

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							1	167

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
CONSTRUCTION PLANS FOR STATE HIGHWAY

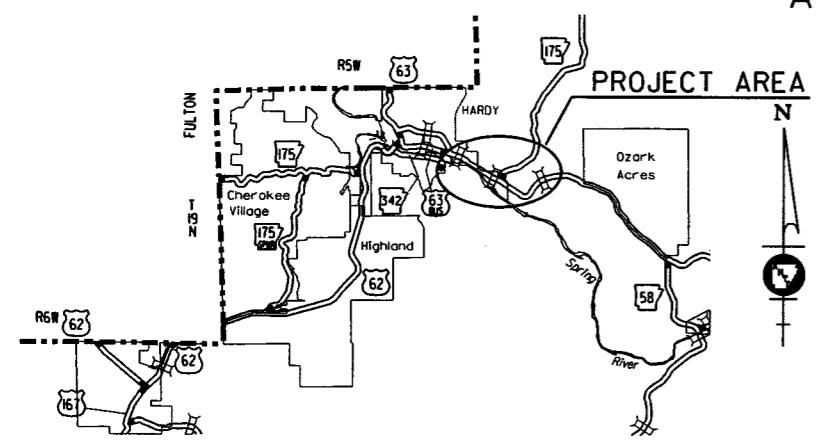
# HARDY-OZARK ACRES STRS. & APPRS. (S)

SHARP COUNTY  
ROUTE 63 SECTION 2

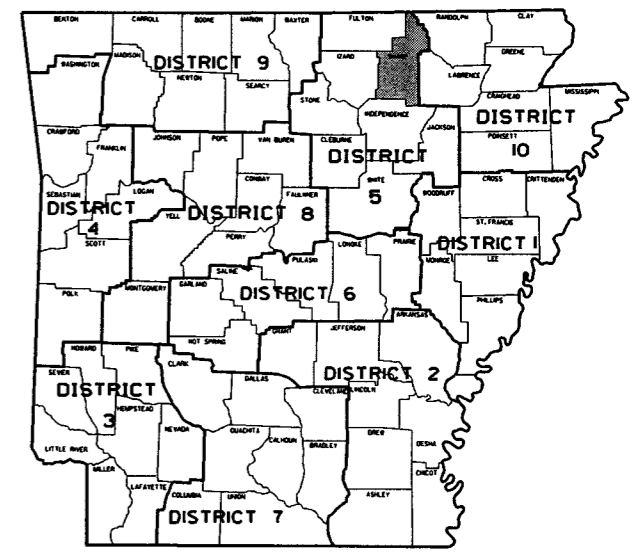
FEDERAL AID PROJ. NHPP-0067(23)

## JOB 050275

2 HARDY-OZARK ACRES STRS. & APPRS. (S)



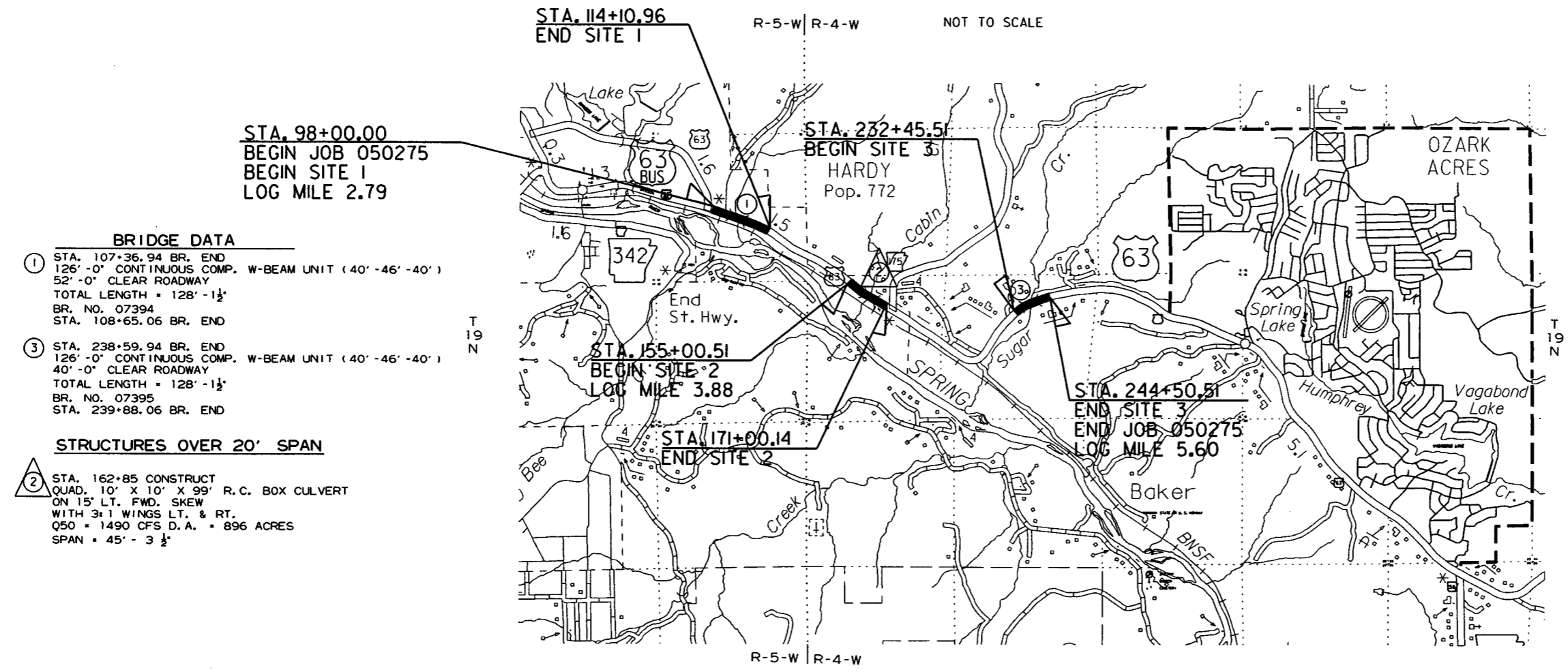
VICINITY MAP



ARK. HWY. DIST. NO. 5

DESIGN TRAFFIC DATA

DESIGN YEAR	2036
2016 ADT	8600
2036 ADT	12000
2036 DHV	1320
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	20%
DESIGN SPEED SECTION 1	45 MPH
SECTIONS 2 & 3	60 MPH



**BRIDGE DATA**

1	STA. 107+36.94 BR. END 126'-0" CONTINUOUS COMP. W-BEAM UNIT (40'-46'-40') 52'-0" CLEAR ROADWAY TOTAL LENGTH = 128'-1 1/2" BR. NO. 07394 STA. 108+65.06 BR. END
3	STA. 238+59.94 BR. END 126'-0" CONTINUOUS COMP. W-BEAM UNIT (40'-46'-40') 40'-0" CLEAR ROADWAY TOTAL LENGTH = 128'-1 1/2" BR. NO. 07395 STA. 239+88.06 BR. END

**STRUCTURES OVER 20' SPAN**

2	STA. 162+85 CONSTRUCT QUAD. 10' X 10' X 99' R.C. BOX CULVERT ON 15' LT. FWD. SKEW WITH 3:1 WINGS LT. & RT. Q50 = 1490 CFS D.A. = 896 ACRES SPAN = 45' - 3 1/2'
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GROSS LENGTH OF PROJECT	445.59	FEET OR	0.836	MILES
NET " " ROADWAY	414.06	" "	0.779	"
NET " " BRIDGES	304.53	" "	0.057	"
NET " " PROJECT	445.59	" "	0.836	"

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 36°18'46"	N 36°18'21"	N 36°18'13"
LONGITUDE	W 91°28'00"	W 91°27'07"	W 91°25'23"



APPROVED



8-19-16  
DEPUTY DIRECTOR  
AND CHIEF ENGINEER

3/24/2016

R050275.DGN

INDEX OF SHEETS

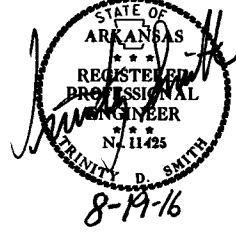
SHEET NO. TITLE BRIDGE NO. DRWG.NO. DATE

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				8-22-02

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

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2 INDEX OF SHEETS



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2 GOVERNING SPECS. AND GENERAL NOTES



**GOVERNING SPECIFICATIONS**

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
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 050275	BIDDING REQUIREMENTS AND CONDITIONS
JOB 050275	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 050275	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 050275	CARGO PREFERENCE ACT REQUIREMENTS
JOB 050275	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 050275	CULVERT CLEAN OUT
JOB 050275	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 050275	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 050275	DISPOSAL OF ILLEGAL DUMP MATERIAL
JOB 050275	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 050275	EXTENSION FOR PIPE CULVERTS
JOB 050275	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 050275	HIGH PERFORMANCE PAVEMENT MARKING
JOB 050275	INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (BNSF)
JOB 050275	MANDATORY ELECTRONIC CONTRACT
JOB 050275	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 050275	NESTING SITES OF MIGRATORY BIRDS
JOB 050275	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB 050275	PARTNERING REQUIREMENTS
JOB 050275	PLASTIC PIPE
JOB 050275	RESTRAINING CONDITIONS
JOB 050275	SHORING
JOB 050275	SHORING FOR CULVERTS
JOB 050275	SOIL STABILIZATION
JOB 050275	STORM WATER POLLUTION PREVENTION PLAN
JOB 050275	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 050275	UTILITY ADJUSTMENTS
JOB 050275	VALUE ENGINEERING
JOB 050275	VEGETATED BUFFER
JOB 050275	WARM MIX ASPHALT
JOB 050275	WATER POLLUTION CONTROL & RESTRAINING CONDITION
JOB 050275	WELLHEAD PROTECTION

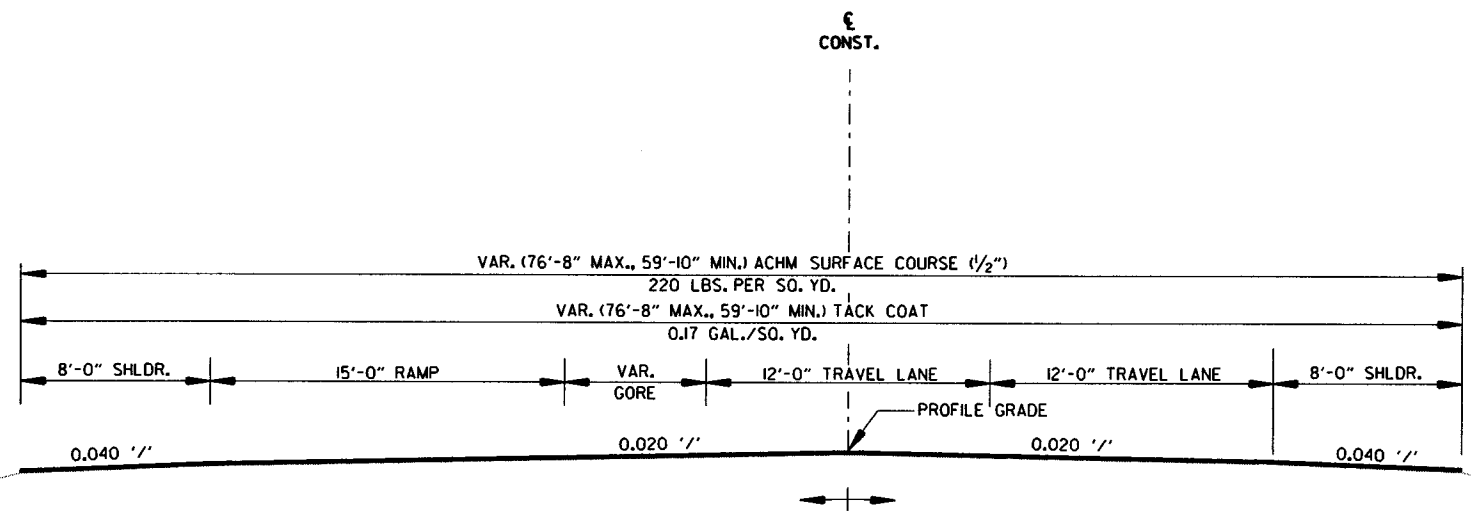
**GENERAL NOTES**

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THIS PROJECT IS COVERED UNDER A SECTION 404 STANDARD INDIVIDUAL 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.

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② TYPICAL SECTIONS OF IMPROVEMENT



SITE 1  
OVERLAY SECTION  
STA. 98+00.00 TO STA. 98+50.00

NOTES:

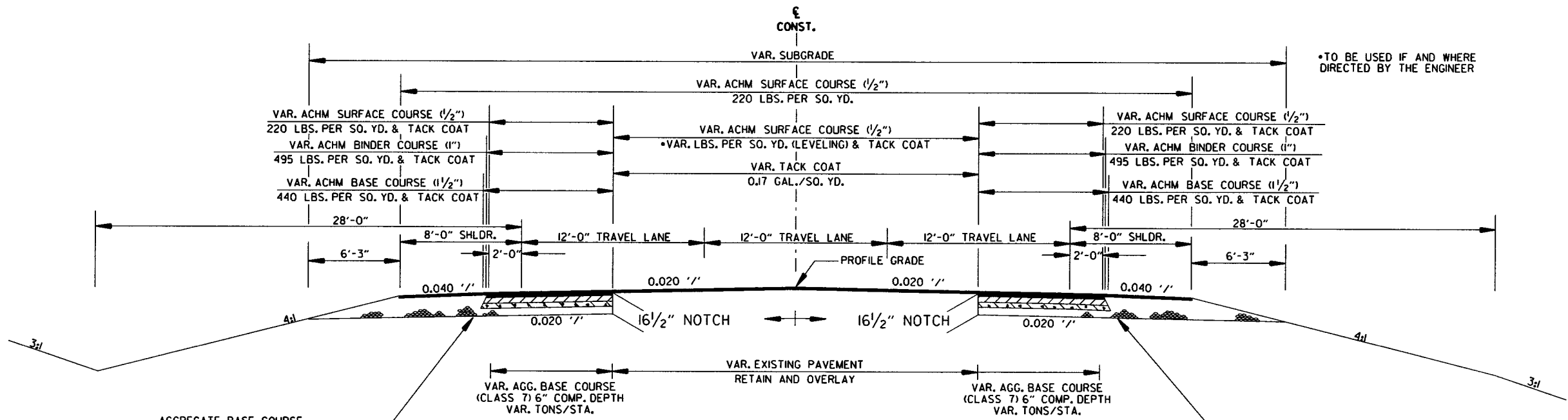
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

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

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

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



SITE 1  
3-LANE TANGENT SECTION  
NOTCH, WIDEN, AND OVERLAY  
STA. 98+50.00 TO STA. 101+35.00

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

AGGREGATE BASE COURSE (CLASS 7) VAR. COMP. DEPTH 95.75 TONS/STA.

VAR. AGG. BASE COURSE (CLASS 7) 6" COMP. DEPTH VAR. TONS/STA.

VAR. AGG. BASE COURSE (CLASS 7) 6" COMP. DEPTH VAR. TONS/STA.

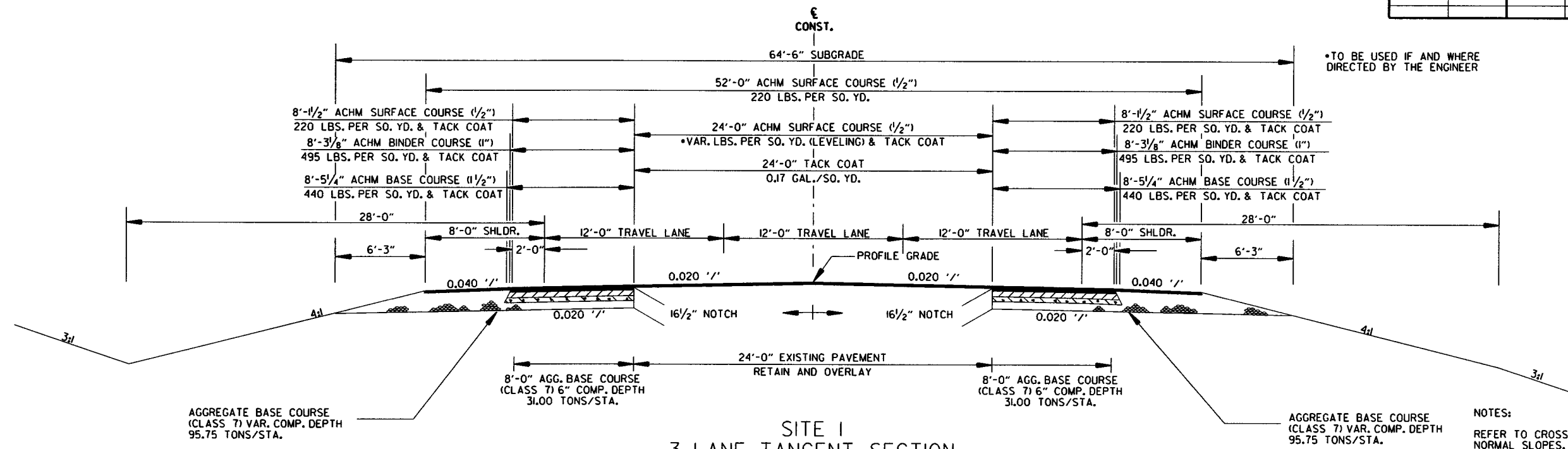
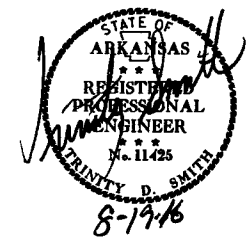
AGGREGATE BASE COURSE (CLASS 7) VAR. COMP. DEPTH 95.75 TONS/STA.

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2 TYPICAL SECTIONS OF IMPROVEMENT



SITE 1  
3-LANE TANGENT SECTION  
NOTCH, WIDEN, AND OVERLAY  
STA. 101+35.00 TO STA. 105+25.00

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

NOTES:

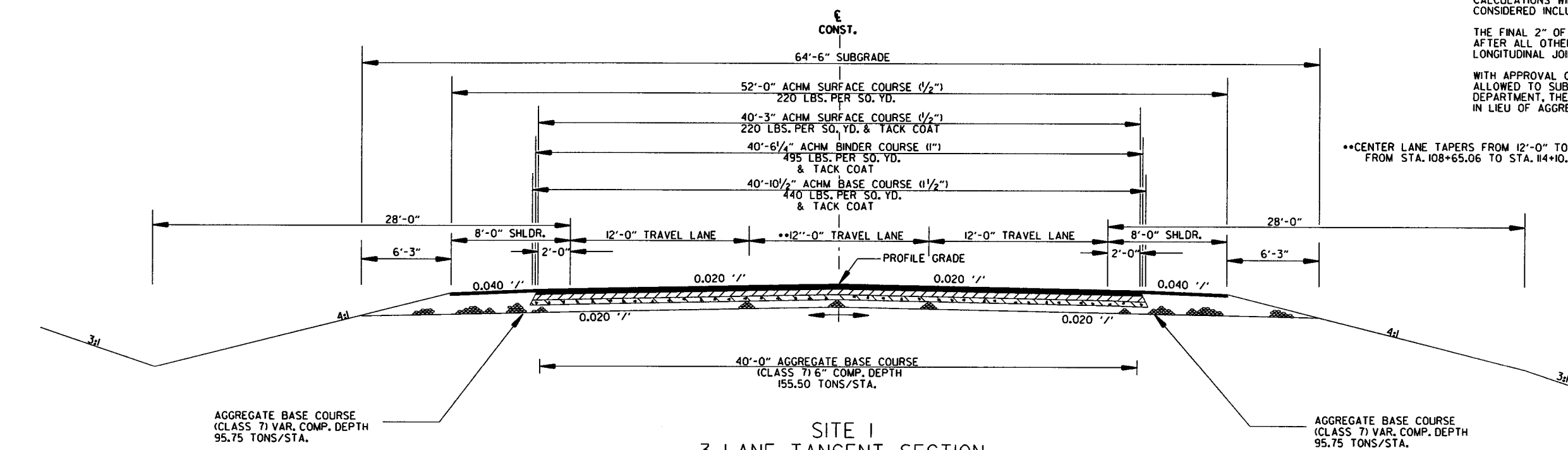
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ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT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

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



SITE 1  
3-LANE TANGENT SECTION  
FULL DEPTH  
STA. 105+25.00 TO STA. 107+36.94  
STA. 108+65.06 TO STA. 110+45.00

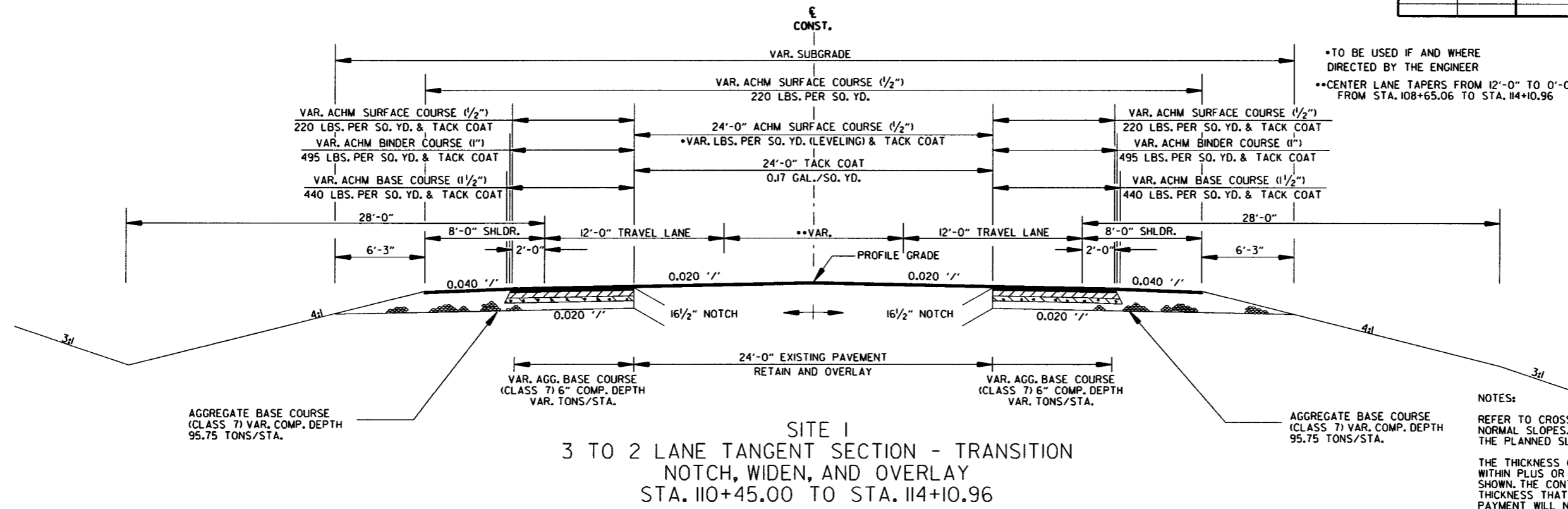
\*\*CENTER LANE TAPERS FROM 12'-0" TO 0'-0" FROM STA. 108+65.06 TO STA. 110+45.00

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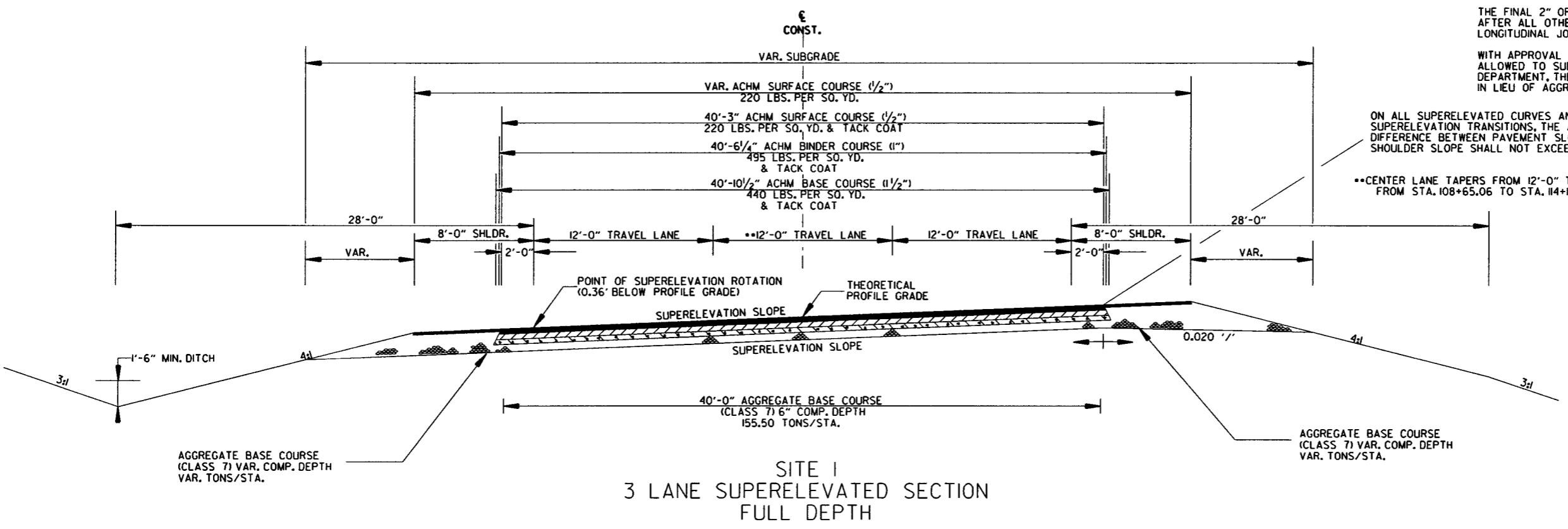
2 TYPICAL SECTIONS OF IMPROVEMENT



SITE 1  
3 TO 2 LANE TANGENT SECTION - TRANSITION  
NOTCH, WIDEN, AND OVERLAY  
STA. 110+45.00 TO STA. 114+10.96

• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER  
•• CENTER LANE TAPERS FROM 12'-0" TO 0'-0" FROM STA. 108+65.06 TO STA. 114+10.96

NOTES:  
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.  
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.  
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THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.  
WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



SITE 1  
3 LANE SUPERELEVATED SECTION  
FULL DEPTH

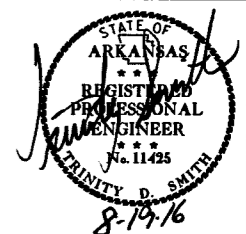
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.  
•• CENTER LANE TAPERS FROM 12'-0" TO 0'-0" FROM STA. 108+65.06 TO STA. 114+10.96

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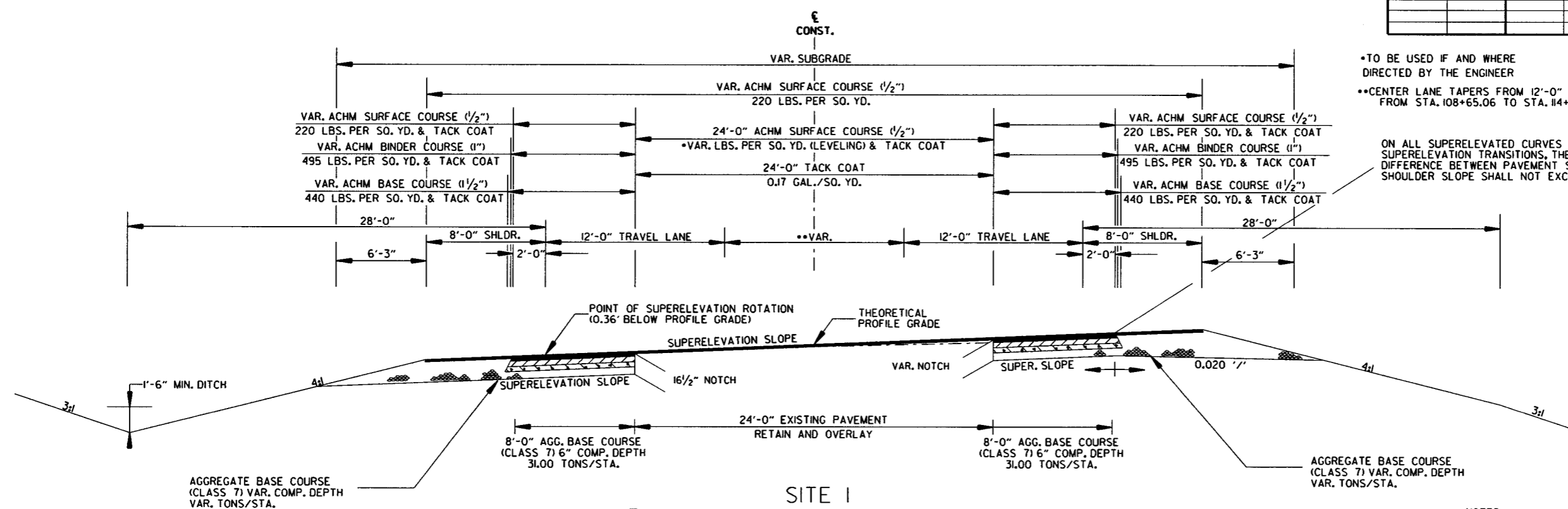
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				6	ARK.		7	167
				JOB NO. 050275				

2 TYPICAL SECTIONS OF IMPROVEMENT

• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER  
 •• CENTER LANE TAPERS FROM 12'-0" TO 0'-0" FROM STA. 108+65.06 TO STA. 114+10.96

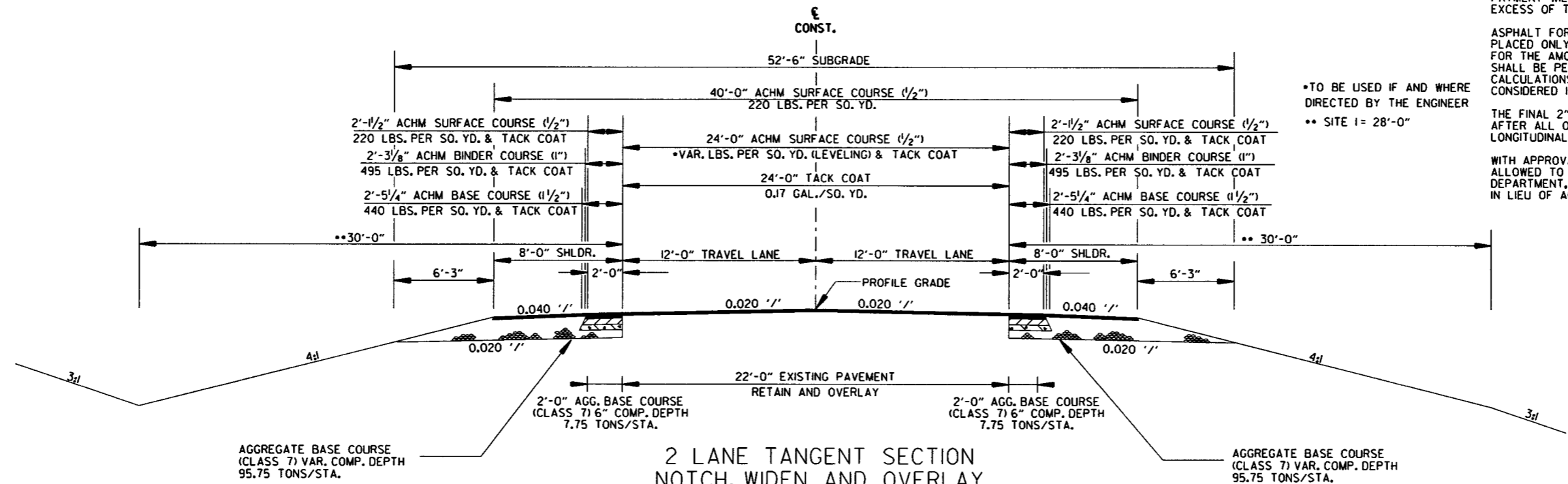


ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.



SITE 1  
3 LANE SUPERELEVATED SECTION  
NOTCH, WIDEN, AND OVERLAY

NOTES:  
 REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.  
 THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.  
 ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.  
 THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.  
 WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



2 LANE TANGENT SECTION  
NOTCH, WIDEN, AND OVERLAY  
 SITE 1 - STA. 114+10.96  
 SITE 2 - STA. 155+00.51 TO STA. 157+95.00  
 SITE 2 - STA. 169+15.00 TO STA. 171+00.14  
 SITE 3 - STA. 232+45.51 TO STA. 234+35.00  
 SITE 3 - STA. 242+30.00 TO STA. 244+50.51

• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER  
 •• SITE 1 = 28'-0"

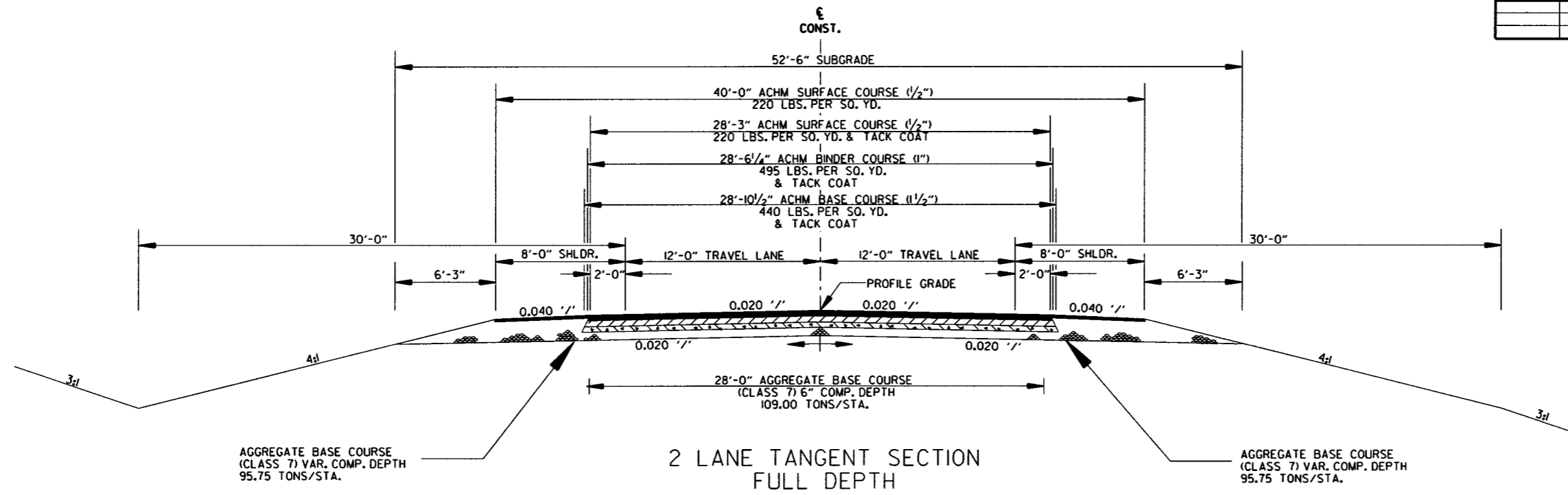
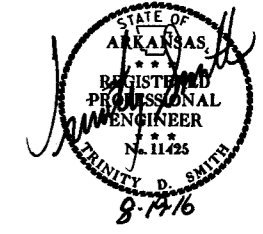
AGGREGATE BASE COURSE (CLASS 7) VAR. COMP. DEPTH 95.75 TONS/STA.

7/20/2016

R050275.DCN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							8	167

2 TYPICAL SECTIONS OF IMPROVEMENT



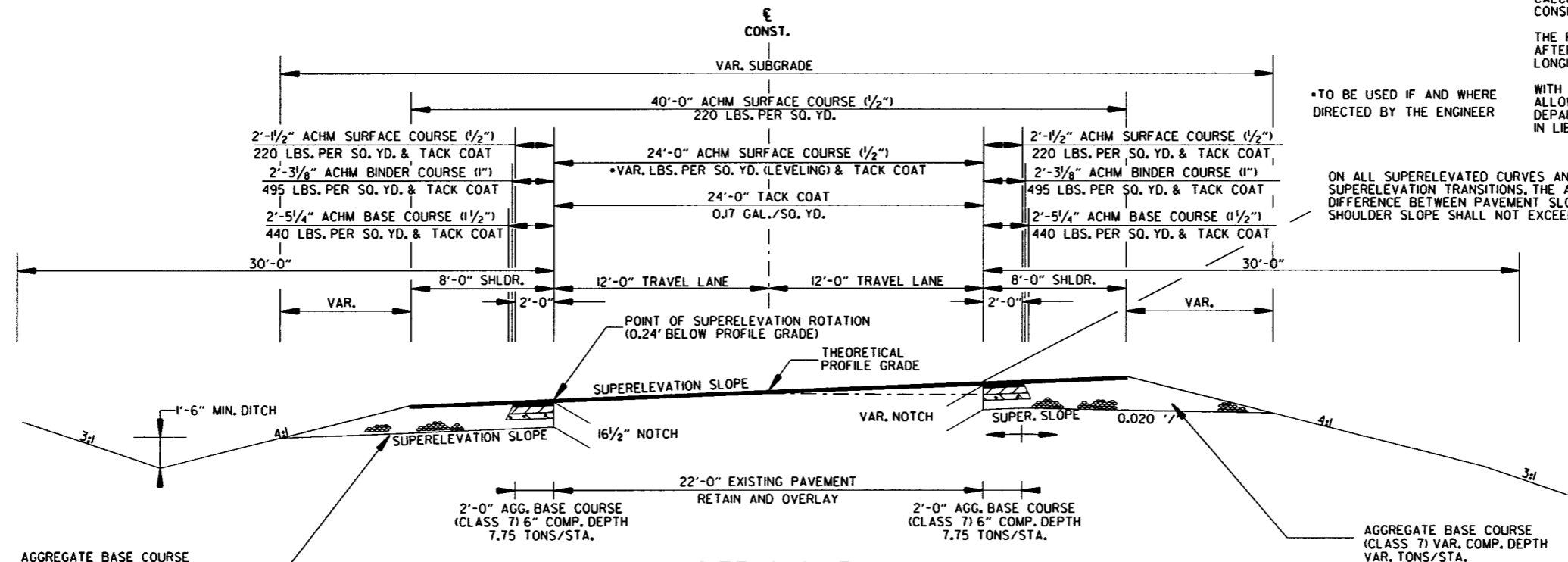
2 LANE TANGENT SECTION  
FULL DEPTH  
SITE 2 - STA. 157+95.00 TO STA. 169+15.00  
SITE 3 - STA. 234+35.00 TO STA. 238+59.94  
SITE 3 - STA. 239+88.06 TO STA. 242+30.00

NOTES:  
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.  
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

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

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



SITE 2 & 3  
2 LANE SUPERELEVATED SECTION  
NOTCH, WIDEN, AND OVERLAY

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

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

AGGREGATE BASE COURSE (CLASS 7) VAR. COMP. DEPTH VAR. TONS/STA.

AGGREGATE BASE COURSE (CLASS 7) VAR. COMP. DEPTH VAR. TONS/STA.

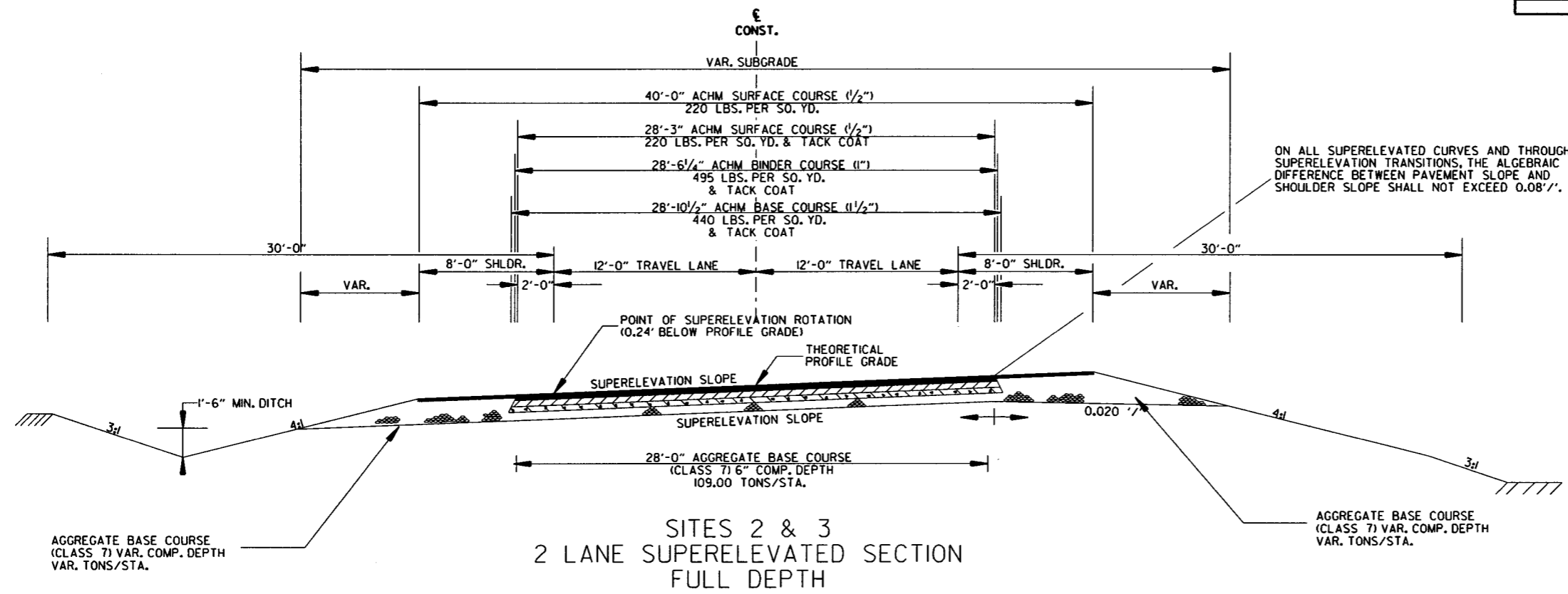
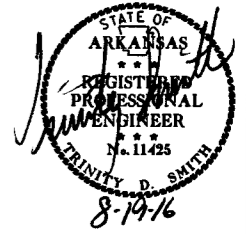
7/20/2016

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DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		9	167
				JOB NO. 050275				

2 TYPICAL SECTIONS OF IMPROVEMENT



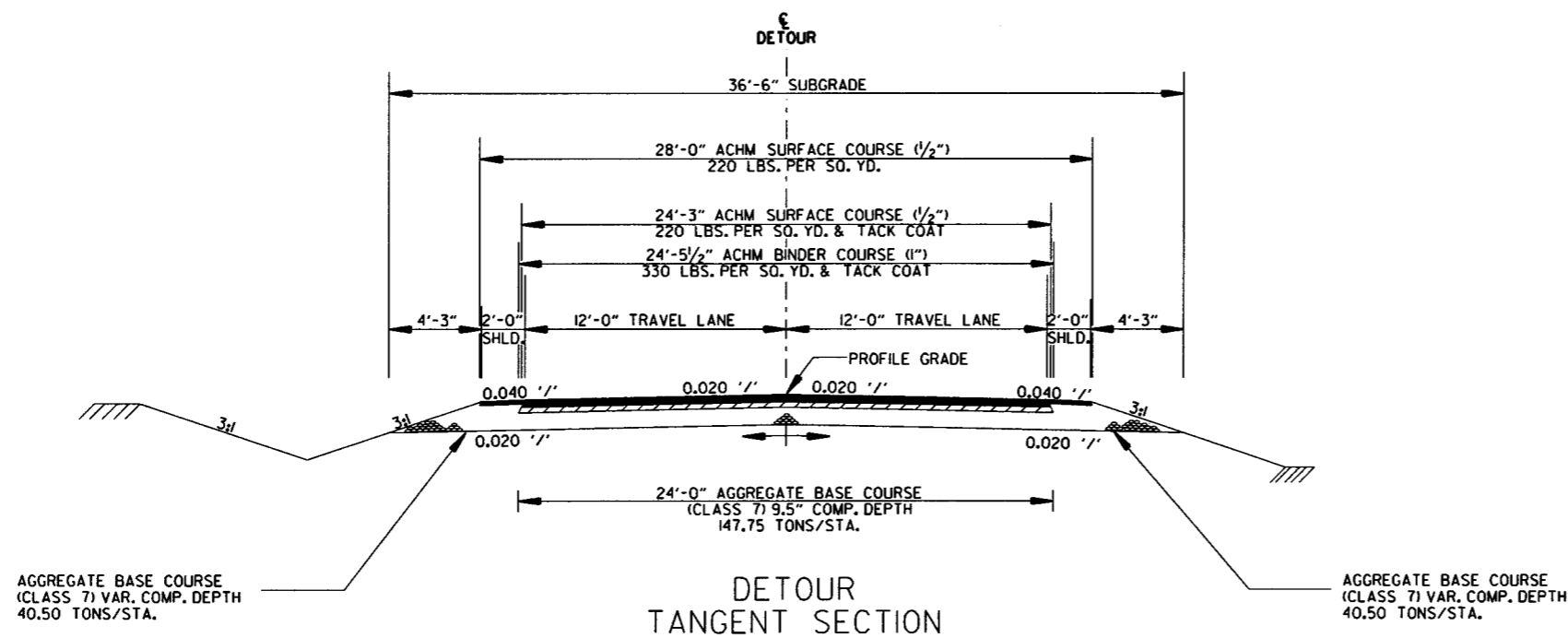
SITES 2 & 3  
2 LANE SUPERELEVATED SECTION  
FULL DEPTH

NOTES:

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

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

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



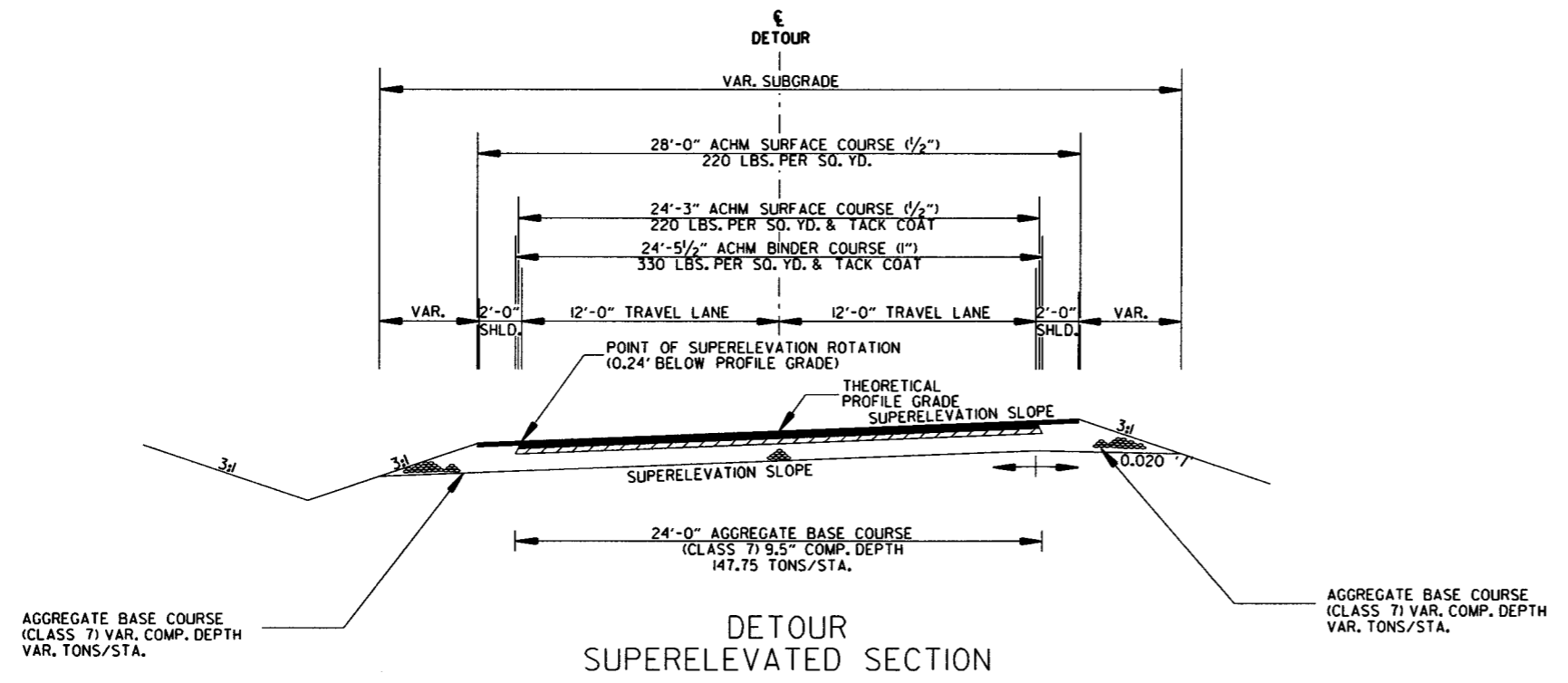
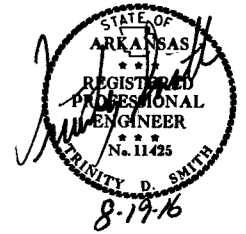
DETOUR  
TANGENT SECTION

7/20/2016

R050275.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.	050275		10	167

② TYPICAL SECTIONS OF IMPROVEMENT



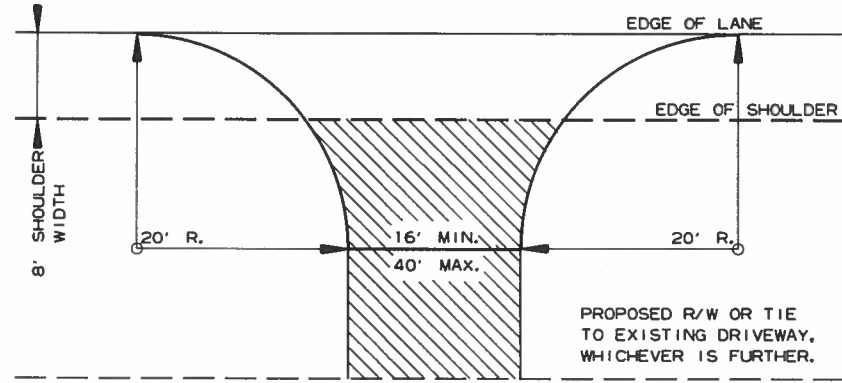
NOTES:  
 REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.  
 THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.  
 THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

DETOUR SUPERELEVATED SECTION

7/20/2016  
 R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. PROJ. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.		11	167
				JOB NO.	050275			

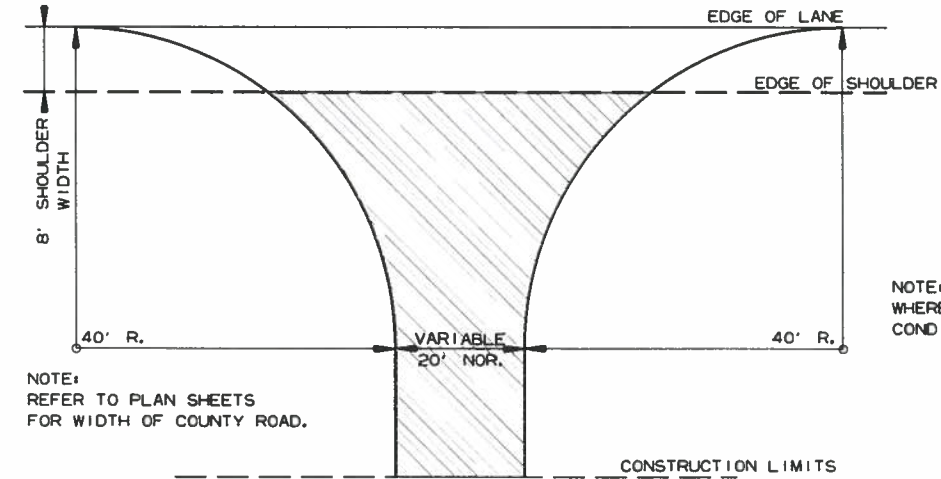
2 SPECIAL DETAILS



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.

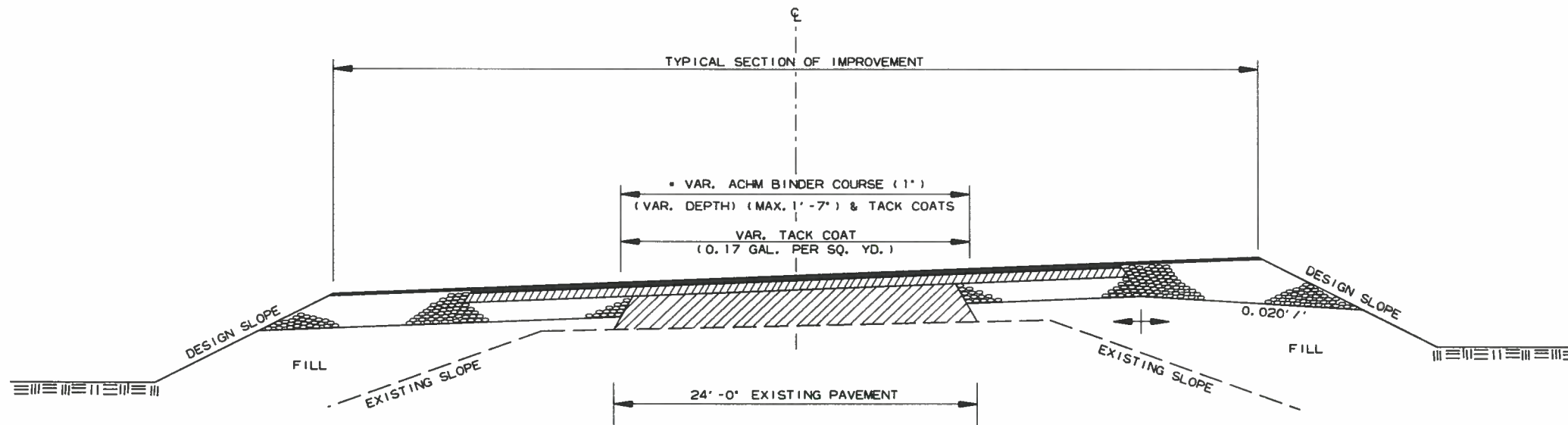
ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT OR GRAVEL DRIVE EXISTING; OR 6" CONCRETE IF CONCRETE DRIVE EXISTING.



DETAIL FOR COUNTY ROAD TURNOUTS  
OPEN SHOULDER SECTION

NOTE: TURNOUTS 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

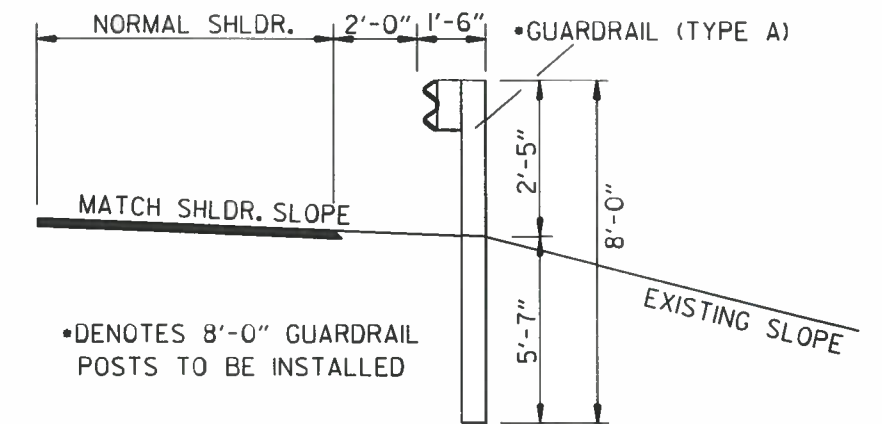


6" AGGREGATE BASE COURSE (CLASS 7) TO BE REPLACED WITH ACHM BINDER COURSE (1")

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.



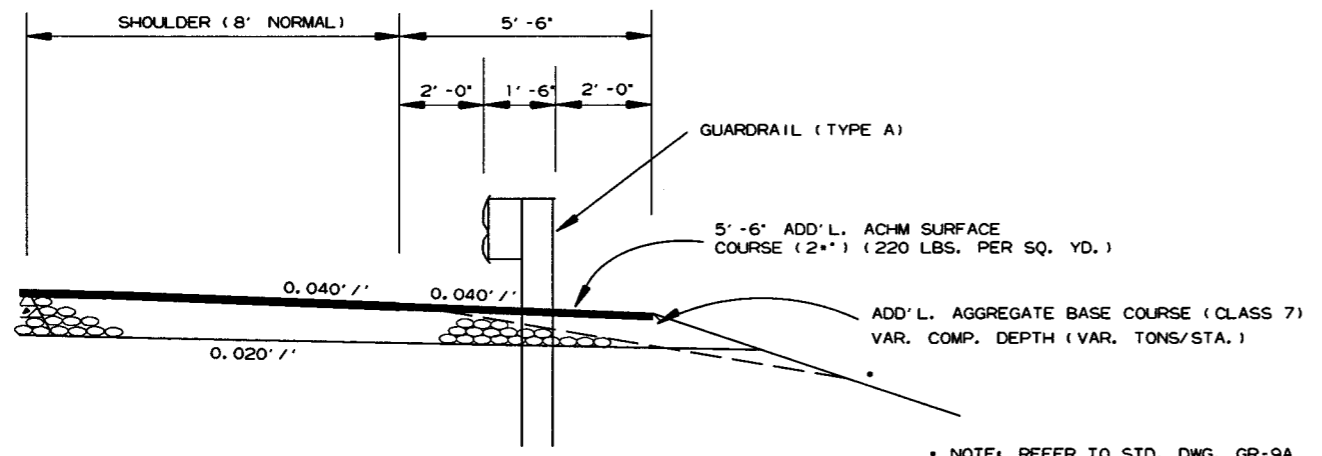
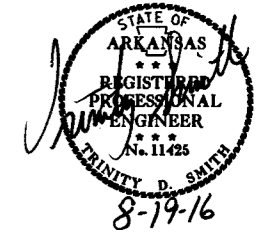
SECTION DETAIL FOR GUARDRAIL

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

STA. 123+73.81 TO STA. 128+19.95

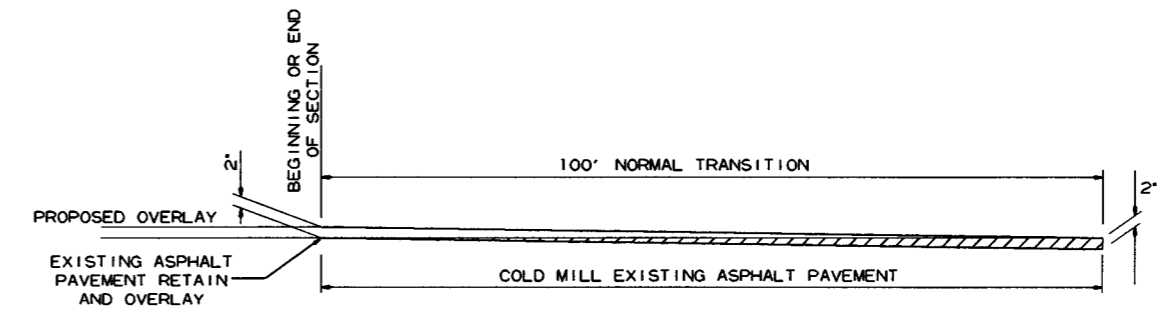
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							12	167

2 SPECIAL DETAILS

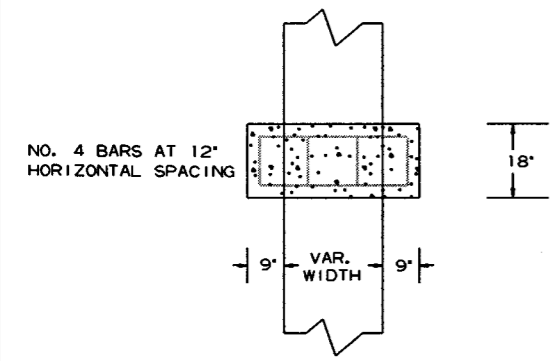


WIDENING FOR GUARDRAIL

NOTE: REFER TO STD. DWG. GR-9A AND CROSS SECTIONS FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

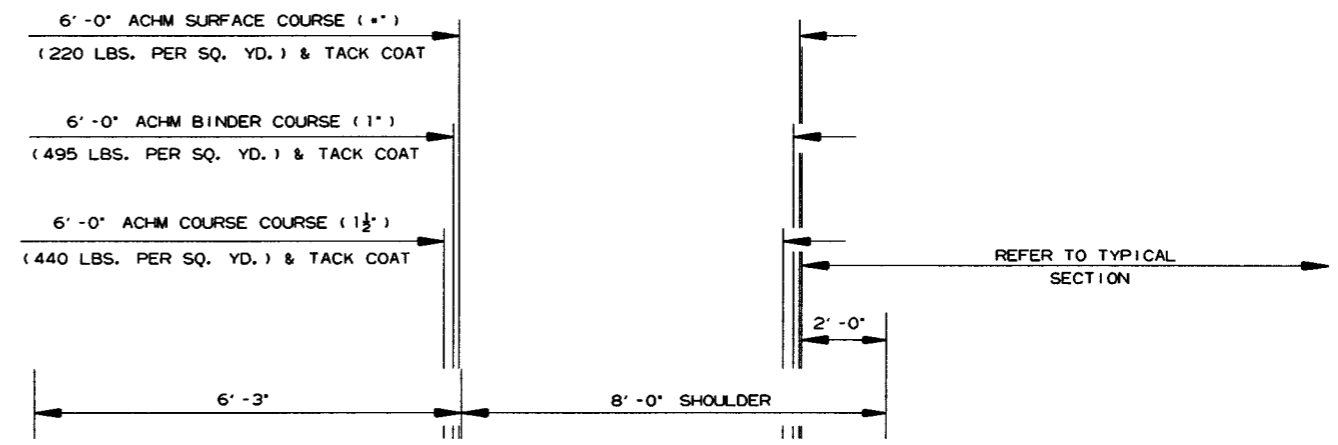


DETAIL FOR TRANSITIONS



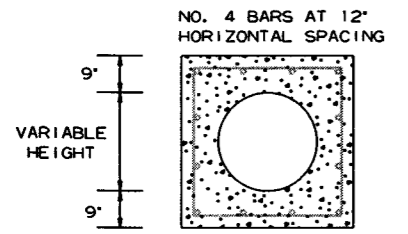
TOP VIEW

MIN 3" COVER

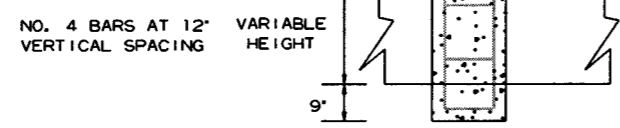


FULL DEPTH SHOULDER FOR MAINTENANCE OF TRAFFIC

STA. 101+35.00 TO STA. 107+36.94  
STA. 108+65.06 TO STA. 114+10.96



FRONT VIEW



SIDE VIEW

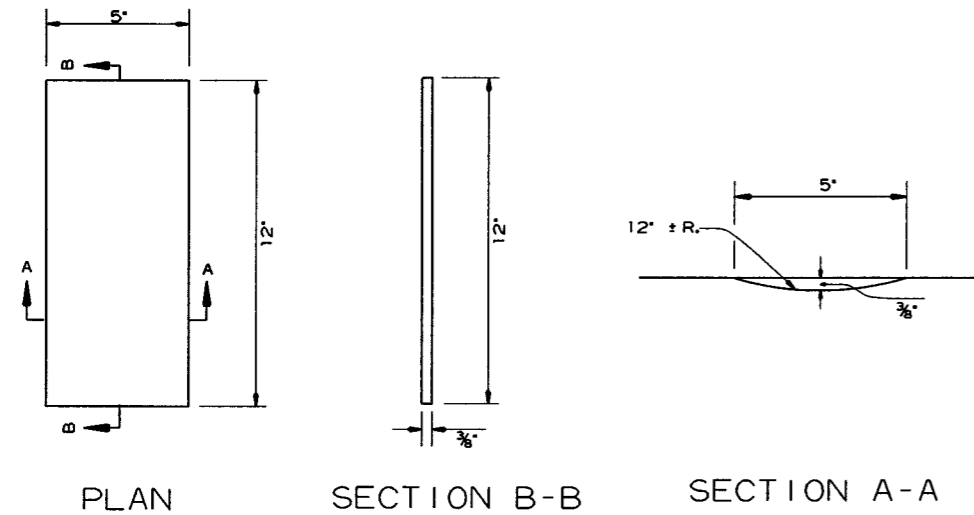
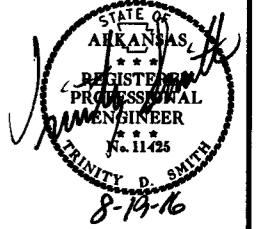
PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL

7/25/2016

R050275.DGN

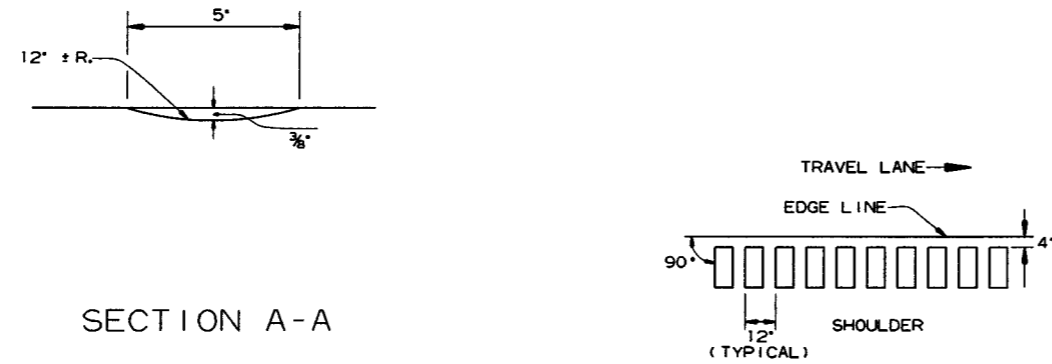
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				6	ARK.			
				JOB NO.	050275		13	167

② SPECIAL DETAILS

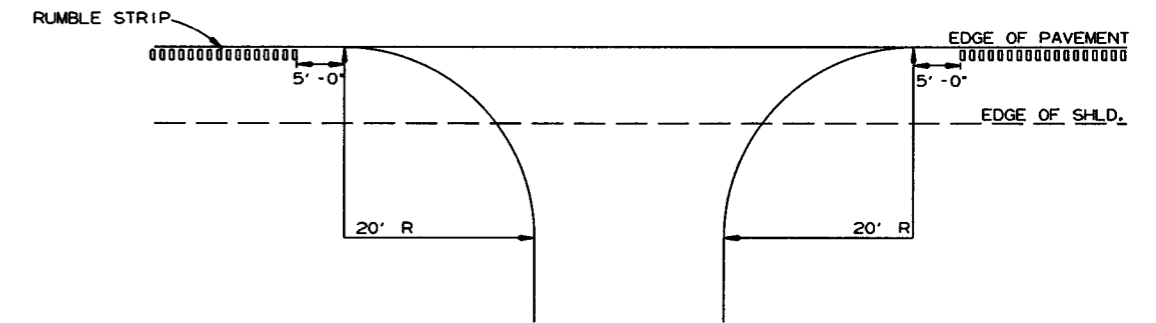


PLAN SECTION B-B SECTION A-A

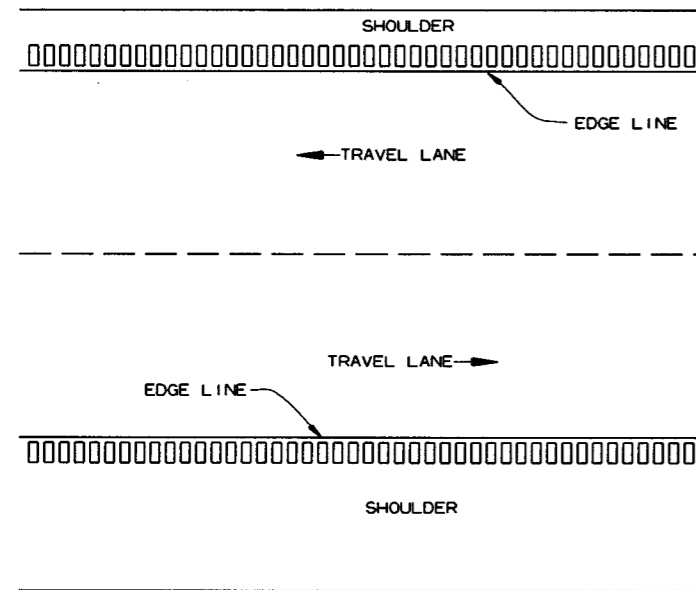
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS  
LEFT OR RIGHT SHOULDER



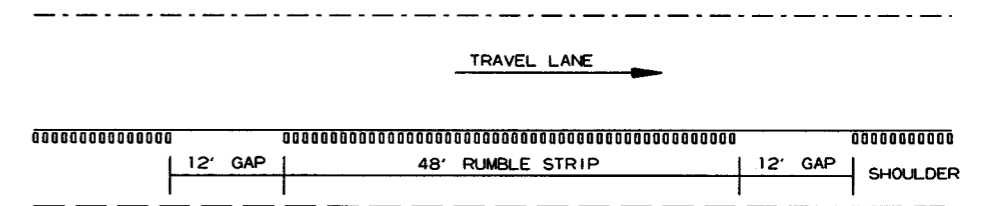
DETAIL FOR RUMBLE STRIP GAP  
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

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



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

DETAIL FOR GAP PATTERN RUMBLE STRIP

MID-SECTION

Table with columns for R.C. BOX SECTION, DESIGN FILL DEPTH, CLEAR SPAN, CLEAR HEIGHT, TOP SLAB THK., BOTTOM SLAB THK., SIDE WALL THK., INTERIOR WALL THK., OVER ALL WIDTH, OVER ALL HEIGHT, SECTION LENGTH, TOP SLAB REINFORCING STEEL, BOTTOM SLAB REINFORCING STEEL, 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, CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60).

Table with columns: CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60), CU. YDS., LBS.

INLET SLOPE SECTION(S)

Table with columns for R.C. BOX SECTION, DESIGN FILL DEPTH, CLEAR SPAN, CLEAR HEIGHT, TOP SLAB THK., BOTTOM SLAB THK., SIDE WALL THK., INTERIOR WALL THK., OVER ALL WIDTH, OVER ALL HEIGHT, SECTION LENGTH, TOP SLAB REINFORCING STEEL, BOTTOM SLAB REINFORCING STEEL, 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, CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60).

Table with columns: CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60), CU. YDS., LBS.

INLET SKEWED END SECTION

Table with columns for SKEW (DEGREE), SLOPE, DESIGN FILL DEPTH, CLEAR SPAN, CLEAR HEIGHT, 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, 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, CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60).

Table with columns: CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60), CU. YDS., LBS.

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

INLET WINGWALL TABLE

Table with columns for 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, CLASS 'S' CONCRETE, REINFORCING STEEL.

MID-SECTION BAR LAP TABLE

Table with columns: # of Long. Laps Req'd., SL = Section Length, REINFORCING STEEL QTY. PER WING (LBS.).

Table with columns: Min. Bar Lap Length, Bar Pin Dia. Table.

Table with columns: DATE REVISED, DATE FILMED, DATE REVISED, DATE FILMED, FEDERAL ROAD DIST. NO., STATE, FED. AID PROJ. NO., SHEET NO., TOTAL SHEETS.



TABULAR DATA BY: BHS DATE: 6/14/2016 CHECKED BY: [Signature] DATE: 6/15/16

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.

Table with columns: Design Fill Depth, Range of Actual Fill Depth.

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 1 OF 2 DETAILS OF R.C. BOX CULVERT QUADRUPLE BARREL BOX CULVERT S+a. 162+85

SPECIAL DETAILS



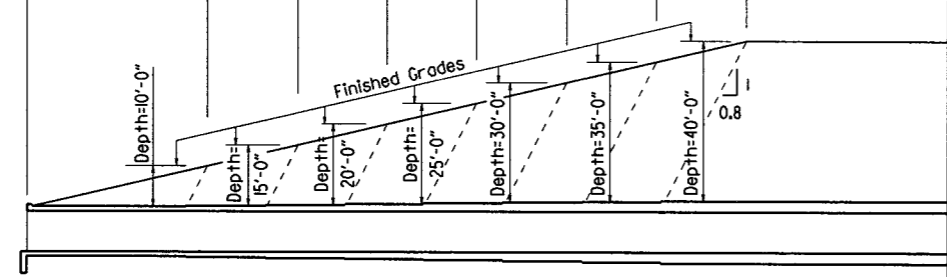


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	050275	16 167
SPECIAL DETAILS								

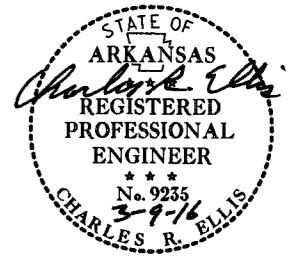
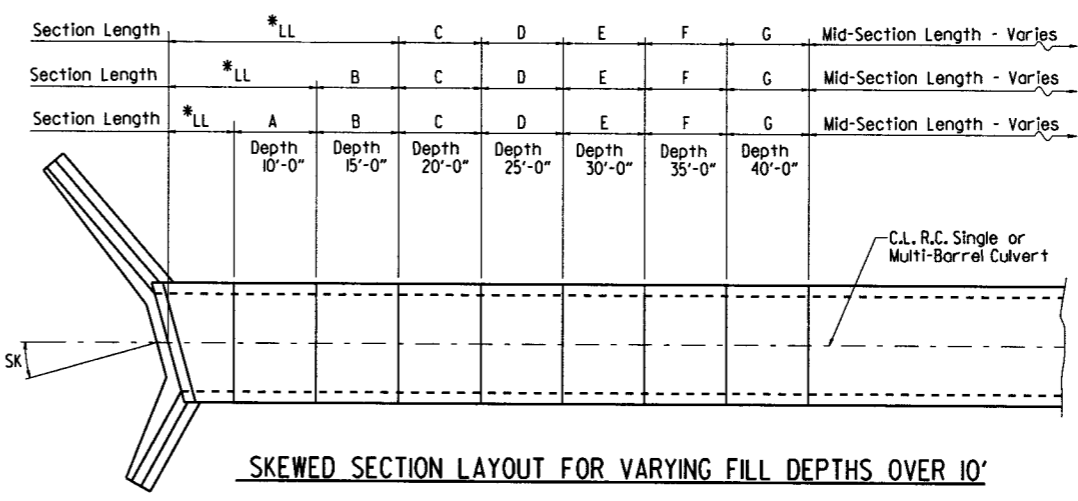
2:1 Slope	20'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
3:1 Slope	30'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"
4:1 Slope	40'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"

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

\*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.



Slope Section Length @ 2:1 Slope	A=12'-0"	B=6'-0"	C=6'-0"	D=6'-0"	E=6'-0"	F=6'-0"	G=6'-0"	Mid-Section Length - Varies
Slope Section Length @ 3:1 Slope	A=22'-0"	B=11'-0"	C=11'-0"	D=11'-0"	E=11'-0"	F=11'-0"	G=11'-0"	Mid-Section Length - Varies
Slope Section Length @ 4:1 Slope	A=32'-0"	B=16'-0"	C=16'-0"	D=16'-0"	E=16'-0"	F=16'-0"	G=16'-0"	Mid-Section Length - Varies



**LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'**

Lengths for Non-Skewed Boxes

**SKewed SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'**

**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 5 with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have 3/4" 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.

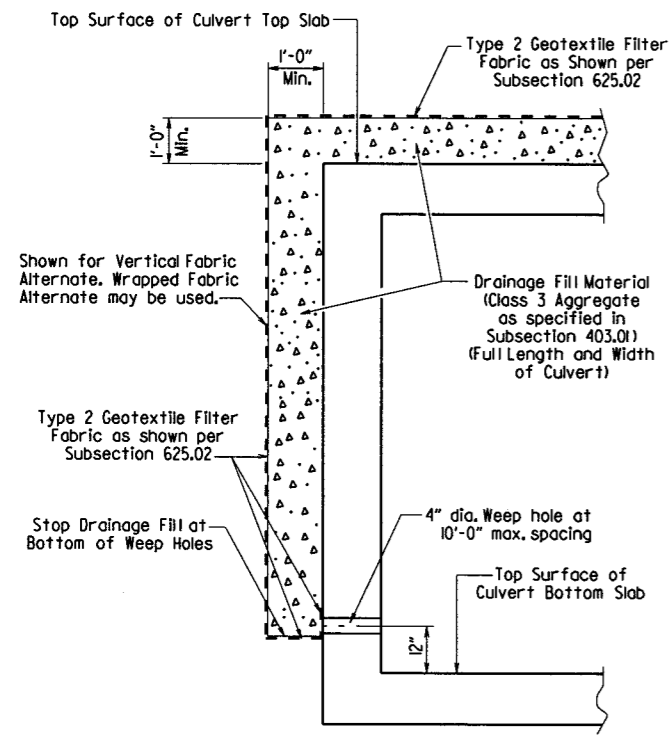
Weep Holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

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 5 Concrete.

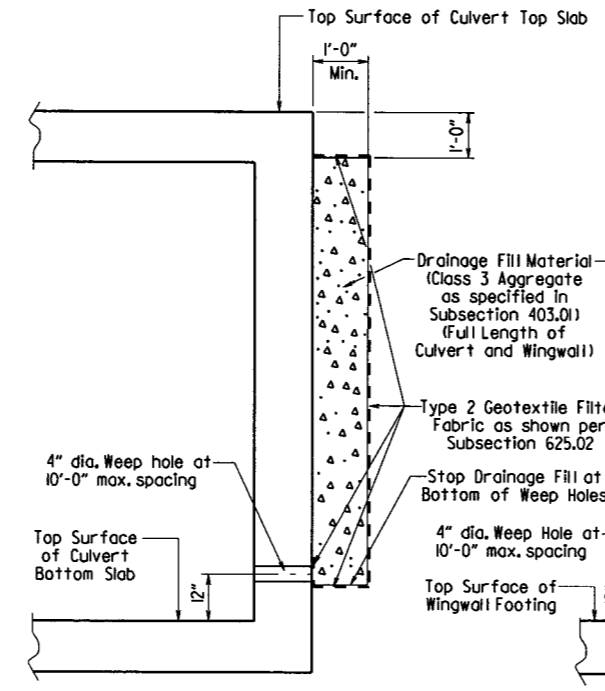
When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and a fine finish shall be applied in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Curing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class 5 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.



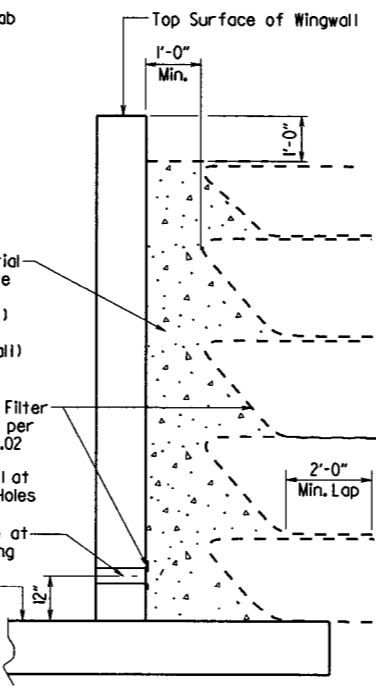
**CULVERT DRAINAGE DETAIL FOR ROCK FILL**

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**

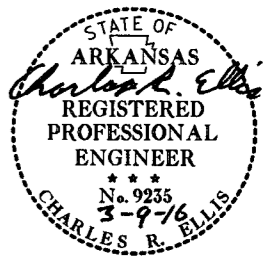
SHEET 1 OF 4  
**GENERAL DETAILS OF R.C. BOX CULVERT**  
 GENERAL NOTES &  
 LONGITUDINAL SECTION LENGTH SCHEDULE  
 SPECIAL DETAILS

V 1.14 Culvert-General.dgn

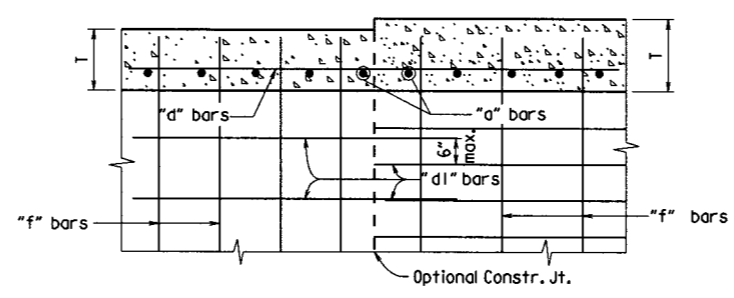
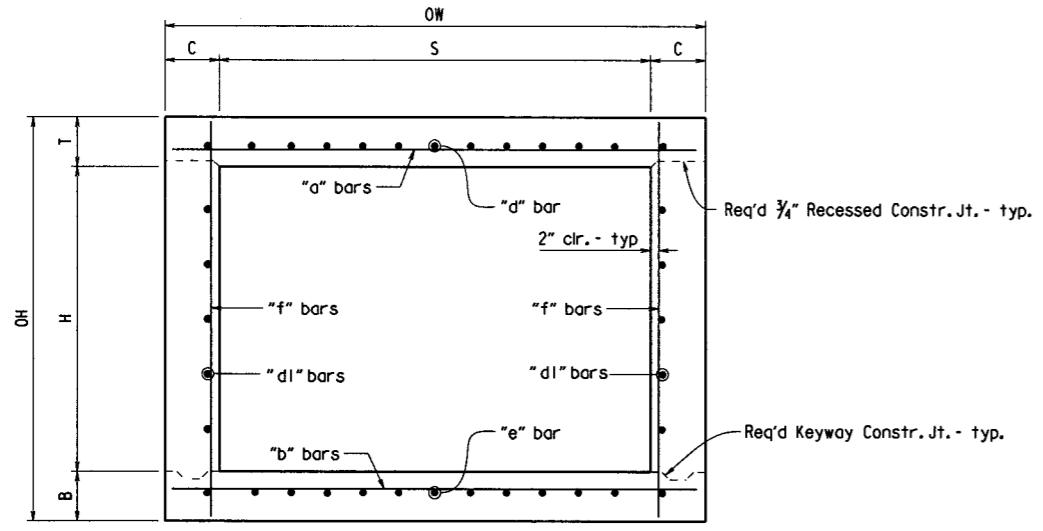




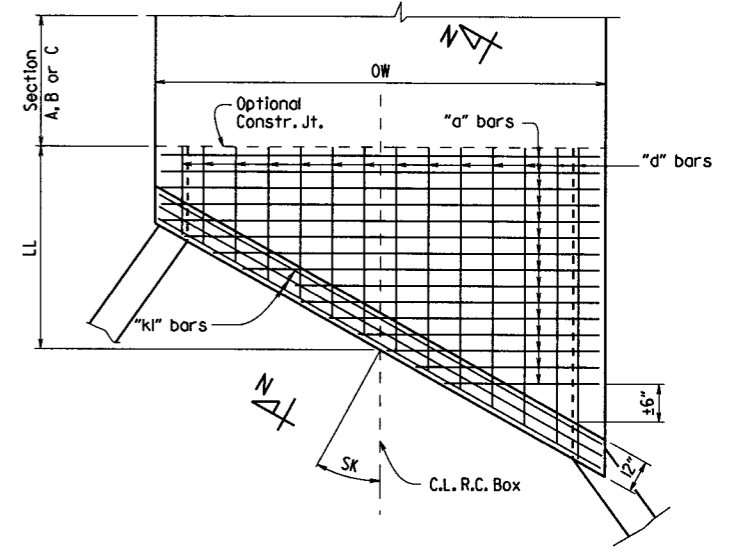
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	050275	17



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

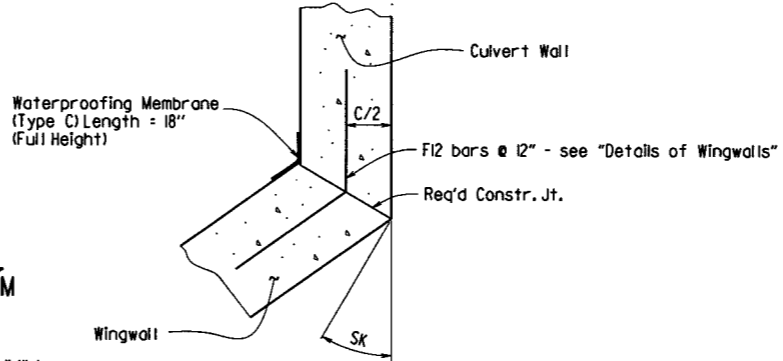
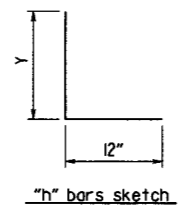


**LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS**  
TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

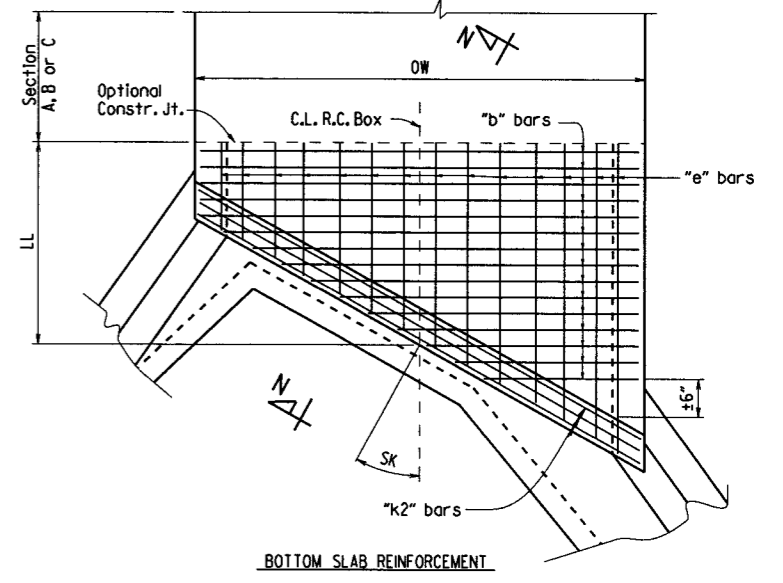


**TOP SLAB REINFORCEMENT**

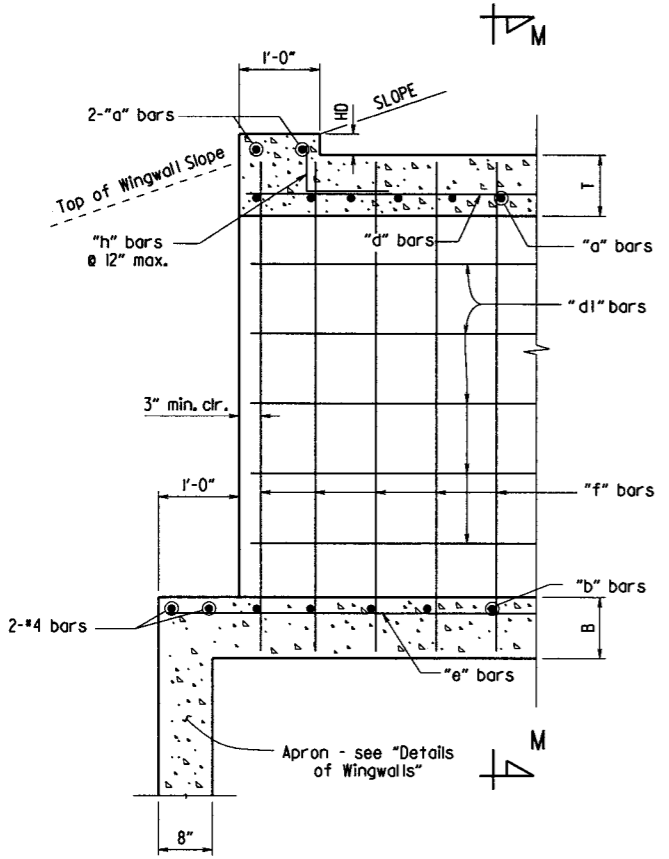
**TYPICAL SECTION M-M**



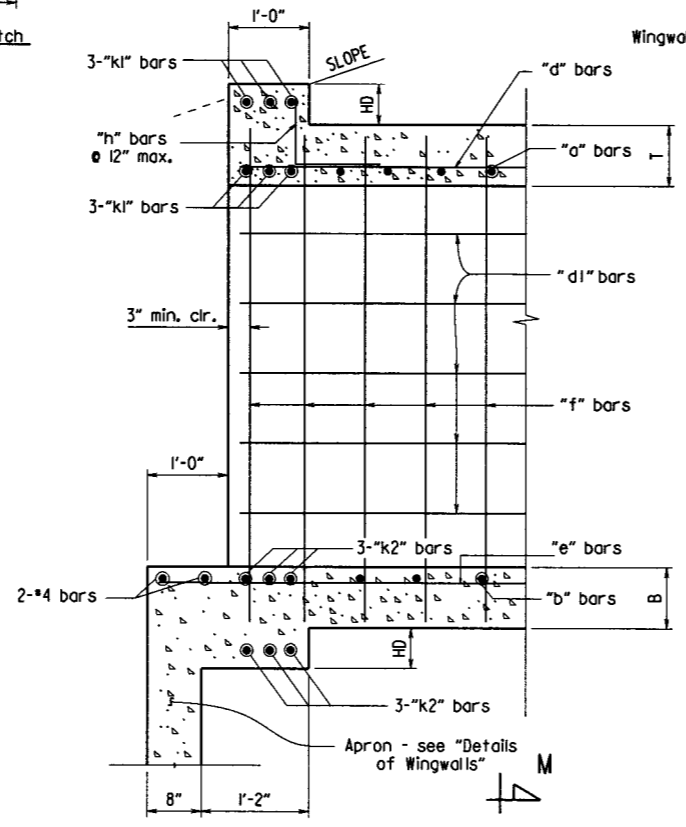
**WINGWALL ATTACHMENT**  
See "Details of Wingwalls" for additional information and wingwall details.



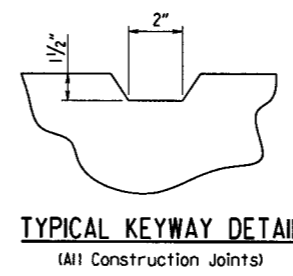
**SKewed END SECTION DETAILS**



**PART LONGITUDINAL SECTION**  
(Non-Skewed Ends)



**PART LONGITUDINAL SECTION N-N**  
(Skewed Ends)



**TYPICAL KEYWAY DETAIL**  
(All Construction Joints)

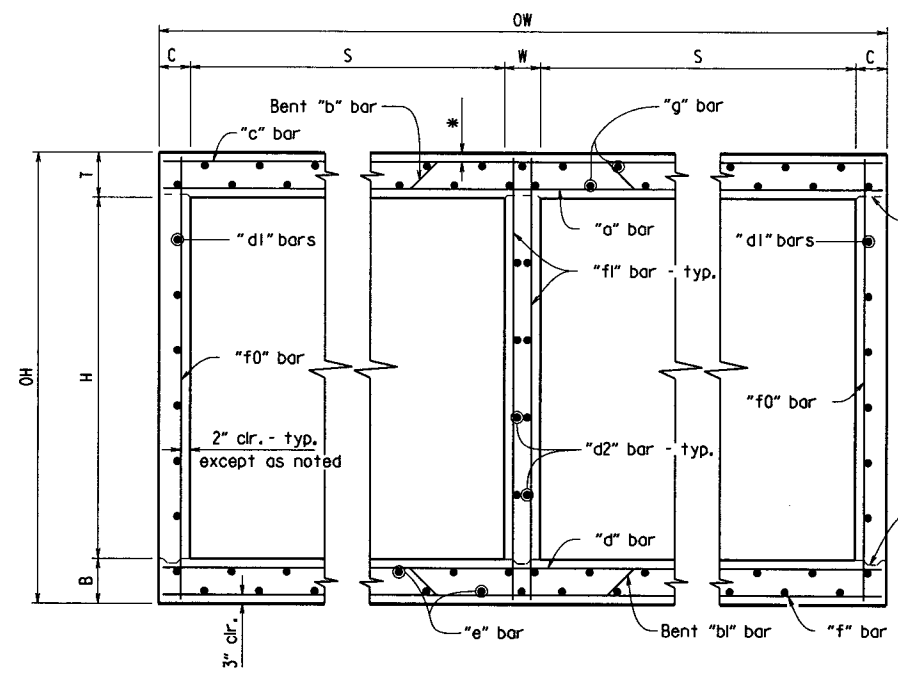
SHEET 2 OF 4  
GENERAL DETAILS OF R.C. BOX CULVERT  
DETAILS OF SINGLE BARREL  
R.C. BOX CULVERT  
SPECIAL DETAILS

Culvert-General.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.						050275	15	167

\*2" clr. for fill depth (D) greater than 2 ft.  
 2 1/2" clr. for fill depth (D) equal to or less than 2 ft.

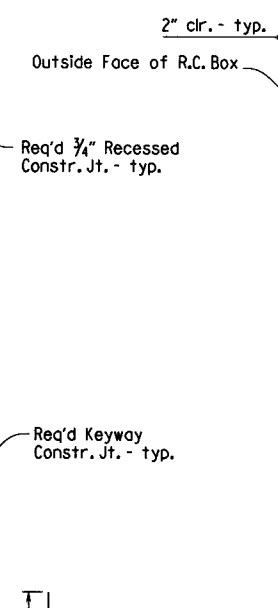
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



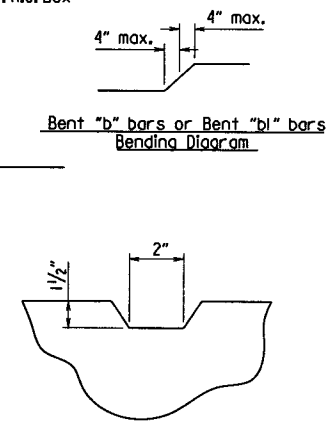
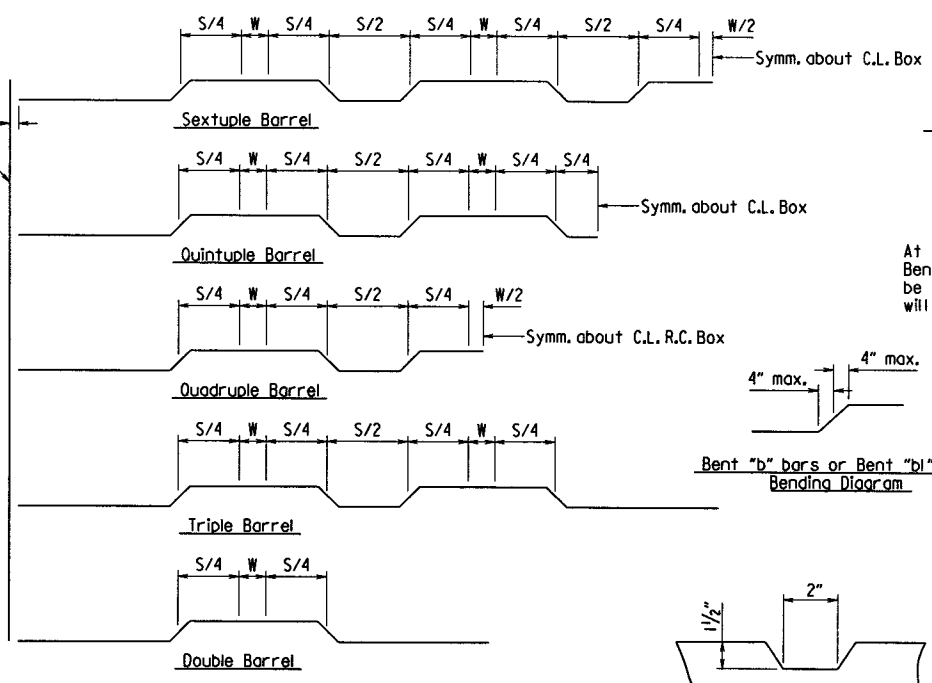
**TYPICAL SECTION M-M**

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

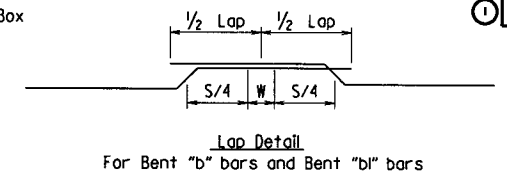
**Bottom Slab**  
 Straight "d" bars shall alternate with Bent "bl" bars in top.  
 Straight "f" bars shall alternate with Bent "bl" bars in bottom.



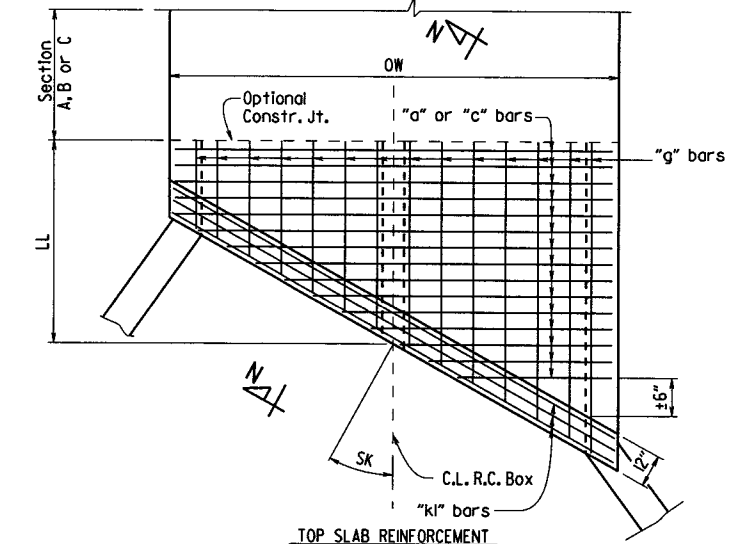
**Bent "b" bars or Bent "bl" bars sketch**



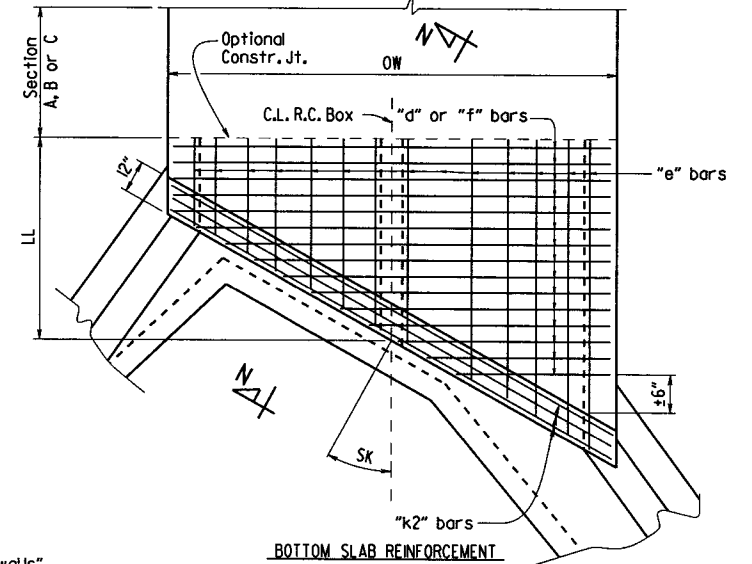
**TYPICAL KEYWAY DETAIL**  
 (All Construction Joints)



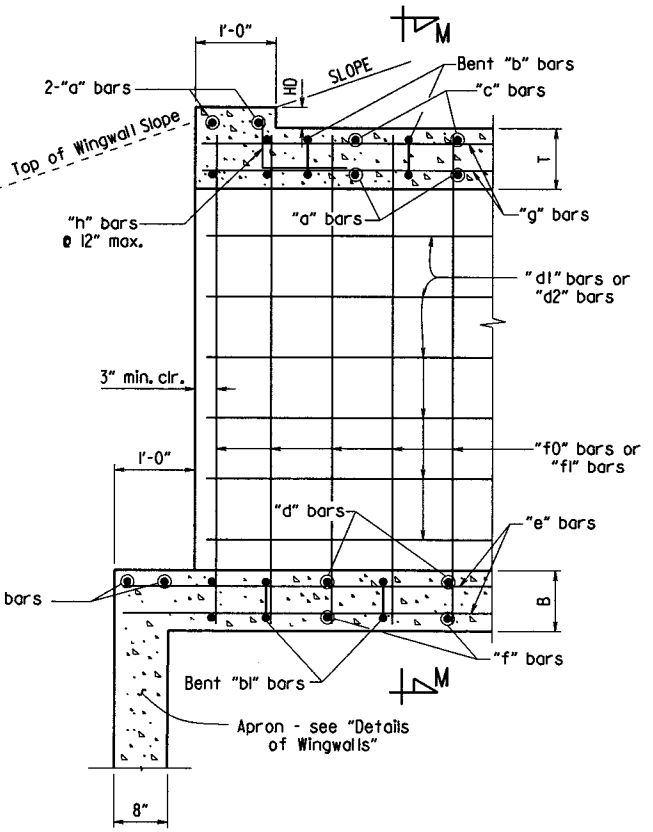
At the Contractor's option in lieu of providing Bent "b" or Bent "bl" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "bl" bar.



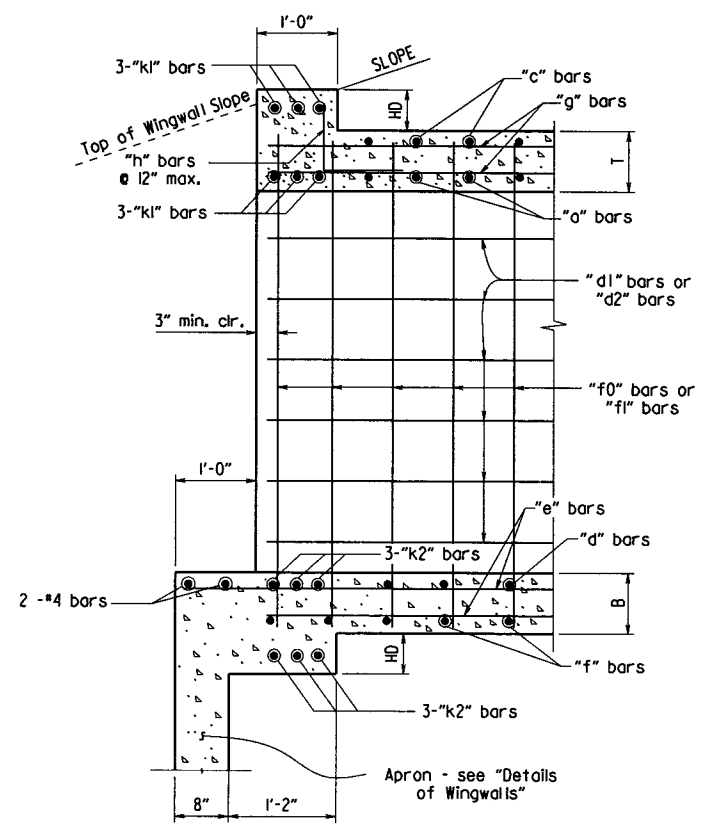
**TOP SLAB REINFORCEMENT**  
 Straight "c" bars in top.  
 Straight "a" bars in bottom.



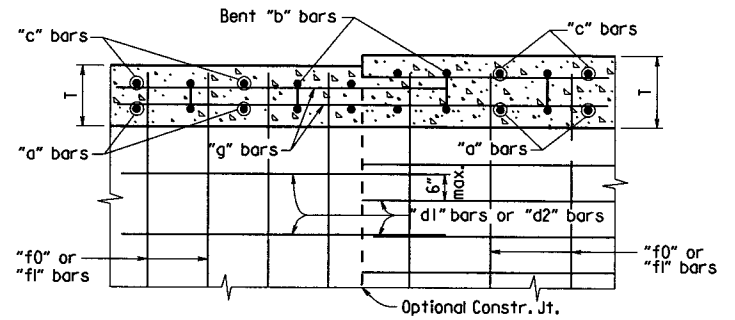
**BOTTOM SLAB REINFORCEMENT**  
 Straight "d" bars in top.  
 Straight "f" bars in bottom.



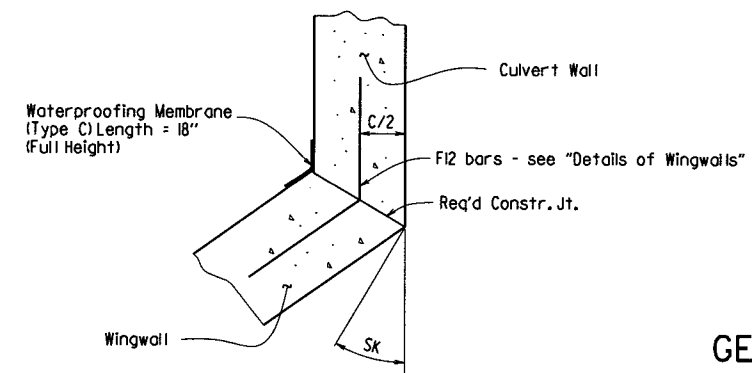
**PART LONGITUDINAL SECTION**  
 (Non-Skewed Ends)



**PART LONGITUDINAL SECTION N-N**  
 (Skewed Ends)



**LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS**  
 TOP SLAB SHOWN, BOTTOM SLAB SIMILAR  
 Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

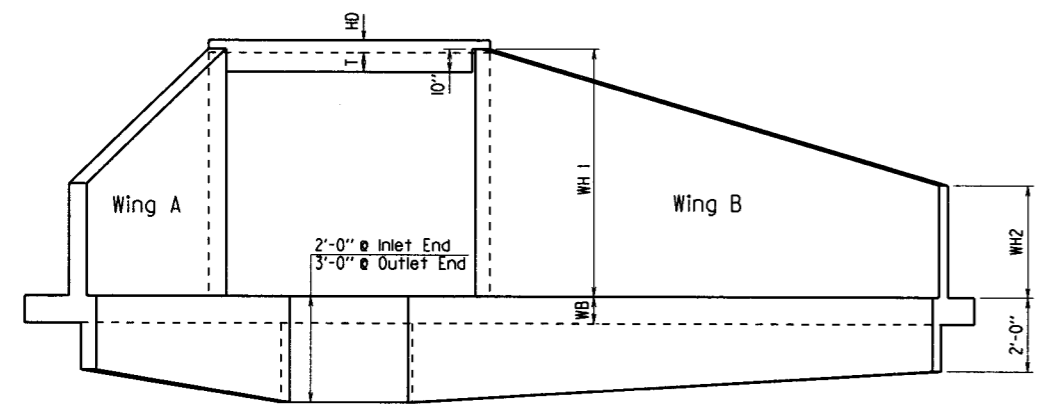


**WINGWALL ATTACHMENT**  
 See "Details of Wingwalls" for additional information and wingwall details.

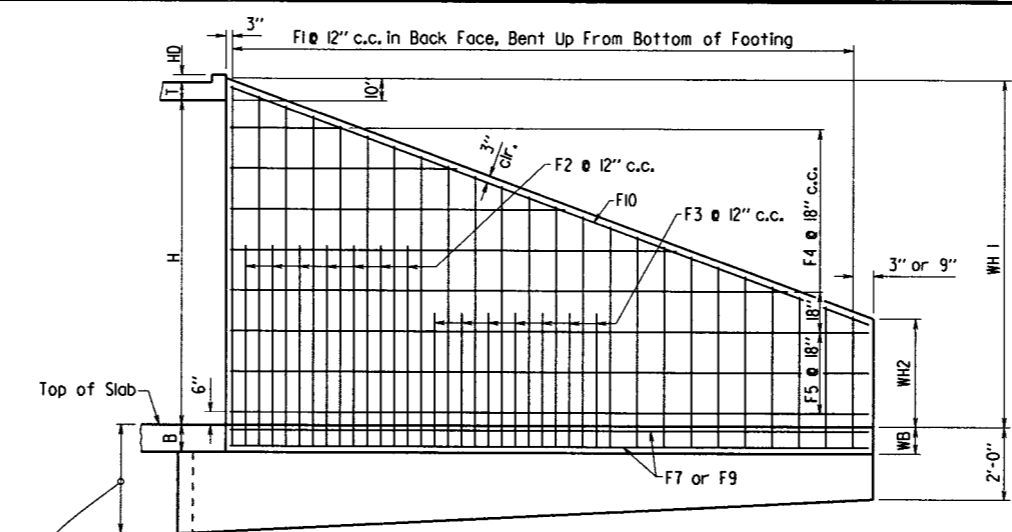
SHEET 3 OF 4  
 GENERAL DETAILS OF R.C. BOX CULVERT  
 DETAILS OF MULTI-BARREL R.C. BOX CULVERT  
 SPECIAL DETAILS

Culvert-General.dgn

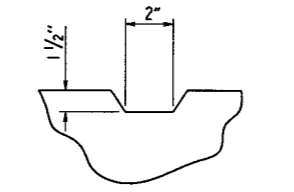
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				6	ARK.			
						JOB NO.	050275	19 167



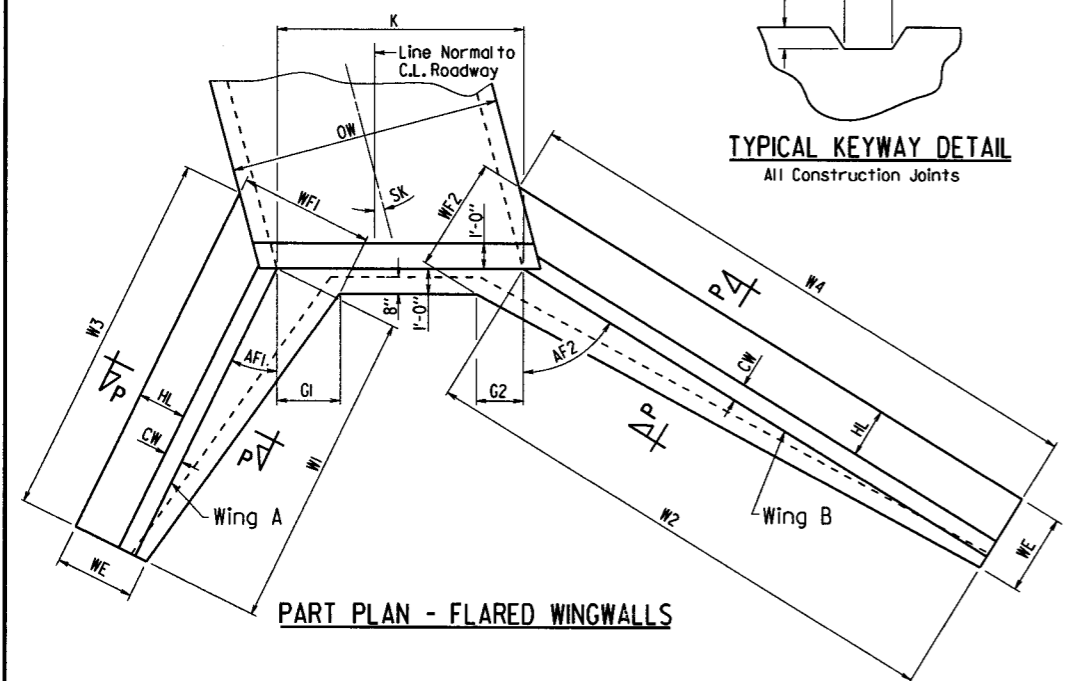
**END ELEVATION**  
Flared Wingwalls Shown



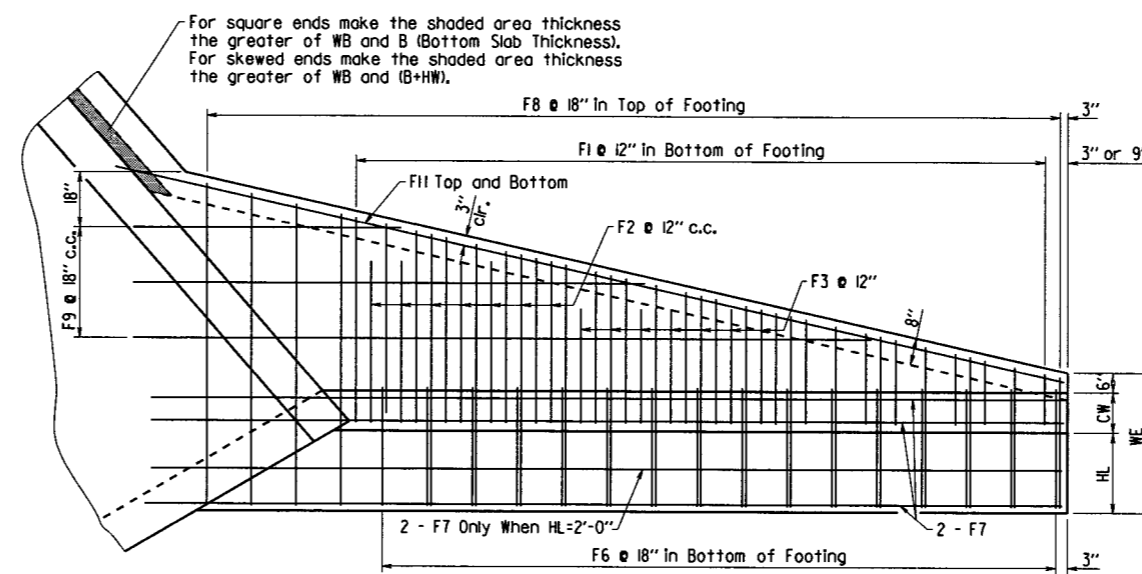
**WINGWALL ELEVATION**  
Showing Back Face Reinforcement



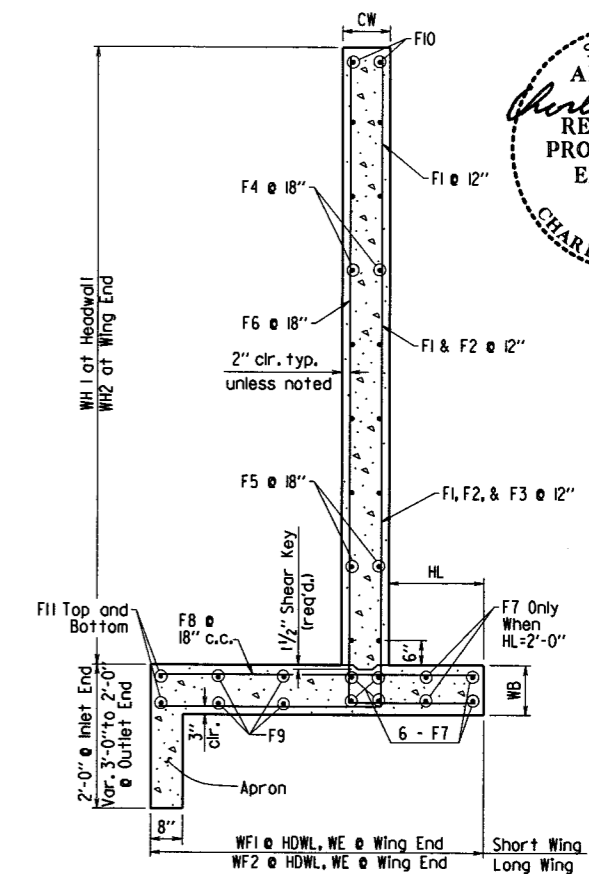
**TYPICAL KEYWAY DETAIL**  
All Construction Joints



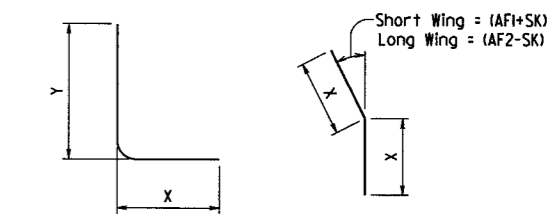
**PART PLAN - FLARED WINGWALLS**



**PLAN - FLARED WINGWALLS**  
Showing Footing Reinforcement

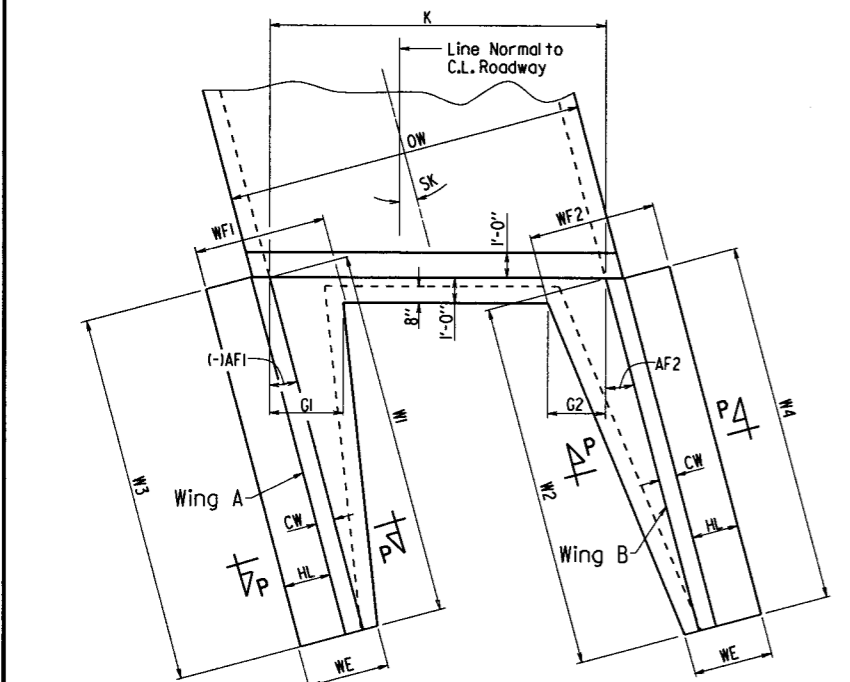


**WINGWALL SECTION P-P**

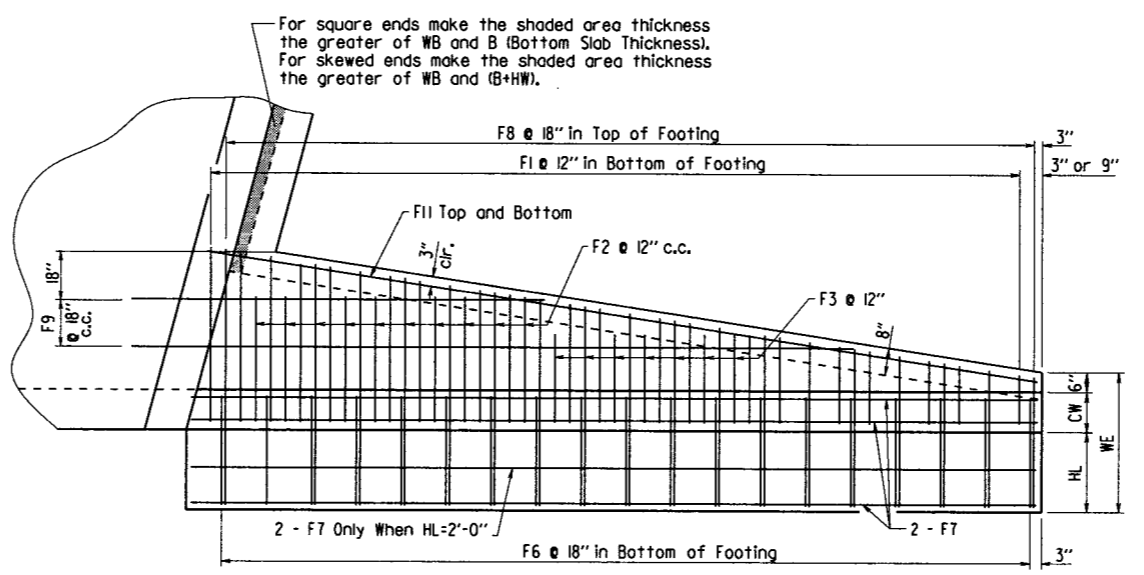


**FI, F2, F3, & F6 BARS**      **FI2 BAR**

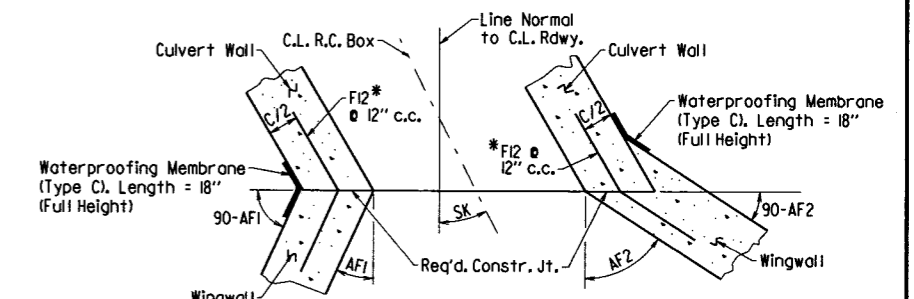
\*FI2 is a straight bar for parallel wingwalls



**PART PLAN - PARALLEL WINGWALLS**



**PLAN - PARALLEL WINGWALLS**  
Showing Footing Reinforcement



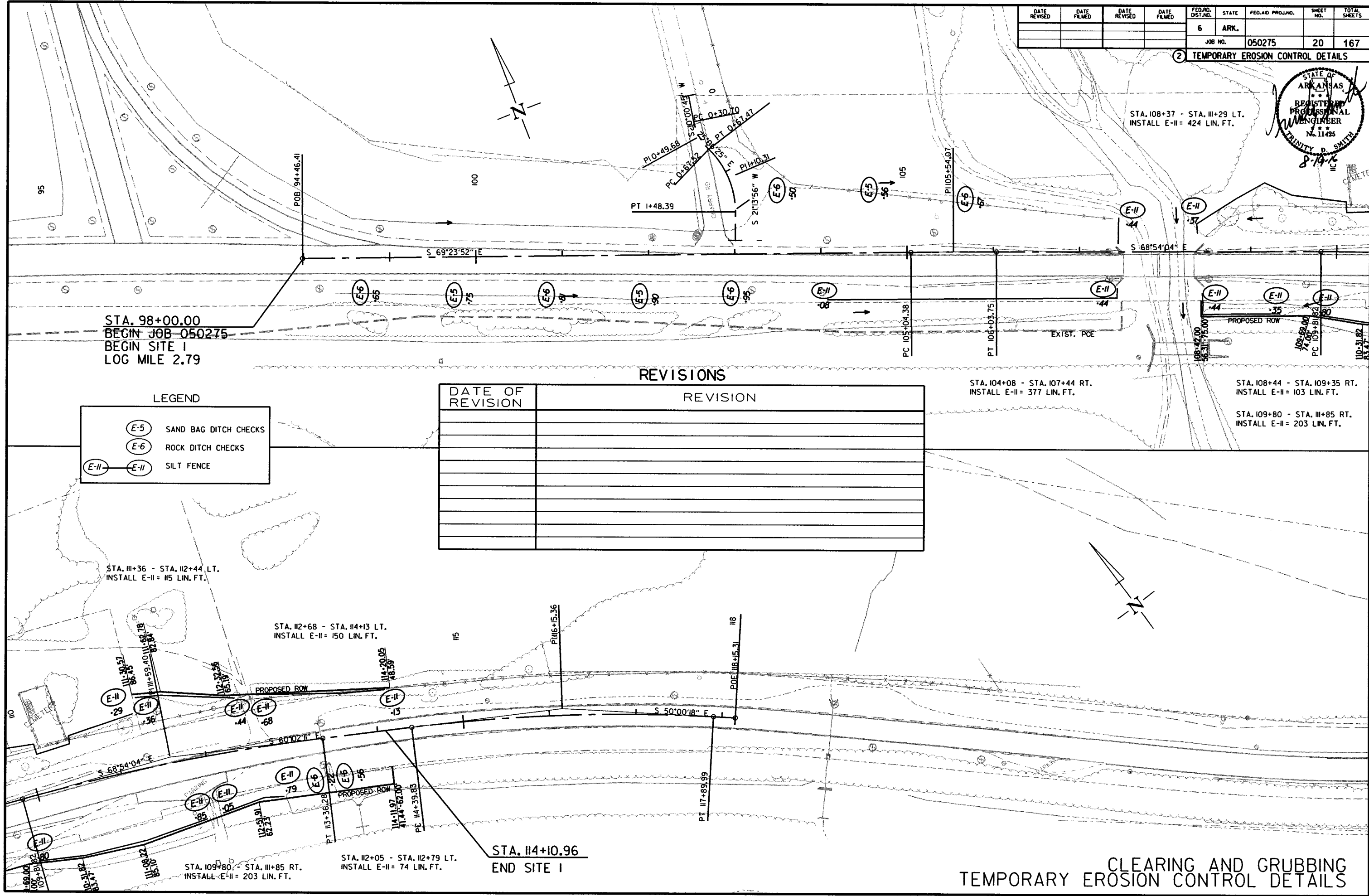
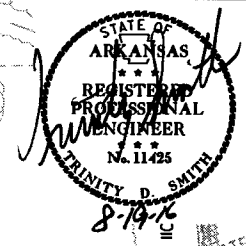
**CONSTRUCTION JOINTS**  
Flared Wingwalls Shown

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

Culvert-General.dgn

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

2 TEMPORARY EROSION CONTROL DETAILS



STA. 98+00.00  
BEGIN JOB 050275  
BEGIN SITE I  
LOG MILE 2.79

LEGEND

	SAND BAG DITCH CHECKS
	ROCK DITCH CHECKS
	SILT FENCE

REVISIONS

DATE OF REVISION	REVISION

STA. 104+08 - STA. 107+44 RT.  
INSTALL E-II = 377 LIN. FT.

STA. 108+37 - STA. 111+29 LT.  
INSTALL E-II = 424 LIN. FT.

STA. 108+44 - STA. 109+35 RT.  
INSTALL E-II = 103 LIN. FT.

STA. 109+80 - STA. 111+85 RT.  
INSTALL E-II = 203 LIN. FT.

7/25/2016

R050275.DGN

STA. 109+80 - STA. 111+85 RT.  
INSTALL E-II = 203 LIN. FT.

STA. 112+05 - STA. 112+79 LT.  
INSTALL E-II = 74 LIN. FT.

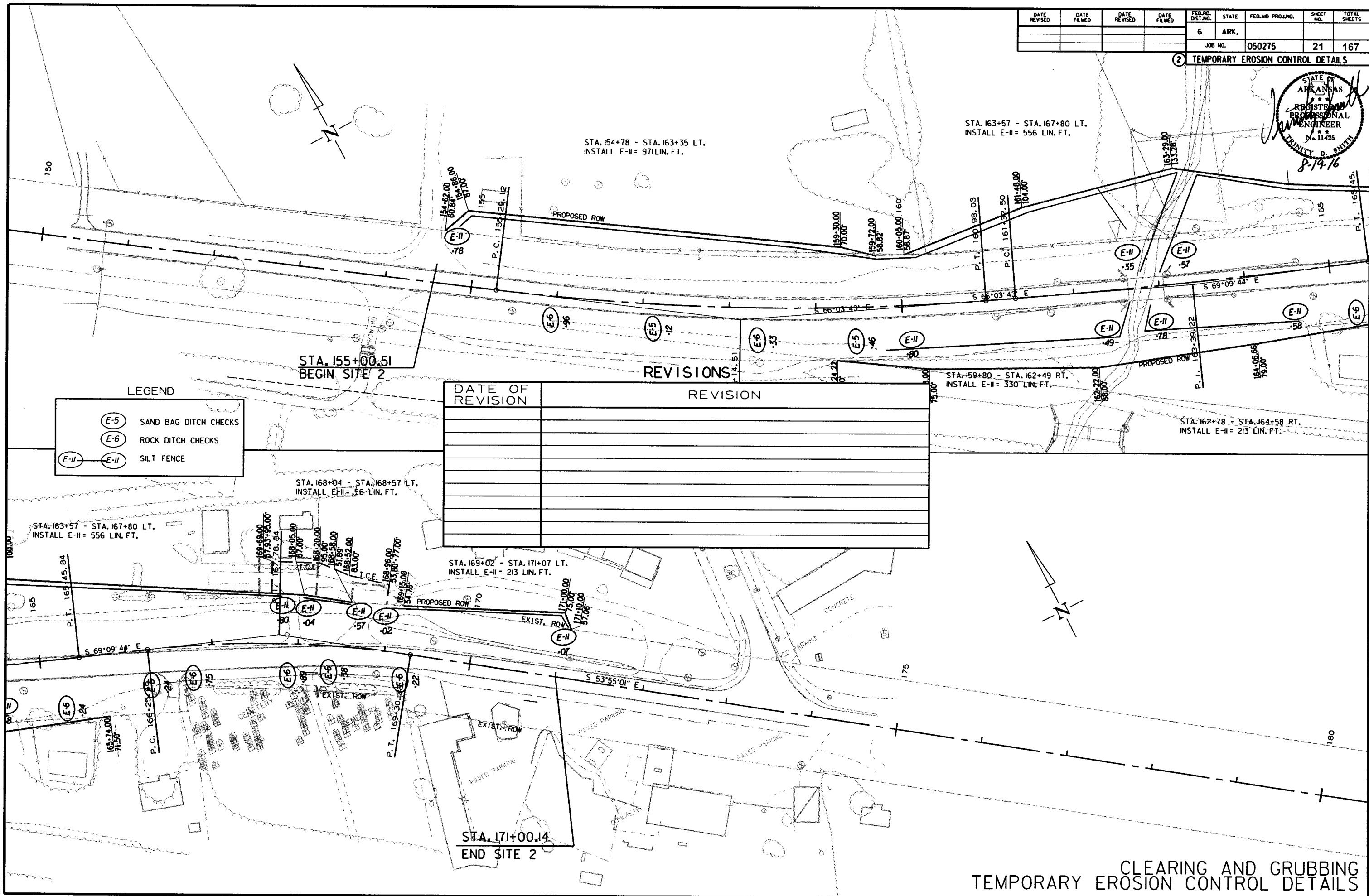
STA. 114+10.96  
END SITE I

CLEARING AND GRUBBING  
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							21	167

2 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS  
 REGISTERED PROFESSIONAL ENGINEER  
 TRINITY D. SMITH  
 No. 11425  
 8-19-16



STA. 154+78 - STA. 163+35 LT.  
 INSTALL E-II = 971 LIN. FT.

STA. 163+57 - STA. 167+80 LT.  
 INSTALL E-II = 556 LIN. FT.

STA. 155+00.51  
 BEGIN SITE 2

REVISIONS

DATE OF REVISION	REVISION

STA. 159+80 - STA. 162+49 RT.  
 INSTALL E-II = 330 LIN. FT.

STA. 162+78 - STA. 164+58 RT.  
 INSTALL E-II = 213 LIN. FT.

STA. 168+04 - STA. 168+57 LT.  
 INSTALL E-II = 56 LIN. FT.

STA. 163+57 - STA. 167+80 LT.  
 INSTALL E-II = 556 LIN. FT.

STA. 169+02 - STA. 171+07 LT.  
 INSTALL E-II = 213 LIN. FT.

- LEGEND
- SAND BAG DITCH CHECKS
  - ROCK DITCH CHECKS
  - SILT FENCE

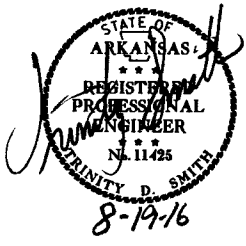
CLEARING AND GRUBBING  
 TEMPORARY EROSION CONTROL DETAILS

7/25/2016

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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.		22	167
							JOB NO.	050275

② TEMPORARY EROSION CONTROL DETAILS

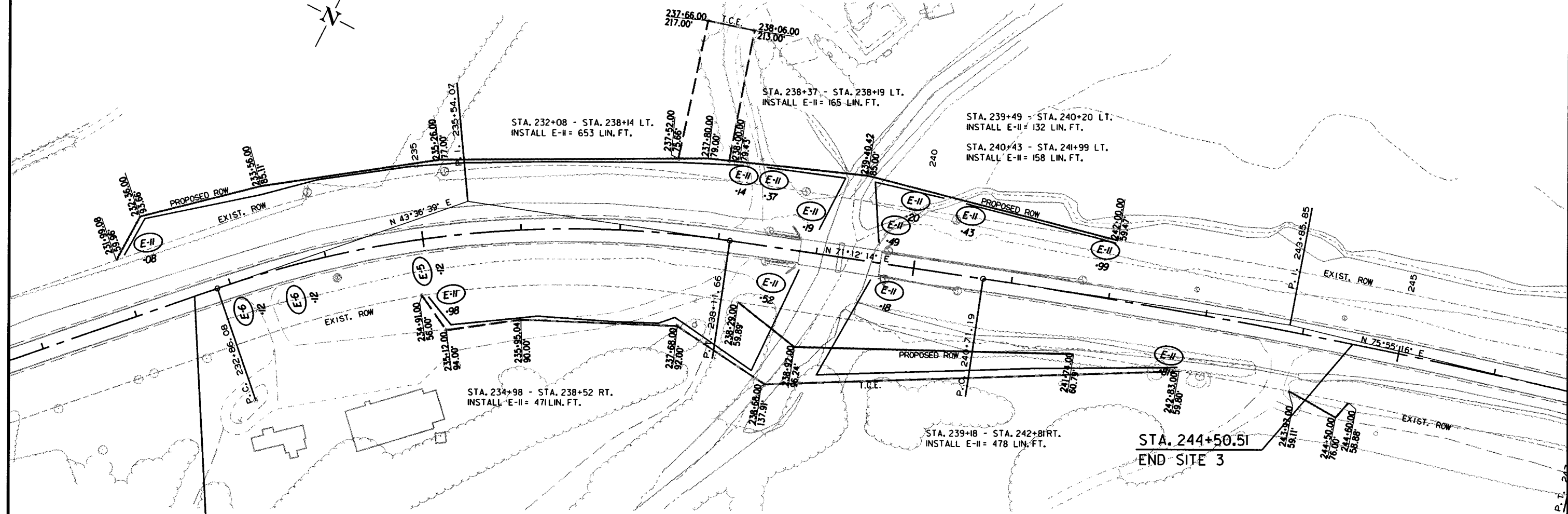
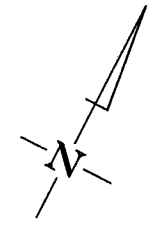


### REVISIONS

DATE OF REVISION	REVISION

**LEGEND**

- SAND BAG DITCH CHECKS
- ROCK DITCH CHECKS
- SILT FENCE

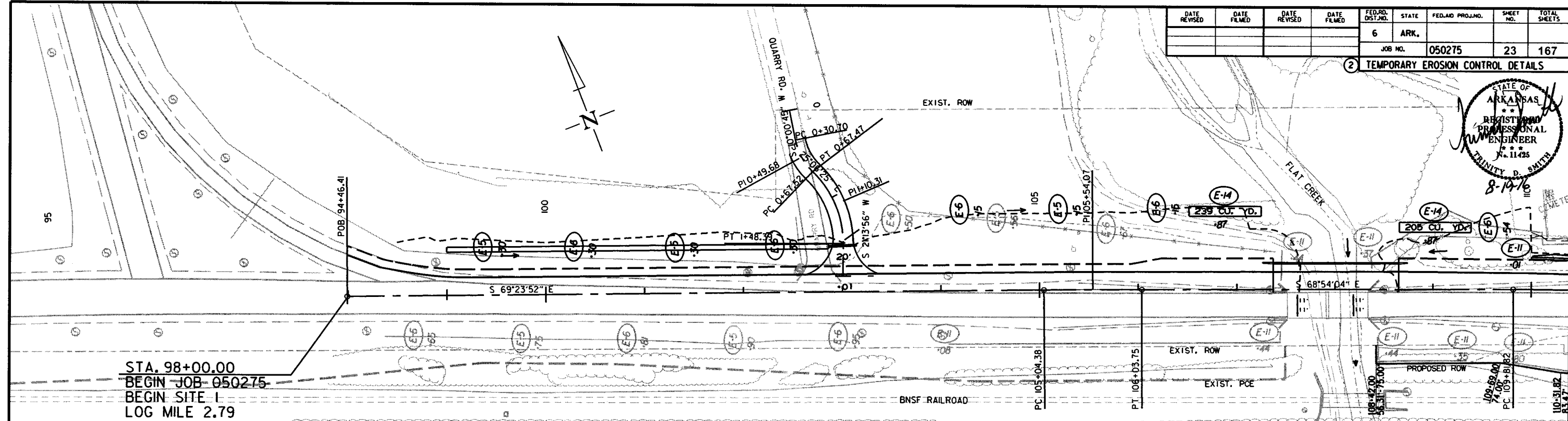
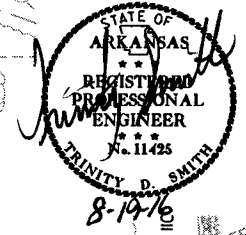


7/25/2016

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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.			

2 TEMPORARY EROSION CONTROL DETAILS



STA. 98+00.00  
 BEGIN JOB 050275  
 BEGIN SITE I  
 LOG MILE 2.79

LEGEND

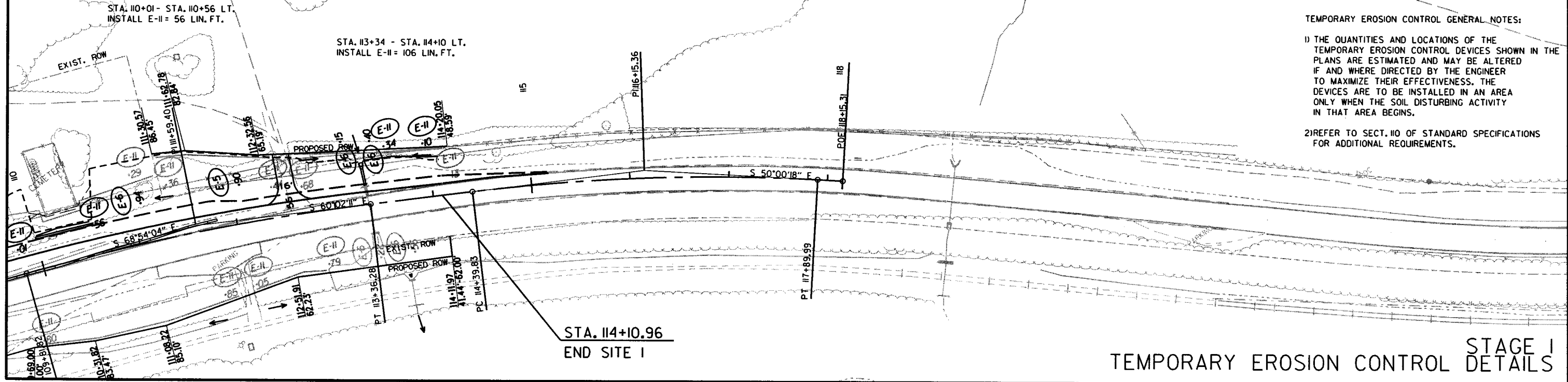
(E-5)	SAND BAG DITCH CHECKS
(E-6)	ROCK DITCH CHECKS
(E-II)	SILT FENCE
(E-14)	SEDIMENT BASIN

REVISIONS

DATE OF REVISION	REVISION

STA. 110+01 - STA. 110+56 LT.  
 INSTALL E-II = 56 LIN. FT.

STA. 113+34 - STA. 114+10 LT.  
 INSTALL E-II = 106 LIN. FT.



STA. 114+10.96  
 END SITE I

TEMPORARY EROSION CONTROL GENERAL NOTES:

- 1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.
- 2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

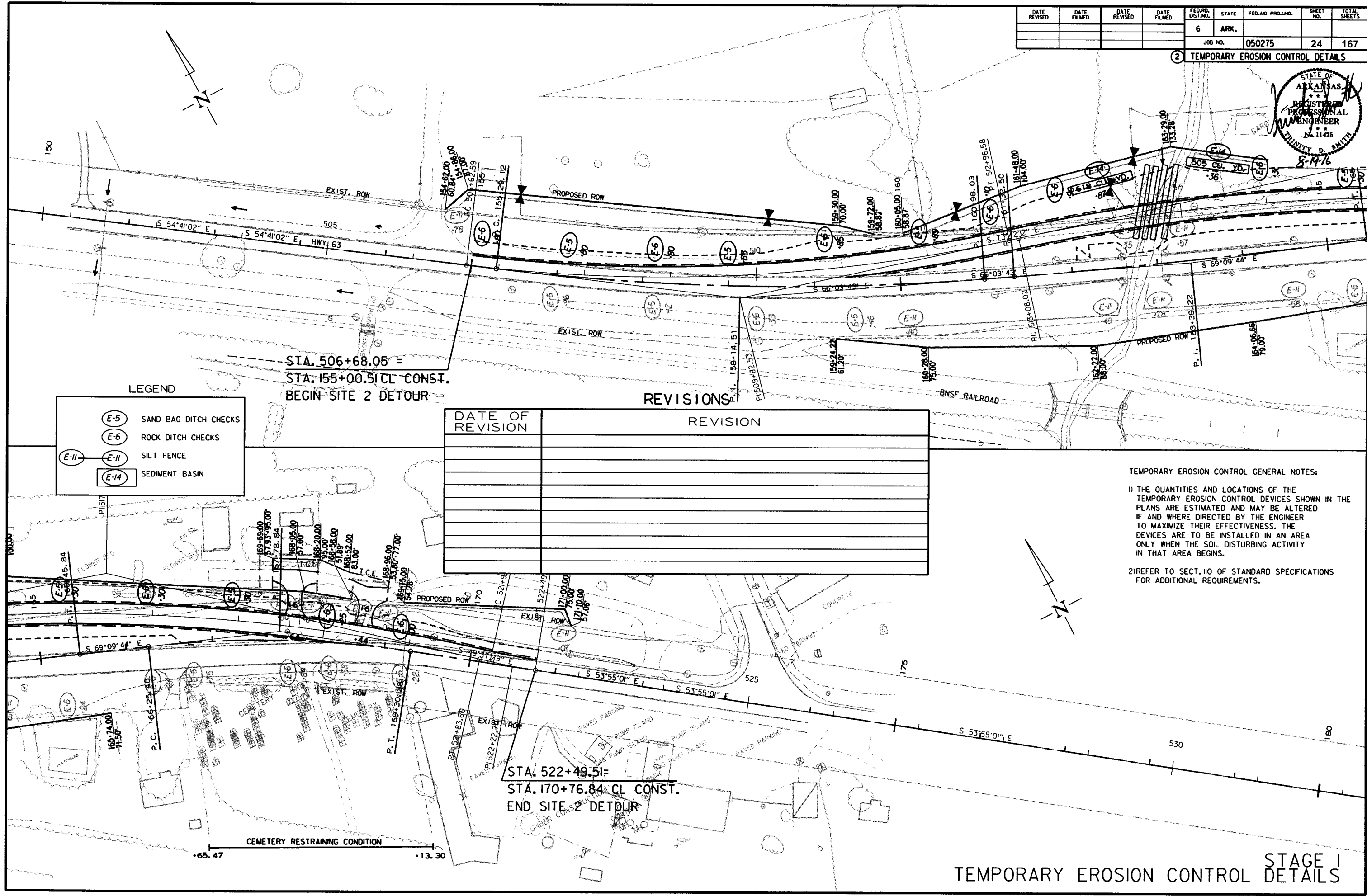
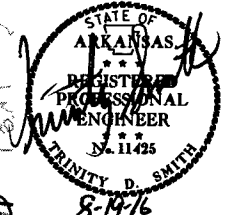
7/25/2016

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TEMPORARY EROSION CONTROL STAGE I DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		24	167

2) TEMPORARY EROSION CONTROL DETAILS



LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-6) ROCK DITCH CHECKS
- (E-11) SILT FENCE
- (E-14) SEDIMENT BASIN

REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL GENERAL NOTES:

- 1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.
- 2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

7/25/2016

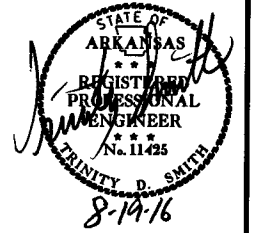
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STAGE I  
TEMPORARY EROSION CONTROL  
DETAILS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275		25	167

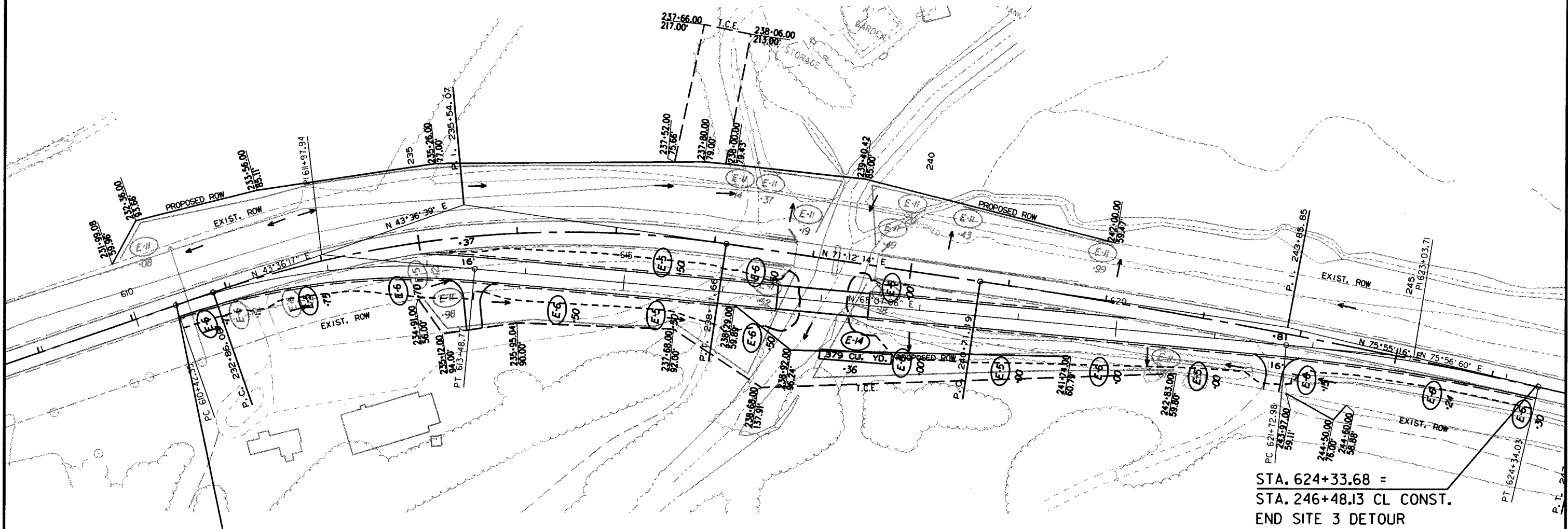
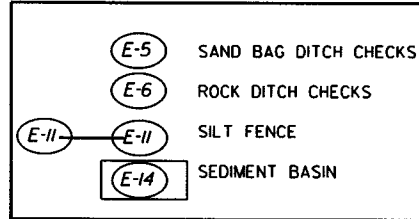
② TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

LEGEND



STA. 610+42.35 =  
STA. 232+46.23 CL CONST.  
BEGIN SITE 3 DETOUR

STA. 624+33.68 =  
STA. 246+48.13 CL CONST.  
END SITE 3 DETOUR

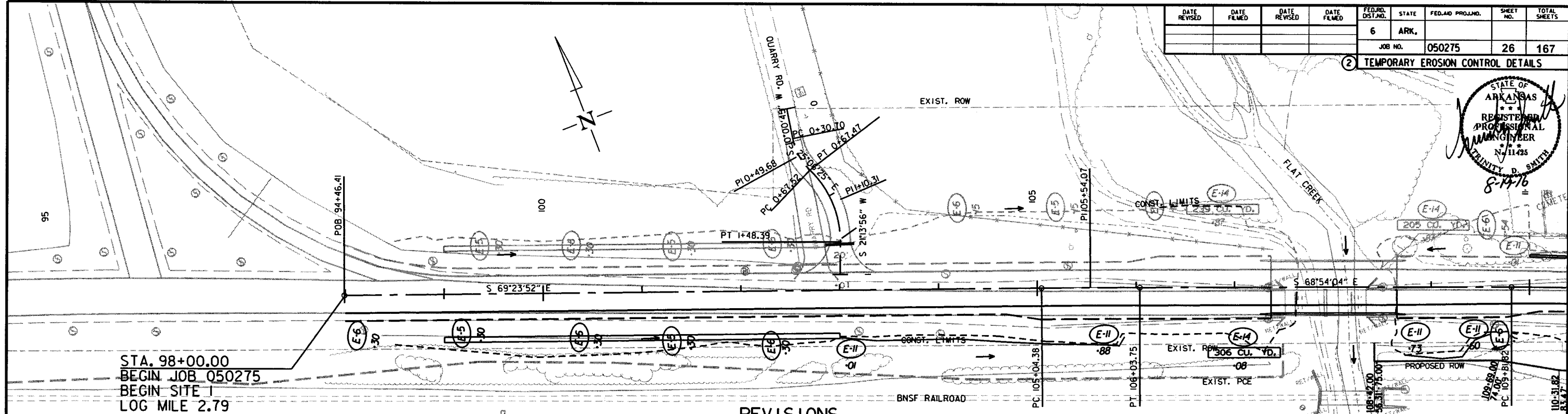
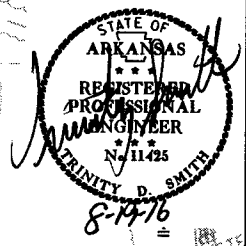
TEMPORARY EROSION CONTROL GENERAL NOTES:  
 1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.  
 2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		26	167

2 TEMPORARY EROSION CONTROL DETAILS



STA. 98+00.00  
 BEGIN JOB Q50275  
 BEGIN SITE I  
 LOG MILE 2.79

LEGEND

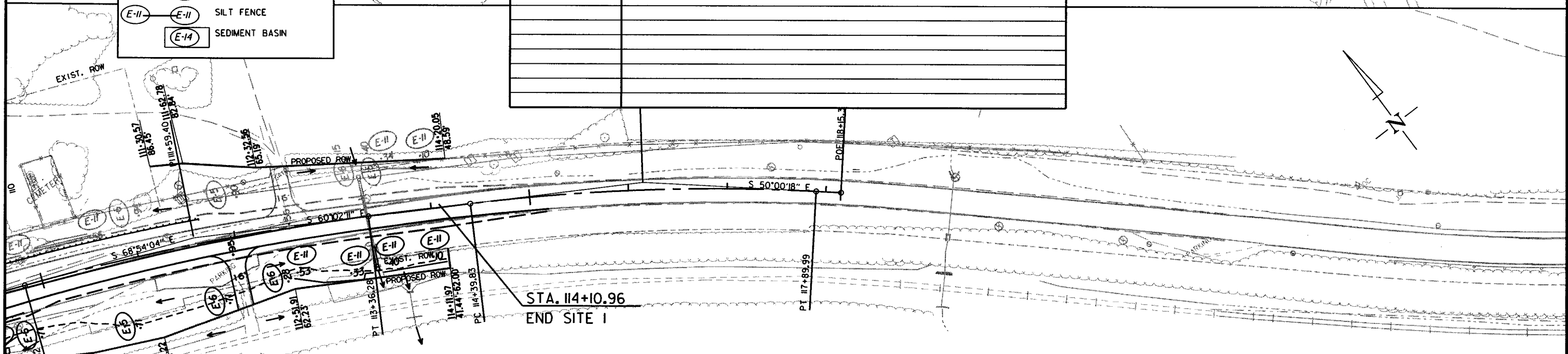
	SAND BAG DITCH CHECKS
	ROCK DITCH CHECKS
	SILT FENCE
	SEDIMENT BASIN

REVISIONS

DATE OF REVISION	REVISION

STA. 103+01 - STA. 105+88 RT.  
 INSTALL E-II = 293 LIN. FT.

STA. 108+73 - STA. 109+60 RT.  
 INSTALL E-II = 50 LIN. FT.



STA. 112+53 - STA. 113+33 RT.  
 INSTALL E-II = 88 LIN. FT.

STA. 113+40 - STA. 114+10 RT.  
 INSTALL E-II = 67 LIN. FT.

TEMPORARY EROSION CONTROL GENERAL NOTES:

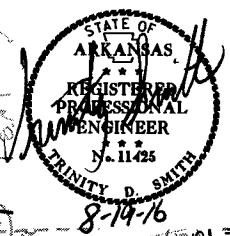
1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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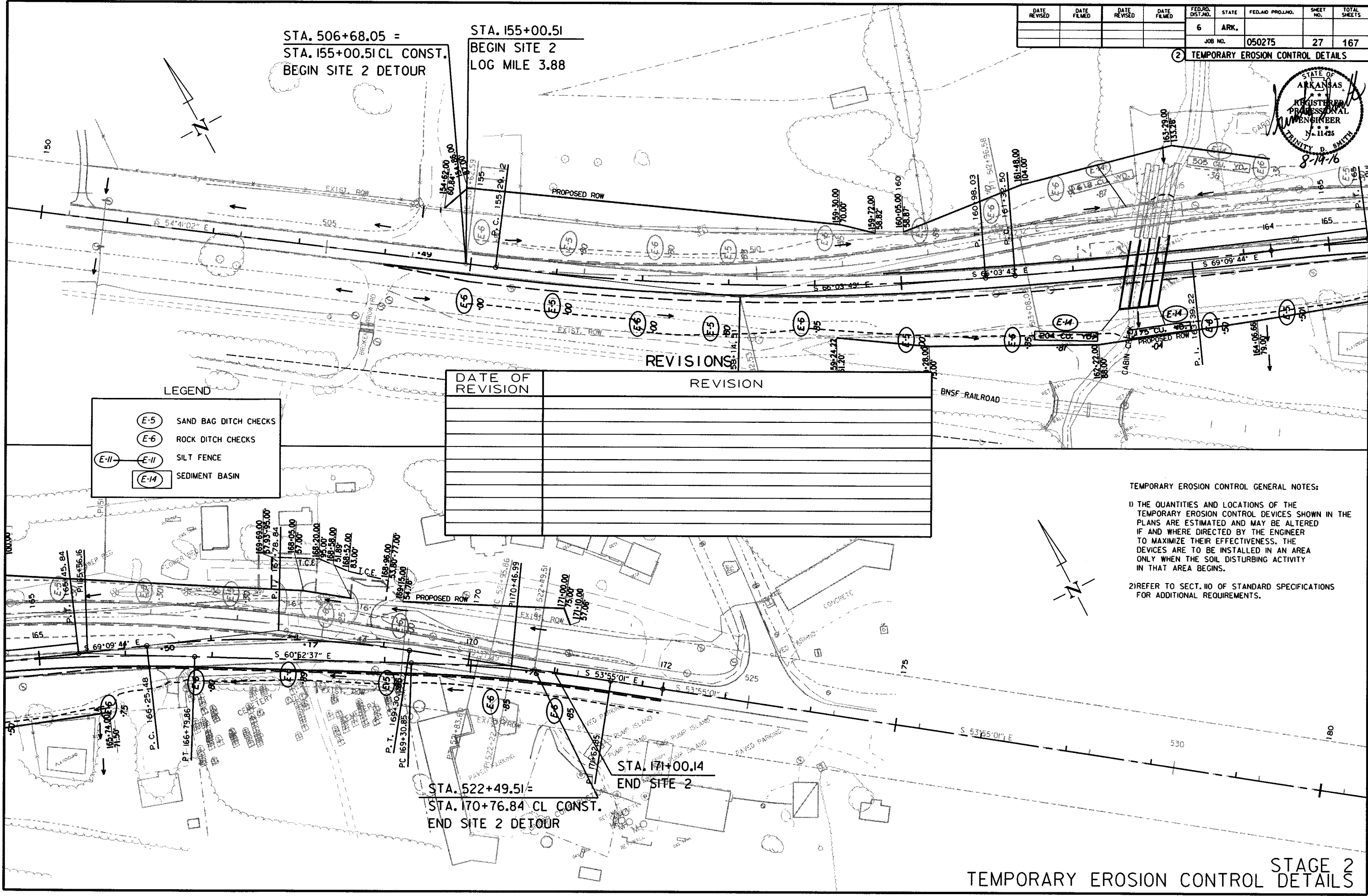
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		27	167

2 TEMPORARY EROSION CONTROL DETAILS



STA. 506+68.05 =  
STA. 155+00.51 CL CONST.  
BEGIN SITE 2 DETOUR

STA. 155+00.51  
BEGIN SITE 2  
LOG MILE 3.88



LEGEND

- E-5 SAND BAG DITCH CHECKS
- E-6 ROCK DITCH CHECKS
- E-11 SILT FENCE
- E-14 SEDIMENT BASIN

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL GENERAL NOTES:

1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

STA. 522+49.51 =  
STA. 170+76.84 CL CONST.  
END SITE 2 DETOUR

STA. 171+00.14  
END SITE 2

STAGE 2  
TEMPORARY EROSION CONTROL DETAILS

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				6	ARK.			
				JOB NO.	050275		28	167

2 TEMPORARY EROSION CONTROL DETAILS



LEGEND

(E-5) SAND BAG DITCH CHECKS  
 (E-6) ROCK DITCH CHECKS  
 (E-14) SEDIMENT BASIN

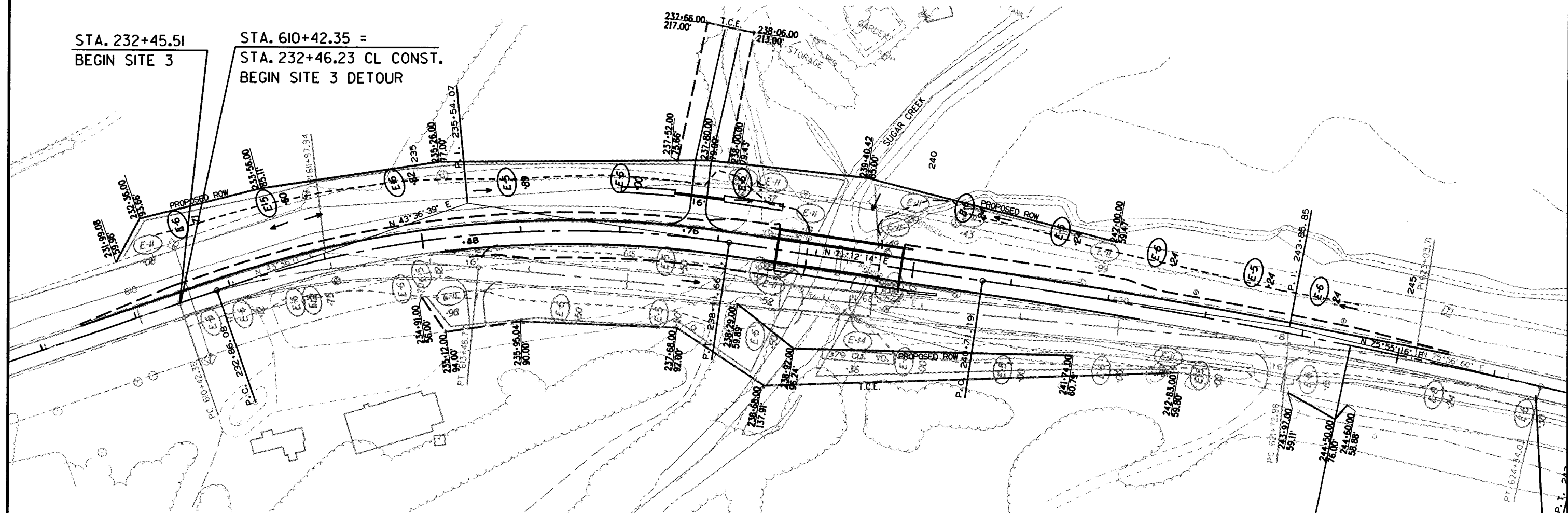


REVISIONS

DATE OF REVISION	REVISION

STA. 232+45.51  
BEGIN SITE 3

STA. 610+42.35 =  
STA. 232+46.23 CL CONST.  
BEGIN SITE 3 DETOUR



TEMPORARY EROSION CONTROL GENERAL NOTES:

1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

STA. 244+50.51  
END SITE 3 &  
END JOB 050275  
LOG MILE 5.60

STA. 624+33.68 =  
STA. 246+48.13 CL CONST.  
END SECTION 3 DETOUR

STAGE 2  
TEMPORARY EROSION CONTROL DETAILS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/25/16				6	ARK.			

2 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS  
 REGISTERED PROFESSIONAL ENGINEER  
 TRINITY D. SMITH  
 No. 11425  
 8-25-16

STA. 506+68.05 =  
 STA. 155+00.51 CL CONST.  
 BEGIN SITE 2 DETOUR

STA. 155+00.51  
 BEGIN SITE 2  
 LOG MILE 3.88

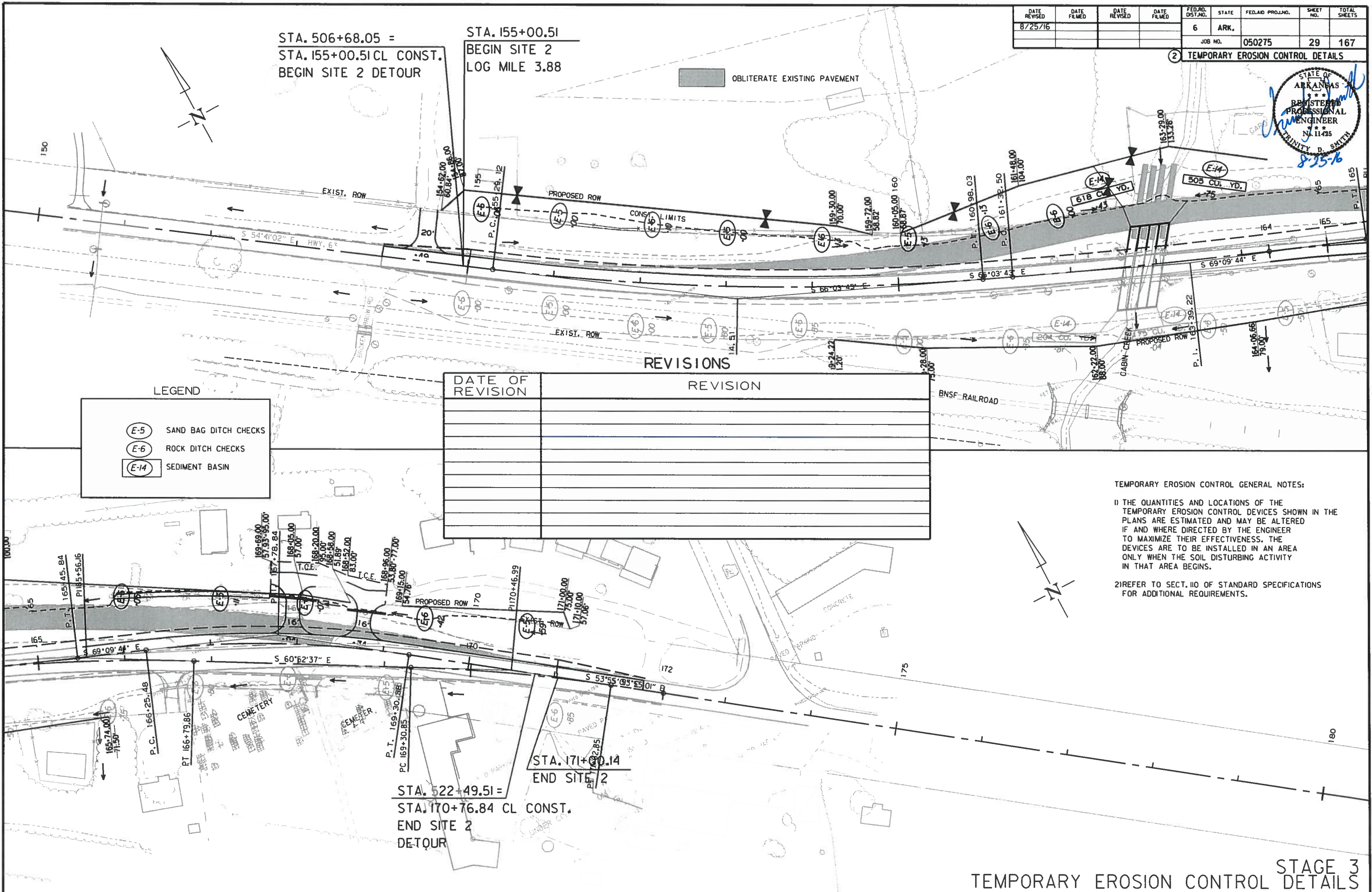
OBLITERATE EXISTING PAVEMENT

- LEGEND
- E-5 SAND BAG DITCH CHECKS
  - E-6 ROCK DITCH CHECKS
  - E-14 SEDIMENT BASIN

DATE OF REVISION	REVISION

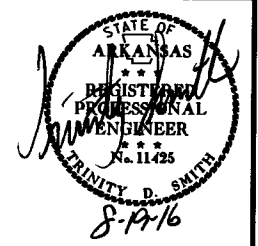
TEMPORARY EROSION CONTROL GENERAL NOTES:  
 1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.  
 2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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R050275.DGN



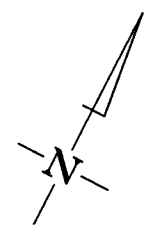
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO. 050275			30	167

2) TEMPORARY EROSION CONTROL DETAILS



LEGEND

- (E-5) SAND BAG DITCH CHECKS
- (E-6) ROCK DITCH CHECKS
- (E-II) SILT FENCE
- (E-14) SEDIMENT BASIN



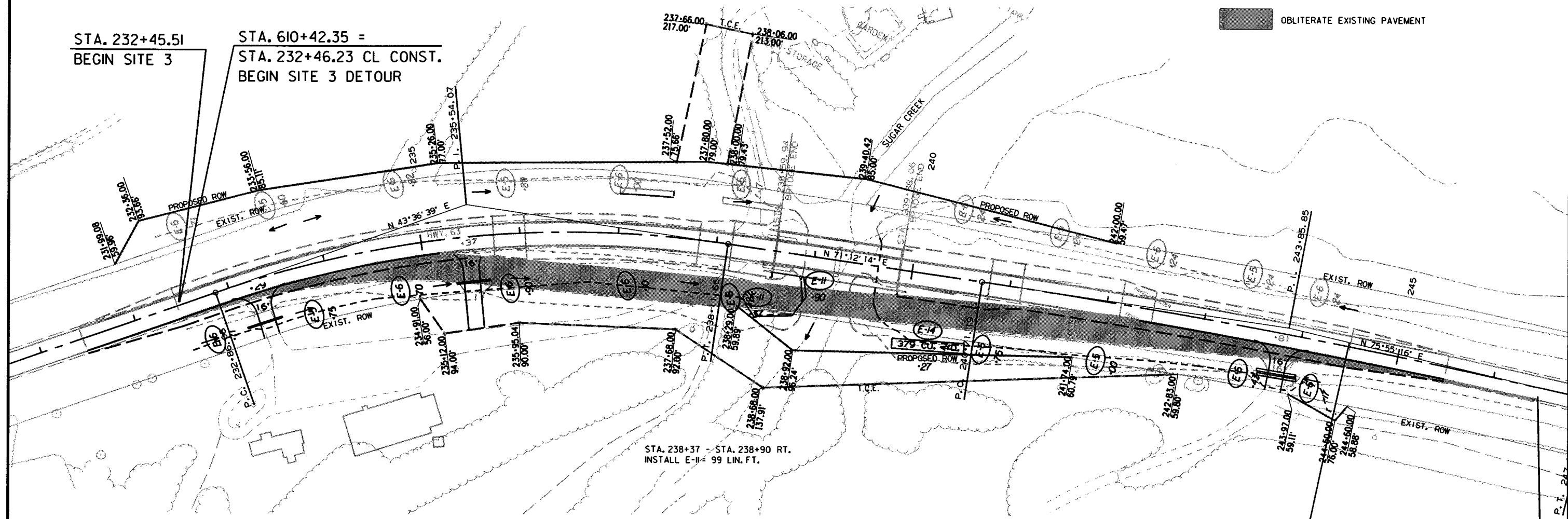
REVISIONS

DATE OF REVISION	REVISION

OBLITERATE EXISTING PAVEMENT

STA. 232+45.51  
BEGIN SITE 3

STA. 610+42.35 =  
STA. 232+46.23 CL CONST.  
BEGIN SITE 3 DETOUR



STA. 238+37 - STA. 238+90 RT.  
INSTALL E-II= 99 LIN. FT.

STA. 244+50.51  
END SITE 3 &  
END JOB 050275  
LOG MILE 5.60

STA. 624+33.68 =  
STA. 246+48.13 CL CONST.  
END SITE 3 DETOUR

TEMPORARY EROSION CONTROL GENERAL NOTES:

1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

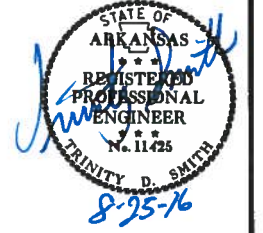
7/25/2016

R050275.DCN

STAGE 3  
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/25/16				6	ARK.			
				JOB NO.	050275		31	167

2 TEMPORARY EROSION CONTROL DETAILS

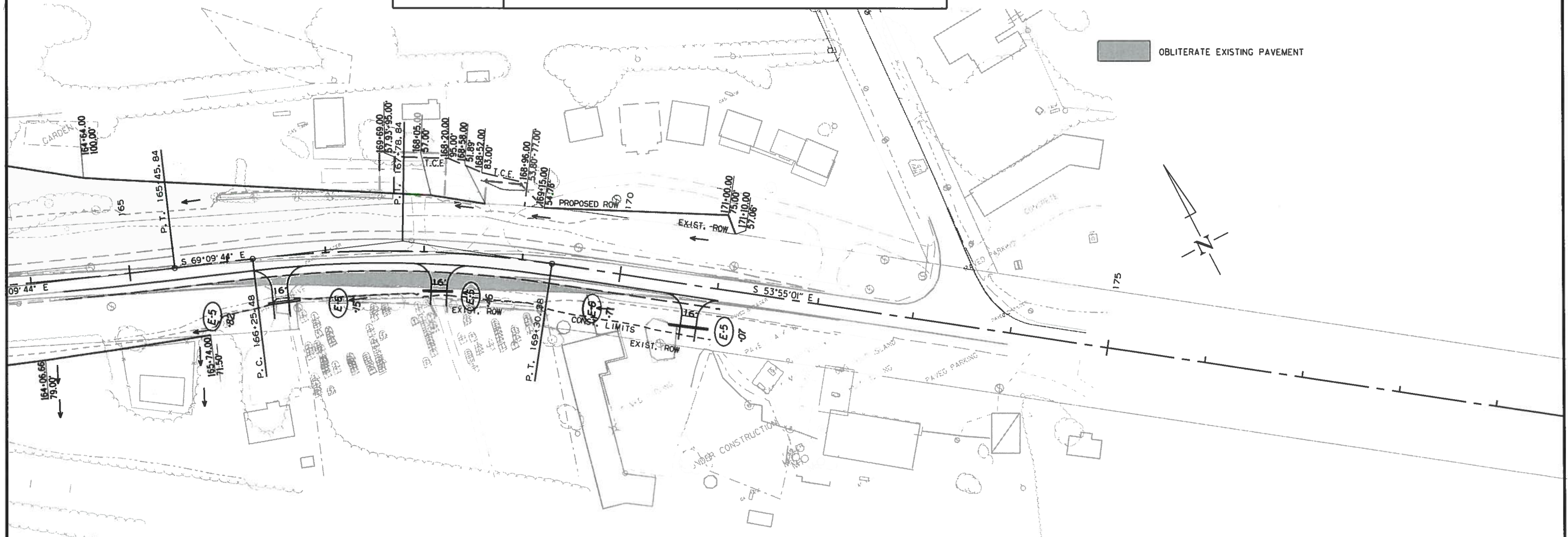


REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 SAND BAG DITCH CHECKS  
E-6 ROCK DITCH CHECKS

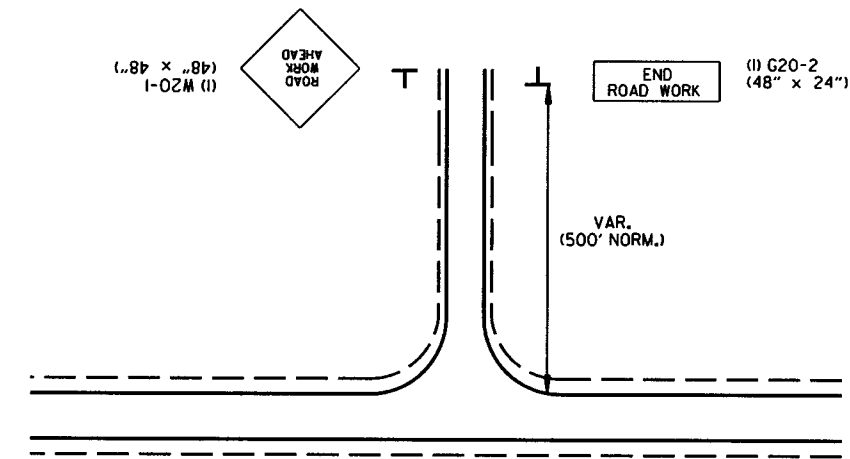
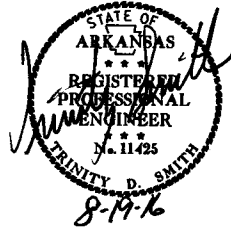


TEMPORARY EROSION CONTROL GENERAL NOTES:

- 1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.
- 2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		32	167
JOB NO. 050275								

2 MAINTENANCE OF TRAFFIC DETAILS



ADVANCE WARNING - SIDE ROADS  
(ALL STAGES)

- STA. 96+00, HWY. 63
- STA. 104+01, QUARRY RD.
- STA. 153+90, BROKEN ARROW LN.
- STA. 173+00, HWY. 175
- STA. 210+50, CHAPMAN RD.
- NOTE: ALL STATIONS BASED OFF HWY. 63.

SHOULDER CLOSED (6) RSP-1 (48" X 30")

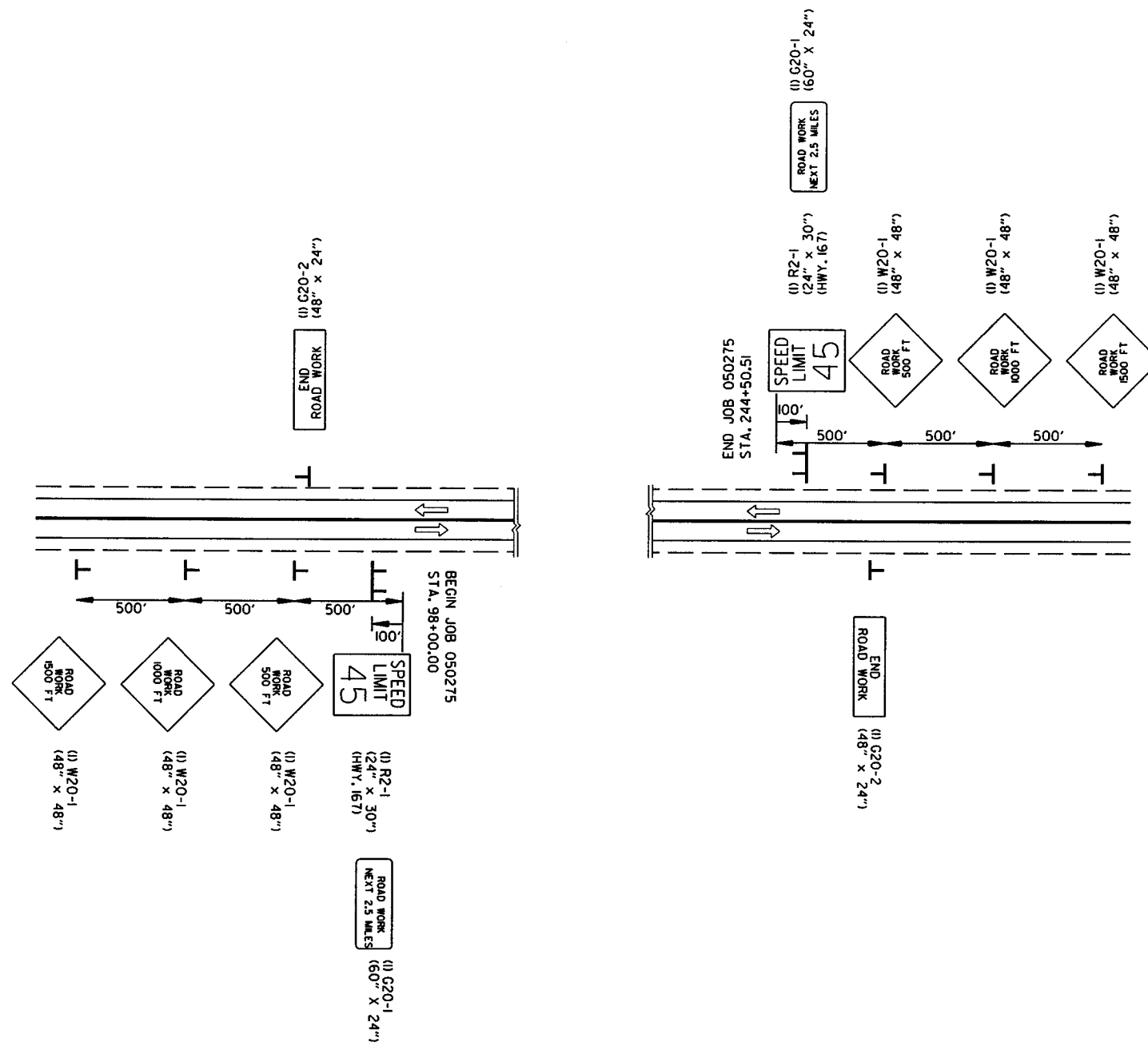
ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

DO NOT PASS (6) R4-1 (24" X 30")

ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

BUMP (6) W8-1 (30" X 30")

ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

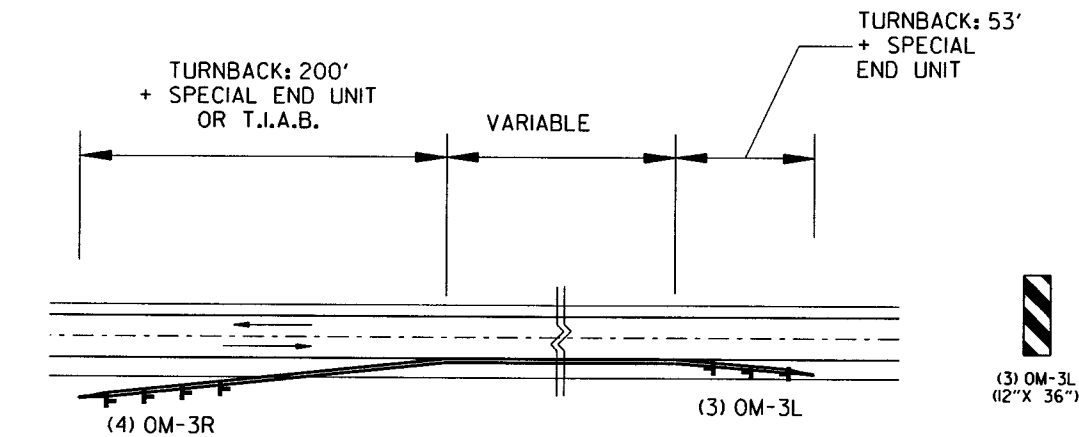
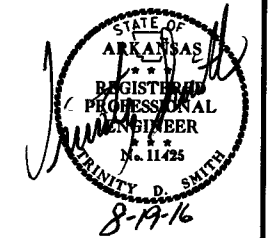


ADVANCE WARNING (ALL STAGES)



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							33	167

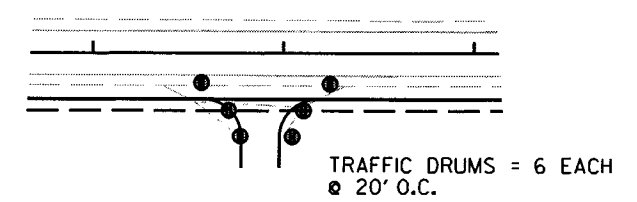
② MAINTENANCE OF TRAFFIC DETAILS



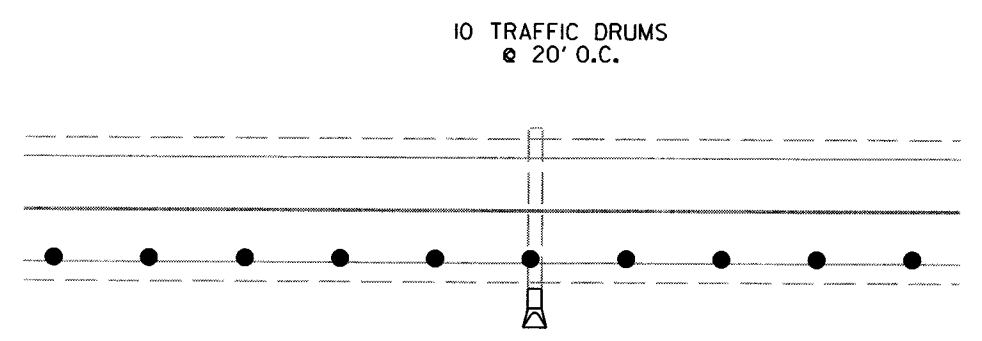
REFER ALSO TO STANDARD DRAWING TC-5 FOR DETAILS OF PLACEMENT OF PCCB TURNBACKS.

NOTE: OM-3L & OM-3R SIGNS SHALL BE EQUALLY SPACED ALONG P.C.C.B. TURNBACK.

DETAIL OF OBJECT MARKERS AT PRECAST CONCRETE BARRIER TURNBACKS



DRIVEWAY/TRAFFIC DRUM DETAIL



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

STAGE 1 CONSTRUCTION SEQUENCE

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

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 50' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

SITE 1: CONSTRUCT STRUCTURES AND EMBANKMENT ON LT. FROM STA. 98+00.00 TO STA. 114+10.96 AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

SITE 2: CONSTRUCT DETOUR FROM STA. 506+68.05 TO STA. 522+49.51 AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

SITE 3: CONSTRUCT DETOUR FROM STA. 610+42.35 TO STA. 624+33.68 AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2 CONSTRUCTION SEQUENCE

MAINTAIN ADVANCE WARNING SIGNS SIGN AS SHOWN ON THE ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAIL.

SHIFT TRAFFIC ONTO THE DETOURS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 50' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

SITE 1: CONSTRUCT STRUCTURES AND EMBANKMENT ON RT. FROM STA. 98+00.00 TO STA. 114+10.96 AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

SITE 2: CONSTRUCT STRUCTURES AND EMBANKMENT ON RT. FROM STA. 155+00.51 TO STA. 164+32.12, AND TEMPORARY WIDENING FROM STA. 164+32.12 TO STA. 171+00.14, AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

SITE 3: CONSTRUCT STRUCTURES AND EMBANKMENT ON LT. FROM STA. 232+45.51 TO STA. 244+50.51 AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 3 CONSTRUCTION SEQUENCE

MAINTAIN ADVANCE WARNING SIGNS SIGN AS SHOWN ON THE ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAIL.

SHIFT TRAFFIC ONTO THE NEW ROADWAY AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 50' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

SITE 1: INSTALL GUARDRAIL

SITE 2: OBLITERATE DETOUR

SITE 3: OBLITERATE DETOUR AND CONSTRUCT FINAL PORTIONS OF THE STRUCTURES AND ROADWAY.

STAGE 4 CONSTRUCTION SEQUENCE

MAINTAIN ADVANCE WARNING SIGNS SIGN AS SHOWN ON THE ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAIL.

SHIFT TRAFFIC ONTO THE NEW ROADWAY AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 50' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

SITE 2: OBLITERATE TEMPORARY WIDENING AND CONSTRUCT FINAL PORTIONS OF THE STRUCTURES AND ROADWAY FROM STA. 164+32.12 TO STA. 171+00.14, AS SHOWN IN THE STAGE 4 MAINTENANCE OF TRAFFIC DETAILS.

SITE 3: INSTALL GUARDRAIL

APPLY FINAL 2" LIFT OF ACHM SURFACE COURSE, INSTALL RUMBLE STRIPS AND PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAIL.

STAGE 1 QUANTITIES

- SIGNS = 470.5 SQ. FT.
- TRAFFIC DRUMS = 60 EACH
- VERTICAL PANELS = 52 EACH
- FURNISHING AND INSTALLING P.C.C.B. = 673 LIN. FT.
- TYPE III BARRICADE-RT. = 48 LIN. FT.
- TYPE III BARRICADE-LT. = 48 LIN. FT.
- TEMPORARY IMPACT ATTENUATION BARRIER = 2 EACH
- TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 2 EACH

STAGE 2 QUANTITIES

- SIGNS = 539.5 SQ. FT.
- TRAFFIC DRUMS = 140 EACH
- VERTICAL PANELS = 36 EACH
- FURNISHING AND INSTALLING P.C.C.B. = 133 LIN. FT.
- RELOCATE P.C.C.B. = 673 LIN. FT.
- TYPE III BARRICADE-RT. = 48 LIN. FT.
- TYPE III BARRICADE-LT. = 48 LIN. FT.
- TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH
- TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 1 EACH
- TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATE) = 2 EACH

STAGE 3 QUANTITIES

- SIGNS = 482.5 SQ. FT.
- TRAFFIC DRUMS = 60 EACH
- RELOCATE P.C.C.B. = 60 LIN. FT.
- TYPE III BARRICADE-RT. = 32 LIN. FT.
- TYPE III BARRICADE-LT. = 32 LIN. FT.
- TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATE) = 1 EACH

STAGE 4 QUANTITIES

- SIGNS = 322.0 SQ. FT.
- TRAFFIC DRUMS = 27 EACH
- TYPE III BARRICADE-LT. = 8 LIN. FT.

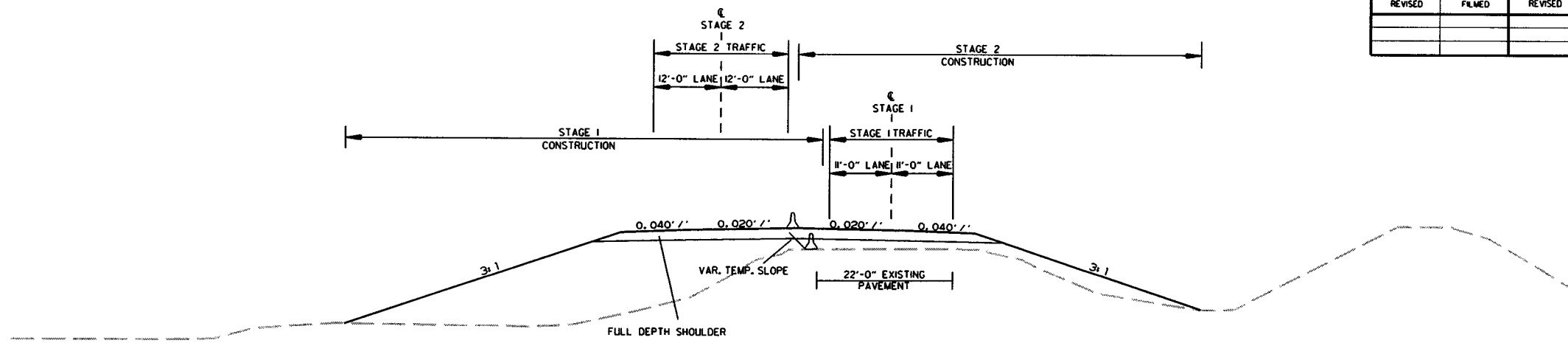
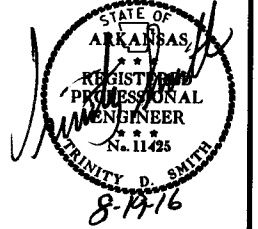
ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAILS

7/26/2016

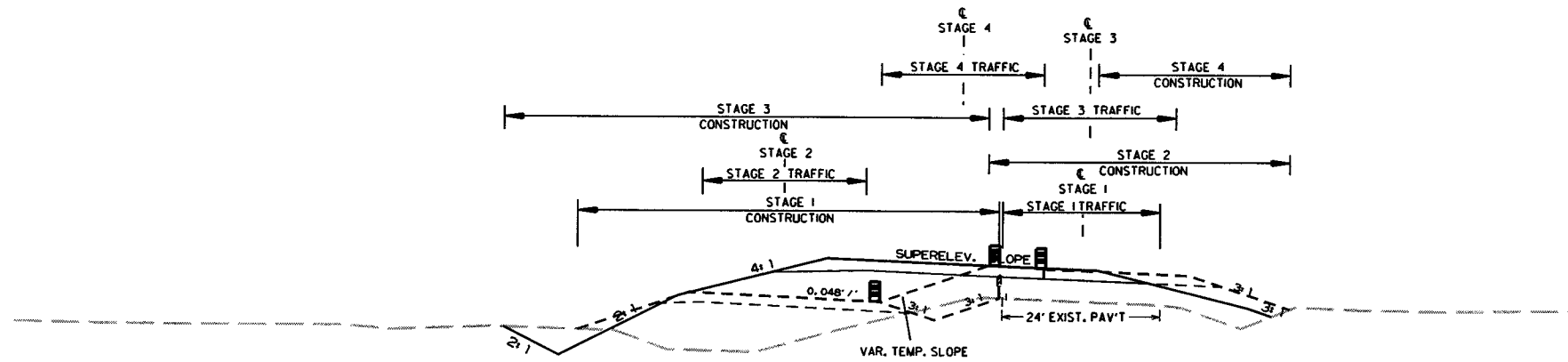
R050275.DGN

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. 050275							34	167

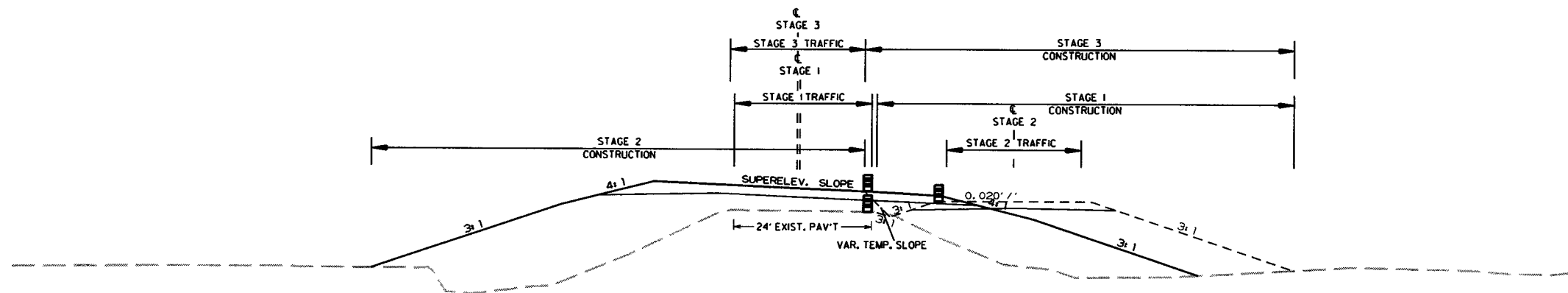
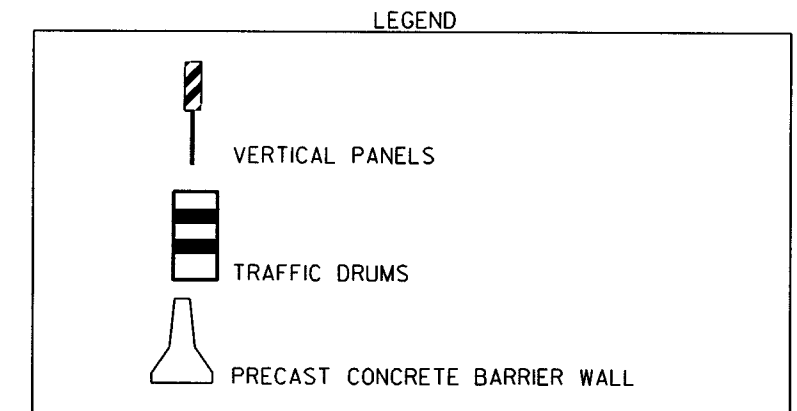
② MAINTENANCE OF TRAFFIC DETAILS



DETAIL FOR STAGE CONSTRUCTION  
SITE 1



DETAIL FOR STAGE CONSTRUCTION  
SITE 2



DETAIL FOR STAGE CONSTRUCTION  
SITE 3

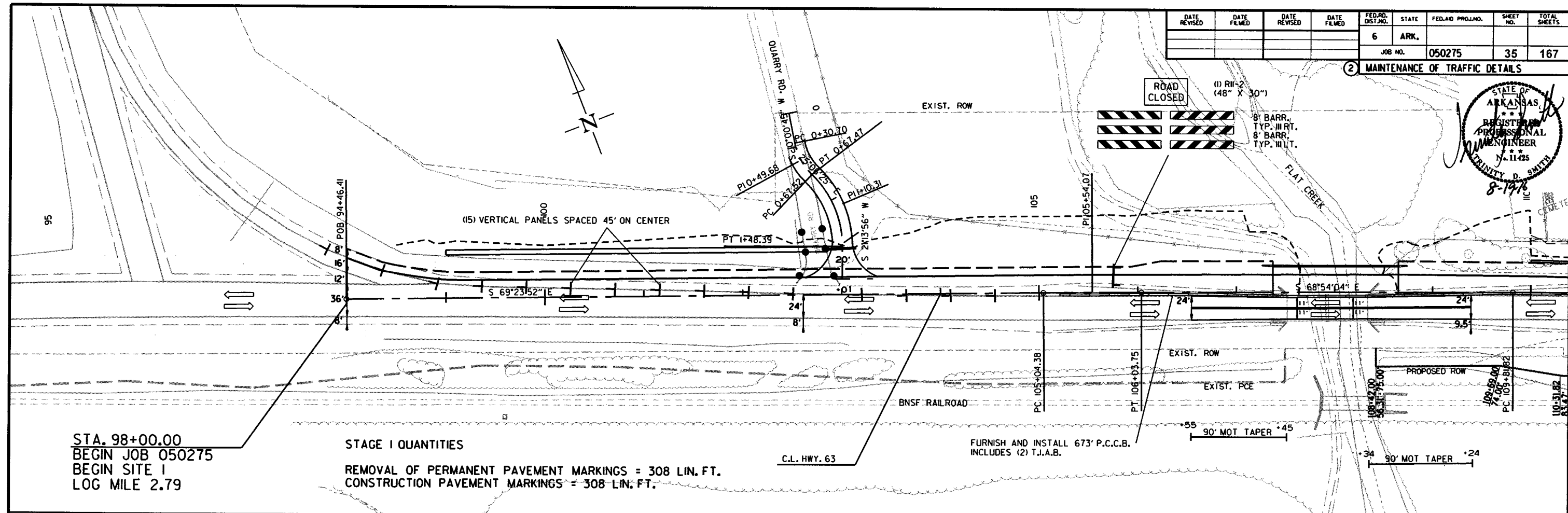
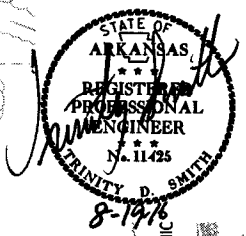
ADVANCE WARNING  
MAINTENANCE OF TRAFFIC DETAILS

7/26/2016

R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		35	167

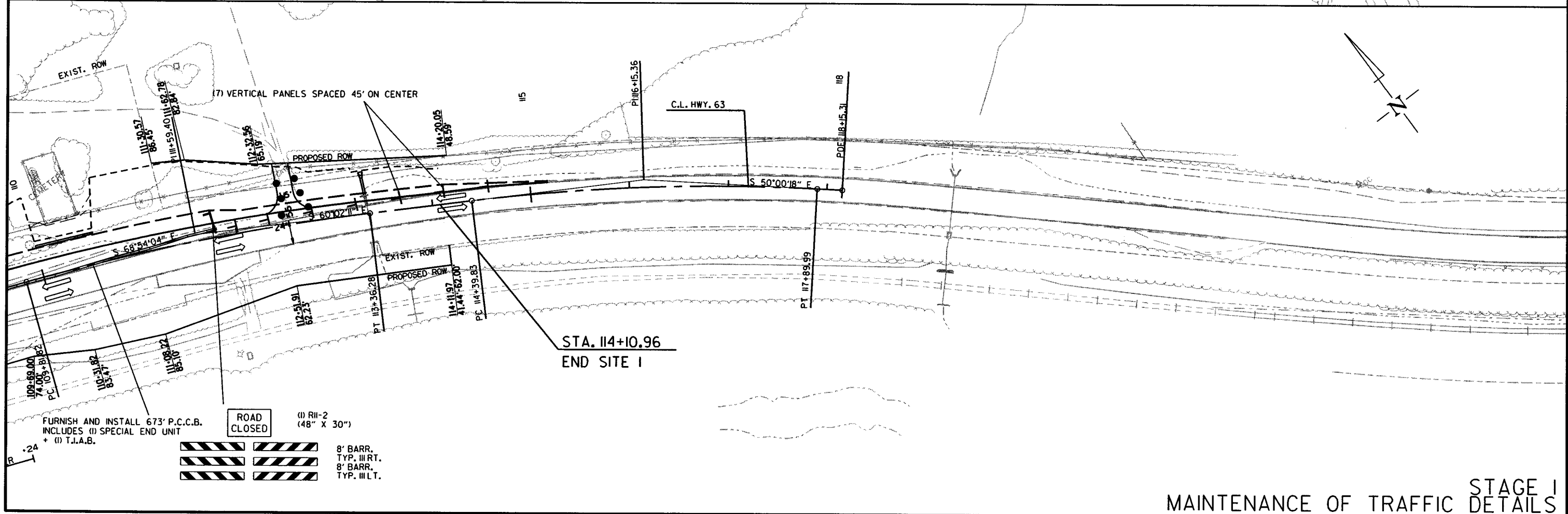
2 MAINTENANCE OF TRAFFIC DETAILS



STA. 98+00.00  
 BEGIN JOB 050275  
 BEGIN SITE I  
 LOG MILE 2.79

STAGE I QUANTITIES  
 REMOVAL OF PERMANENT PAVEMENT MARKINGS = 308 LIN. FT.  
 CONSTRUCTION PAVEMENT MARKINGS = 308 LIN. FT.

FURNISH AND INSTALL 673' P.C.C.B.  
 INCLUDES (2) T.J.A.B.



STA. 114+10.96  
 END SITE I

FURNISH AND INSTALL 673' P.C.C.B.  
 INCLUDES (1) SPECIAL END UNIT  
 + (1) T.J.A.B.

ROAD CLOSED (1) RII-2 (48" X 30")

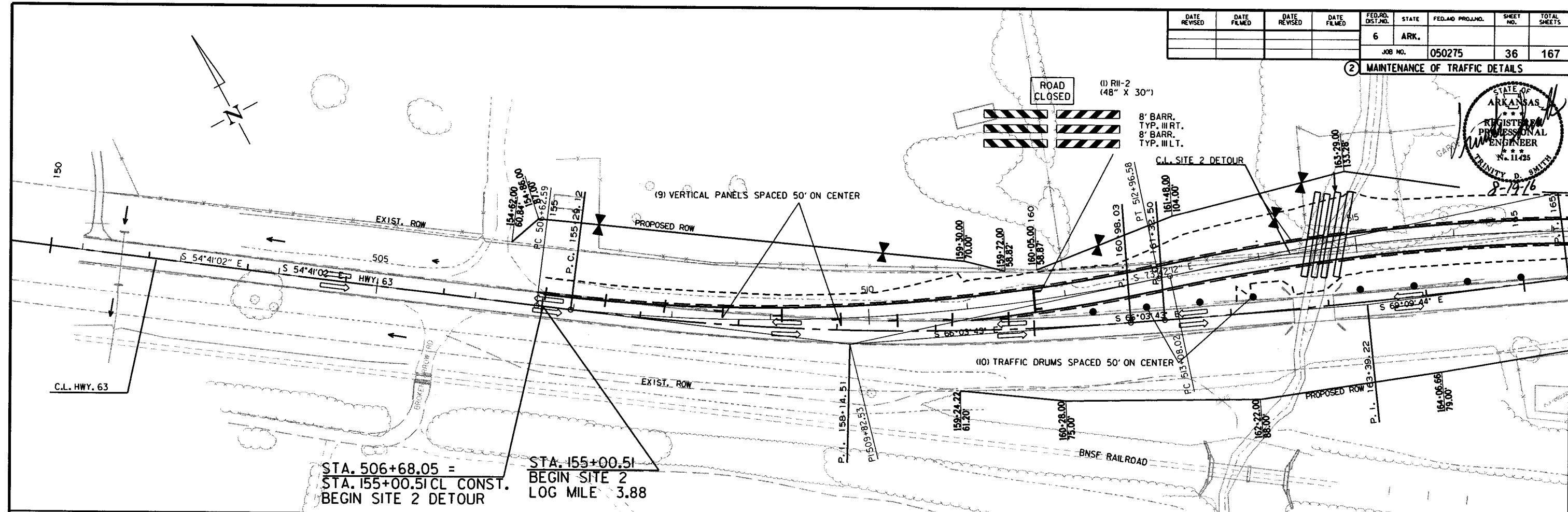
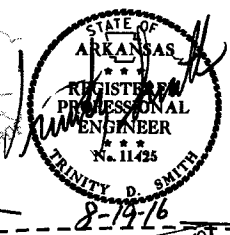
8' BARR. TYP. III RT.  
 8' BARR. TYP. III LT.

STAGE I MAINTENANCE OF TRAFFIC DETAILS

7/26/2016  
 R050275.DGN

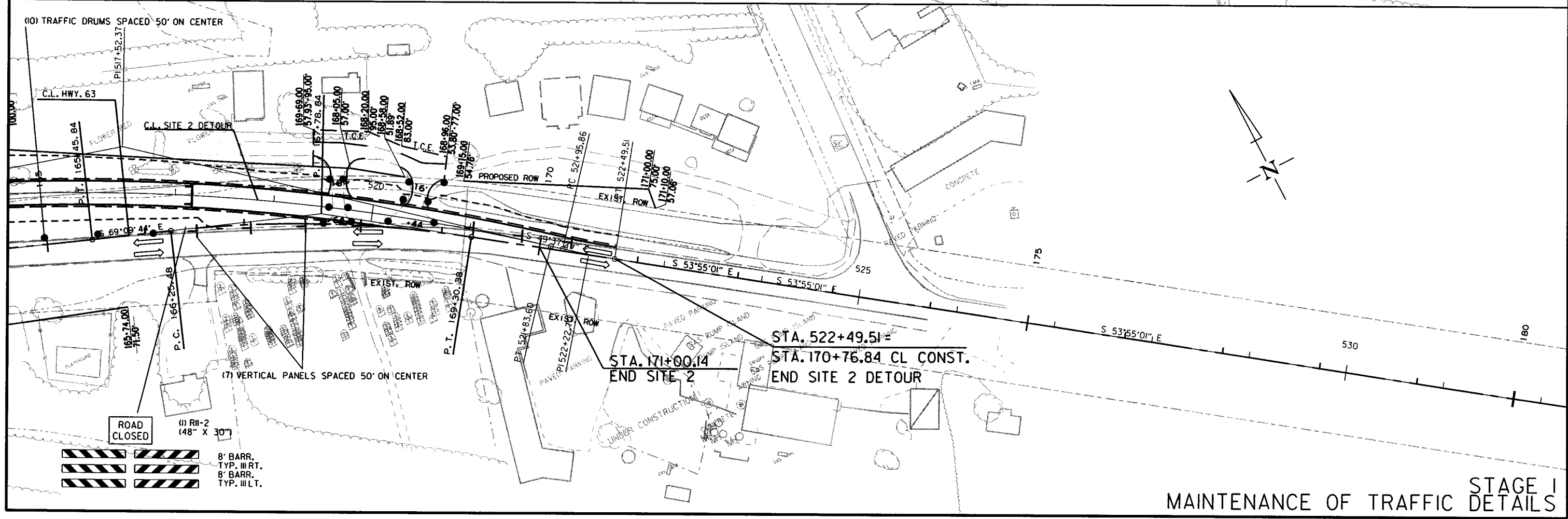
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							36	167

2 MAINTENANCE OF TRAFFIC DETAILS



STA. 506+68.05 =  
STA. 155+00.51 CL CONST.  
BEGIN SITE 2 DETOUR

STA. 155+00.51  
BEGIN SITE 2  
LOG MILE 3.88



STA. 171+00.14  
END SITE 2

STA. 522+49.51 =  
STA. 170+76.84 CL CONST.  
END SITE 2 DETOUR

ROAD CLOSED (1) R11-2 (48\"/>

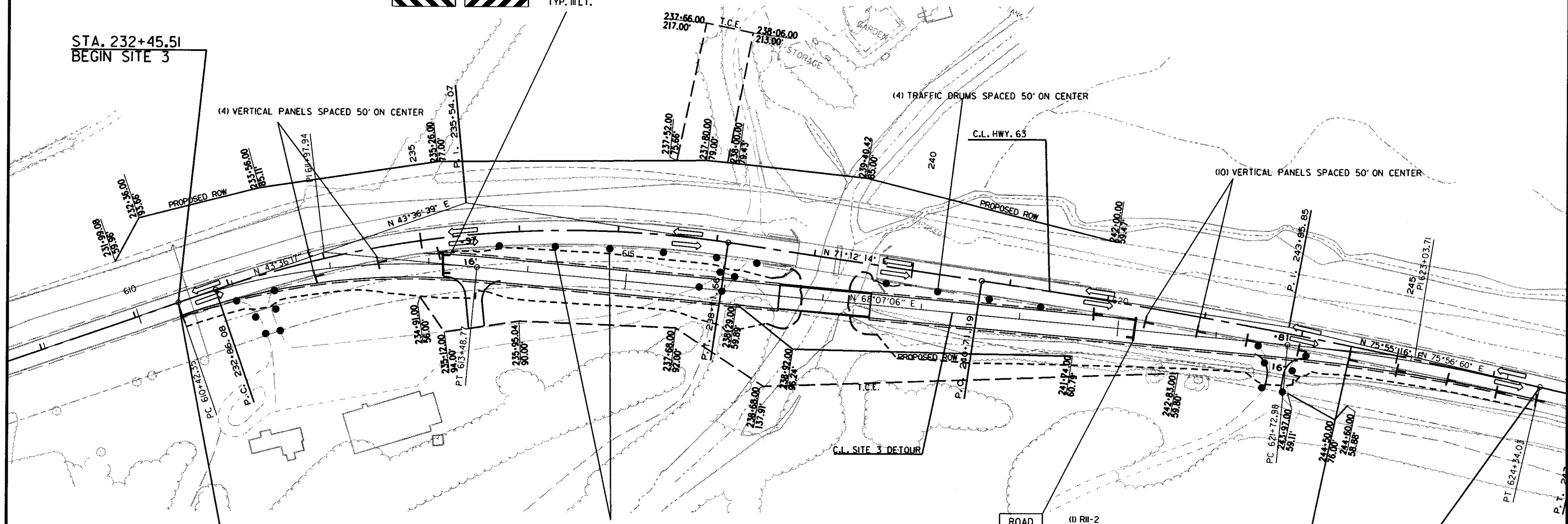
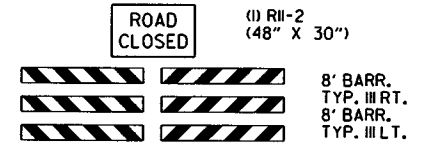
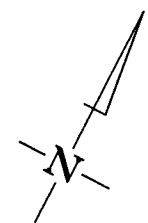
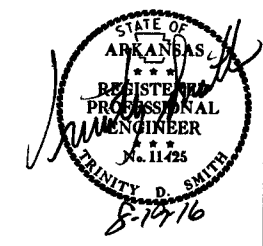
STAGE I  
MAINTENANCE OF TRAFFIC DETAILS

7/26/2016

R050275.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.	050275		37	167

② MAINTENANCE OF TRAFFIC DETAILS



STA. 232+45.51  
BEGIN SITE 3

STA. 610+42.35 =  
STA. 232+46.23 CL CONST.  
BEGIN SITE 3 DETOUR

STA. 244+50.51  
END SITE 3 &  
END JOB 050275  
LOG MILE 5.60

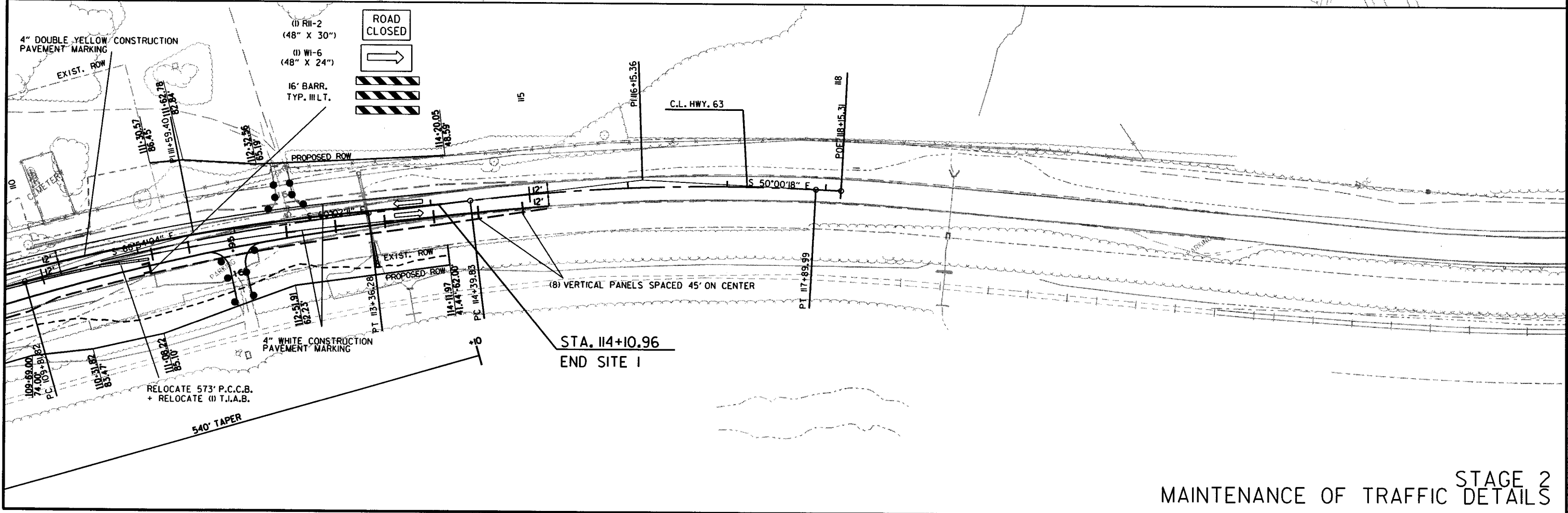
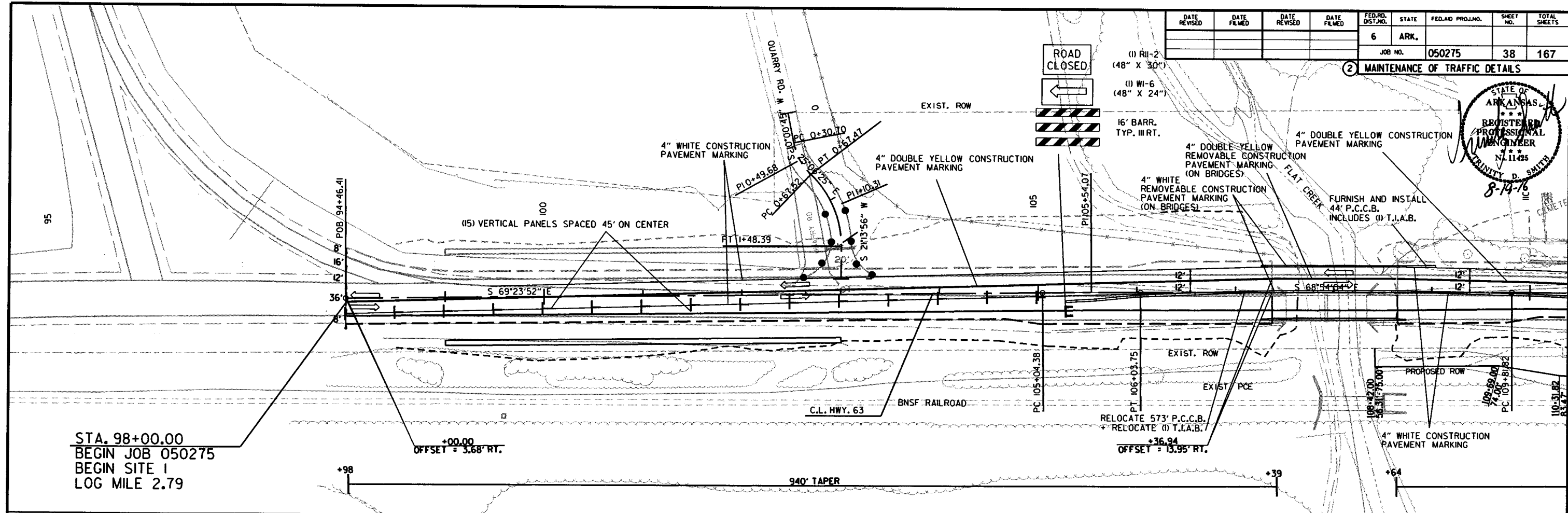
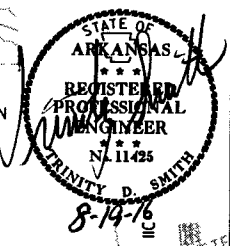
STA. 624+33.68 =  
STA. 246+48.13 CL CONST.  
END SITE 3 DETOUR

7/26/2016

R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		38	167

2 MAINTENANCE OF TRAFFIC DETAILS



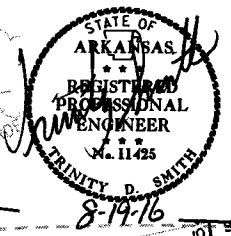
7/26/2016

R050275.DGN

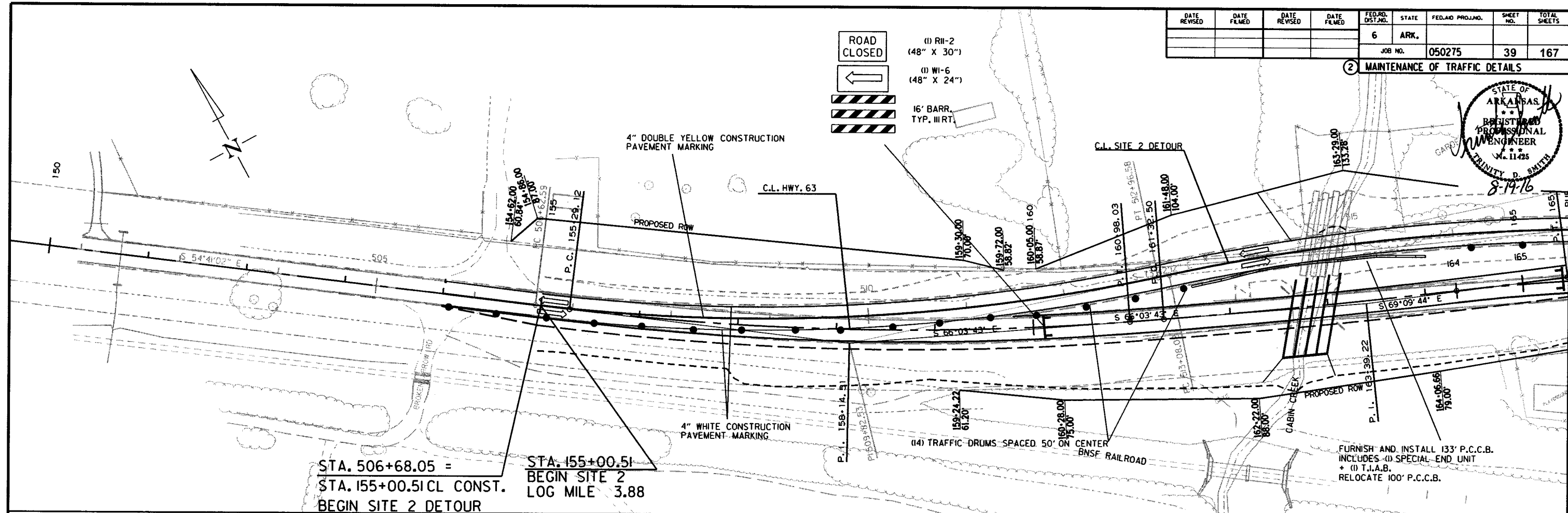
STAGE 2  
MAINTENANCE OF TRAFFIC DETAILS

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. 050275							39	167

② MAINTENANCE OF TRAFFIC DETAILS

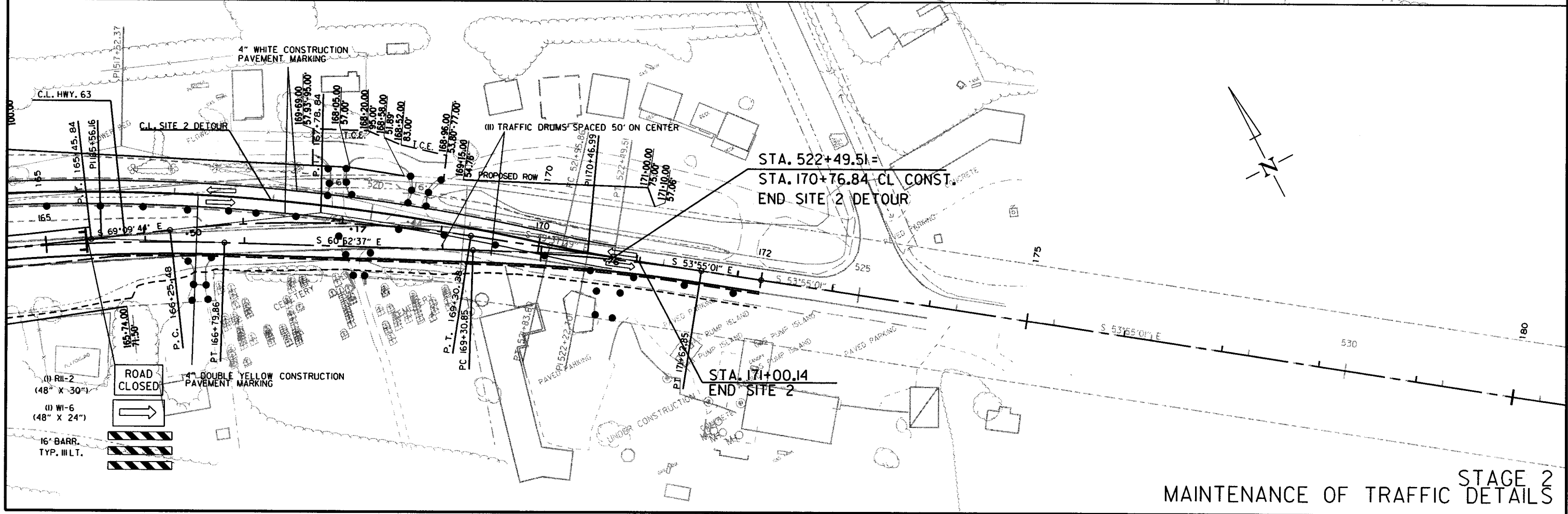


- ROAD CLOSED (48" X 30")
- (I) WI-6 (48" X 24")
- 16' BARR. TYP. III RT.



STA. 506+68.05 = STA. 155+00.51  
 STA. 155+00.51 CL CONST. BEGIN SITE 2  
 BEGIN SITE 2 DETOUR LOG MILE 3.88

FURNISH AND INSTALL 133' P.C.C.B.  
 INCLUDES - (1) SPECIAL END UNIT  
 + (1) T.I.A.B.  
 RELOCATE 100' P.C.C.B.



STA. 522+49.51 = STA. 170+76.84 CL CONST.  
 END SITE 2 DETOUR

STA. 171+00.14  
 END SITE 2

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

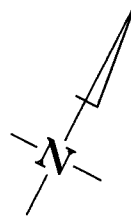
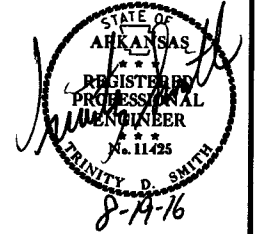
STAGE 2 MAINTENANCE OF TRAFFIC DETAILS

7/26/2016

R050275.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. 050275	40

② MAINTENANCE OF TRAFFIC DETAILS



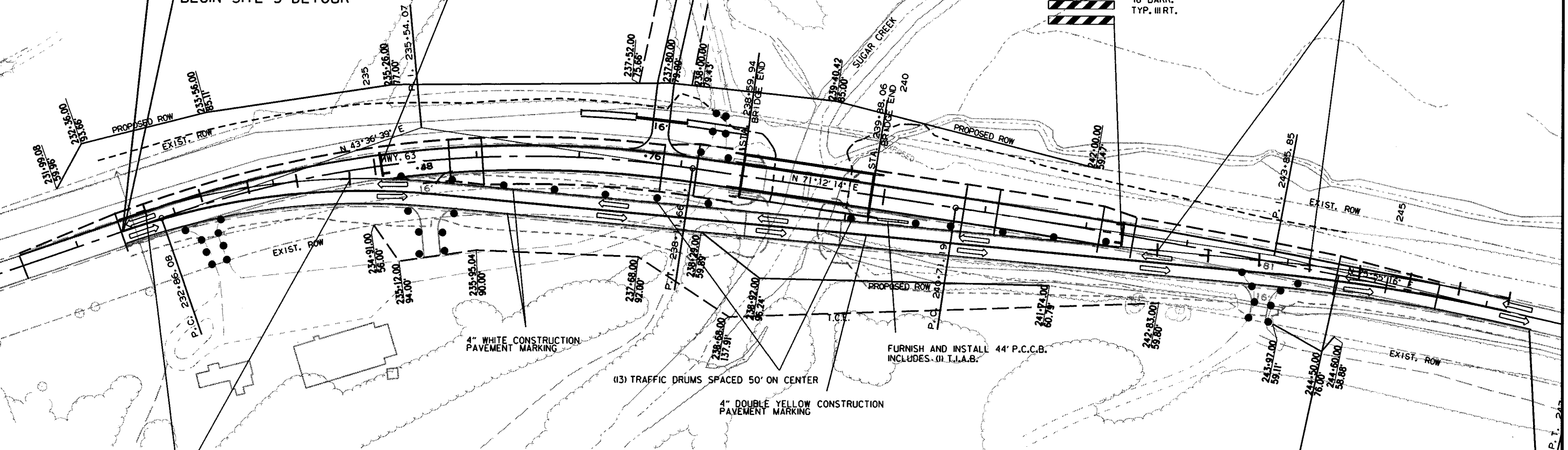
- (1) RII-2 (48" X 30")
- (1) WI-6 (48" X 24")
- 16' BARR. TYP. III RT.

- ROAD CLOSED
- (1) RII-2 (48" X 30")
- (1) WI-6 (48" X 24")
- 16' BARR. TYP. III RT.

STA. 232+45.51  
BEGIN SITE 3

STA. 610+42.35 =  
STA. 232+46.23 CL CONST.  
BEGIN SITE 3 DETOUR

(8) VERTICAL PANELS SPACED 50' ON CENTER



(5) VERTICAL PANELS SPACED 50' ON CENTER

STA. 244+50.51  
END SITE 3 &  
END JOB 050275  
LOG MILE 5.60

STA. 624+33.68 =  
STA. 246+48.13 CL CONST.  
END SITE 3 DETOUR

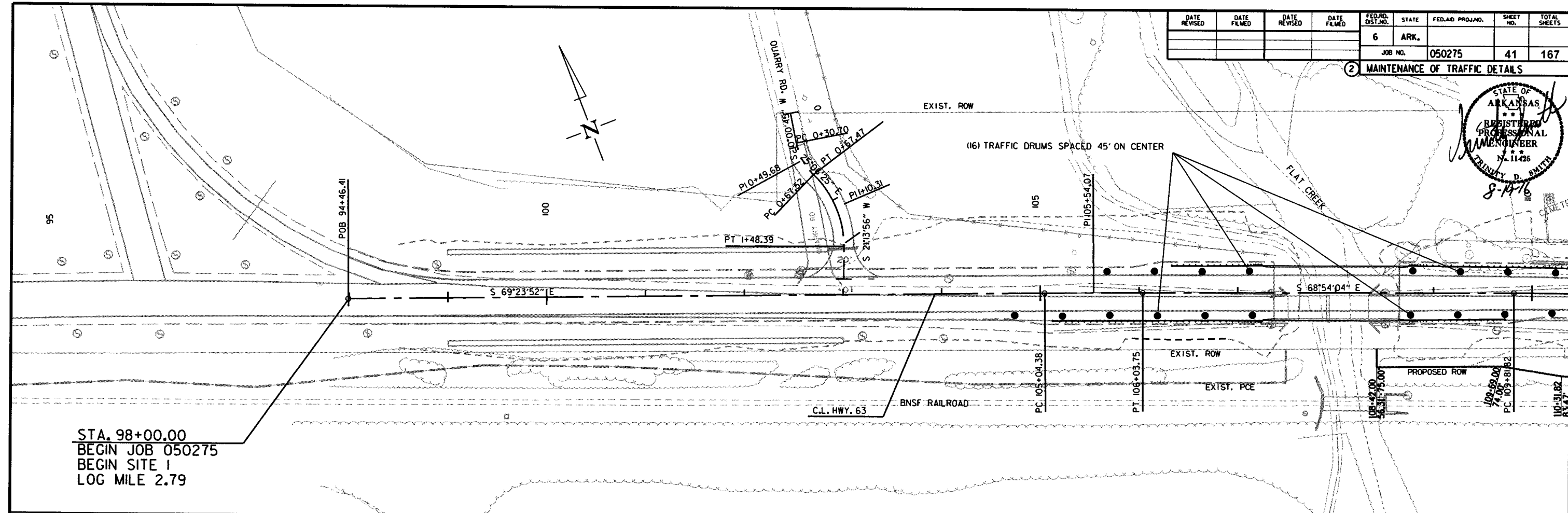
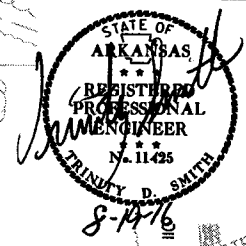
7/26/2016

R050275.DGN

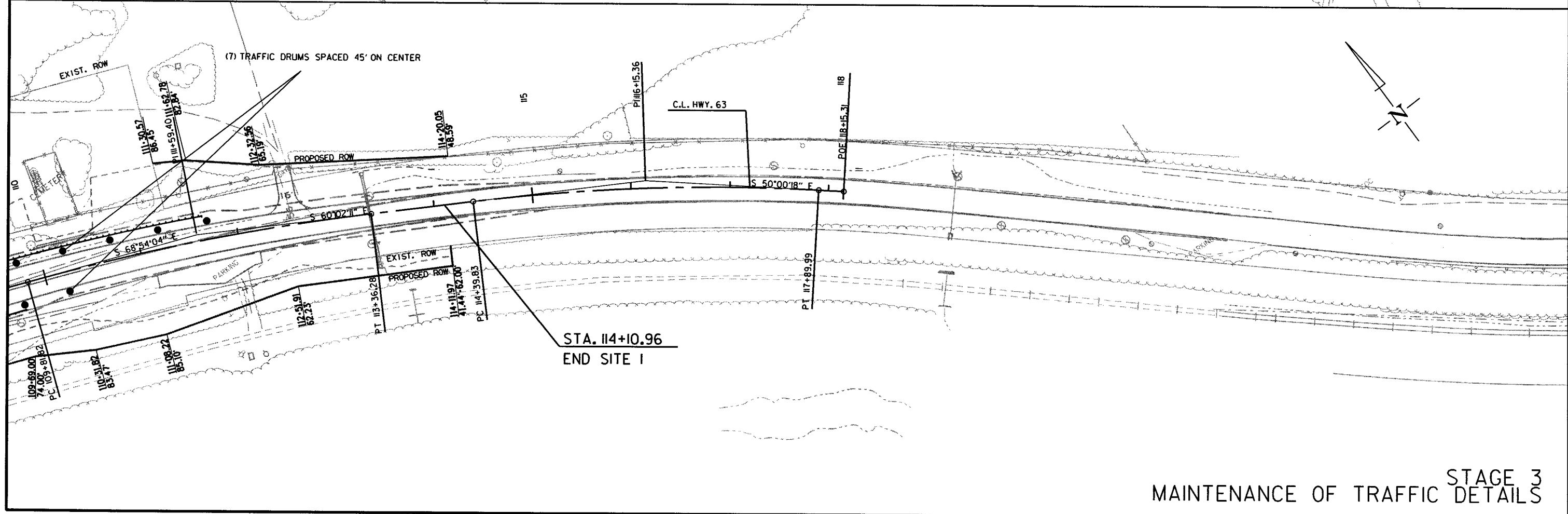


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							41	167

2 MAINTENANCE OF TRAFFIC DETAILS



STA. 98+00.00  
 BEGIN JOB 050275  
 BEGIN SITE 1  
 LOG MILE 2.79



STA. 114+10.96  
 END SITE 1

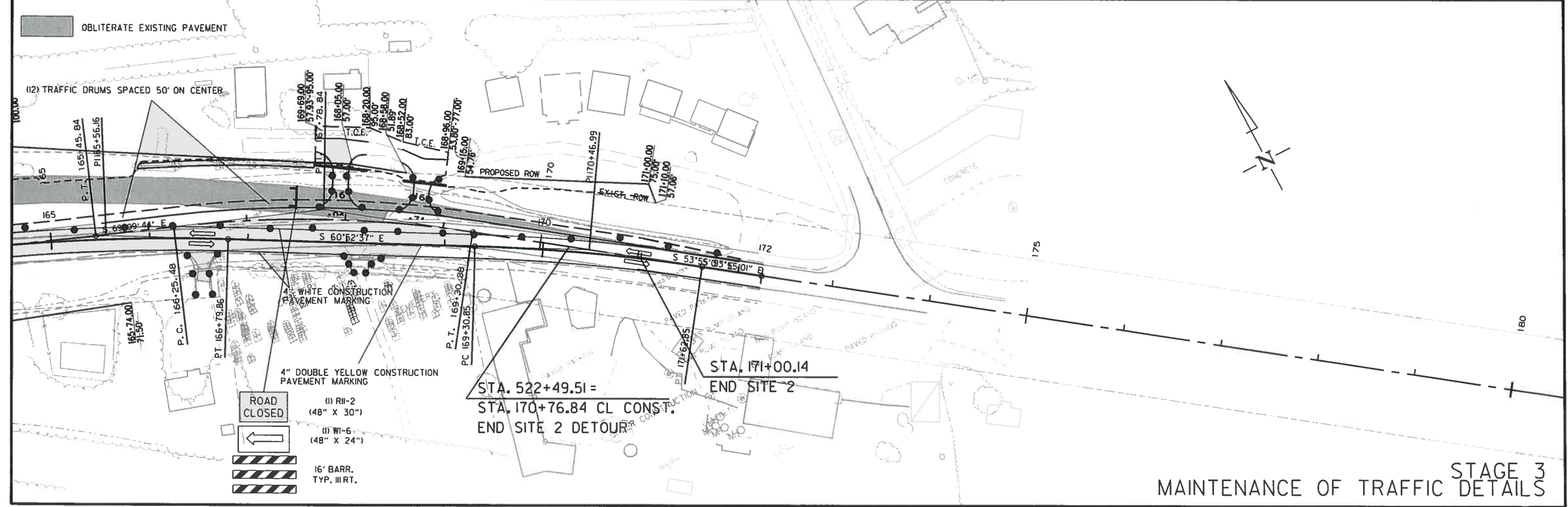
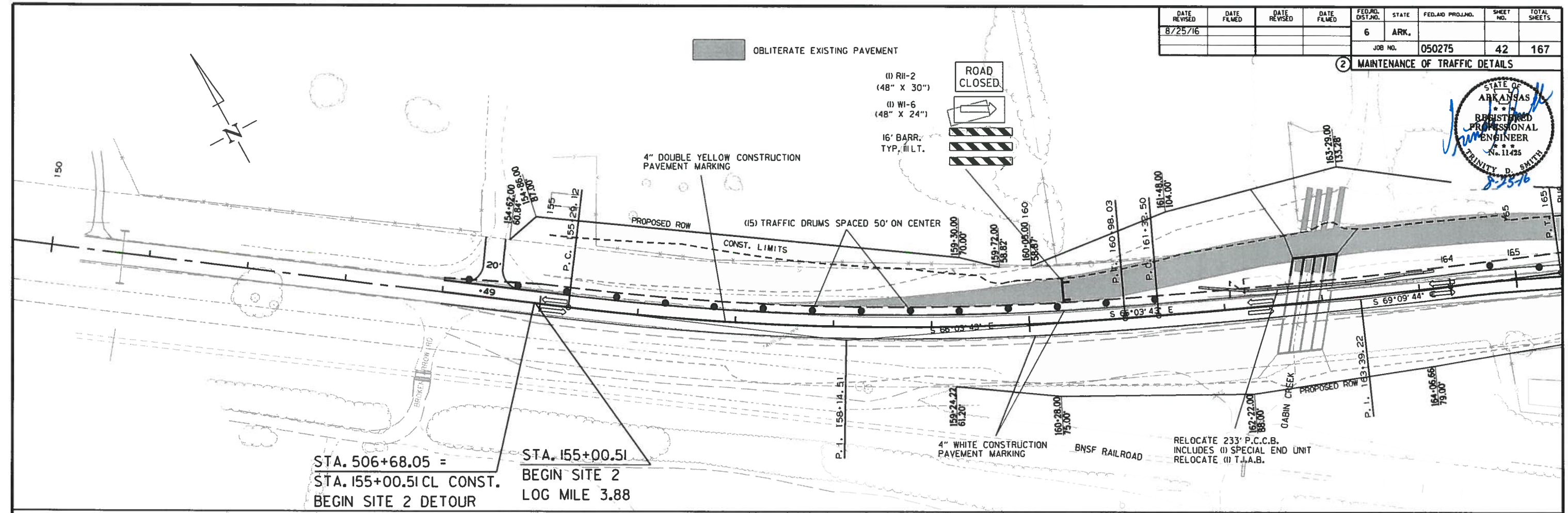
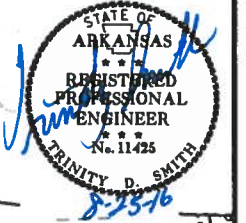
7/26/2016

R050275.DGN

STAGE 3  
 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
8/25/16				6	ARK.			
JOB NO. 050275							42	167

2 MAINTENANCE OF TRAFFIC DETAILS

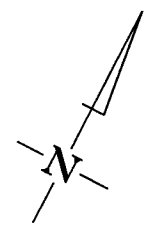
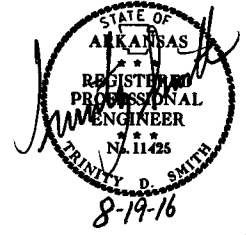


STAGE 3 MAINTENANCE OF TRAFFIC DETAILS

7/26/2016  
R050275.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.	050275		43	167

② MAINTENANCE OF TRAFFIC DETAILS



OBLITERATE EXISTING PAVEMENT

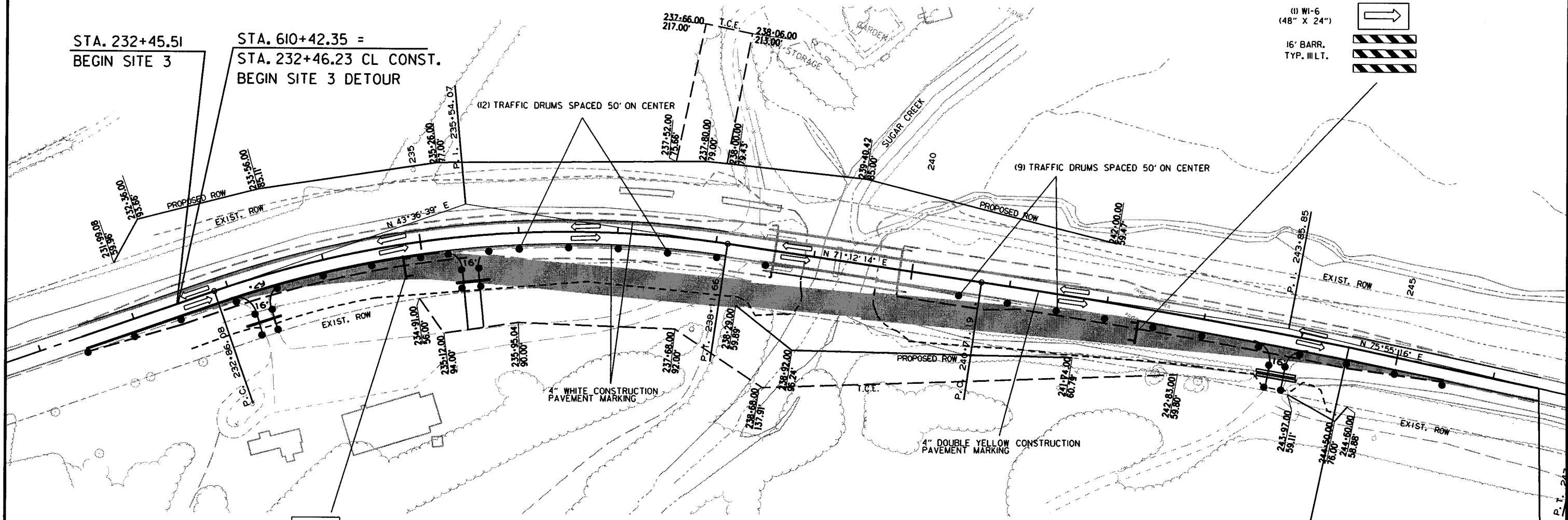
- (1) RII-2 (48" X 30")
- (1) WI-6 (48" X 24")
- 16' BARR. TYP. III LT.

STA. 232+45.51  
BEGIN SITE 3

STA. 610+42.35 =  
STA. 232+46.23 CL CONST.  
BEGIN SITE 3 DETOUR

STA. 244+50.51  
END SITE 3 &  
END JOB 050275  
LOG MILE 5.60

STA. 624+33.68 =  
STA. 246+48.13 CL CONST.  
END SITE 3 DETOUR



- ROAD CLOSED (1) RII-2 (48" X 30")
- (1) WI-6 (48" X 24")
- 16' BARR. TYP. III RT.

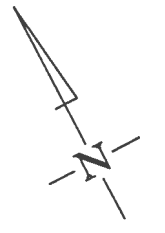
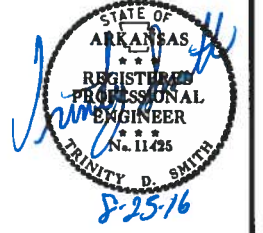
7/26/2016

R050275.DGN

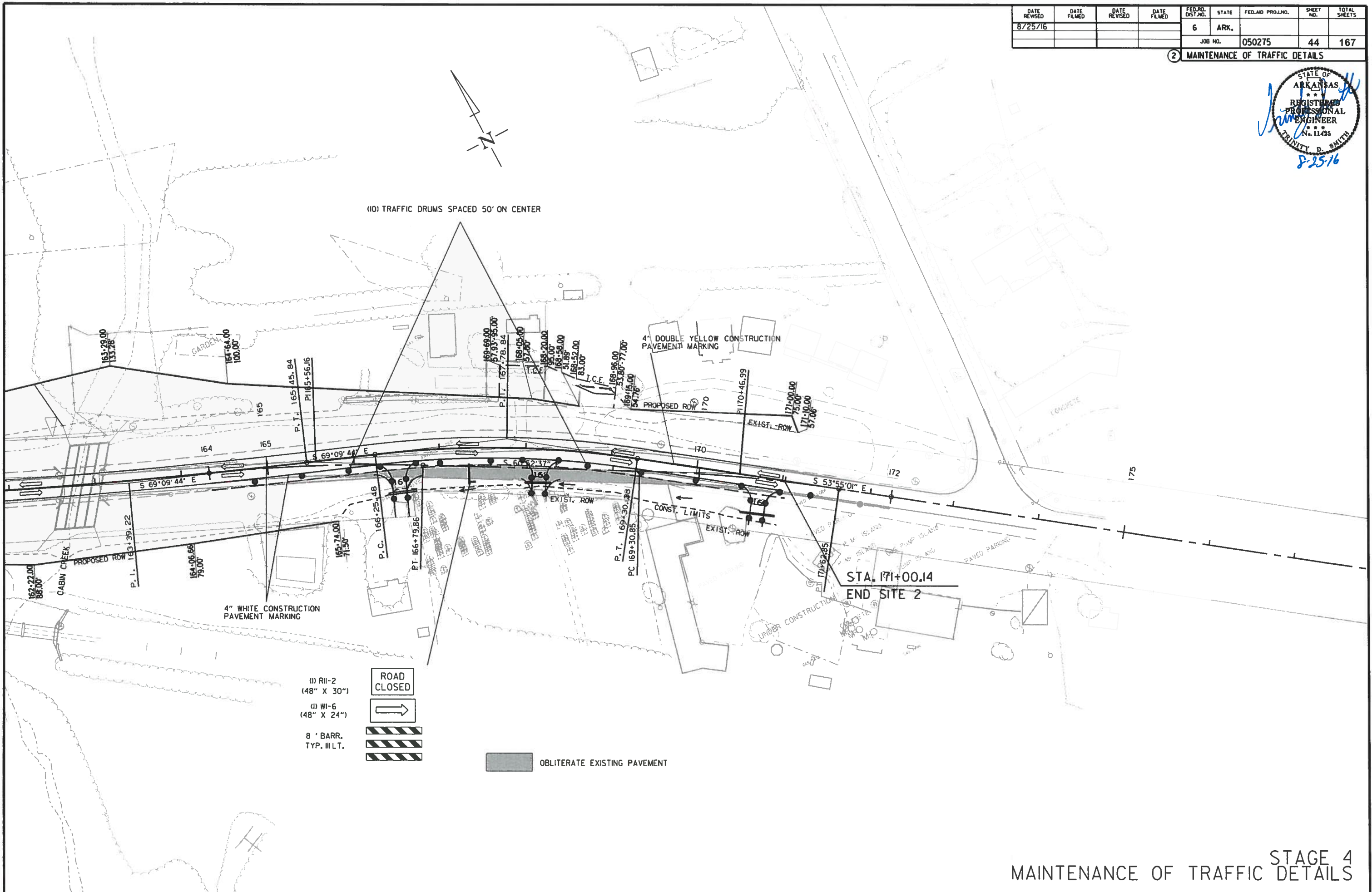
STAGE 3  
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/25/16				6	ARK.			
				JOB NO. 050275		44		167

② MAINTENANCE OF TRAFFIC DETAILS



(10) TRAFFIC DRUMS SPACED 50' ON CENTER



- (1) R11-2 (48" X 30")
- (1) W1-6 (48" X 24")
- 8' BARR. TYP. III LT.

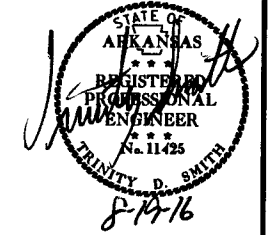


OBLITERATE EXISTING PAVEMENT

7/26/2016 R050275.DGN

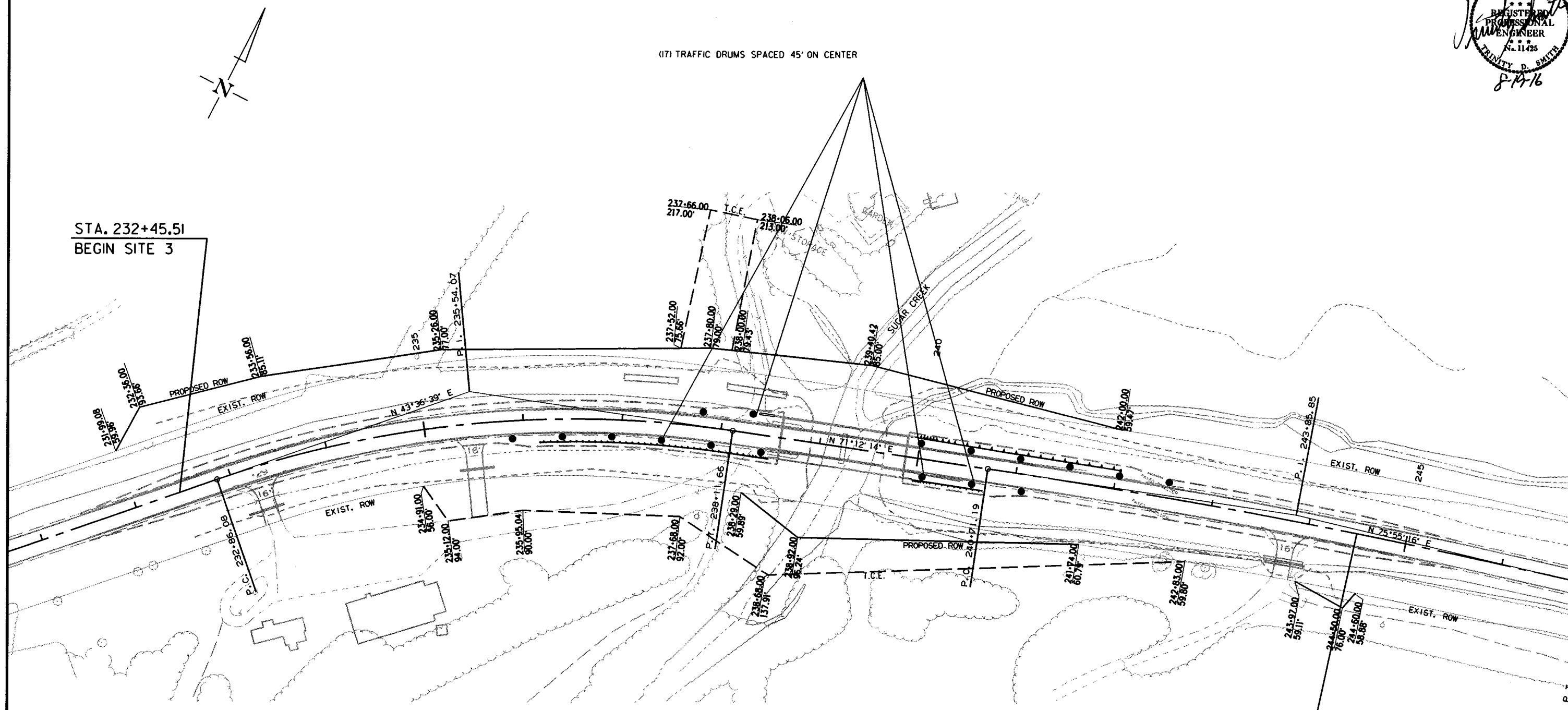
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275		45	167

② MAINTENANCE OF TRAFFIC DETAILS



(17) TRAFFIC DRUMS SPACED 45' ON CENTER

STA. 232+45.51  
BEGIN SITE 3



STA. 244+50.51  
END SITE 3 &  
END JOB 050275  
LOG MILE 5.60

7/26/2016

R050275.DGN

STAGE 4  
MAINTENANCE OF TRAFFIC DETAILS

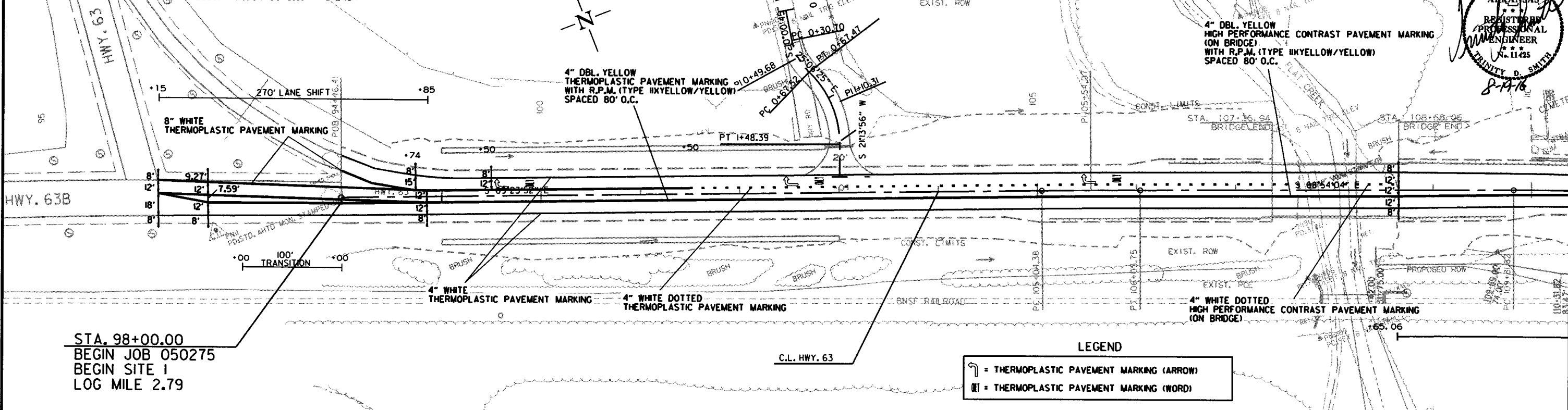
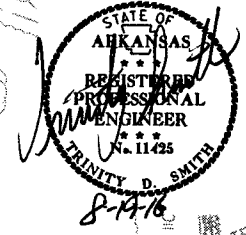
PERMANENT PAVEMENT MARKINGS - SITE I

THERMOPLASTIC PAVEMENT MARKINGS WHITE (4") = 3775 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKINGS WHITE (8") = 677 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4") = 3836 LIN. FT.  
 HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS YELLOW (4") = 256 LIN. FT.  
 HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS WHITE (4") = 14 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKINGS WORDS = 3 EACH  
 THERMOPLASTIC PAVEMENT MARKINGS ARROWS = 3 EACH  
 RAISED PAVEMENT MARKERS (TYPE II/YELLOW/YELLOW)(80' O.C.) = 48 EACH

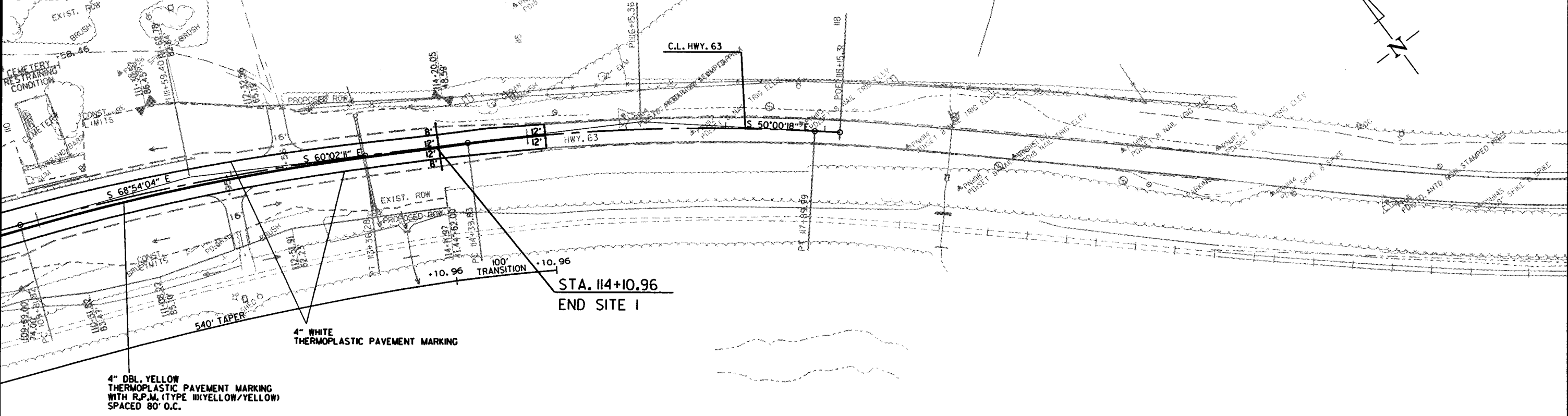
NOTE: THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							46	167

2 PERMANENT PAVEMENT MARKING DETAILS



NOTE: THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.



8/18/2016

R050275.DGN

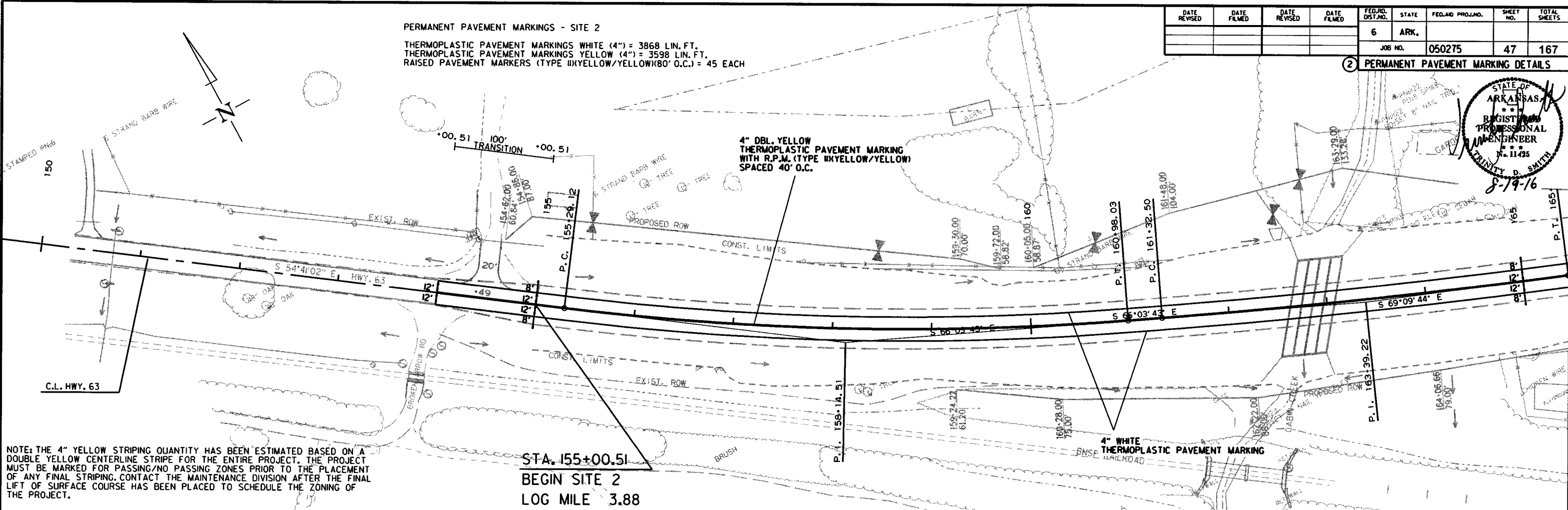
PERMANENT PAVEMENT MARKING DETAILS

PERMANENT PAVEMENT MARKINGS - SITE 2  
 THERMOPLASTIC PAVEMENT MARKINGS WHITE (4") = 3868 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4") = 3598 LIN. FT.  
 RAISED PAVEMENT MARKERS (TYPE III YELLOW/YELLOW)(80' O.C.) = 45 EACH

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		47	167

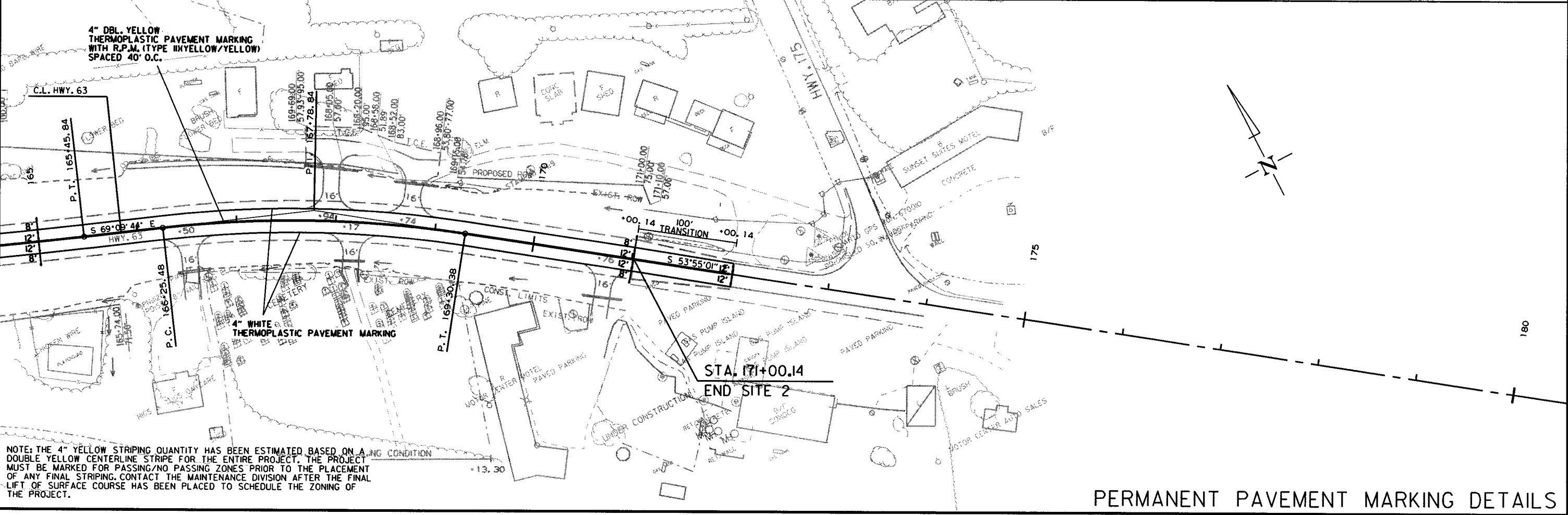
2 PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS  
 REGISTERED PROFESSIONAL ENGINEER  
 TRINITY D. SMITH  
 No. 11425  
 8-19-16



NOTE: THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

STA. 155+00.51  
 BEGIN SITE 2  
 LOG MILE 3.88



NOTE: THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

STA. 171+00.14  
 END SITE 2

PERMANENT PAVEMENT MARKING DETAILS

8/18/2016

R050275.DGN

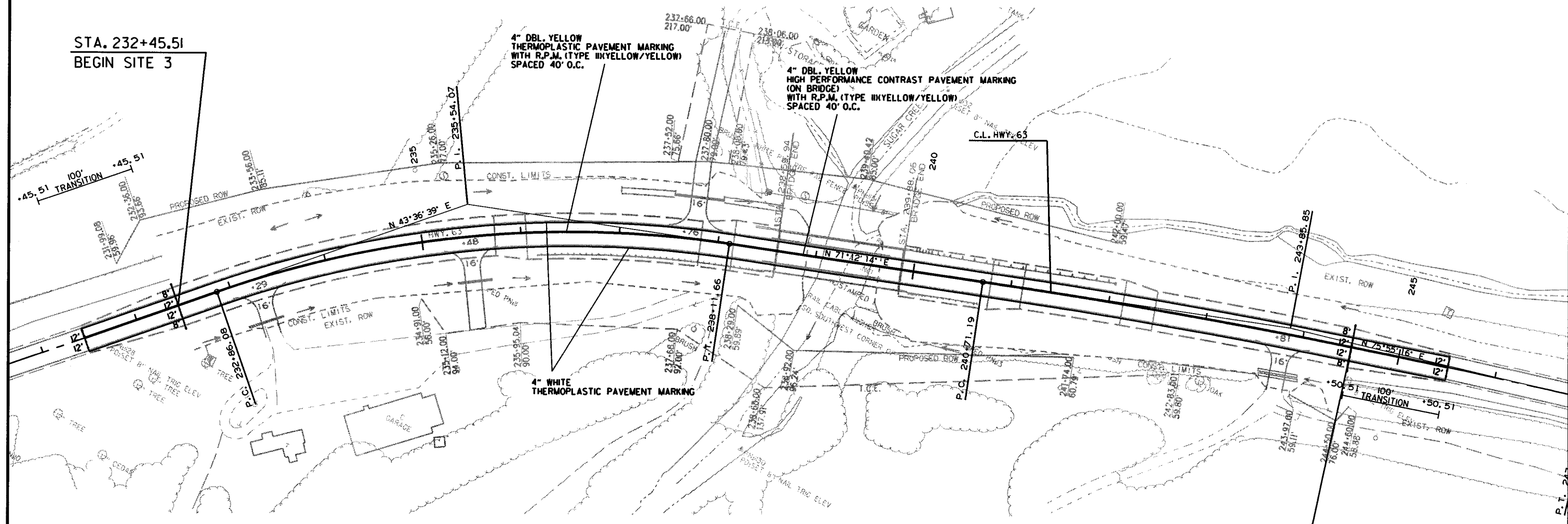
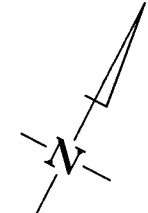
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275		48	167

2 PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS  
 REGISTERED PROFESSIONAL ENGINEER  
 TRINITY D. SMITH  
 No. 11425  
 8-19-16

PERMANENT PAVEMENT MARKINGS - SITE 3

THERMOPLASTIC PAVEMENT MARKINGS WHITE (4") = 2676 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4") = 2554 LIN. FT.  
 HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS YELLOW (4") = 256 LIN. FT.  
 RAISED PAVEMENT MARKERS (TYPE II) YELLOW/YELLOW (80" O.C.) = 3 EACH



STA. 232+45.51  
 BEGIN SITE 3

STA. 244+50.51  
 END SITE 3 &  
 END JOB 050275  
 LOG MILE 5.60

NOTE: THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

PERMANENT PAVEMENT MARKING DETAILS

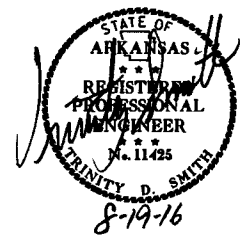
8/18/2016

R050275.DGN



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		49	167
				JOB NO. 050275				

2 QUANTITIES



ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	STAGE 4	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)	TEMP. IMPACT ATTEN.BARR. (RELOCATION)	
								NO.	SQ. FT.			RIGHT	LEFT						LIN. FT.
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	2	32.0										
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	2	32.0										
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	2	32.0										
W20-1	ROAD WORK AHEAD	48"x48"	5	5	5	5	5	5	80.0										
G20-2	END ROAD WORK	48"x24"	7	7	7	7	7	7	56.0										
G20-1	ROAD WORK NEXT 2.5 MILES	60"x24"	2	2	2	2	2	2	20.0										
R2-1	SPEED LIMIT 45	24"x30"	2	2	2	2	2	2	10.0										
R11-2	ROAD CLOSED	48"x30"	6	6	4	1	6	6	60.0										
OM-3L	OBJECT MARKER	12"x36"	3	6	3		6	6	18.0										
OM-3R	OBJECT MARKER	12"x36"	4	8	4		8	8	24.0										
W1-6	LARGE ARROW	48"x24"		6	4		6	6	48.0										
R4-1	DO NOT PASS	24"x30"	6	6	6		6	6	30.0										
RSP-1	SHOULDER CLOSED	48"x30"	6	6	6		6	6	60.0										
W8-1	BUMP	30"x30"	6	6	6		6	6	37.5										
	VERTICAL PANELS		52	36			52			52									
	TRAFFIC DRUMS		60	140	83	27	140				140								
	TYPE III BARRICADE-RT. (8')		6				6					48							
	TYPE III BARRICADE-LT. (8')		6			1	6						48						
	TYPE III BARRICADE-RT. (16')			3	2		3					48							
	TYPE III BARRICADE-LT. (16')			3	2		3						48						
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		673	221	20		914							914					
	RELOCATING PRECAST CONCRETE BARRIER			673	233		906								906				
	TEMPORARY IMPACT ATTENUATION BARRIER		2	1			3									3			
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		2	1			3										3		
	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)			2	1		3												3
<b>TOTALS:</b>									539.5	52	140	96	96	914	906	3	3	3	

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	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING					HIGH PERFORMANCE CONTRAST PAVEMENT MARKING			
									4"		8"		WORDS	ARROWS	4"	8"	
									WHITE	YELLOW	WHITE	YELLOW			WHITE		
REMOVAL OF PERMANENT PAVEMENT MARKINGS	308	5750			6058												
CONSTRUCTION PAVEMENT MARKINGS	308	18452	13220			31980											
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		500					500										
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)				96				96									
THERMOPLASTIC PAVEMENT MARKING WHITE (4")				10220					10220								
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")				9988						9988							
THERMOPLASTIC PAVEMENT MARKING WORDS				3							3						
THERMOPLASTIC PAVEMENT MARKING ARROWS				3								3					
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")				512											512		
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (8")				14												14	
THERMOPLASTIC PAVEMENT MARKING WHITE (8")				677						677							
<b>TOTALS:</b>					6058	31980	500	96	10220	9988	677	3	3	512	14		

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

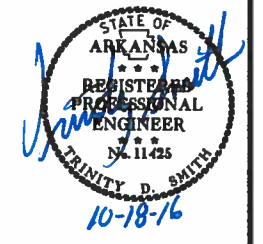
NOTE: THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

7/28/2016

R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/25/16				6	ARK.			
10/14/16								

2 QUANTITIES



**CLEARING AND GRUBBING**

STATION	STATION	LOCATION	CLEARING STATION	GRUBBING STATION
98+00	101+15	HWY. 63 RT.	4	4
106+25	107+40	HWY. 63 LT.	2	2
108+65	114+11	HWY. 63 LT. & RT.	7	7
161+70	165+00	HWY. 63 LT. & RT.	4	4
232+45	244+51	HWY. 63 LT. & RT.	13	13
<b>TOTALS:</b>			<b>30</b>	<b>30</b>

**REMOVAL AND DISPOSAL OF FENCE**

STATION	STATION	LOCATION	FENCE LIN. FT.
104+25	107+40	HWY. 63 LT.	315
108+42	114+10	HWY. 63 LT.	770
155+50	159+72	HWY. 63 LT.	445
160+05	162+75	HWY. 63 LT.	345
<b>TOTAL:</b>			<b>1875</b>

**BENCH MARKS**

STATION	LOCATION	BENCH MARKS EACH
107+37	BRIDGE END	1
162+74	HDWL. OF R.C. BOX CULVERT ON LT.	1
238+60	BRIDGE END	1
<b>TOTAL:</b>		<b>3</b>

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

**REMOVAL AND DISPOSAL OF ITEMS**

STATION	STATION	LOCATION	TIRES EACH	SIGN FOUNDATIONS EACH	GUARDRAIL LIN. FT.	BILLBOARDS EACH	WASTE CU. YD.	SIGNS EACH	BRIDGE END TERMINAL EACH
105+16	107+34	HWY. 63 RT.			218				
105+39	107+34	HWY. 63 LT.			195				
108+51	110+70	HWY. 63 LT.			219				
108+51	110+45	HWY. 63 RT.			194				
111+50		HWY. 63 LT.		3		1			
112+20		HWY. 63 LT.		1				1	
113+34		HWY. 63 LT.							
113+34		HWY. 63 RT.							
123+74	128+20	HWY. 63 RT.			500				
161+84	162+62	HWY. 63 LT.			78				
161+09	162+61	HWY. 63 RT.			152				
162+50		HWY. 63 LT.		5		1			
163+08	164+60	HWY. 63 LT.			152				
163+08	163+84	HWY. 63 RT.			76				
163+27	164+27	HWY. 63 LT.	10		100		30		
166+65		HWY. 63 RT.		1					
166+65		HWY. 63 RT.		2				1	
233+95		HWY. 63 LT.		4		1			
238+50	238+80	HWY. 63 LT.							1
238+52	238+79	HWY. 63 RT.							1
239+65	240+45	HWY. 63 RT.			80				
239+66	241+70	HWY. 63 LT.			204				
<b>TOTALS:</b>			<b>10</b>	<b>16</b>	<b>2168</b>	<b>3</b>	<b>30</b>	<b>2</b>	<b>2</b>

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

**REMOVAL AND DISPOSAL OF CULVERTS**

STATION	DESCRIPTION	PIPE CULVERTS EACH
102+77	HWY. 63 LT.	1
166+53	HWY. 63 RT.	1
167+93	HWY. 63 LT.	1
168+12	HWY. 63 RT.	1
168+73	HWY. 63 LT.	1
233+30	HWY. 63 RT.	1
235+48	HWY. 63 RT.	1
238+18	HWY. 63 RT.	1
238+32	HWY. 63 LT.	1
243+81	HWY. 63 RT.	1
<b>TOTAL:</b>		<b>10</b>

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

**DUMPED RIPRAP AND FILTER BLANKET**

STATION	LOCATION	DUMPED RIPRAP CU. YD.	FILTER BLANKET SQ. YD.
113+32	OUTLET OF PIPE CULVERT	38	75
	*TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	10	20
<b>TOTALS:</b>		<b>48</b>	<b>95</b>

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

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

**4" PIPE UNDERDRAIN**

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS LIN. FT.	UNDERDRAIN OUTLET PROTECTORS EACH
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			2000	8
<b>TOTALS:</b>			<b>2000</b>	<b>8</b>

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

**CULVERT CLEAN OUT**

STATION	LOCATION	EACH
113+34	HWY. 63	1
<b>TOTAL:</b>		<b>1</b>

**EARTHWORK**

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION CU. YD.	COMPACTED EMBANKMENT CU. YD.	* SOIL STABILIZATION TON
098+00.00	114+40.96	STAGE 1 - SITE 1	2775	6919	
154+00.51	171+00.14	STAGE 1 - SITE 2	573	9370	
232+45.51	244+50.51	STAGE 1 - SITE 3	337	4786	
098+00.00	114+40.96	STAGE 2 - SITE 1	1258	1412	
154+00.51	171+00.14	STAGE 2 - SITE 2	443	12093	
232+45.51	244+50.51	STAGE 2 - SITE 3	1560	6772	
098+00.00	114+40.96	STAGE 3 - SITE 1			
154+00.51	171+00.14	STAGE 3 - SITE 2	8065	2263	
232+45.51	244+50.51	STAGE 3 - SITE 3	4101	562	
098+00.00	114+40.96	STAGE 4 - SITE 1			
154+00.51	171+00.14	STAGE 4 - SITE 2	512		
232+45.51	244+50.51	STAGE 4 - SITE 3			
ENTIRE PROJECT	APPROACHES		325	1595	
107+36.94	108+65.06	EXCAVATE EXISTING EMBANKMENTS	450		
238+59.94	239+88.06	EXCAVATE EXISTING EMBANKMENTS	365		
162+27.00	163+00.00	CHANNEL CHANGE	2806		
ENTIRE PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER				100
<b>TOTALS:</b>			<b>23570</b>	<b>45772</b>	<b>100</b>

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

**CONCRETE DITCH PAVING**

STATION	STATION	LOCATION	LENGTH LIN. FT.	"W" FEET	CONC. DITCH PAVING (TYPE B) SQ. YD.	SOLID SODDING SQ. YD.	WATER M. GAL.
99+00.00	102+85.00	HWY. 63 LT.	385.00	6.33	270.78	171.11	2.16
99+00.00	103+00.00	HWY. 63 RT.	400.00	6.33	281.33	177.78	2.24
166+00.00	167+68.00	HWY. 63 LT.	168.00	6.33	118.16	74.67	0.94
237+00.00	237+53.00	HWY. 63 LT.	53.00	6.33	37.28	23.56	0.30
238+00.00	238+60.00	HWY. 63 LT.	60.00	6.33	42.20	26.67	0.34
<b>TOTALS:</b>					<b>749.75</b>	<b>473.79</b>	<b>5.98</b>

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

**FENCING**

STATION	STATION	LOCATION	WIRE FENCE LIN. FT.	
			(TYPE C)	(TYPE D-1)
111+33	114+19	HWY. 63 LT.	298	
155+48	162+84	HWY. 63 LT.		795
<b>TOTALS:</b>			<b>298</b>	<b>795</b>

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/14/16				6	ARK.		51	167
				JOB NO.	050275			

**SOIL LOG**

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC						
107+00	36	18	43.80	91	27	53.20	6' RT.	0-3Z	ND	NP	A-2-4(0)	BR/GR
107+00	36	18	43.70	91	27	53.30	17' RT.	0-2.5Z	ND	NP	A-1-B(0)	BR/GR
107+00	36	18	43.60	91	27	53.40	35' RT.	0-3Z	17	3	A-1-B(0)	BR/GR
115+00	36	18	41.00	91	27	44.20	6' LT.	0-5	41	27	A-7-6(14)	BR/GR
115+00	36	18	41.20	91	27	44.10	21' LT.	0-5	41	24	A-7-6(10)	BR/GR
162+00	36	18	14.80	91	26	56.80	6' RT.	0-5	41	27	A-7-6(17)	BR/GR
162+00	36	18	14.70	91	26	56.90	23' RT.	0-5	36	22	A-6(7)	BR/GR
169+00	36	18	12.00	91	26	48.90	6' LT.	0-5	14	1	A-4(0)	BR/GR
169+00	36	18	12.10	91	26	48.80	22' LT.	0-5	13	NP	A-4(0)	BR/GR
239+00	36	18	9.00	91	25	42.60	7' RT.	0-5	54	28	A-7-6(29)	BR/GR
239+00	36	18	8.90	91	25	42.50	14' RT.	0-5	59	36	A-7-6(25)	BR/GR
239+00	36	18	8.90	91	25	42.50	24' RT.	0-5	68	41	A-7-6(37)	BR/GR
246+00	36	18	11.40	91	25	34.70	6' LT.	0-5	39	23	A-6(13)	BR/GR
246+00	36	18	11.50	91	25	34.70	14' LT.	0-5	22	8	A-4(0)	BR/GR
246+00	36	18	11.50	91	25	34.70	27' LT.	0-5	24	9	A-2-4(0)	BR/GR
115+00	36	18	41.20	91	27	44.10	21' LT.	0-5	50	34	A-7-6(15)	RD/BR
162+00	36	18	14.70	91	26	56.90	23' RT.	0-5	39	23	A-6(12)	RD/BR
239+00	36	18	8.90	91	25	42.50	24' RT.	0-5	65	41	A-7-6(40)	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.  
 Z- AUGER REFUSAL  
 NP - NON-PLASTIC  
 ND - NOT DETERMINABLE

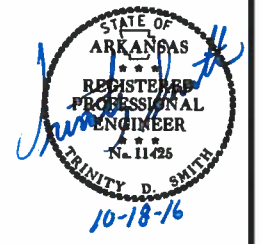
**MAILBOXES**

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

**GUARDRAIL**

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THREE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	BRIDGE END TERMINAL
			LIN. FT.	EACH		
105+18.79	107+37.54	RT. SIDE	150	1	1	
106+43.79	107+37.54	LT. SIDE	75	1	1	
108+64.46	109+58.21	RT. SIDE	75	1	1	
108+64.46	110+83.21	LT. SIDE	150	1	1	
123+73.81	128+19.95	RT. SIDE	500	1	1	
236+41.79	238+60.54	RT. SIDE	150	1	1	
238+35.96	238+50.96	LT. SIDE				1
239+87.46	240+81.21	RT. SIDE	75	1	1	
239+87.46	242+06.21	LT. SIDE	150	1	1	
TOTALS:			1325	8	8	1

**QUANTITIES**



**EROSION CONTROL MATTING**

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
108+65.00	109+98.38	HWY. 63 LT.	133.38	118.56
109+10.00	109+79.00	HWY. 63 RT.	69.00	61.33
110+10.00	112+40.00	HWY. 63 RT.	230.00	204.44
110+70.00	112+40.00	HWY. 63 LT.	170.00	151.11
157+00.00	161+50.00	HWY. 63 RT.	450.00	400.00
159+00.00	161+40.00	HWY. 63 LT.	240.00	213.33
165+00.00	166+10.00	HWY. 63 LT.	110.00	97.78
166+89.00	169+00.00	HWY. 63 RT.	211.00	187.56
233+00.00	237+00.00	HWY. 63 LT.	400.00	355.56
233+00.00	237+00.00	HWY. 63 RT.	400.00	355.56
TOTAL:				2145.23

NOTE: AVERAGE WIDTH = 8'-0"

**RUMBLE STRIPS IN ASPHALT SHOULDERS**

STATION	STATION	LOCATION	*RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN. FT.
98+00	114+11	HWY. 63 LT.	1010
98+00	114+11	HWY. 63 RT.	1120
155+01	171+00	HWY. 63 LT.	1147
155+01	171+00	HWY. 63 RT.	1081
232+46	244+51	HWY. 63 LT.	796
232+46	244+51	HWY. 63 RT.	664
TOTAL:			5818

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

**EROSION CONTROL**

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL									
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	WATTLE (20")	SAND BAG DITCH CHECKS	ROCK DITCH CHECKS	SILT FENCE	SEDIMENT BASIN	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	LIN. FT.	BAG	CU.YD.	LIN. FT.	CU.YD.	CU.YD.	CU.YD.
ENTIRE PROJECT		CLEARING AND GRUBBING						4.13	4.13	84.3		110	51	6177		251	
ENTIRE PROJECT		STAGE 1						4.57	4.57	93.2		308	81	162	1946	444	1993
ENTIRE PROJECT		STAGE 2						4.80	4.80	97.9		308	72	498	685	306	741
ENTIRE PROJECT		STAGE 3						3.13	3.13	63.9		154	48	99	1502	3383	1529
ENTIRE PROJECT		STAGE 4	7.28	14.56	7.28	742.6	7.28					66	6			5	
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.82	3.64	1.82	185.7	1.82	4.16	4.16	84.8	90	220	63	1734	1033	1033	1138
TOTALS:			9.10	18.20	9.10	928.3	9.10	20.79	20.79	424.1	90	1166	321	8670	5166	5166	5657

BASIS OF ESTIMATE:  
 LIME ..... 2 TONS / ACRE OF SEEDING  
 WATER..... 102.0 M.G. / ACRE OF SEEDING  
 WATER..... 20.4 M.G. / ACRE OF TEMPORARY SEEDING  
 WATTLE DITCH CHECKS..... 9 LIN. FT. / LOCATION  
 SAND BAG DITCH CHECKS..... 22 BAGS / LOCATION  
 ROCK DITCH CHECKS..... 3 CU.YD./LOCATION

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

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

**QUANTITIES**

7/28/2016 R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		52	167
				JOB NO. 050275				

**DRIVEWAYS & TURNOUTS**

STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)			AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS			STANDARD DRAWINGS
				FEET	SQ. YD.	TON		TON	18"	24"	
103+01	LT.	HWY. 63	20	398.79	43.87	162.84		28		PCC-1, PCM-1, PCP-1, PCP-2	
111+95	RT.	HWY. 63	16	86.10	9.47	35.16				PCC-1, PCM-1, PCP-1, PCP-2	
112+55	LT.	HWY. 63	16	77.57	8.53	31.67				PCC-1, PCM-1, PCP-1, PCP-2	
154+49	LT.	HWY. 63	20	96.71	10.64	39.49				PCC-1, PCM-1, PCP-1, PCP-2	
166+50	RT.	HWY. 63	16	100.07	11.01	40.86		32		PCC-1, PCM-1, PCP-1, PCP-2	
167+94	LT.	HWY. 63	16	54.77	6.02	22.36	54			PCC-1, PCM-1, PCP-1, PCP-2	
168+17	RT.	HWY. 63	16	62.90	6.92	25.68	30			PCC-1, PCM-1, PCP-1, PCP-2	
168+74	LT.	HWY. 63	16	43.66	4.80	17.83	44			PCC-1, PCM-1, PCP-1, PCP-2	
170+76	RT.	HWY. 63	16	79.81	8.78	32.59	40			PCC-1, PCM-1, PCP-1, PCP-2	
233+29	RT.	HWY. 63	16	73.12	8.04	29.86	36			PCC-1, PCM-1, PCP-1, PCP-2	
235+48	RT.	HWY. 63	16	95.52	10.51	39.00	34			PCC-1, PCM-1, PCP-1, PCP-2	
237+76	LT.	HWY. 63	16	343.54	37.79	140.28	50			PCC-1, PCM-1, PCP-1, PCP-2	
243+81	RT.	HWY. 63	16	72.91	8.02	29.77		80		PCC-1, PCM-1, PCP-1, PCP-2	
ENTIRE PROJECT TEMPORARY DRIVES							120.00				
<b>TOTALS:</b>				<b>1585.47</b>	<b>174.40</b>	<b>767.39</b>	<b>288</b>	<b>60</b>	<b>80</b>		

BASIS OF ESTIMATE:  
 ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER  
 MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

**SELECTED PIPE BEDDING**

LOCATION	SELECTED PIPE BEDDING
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	30
<b>TOTAL:</b>	<b>30</b>

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

**APPROACH GUTTERS**

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE A)	APPROACH GUTTER (TYPE C)	REINFORCING STEEL-RDWY. (GR. 60)
			CU.YD.	CU.YD.	POUND
107+00.44	107+36.94	LT. SIDE		14.80	810
107+00.44	107+36.94	RT. SIDE		14.80	810
108+65.06	109+01.56	LT. SIDE		14.80	810
108+65.06	109+01.56	RT. SIDE		14.80	810
238+29.94	238+59.94	LT. SIDE	7.55		665
238+29.94	238+59.94	RT. SIDE	7.55		665
239+88.06	240+18.06	LT. SIDE	7.55		665
239+88.06	240+18.06	RT. SIDE	7.55		665
<b>TOTALS:</b>			<b>30.20</b>	<b>59.20</b>	<b>5900</b>

NOTE: USE T=9" FOR 8' SHOULDER, APPROACH GUTTER (TYPE A)  
 USE T=14.5" FOR 8' SHOULDER, APPROACH GUTTER (TYPE C)

**ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC**

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	15	30
<b>TOTALS:</b>	<b>15</b>	<b>30</b>

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

**COLD MILLING ASPHALT PAVEMENT**

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
114+10.96	115+10.96	MAIN LANES	24.00	266.67
154+00.51	155+00.51	MAIN LANES	22.00	244.44
171+00.14	172+00.14	MAIN LANES	22.00	244.44
231+45.51	232+45.51	MAIN LANES	24.00	266.67
244+50.51	245+50.51	MAIN LANES	24.00	266.67
<b>TOTAL:</b>				<b>1288.89</b>

NOTE: AVERAGE MILLING DEPTH 1".

**STRUCTURES**

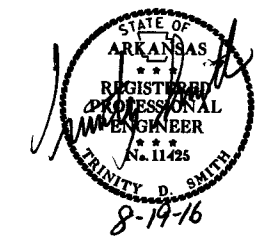
STATION	DESCRIPTION	REINFORCED CONCRETE PIPE (CLASS III)	SIDE DRAIN	FLARED END SECTIONS FOR R.C. PIPE CULVERTS	TEMPORARY CULVERT	SPAN	HEIGHT	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL. EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.	
		24"	18"	24"	72"				POUND	CU.YD.	SQ.YD.	M.GAL.		
113+34	EXTENDED 24" x 52' R.C. PIPE CULVERT	42		2							8	0.10	FES-1, FES-2, PCC-1, PCM-1	
110+26	18" x 60' LT. SIDE DRAIN		60										PCC-1, PCM-1, PCP-1, PCP-2	
514+68	QUAD. 72" x 88' TEMP. PIPE CULVERT				352								PCC-1, PCM-1, PCP-1, PCP-2	
<b>SUBTOTALS:</b>		<b>42</b>	<b>60</b>	<b>2</b>	<b>352</b>						<b>8</b>	<b>0.10</b>		
<b>STRUCTURES OVER 20' - 0" SPAN</b>														
162+85	QUAD. 10' x 10' x 99' R.C. BOX CULVERT ON 15° LT. FWD. SKEW					10	10	536.34	64721	228	44	0.55	PBC-1, RCB-1, RCB-2, SPECIAL DETAILS	
<b>SUBTOTALS:</b>								<b>536.34</b>	<b>64721</b>	<b>228</b>	<b>44</b>	<b>0.55</b>		
<b>TOTALS:</b>		<b>42</b>	<b>60</b>	<b>2</b>	<b>352</b>			<b>536.34</b>	<b>64721</b>	<b>228</b>	<b>52</b>	<b>0.65</b>		

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.

**QUANTITIES**



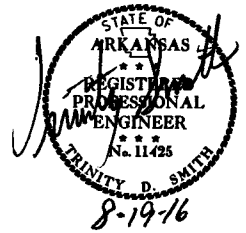
7/28/2016

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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.		050275	54	167

2 QUANTITIES



BASE AND SURFACING (BOX 2 OF 2)

STATION	STATION	LOCATION	LENGTH FEET	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	0.05 GAL./SQ. YD.			0.17 GAL./SQ. YD.			TOTAL GALLONS	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	TOTAL PG 70-22 TON	
						AVG. WID. FEET	SQ.YD.	GALLONS	AVG. WID. FEET	SQ.YD.	GALLONS																			
ADDITIONAL FOR SUPERELEVATION																														
108+89.95	111+14.95	SUPERELEVATION TRANSITION	225.00	26.00	58.50																									
111+14.95	114+10.03	MAXIMUM SUPERELEVATION	295.08	52.00	153.44																									
155+00.51	158+00.51	SUPERELEVATION TRANSITION	300.00	31.63	94.89																									
158+00.51	160+23.03	MAXIMUM SUPERELEVATION	222.52	63.25	140.74																									
160+23.03	161+48.48	SUPERELEVATION TRANSITION	125.45	50.50	63.35																									
161+48.48	163+39.17	MAXIMUM SUPERELEVATION	190.69	37.75	71.99																									
163+39.17	165+89.17	SUPERELEVATION TRANSITION	250.00	18.88	47.20																									
165+89.17	167+77.93	SUPERELEVATION TRANSITION	188.76	25.50	48.13																									
167+77.93	168+67.34	SUPERELEVATION TRANSITION	89.41	51.00	45.60																									
168+67.34	169+66.69	MAXIMUM SUPERELEVATION	99.35	25.50	25.33																									
232+45.51	234+43.58	SUPERELEVATION TRANSITION	198.07	53.50	105.97																									
234+43.58	236+54.16	MAXIMUM SUPERELEVATION	210.58	100.75	212.16																									
236+54.16	241+39.26	SUPERELEVATION TRANSITION	485.10	69.25	335.93																									
241+39.26	244+50.51	MAXIMUM SUPERELEVATION	311.25	37.75	117.50																									
FULL DEPTH SHOULDER																														
101+35.00	107+36.94	HWY. 63-LT.	601.94	34.50	207.67	18.00	1203.88	60.19			60.19			6.00	401.29	440.00	88.28	6.00	401.29	495.00	99.32	6.00	401.29	220.00	44.14			44.14		
108+65.06	114+10.96	HWY. 63-LT.	545.90	34.50	188.34	18.00	1091.80	54.59			54.59			6.00	363.93	440.00	80.06	6.00	363.93	495.00	90.07	6.00	363.93	220.00	40.03			40.03		
DETOUR																														
506+68.05	511+09.79	DETOUR - NOTCH AND WIDEN	441.74	VAR.	333.14	VAR.	890.41	44.52			44.52																			
511+09.79	518+88.78	DETOUR - FULL DEPTH	778.99	229.25	1785.83	48.71	4216.07	210.80			210.80			VAR.	449.74	330.00	74.21	VAR.	440.67	220.00	48.47	VAR.	524.23	220.00	57.67			106.14		
518+88.78	521+00.00	DETOUR - NOTCH AND WIDEN	211.22	VAR.	210.96	VAR.	696.84	34.84			34.84			VAR.	2117.12	330.00	349.32	24.25	2098.95	220.00	230.88	28.00	2423.52	220.00	266.59			497.47		
610+42.35	612+94.76	DETOUR - NOTCH AND WIDEN	252.41	VAR.	184.14	VAR.	468.34	23.42			23.42			VAR.	337.14	330.00	55.63	VAR.	359.70	220.00	39.57	VAR.	402.62	220.00	44.29			83.86		
612+94.76	616+55.61	DETOUR - FULL DEPTH	360.85	229.25	827.25	48.71	1953.00	97.65			97.65			VAR.	232.91	330.00	38.43	VAR.	235.43	220.00	25.90	VAR.	282.87	220.00	31.12			57.02		
617+48.61	620+19.05	DETOUR - FULL DEPTH	270.44	229.25	619.98	48.71	1463.69	73.18			73.18			24.46	980.71	330.00	161.82	24.25	972.29	220.00	106.95	28.00	1122.64	220.00	123.49			230.44		
620+19.05	624+33.68	DETOUR - NOTCH AND WIDEN	414.63	VAR.	315.22	VAR.	848.61	42.43			42.43			24.46	735.00	330.00	121.28	24.25	728.69	220.00	80.16	28.00	841.37	220.00	92.55			172.71		
624+33.68														VAR.	418.16	330.00	69.00	VAR.	430.45	220.00	47.35	VAR.	486.84	220.00	53.55			100.90		
TEMPORARY WIDENING FOR MAINTENANCE OF TRAFFIC																														
164+50.01	170+15.72	TEMPORARY WIDENING - NOTCH AND WIDEN	565.71	VAR.	519.76	VAR.	1271.92	63.60			63.60			VAR.	449.74	330.00	74.21	VAR.	822.18	220.00	90.44	VAR.	959.77	220.00	105.57			196.01		
SUBTOTALS (BOX 1 OF 2):					13029.01		40355.07	1969.34			5327.92	905.75	2875.09		9715.50		2137.43		13947.96		3145.81		17065.88		2047.10		23264.25		2559.06	4606.16
SUBTOTALS (BOX 2 OF 2):					6713.02		14104.56	705.22			114.78	590.44			765.22		168.34		6485.74		1133.29		6853.58		753.89		7043.86		774.83	1528.72
TOTALS:					19742.03		54459.63	2674.56			5327.92	1020.53	3465.53		10480.72		2305.77		20433.70		4279.10		23919.46		2800.99		30308.11		3333.89	6134.88

BASIS OF ESTIMATE:  
 ACHM SURFACE COURSE (1/2")..... 94.6% MIN. AGGR..... 5.4% ASPHALT BINDER  
 ACHM BINDER COURSE (1")..... 95.5% MIN. AGGR..... 4.5% ASPHALT BINDER  
 ACHM BASE COURSE (1 1/2")..... 95.9% MIN. AGGR..... 4.1% ASPHALT BINDER  
 MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22  
 TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

7/28/2016

R050275.DGN

QUANTITIES

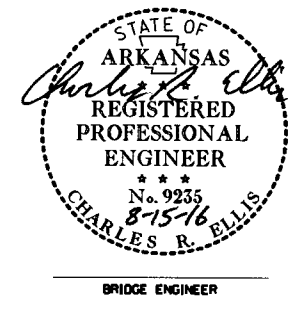
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275	55	167	
								① 07394 & 07395 QUANTITIES 58771

**SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 050275**

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO. ITEM	205	603	801	802	802	803	804	804	805	SP & 807	808	809	812	816	816		
				REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. ...)	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	③ STEEL PILING (HP 12X53)	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP		
				LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LB.	CU. IN.	LIN. FT.	EACH	SO. YD.	CU. YD.		
07394	FLAT CREEK	BENT 1				18	55.79		0.3	4,185		154	1,084	1,638			374	206		
		BENT 2				158	60.52			8,910				1,776						
		BENT 3				105	60.52			8,910				1,776						
		BENT 4				11	34.77			0.3	3,555		112	1,084	1,638			373	204	
		126'-0" CONT. COMP. W-BEAM UNIT SITE NO. 1 (BR. NO. A1136)								200.00	16.5			50,810	118,212		110	1		
		TOTALS FOR BRIDGE NO. 07394					292	211.60	200.00	17.1	25,560	50,810	266	120,380	6,828	110	1	747	410	
		② SITE NO. 2 (BR. NO. A1137)																		
07395	SUGAR CREEK	BENT 1				6	28.13		0.3	2,895		105	835	1,365			231	126		
		BENT 2				44	44.23			6,420				1,396						
		BENT 3				54	44.13			6,420				1,396						
		BENT 4				5	28.11			0.3	2,895		95	835	1,365			309	172	
		126'-0" CONT. COMP. W-BEAM UNIT SITE NO. 3 (BR. NO. A1138)							162.90	13.2		41,940		85,700		86	1			
		TOTALS FOR BRIDGE NO. 07395				93	109	144.60	162.90	13.8	18,630	41,940	200	87,370	5,522	86	1	540	298	
TOTALS FOR JOB NO. 050275					93	① 401	356.20	362.90	30.9	44,190	92,750	466	207,750	12,350	196	2	1,287	708		

- ① Includes approx. 117 Cu. Yd. of rock excavation
- ② Existing Bridge No. A1137 (Log Mile 4.00) is 31.5' wide (26.0' Roadway) and 42.0' long and consists of a single span haunched RCDG unit supported by concrete wall abutments. This bridge shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.
- ③ All steel piling shall be Grade 50 and are required to have approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP 12x53)". All piles shall conform to Standard Drawing No. 55020.

KYLE YEARY  
DESIGN SECTION SUPERVISOR



SCHEDULE OF BRIDGE QUANTITIES  
HARDY-OZARK ACRES STRS. & APPRS. (S)  
SHARP COUNTY

ROUTE 63 SEC. 2  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 3/3/2016 FILENAME: b050275.qldgn  
 CHECKED BY: Kwy DATE: 9/15/16 SCALE: No Scale  
 DESIGNED BY: DATE: BRIDGE NO. 07394 & 07395 DRAWING NO. 58771

PRINT DATE: 8/15/2016

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	30	STATION
201	GRUBBING	30	STATION
SP	REMOVAL AND DISPOSAL OF TIRES	10	EACH
202	REMOVAL AND DISPOSAL OF FENCE	1875	LN. FT.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS	16	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	10	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	2168	LN. FT.
202	REMOVAL AND DISPOSAL OF BILLBOARDS	3	EACH
202	REMOVAL AND DISPOSAL OF SIGNS	2	EACH
202	REMOVAL AND DISPOSAL OF BRIDGE END TERMINAL	2	EACH
SP	DISPOSAL OF WASTE	30	CU. YD.
210	UNCLASSIFIED EXCAVATION	23570	CU. YD.
210	COMPACTED EMBANKMENT	45772	CU. YD.
SP & 210	SOIL STABILIZATION	100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	20509	TON
SS & 401	TACK COAT	3496	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	2211	TON
SP, SS, & 406	ASPHALT BINDER (PG 70-22) IN ACHM BASE COURSE (1 1/2")	95	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	4086	TON
SP, SS, & 407	ASPHALT BINDER (PG 70-22) IN ACHM BINDER COURSE (1")	193	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	5969	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	9	TON
412	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")	329	TON
SP & 414	COLD MILLING ASPHALT PAVEMENT	1289	SQ. YD.
504	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	15	TON
601	APPROACH GUTTERS	89.4	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	72" TEMPORARY CULVERT	352	LN. FT.
SS & 604	SIGNS	540	SQ. FT.
SS & 604	BARRICADES	192	LN. FT.
SS & 604	TRAFFIC DRUMS	140	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	914	LN. FT.
604	RELOCATING PRECAST CONCRETE BARRIER	906	LN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	31980	LN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	500	LN. FT.
SS & 604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	6058	LN. FT.
605	VERTICAL PANELS	52	EACH
606	CONCRETE DITCH PAVING (TYPE B)	750	SQ. YD.
SP, SS, & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	42	LN. FT.
SP, SS, & 606	18" SIDE DRAIN	348	LN. FT.
SP, SS, & 606	24" SIDE DRAIN	60	LN. FT.
606	30" SIDE DRAIN	80	LN. FT.
611	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
611	SELECTED PIPE BEDDING	30	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS	8	EACH
617	4" PIPE UNDERDRAINS	2000	LN. FT.
617	GUARDRAIL (TYPE A)	1325	LN. FT.
617	GUARDRAIL TERMINAL (TYPE 2)	8	EACH
617	THREE BEAM GUARDRAIL TERMINAL	8	EACH
619	WIRE FENCE (TYPE C)	298	LN. FT.
619	WIRE FENCE (TYPE D-1)	795	LN. FT.
620	LIME	18	TON
620	SEEDING	9.10	ACRE
SS & 620	MULCH COVER	29.89	ACRE
620	WATER	1359.0	M. GAL.
621	TEMPORARY SEEDING	20.79	ACRE
621	SILT FENCE	8670	LN. FT.
621	SAND BAG DITCH CHECKS	1166	BAG
621	SEDIMENT BASIN	5166	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	5166	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	5657	CU. YD.
621	ROCK DITCH CHECKS	321	CU. YD.
621	WATTLE (20')	90	LN. FT.
623	SECOND SEEDING APPLICATION	9.10	ACRE
624	SOLID SODDING	526	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)	2145	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOXES	5	EACH
637	MAILBOX SUPPORTS (SINGLE)	5	EACH
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	5818	LN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4')	10220	LN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (8')	677	LN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4')	9888	LN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (8')	3	EACH
719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	3	EACH
719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	14	LN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (8')	14	LN. FT.
SP	HIGH PERFORMANCE MARKING TAPE WHITE (8')	14	LN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4')	512	LN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4')	512	LN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	96	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER	3	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	3	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)	3	EACH
734	BRIDGE END TERMINAL	1	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)	5900	POUND
816	FILTER BLANKET	95	SQ. YD.
816	DUMPED RIPRAP	48	CU. YD.
SP	CULVERT CLEAN OUT	1	EACH
<b>STRUCTURES OVER 20' SPAN</b>			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3)	1.00	LUMP SUM
603	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)	93	LN. FT.
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	401	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	228	CU. YD.
802	CLASS 5 CONCRETE-BRIDGE	356.20	CU. YD.
802	CLASS 5(AE) CONCRETE-BRIDGE	536.34	CU. YD.
802	CLASS 1 PROTECTIVE SURFACE TREATMENT	362.90	CU. YD.
803	REINFORCING STEEL-ROADWAY (GRADE 60)	30.9	GAL.
804	EPOXY COATED REINFORCING STEEL (GRADE 60)	64721	POUND
804	STEEL PILING (HP 12X53)	44190	POUND
805	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	92750	POUND
808	ELASTOMERIC BEARINGS	466	LN. FT.
809	SILICONE JOINT SEALANT	207750	POUND
812	BRIDGE NAME PLATE (TYPE D)	12350	CU. IN.
816	FILTER BLANKET	196	LN. FT.
816	DUMPED RIPRAP	2	EACH
816	CULVERT CLEAN OUT	1287	SQ. YD.
816	CULVERT CLEAN OUT	708	CU. YD.

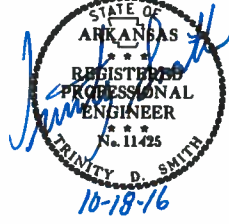
\* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
8/25/2016	THE CONSTRUCTION LIMITS WERE REVISED WITH A FLATTENED SLOPE AT STA. 168+00 TO STA. 169+60 TO AVOID IMPACTING THE RES TRAINING CONDITION OF THE CEMETERY. THE CORRESPONDING PLAN, TEMPORARY EROSION CONTROL, MAINTENANCE OF TRAFFIC, EARTHWORK QUANTITY BOX, SUMMARY, AND CROSS SECTION SHEETS WERE REVISED ACCORDINGLY. A RESTRAINING CONDITIONS SPECIAL PROVISION WAS ADDED. ADDED PAY ITEMS FOR DISPOSAL OF WASTE AND REMOVAL AND DISPOSAL OF TIRES. REVISED QUANTITY OF GUARDRAIL (TYPE A), GUARDRAIL TERMINAL (TYPE 2), AND TERM ANCHOR POSTS (TYPE 1). REMOVAL OF "SITE USE (A+C METHOD) - CALENDAR DAY CONTRACT" AND "PROSECUTION AND PROGRESS - CALENDAR DAY CONTRACT" SPECIAL PROVISIONS. ADDED "DISPOSAL OF ILLEGAL DUMP MATERIAL" AND "INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (BNSF)" SPECIAL PROVISIONS. REVISED "STORM WATER POLLUTION PREVENTION PLAN" SPECIAL PROVISION. REMOVAL OF ISSUANCE OF PROPOSALS SPECIAL PROVISION. ADDED ISSUANCE OF PROPOSALS SUPPLEMENTAL SPECIFICATION. A SECTION DETAIL FOR GUARDRAIL WAS ADDED TO SPECIAL DETAILS. CHANGED ESTIMATE FROM CALENDAR DAY CONTRACT TO WORKING DAY CONTRACT.	3, 29, 31, 42, 44, 50, 56, 65, & 157
10/14/2016		3, 11, 50, 51, & 56

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/25/16				6	ARK.			
10/14/16								
				JOB NO.	050275		56	167

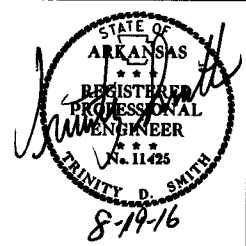
2 SUMMARY OF QUANTITIES AND REVISIONS





DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. PROJ. NO.	STATE	FED. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050275	57	167

2 SURVEY CONTROL DETAILS



SURVEY CONTROL COORDINATES

Project Name: 050275  
 Date: 2/10/2014  
 Coordinate System: Arkansas State Plane Coordinates  
 Based on AHTD GPS PTS 670009, 670010, 670010A, 670014, & 670014A  
 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	720966.1332	0.014	1469331.496	0.014	385.747	0.0038	CTL	PD:STD. AHTD MON. STAMPED PN:1
2	720741.9939	0.018	1469921.687	0.018	366.563	0.004	CTL	PD:STD. AHTD MON. STAMPED PN:2
3	720626.4654	0.019	1470335.199	0.02	356.49	0.004	CTL	PD:STD. AHTD MON. STAMPED PN:3
4	720255.4985	0.024	1471117.795	0.023	369.881	0.004	CTL	PD:STD. AHTD MON. STAMPED PN:4
5	719723.3748	0.021	1471681.641	0.021	387.198	0.0041	CTL	PD:STD. AHTD MON. STAMPED PN:5
6	718420.7957	0.019	1473827.655	0.018	375.896	0.0037	CTL	PD:STD. AHTD MON. STAMPED PN:6
7	717902.6564	0.025	1474432.298	0.023	360.662	0.0035	CTL	PD:STD. AHTD MON. STAMPED PN:7
8	717653.5347	0.022	1474963.539	0.019	356.191	0.0031	CTL	PD:STD. AHTD MON. STAMPED PN:8
9	717427.8439	0.02	1475560.808	0.017	370.595	0.0028	CTL	PD:STD. AHTD MON. STAMPED PN:9
10	716823.252	0.027	1480237.193	0.024	391.498	0.0035	CTL	PD:STD. AHTD MON. STAMPED PN:10
11	717192.4341	0.025	1480615.136	0.021	393.386	0.0033	CTL	PD:STD. AHTD MON. STAMPED PN:11
12	717359.5069	0.024	1480948.959	0.021	380.049	0.003	CTL	PD:STD. AHTD MON. STAMPED PN:12
13	717363.4658	0.028	1481076.506	0.024	377.305	0.003	CTL	PD:STD. AHTD MON. STAMPED PN:13
14	717647.614	0.031	1481928.198	0.028	388.827	0.0029	CTL	PD:STD. AHTD MON. STAMPED PN:14
15	717718.3772	0.024	1482665.165	0.023	399.939	0.0026	CTL	PD:STD. AHTD MON. STAMPED PN:15
16	717809.4781	0.027	1483350.059	0.026	425.238	0.0014	CTL	PD:STD. AHTD MON. STAMPED PN:16
100	720414.58	0.0001	1470693.538	0.0001	368.741	0.0001	GPS	PD:GPS MON. Q313A
101	717222.0449	0.0001	1475899.603	0.0001	381.544	0.0001	GPS	PD:AHTD GPS MON. 670010
102	-99999	0.0001	-99999	0.0001	354.622	0.0001	GPS	PD:AHTD GPS MON. 670010A
103	715722.4032	0.0001	1489048.386	0.0001	709.679	0.0001	GPS	PD:AHTD GPS MON. 670014
104	714415.2742	0.0001	1490124.951	0.0001	690.097	0.0001	GPS	PD:AHTD GPS MON. 670014A
105	723484.3027	0.0001	1466986.716	0.0001	423.142	0.0001	GPS	PD:AHTD GPS MON. 670009
900	721957.6907	0.029	1466268.428	0.03	367.061	0.0026	TBM	PD:CHISLED SQ. NORTHWEST CORNER OF BRIDGE
901	721181.624	0.02	1468959.212	0.0182	379.065	0.0034	BM	PD:CHIS SQR ON HEAD WALL
902	720587.082	0.0129	1470337.322	0.0089	360.349	0.0041	BM	PD:DISC IN SE BRIDGE CORNER
903	718958.9893	0.026	1473014.003	0.025	362.894	0.0035	TBM	PD:CHISLED SQ. NORTH END OF CONC DITCH
904	717680.731	0.0138	1474983.723	0.0102	357.798	0.0028	BM	PD:CHIS. SQR N. W COR BRIDGE
905	717208.963	0.0071	1475884.018	0.008	378.623	0.0022	BM	PD:CHIS. SQR IN ROCK
906	715337.8421	0.037	1478617.749	0.03	375.61	0.0027	TBM	PD:CHISLED SQ. IN ROCK
907	717322.736	0.0151	1480954.753	0.0111	379.838	0.0027	BM	PD:CHIS SQR IN CONC
990	716584.9474	0.026	1476731.923	0.027	371.3	0.0001	BM	PD:NGS BM R313
991	717843.817	0.0307	1483568.417	0.0196	435.14	0.0001	BM	PD:DISC IN ROCK N OF HWY
992	716882.058	30	1485951.786	30	559.15	0.0001	BM	PD:NGS BM U313
993	714881.809	30	1489647.66	30	692.22	0.0001	BM	PD:NGS BM V313
994	721613.185	30	1463988.98	30	358.06	0.0001	BM	PD:NGS BM O1
908	716378.334	0.0001	1479883.856	0.0001	368.826	0.0048	BM	PD:CHIS SQR IN HEAD WALL
909	718296.202	0.0001	1473975.408	0.0001	365.653	0.0036	BM	PD:CHIS SQR IN HEAD WALL
910	719804.5	0.0001	1471589.228	0.0001	382.025	0.0032	BM	PD:RR SPIKE N SIDE OF 24"
911	719868.489	0.0001	1471593.826	0.0001	384.296	0.006	BM	PD:CHIS SQR IN ROCK

\*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 techniques.

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: 100-105  
 Horizontal - Primary (2.0cm ± 20PPM) PN: 1-16  
 Horizontal - Secondary (3 cm ± 50PPM) PN: N/A  
 Vertical - NGS 1st Order (±4mm x vdist in km) PN: 990-994  
 Vertical - NGS 2nd Order (±6mm x vdist in km) PN: N/A  
 Vertical - NGS 3rd Order (±8mm x vdist in km) PN: 900-907

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: 0.999981176 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: 0.9999820277 has been computed and incorporated in the above CAF.  
 This is based on the average elevation of the project: 375.73 Feet  
 3-Wire Leveling techniques have been used to establish elevations on  
 Points: 1-15, 100-105 From NGS BM R 313, U 313, & V 313

Basis of Bearing: Grid Bearings based on AHTD GPS points: (List AHTD GPS points used)  
 Convergence Angle is: 00 19 08 Right at PN: 6  
 LT: 36-18-21 N LG: 091-27-07 W  
 Grid Azimuth = Astronomical Azimuth - Convergence Angle

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

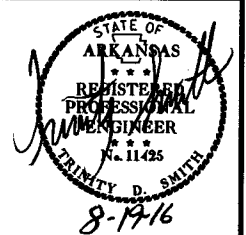
6/8/2016

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. PROJ. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							58	167

2 SURVEY CONTROL DETAILS



HWY. 63 SITE 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	97+99.18	720964.9004	1469488.8064
8001	PC	105+04.38	720716.7553	1470148.9101
8003	PT	106+03.75	720681.3876	1470241.7692
8004	PC	109+81.82	720545.2905	1470594.4916
8006	PT	113+36.28	720392.6694	1470914.0186
8007	PC	114+39.83	720340.9525	1471003.7261
8009	PT	117+89.99	720140.4665	1471290.2690
8010	POE	118+15.31	720124.1926	1471309.6669

SITE 1 - STA. 103+01 DRIVEWAY

POINT NO.	TYPE	STATION	NORTHING	EASTING
8095	POB	00+00.00	720978.6727	1469973.7317
8097	PC	00+30.70	720929.7474	1469968.0998
8099	PT	00+67.47	720912.5546	1469973.1501
8101	PC	00+67.52	720912.5144	1469973.1690
8103	PT	01+48.39	720833.8684	1469975.8293

HWY. 63 SITE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8031	PC	147+74.15	718462.9427	1473746.7273
8033	PT	148+89.82	718396.5511	1473841.4494
8034	PC	155+29.12	718026.9809	1474363.0998
8036	PT	160+98.03	717746.2006	1474856.8193
8037	PC	161+32.50	717732.2123	1474888.3292
8039	PT	165+45.84	717574.7993	1475270.4704
8040	PC	166+25.48	717546.4706	1475344.8979
8042	PT	169+30.38	717401.5970	1475612.1615
8043	PI	181+25.17	716697.9207	1476577.7439

HWY. 63 SITE 3

POINT NO.	TYPE	STATION	NORTHING	EASTING
8054	PT	224+68.40	716467.5015	1479938.7397
8055	PC	232+86.08	717059.5330	1480502.7381
8057	PT	238+11.66	717339.9163	1480941.2863
8058	PC	240+71.19	717423.5363	1481186.9744
8060	PT	247+00.15	717601.4611	1481790.0556

SITE 2 DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8068	POB	500+00.00	718429.9860	1473794.2559
8069	PC	506+62.59	718046.9486	1474334.9154
8071	PT	512+96.58	717772.2210	1474903.0537
8072	PC	513+08.02	717769.0105	1474914.0352
8074	PT	521+83.60	717356.4742	1475679.0472
8075	PC	521+95.86	717348.5338	1475688.3854
8077	PT	522+49.51	717315.3407	1475730.5222
8078	PI	533+07.98	716691.9500	1476585.9368

SITE 3 DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8080	PC	610+42.35	717030.7546	1480475.1666
8082	PT	613+48.77	717201.4079	1480726.8560
8083	PC	621+72.98	717508.5843	1481491.6885
8085	PT	624+34.03	717589.0435	1481739.8192

SITE 2 TEMPORARY WIDENING

POINT NO.	TYPE	STATION	NORTHING	EASTING
8087	PC	164+32.12	717616.0430	1475164.4908
8089	PT	166+79.86	717509.8261	1475388.1135
8091	PC	169+30.85	717387.6728	1475607.3723
8093	PT	171+62.85	717262.7447	1475802.6492

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STA. 98+00.00  
 BEGIN JOB 050275  
 BEGIN SITE 1  
 LOG MILE 2.79

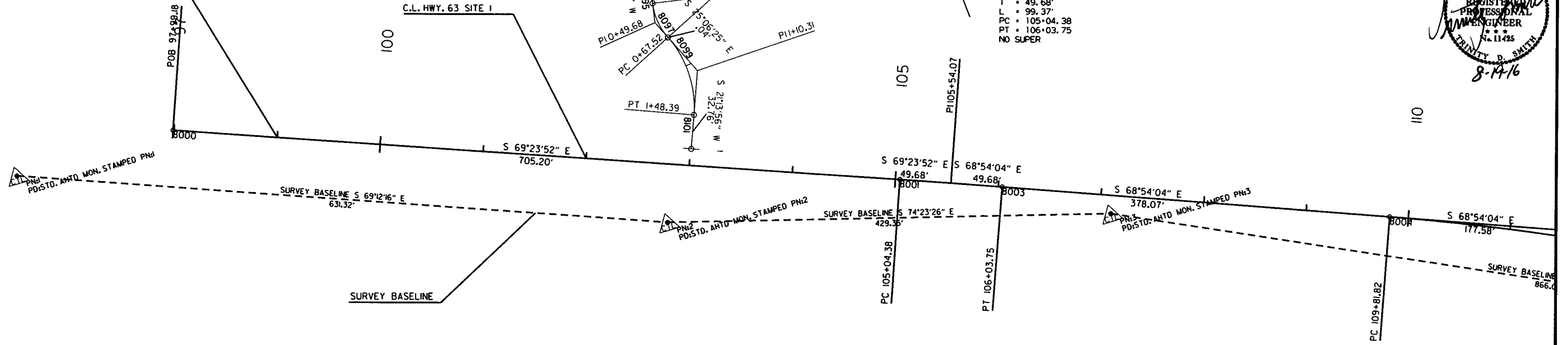
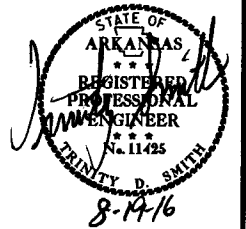
SITE 1 - STA. 103+01 DRIVE  
 PI = 0+49.68  
 Δ = 35°07'10" LT.  
 D = 95°29'35"  
 T = 18.99'  
 L = 36.78'  
 PC = 0+30.70  
 PT = 0+67.47

SITE 1 - STA. 103+01 DRIVE  
 PI = 1+10.31  
 Δ = 46°20'21" RT.  
 D = 57°17'45"  
 T = 42.80'  
 L = 80.88'  
 PC = 0+67.52  
 PT = 1+48.39

HWY. 63 SITE 1  
 PI = 105+54.07  
 Δ = 0°29'49" LT.  
 D = 0°30'00"  
 T = 49.68'  
 L = 99.37'  
 PC = 105+04.38  
 PT = 106+03.75  
 NO SUPER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							59	167

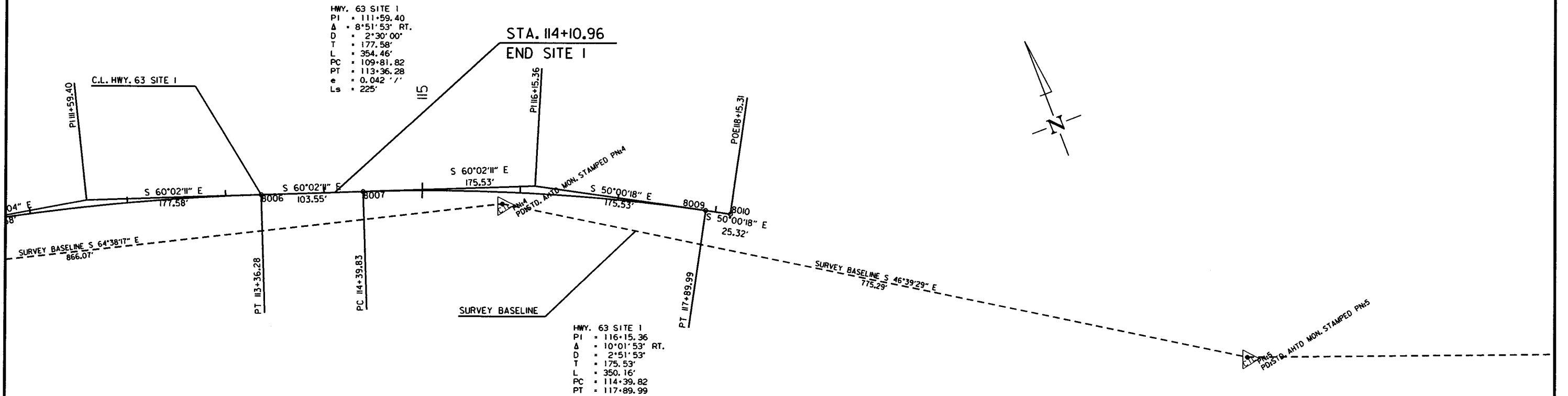
② SURVEY CONTROL DETAILS



HWY. 63 SITE 1  
 PI = 111+59.40  
 Δ = 8°51'53" RT.  
 D = 2°30'00"  
 T = 177.58'  
 L = 354.46'  
 PC = 109+81.82  
 PT = 113+36.28  
 e = 0.042  
 Ls = 225'

STA. 114+10.96  
 END SITE 1

HWY. 63 SITE 1  
 PI = 116+15.36  
 Δ = 10°01'53" RT.  
 D = 2°51'53"  
 T = 175.53'  
 L = 350.16'  
 PC = 114+39.82  
 PT = 117+89.99



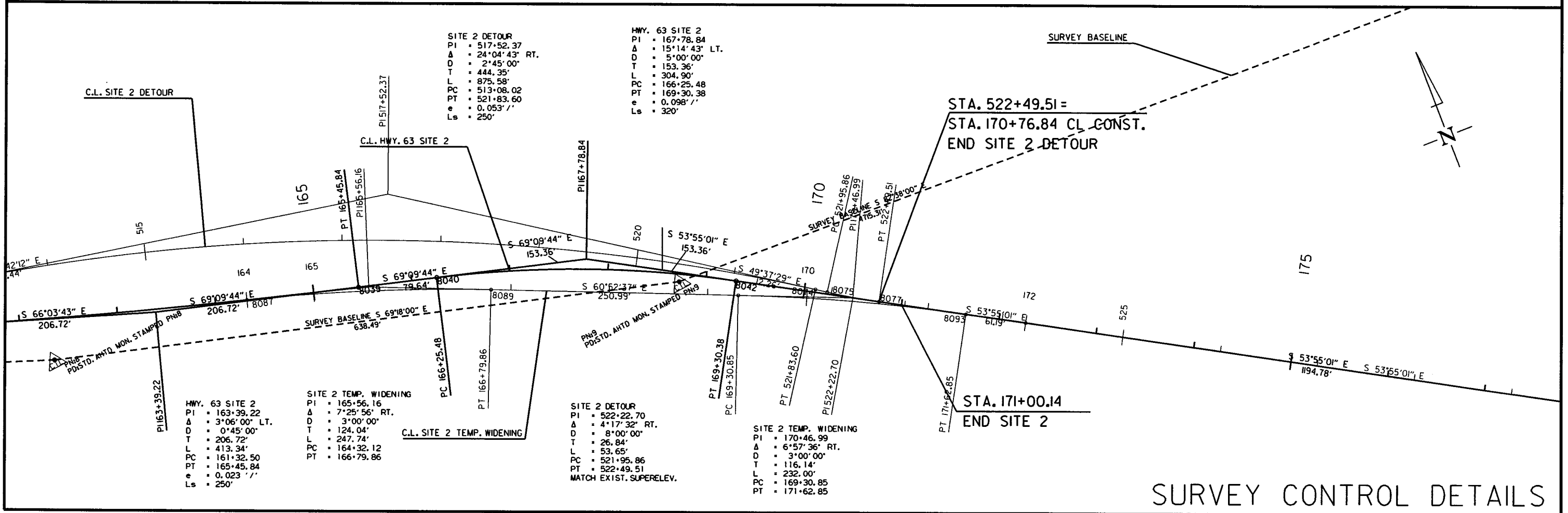
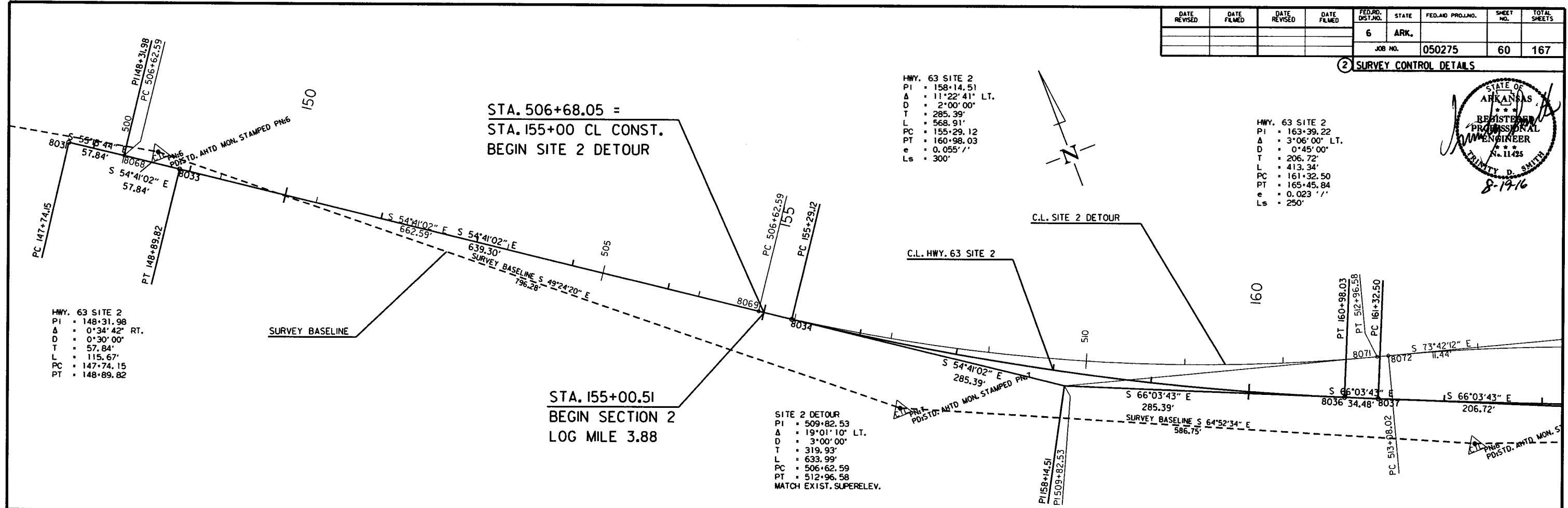
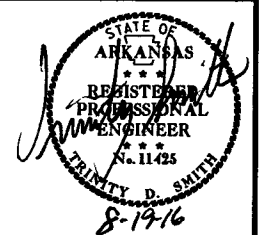
6/8/2016

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							60	167

2 SURVEY CONTROL DETAILS

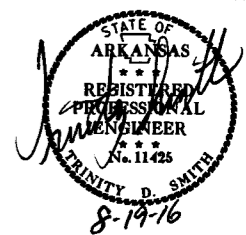


SURVEY CONTROL DETAILS

6/8/2016  
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							61	167

2 SURVEY CONTROL DETAILS

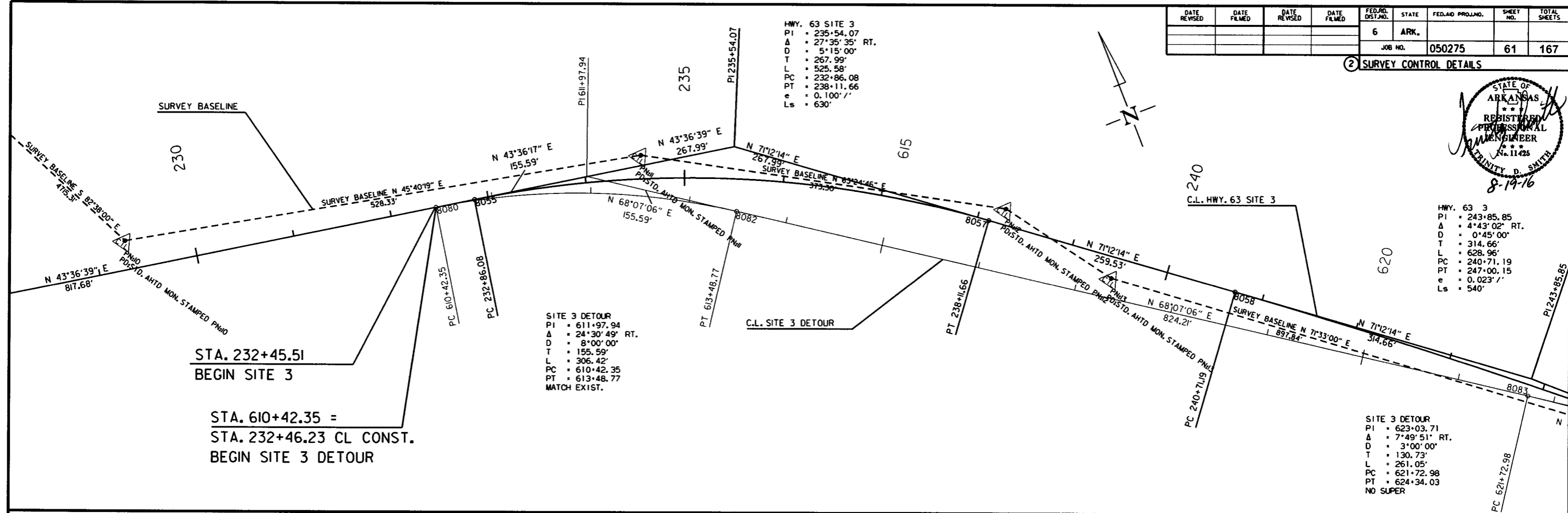


HWY. 63 SITE 3  
 PI = 235+54.07  
 Δ = 27°35'35" RT.  
 D = 5°15'00"  
 T = 267.99'  
 L = 525.58'  
 PC = 232+86.08  
 PT = 238+11.66  
 e = 0.100' /'  
 Ls = 630'

HWY. 63 3  
 PI = 243+85.85  
 Δ = 4°43'02" RT.  
 D = 0°45'00"  
 T = 314.66'  
 L = 628.96'  
 PC = 240+71.19  
 PT = 247+00.15  
 e = 0.023' /'  
 Ls = 540'

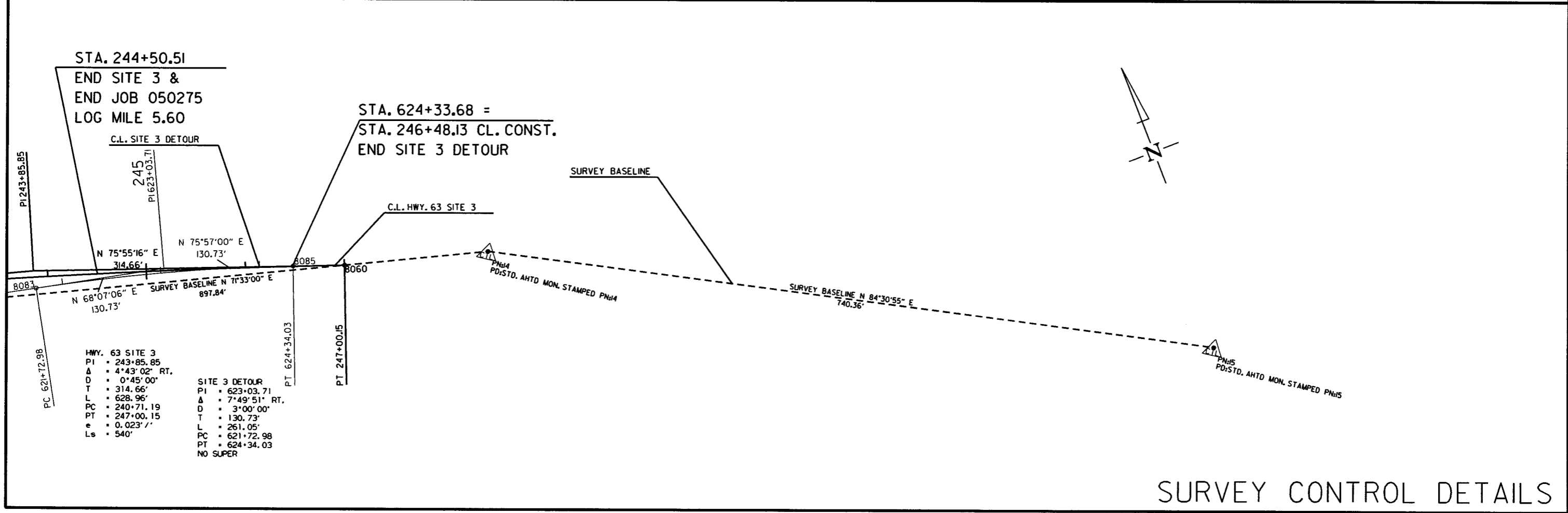
SITE 3 DETOUR  
 PI = 611+97.94  
 Δ = 24°30'49" RT.  
 D = 8°00'00"  
 T = 155.59'  
 L = 306.42'  
 PC = 610+42.35  
 PT = 613+48.77  
 MATCH EXIST.

SITE 3 DETOUR  
 PI = 623+03.71  
 Δ = 7°49'51" RT.  
 D = 3°00'00"  
 T = 130.73'  
 L = 261.05'  
 PC = 621+72.98  
 PT = 624+34.03  
 NO SUPER



STA. 244+50.51  
 END SITE 3 &  
 END JOB 050275  
 LOG MILE 5.60

STA. 624+33.68 =  
 STA. 246+48.13 CL CONST.  
 END SITE 3 DETOUR



HWY. 63 SITE 3  
 PI = 243+85.85  
 Δ = 4°43'02" RT.  
 D = 0°45'00"  
 T = 314.66'  
 L = 628.96'  
 PC = 240+71.19  
 PT = 247+00.15  
 e = 0.023' /'  
 Ls = 540'

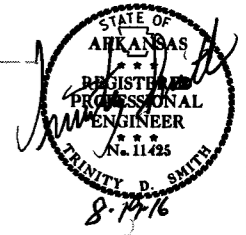
SITE 3 DETOUR  
 PI = 623+03.71  
 Δ = 7°49'51" RT.  
 D = 3°00'00"  
 T = 130.73'  
 L = 261.05'  
 PC = 621+72.98  
 PT = 624+34.03  
 NO SUPER

SURVEY CONTROL DETAILS

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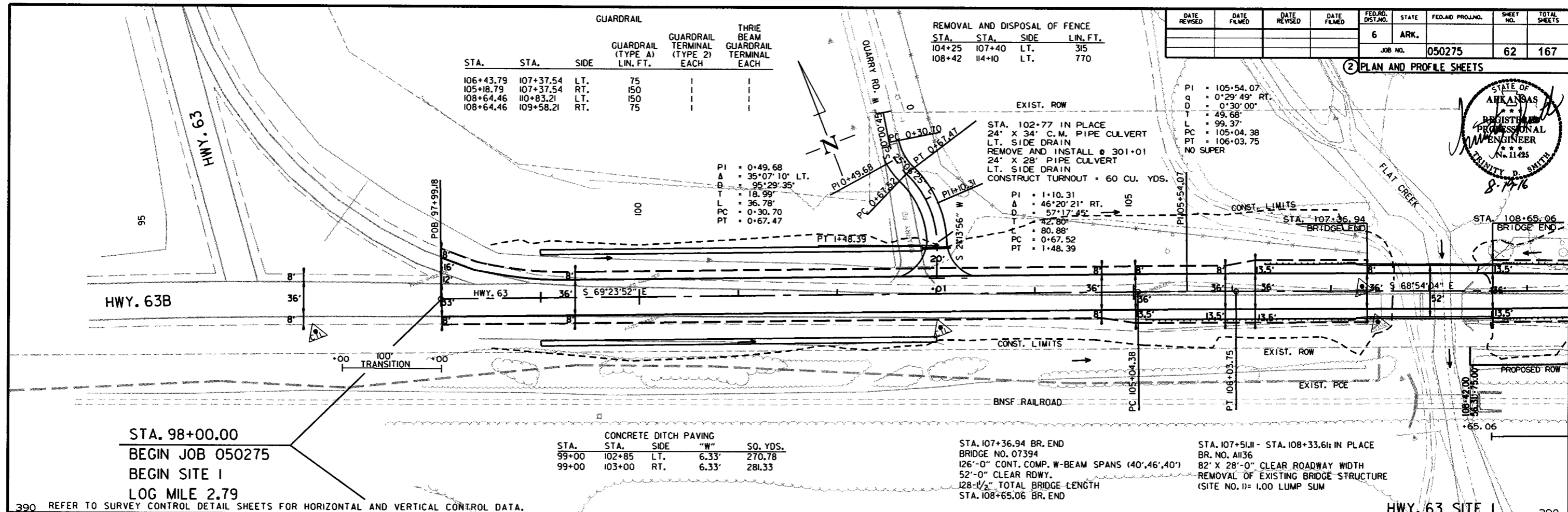
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		62	167
JOB NO. 050275							62	167

2 PLAN AND PROFILE SHEETS



GUARDRAIL			THREE BEAM GUARDRAIL TERMINAL EACH
STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.
106+43.79	107+37.54	LT.	75
105+18.79	107+37.54	RT.	150
108+64.46	109+58.21	LT.	150
108+64.46	109+58.21	RT.	75

REMOVAL AND DISPOSAL OF FENCE			
STA.	STA.	SIDE	LIN. FT.
104+25	107+40	LT.	315
108+42	114+10	LT.	770



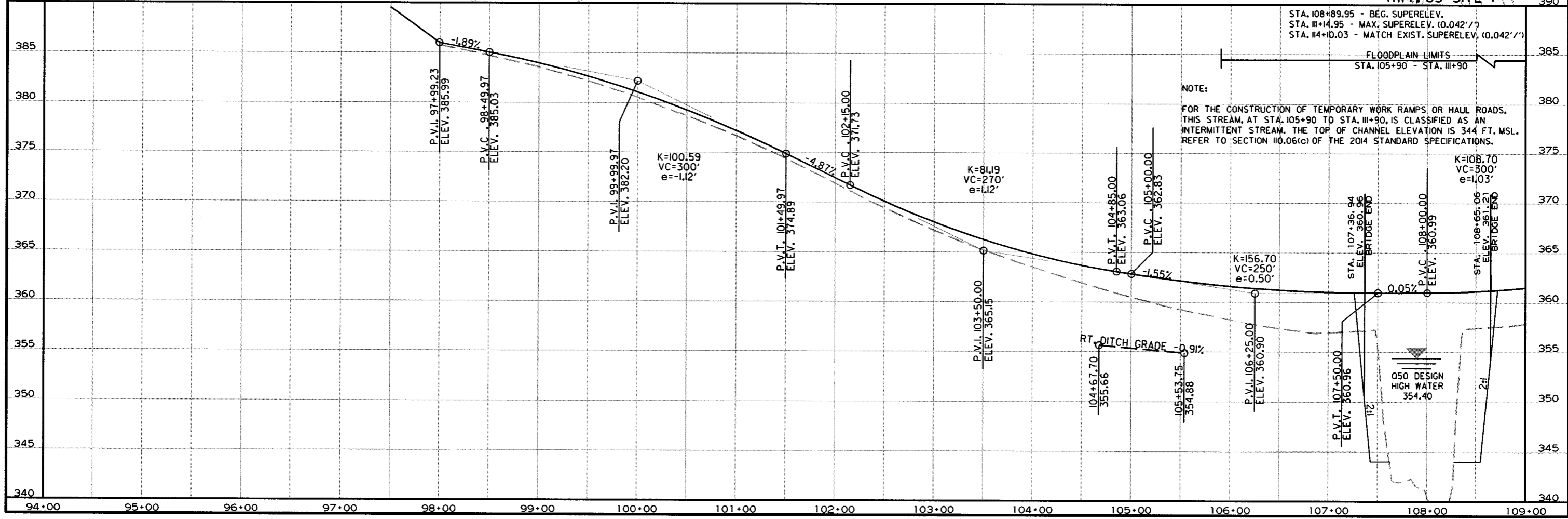
STA. 98+00.00  
 BEGIN JOB 050275  
 BEGIN SITE 1  
 LOG MILE 2.79

CONCRETE DITCH PAVING				
STA.	STA.	SIDE	"W"	SO. YDS.
99+00	102+85	LT.	6.33'	270.78
99+00	103+00	RT.	6.33'	281.33

STA. 107+36.94 BR. END  
 BRIDGE NO. 07394  
 126'-0" CONT. COMP. W-BEAM SPANS (40', 46', 40')  
 52'-0" CLEAR RDWY.  
 128'-1/2" TOTAL BRIDGE LENGTH  
 STA. 108+65.06 BR. END

STA. 107+51.11 - STA. 108+33.61 IN PLACE  
 BR. NO. A1136  
 82' X 28'-0" CLEAR ROADWAY WIDTH  
 REMOVAL OF EXISTING BRIDGE STRUCTURE  
 (SITE NO. 1) = 1.00 LUMP SUM

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



NOTE:  
 FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM, AT STA. 105+90 TO STA. 111+90, IS CLASSIFIED AS AN INTERMITTENT STREAM. THE TOP OF CHANNEL ELEVATION IS 344 FT. MSL. REFER TO SECTION 110.06(c) OF THE 2014 STANDARD SPECIFICATIONS.

R050275.DGN 8/18/2016

STA.	STA.	SIDE	LIN. FT.
108+42	114+10	LT.	770

STA. 110+26 INSTALL  
18' x 60' PIPE CULVERT  
(LT. SIDE DRAIN)

STA.	STA.	SIDE	TYPE	LIN. FT.
111+33	114+19	LT.	C	286

STA. 112+55 CONSTRUCT  
APPROACH ON LT. = 80 CU. YDS.

STA. 111+95 CONSTRUCT  
APPROACH ON RT. = 40 CU. YDS.  
UNCLASSIFIED EXCAVATION = 15 CU. YDS.

STA. 113+34 IN PLACE  
24' x 50' R.C. PIPE CULVERT  
WITH HDWLS LT. & RT.  
REMOVE HDWLS LT. & RT. AND EXTEND R.C. PIPE  
TO A COMPLETED LENGTH OF 84'  
(CLASS III) (TYPE 3 BEDDING)  
WITH FES LT. & RT.  
Q50 = 4500 CFS D.A. = 5.6 ACRES  
24' R.C. PIPE = 42 LIN. FT.  
24' FES = 2 EA.

PI = 111+59.40  
Δ = 8°51'53" RT.  
D = 2°30'03"  
T = 177.58'  
L = 354.46'  
PC = 109+81.82  
PT = 113+36.28  
e = 0.042'/'  
Ls = 225'

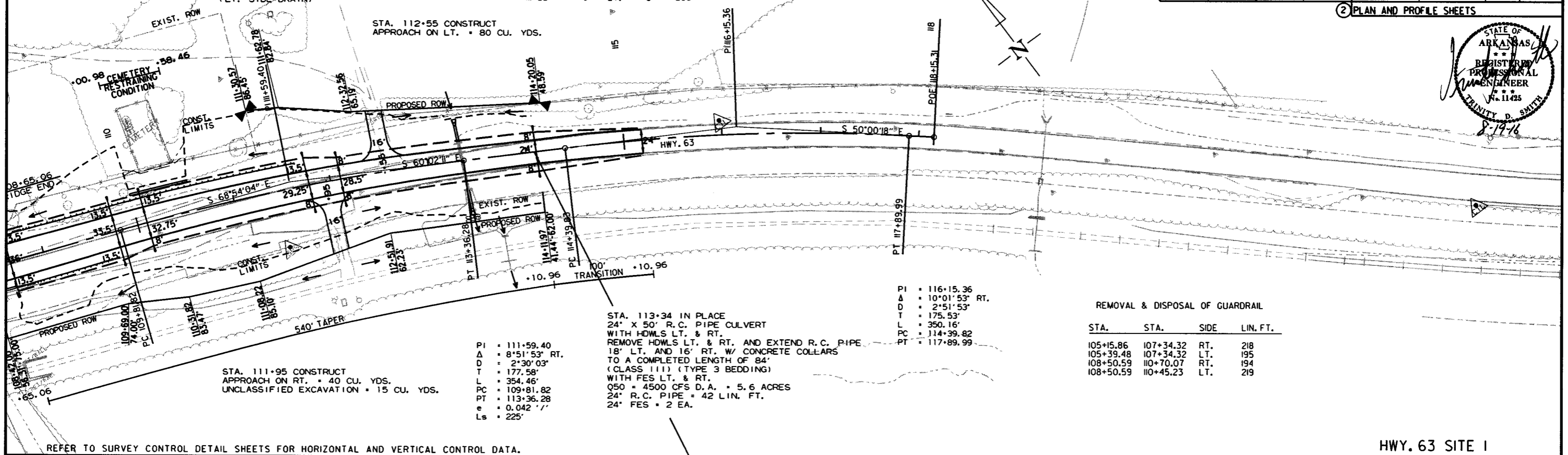
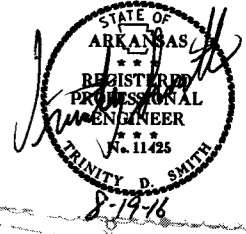
PI = 116+15.36  
Δ = 10°01'53" RT.  
D = 2°51'53"  
T = 175.53'  
L = 350.16'  
PC = 114+39.82  
PT = 117+89.99

REMOVAL & DISPOSAL OF GUARDRAIL

STA.	STA.	SIDE	LIN. FT.
105+15.86	107+34.32	RT.	218
105+39.48	107+34.32	LT.	195
108+50.59	110+70.07	RT.	194
108+50.59	110+45.23	LT.	219

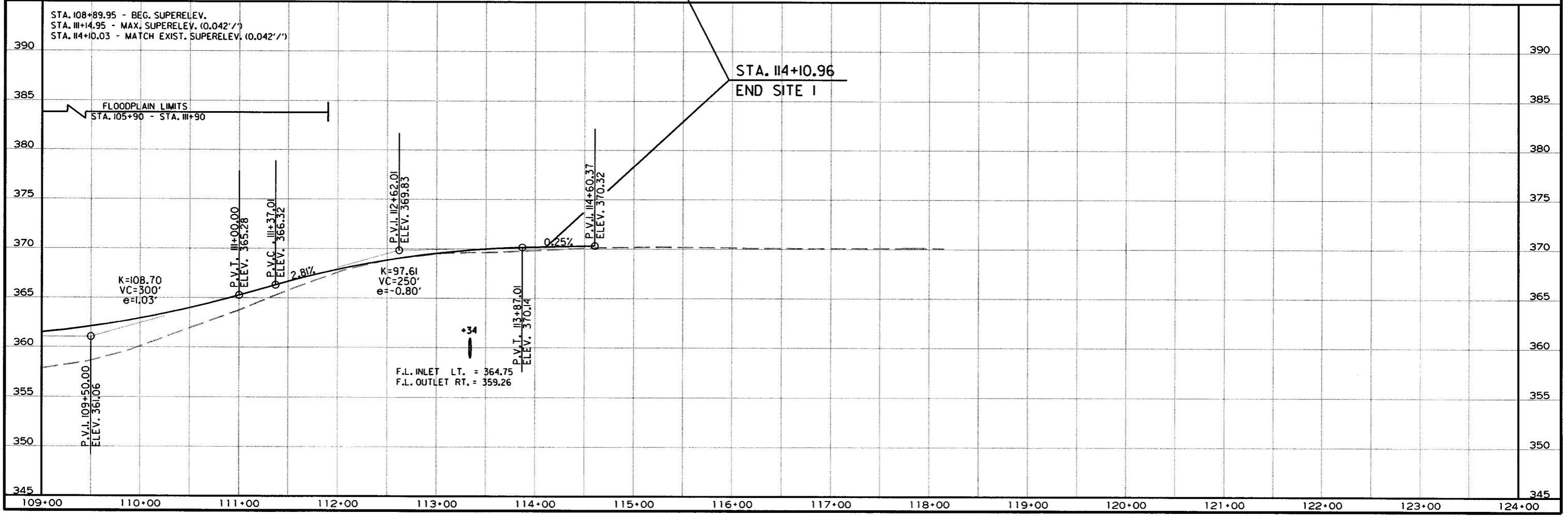
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				6	ARK.			
						JOB NO. 050275	63	167

2 PLAN AND PROFILE SHEETS



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

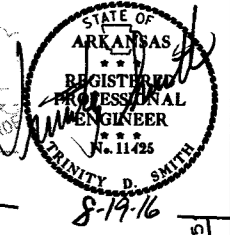
HWY. 63 SITE I



8/18/2016 R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		64	167

2 PLAN AND PROFILE SHEETS



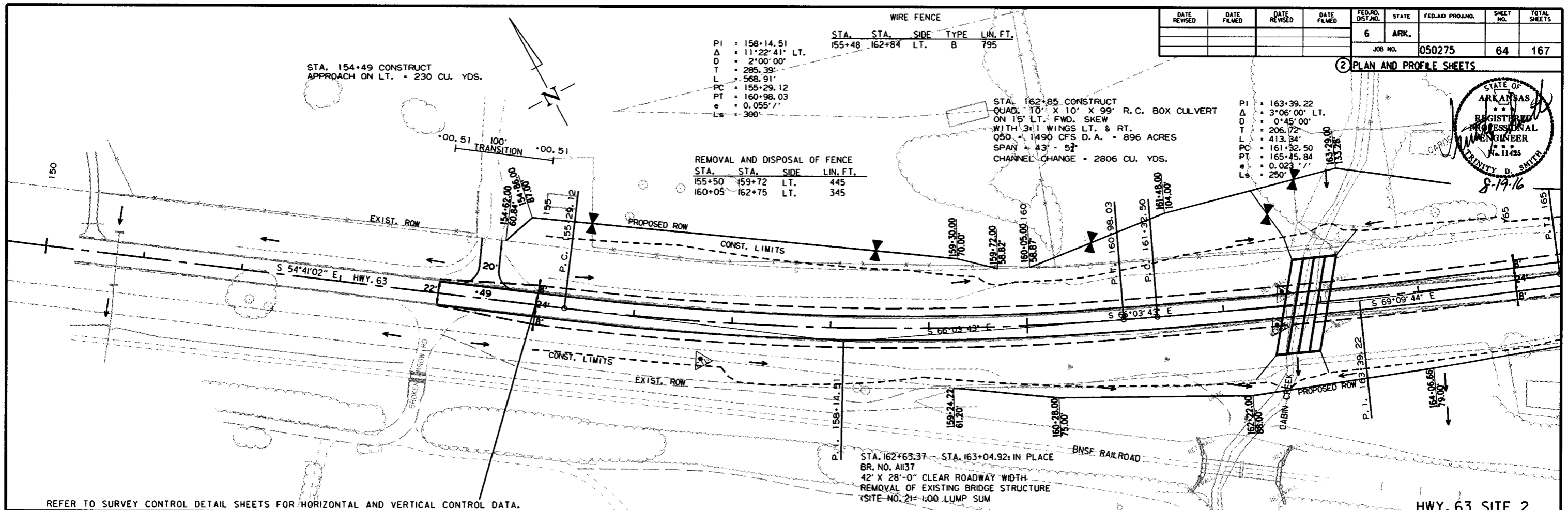
WIRE FENCE  
 STA. STA. SIDE TYPE LIN. FT.  
 155+48 162+84 LT. B 795

PI = 158+14.51  
 Δ = 11°22'41" LT.  
 D = 2'00'00"  
 T = 285.39'  
 L = 568.91'  
 PC = 155+29.12  
 PT = 160+98.03  
 e = 0.055'/'  
 Ls = 300'

REMOVAL AND DISPOSAL OF FENCE  
 STA. STA. SIDE LIN. FT.  
 155+50 159+72 LT. 445  
 160+05 162+75 LT. 345

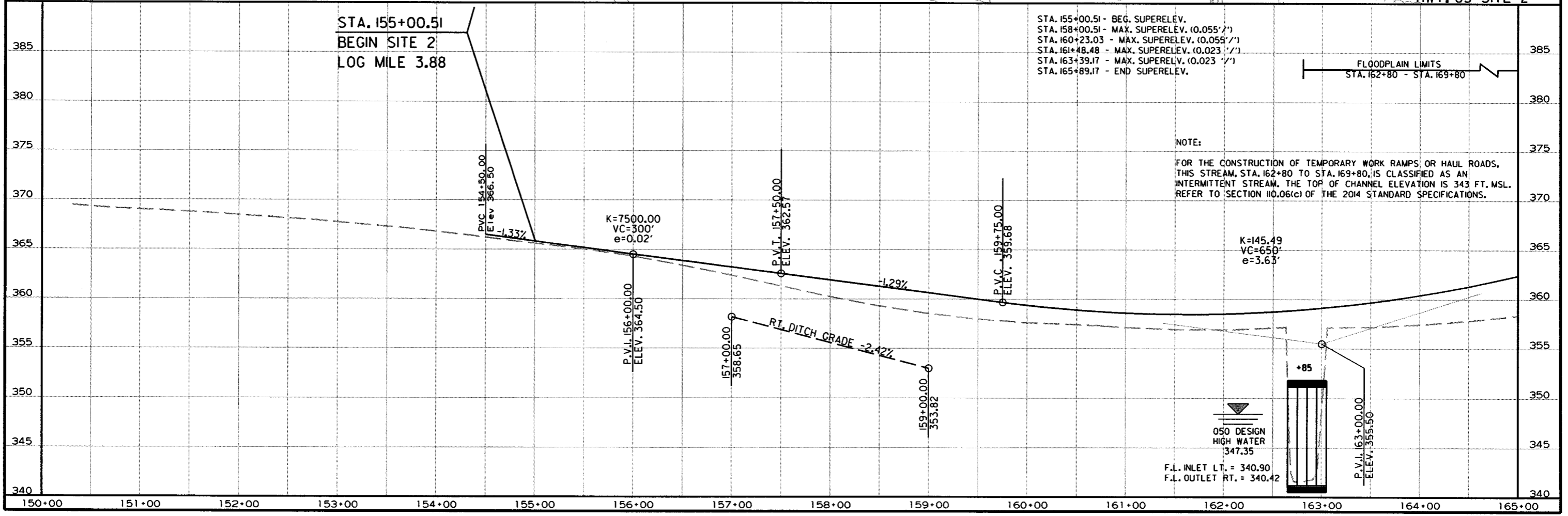
STA. 162+85 CONSTRUCT  
 QUAD. 10' X 10' X 99' R. C. BOX CULVERT  
 ON 15' LT. FWD. SKEW  
 WITH 3:1 WINGS LT. & RT.  
 Q50 = 1490 CFS D. A. = 896 ACRES  
 SPAN = 43' - 5"  
 CHANNEL CHANGE = 2806 CU. YDS.

PI = 163+39.22  
 Δ = 3°06'00" LT.  
 D = 0'45'00"  
 L = 206.72'  
 T = 413.94'  
 PC = 161+32.50  
 PT = 165+45.84  
 e = 0.023'/'  
 Ls = 250'



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

HWY. 63 SITE 2



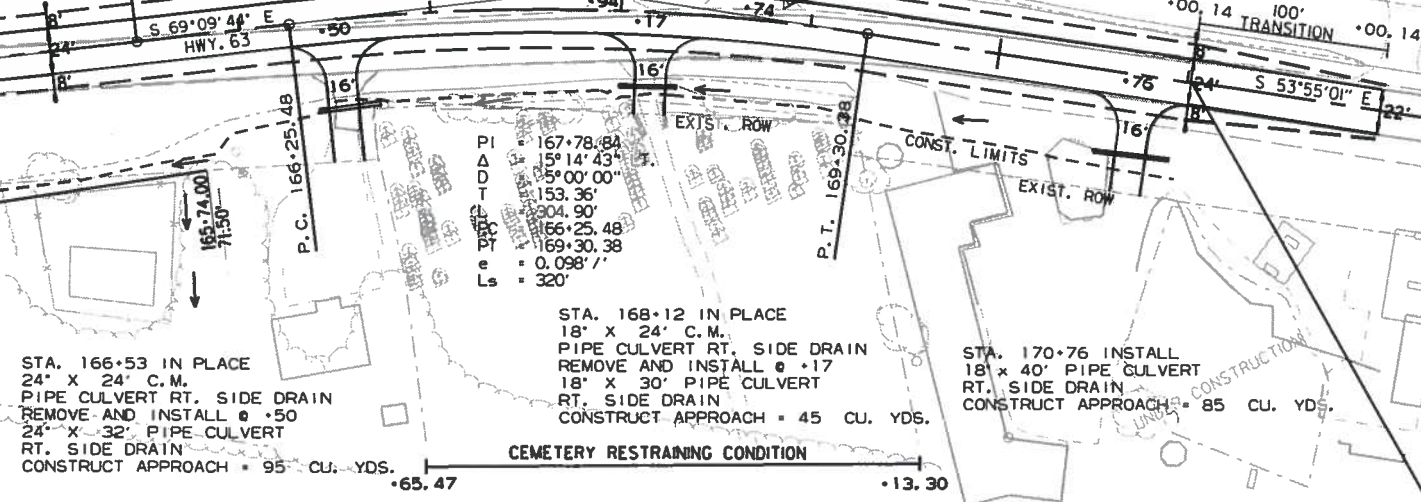
R050275.DGN 8/18/2016



CONCRETE DITCH PAVING  
 STA. 166+00 STA. 167+68 LT. 6.33' 118.16  
 SO. YDS. 118.16  
 PI = 163+39.22  
 Δ = 3°06'00" LT.  
 D = 0'45'00"  
 T = 206.72'  
 L = 413.34'  
 PC = 161+32.50  
 PT = 165+45.84  
 e = 0.023' /'  
 Ls = 250'

STA. 167+93 IN PLACE  
 18" X 24" C.M.  
 PIPE CULVERT LT. SIDE DRAIN  
 REMOVE AND INSTALL Ø +94  
 18" X 54" PIPE CULVERT  
 LT. SIDE DRAIN  
 CONSTRUCT APPROACH = 320 CU. YDS.

STA. 168+73 IN PLACE  
 18" X 39" C.M.  
 PIPE CULVERT LT. SIDE DRAIN  
 REMOVE AND INSTALL Ø +74  
 18" X 44" PIPE CULVERT  
 LT. SIDE DRAIN  
 CONSTRUCT APPROACH = 160 CU. YDS.



STA.	STA.	SIDE	LIN. FT.
161+84.03	162+61.52	LT.	78
161+09.03	162+60.70	RT.	152
163+08.11	164+60.37	LT.	152
163+08.11	163+84.20	RT.	76

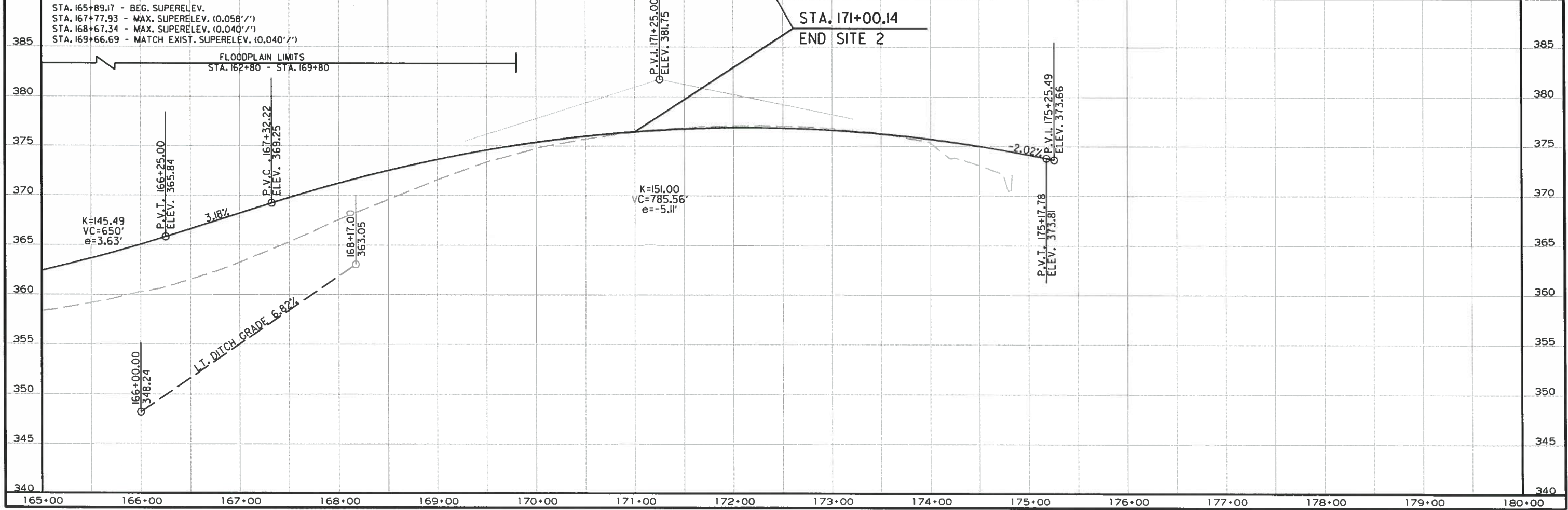
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

HWY. 63 SITE 2

STA. 165+89.17 - BEG. SUPERELEV.  
 STA. 167+77.93 - MAX. SUPERELEV. (0.058' /')  
 STA. 168+67.34 - MAX. SUPERELEV. (0.040' /')  
 STA. 169+66.69 - MATCH EXIST. SUPERELEV. (0.040' /')

FLOODPLAIN LIMITS  
 STA. 162+80 - STA. 169+80

STA. 171+00.14  
 END SITE 2



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/25/16				6	ARK.			
				JOB NO.	050275		65	167

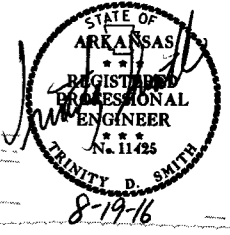
2 PLAN AND PROFILE SHEETS



8/25/2016 R050275.DGN

DATE REVISION	DATE FILMED	DATE REVISION	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							66	167

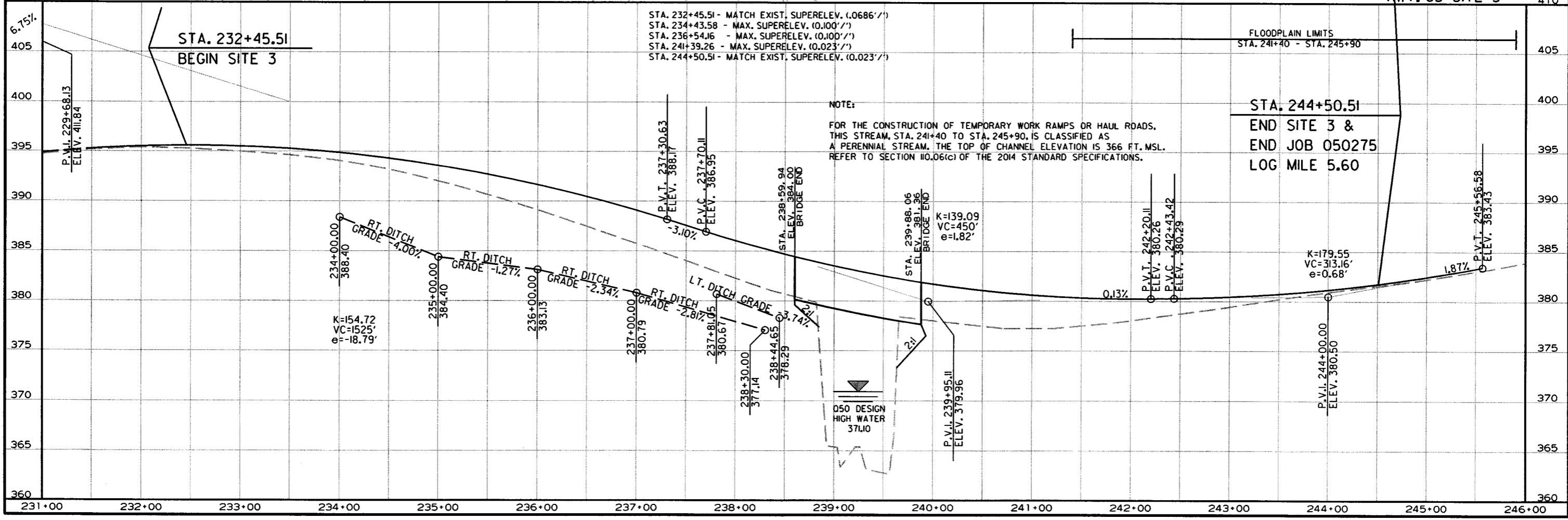
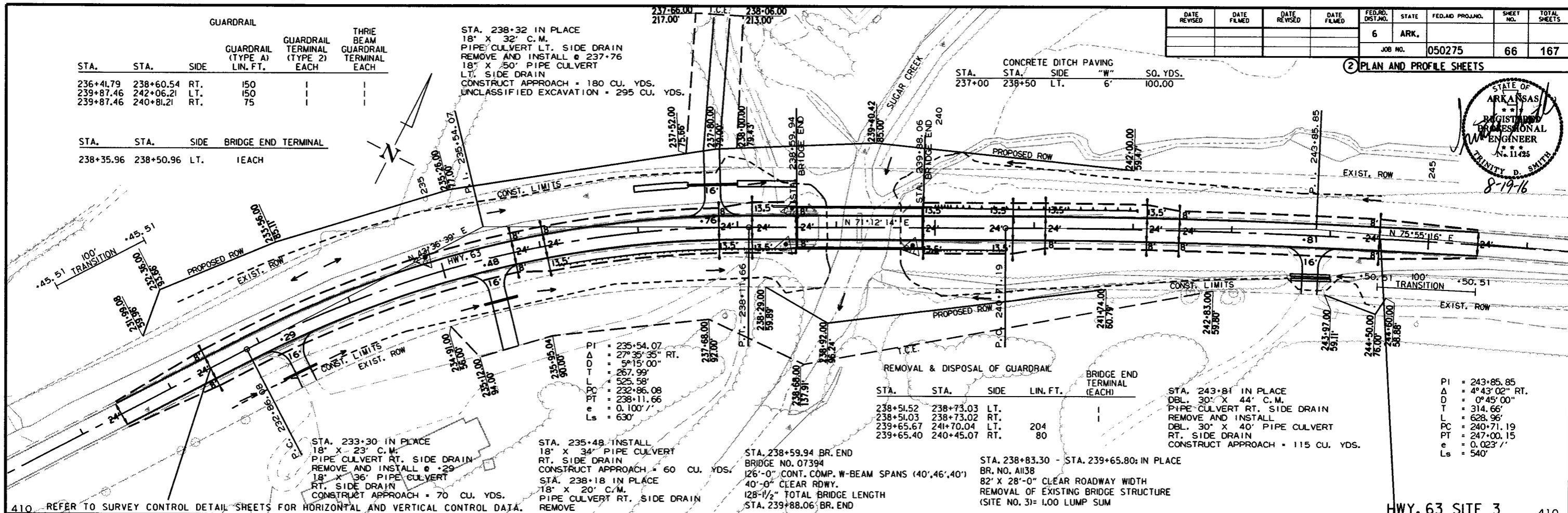
2 PLAN AND PROFILE SHEETS



STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	GUARDRAIL TERMINAL (TYPE 2) EACH	THREE BEAM GUARDRAIL TERMINAL EACH
236+41.79	238+60.54	RT.	150	1	1
239+87.46	242+06.21	LT.	150	1	1
239+87.46	240+81.21	RT.	75	1	1

STA.	STA.	SIDE	BRIDGE END TERMINAL
238+35.96	238+50.96	LT.	1 EACH

STA.	STA.	SIDE	"W"	SO. YDS.
237+00	238+50	LT.	6'	100.00



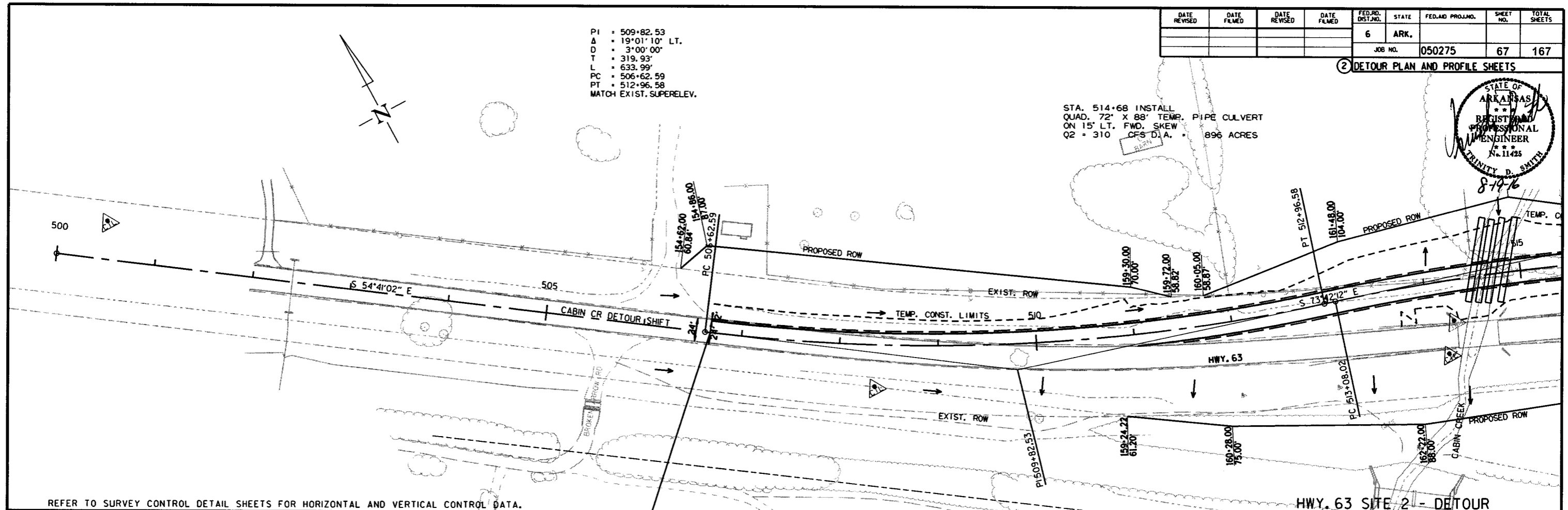
8/18/2016  
R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		67	167
JOB NO. 050275								

2 DETOUR PLAN AND PROFILE SHEETS

PI = 509+82.53  
 Δ = 19°01'10" LT.  
 D = 3°00'00"  
 T = 319.93'  
 L = 633.99'  
 PC = 506+62.59  
 PT = 512+96.58  
 MATCH EXIST. SUPERELEV.

STA. 514+68 INSTALL  
 QUAD. 72" X 88" TEMP. PIPE CULVERT  
 ON 15' LT. FWD. SKEW  
 Q2 = 310 CFS D.A. 896 ACRES



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

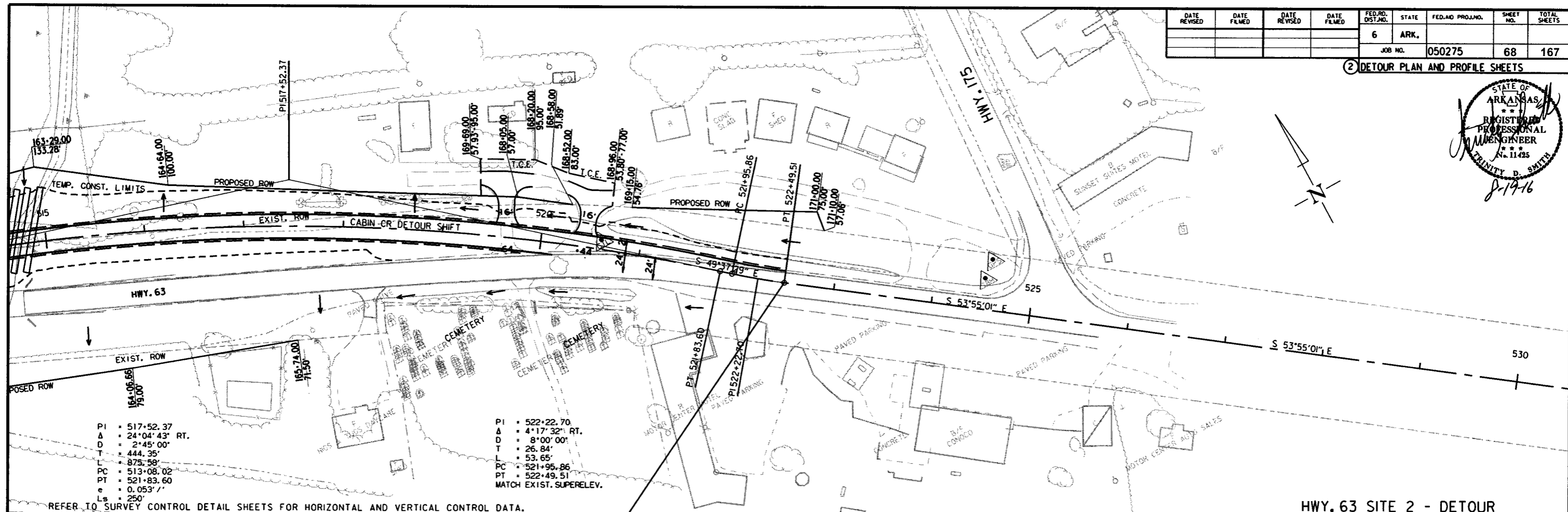
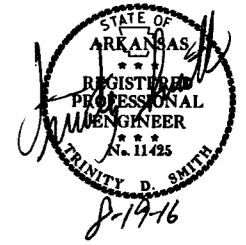
HWY. 63 SITE 2 - DETOUR



RO50275.DGN 8/18/2016

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							68	167

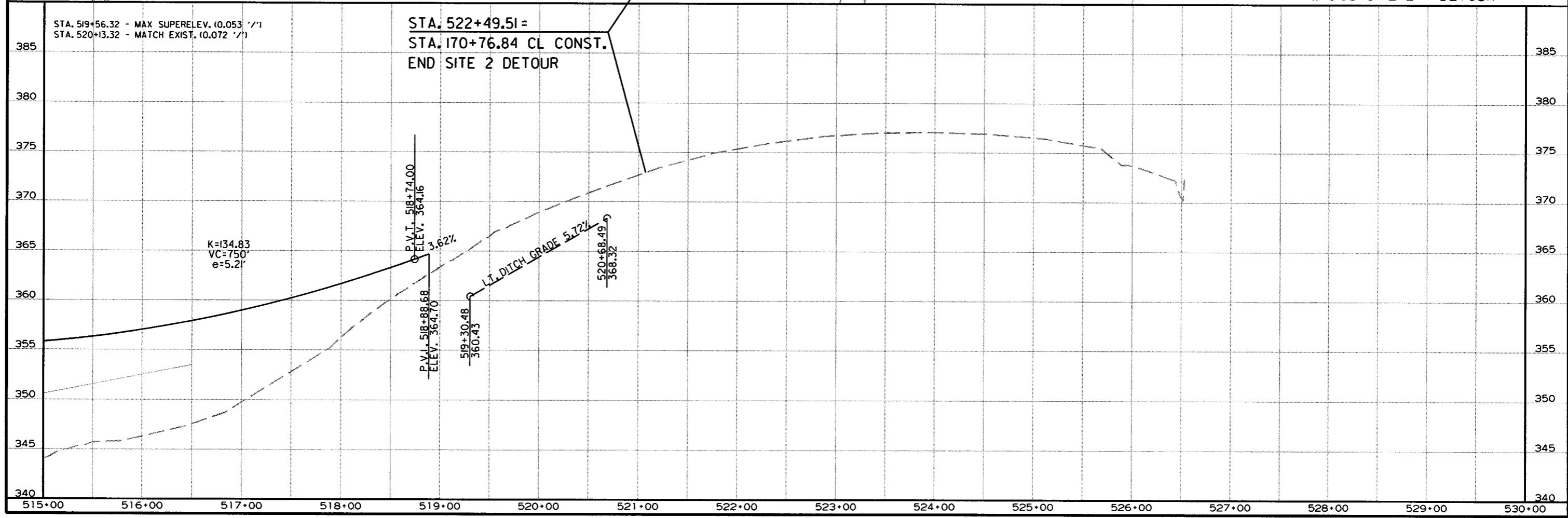
2 DETOUR PLAN AND PROFILE SHEETS



- PI = 517+52.37
  - Δ = 24°04'43" RT.
  - D = 2'45'00"
  - T = 444.35'
  - L = 875.58'
  - PC = 513+08.02
  - PT = 521+83.60
  - e = 0.053'/'
  - LS = 250'
- PI = 522+22.70
  - Δ = 4°17'32" RT.
  - D = 8'00'00"
  - T = 26.84'
  - L = 53.65'
  - PC = 521+95.86
  - PT = 522+49.51
  - MATCH EXIST. SUPERELEV.

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

HWY. 63 SITE 2 - DETOUR

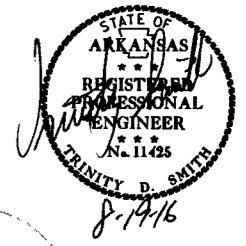


8/18/2016  
R050275.DGN

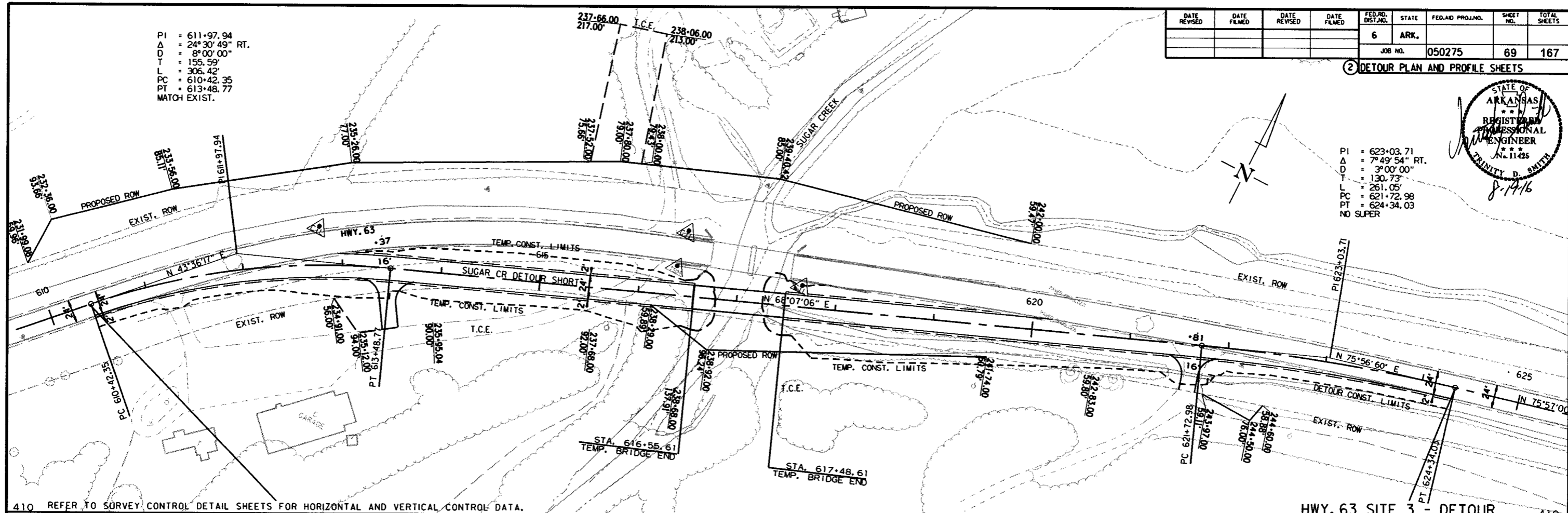
PI = 611+97.94  
 Δ = 24°30'49" RT.  
 D = 8°00'00"  
 L = 155.59'  
 PC = 610+42.95  
 PT = 613+48.77  
 MATCH EXIST.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		69	167
JOB NO. 050275								

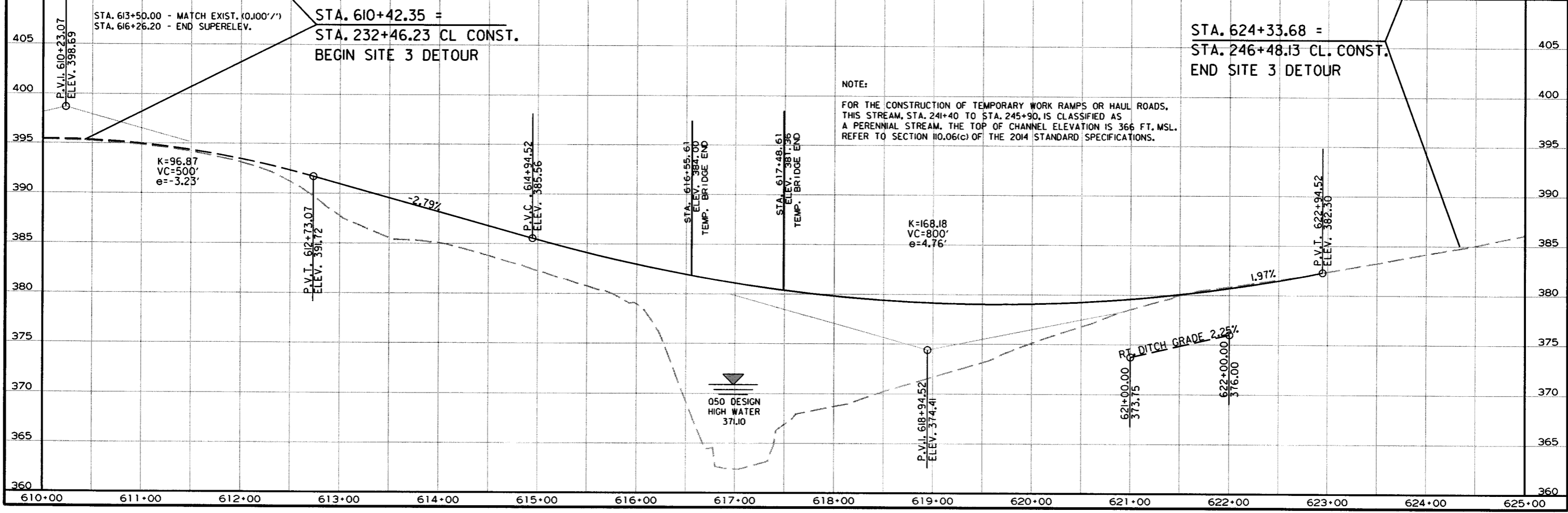
2 DETOUR PLAN AND PROFILE SHEETS



PI = 623+03.71  
 Δ = 7°49'54" RT.  
 D = 3°00'00"  
 L = 130.73'  
 PC = 621+05.00  
 PT = 624+34.03  
 NO SUPER



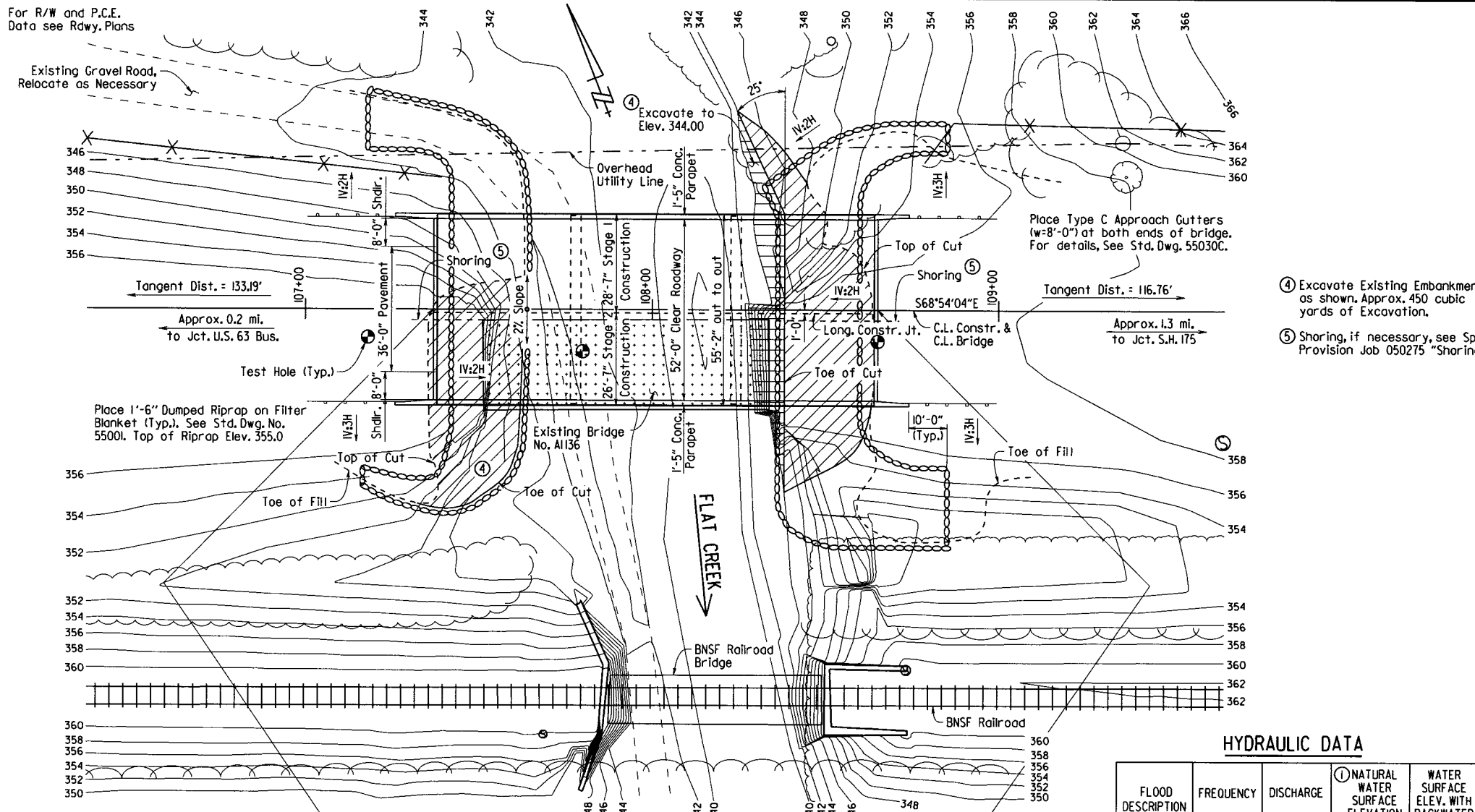
410 REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA. HWY. 63 SITE 3 - DETOUR 410



8/18/2016  
 R050275.DGN

For R/W and P.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.		050275	70	167
				07394 - LAYOUT - 58772				



**GENERAL NOTES**

BENCH MARK: Vertical Control Data are shown on Survey Control Details.

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 6th Edition (2012), with 2013 Interim revisions.

LIVE LOADING: HL-93

SEISMIC ZONE: I  $S_{DI} = 0.119$  SITE CLASS = B

MATERIALS AND STRENGTHS:

Class 5 Concrete (Superstructure)	$f'_c = 4,000$ psi
Class 5 Concrete (Substructure)	$f'_c = 3,500$ psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	$f_y = 60,000$ psi
Structural Steel (AASHTO M 270, Gr. 36)	$f_y = 36,000$ psi
Structural Steel (AASHTO M 270, Gr. 50W)	$F_y = 50,000$ psi

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

STEEL PILING: All piling shall be HP 12X53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons and into the material designated as Dolostone on the boring legend. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. Actual piling lengths to be determined in the field. The Contractor shall use approved steel H-Pile driving points on all piles.

FOOTINGS: Footings shall be set a minimum of 2'-0" into material designated as Dolostone on the boring legend. The top of the footings shall be set at or below the channel bottom as determined by the lowest channel elevation within the footprint of the footing. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Blasting will not be allowed. Concrete in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of the existing ground in accordance with Subsection 801.08.

BRIDGE DECK: The concrete bridge deck shall be given a fine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Roadway Surface Finish.

DETAIL DRAWINGS:

Stage Construction	DRAWING NO. 58774
Bent 1	58775-58776
Intermediate Bents	58777
Bent 4	58778 - 58779
126'-0" Continuous Composite W-Beam Unit	58780 - 58784
Elastomeric Bearings	58785
Steel Piling	55020
Type C Approach Gutters	55030C
General Notes	55006

**HYDRAULIC DATA**

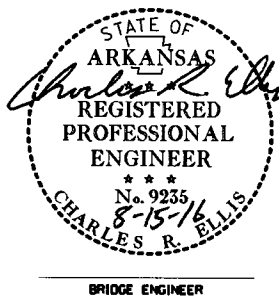
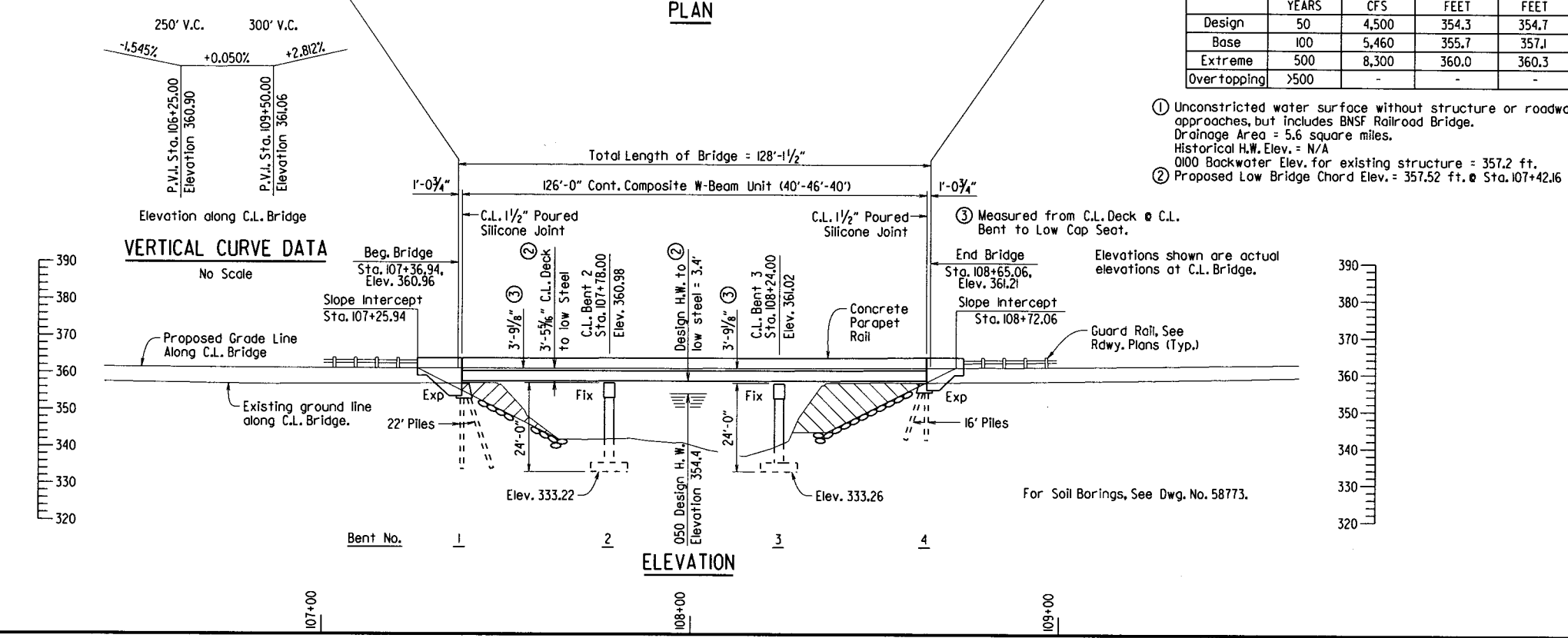
FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
			FEET	FEET
Design	50	4,500	354.3	354.7
Base	100	5,460	355.7	357.1
Extreme	500	8,300	360.0	360.3
Overtopping	>500	-	-	-

- ① Unconstricted water surface without structure or roadway approaches, but includes BNSF Railroad Bridge. Drainage Area = 5.6 square miles. Historical H.W. Elev. = N/A. 0100 Backwater Elev. for existing structure = 357.2 ft.
- ② Proposed Low Bridge Chord Elev. = 357.52 ft. @ Sta. 107+42.16
- ③ Measured from C.L. Deck @ C.L. Bent to Low Cap Seat.

EXISTING BRIDGE: Existing Bridge No. A1136 (Log Mile 2.97) is 31.5' wide (26'-0" Roadway) and 82.0' long and consists of a two span (40'-40") continuous haunched RCDG unit supported by concrete wall abutments and a concrete pier wall.

REMOVAL AND SALVAGE: After Stage 1 Construction is complete and open to traffic, the Contractor shall remove existing Bridge No. A1136 in accordance with Section 205. Any exposed timber piling from a previous structure interfering with the construction of the new structure shall be removed as directed by the Engineer. This material and all material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.



SHEET 1 OF 2  
LAYOUT OF BRIDGE OVER FLAT CREEK  
HARDY-OZARK ACRES STRS. & APPRS. (S)  
SHARP COUNTY

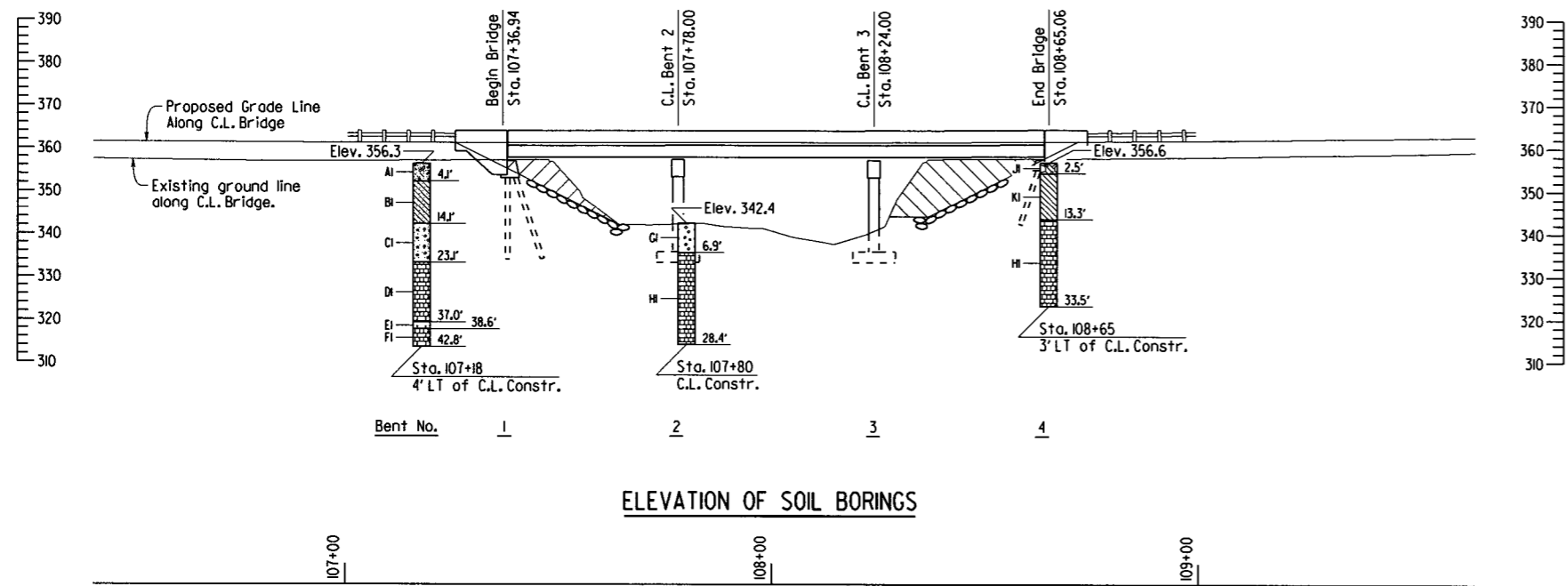
ROUTE 63 SEC. 2  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

BRIDGE ENGINEER

DRAWN BY: CMW DATE: 10/15/15 FILENAME: b050275x1.dgn  
CHECKED BY: LHS DATE: 8/15/16 SCALE: 1" = 20'  
DESIGNED BY: CMW DATE: 4/15  
BRIDGE NO. 07394 DRAWING NO. 58772

PRINT DATE: 8/15/2016

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.		050275	71	167
				07394 - LAYOUT - 58773				



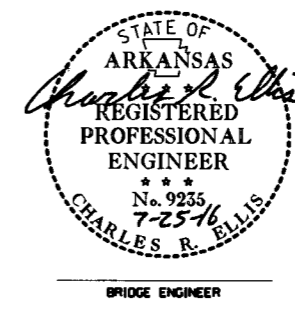
**BORING LEGEND**

- AI-Moist, Loose, Brown Gravel with Clay and Sand
- BI-Moist, Medium Stiff, Reddish Brown Sandy Clay with Some Gravel
- CI-Moist, Medium Dense, Reddish Brown Sand with Gravel
- DI-DOLOSTONE WITH OCCASIONAL CHERT LAYERS - Slightly Weathered, Hard, Occasional Fractures, Light Gray
- EI-CHERT - Unweathered, Hard, Gray
- FI-DOLOSTONE WITH OCCASIONAL CHERT LAYERS - Unweathered, Hard, Light Gray
- GI-Dry, Medium Dense, Brown Gravel
- HI-DOLOSTONE
- JI-Moist, Soft, Brown Clay with Gravel, Cobbles, and Boulders
- KI-Moist, Soft, Reddish Brown, Clay

**"N" VALUES**

- Sta. 107+18 - 4' Left of Construction Centerline
  - 4.6 - 5.6, N=7
  - 9.6 - 10.6, N=6
  - 14.6 - 15.6, N=11
  - 19.6 - 20.6, N=27
- Sta. 107+80 - Construction Centerline
  - 4.7 - 5.7, N=12
- Sta. 108+65 - 3' Left of Construction Centerline
  - 4.8 - 5.8, N=2
  - 9.8 - 10.8, N=12

PRINT DATE: 7/21/2016



SHEET 2 OF 2  
 LAYOUT OF BRIDGE OVER FLAT CREEK  
 HARDY-OZARK ACRES STRS. & APPRS. (S)  
 SHARP COUNTY

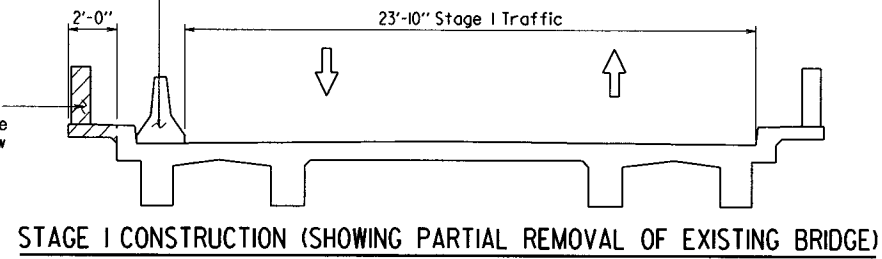
ROUTE 63 SEC. 2  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 10/15/15 FILENAME: b050275x11.dgn  
 CHECKED BY: BHS DATE: 7/20/16 SCALE: 1" = 20'  
 DESIGNED BY: DMW DATE: 7/15  
 BRIDGE NO. 07394 DRAWING NO. 58773

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.	050275		72	167
① 07394 - STAGE CONSTRUCTION - 58774								

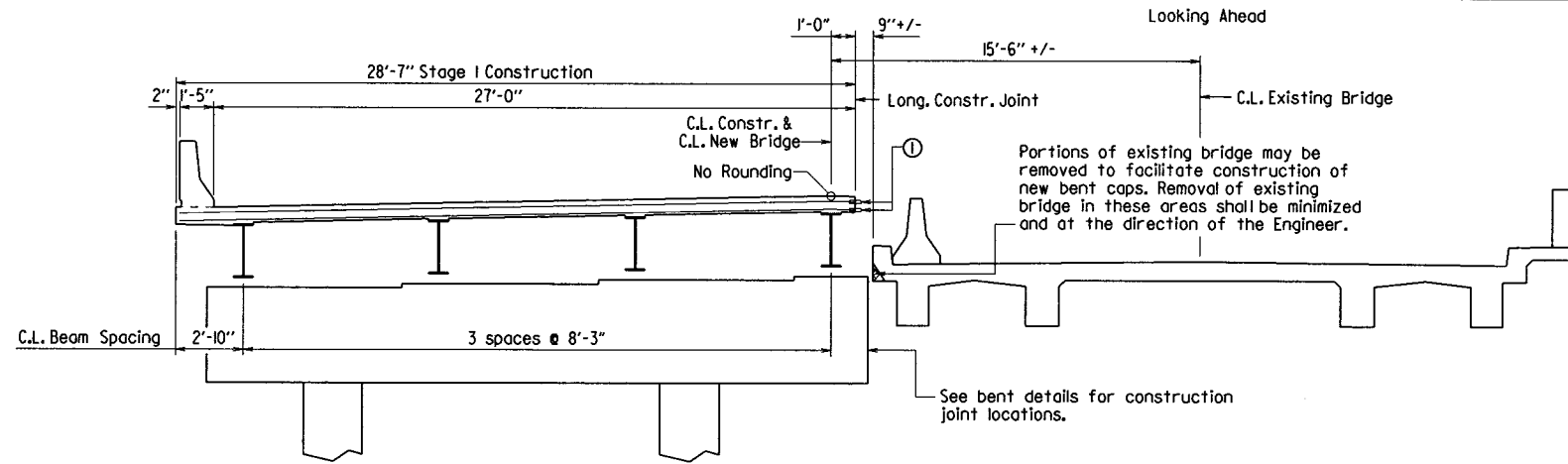
Install temporary precast barrier against curb. Temporary precast barriers shall be positioned to minimize blockage of existing deck drains. Align as many drain slots on the temporary precast barriers with the drain slots in the bridge deck as possible. Temporary precast barriers shall not be doweled to the existing bridge deck. See Std. Dwg. TC-4 for details.

Remove hatched portion of existing bridge to facilitate Stage I Construction of new bridge.



STAGE I CONSTRUCTION (SHOWING PARTIAL REMOVAL OF EXISTING BRIDGE)

① Epoxy coated mechanical bar couplers shall be of the threaded type and shall be listed on the Department's Qualified Products List (QPL) and shall be installed according to the manufacturer's recommendations. They shall develop at least 125% of the specified yield strength of the bar. Couplers shall be installed with minimal projection beyond the deck longitudinal construction joint and shall be adequately protected from damage until the the Stage 2 slab reinforcing is installed.

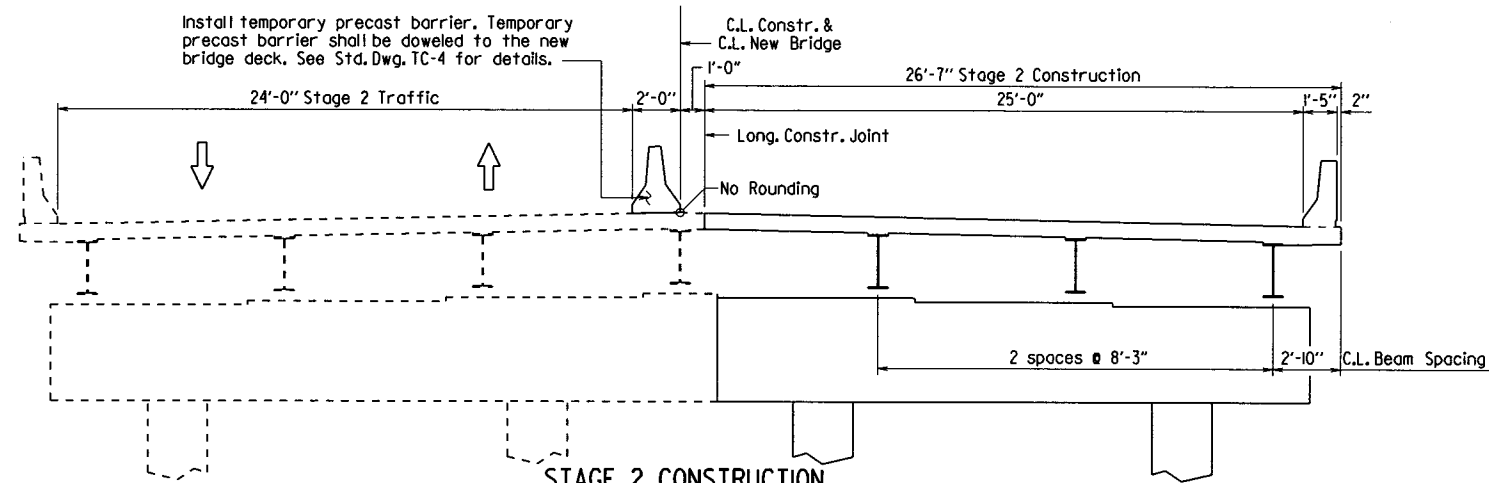


STAGE I CONSTRUCTION

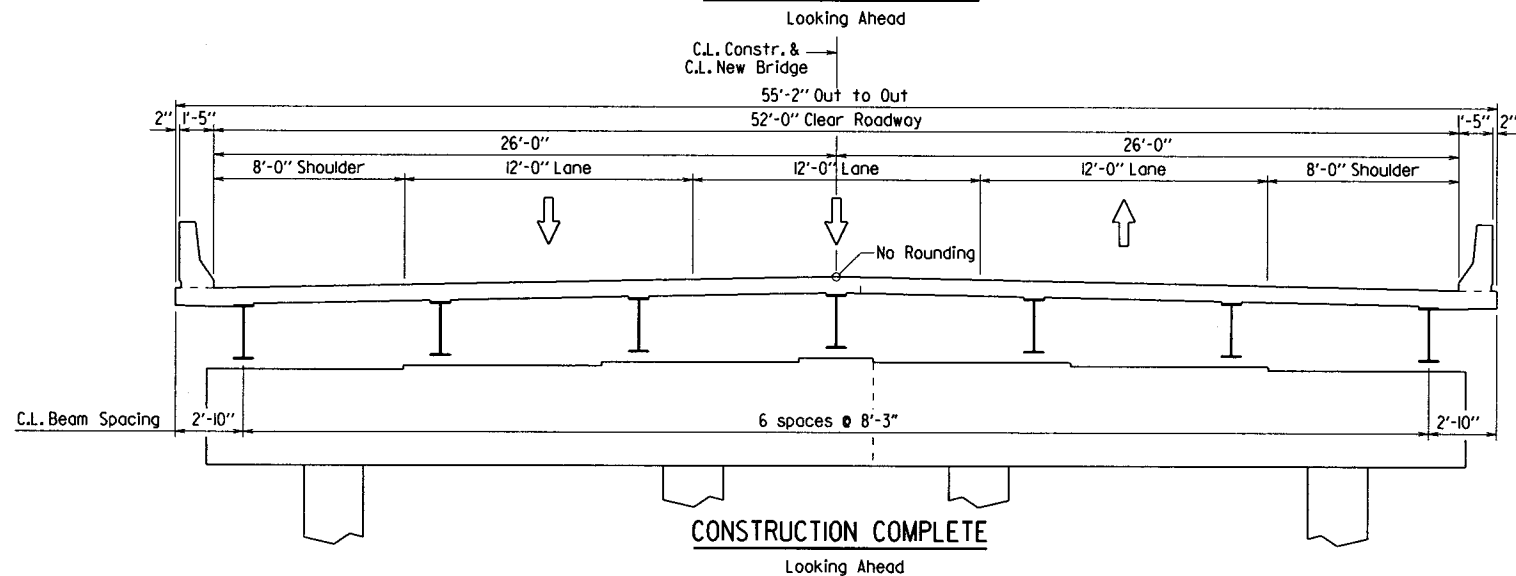
NOTES:

Details which relate to Maintenance of Traffic are shown on bridge plans for information only. See Roadway plans for Maintenance of Traffic.

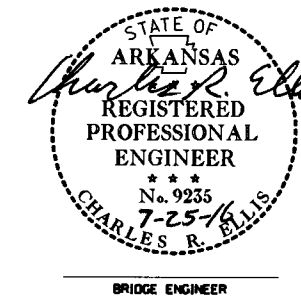
For additional information, see Layout.



STAGE 2 CONSTRUCTION



CONSTRUCTION COMPLETE



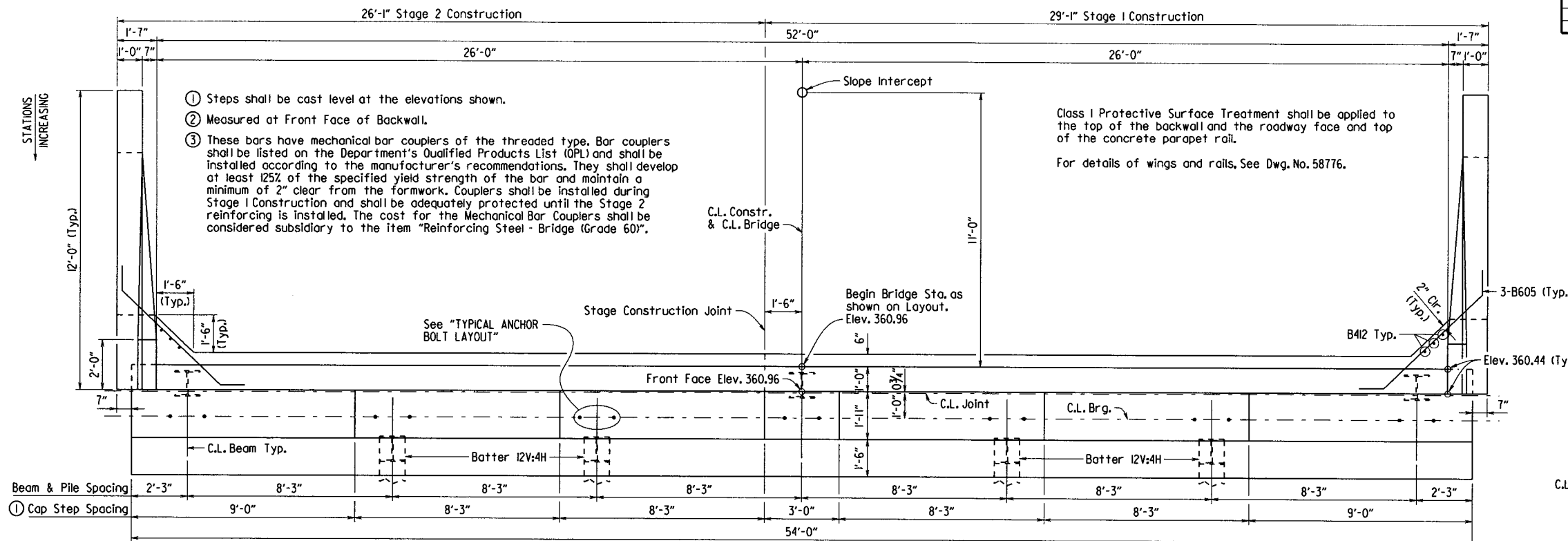
DETAILS OF STAGE CONSTRUCTION  
FLAT CREEK  
SHARP COUNTY

ROUTE 63 SEC. 2  
ARKANSAS STATE HIGHWAY COMMISSION

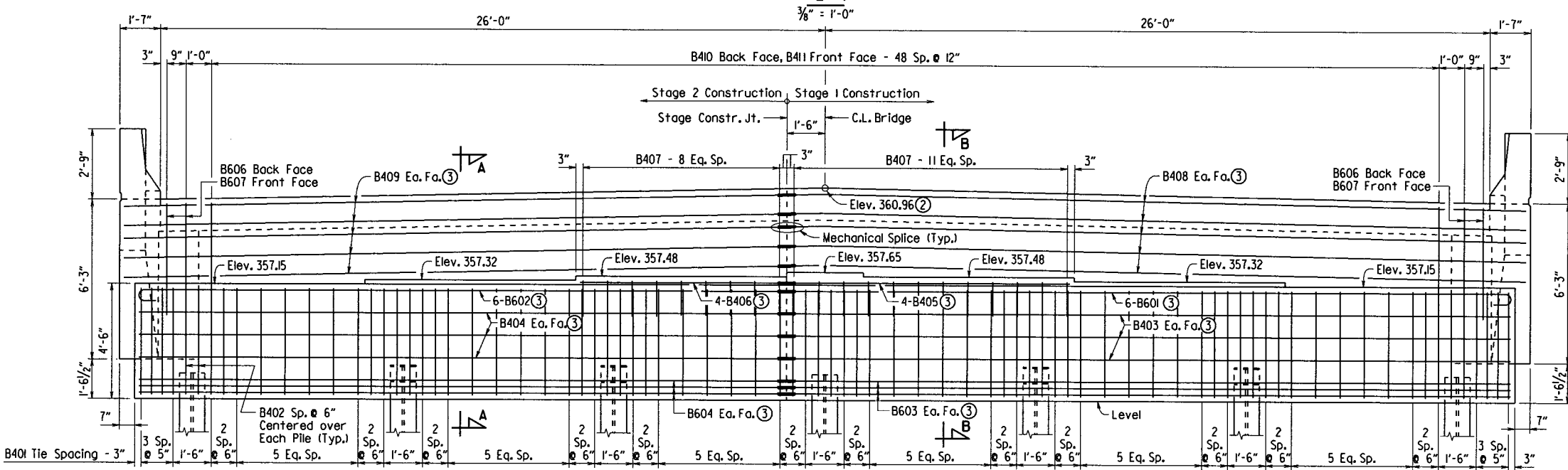
LITTLE ROCK, ARK.  
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CHECKED BY: CMW DATE: 7/25/16 SCALE: 1/4" = 1'-0"  
DESIGNED BY: K.W.Y. DATE: 10/15  
BRIDGE NO. 07394 DRAWING NO. 58774



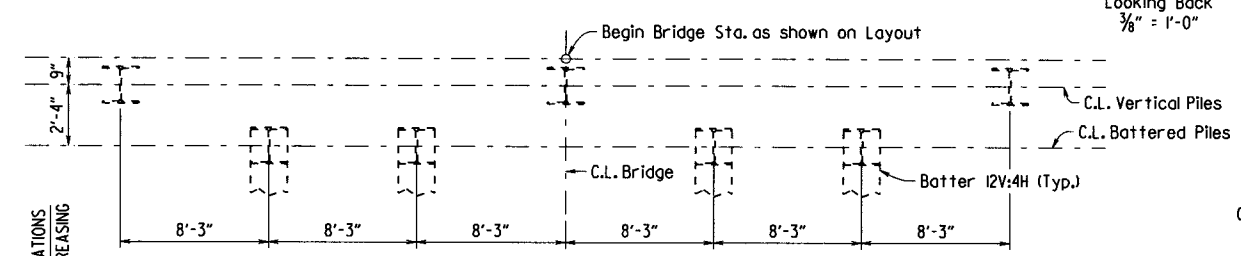
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				6	ARK.			
JOB NO. 050275							73167	
① 07394 - END BENT DETAILS - 58775								



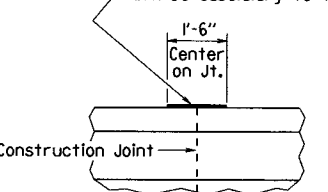
PLAN  
3/8" = 1'-0"



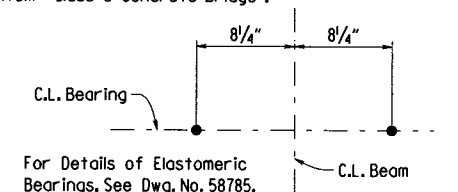
ELEVATION  
Looking Back  
3/8" = 1'-0"



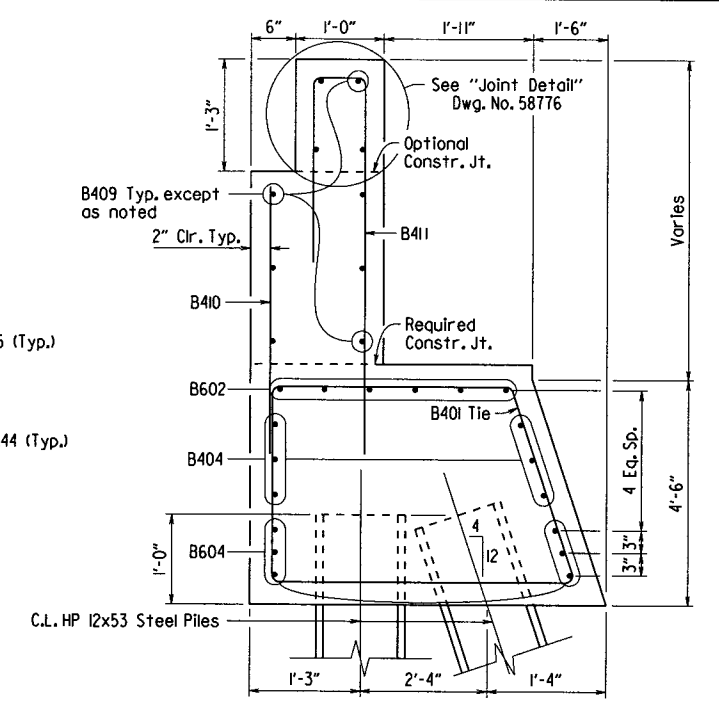
PILE LAYOUT  
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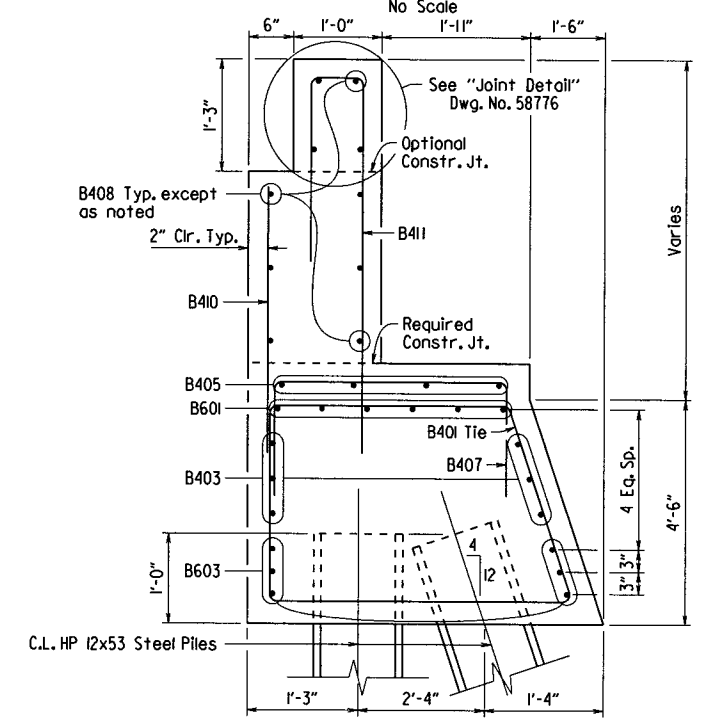
CONSTRUCTION JOINT DETAIL  
1/2" = 1'-0"



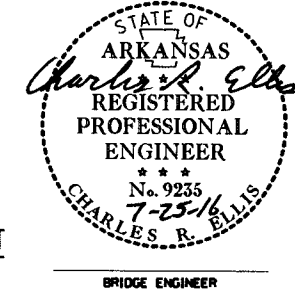
TYPICAL ANCHOR BOLT LAYOUT  
No Scale



SECTION A-A  
No Scale



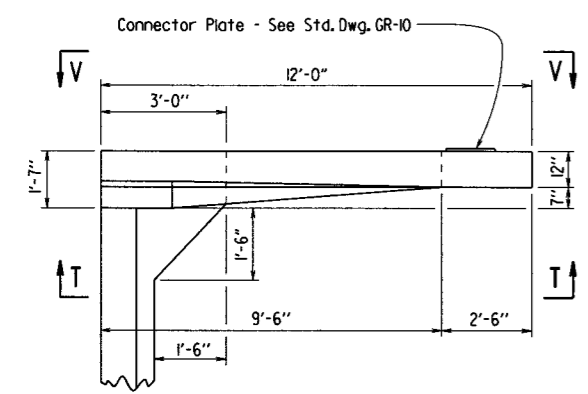
SECTION B-B  
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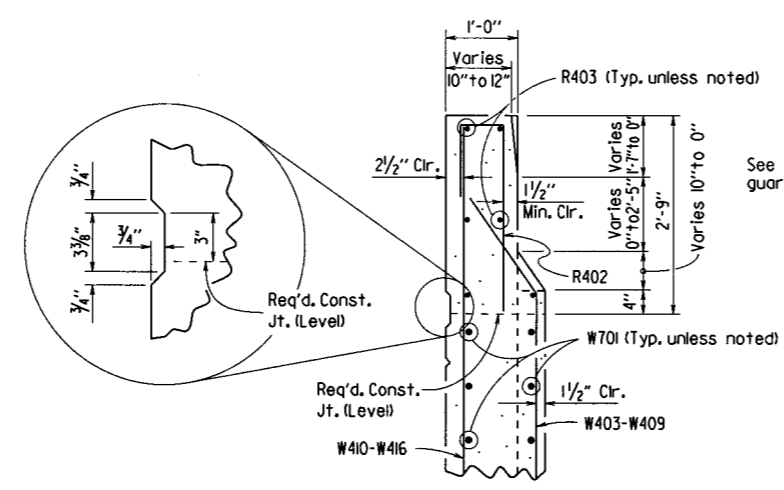
SHEET 1 OF 2  
DETAILS OF BENT 1  
FLAT CREEK  
ROUTE 800  
SEC. 1  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: BHS DATE: 2/24/2016 FILENAME: b050275xl.dgn  
CHECKED BY: CMW DATE: 7/23/16 SCALE: AS SHOWN  
DESIGNED BY: BHS DATE: 2/16  
BRIDGE NO. 07394 DRAWING NO. 58775

PRINT DATE: 7/25/2016

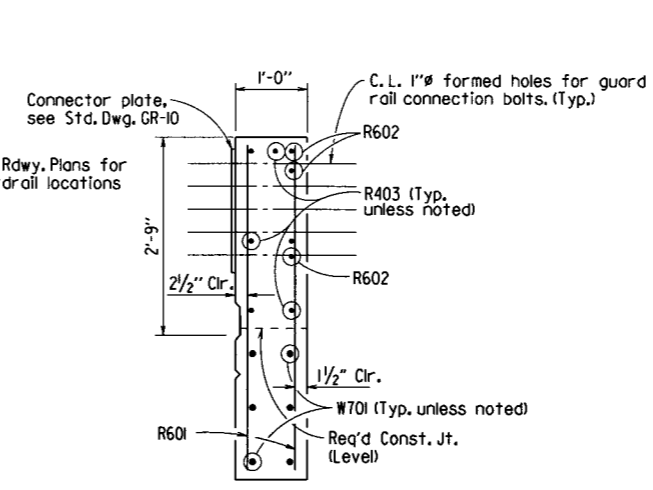
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				6	ARK.			
				JOB NO.	050275	74	167	
				07394 - END BENT DETAILS - 58776				



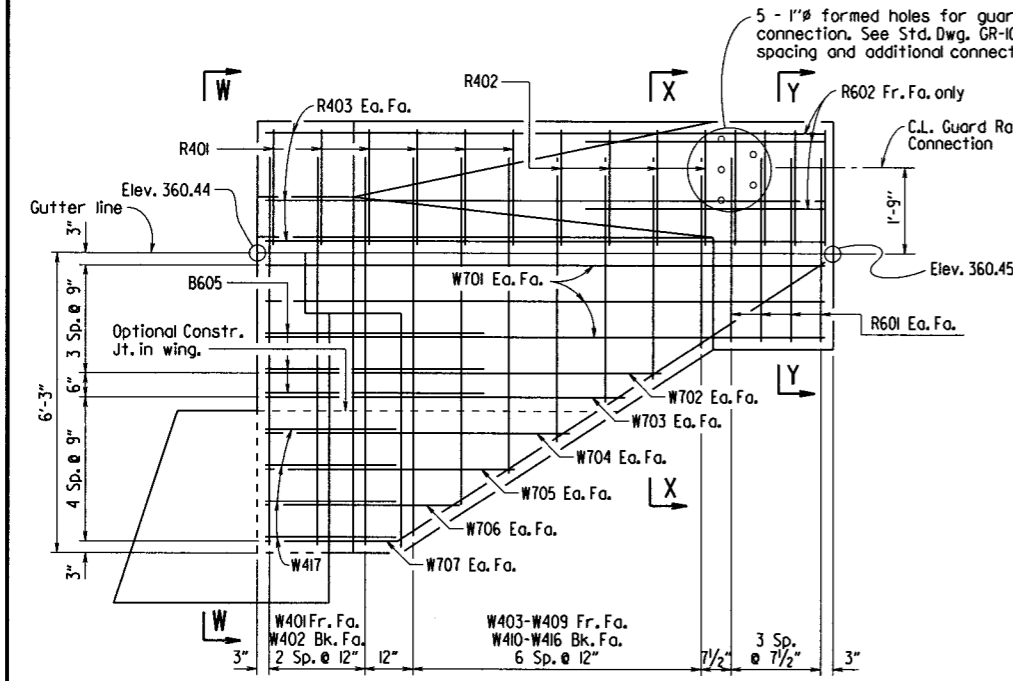
PLAN OF RAIL



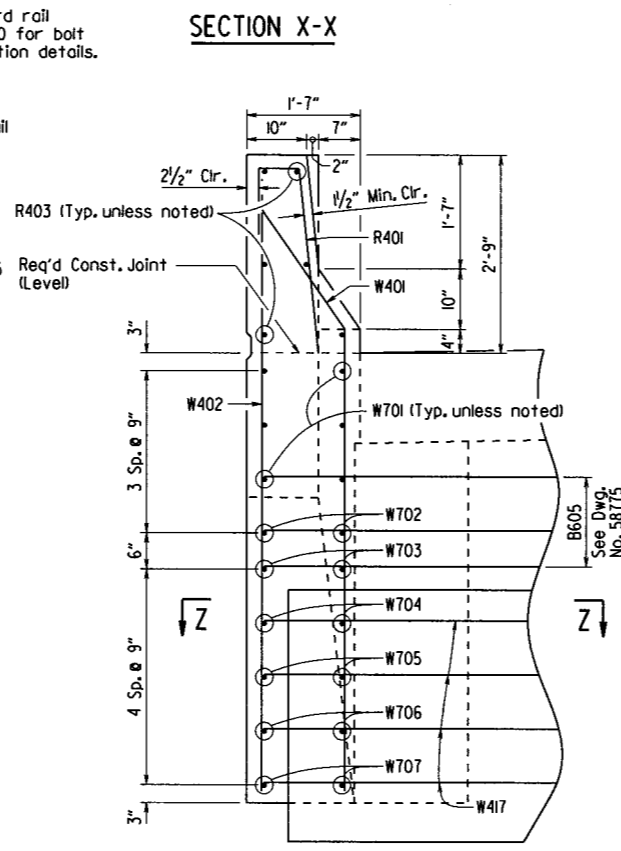
SECTION X-X



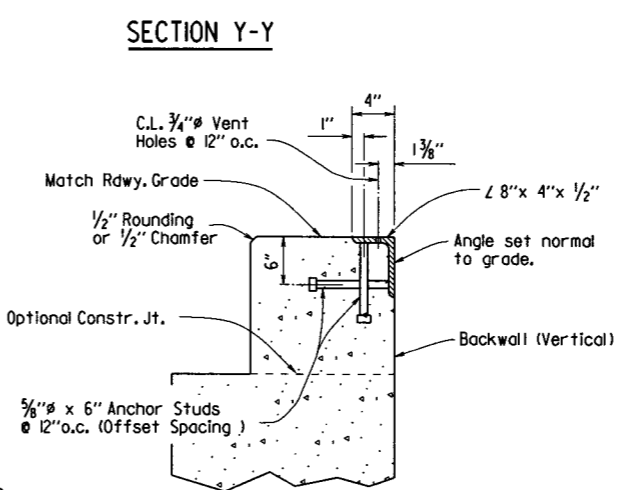
SECTION Y-Y



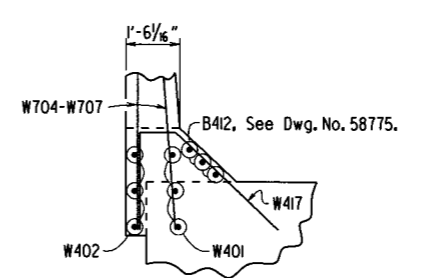
VIEW T-T



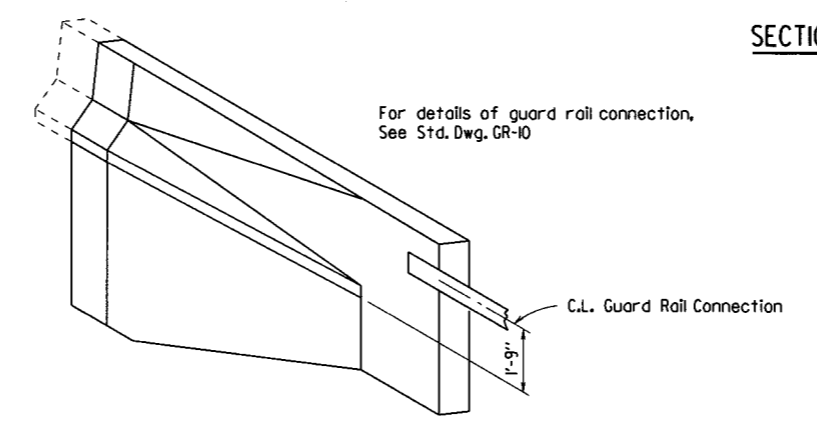
VIEW W-W



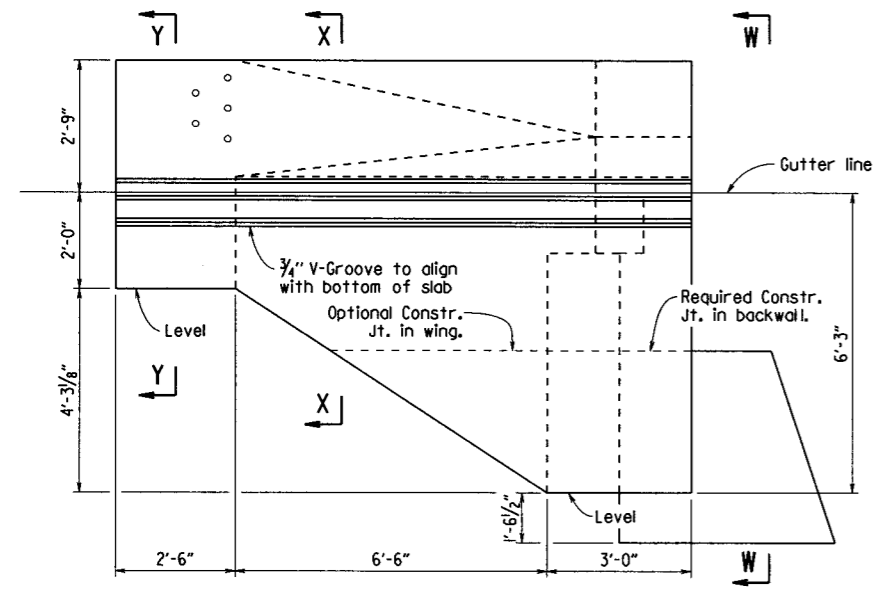
JOINT DETAIL



SECTION Z-Z



THREE DIMENSIONAL VIEW OF RAIL



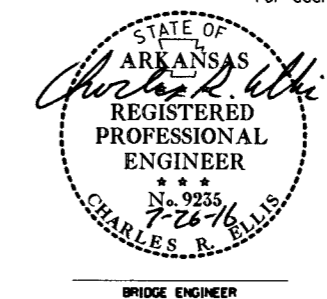
VIEW V-V

BAR LIST

Mark	No. Req'd	Length	Pin Dia.	Bending Diagram
B401	68	16'-3"	2"	
B402	14	11'-6"	2"	
B403	6	28'-4"	Str.	
B404	6	25'-4"	Str.	
B405	4	11'-1"	Str.	
B406	4	8'-1"	Str.	
B407	21	5'-9"	2"	
B408	10	28'-11"	Str.	
B409	10	25'-11"	Str.	
B410	49	3'-1"	Str.	
B411	49	6'-10"	2"	
B412	6	4'-8"	Str.	
B601	6	29'-0"	4 1/2"	
B602	6	26'-0"	4 1/2"	
B603	6	28'-4"	Str.	
B604	6	25'-4"	Str.	
B605	6	7'-5"	4 1/2"	
B606	4	3'-7"	Str.	
B607	4	7'-9"	4 1/2"	
R401	12	3'-11"	2"	
R402	8	4'-0"	2"	
R403	12	11'-8"	Str.	
R601	16	4'-5"	Str.	
R602	6	5'-0"	Str.	
W401	6	8'-4"	2"	
W402	6	8'-8"	Str.	
W403-W409	2 ea.	7'-4" to 3'-5"	2"	
W410-W416	2 ea.	8'-6" to 4'-7"	Str.	
W417	8	7'-7"	2"	
W701	12	11'-8"	Str.	
W702	4	8'-3"	Str.	
W703	4	7'-6"	Str.	
W704	4	6'-4"	Str.	
W705	4	5'-2"	Str.	
W706	4	4'-0"	Str.	
W707	4	13'-4"	5 1/4"	

The lengths shown are from end of bar to the Stage Construction Joint. The Contractor may relocate the mechanical bar splice beyond the Stage I Construction joint if site conditions allow. Individual lengths shall be determined in the field by the Contractor.

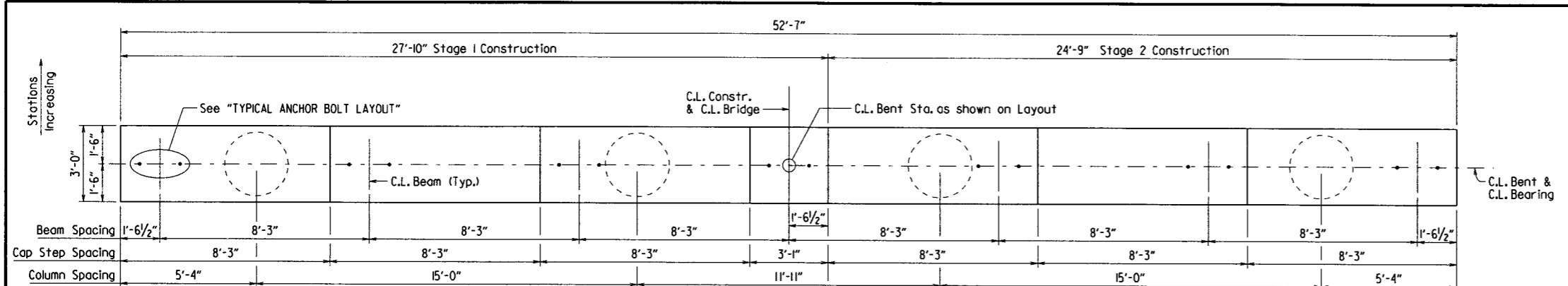
GENERAL NOTES  
 For Standard General Notes, See Std. Dwg. No. 55006.  
 All piling shall be Grade 50.  
 For Details of Steel Piling, See Std. Dwg. No. 55020.  
 No portion of the backwall shall be poured before the beams are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation" note on Dwg. No. 58784.  
 For additional information see Layout.



SHEET 2 OF 2  
 DETAILS OF BENT 1  
 FLAT CREEK  
 ROUTE 500 SEC. 10  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: BHS DATE: 4/6/2015 FILENAME: b050275xl.dgn  
 CHECKED BY: CMW DATE: 7/20/10 SCALE: No Scale  
 DESIGNED BY: Bhs DATE: 2/10  
 BRIDGE NO. 07394 DRAWING NO. 58776

PRINT DATE: 7/26/2016

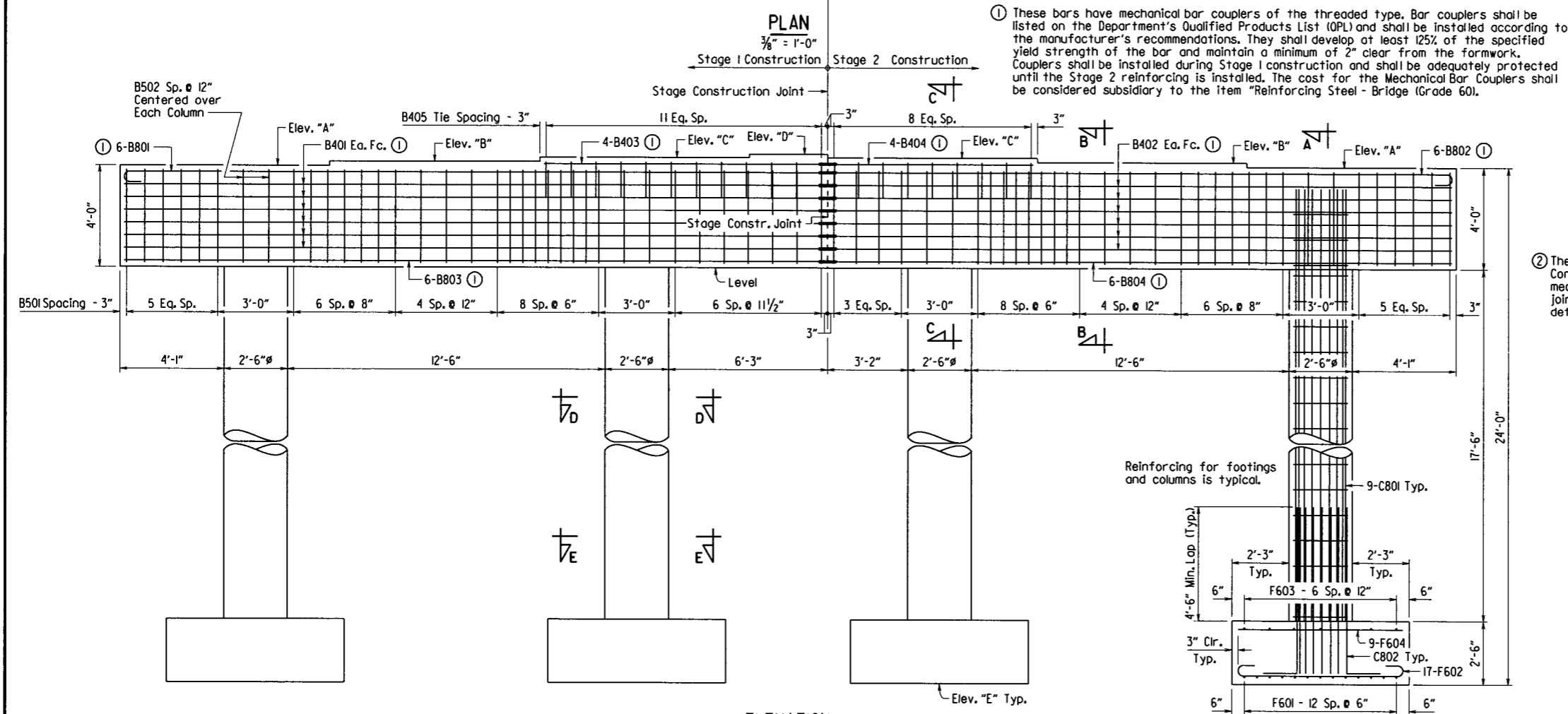
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				6	ARK.			
JOB NO. 050275							75	167
① 07394 - INT. BENT DETAILS - 58777								



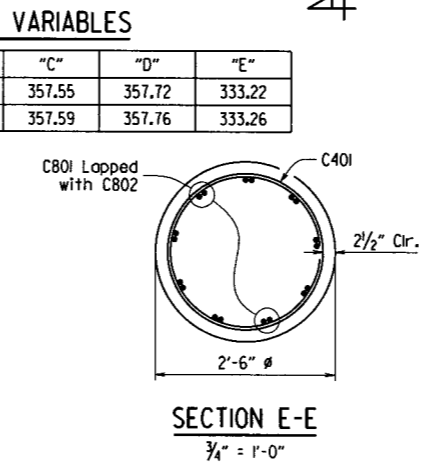
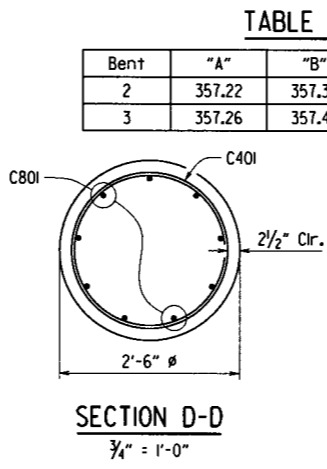
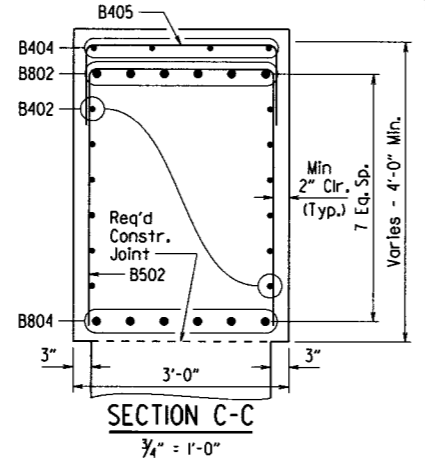
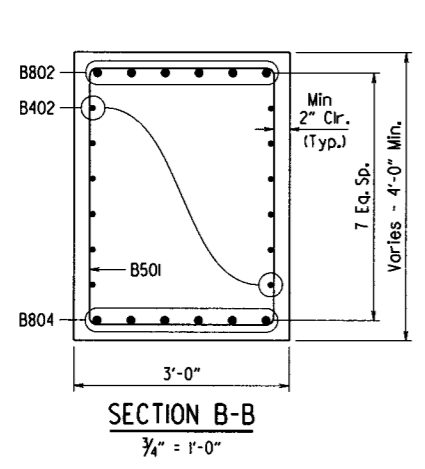
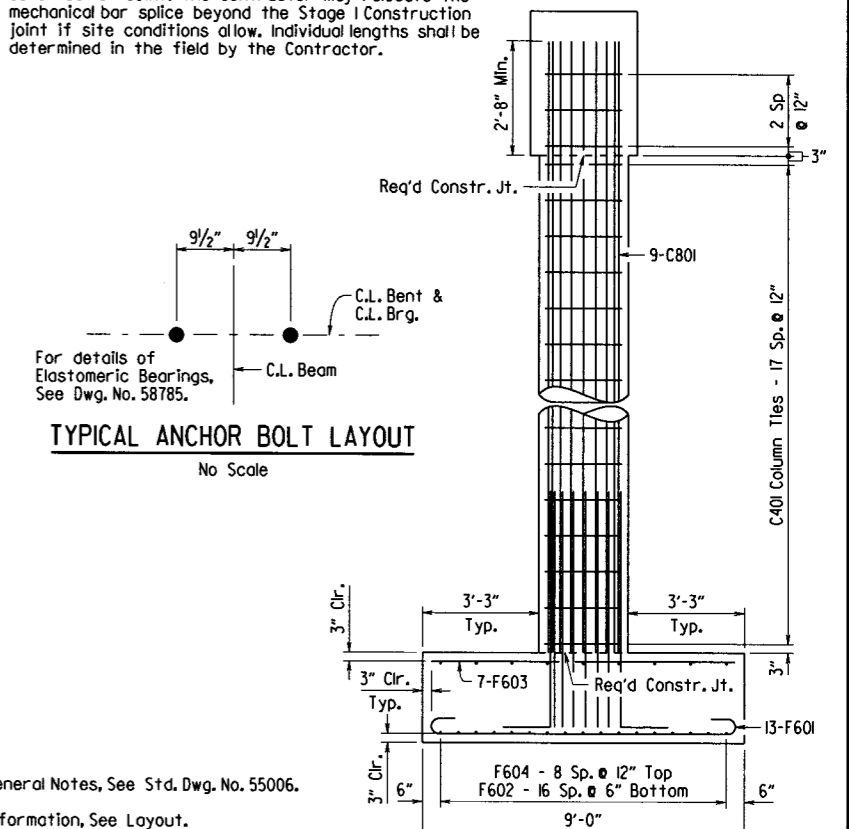
### BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
② B401	12	27'-8"	Str.	
② B402	12	24'-7"	Str.	
② B403	4	11'-2"	Str.	
② B404	4	8'-1"	Str.	
B405	21	5'-8"	2"	
B501	61	13'-2"	2 1/2"	
B502	8	9'-10"	2 1/2"	
② B801	6	28'-7"	6"	
② B802	6	25'-6"	6"	
② B803	6	27'-8"	Str.	
② B804	6	24'-7"	Str.	
C401	84	7'-8"	3"	
C801	36	20'-8"	Str.	
C802	36	10'-10"	6"	
F601	52	9'-10"	4 1/2"	
F602	68	7'-10"	4 1/2"	
F603	28	8'-6"	Str.	
F604	36	6'-6"	Str.	

Dimensions are out to out of bars.



② The lengths shown are from end of bar to the Stage Construction Joint. The Contractor may relocate the mechanical bar splice beyond the Stage I Construction joint if site conditions allow. Individual lengths shall be determined in the field by the Contractor.



### TABLE OF VARIABLES

Bent	"A"	"B"	"C"	"D"	"E"
2	357.22	357.39	357.55	357.72	333.22
3	357.26	357.43	357.59	357.76	333.26

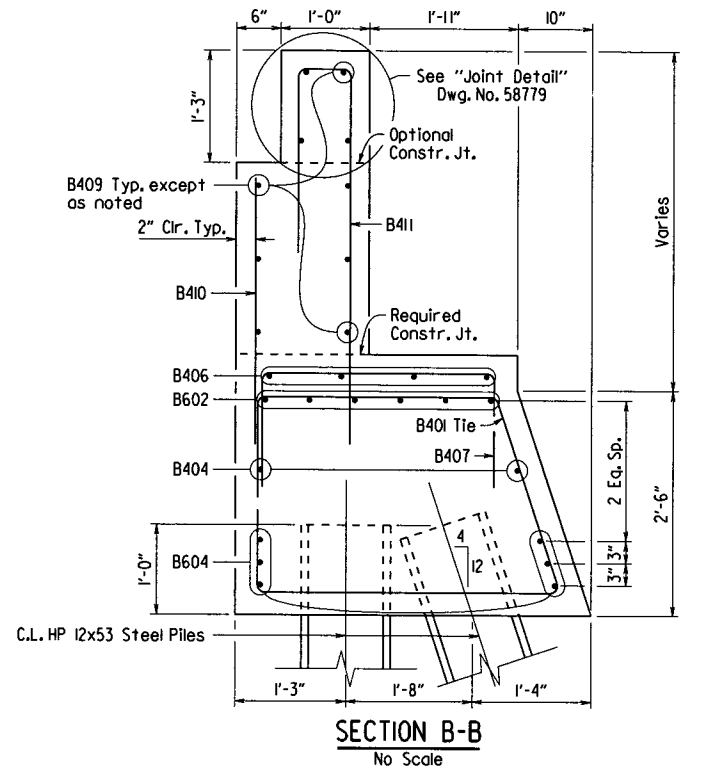
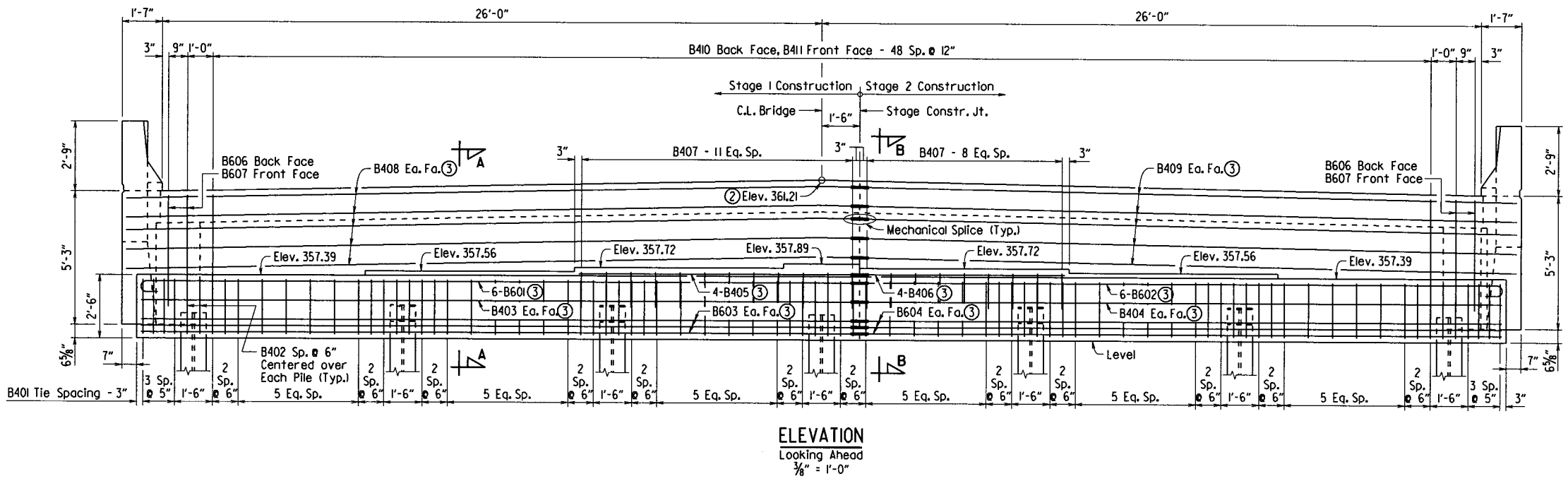
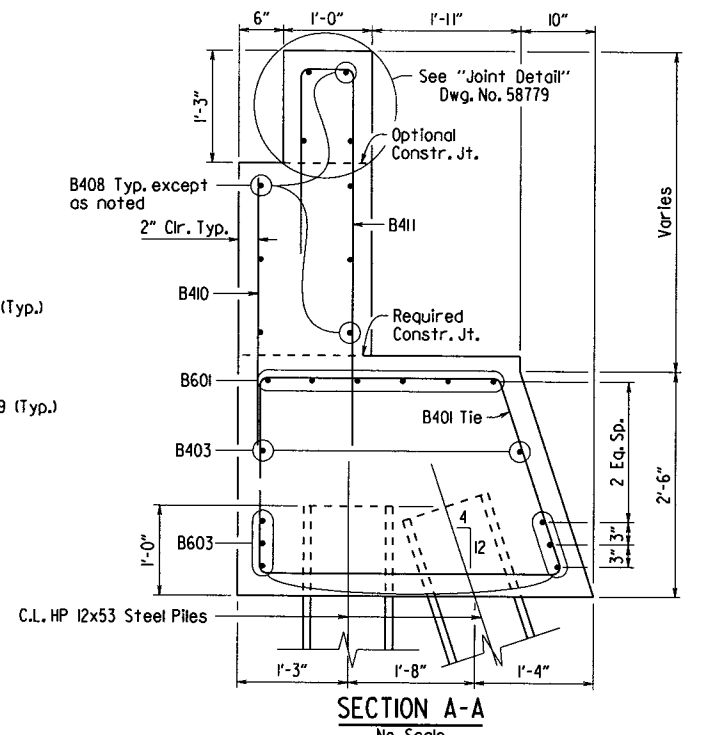
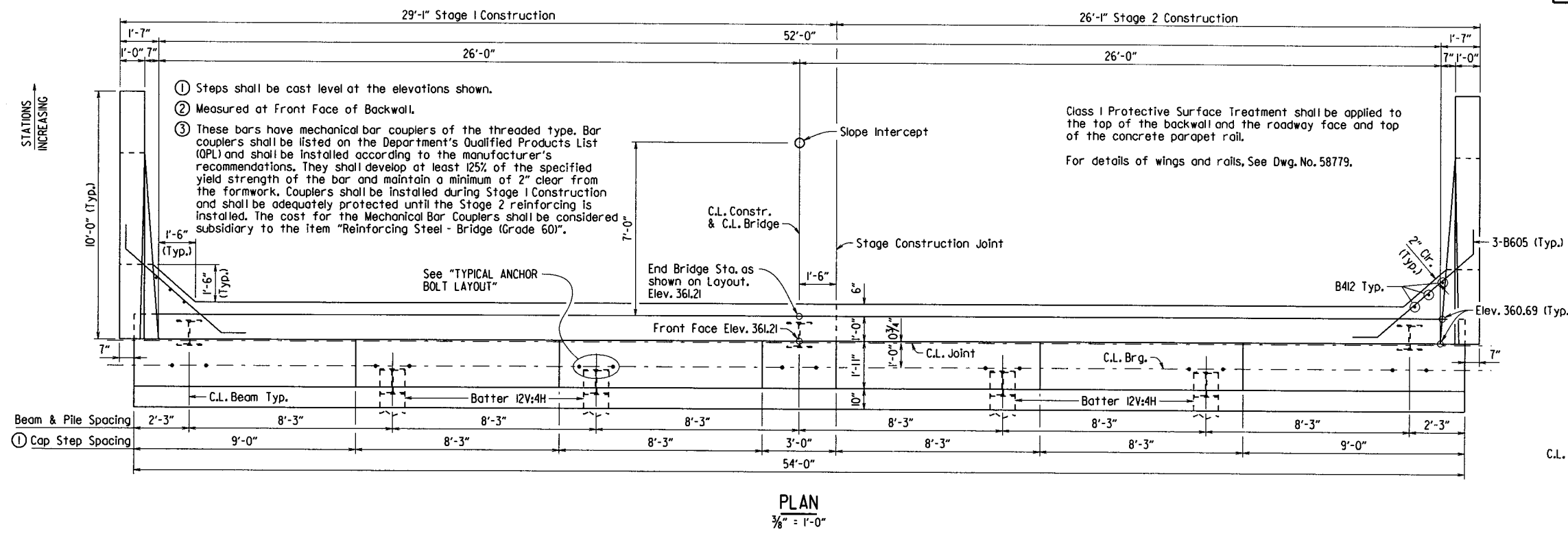
General Notes:  
 For Standard General Notes, See Std. Dwg. No. 55006.  
 For Additional Information, See Layout.

STATE OF ARKANSAS  
 REGISTERED PROFESSIONAL ENGINEER  
 No. 9235  
 7-25-16  
 CHARLES R. ELLIS  
 BRIDGE ENGINEER

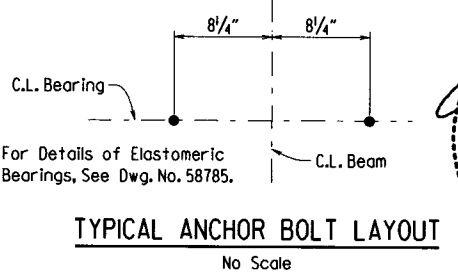
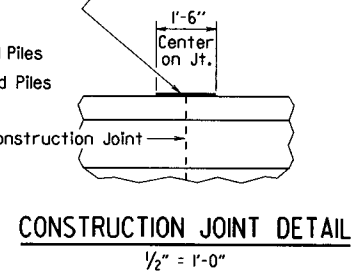
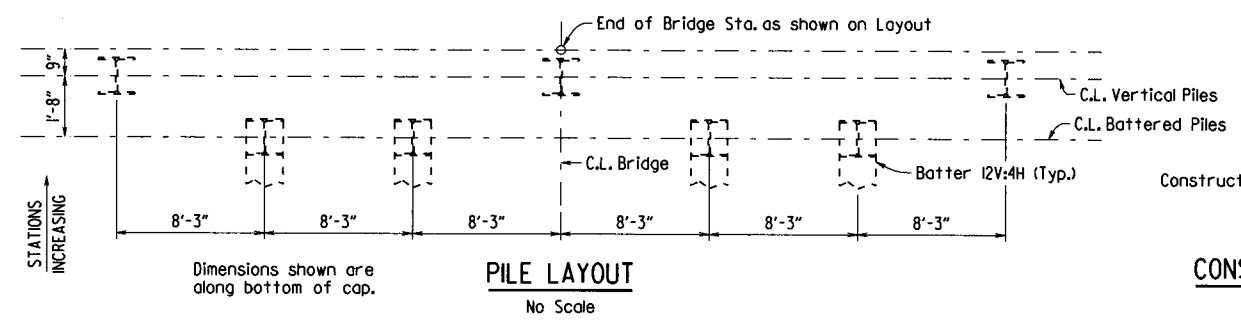
SECTION A-A  
 3/8" = 1'-0"  
 DETAILS OF INTERMEDIATE BENTS  
 FLAT CREEK  
 ROUTE SEC.  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: BHS DATE: 2/24/2016 FILENAME: b050275x1.b2.dgn  
 CHECKED BY: CMW DATE: 7/25/16 SCALE: AS SHOWN  
 DESIGNED BY: BHS DATE: 2/16/16  
 BRIDGE NO. 07394 DRAWING NO. 58777

PRINT DATE: 7/25/2016

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.	050275	76	167	
				07394 - END BENT DETAILS - 58778				



Membrane Waterproofing System Type C or an approved equal to extend full height of backwall and cap. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the item "Class S Concrete-Bridge".



STATE OF ARKANSAS  
 REGISTERED PROFESSIONAL ENGINEER  
 No. 9235  
 7-25-16  
 CHARLES R. ELLIS  
 BRIDGE ENGINEER

SHEET 1 OF 2  
 DETAILS OF BENT 4  
 FLAT CREEK

ROUTE 585  
 SEC. 1  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.

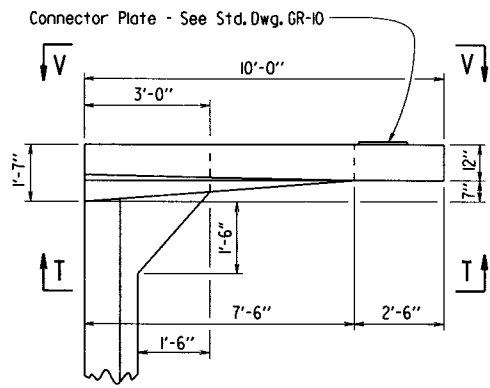
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 CHECKED BY: OMW  
 DESIGNED BY: BHS  
 BRIDGE NO. 07394

DATE: 2/24/2016  
 DATE: 7/25/16  
 DATE: 2/16

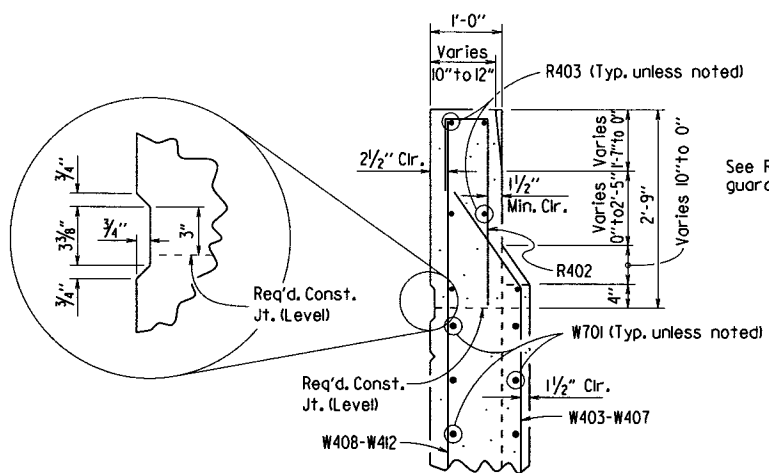
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 DRAWING NO. 58778

PRINT DATE: 7/25/2016

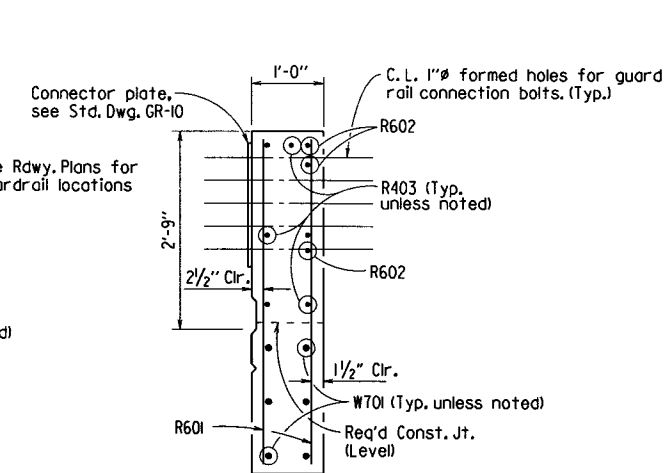
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				JOB NO.	050275		77	167
				07394 - END BENT DETAILS - 58779				



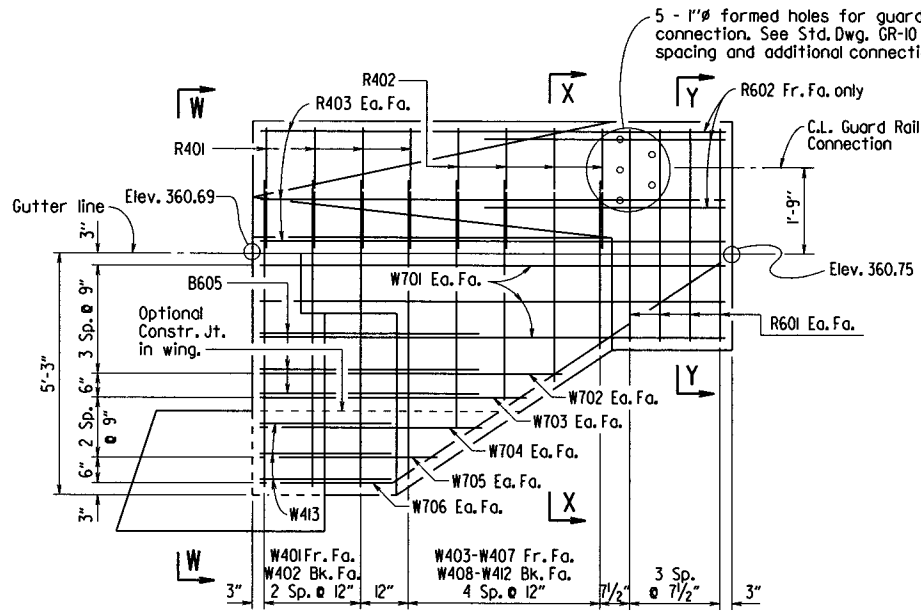
PLAN OF RAIL



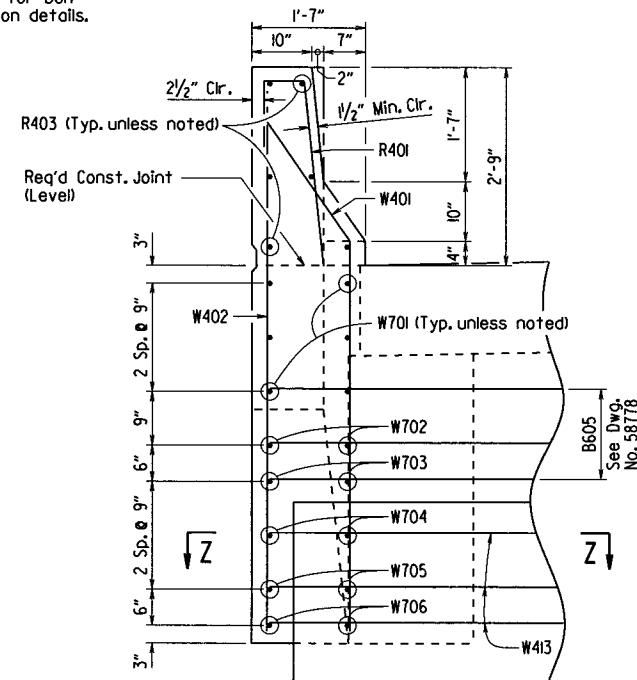
SECTION X-X



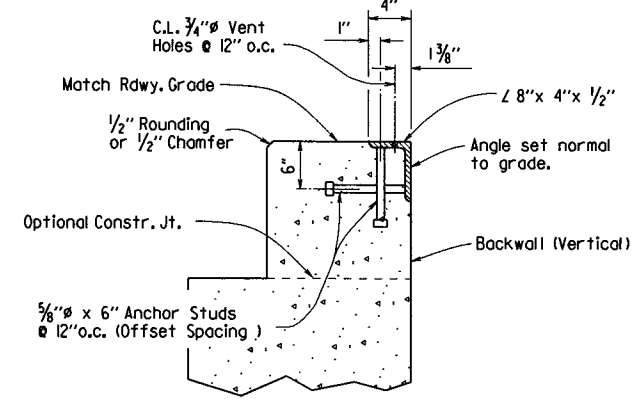
SECTION Y-Y



VIEW T-T

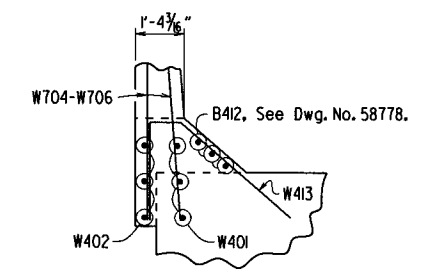


VIEW W-W

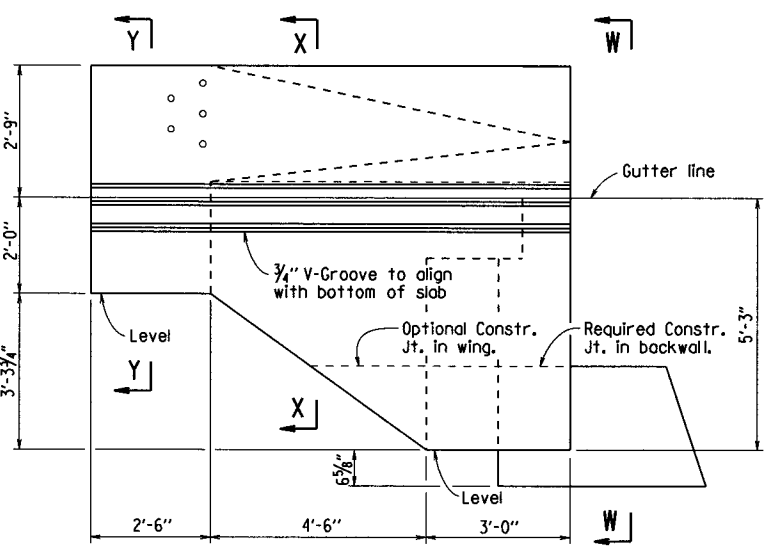


JOINT DETAIL

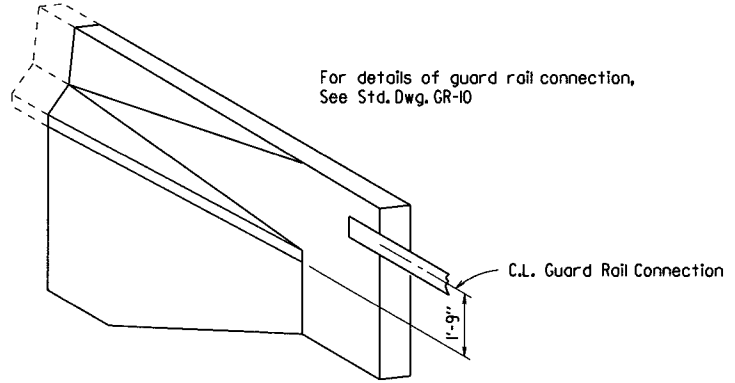
For additional Joint Details See Dwg. No. 58784  
Concrete shall be hand packed under joint armor in the backwall.



SECTION Z-Z



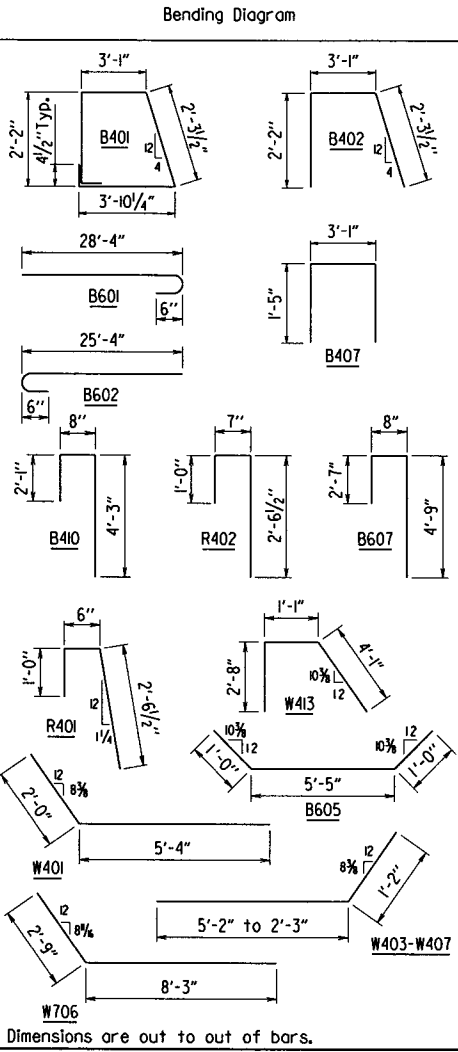
VIEW V-V



THREE DIMENSIONAL VIEW OF RAIL

BAR LIST

Mark	No. Req'd	Length	Pin Dia.
B401	68	11'-8"	2"
B402	14	7'-5"	2"
B403	2	28'-4"	Str.
B404	2	25'-4"	Str.
B405	4	11'-1"	Str.
B406	4	8'-1"	Str.
B407	21	5'-9"	2"
B408	10	28'-11"	Str.
B409	10	25'-11"	Str.
B410	49	3'-1"	Str.
B411	49	6'-10"	2"
B412	6	3'-8"	Str.
B601	6	29'-0"	4 1/2"
B602	6	26'-0"	4 1/2"
B603	6	28'-4"	Str.
B604	6	25'-4"	Str.
B605	6	7'-5"	4 1/2"
B606	4	3'-7"	Str.
B607	4	7'-9"	4 1/2"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	7'-4"	2"
W402	6	7'-8"	Str.
W403-W407	2 ea.	6'-4" to 3'-5"	2"
W408-W412	2 ea.	7'-7" to 4'-7"	Str.
W413	6	7'-8"	2"
W701	12	9'-8"	Str.
W702	4	6'-4"	Str.
W703	4	5'-7"	Str.
W704	4	4'-7"	Str.
W705	4	3'-9"	Str.
W706	4	11'-0"	5 1/4"



The lengths shown are from end of bar to the Stage Construction Joint. The Contractor may relocate the mechanical bar splice beyond the Stage 1 Construction joint if site conditions allow. Individual lengths shall be determined in the field by the Contractor.

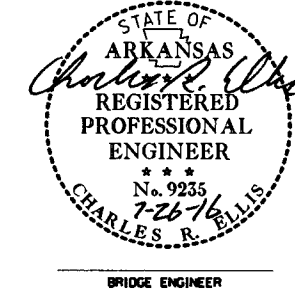
GENERAL NOTES

- For Standard General Notes, See Std. Dwg. No. 55006.
- All piling shall be Grade 50.
- For Details of Steel Piling, See Std. Dwg. No. 55020.
- No portion of the backwall shall be poured before the beams are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation" note on Dwg. No. 58784.
- For additional information, see Layout.

SHEET 2 OF 2  
DETAILS OF BENT 4  
FLAT CREEK

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

BRIDGE NO. 07394  
DRAWING NO. 58779  
DRAWN BY: BHS  
CHECKED BY: CMW  
DESIGNED BY: BHS  
DATE: 4/6/2015  
DATE: 7/20/16  
DATE: 2/1/16  
FILENAME: b050275xl.bl.dgn  
SCALE: No Scale



PRINT DATE: 7/26/2016

**Slab Reinforcing:**

Longitudinal: S402E as shown  
S601E as shown over int. supports, see "Reinforcing Plan & Deck Pouring Sequence", Dwg. No. 58782.

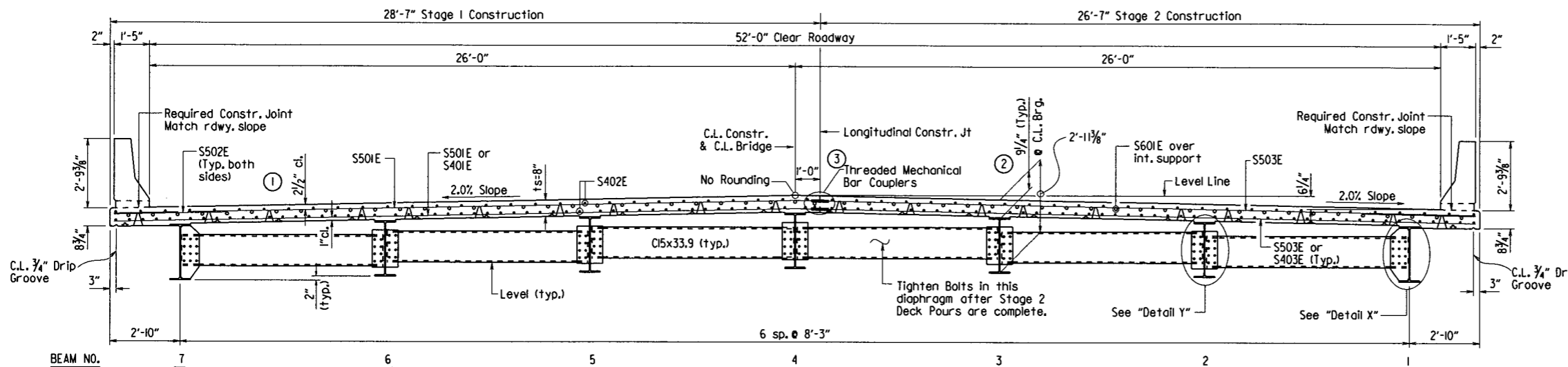
Transverse: Stage 1 S501E @ 6" in top  
S401E @ 12" o.c. in bottom — Alternate  
S501E @ 12" o.c. in bottom — Alternate  
Stage 2 S503E @ 6" in top  
S403E @ 12" o.c. in bottom — Alternate  
S503E @ 12" o.c. in bottom — Alternate  
S502E @ 6" in top of overhangs (bundled with #5 bars)

- ① Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".
- ② See "Adjustment for Slab Thickness Tolerance".
- ③ Epoxy coated mechanical bar couplers shall be of the threaded type and shall be listed on the Department's Qualified Products List (QPL) and shall be installed according to the manufacturer's recommendations. They shall develop at least 125% of the specified yield strength of the bar. Couplers shall be installed during Stage 1 Construction and shall be adequately protected from damage until the Stage 2 slab reinforcing is installed. The cost for the Mechanical Bar Couplers shall be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

Class I Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the Concrete Parapet Rail.

Bar positions and clearances from the forms shall be maintained by means of stays, ties, hangers, or other approved devices sufficient in size and number to prevent displacement during construction. See Subsection 804.06.

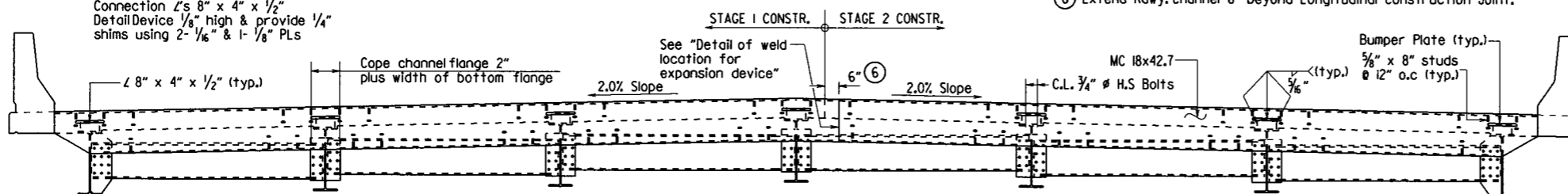
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275		72167	
				07394 - SPAN DETAILS - 58780				



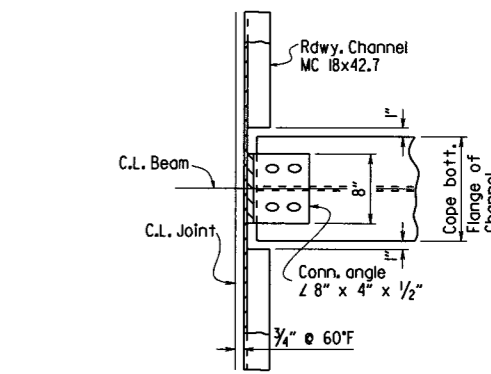
**TYPICAL ROADWAY SECTION**  
Looking Ahead  
3/8" = 1'-0"

**Expansion Device:**

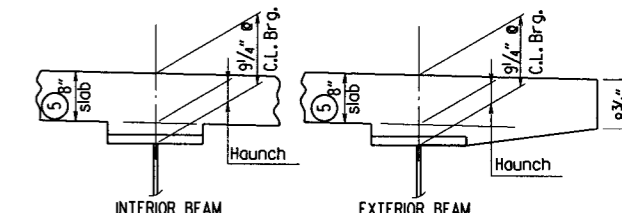
Rdwy. Channel - MC 18x42.7  
Connection L's 8" x 4" x 1/2"  
Detail Device 1/8" high & provide 1/4" shims using 2-1/16" & 1-1/8" PLs



**TYPICAL ROADWAY SECTION NEAR JOINT**  
3/8" = 1'-0"



**CHANNEL CONNECTION DETAIL**  
No Scale

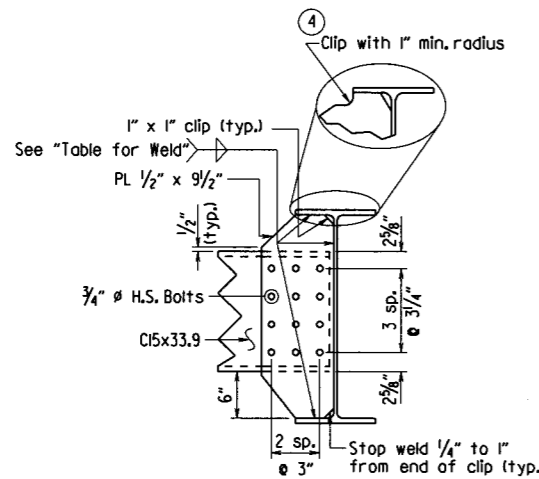


⑤ Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

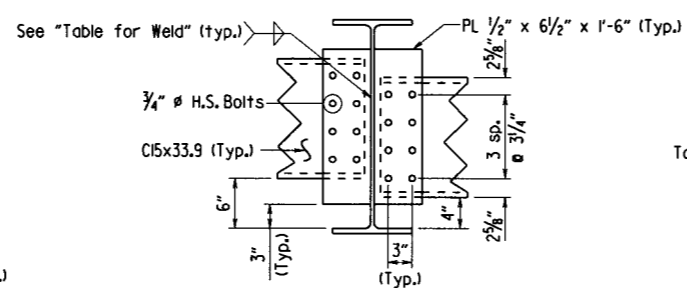
**ADJUSTMENT FOR SLAB THICKNESS TOLERANCE**  
No Scale

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

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.



**DETAIL X**  
1" = 1'-0"

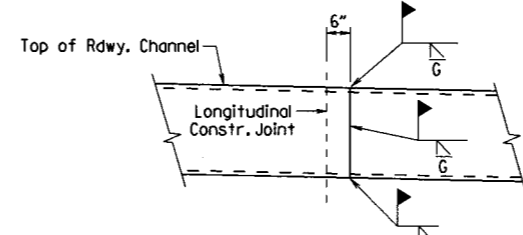


**DETAIL Y**  
1" = 1'-0"

**TABLE FOR WELD**

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

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

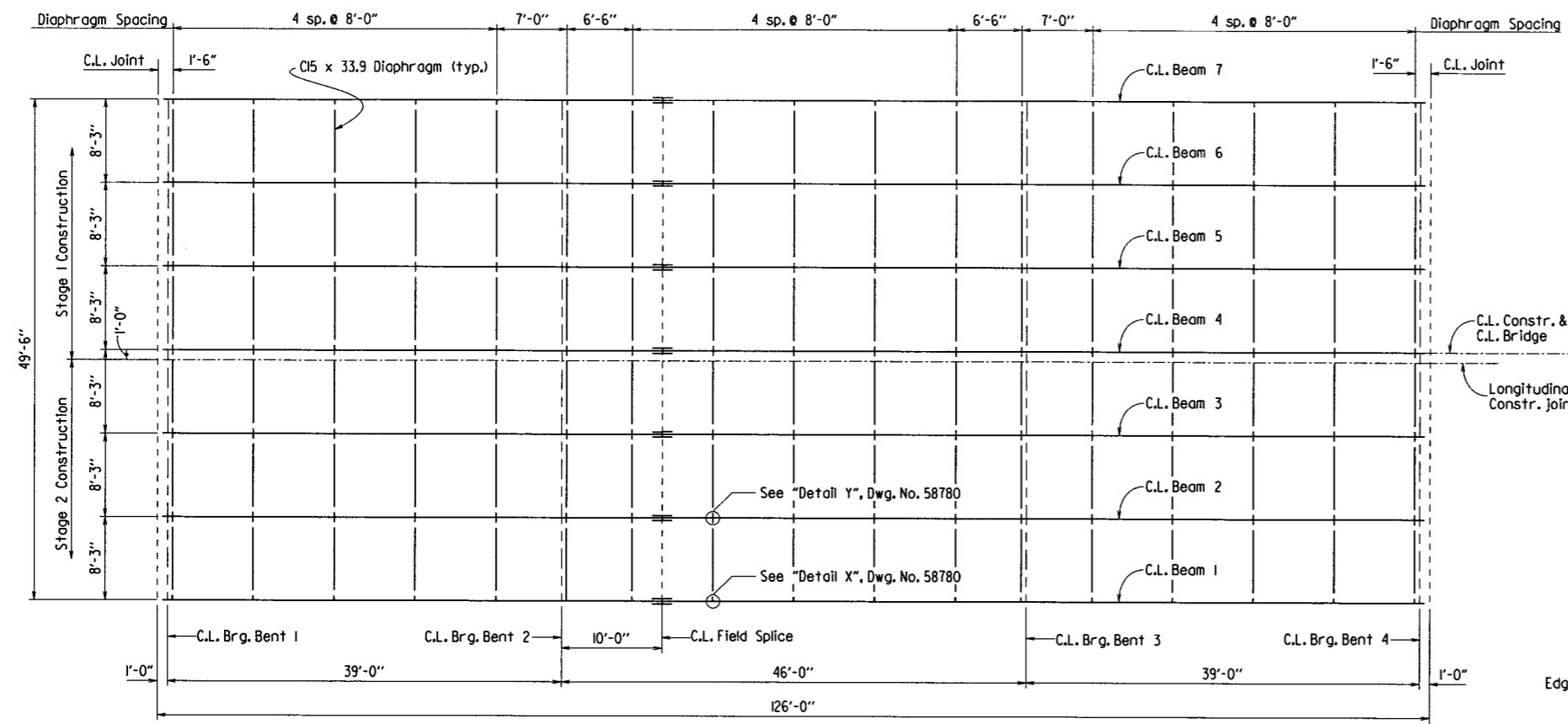


**DETAIL OF WELD LOCATION FOR EXPANSION DEVICE**  
No Scale

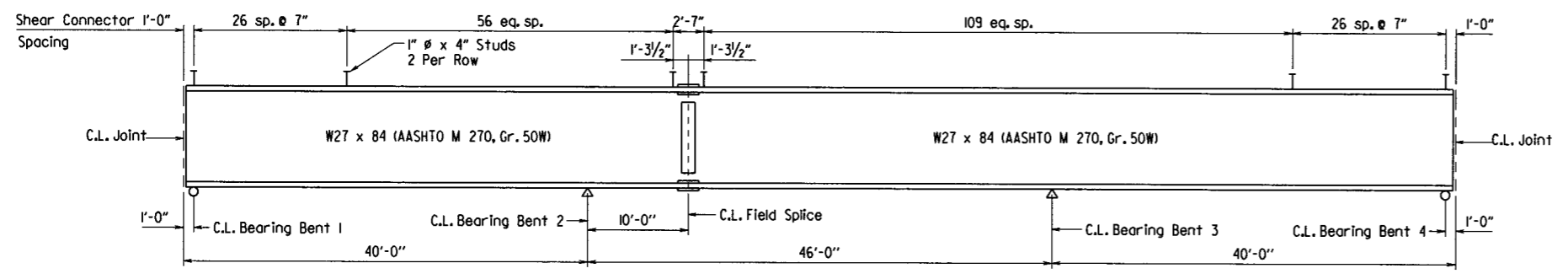
STATE OF ARKANSAS  
*Charles R. Ellis*  
REGISTERED PROFESSIONAL ENGINEER  
No. 9235  
7-26-16  
CHARLES R. ELLIS  
BRIDGE ENGINEER

SHEET 1 OF 5  
DETAILS OF 126'-0" CONTINUOUS COMPOSITE W-BEAM UNIT  
FLAT CREEK  
ROUTE SEC.  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: COR DATE: 1/25/2016 FILENAME: b050275x1.sl.dgn  
CHECKED BY: CMW DATE: 7/30/14 SCALE: As Shown  
DESIGNED BY: COR DATE: 1/16  
BRIDGE NO. 07394 DRAWING NO. 58780

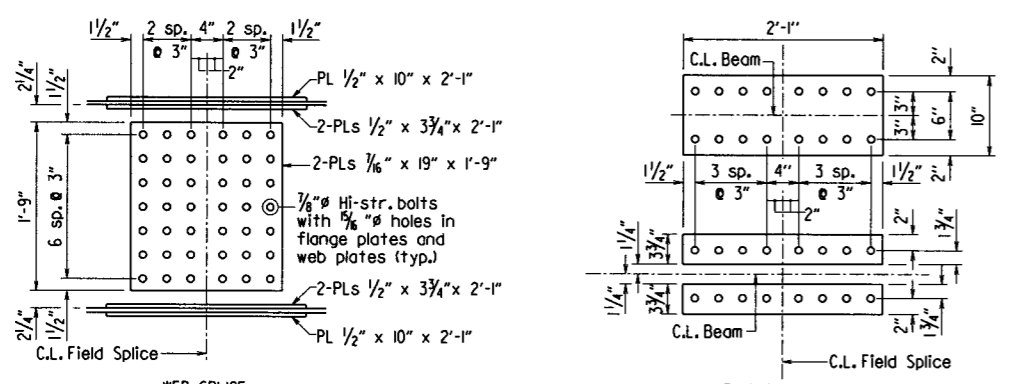
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
							JOB NO. 050275	79 167
							07394 - SPAN DETAILS - 58781	



**FRAMING PLAN**  
1/8" = 1'-0"

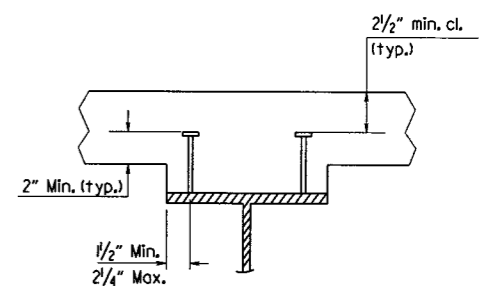


**TYPICAL BEAM ELEVATION**  
No Scale



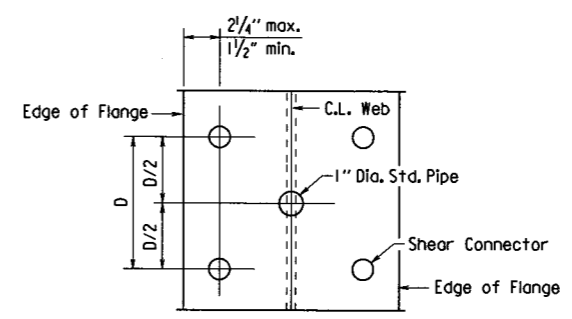
**FIELD SPlice DETAILS**  
1" = 1'-0"

Bolted field splices shown may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of the Plan Quantities.  
 All Field Splice Plates shall be AASHTO M 270, Gr. 50W steel  
 All Field Splice Bolts shall be 7/8" H.S. Bolts  
 All Field Splice Bolt Holes shall be 5/16"  
 All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted.  
 For General Notes, See Std. Dwg. No. 55006.

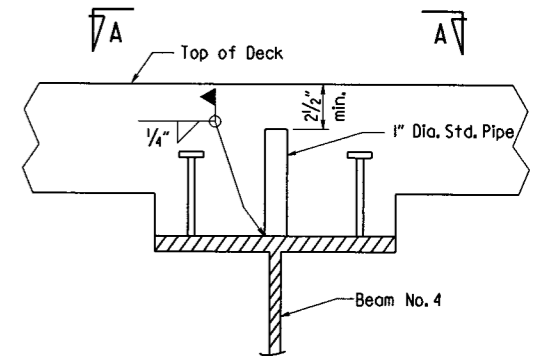


Stud Shear Connectors shown shall be 1" x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with recommendations of the Manufacturer.

**SHEAR CONNECTOR DETAIL**  
No Scale

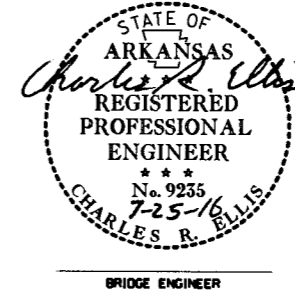


**VIEW A-A**  
No Scale



**BEAM 4 TRANSVERSE SCREED RAIL SUPPORT DETAIL**  
No Scale

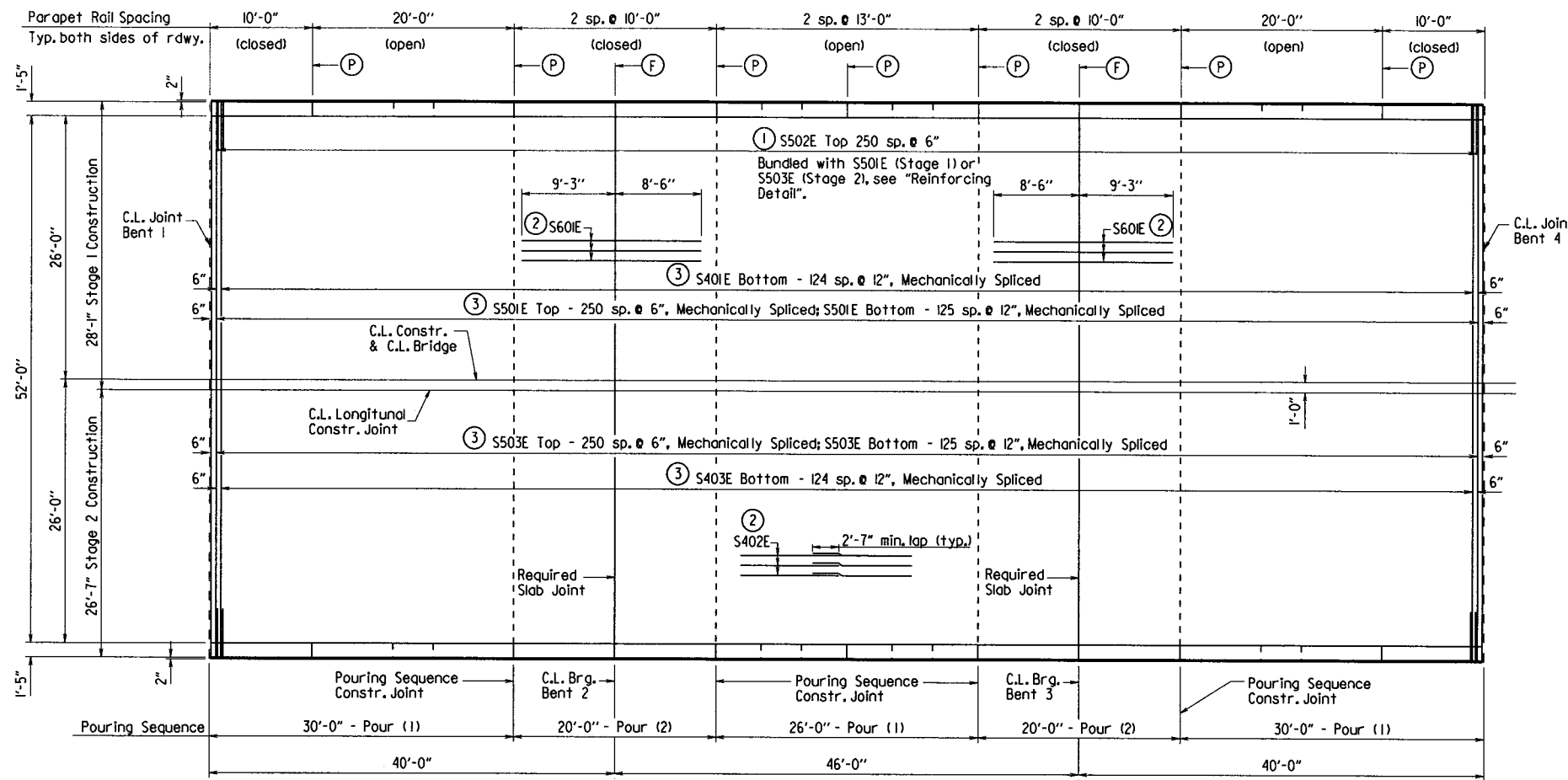
The transverse screed rail supports shall be centered over the beam web and centered longitudinally between adjacent rows of shear connectors.  
 The pipe shall not interfere with the proper vertical position of the deck reinforcing steel.  
 The pipe shall be free of dirt, grease, rust, or other foreign substance before the deck is poured.  
 Care shall be exercised so as voids do not exist in the pipe after placement of the deck concrete.  
 All welding shall be performed by a certified welder and in accordance with Subsections 802J3 and 807.26.



SHEET 2 OF 5  
 DETAILS OF 126'-0" CONTINUOUS  
 COMPOSITE W-BEAM UNIT  
 FLAT CREEK  
 ROUTE SEC.  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: COR DATE: 1/26/2016 FILENAME: b050275x1.sl.dgn  
 CHECKED BY: CMW DATE: 7/23/16 SCALE: As Shown  
 DESIGNED BY: COR DATE: 1/16  
 BRIDGE NO. 07394 DRAWING NO. 58781

PRINT DATE: 7/25/2016

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.	050275		30	167
				07394 - SPAN DETAILS - 58782				

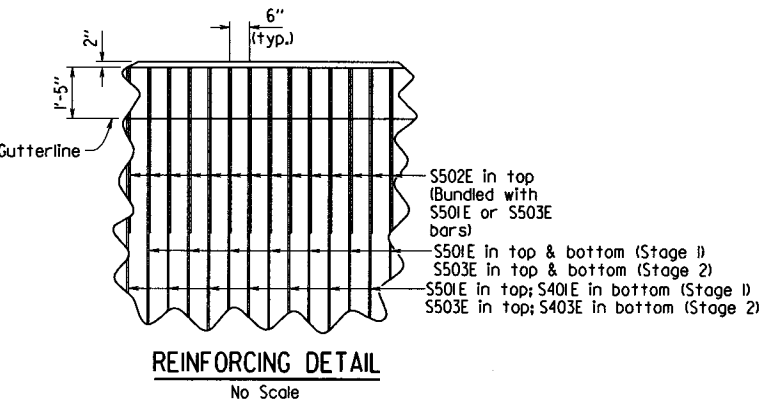


**REINFORCING PLAN & DECK POURING SEQUENCE**

1/8" = 1'-0"

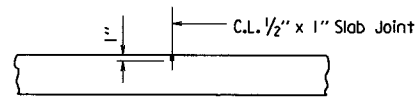
For each stage of Construction, pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any railing pours made before the entire slab unit of that stage has been placed must be approved by the Engineer. Concrete in bridge superstructure shall be placed, screeded and consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

- (F) C.L. Full Depth Parapet Joint (1/4" - 1" max.) Stop 4" from top of slab.
- (P) C.L. Partial Depth Parapet Joint (1/4" - 1" max.) Stop 1'-2" from top of slab.
- (1) Bundled with S501E in top of overhang. Typical both sides of rdwy.
- (2) Placed as shown in "TYPICAL ROADWAY SECTION". Dwg. No. 58780.
- (3) These bars will require the usage of threaded mechanical couplers.



**REINFORCING DETAIL**

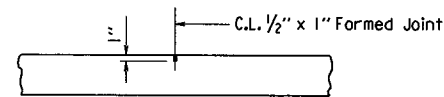
No Scale



**TRANSVERSE SLAB JOINT DETAIL**

No Scale

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



Use 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02 (h) and 501.05 (j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class (SAE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

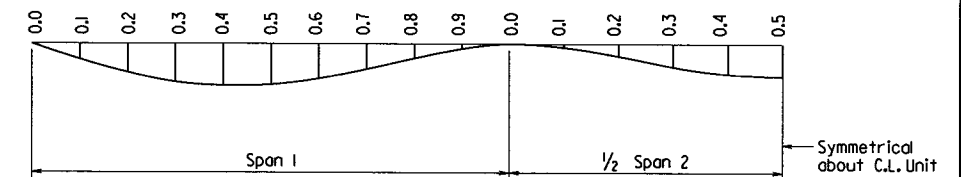
**LONGITUDINAL CONSTRUCTION JOINT**

No Scale

**TABLE OF DEAD LOAD DEFLECTIONS (INCHES)**

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1	0	0	0	0	0	0	0
	0.1	0.03	0.011	0.111	0.092	0.114	0.100
	0.2	0.024	0.020	0.205	0.171	0.211	0.186
	0.3	0.032	0.027	0.271	0.225	0.278	0.245
	0.4	0.035	0.030	0.300	0.250	0.308	0.272
	0.5	0.034	0.029	0.292	0.243	0.300	0.264
	0.6	0.029	0.025	0.250	0.208	0.257	0.226
	0.7	0.021	0.018	0.183	0.152	0.188	0.165
	0.8	0.012	0.010	0.105	0.088	0.108	0.096
	0.9	0.004	0.004	0.036	0.030	0.037	0.033
2	0	0	0	0	0	0	0
	0.1	0.003	0.002	0.023	0.019	0.024	0.021
	0.2	0.010	0.009	0.089	0.074	0.090	0.080
	0.3	0.019	0.016	0.161	0.134	0.165	0.146
	0.4	0.025	0.021	0.214	0.178	0.220	0.194
	0.5	0.027	0.023	0.234	0.194	0.240	0.211

This table is symmetrical about C.L. Unit.



Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included.

**DEAD LOAD DEFLECTION DIAGRAM**

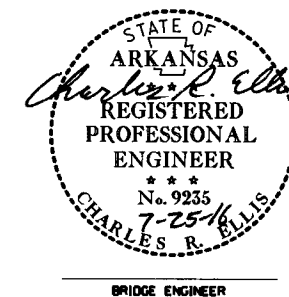
No Scale

SHEET 3 OF 5  
 DETAILS OF 126'-0" CONTINUOUS  
 COMPOSITE W-BEAM UNIT  
 FLAT CREEK

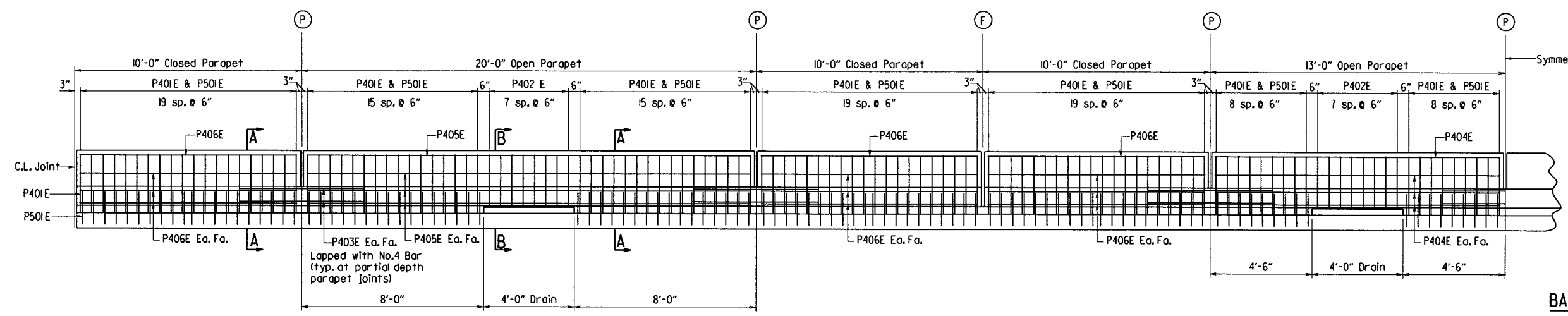
ROUTE 501  
 ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: COR DATE: 1/26/2016 FILENAME: b050275xl.sl.dgn  
 CHECKED BY: CNW DATE: 7/23/16 SCALE: As Shown  
 DESIGNED BY: COR DATE: 1/16  
 BRIDGE NO. 07394 DRAWING NO. 58782







(F) C.L. Full Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN AND DECK POURING SEQUENCE", Dwg. No. 58782. Stop 4" from top of slab.

(P) C.L. Partial Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN AND DECK POURING SEQUENCE", Dwg. No. 58782. Stop 1'-2" from top of slab.

**ELEVATION - CONCRETE PARAPET RAIL**

1/2" = 1'-0"

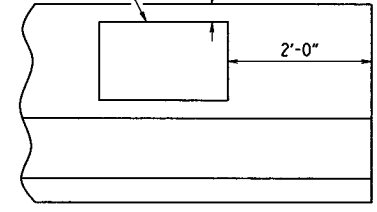
**BAR LIST**

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
STAGE 1 CONSTRUCTION				
S401E	125	28'-5"	Str.	
S402E	324	33'-4"	Str.	
S501E	377	28'-5"	Str.	
S502E	251	4'-8"	Str.	
S601E	58	17'-9"	Str.	
P401E	220	5'-6"	3"	
P402E	32	4'-10"	3"	
P403E	28	5'-6"	Str.	
P404E	14	12'-8"	Str.	
P405E	14	19'-8"	Str.	
P406E	42	9'-8"	Str.	
P501E	220	4'-10"	3 3/4"	
STAGE 2 CONSTRUCTION				
S402E	300	33'-4"	Str.	
S403E	125	26'-5"	Str.	
S502E	251	4'-8"	Str.	
S503E	377	26'-5"	Str.	
S601E	52	17'-9"	Str.	
P401E	220	5'-6"	3"	
P402E	32	4'-10"	3"	
P403E	28	5'-6"	Str.	
P404E	14	12'-8"	Str.	
P405E	14	19'-8"	Str.	
P406E	42	9'-8"	Str.	
P501E	220	4'-10"	3 3/4"	

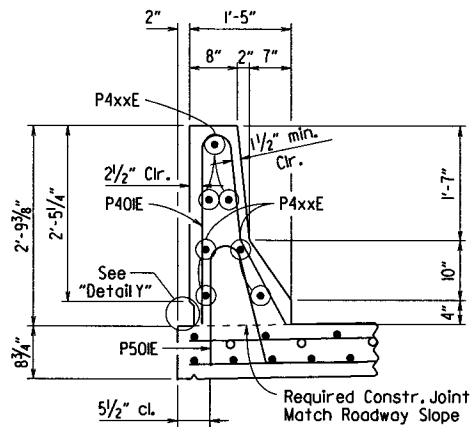
① The lengths shown are from end of bar to the Stage Construction joint. The Contractor may relocate the mechanical bar splice beyond the Stage I Construction joint if site conditions allow. Individual lengths shall be determined in the field based on the location of the mechanical bar splice.

NOTE: Bars designated with "E" suffix are epoxy coated.

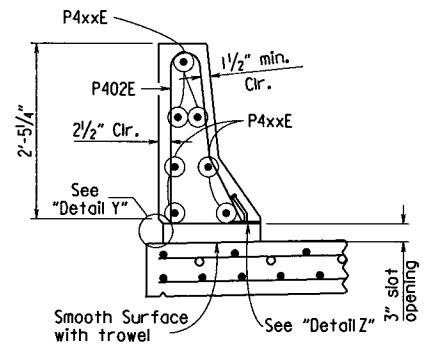
Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge (Right side of roadway only). See Std. Dwg. No. 55010.



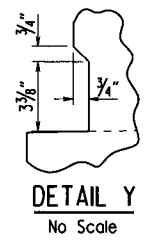
**NAME PLATE DETAIL**  
3/8" = 1'-0"



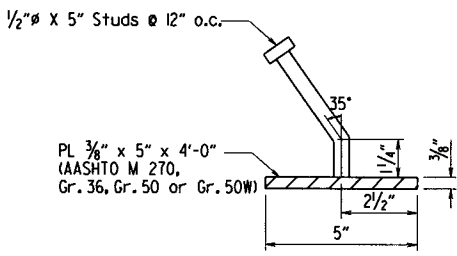
**SECTION A-A**  
3/4" = 1'-0"



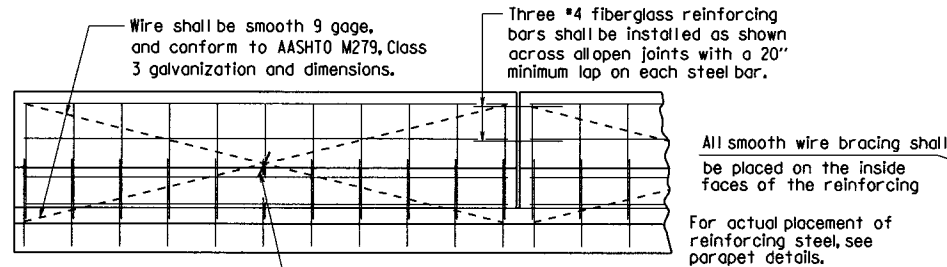
**SECTION B-B**  
3/4" = 1'-0"



**DETAIL Y**  
No Scale



**DETAIL Z**  
No Scale



**DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL**

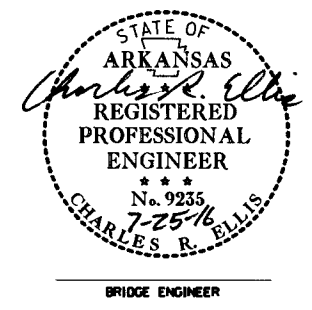
No Scale

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. Unless otherwise noted, exposed surface may be given a light brush finish or a Class 3, Textured Coating Finish, in place of the Class 2, Rubbed Finish.

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

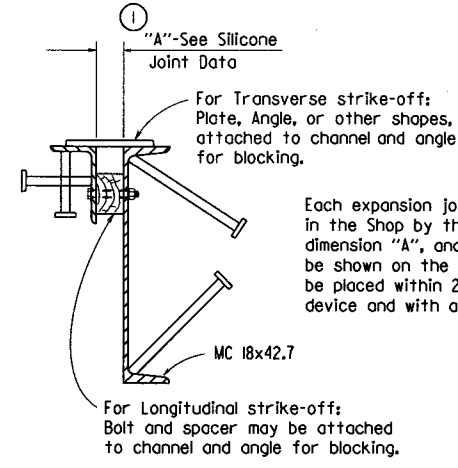
The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance to Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)".



SHEET 4 OF 5  
**DETAILS OF 126'-0" CONTINUOUS COMPOSITE W-BEAM UNIT**  
 FLAT CREEK  
 ROUTE 800  
**ARKANSAS STATE HIGHWAY COMMISSION**  
 LITTLE ROCK, ARK.  
 DRAWN BY: COR DATE: 1/28/2016 FILENAME: b050275x1.sl.dgn  
 CHECKED BY: C.M.W. DATE: 7/27/16 SCALE: As Shown  
 DESIGNED BY: COR DATE: 1/16  
 BRIDGE NO. 07394 DRAWING NO. 58783

PRINT DATE: 7/25/2016

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.	050275	02	167	
				07394 - SPAN DETAILS - 58784				



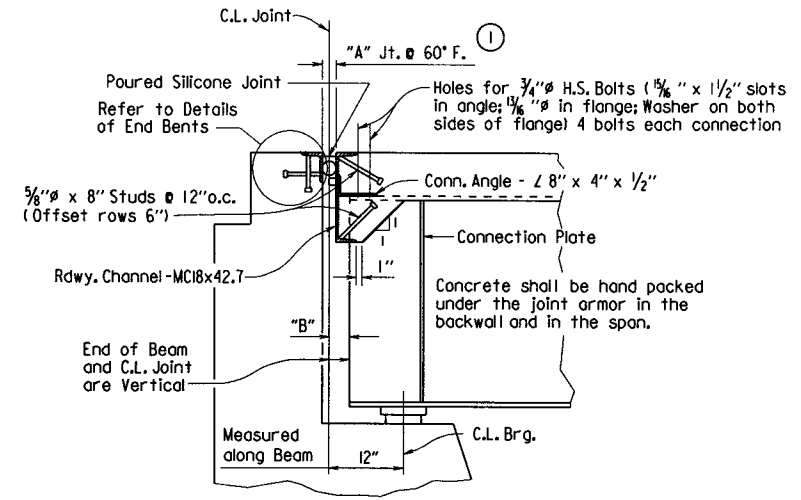
Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A", and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

**DETAILS FOR BLOCKING EXPANSION JOINT DEVICE**

**EXPANSION DEVICE INSTALLATION**

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

- 1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature and grade, and the backwall constructed.
- 2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade. Backfill shall not be placed behind the backwall until the deck concrete on the adjacent span has been placed.



**SECTION THRU JOINT AT BENTS 1 & 4**

**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			
1 & 4	1 5/8"	1 1/2"	1 3/8"	2 3/4" ±	1" x 3/4"	4"

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

NOTES: The temperature limitations recommended by the sealant manufacturer shall be observed.

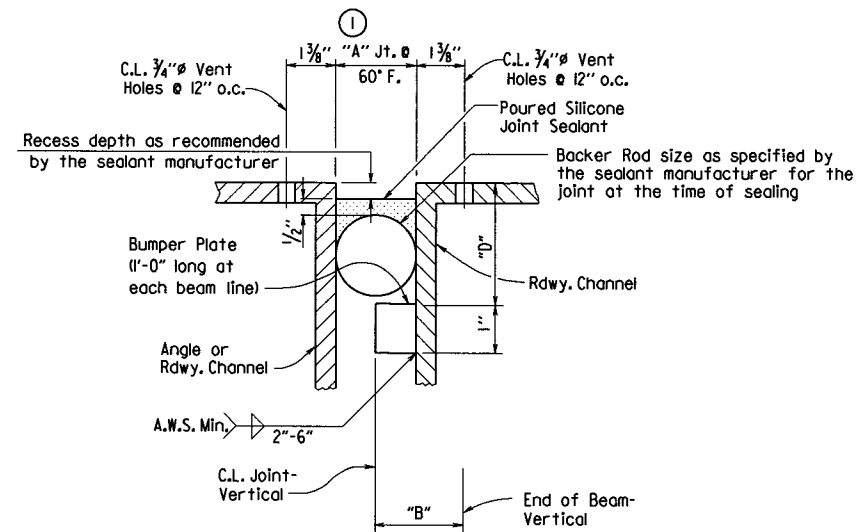
The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80°F.

**BACKER ROD NOTE:**

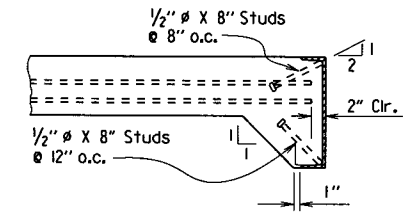
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod that 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.

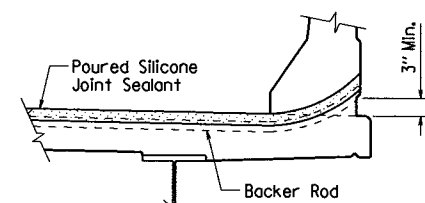


**DETAIL OF POURED SILICONE JOINT SEAL**

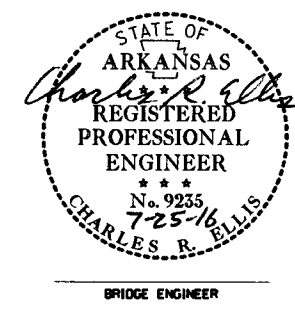


NOTE: As an alternate to 3/8 inch studs, 1/2 inch x 8 inch studs spaced as shown may be used. Use weight of 3/8 inch stud as basis of measurement of structural steel in anchors.

**DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT**



**JOINT SEAL PLACEMENT AT CURB**

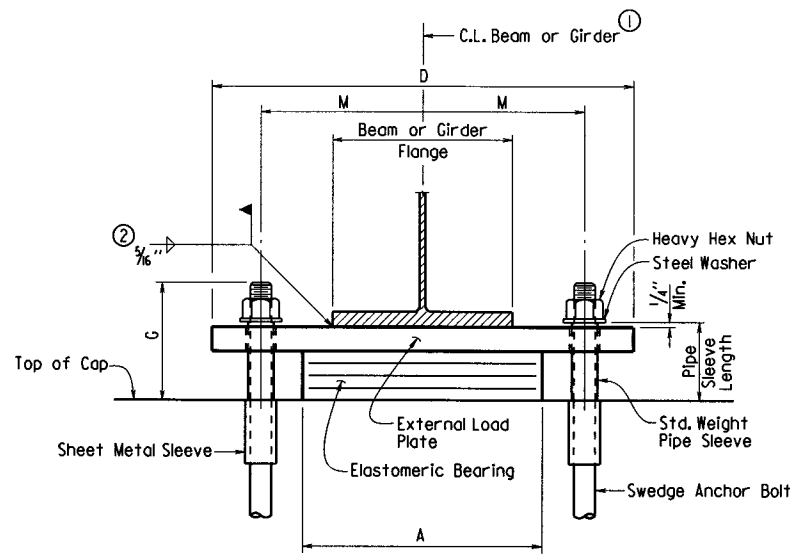


SHEET 5 OF 5  
 DETAILS OF 126'-0" CONTINUOUS COMPOSITE W-BEAM UNIT  
 FLAT CREEK  
 ROUTE SEC.  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: COR DATE: 1/28/2016 FILENAME: b050275xl.st.dgn  
 CHECKED BY: CMW DATE: 7/25/16 SCALE: No Scale  
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 BRIDGE NO. 07394 DRAWING NO. 58784

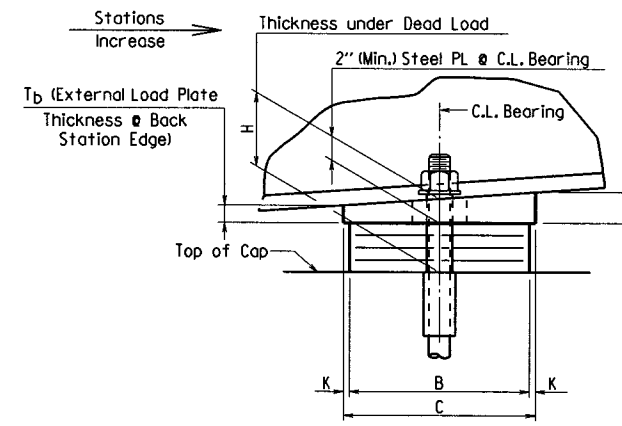
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275	83	167	

07394 - ELASTOMERIC BEARINGS - 58785

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



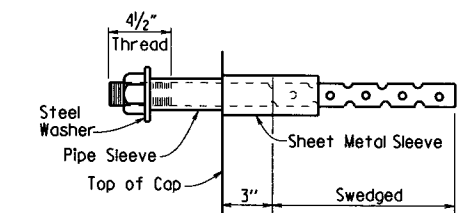
FRONT VIEW



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.

Core 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.

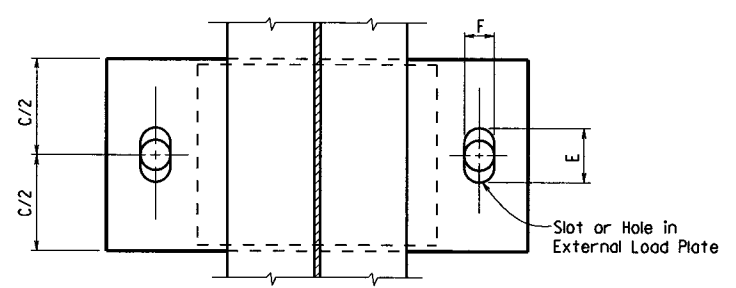


ANCHOR BOLT DETAIL

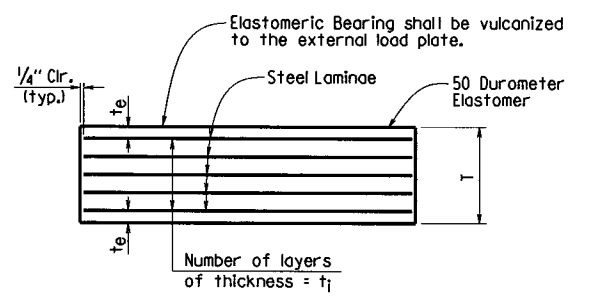
Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

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

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



PLAN VIEW



ELASTOMERIC BEARING

$t_e$  = 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  $t_i$

Prior to erection of the beams or girders, the Contractor shall verify the orientation of the bearings with respect to  $T_a$  and  $T_b$ .

TABLE OF FABRICATOR VARIABLES

③ Maximum Design Load - Service I Limit State

BRIDGE NO.	LOCATION		BEARING TYPE	NO. OF BEARINGS EACH BENT	③ MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD				EXTERNAL LOAD PLATE						ANCHOR BOLT									
	BENT NO(S).	BEAM OR GIRDER NO.						A	B	N	$t_i$	$t_e$	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	$T_a$	$T_b$	ANCHOR BOLT ( $\phi \times L$ )	PIPE SLEEVE SIZE ( $\phi \times L$ )	SHEET METAL SLEEVE SIZE ( $\phi \times L$ )	STEEL WASHER SIZE (O.D.)	
07394	1	ALL	EXP	7	73	7"	4 3/8"	12"	8"	3	1/2"	1/4"	4 @ 12 ga.	2 1/8"	9"	22"	3 3/8"	2 1/4"	1/2"	8 1/4"	2.00"	2.00"	1 1/2" x 24"	55	1 1/2" x 4 3/8"	3" x 6"	3"
	2	ALL	FIX	7	145	7"	3 3/8"	14"	10"	2	1/2"	1/4"	3 @ 12 ga.	1 1/8"	11"	25"	2 5/8"	2 5/8"	1/2"	9 1/2"	2.00"	2.00"	1 3/4" x 27"	55	2" x 4 1/8"	4" x 6"	3 3/8"
	3	ALL	FIX	7	145	7"	3 3/8"	14"	10"	2	1/2"	1/4"	3 @ 12 ga.	1 1/8"	11"	25"	2 5/8"	2 5/8"	1/2"	9 1/2"	2.01"	1.99"	1 3/4" x 27"	55	2" x 4 1/8"	4" x 6"	3 3/8"
	4	ALL	EXP	7	73	7"	4 3/8"	12"	8"	3	1/2"	1/4"	4 @ 12 ga.	2 1/8"	9"	22"	3 3/8"	2 1/4"	1/2"	8 1/4"	2.03"	1.97"	1 1/2" x 24"	55	1 1/2" x 4 3/8"	3" x 6"	3"

GENERAL NOTES

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

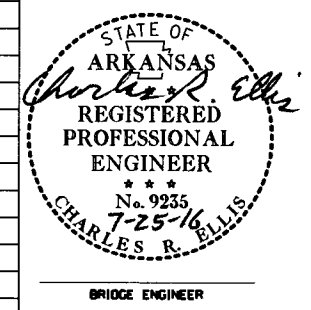
External load plates shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

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

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M 270, Gr. 50W)". External load plates will not be measured and paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

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

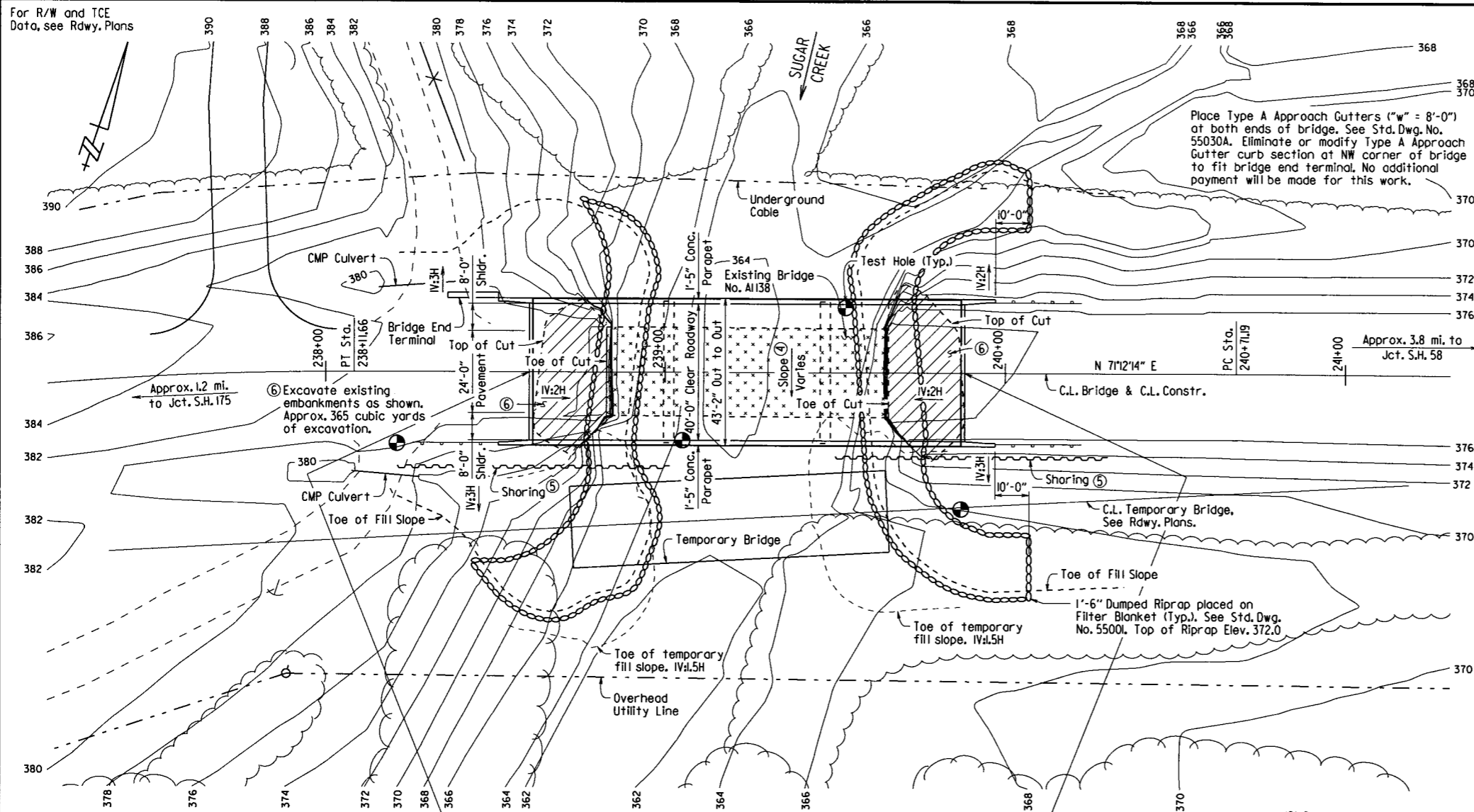


DETAILS OF ELASTOMERIC BEARINGS  
 FLAT CREEK  
 ROUTE SEC.  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: COR DATE: 2/01/2016 FILENAME: b050275xl.el.dgn  
 CHECKED BY: CM DATE: 7/25/16 SCALE: No Scale  
 DESIGNED BY: COR DATE: 1/16  
 BRIDGE NO. 07394 DRAWING NO. 58785

PRINT DATE: 7/25/2016

For R/W and TCE 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.	050275		84 167	
				07395 - LAYOUT - 58786				



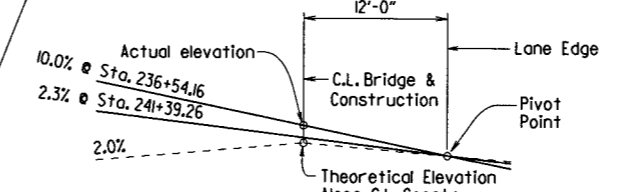
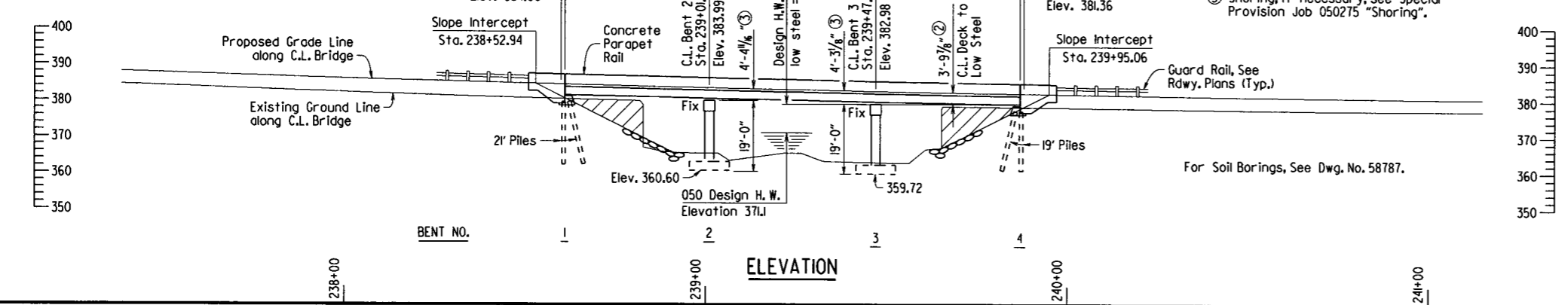
Place Type A Approach Gutters ("w" = 8'-0") at both ends of bridge. See Std. Dwg. No. 55030A. Eliminate or modify Type A Approach Gutter curb section at NW corner of bridge to fit bridge end terminal. No additional payment will be made for this work.

Excavate existing embankments as shown. Approx. 365 cubic yards of excavation.

### HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY YEARS	DISCHARGE CFS	NATURAL WATER SURFACE ELEVATION FEET	WATER SURFACE ELEV. WITH BACKWATER FEET
Design	50	4,080	370.4	371.2
Base	100	4,950	371.2	372.0
Extreme	500	7,300	373.2	374.0
Overtopping	>500	-	-	-

- ① Unconstricted water surface without structure or roadway approaches. Drainage Area = 4.9 square miles. Historical H.W. Elev. = N/A. 0100 Backwater Elev. for existing structure = 371.5 ft.
- ② Proposed Low Bridge Chord Elev. = 378.42 ft. @ Sta. 239+86.00



**GENERAL NOTES**

BENCH MARK: Vertical Control Data are shown on Survey Control Details.

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 6th Edition (2012), with 2013 interim revisions.

LIVE LOADING: HL-93

SEISMIC ZONE: I S<sub>DI</sub> = 0.121 SITE CLASS = B

MATERIALS AND STRENGTHS:  
 Class (S/AE) Concrete (Superstructure) f'c = 4,000 psi  
 Class 5 Concrete (Substructure) f'c = 3,500 psi  
 Reinforcing Steel (AASHTO M 31 or M 322, Type A) fy = 60,000 psi  
 Structural Steel (AASHTO M 270, Gr. 36) Fy = 36,000 psi  
 Structural Steel (AASHTO M 270, Gr. 50W) Fy = 50,000 psi

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

STEEL PILING: All piling shall be HP 12X53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons and into the material designated as Dolostone on the boring legend. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. Actual piling lengths to be determined in the field. The Contractor shall use approved steel H-Pile driving points on all piles.

FOOTINGS: Footings shall be set a minimum of 2'-0" into material designated as Dolostone on the boring legend. The top of the footings shall be set at or below the channel bottom as determined by the lowest channel elevation within the footprint of the footing. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Blasting will not be permitted. Concrete in footings shall be poured directly against excavated surfaces of rock.

BRIDGE DECK: The concrete bridge deck shall be given a fine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

DETAIL DRAWINGS:  
 End Bents 58788 - 58790  
 Intermediate Bents 58791  
 126'-0" Continuous Composite W-Beam Unit 58792 - 58796  
 Elastomeric Bearings 58797  
 General Notes 55006  
 Steel Piling 55020  
 Approach Gutters 55030A

EXISTING BRIDGE: Existing Bridge No. A1138 (Log Mile 5.48) is 31.7' wide (26.0' Roadway), 82.0' long and consists of a two span (40'-40') continuous haunched RCDG unit supported by concrete wall abutments and a concrete wall pier.

REMOVAL AND SALVAGE: Existing Bridge No. A1138 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

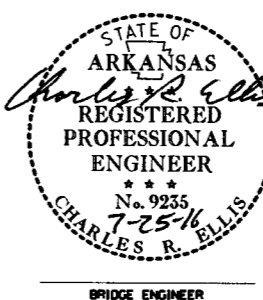
TEMPORARY BRIDGE: Construct a minimum 93' long temporary bridge approximately 45' downstream with a minimum deck elevation of 378.00. See Roadway Plans for actual detour grade and alignment. The temporary bridge shall have a minimum roadway width of 24', and a minimum live load capacity of H15 in accordance with AASHTO Standard Specifications for Highway Bridges, 2002 Edition. See Section 603 and Std. Drawing Nos. 55054-55056 for temporary bridge details. If timber piling and pine timber are used on this temporary bridge structure, the materials shall be treated with a preservative according to the Standard Specifications. A timber deck is not allowed.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

### VERTICAL CURVE DATA

No Scale

Vertical Curve Length = 450'
Theoretical Elevation along C.L. Bridge and C.L. Construction.
-3.104%
0.132%
P.V.I. 239+95.11
Elev. 379.96



SHEET 1 OF 2  
 LAYOUT OF BRIDGE OVER SUGAR CREEK  
 HARDY-OZARK ACRES STRS. & APPRS. (S)  
 SHARP COUNTY

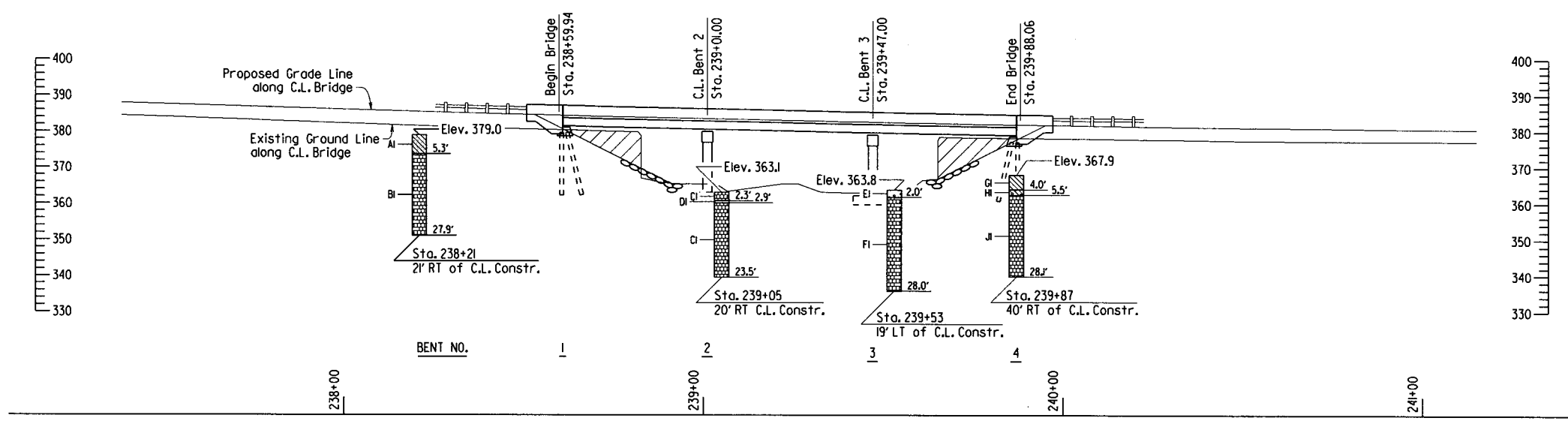
ROUTE 63 SEC. 2  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.

BRIDGE NO. 07395 DRAWING NO. 58786

DATE: 9/10/2015  
 FILENAME: b050275x3.11.dgn  
 SCALE: 1" = 20'-0"

PRINT DATE: 7/25/2016

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.	050275	25	167	
				07395 - LAYOUT - 58787				



ELEVATION OF SOIL BORINGS

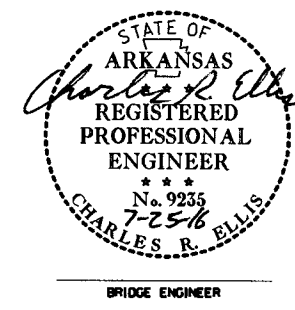
**BORING LEGEND**

- AI-Moist, Stiff, Brown Clay with Sand
- BI-DOLOSTONE
- CI-DOLOSTONE - Slightly Weathered, Hard, Frequent Fractures, Occasional Dolomite-Filled Vugs, Light Gray
- DI-Soil-Filled Cavity (2.3' to 2.9')
- EI-Gravel
- FI-DOLOSTONE - Weathered, Medium Hard
- GI-Moist, Hard, Brown Clay
- HI-Moist, Hard, Brown Clay with Gravel (Rock Fragments)
- JI-DOLOSTONE WITH OCCASIONAL CHERT LAYERS - Slightly Weathered, Hard, Frequent Fractures, Gray

**"N" VALUES**

- Sta. 238+21 - 2' Right of Construction Centerline
- 4.2 - 5.2, N=10
- Sta. 239+87 - 40' Right of Construction Centerline
- 4.5 - 4.8, N=60(4')

PRINT DATE: 7/25/2016

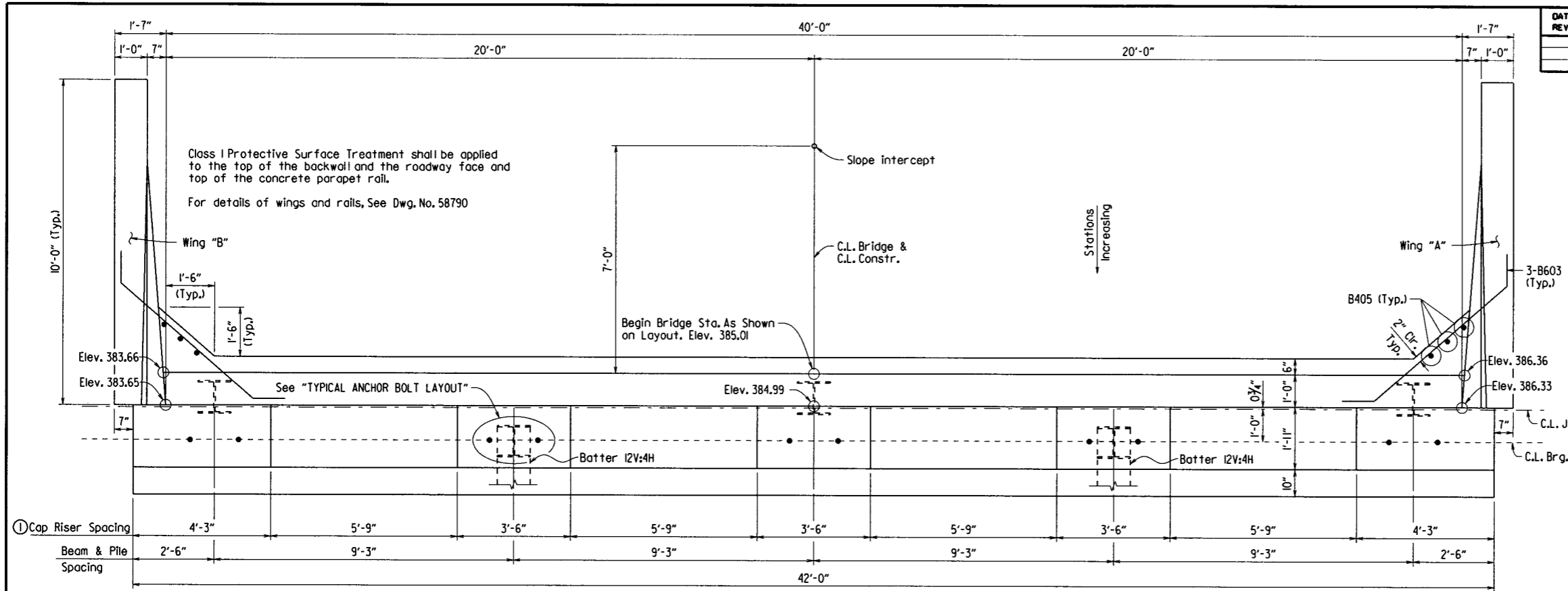


SHEET 2 OF 2  
 LAYOUT OF BRIDGE OVER SUGAR CREEK  
 HARDY-OZARK ACRES STRS. & APPRS. (S)  
 SHARP COUNTY

ROUTE 63 SEC. 2  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.

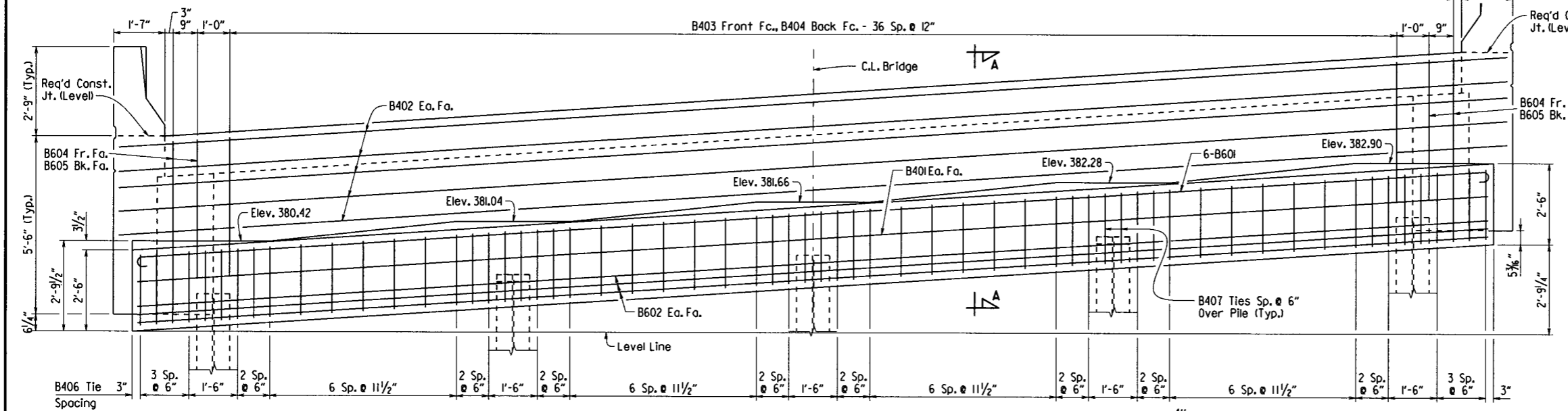
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 BRIDGE NO. 07395 DRAWING NO. 58787

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. 050275							66	167
① 07395 - END BENT DETAILS - 58788								

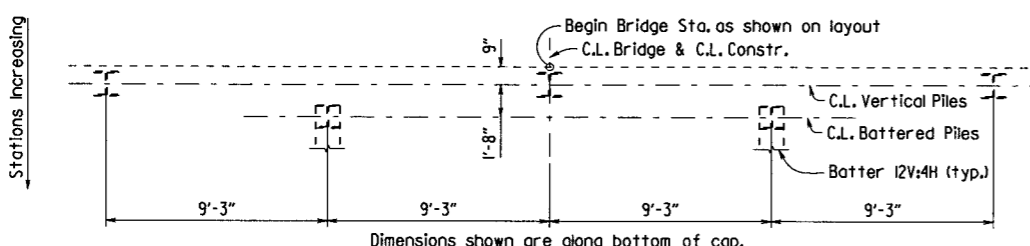


① Steps to be cast level at the elevations shown.

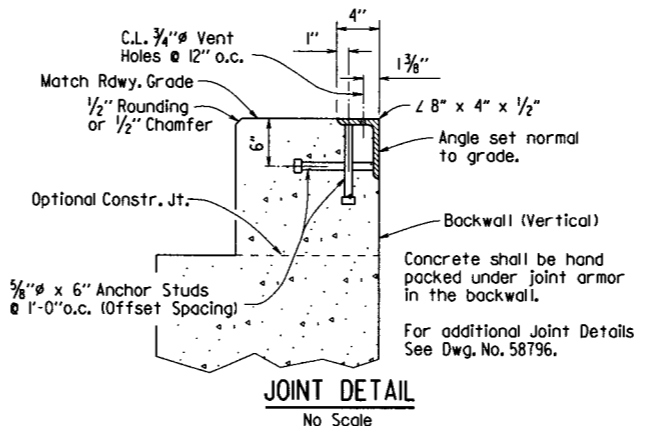
PLAN  
1/2" = 1'-0"



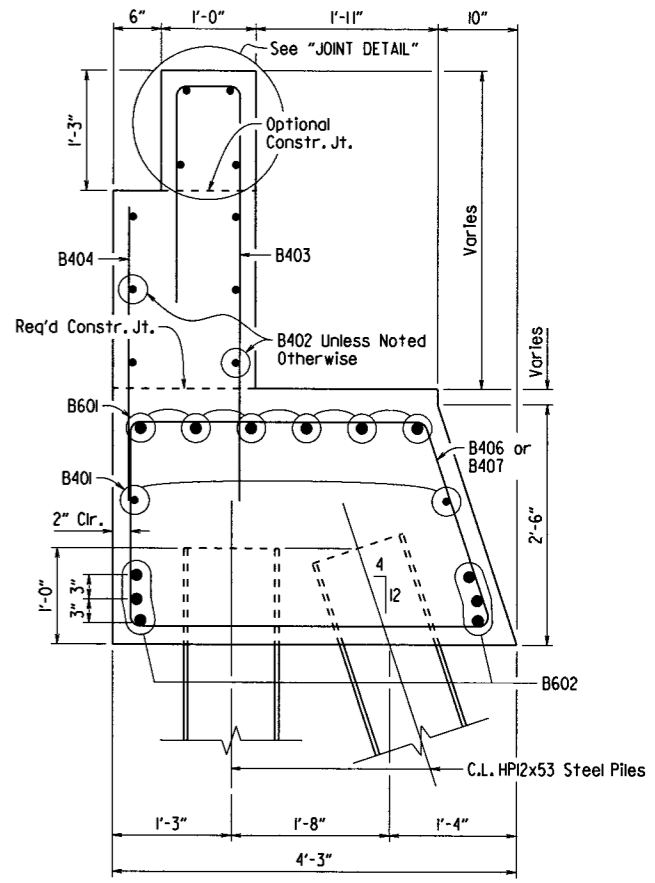
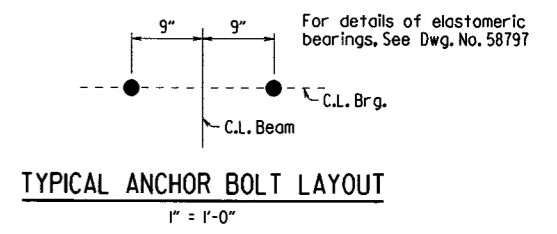
ELEVATION  
Looking Back  
1/2" = 1'-0"



PILE LAYOUT  
1/4" = 1'-0"

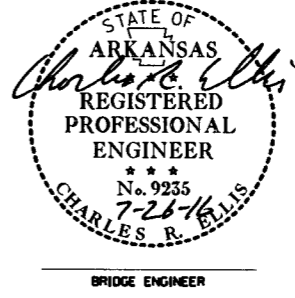


JOINT DETAIL  
No Scale



SECTION A-A  
1" = 1'-0"

General Notes:  
For Standard General Notes, See Std. Dwg. No. 55006.  
For Details of Steel Piling, See Std. Dwg. No. 55020.  
All Piling shall be grade 50.  
No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation" note on Dwg. No. 58796.  
For additional information see Layout.



DETAILS OF BENT I  
SUGAR CREEK

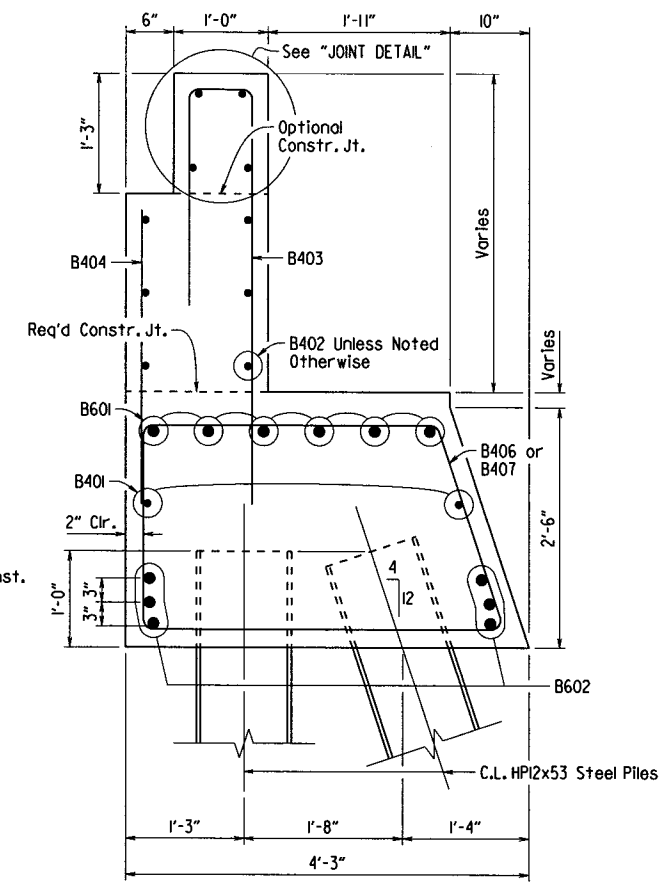
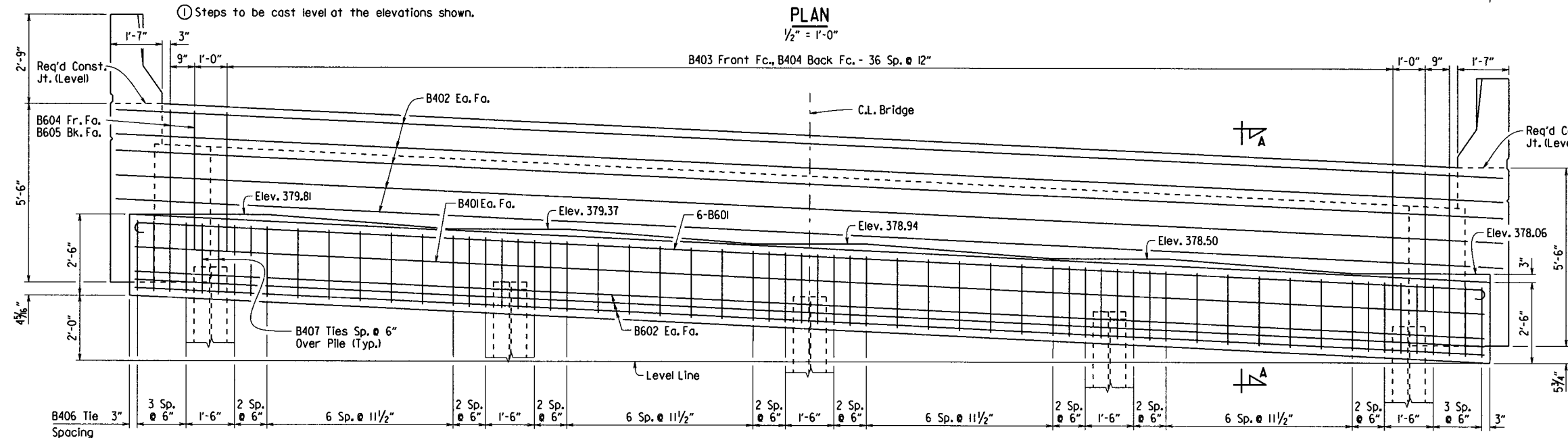
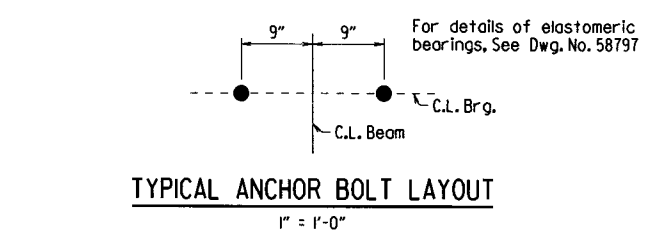
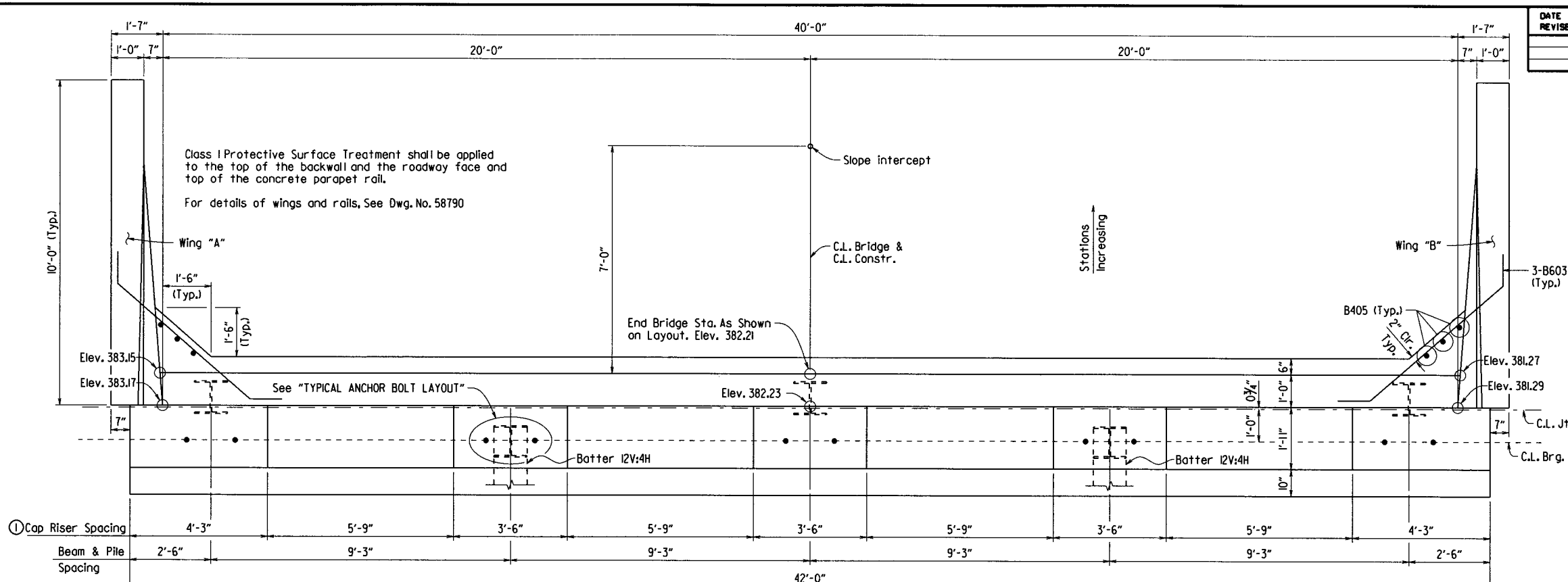
ROUTE SEC.  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

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CHECKED BY: B45 DATE: 7/26/16 SCALE: As Shown  
DESIGNED BY: BHS DATE: 1/20/16

BRIDGE NO. 07395 DRAWING NO. 58788

PRINT DATE: 7/26/2016

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. 050275							37	167
07395 - END BENT DETAILS - 58789								



General Notes:  
1" = 1'-0"

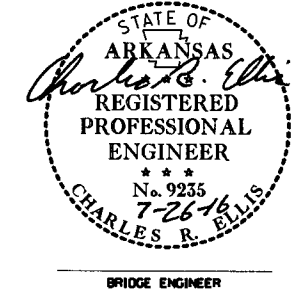
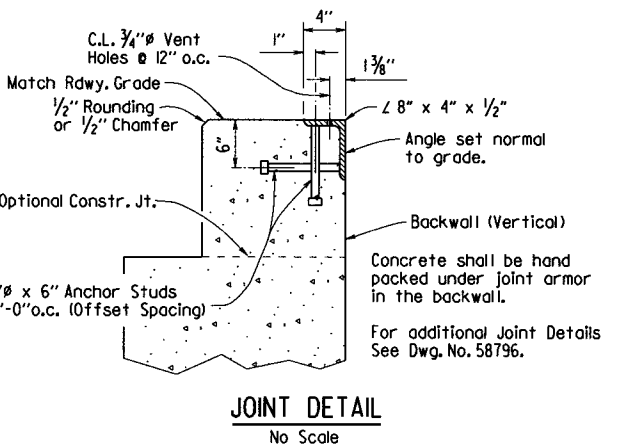
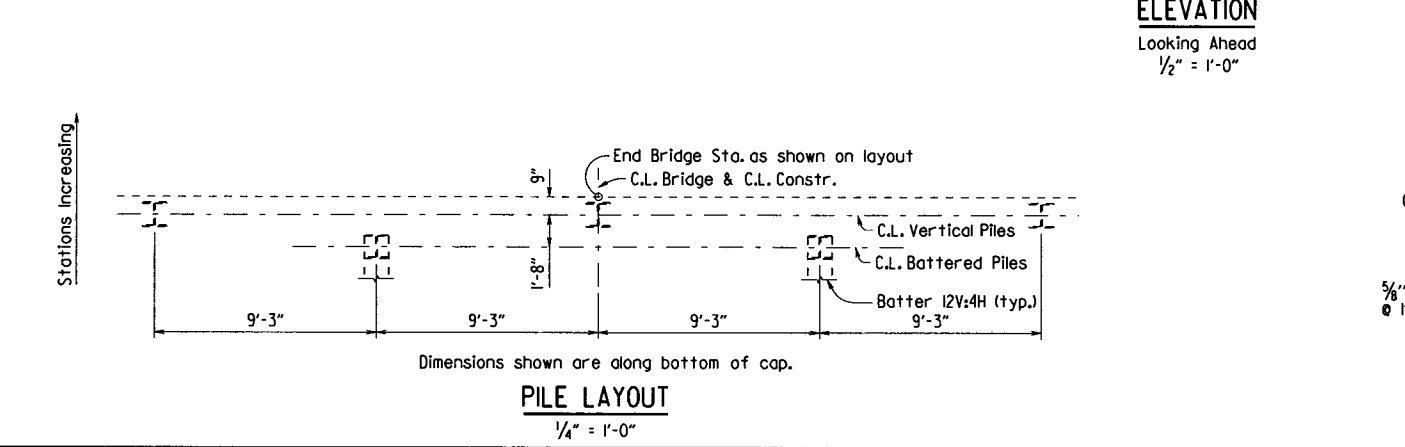
For Standard General Notes, See Std. Dwg. No. 55006.

For Details of Steel Piling, See Std. Dwg. No. 55020.

All Piling shall be grade 50.

No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation" note on Dwg. No. 58796.

For additional information see Layout.



DETAILS OF BENT 4  
SUGAR CREEK

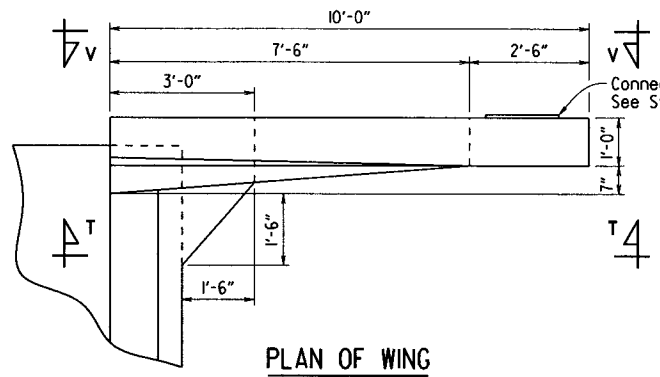
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ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

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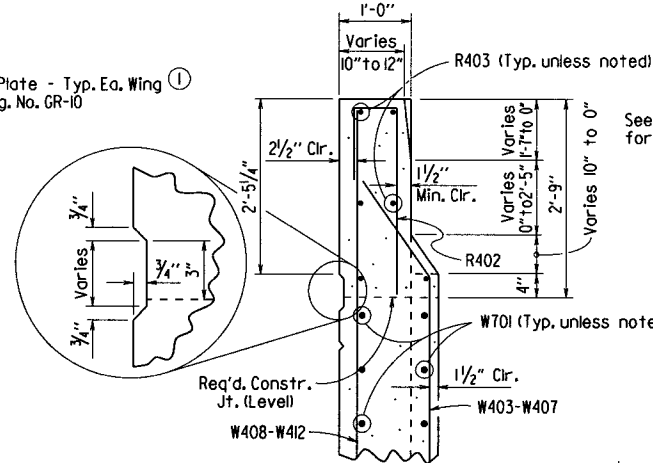
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PRINT DATE: 7/26/2016

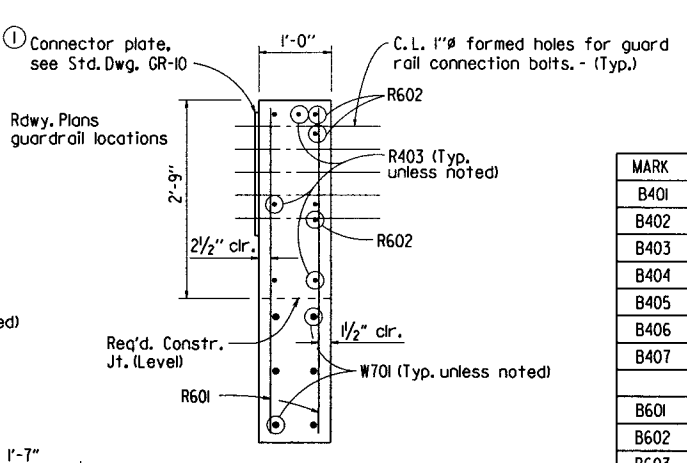
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				JOB NO.	050275	88	167	
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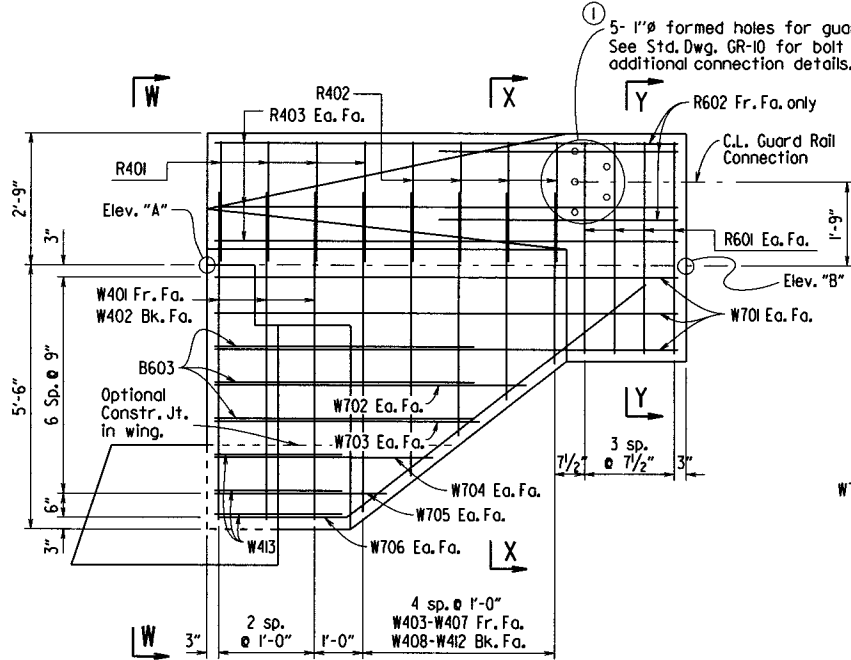
PLAN OF WING



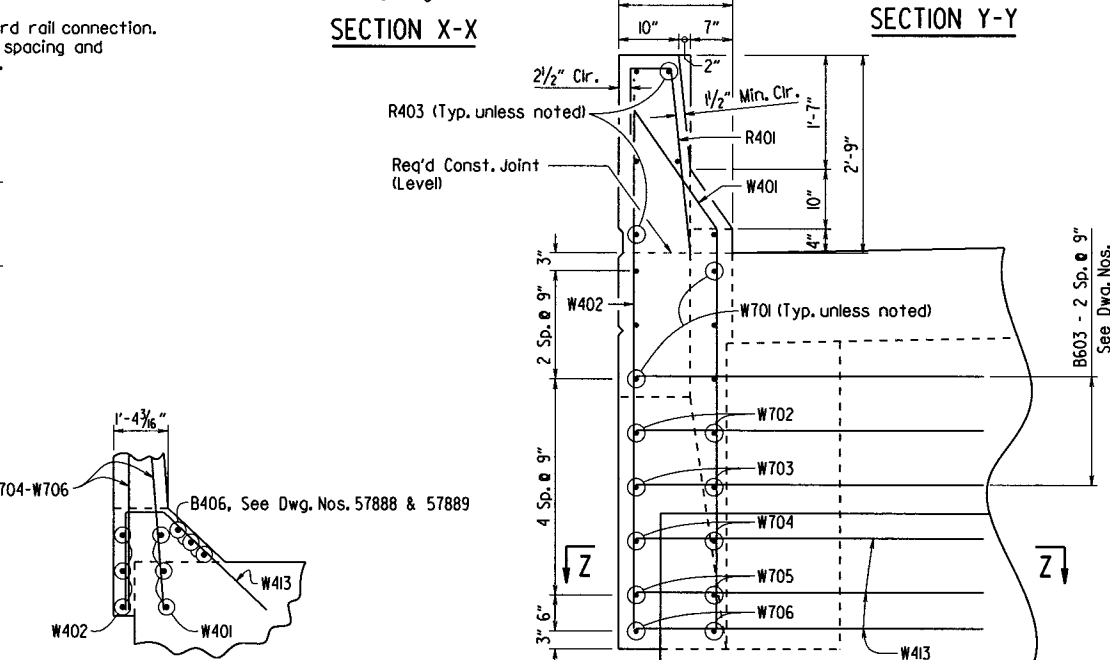
SECTION X-X



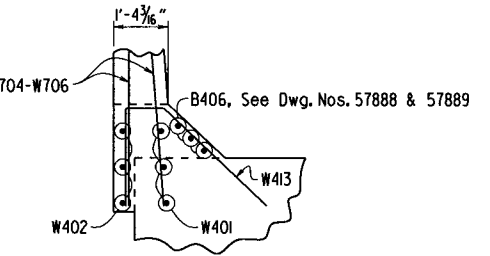
SECTION Y-Y



VIEW T-T

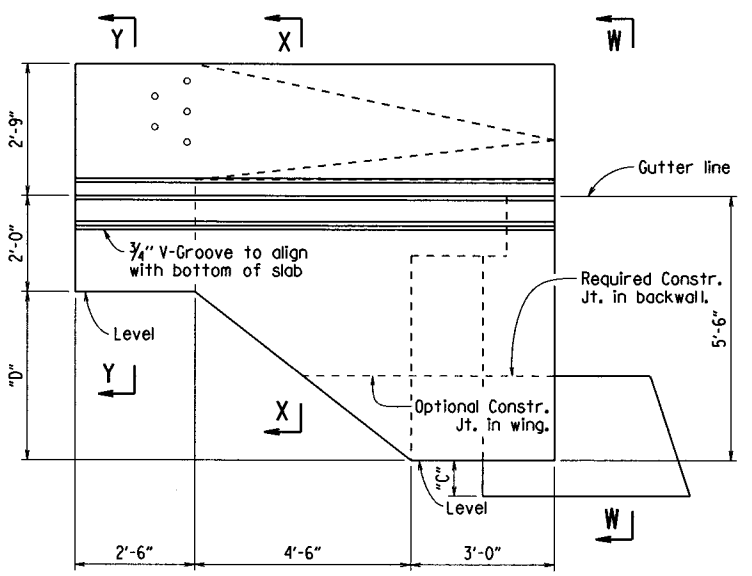


VIEW W-W



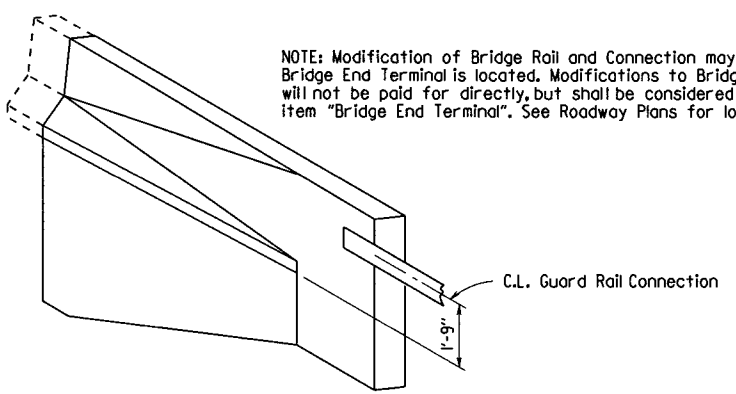
SECTION Z-Z

BAR LIST - PER BENT				BENDING DIAGRAMS	
MARK	NO. REQ'D.	LENGTH	P.D.	Dimensions are out to out of bars.	
B401	2	4'-8"	Str.		
B402	10	42'-10"	Str.		
B403	37	6'-11"	2"		
B404	37	3'-1"	Str.		
B405	6	3'-11"	Str.		
B406	52	11'-9"	2"		
B407	10	7'-5"	2"		
B601	6	43'-0"	4 1/2"		
B602	6	41'-8"	Str.		
B603	6	7'-5"	4 1/2"		
B604	4	7'-9"	4 1/2"		
B605	4	3'-7"	Str.		
R401	8	3'-11"	2"		
R402	8	4'-0"	2"		
R403	12	9'-8"	Str.		
R601	16	4'-5"	Str.		
R602	6	5'-0"	Str.		
W401	6	7'-7"	2"		
W402	6	7'-11"	Str.		
W403-W407	2 each	Var. 7'-4" to 4'-3"	2"		
W408-W412	2 each	Var. 7'-8" to 4'-7"	Str.		
W413	6	7'-8"	2"		
W701	12	9'-8"	Str.		
W702	4	6'-5"	Str.		
W703	4	5'-6"	Str.		
W704	4	4'-6"	Str.		
W705	4	3'-7"	Str.		
W706	4	11'-0"	5 1/4"		



VIEW V-V

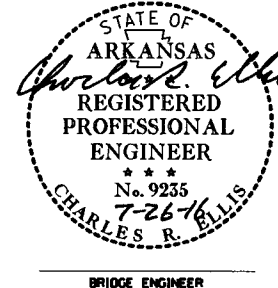
① Connector plate as required. See Roadway plans for location of guard rail.



THREE DIMENSIONAL VIEW OF RAIL

TABLE OF VARIABLES

Bent	Wing	Elev. "A"	Elev. "B"	"C"	"D"
1	A	386.33	386.63	5 3/8"	3'-9 3/8"
	B	383.65	383.87	6 1/4"	3'-8 5/8"
4	A	383.17	382.97	4 5/8"	3'-3 3/8"
	B	381.29	381.15	6 3/8"	3'-4 3/8"



COMMON DETAILS OF END BENTS  
SUGAR CREEK  
ROUTE SEC.  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

DRAWN BY: CGP DATE: 1/20/2016 FILENAME: b050275x3.bl.dgn  
CHECKED BY: BHS DATE: 7/26/16 SCALE: No Scale  
DESIGNED BY: BHS DATE: 1/20/16  
BRIDGE NO. 07395 DRAWING NO. 58790



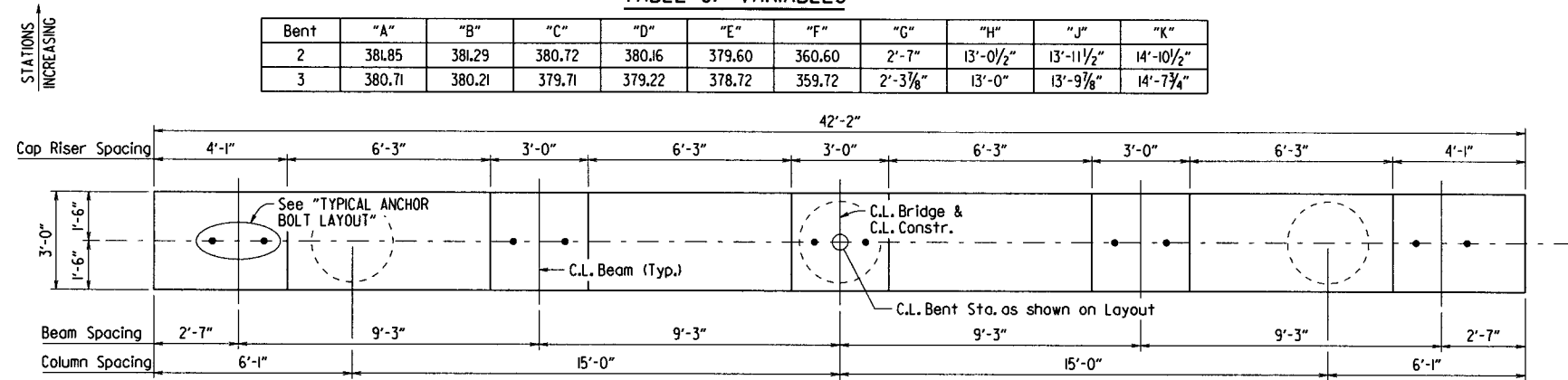
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275	89	167	
				07395 - INT. BENT DETAILS - 58791				

TABLE OF VARIABLES

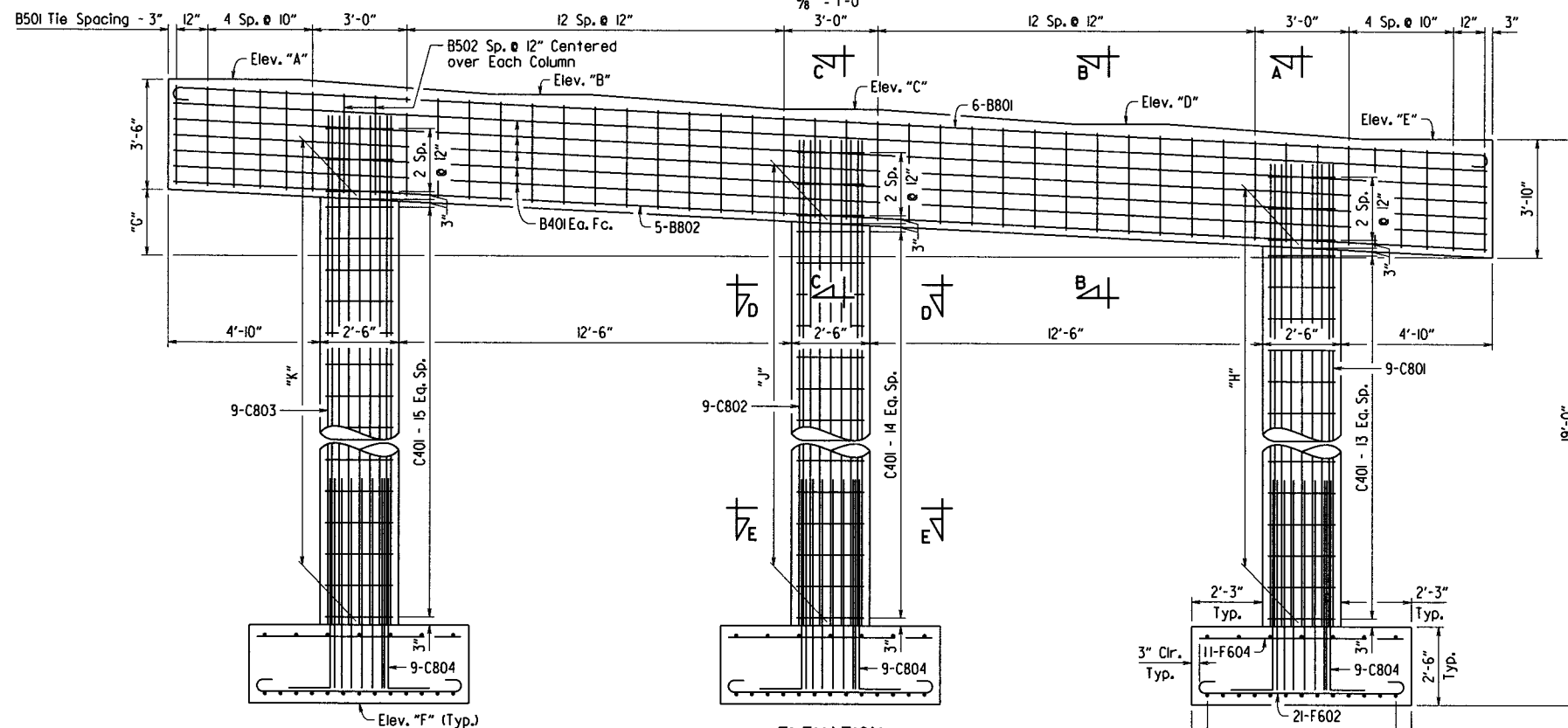
Bent	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"
2	381.85	381.29	380.72	380.16	379.60	360.60	2'-7"	13'-0 $\frac{1}{2}$ "	13'-11 $\frac{1}{2}$ "	14'-10 $\frac{1}{2}$ "
3	380.71	380.21	379.71	379.22	378.72	359.72	2'-3 $\frac{1}{8}$ "	13'-0"	13'-9 $\frac{3}{8}$ "	14'-7 $\frac{3}{4}$ "

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	"X"	"Y"	P.D.	BENDING DIAGRAMS
B401	10	41'-10"			Str.	
B501	38	12'-2"			2 $\frac{1}{2}$ "	
B502	6	8'-10"			2 $\frac{1}{2}$ "	
B801	6	43'-8"	41'-10"	8"	6"	
B802	5	41'-10"			Str.	
C401	54	7'-8"			2'-0"	
C801	9	15'-9"			Str.	
C802	9	16'-8"			Str.	
C803	9	17'-7"			Str.	
C804	27	10'-10"			6"	
F601	39	11'-10"	10'-6"	6"	4 $\frac{1}{2}$ "	
F602	63	7'-10"	6'-6"	6"	4 $\frac{1}{2}$ "	
F603	21	10'-6"			Str.	
F604	33	6'-6"			Str.	

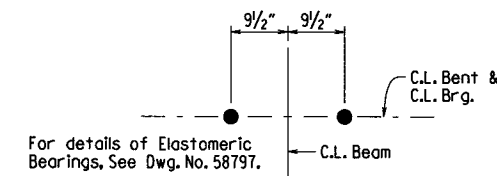


PLAN



ELEVATION

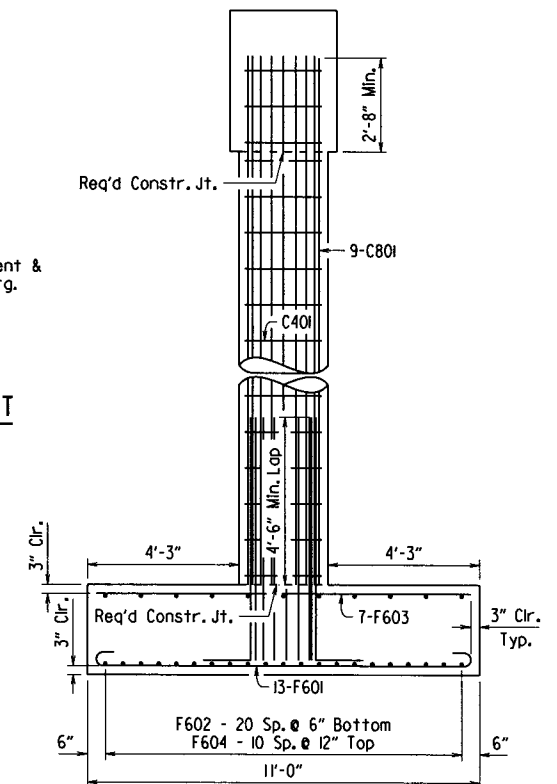
Looking Ahead  
3/8" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

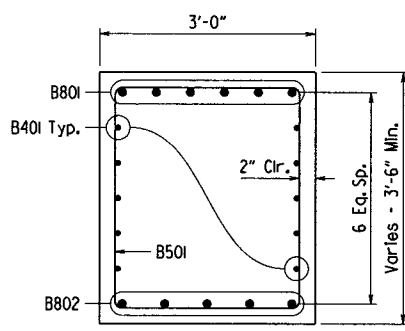
No Scale

General Notes:  
For Standard General Notes, See Std. Dwg. No. 55006.  
For Additional Information, See Layout.



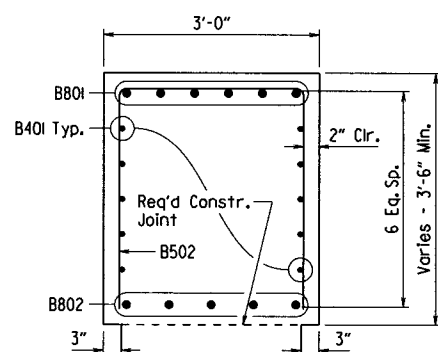
SECTION A-A

3/8" = 1'-0"



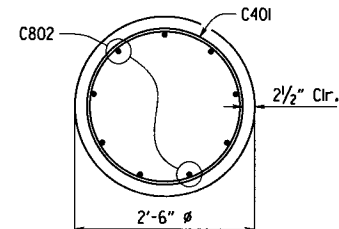
SECTION B-B

3/4" = 1'-0"



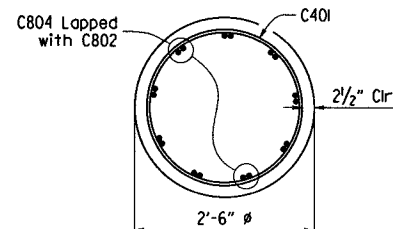
SECTION C-C

3/4" = 1'-0"



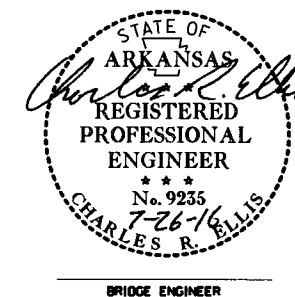
SECTION D-D

3/4" = 1'-0"



SECTION E-E

3/4" = 1'-0"



DETAILS OF INTERMEDIATE BENTS  
SUGAR CREEK  
ROUTE 160  
SEC. 16  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

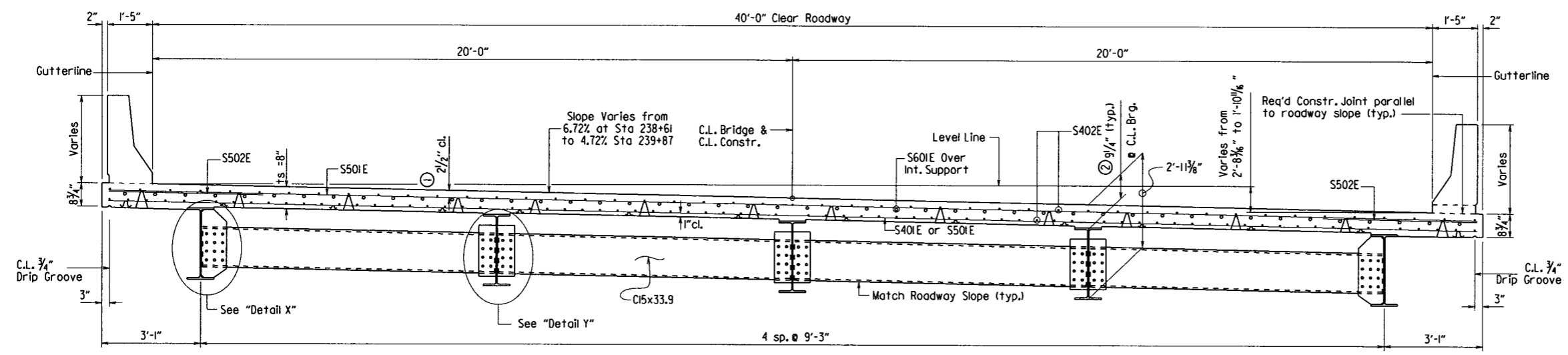
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CHECKED BY: KHS DATE: 1/20/16 SCALE: 3/8" = 1'-0" or  
DESIGNED BY: KHS DATE: 1/20/16 AS SHOWN  
BRIDGE NO. 07395 DRAWING NO. 58791

REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.			
		JOB NO.	050275	93	167	
① 07395 - SPAN DETAILS - 58792						

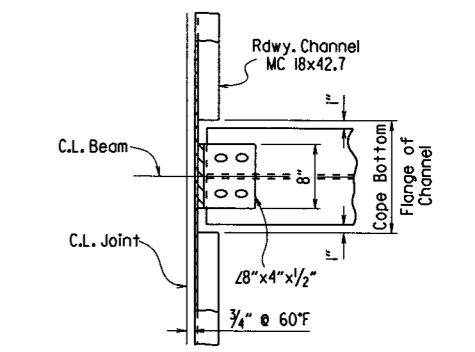
**Slab Reinforcing:**  
 Longitudinal: S402E as shown  
 S601E as shown over int. supports, see "Reinforcing Plan & Deck Pouring Sequence", Dwg. No. 58794.  
 Transverse: S501E @ 6" in top  
 S401E @ 12" o.c. in bottom — Alternate  
 S501E @ 12" o.c. in bottom  
 S502E @ 6" o.c. in top of overhangs (bundled with #5 bars)

NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Roadway Face and top of the Concrete Parapet Rail.  
 Bar positions and clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices sufficient in size and number to prevent displacement during construction. See Subsection 804.06.

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



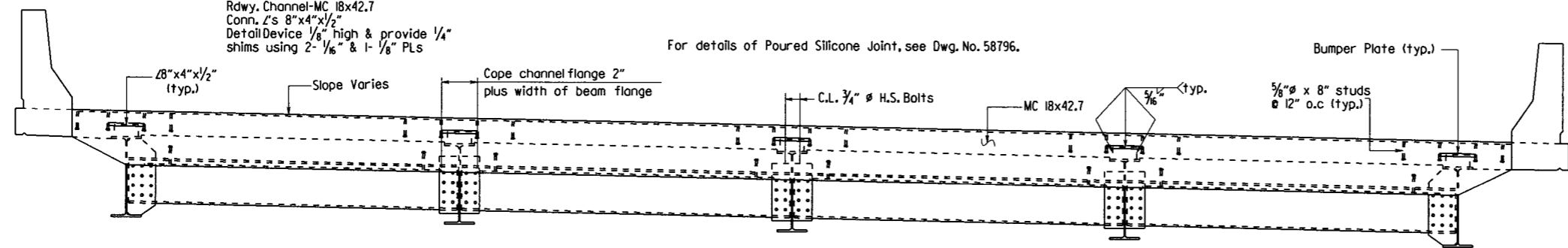
**TYPICAL ROADWAY SECTION**  
 Looking Ahead  
 1/2" = 1'-0"



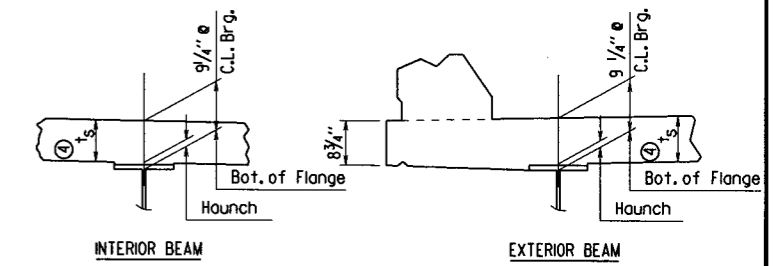
**CHANNEL CONNECTION DETAIL**  
 No Scale

t<sub>s</sub> = slab thickness as shown in "Typical Roadway Section"

**Expansion Device:**  
 Rdwy. Channel-MC 18x42.7  
 Conn. L's 8"x4"x1/2"  
 Detail Device 1/8" high & provide 1/4" shims using 2- 1/16" & 1- 1/8" PLs



**TYPICAL ROADWAY SECTION NEAR JOINT**  
 Looking Ahead Bent 1, Bent 4 Similar  
 1/2" = 1'-0"



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

**ADJUSTMENT FOR SLAB THICKNESS TOLERANCE**  
 No Scale

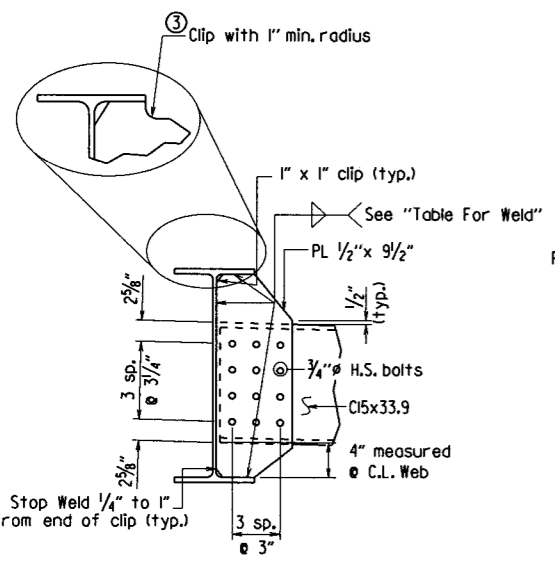
NOTES:  
 Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1 3/4". No increase in concrete and structural steel quantities will be made to maintain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

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

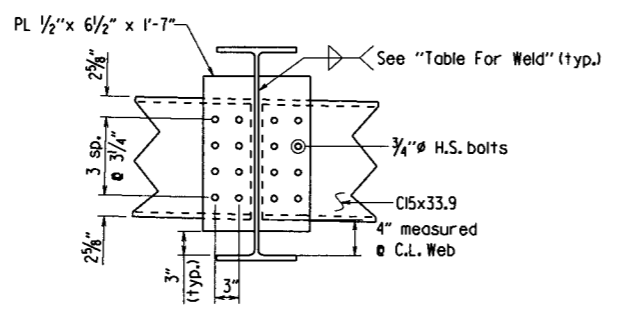
**TABLE FOR WELD**

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

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.

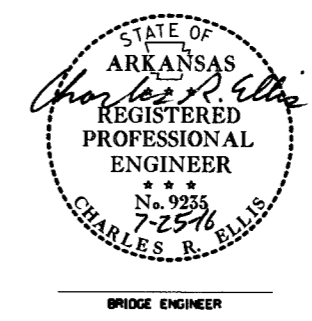


**DETAIL X**  
 1" = 1'-0"



**DETAIL Y**  
 1" = 1'-0"

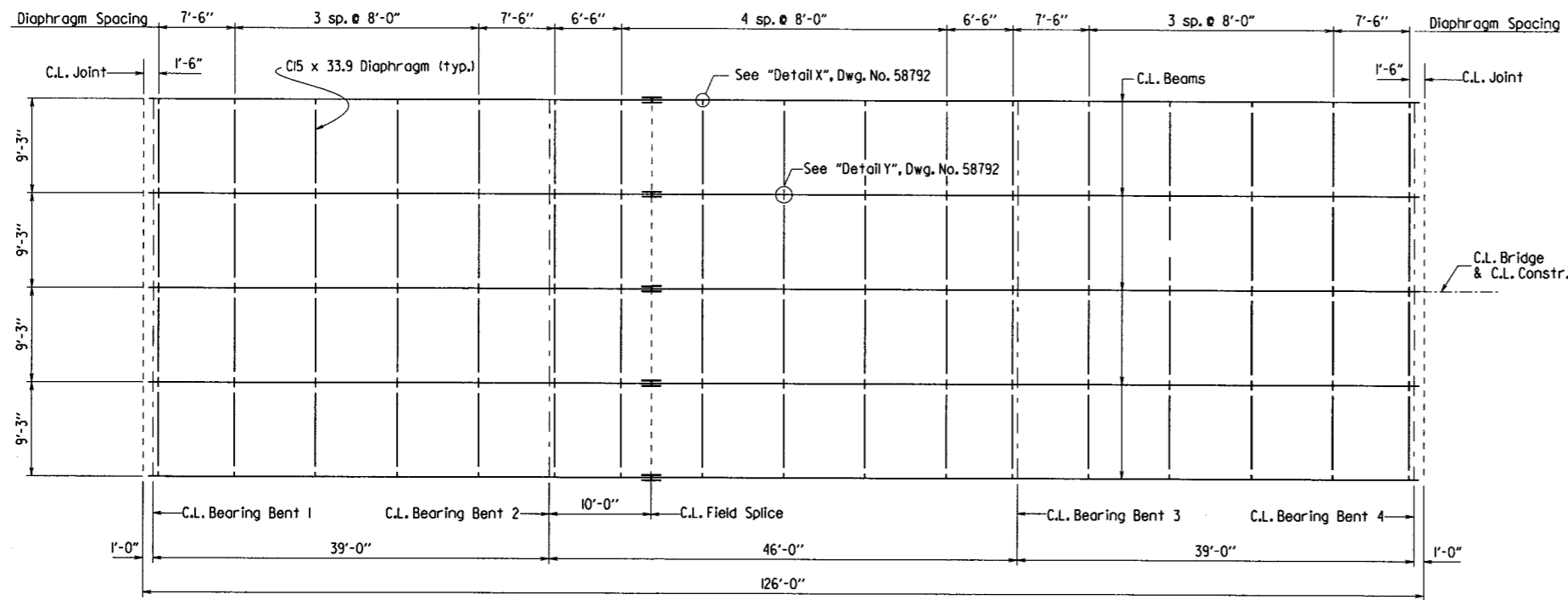
- ③ If permanent steel bridge deck forms are used, the Fabricator shall clip plates as necessary to accommodate the deck form supports.



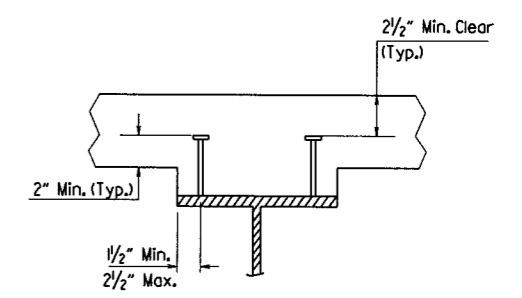
SHEET 1 OF 5  
 DETAILS OF 126'-0" CONTINUOUS COMPOSITE W-BEAM UNIT  
 SUGAR CREEK  
 ROUTE SEC.  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: COR DATE: 8/1/2015 FILENAME: b050275x3.st.dgn  
 CHECKED BY: BHS DATE: 7/25/14 SCALE: As Shown  
 DESIGNED BY: COR DATE: 7/15  
 BRIDGE NO. 07395 DRAWING NO. 58792

PRINT DATE: 7/25/2016

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.	050275	91	167	
				07395 - SPAN DETAILS - 58793				

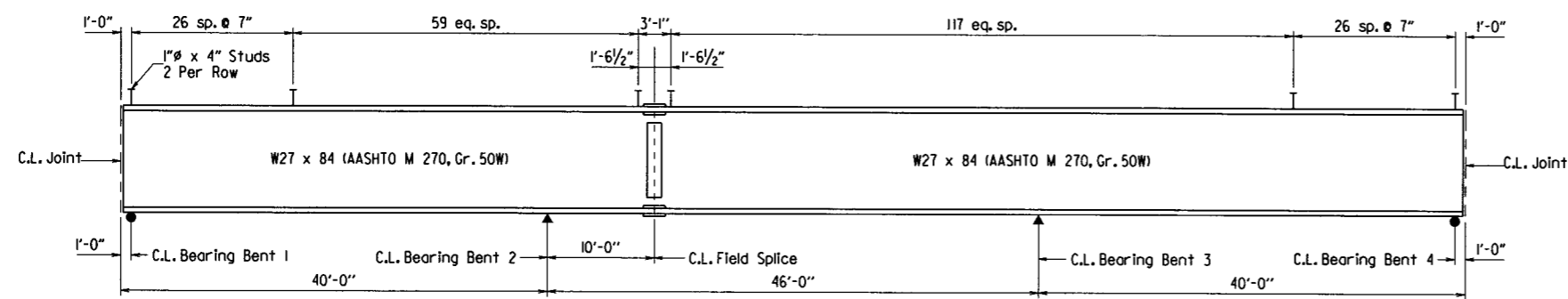


**FRAMING PLAN**  
1/8" = 1'-0"

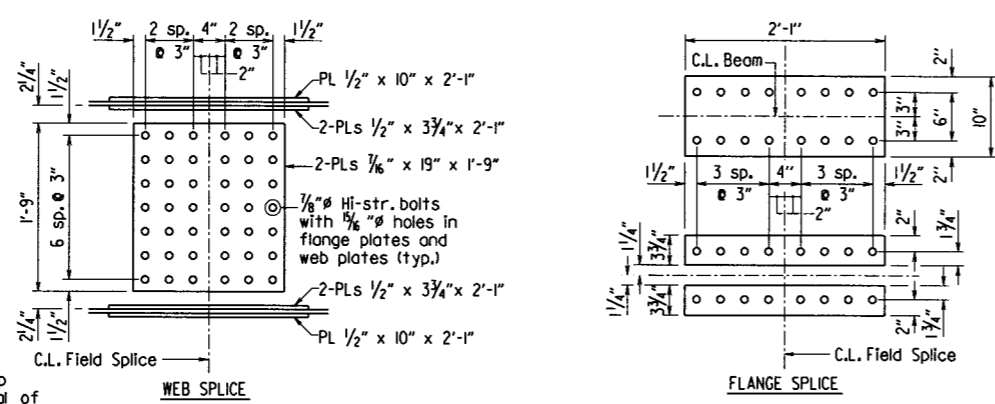


Stud Shear Connectors shown shall be 1" x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with recommendations of the Manufacturer.

**SHEAR CONNECTOR DETAIL**  
No Scale



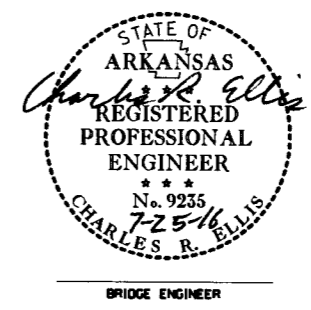
**TYPICAL BEAM ELEVATION**  
No Scale



**FIELD SPICE DETAILS**  
1" = 1'-0"

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

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



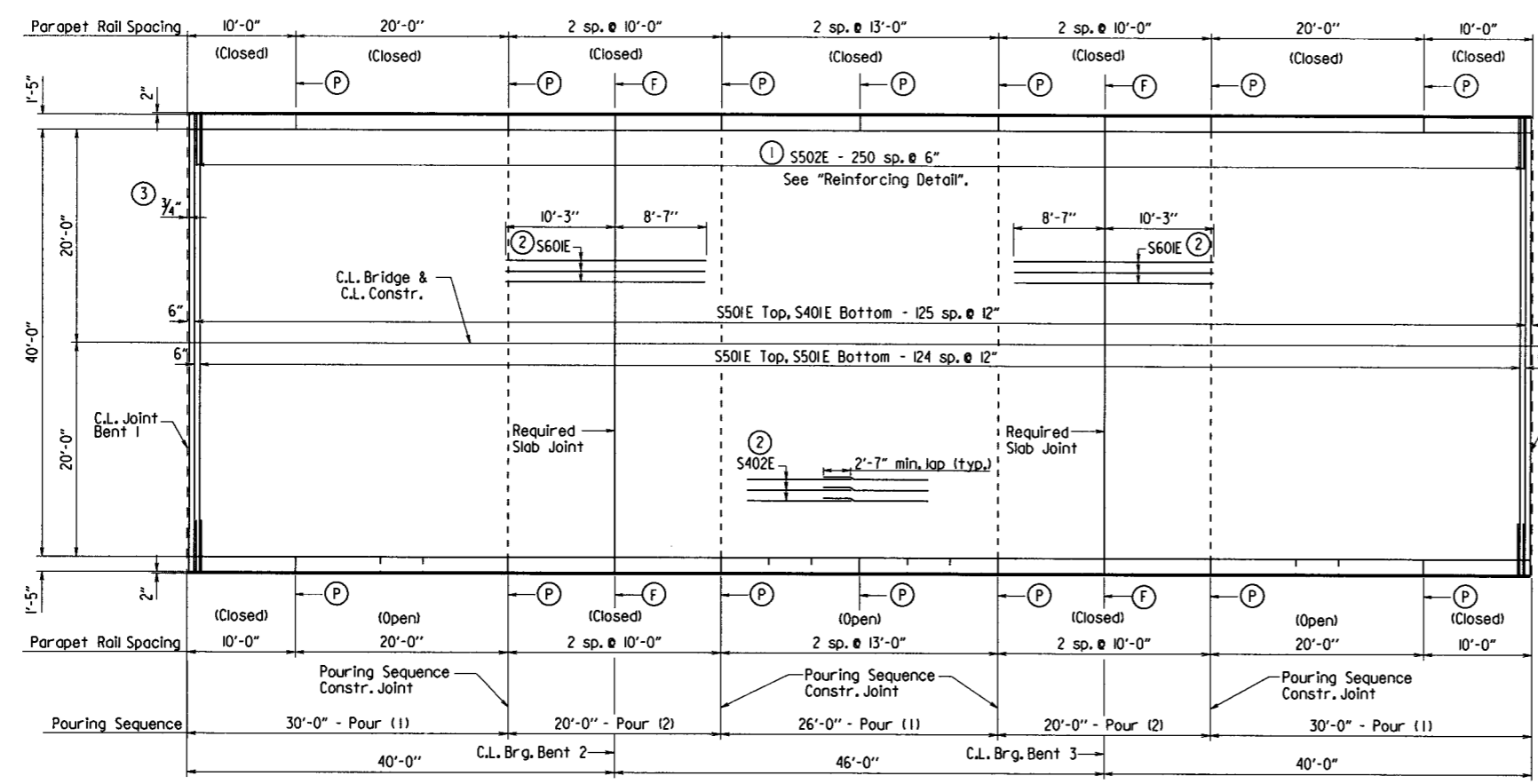
SHEET 2 OF 5  
DETAILS OF 126'-0" CONTINUOUS  
COMPOSITE W-BEAM UNIT  
SUGAR CREEK  
ROUTE SEC.  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

DRAWN BY: COR DATE: 8/12/2015 FILENAME: b050275x3.sl.dgn  
CHECKED BY: BLS DATE: 7/15/16 SCALE: As Shown  
DESIGNED BY: COR DATE: 7/15  
BRIDGE NO. 07395 DRAWING NO. 58793

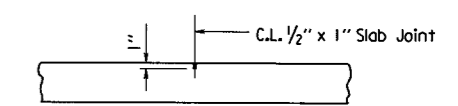
PRINT DATE: 7/25/2016

Bolted field splices shown may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of the Plan Quantities.  
All Field Splice Plates shall be AASHTO M 270, Gr. 50W steel  
All Field Splice Bolts shall be 7/8" H.S. Bolts  
All Field Splice Bolt Holes shall be 5/8"

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		42	167
				JOB NO.	050275		42	167
				07395 - SPAN DETAILS - 58794				



- (F) C.L. Full Depth Parapet Joint (1/4" - 1" max.) Stop 4" from top of slab.
- (P) C.L. Partial Depth Parapet Joint (1/4" - 1" max.) Stop 1'-2" from top of slab.
- (1) Bundled with S501E and S502E in top of overhang. Typical both sides of rdwy.
- (2) Placed as shown in "TYPICAL ROADWAY SECTION". Dwg. No. 58792.
- (3) Measured from C.L. Joint to Face of Rdwy. Channel.



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

**SLAB JOINT DETAIL**  
No Scale

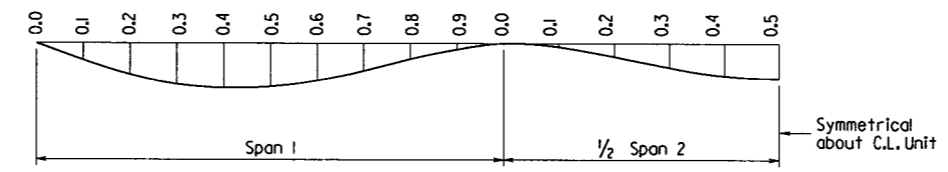
**REINFORCING PLAN & DECK POURING SEQUENCE**  
1/8" = 1'-0"

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 the end of a pour and the start of an adjacent pour. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. Concrete in bridge superstructure shall be placed, screeded and consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

**TABLE OF DEAD LOAD DEFLECTIONS (INCHES)**

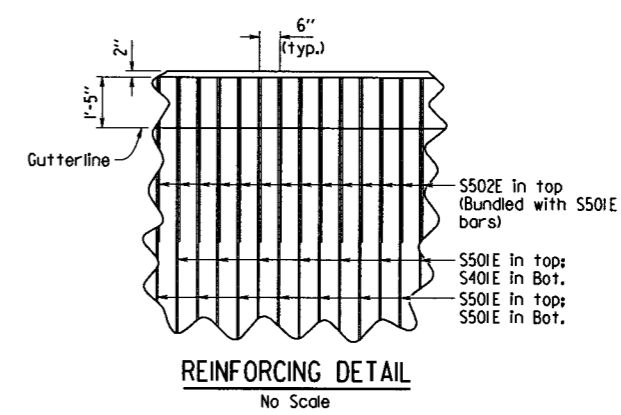
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1	0	0	0	0	0	0	0
	0.1	0.014	0.012	0.124	0.102	0.129	0.110
	0.2	0.026	0.021	0.229	0.188	0.238	0.202
	0.3	0.034	0.028	0.302	0.248	0.314	0.267
	0.4	0.037	0.031	0.334	0.274	0.347	0.295
	0.5	0.036	0.030	0.325	0.267	0.338	0.288
	0.6	0.031	0.026	0.278	0.229	0.289	0.247
	0.7	0.023	0.019	0.204	0.168	0.212	0.181
	0.8	0.013	0.011	0.117	0.097	0.122	0.104
	0.9	0.005	0.004	0.041	0.033	0.043	0.036
2	0	0	0	0	0	0	0
	0.1	0.003	0.002	0.026	0.021	0.027	0.023
	0.2	0.011	0.009	0.099	0.081	0.103	0.087
	0.3	0.020	0.017	0.179	0.148	0.186	0.159
	0.4	0.027	0.022	0.238	0.196	0.249	0.211
	0.5	0.029	0.024	0.260	0.214	0.270	0.230

This table is symmetrical about C.L. Unit.

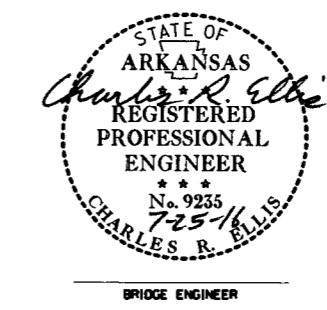


Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included.

**DEAD LOAD DEFLECTION DIAGRAM**  
No Scale



**REINFORCING DETAIL**  
No Scale



SHEET 3 OF 5  
DETAILS OF 126'-0" CONTINUOUS  
COMPOSITE W-BEAM UNIT  
SUGAR CREEK

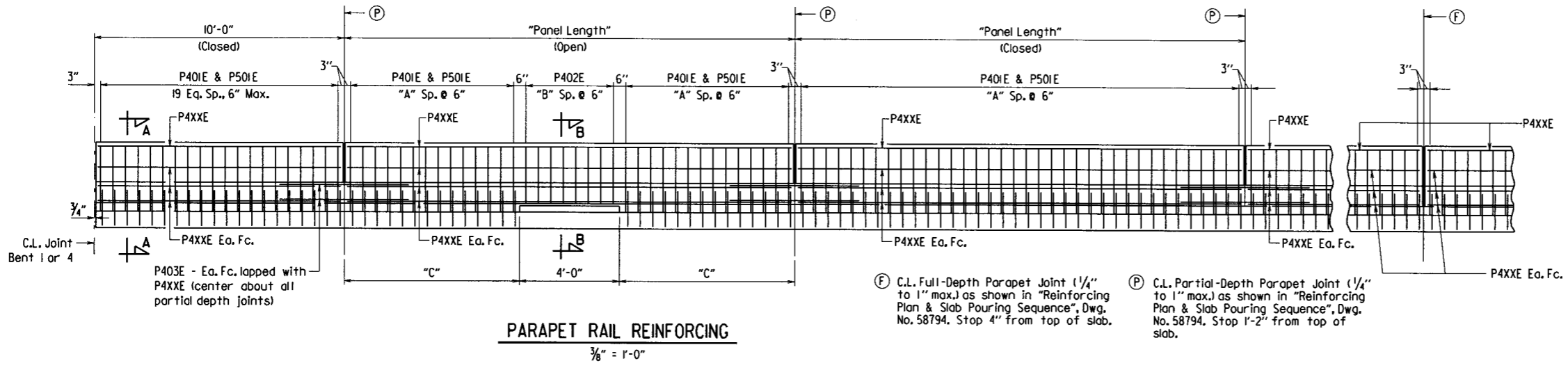
ROUTE SEC.  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

BRIDGE NO. 07395 DRAWING NO. 58794

DRAWN BY: COR DATE: 8/14/2015 FILENAME: b050275x3.sl.dgn  
CHECKED BY: BHS DATE: 7/25/16 SCALE: As Shown  
DESIGNED BY: COR DATE: 7/15

PRINT DATE: 7/25/2016

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.	050275	43	167	
				07395 - SPAN DETAILS - 58795				



(F) C.L. Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan & Slab Pouring Sequence", Dwg. No. 58794. Stop 4" from top of slab.

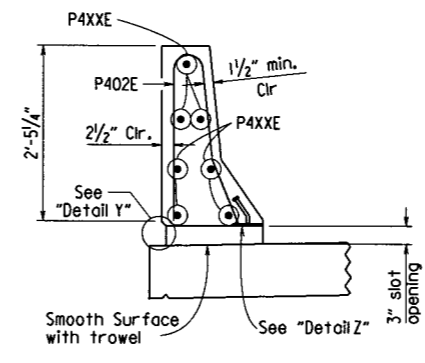
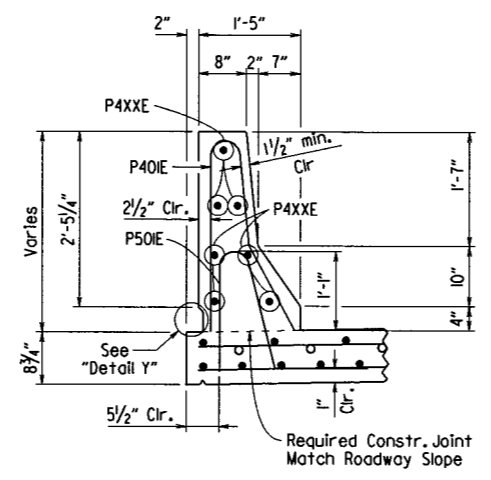
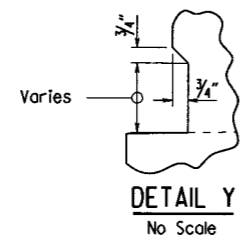
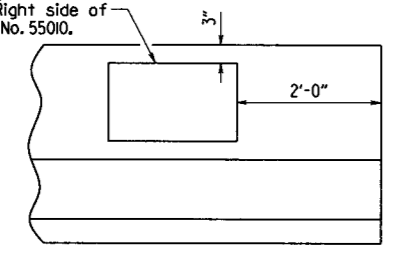
(P) C.L. Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan & Slab Pouring Sequence", Dwg. No. 58794. Stop 1'-2" from top of slab.

**TABLE OF VARIABLES**

Panel Length	Panel Type	"A"	"B"	"C"	P4XXE
10'-0"	Closed	19	-	-	P406E
13'-0"	Open	8	7	4'-6"	P404E
13'-0"	Closed	25	-	-	P404E
20'-0"	Open	15	7	8'-0"	P405E
20'-0"	Closed	39	-	-	P405E

For location of panels, see "Reinforcing Plan & Slab Pouring Sequence", Dwg. No. 58794.

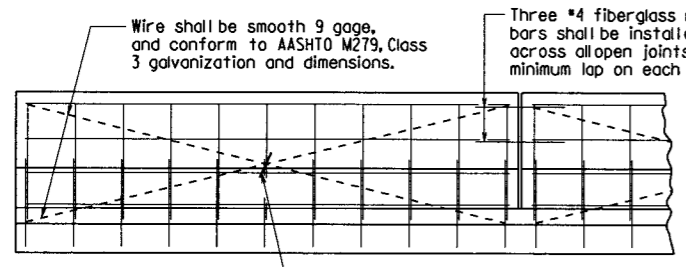
Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge (Right side of roadway only). See Std. Dwg. No. 55010.



**BAR LIST**

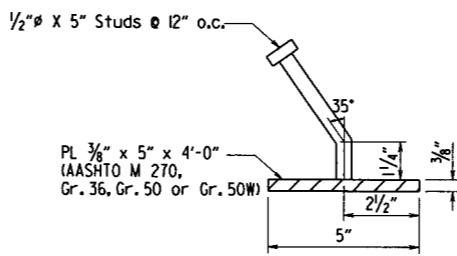
MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
S401E	126	42'-10"	Str.	Dimensions are out to out of bars. 
S402E	484	33'-6"	Str.	
S501E	376	42'-10"	Str.	
S502E	502	4'-10"	Str.	
S601E	92	18'-10"	Str.	
P401E	472	5'-6"	3"	
P402E	32	4'-10"	3"	
P403E	56	5'-6"	Str.	
P404E	28	12'-8"	Str.	
P405E	28	19'-8"	Str.	
P406E	84	9'-8"	Str.	
P501E	472	4'-9"	3 3/4"	

Bars designated with "E" suffix are epoxy coated.



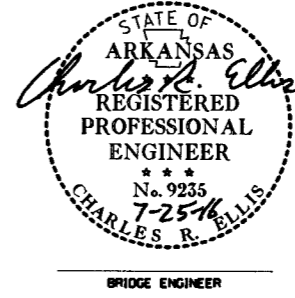
**DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL**

No Scale



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

The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance to Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)".



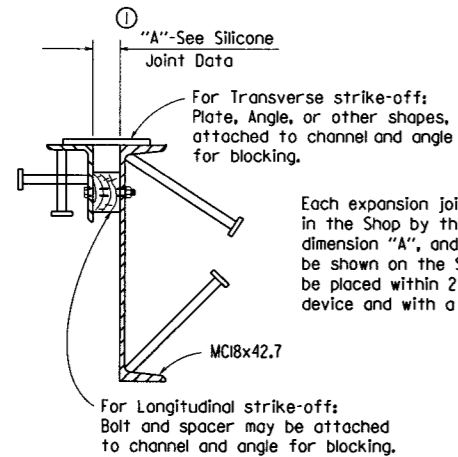
SHEET 4 OF 5  
DETAILS OF 126'-0" CONTINUOUS COMPOSITE W-BEAM UNIT SUGAR CREEK

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

DRAWN BY: COR DATE: 8/19/2015 FILENAME: b050275x3.sl.dgn  
CHECKED BY: BHS DATE: 7/15/16 SCALE: As Shown  
DESIGNED BY: COR DATE: 7/15  
BRIDGE NO. 07395 DRAWING NO. 58795

PRINT DATE: 7/25/2016

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.	050275		94/167	
				07395 - SPAN DETAILS - 58796				



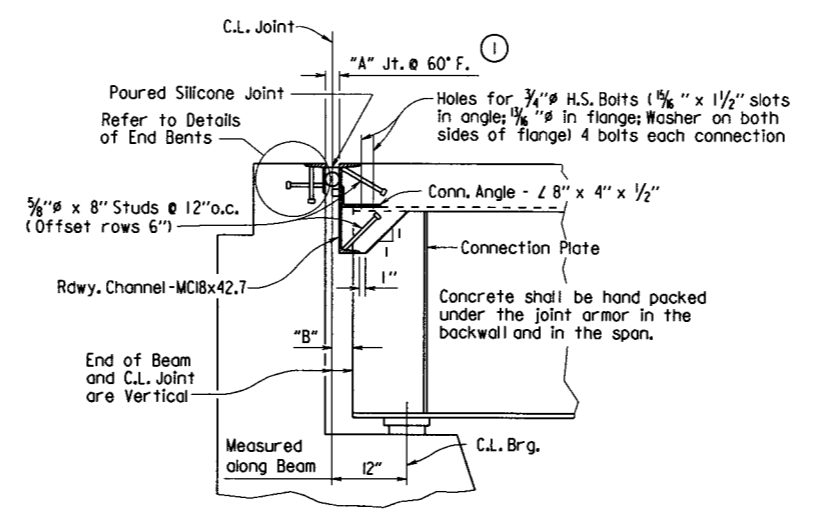
Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A", and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

**DETAILS FOR BLOCKING EXPANSION JOINT DEVICE**

**EXPANSION DEVICE INSTALLATION**

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

- 1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature and grade, and the backwall constructed.
- 2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade. Backfill shall not be placed behind the backwall until the deck concrete on the adjacent span has been placed.



**SECTION THRU JOINT AT BENTS 1 & 4**

**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			
1	1 5/8"	1 1/2"	1 1/8"	2" ±	1" x 3/4"	4"
4	1 5/8"	1 1/2"	1 3/8"	2" ±	1" x 3/4"	4"

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

NOTES: The temperature limitations recommended by the sealant manufacturer shall be observed.

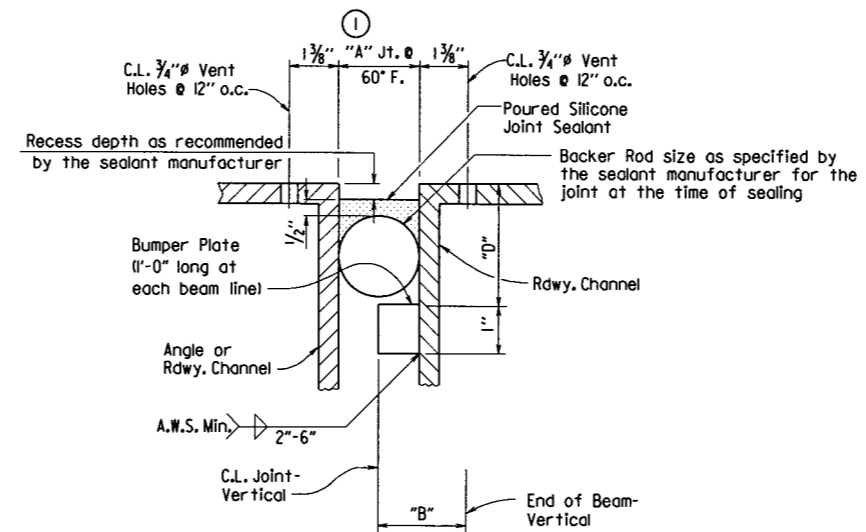
The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80°F.

**BACKER ROD NOTE:**

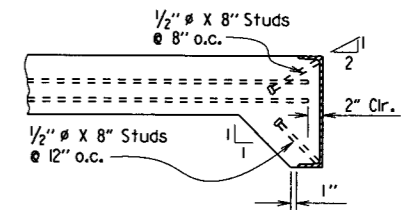
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod that 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.

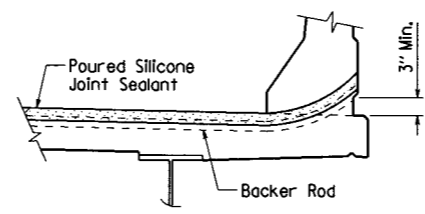


**DETAIL OF POURED SILICONE JOINT SEAL**

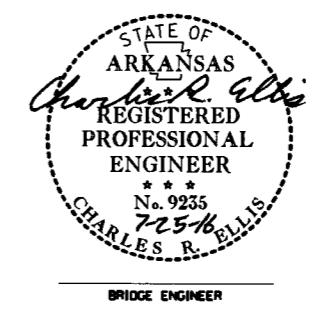


As an alternate to 5/8" studs, 1/2" x 8" studs spaced as shown may be used. Use weight of 5/8" stud as basis of measurement of structural steel in anchors.

**DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT**



**JOINT SEAL PLACEMENT AT CURB**

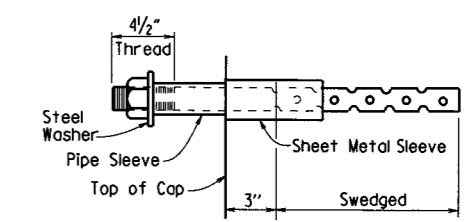
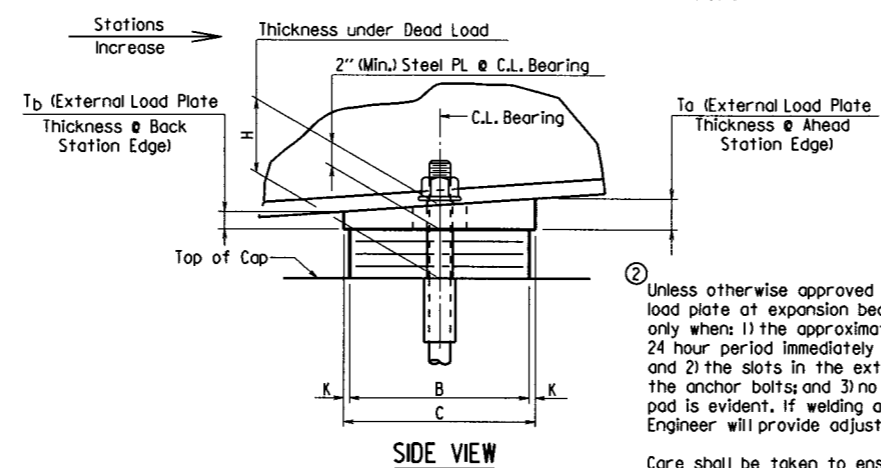
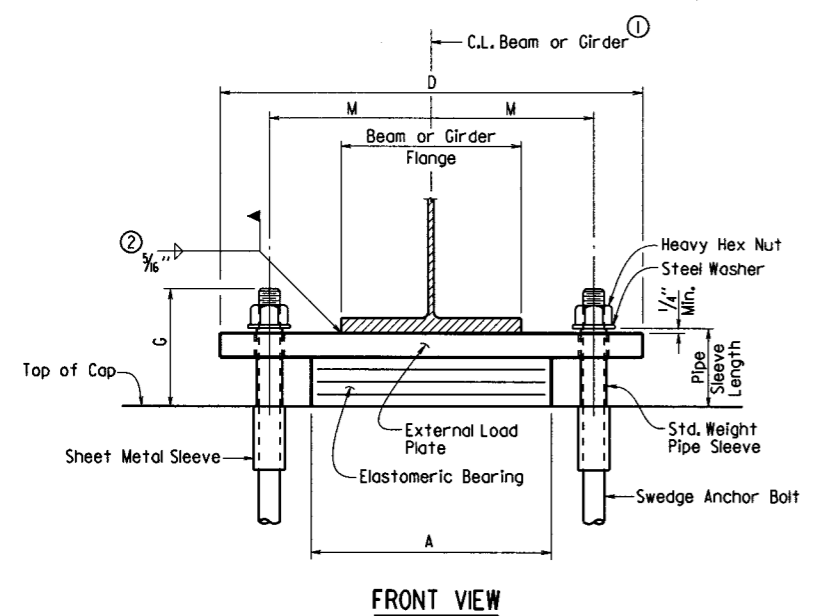


SHEET 5 OF 5  
 DETAILS OF 126'-0" CONTINUOUS COMPOSITE W-BEAM UNIT SUGAR CREEK  
 ROUTE SEC.  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: COR DATE: 8/19/2015 FILENAME: b050275x3.sl.dgn  
 CHECKED BY: BHS DATE: 7/25/16 SCALE: No Scale  
 DESIGNED BY: COR DATE: 7/15  
 BRIDGE NO. 07395 DRAWING NO. 58796

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.						050275	95	167

07395 - ELASTOMERIC BEARINGS - 58797

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



**ANCHOR BOLT DETAIL**

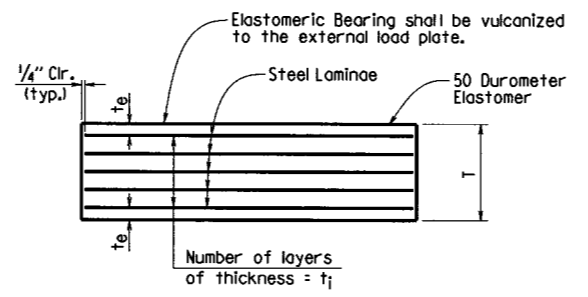
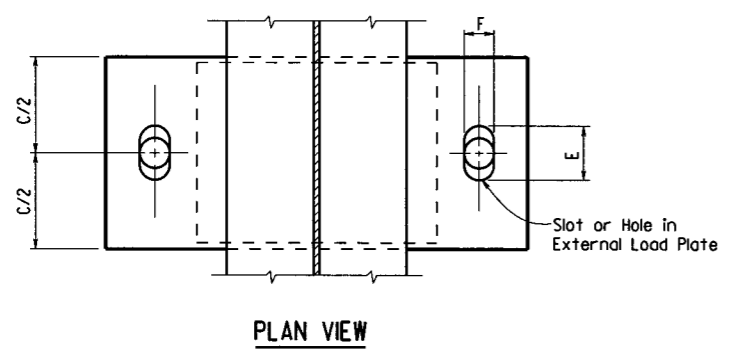
Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

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

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.

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



$t_e$  = 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  $t_i$

Prior to erection of the beams or girders, the Contractor shall verify the orientation of the bearing with respect to  $T_a$  and  $T_b$ .

**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.

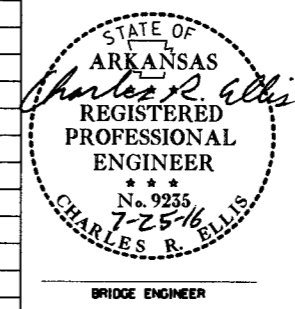
Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in BEAM Spans (M 270, Gr. 50W)". External load plates will not be measured and paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

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.

**TABLE OF FABRICATOR VARIABLES**

③ Maximum Design Load = Service I Limit State

BRIDGE NO.	LOCATION		BEARING TYPE	NO. of BEARINGS EACH BENT	③ MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD					EXTERNAL LOAD PLATE					ANCHOR BOLT									
	BENT NO(S)	BEAM OR GIRDER NO.						A	B	N	$t_i$	$t_e$	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	$T_a$	$T_b$	ANCHOR BOLT ( $\phi \times L$ )	PIPE SLEEVE SIZE ( $\phi \times L$ )	SHEET METAL SLEEVE SIZE ( $\phi \times L$ )	STEEL WASHER SIZE (O.D.)	
07395	1	ALL	EXP	5	80	7"	4 3/8"	14"	8"	3	1/2"	1/4"	4 @ 12 ga.	2 1/8"	9"	23"	3 3/8"	2"	1/2"	9"	1.89"	2.11"	1 1/4" x 21"	55	1 1/4" x 4 3/8"	3" x 6"	2 1/2"
	2	ALL	FIX	5	161	7"	3 3/8"	14"	11"	2	1/2"	1/4"	3 @ 12 ga.	1 3/8"	12"	25"	2 5/8"	2 5/8"	1/2"	9 1/2"	1.86"	2.14"	1 3/4" x 27"	55	2" x 4 1/8"	4" x 6"	3 3/8"
	3	ALL	FIX	5	161	7"	3 3/8"	14"	11"	2	1/2"	1/4"	3 @ 12 ga.	1 3/8"	12"	25"	2 5/8"	2 5/8"	1/2"	9 1/2"	1.88"	2.12"	1 3/4" x 27"	55	2" x 4 1/8"	4" x 6"	3 3/8"
	4	ALL	EXP	5	80	7"	4 3/8"	14"	8"	3	1/2"	1/4"	4 @ 12 ga.	2 1/8"	9"	23"	3 3/8"	2"	1/2"	9"	1.93"	2.07"	1 1/4" x 21"	55	1 1/4" x 4 3/8"	3" x 6"	2 1/2"



**DETAILS OF ELASTOMERIC BEARINGS SUGAR CREEK**

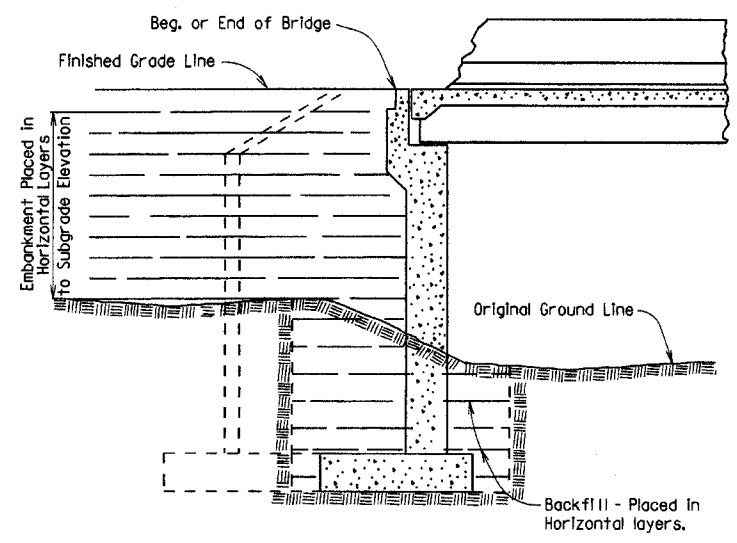
ROUTE SEC.  
**ARKANSAS STATE HIGHWAY COMMISSION**  
 LITTLE ROCK, ARK.

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 CHECKED BY: LAWY DATE: 7/23/15 SCALE: No Scale  
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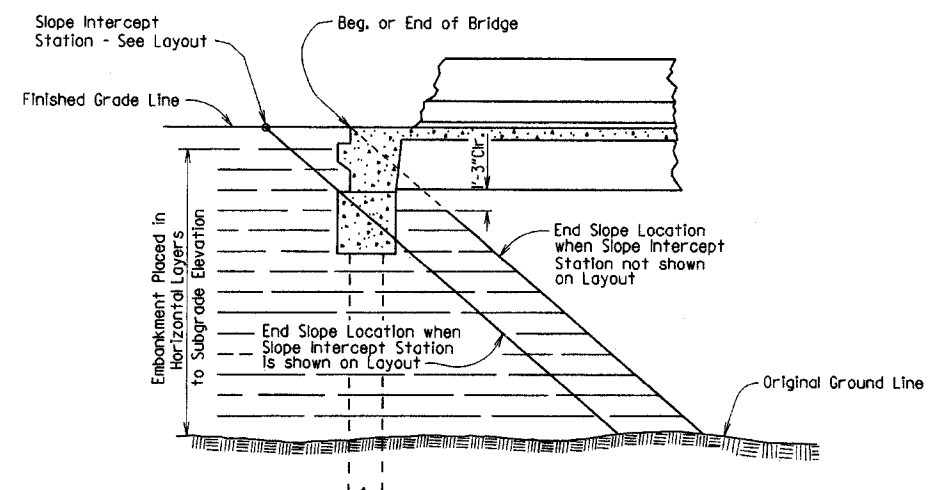
BRIDGE NO. 07395 DRAWING NO. 58797

PRINT DATE: 7/25/2016

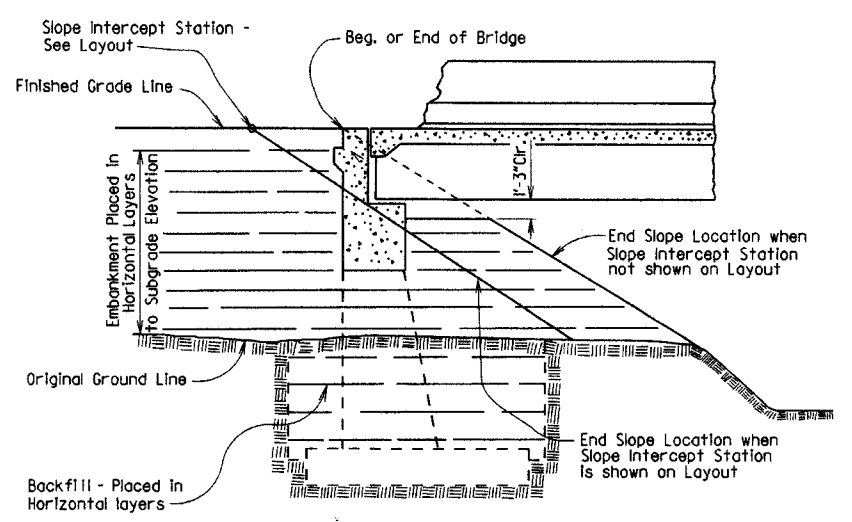
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				6	ARK.		96	
							JOB NO.	
							① EMBANKMENT & BACKFILL	55000



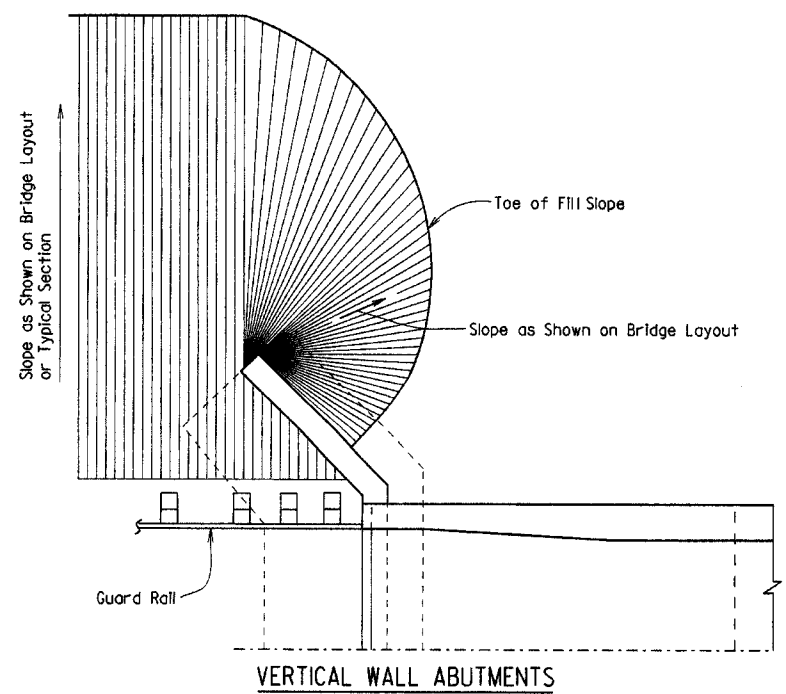
**EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS**



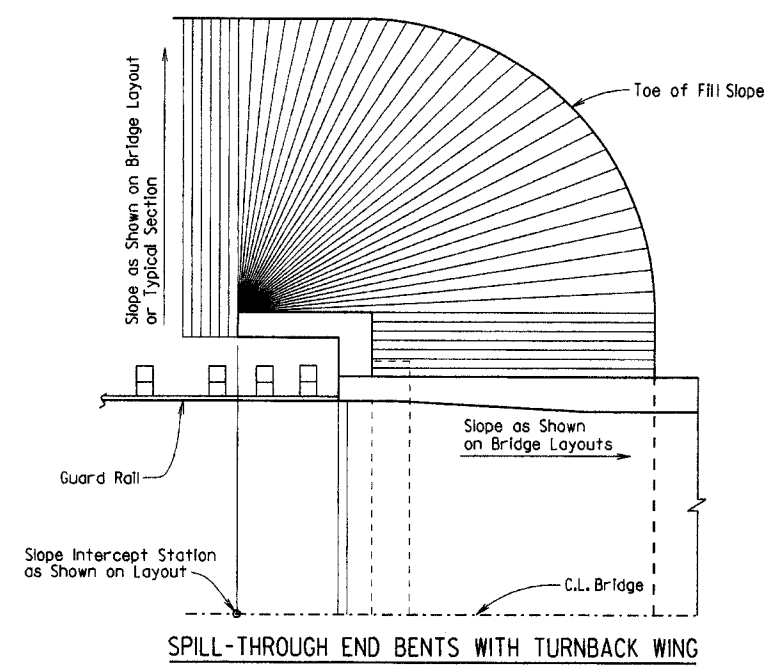
**EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS**



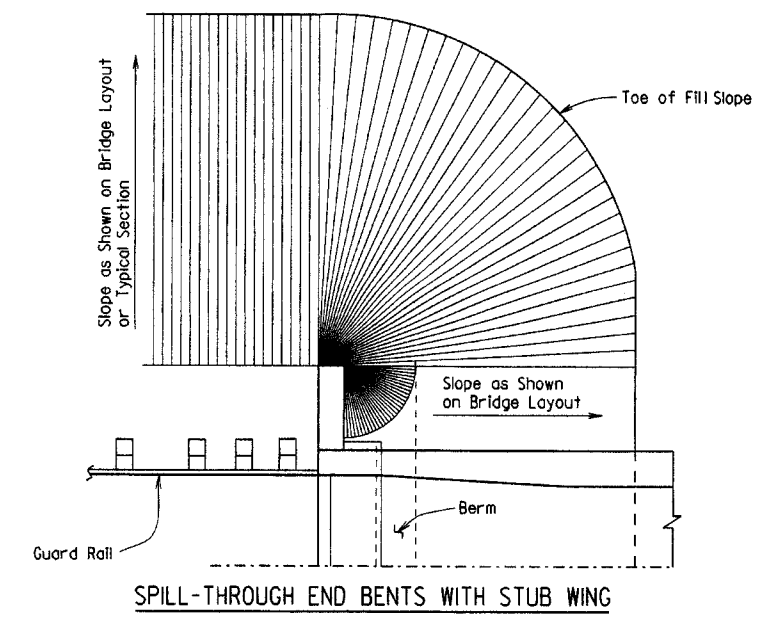
**EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS**



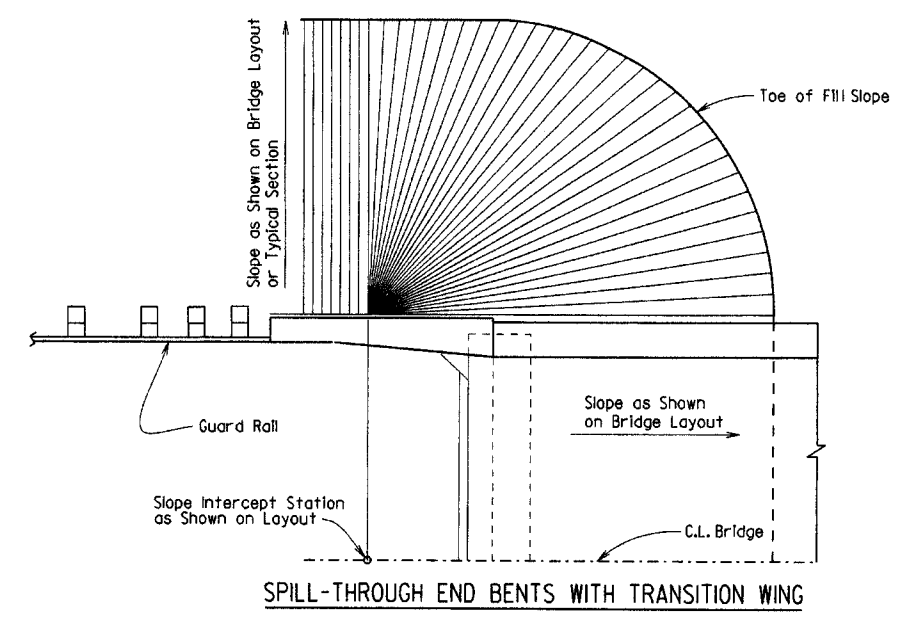
**VERTICAL WALL ABUTMENTS**



**SPILL-THROUGH END BENTS WITH TURNBACK WING**



**SPILL-THROUGH END BENTS WITH STUB WING**



**SPILL-THROUGH END BENTS WITH TRANSITION WING**

**METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS**

**GENERAL NOTES**

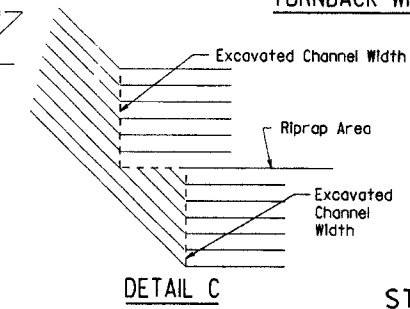
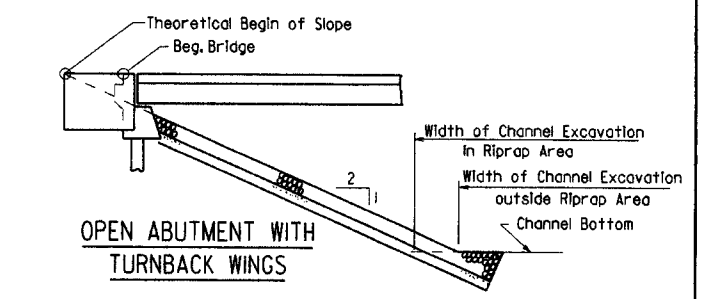
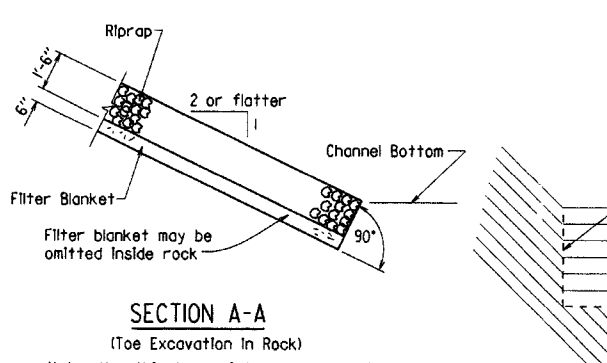
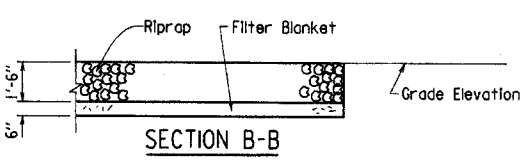
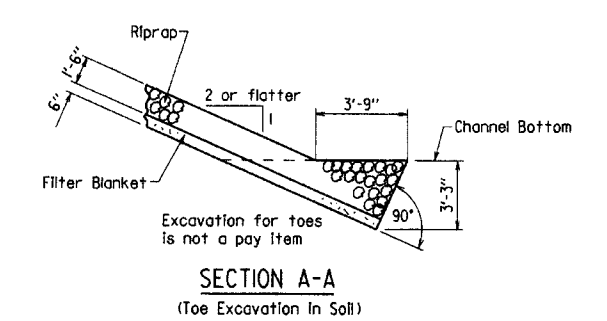
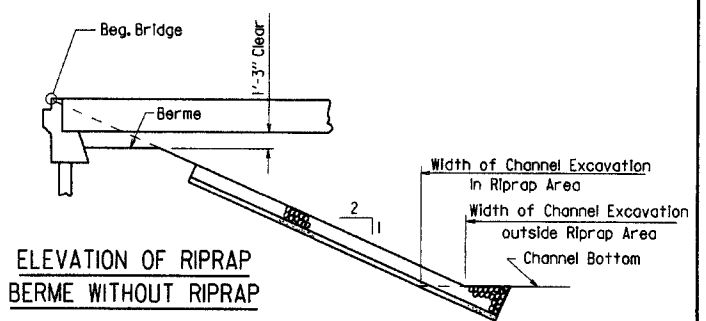
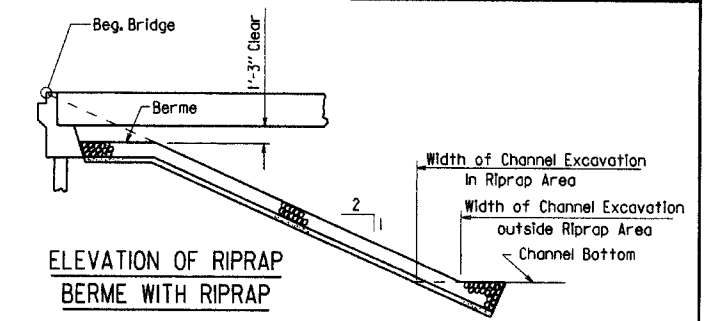
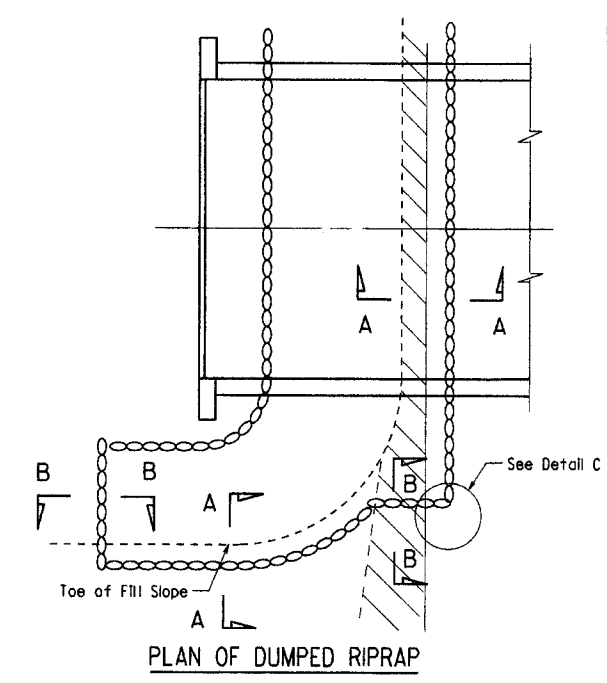
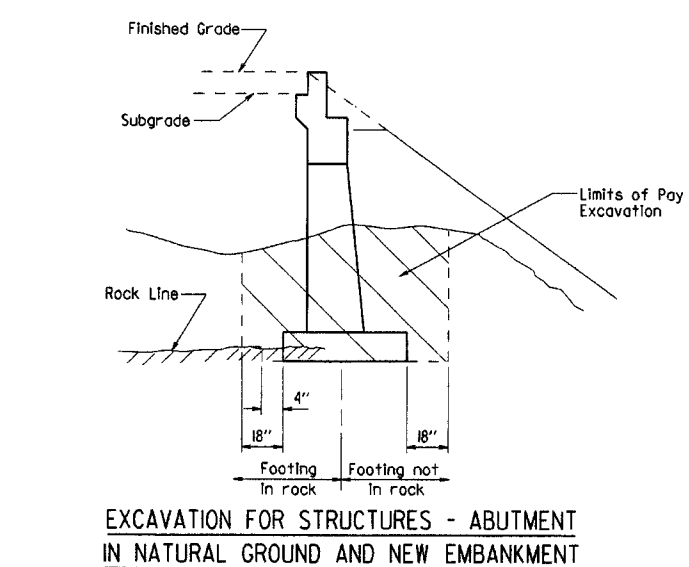
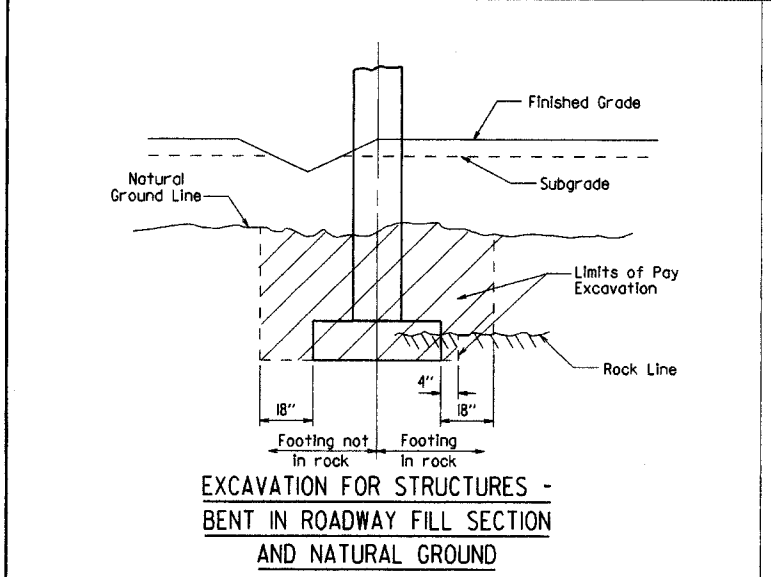
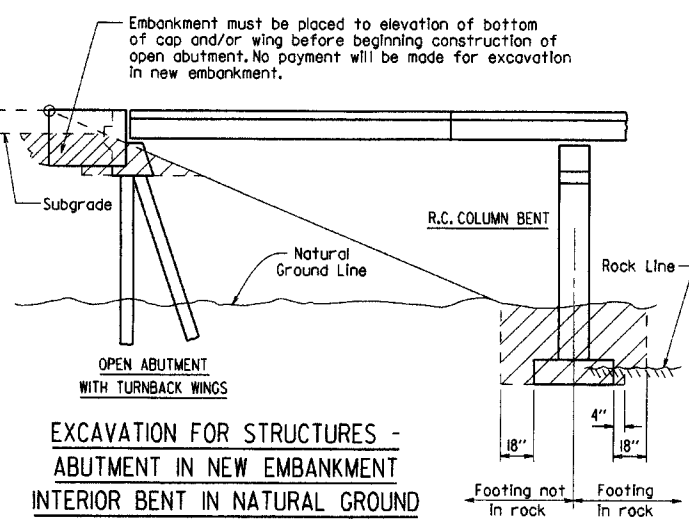
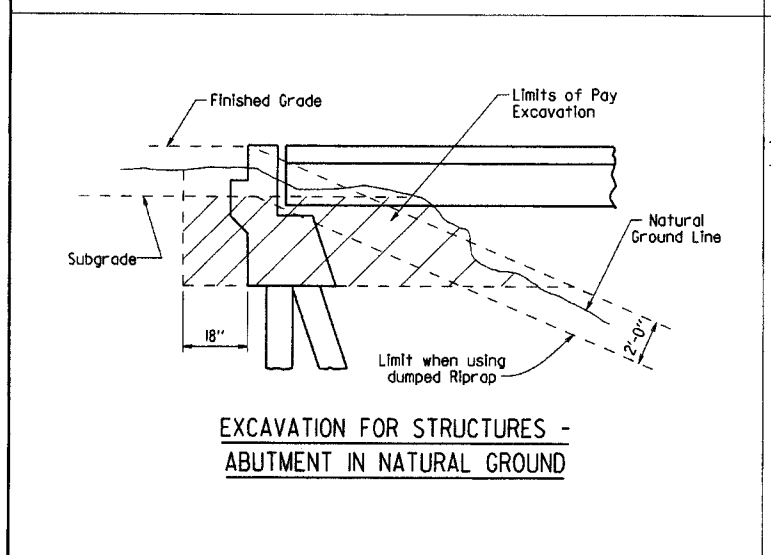
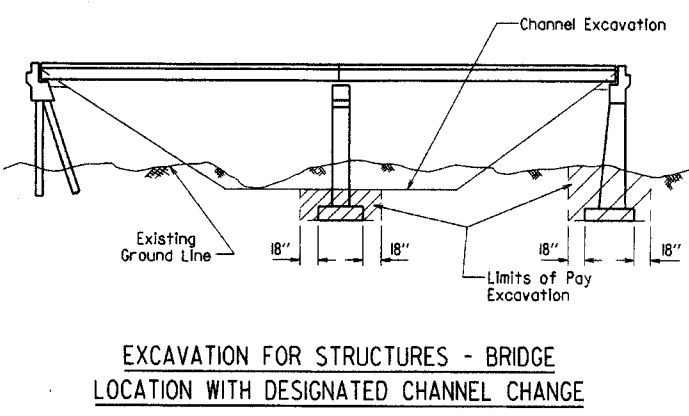
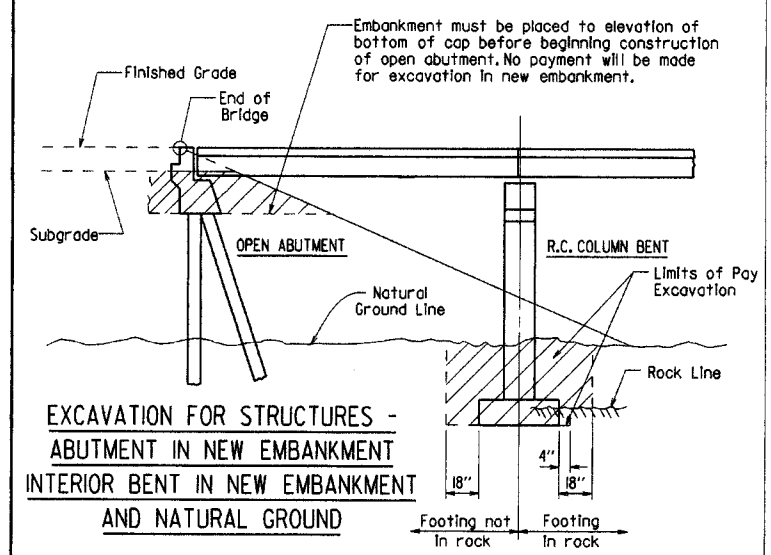
The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 6 inch horizontal 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.		97	
							JOB NO.	
							①	RIPRAP & EXCAV. 55001



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

Note: In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

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

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

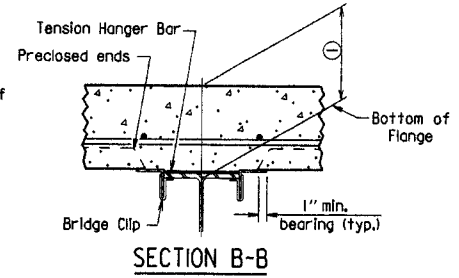
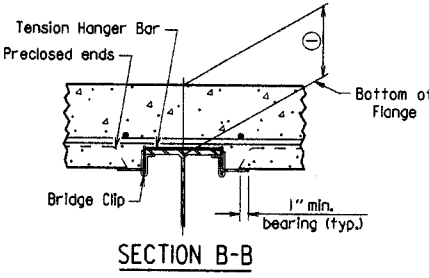
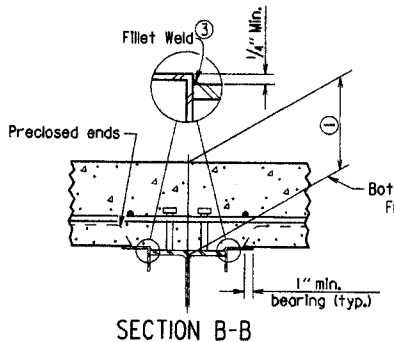
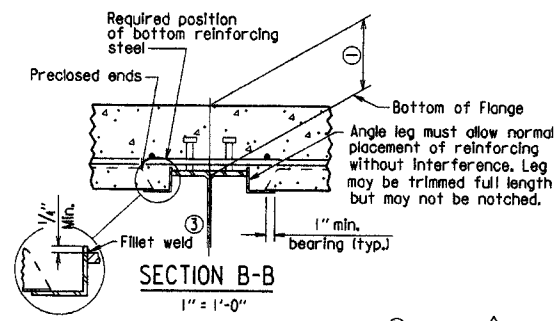
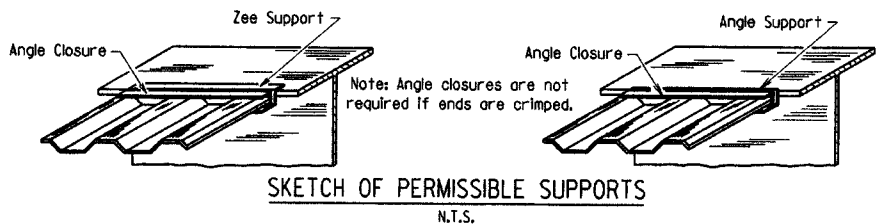
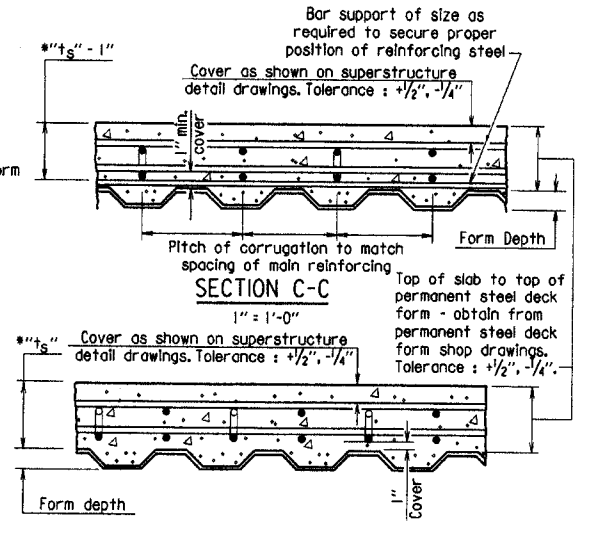
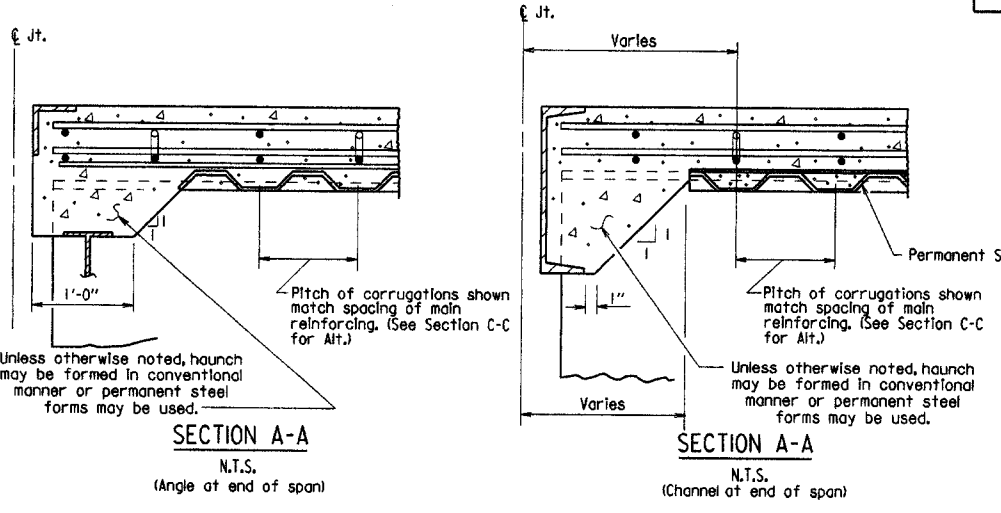
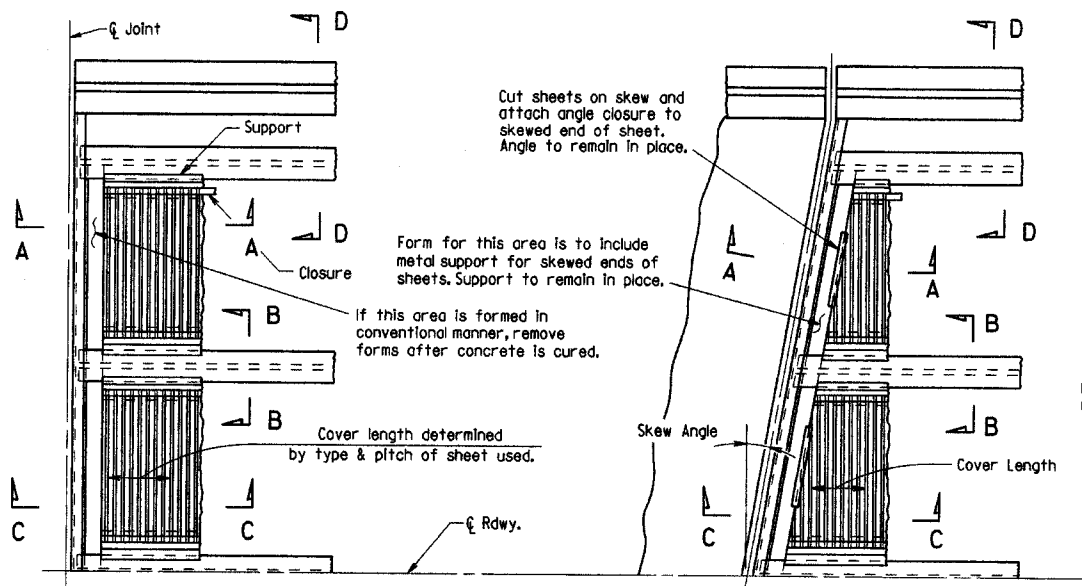
**ARKANSAS STATE HIGHWAY COMMISSION**

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn  
 CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE  
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DRAWING NO. 55001

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.		98	
JOB NO.							BRIDGE DECK FORMS	55005

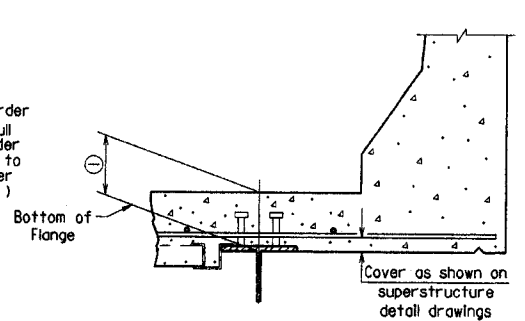
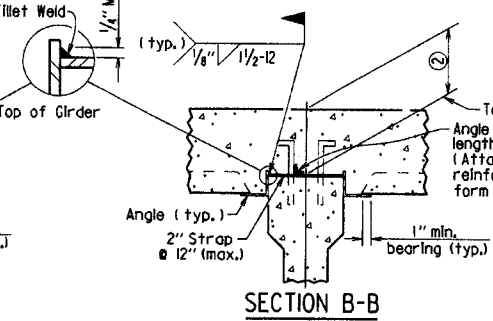
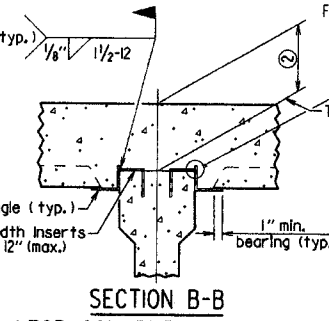
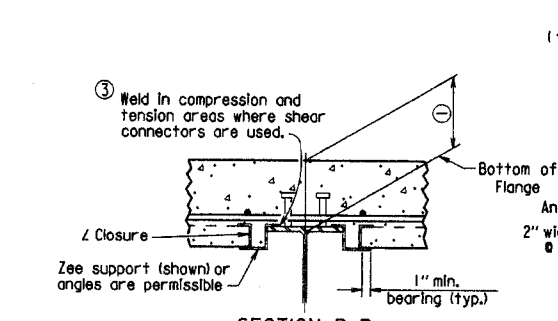


③ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1/2" (typ.)

③ Weld in compression and tension areas where shear connectors are used.

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

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



**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 Z supports to the flange must be approved by the Engineer.

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

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

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

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

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

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

**ARKANSAS STATE HIGHWAY COMMISSION**  
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn  
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE  
DESIGNED BY: STD. DATE: \_\_\_\_\_

DRAWING NO. 55005

## GENERAL NOTES

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

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: See Bridge Layout(s).

### SUPERSTRUCTURE NOTES:

#### MATERIALS AND STRENGTHS:

Class S(AE) Concrete	$f'c = 4,000$ psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	$f_y = 60,000$ psi
Structural Steel (AASHTO M 270, Gr. 36)	$F_y = 36,000$ psi
Structural Steel (AASHTO M 270, Gr. 50)	$F_y = 50,000$ psi
Structural Steel (AASHTO M 270, Gr. 50W)	$F_y = 50,000$ psi
Structural Steel (AASHTO M 270, Gr. HPSTOW)	$F_y = 70,000$ 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  $\frac{3}{4}$ " unless otherwise noted.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 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 fine 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  $\frac{3}{4}$ "  $\phi$  high-strength bolts using  $\frac{1}{8}$ "  $\phi$  open holes. Holes for  $\frac{3}{4}$ "  $\phi$  high-strength bolts may be  $\frac{1}{8}$ "  $\phi$  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  $\frac{1}{4}$ " +/- 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  $\frac{1}{4}$ " +/- 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.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		99	
							1	GENERAL NOTES
								55006

### 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  $\frac{3}{4}$ " 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.

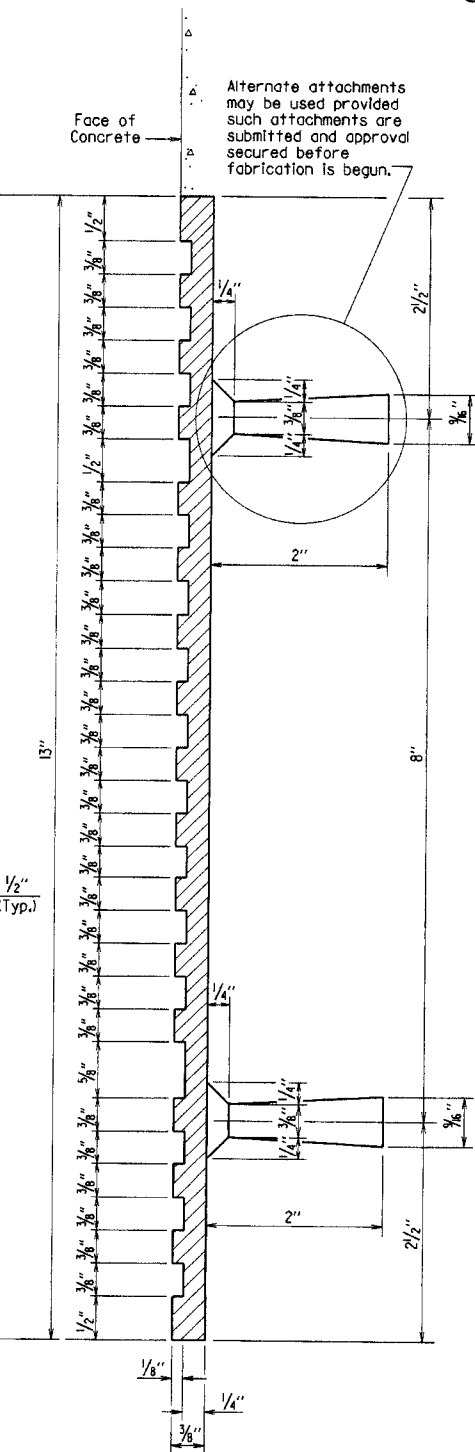
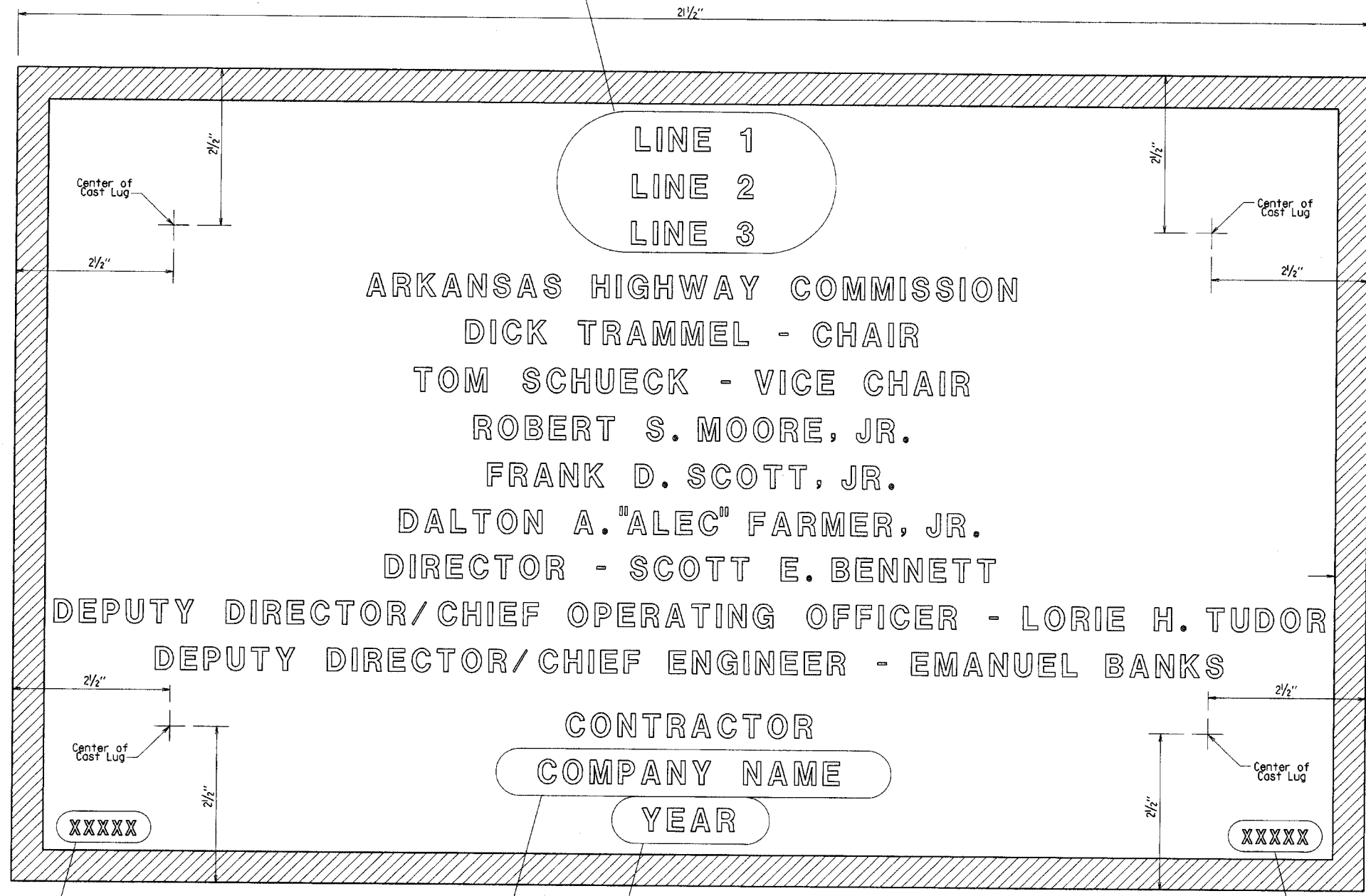
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 CHECKED BY: B.E.F. DATE: 9-2-2015 SCALE: NO SCALE  
 DESIGNED BY: STD. DATE:

DRAWING NO. 55006

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.		100	
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	



**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.

▲ Revised Chair and Vice Chair  
Added New Commissioner  
1-14-15 KDH Checked By: CRE

▲ Revised Deputy Director/  
Chief Engineer  
Added Deputy Director/  
Chief Operating Officer  
12-1-14 KDH Checked By: CRE

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

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

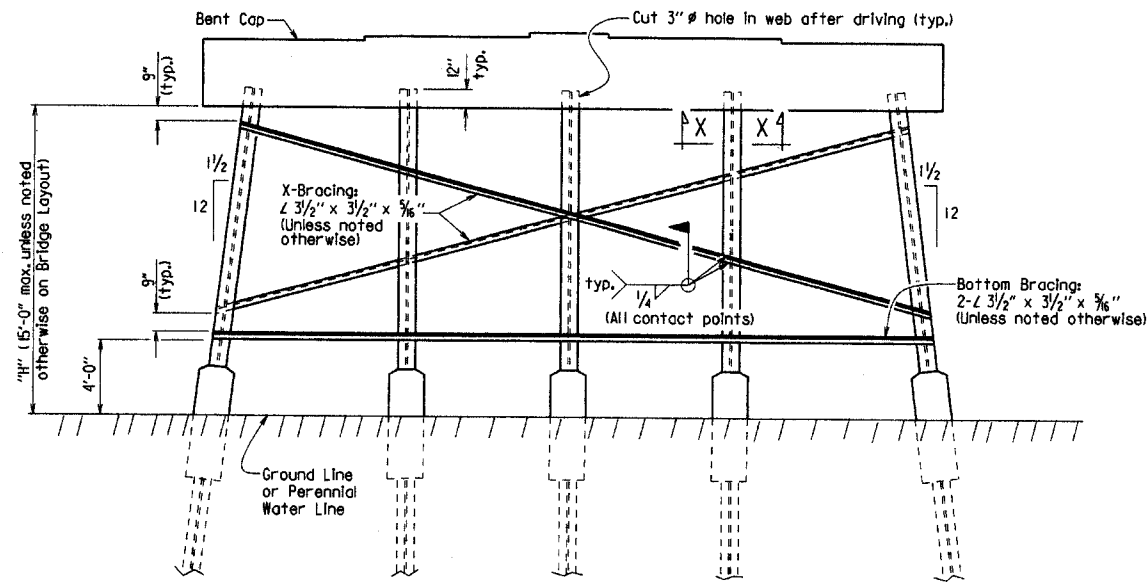
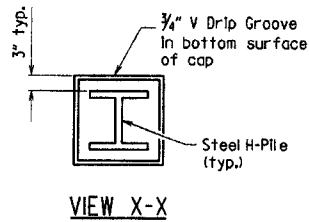
**GENERAL NOTES FOR STEEL H-PILES:**

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".



**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.

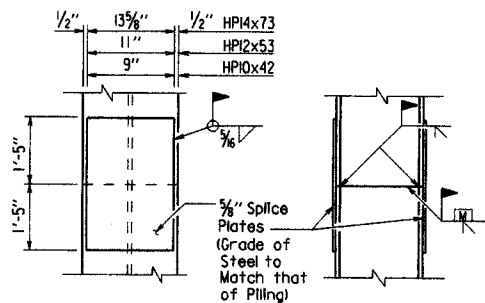
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

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**

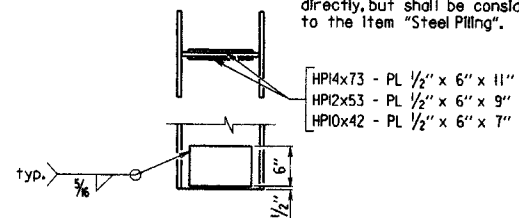
(Shown with Partial Height Encasement)



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 inch fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifications for Highway Construction (2014 Edition).



**REINFORCING DETAIL FOR STEEL H-PILE TIP**

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".

**GENERAL NOTES FOR H-PILE ENCASEMENTS:**

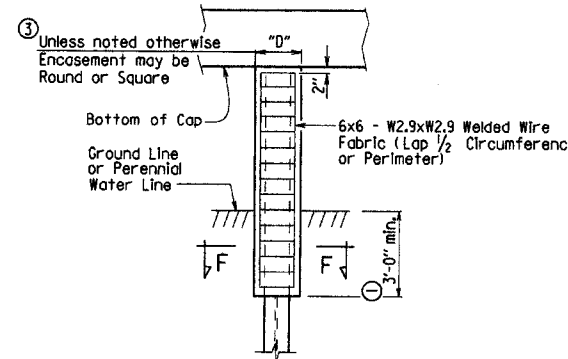
See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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.

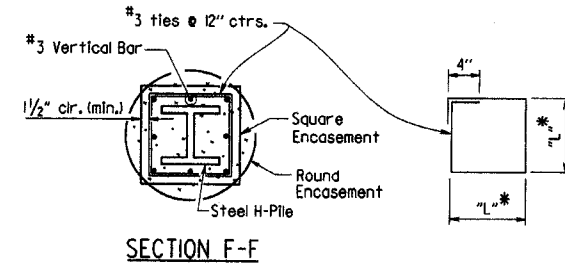
Concrete, welded wire fabric or reinforcing steel and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



**PILE ENCASEMENT DETAIL FOR STEEL H-PILES**

(Shown with Encasement to Bottom of Cap)

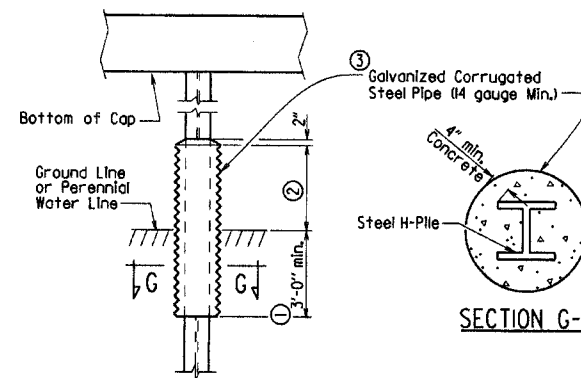
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.		101	
JOB NO.							STEEL H-PILES	55020



**TABLE OF VARIABLES FOR PILE ENCASEMENT**

Pile Size	"D"		"L"*
	Square Encmt.	Round Encmt.	
HP10x42	1'-7"	2'-0"	1'-4"
HP12x53	1'-8"	2'-2"	1'-5"
HP14x73	1'-11"	2'-6"	1'-8"

\* Measured out-to-out of bar.



**ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES**

(Shown with Partial Height Encasement)

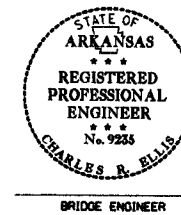
1 Unless otherwise noted on Bridge Layout.

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 1 1/2" and a minimum clearance of 1/4" 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.

**STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS**

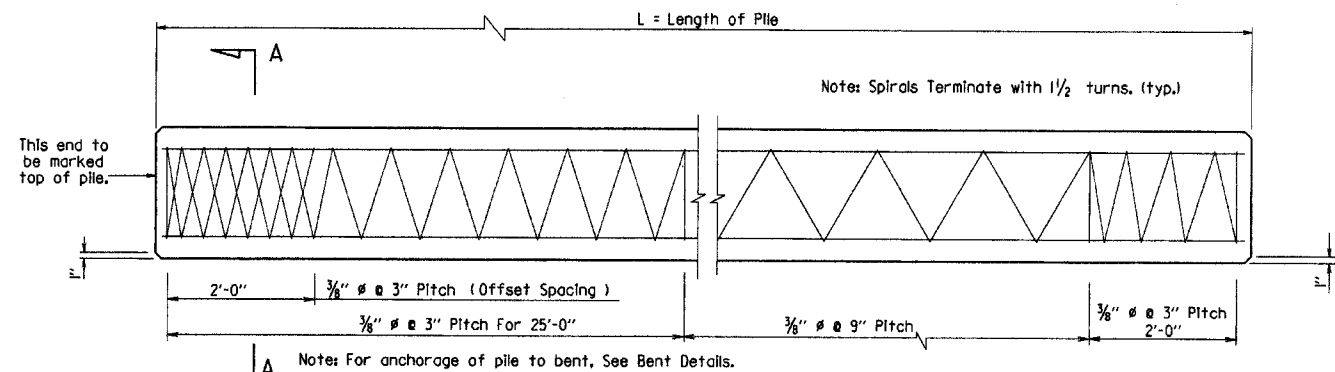
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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 CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE  
 DESIGNED BY: STD. DATE: —

DRAWING NO. 55020

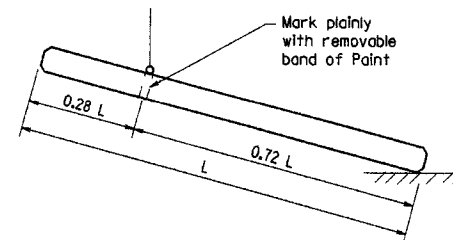
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				6	ARK.		102	
							JOB NO.	CONC. PILES 55025



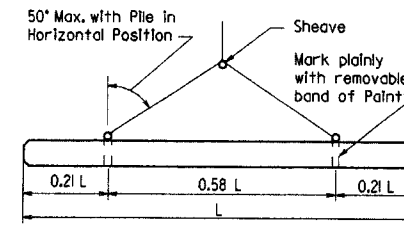
PLAN OF PILE SHOWING SPIRAL TIE SPACING

MAXIMUM PICKUP LENGTHS L

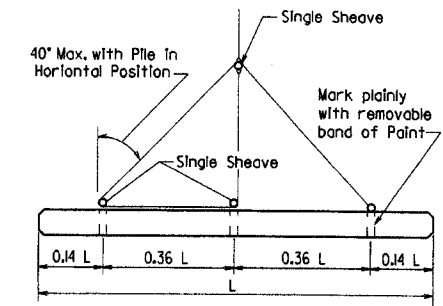
Type of Pick - Up	Prestressed 16" Oct., 18" Oct.	Precast 16" or 18" Oct.	Prestressed 16" Sq., 18" Sq.	Precast 16" Sq., 18" Sq.
One - Point	52' 55'	46'	59' 63'	51' 55'
Two - Point	75' 80'	67'	84' 90'	74' 79'
Three - Point	105' 112'	93'	117' 126'	103' 111'



ONE POINT PICK-UP

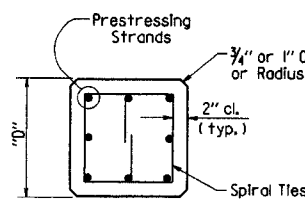


TWO POINT PICK-UP

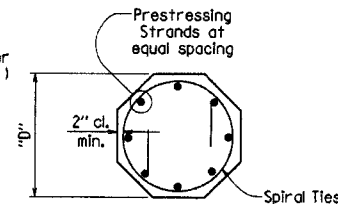


THREE POINT PICK-UP

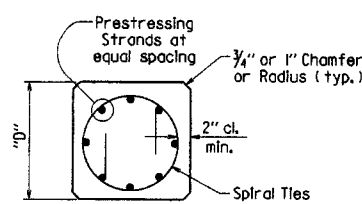
Note: Strand location shall be symmetrical about the axis of the pile with no more than one strand difference between any two adjacent sides. Circular spiral ties are required for odd number of strands.



SECTION A-A SQUARE PILE



SECTION A-A OCTAGONAL PILE

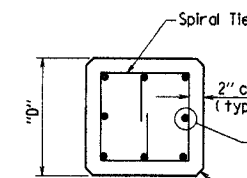


SECTION A-A SQUARE PILE

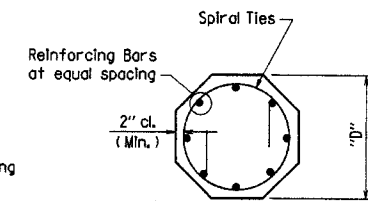
PRESTRESSED CONCRETE PILES

PRECAST PILE REINFORCING

Pile Size	No. Req'd.	Bar Size
16" Oct.	8	# 7
18" Oct.	8	# 7
14" Sq.	8	# 7
16" Sq.	8	# 7
18" Sq.	8	# 8



SECTION A-A SQUARE PILE



SECTION A-A OCTAGONAL PILE

PRECAST CONCRETE PILES

PRESTRESSED PILE PROPERTIES

Stress Relieved	Grade	Strand Diameter	*Number of Strands per Size "D"				Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
			16" Oct.	18" Oct.	16" Sq.	18" Sq.		
250	250	3/8"	11	13	12	16	27,000	18,900
		1/2"	8	10	10	12	36,000	25,200
	270	3/8"	9	11	12	14	34,000	24,700
		1/2"	7	9	8	10	41,300	28,900
270	250	3/8"	9	11	11	13	27,000	20,200
		1/2"	7	8	8	10	36,000	27,000
	270	3/8"	8	10	9	11	34,000	23,300
		1/2"	6	7	7	9	41,300	31,000

\*Number based on initial prestress force of "B" x Ultimate Tensile Stress, Prestress Losses, and min. 700 psi Unit Prestress on concrete after losses.  
 "B" 0.75 Low Relaxation  
 0.70 Stress - Relieved

GENERAL NOTES

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, references to Section and Subsection numbers in the plans refer to the Construction Specifications.

Design Specifications: AASHTO Standard Specifications for Highway Construction (2002 Edition), with Interim Specifications.

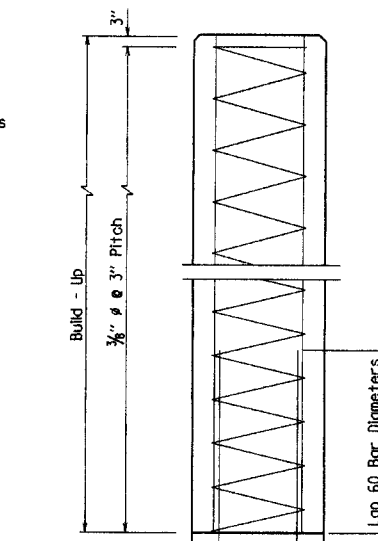
Concrete: Concrete in the Precast Prestressed Piles shall be Class S(AE) and shall have a Minimum Compressive Strength (f'c) of 5000 psi at 28 days. Compressive Strength at transfer of the Prestressing Force shall be not less than 4000 psi. Concrete in Build-Ups shall have a minimum Compressive Strength (f'c) of 4000 psi.

Prestressing Reinforcement: Seven wire stress relieved or low relaxation strands shall conform to the general requirements of AASHTO M203. Broken wires within individual strands will be permitted up to 2% of the total number of wires in each pile, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand, even though the two broken wires are within the 2% limitation.

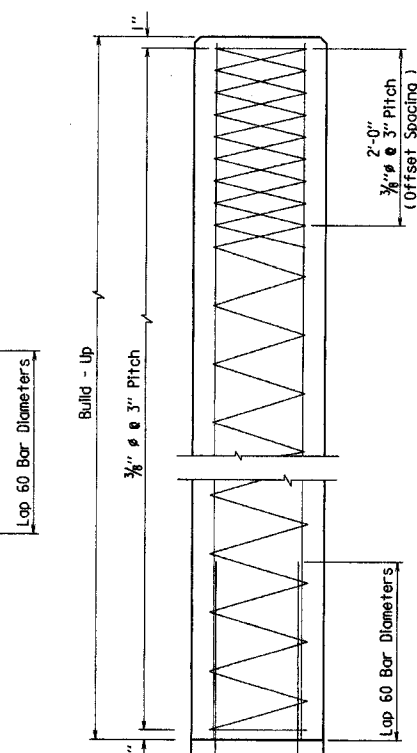
Build-Ups: To provide for Build-Ups of Piles where authorized by the Engineer, concrete shall be cut back to expose the strands for a distance sufficient to provide a lap of 40 diameters of the reinforcing bars required for Build-Up. Reinforcing of Build-Ups shall have a minimum area equal to 1/2% of the gross section of pile. Placement of bars shall be in a symmetrical pattern of not less than four bars. See Subsection 805.11(b).

Forms: For forming exterior of piles, the use of steel forms on concrete founded casting beds is required, unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding 1/4" per foot.

Tolerances: Pile ends shall be plane surfaces and perpendicular to axis of pile with a maximum tolerance of 1/8" per foot transversely.



BUILD - UP WITHOUT DRIVING



BUILD - UP WITH DRIVING

GENERAL NOTES

The maximum sweep (deviation from straightness measured along two perpendicular faces of the pile, while not subject to bending forces) shall not exceed 1/8" in 10 ft. of its length.

General: Shipment of piles from the plant site or pile driving will not be permitted until the required minimum compressive strength is reached, and in no case less than 10 days after pouring of the concrete. Piles may be removed from casting bed to a nearby storage any time after transfer of stress.

Spiral Reinforcing: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M32 with a minimum diameter of 0.2" or shall be plain round steel bars meeting the requirements of Grade 60, AASHTO M31 or M322, Type A with a minimum diameter of 0.25".

Manufacture, Transportation and Storage: See Section 802 "Concrete for Structures".

Unless otherwise approved by the Engineer, all protruding or exposed pile lifting or transporting devices above the finished ground shall be removed after pile driving is complete. Removal shall be a minimum of 1" below the surface of the pile and the cavity shall be filled with a non-shrink grout listed on the Department's OPL.

Installation, Measurement and Payment: See Section 805 "Piling". Precast Prestressed Concrete Piling will be paid for at the contract unit price per Linear Foot bid for "Concrete Piling".

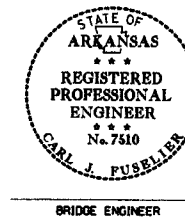
The Contractor may elect to use a Precast Concrete Pile in lieu of the Prestressed Concrete Pile. The following notes apply to Precast Concrete Piles:

All concrete shall be Class S (AE) and shall have a minimum compressive strength (f'c) of 4000 psi at 28 days.

All longitudinal reinforcing bars shall be deformed bars of Grade 60, AASHTO M31 or M322, Type A.

All spiral reinforcing shall be the same as that shown for prestressed concrete.

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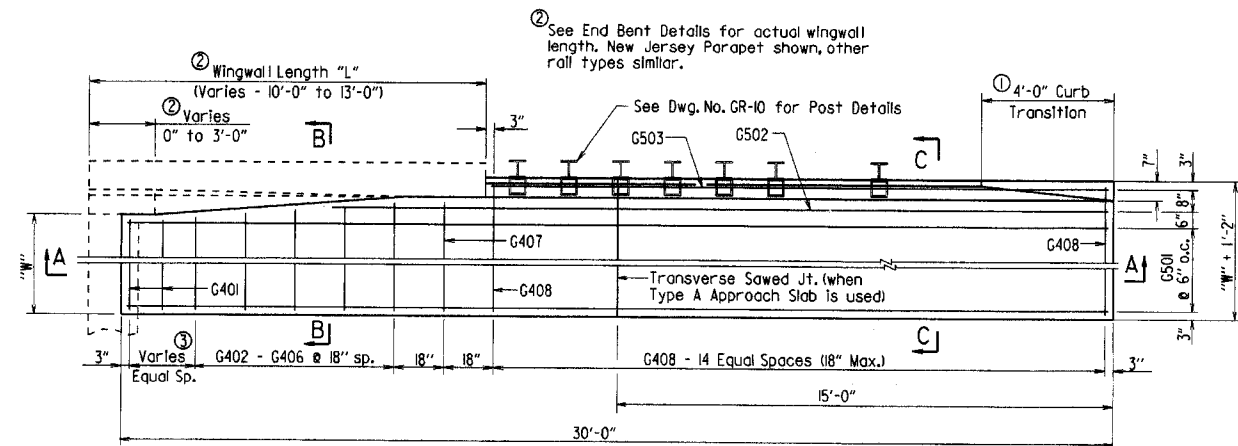
STANDARD DETAILS FOR CONCRETE PILES SEISMIC REGION B (LOAD FACTOR DESIGN)

ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.

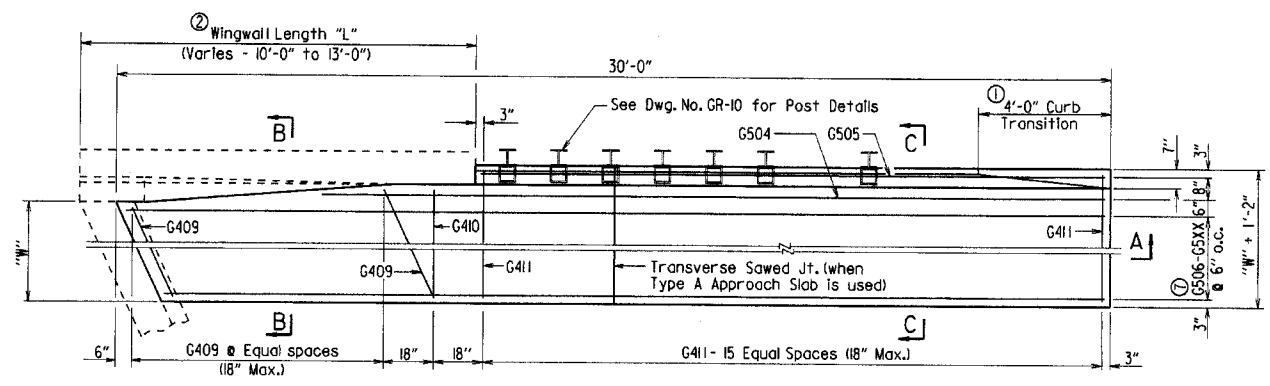
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 DESIGNED BY: STD. DATE: -

DRAWING NO. 55025

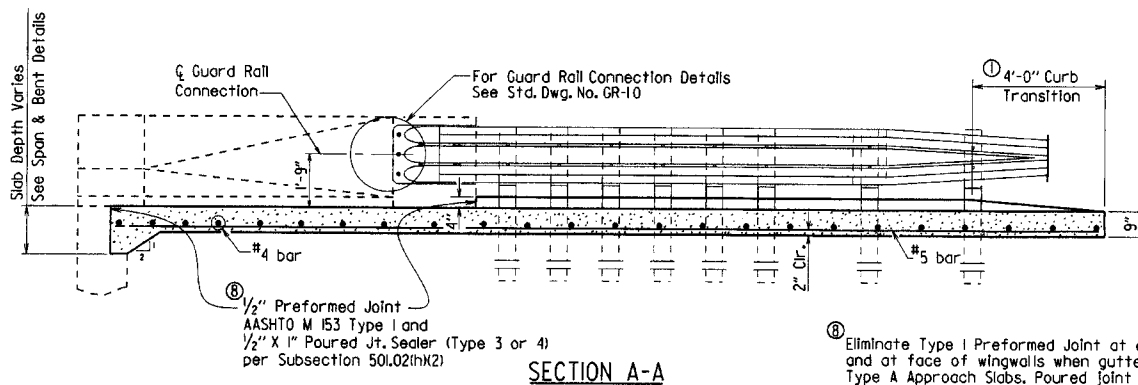
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9/2/15				6	ARK.		103	
JOB NO.							TYPE A GUTTERS	55030A



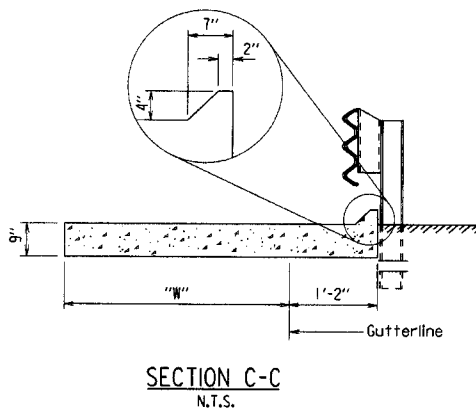
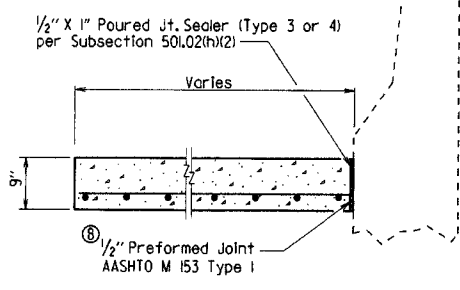
HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.  
 Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



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

△ Revised to add "W" = 2'-0"; By LJB  
 Checked By: K.W.Y. 9/2/15

BAR LIST FOR ONE TYPE A GUTTER

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

④ 0 for "L" = 10'  
 1 for "L" = 11'  
 2 for "L" = 12'  
 2 for "L" = 13'  
 ⑦ G509 for "W" = 2' △  
 G511 for "W" = 3'  
 G513 for "W" = 4'  
 G517 for "W" = 6'  
 G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.  
 ⑥ No. Req'd. varies with Skew and Wingwall length.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER (FOR INFORMATION ONLY)

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

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

GENERAL NOTES

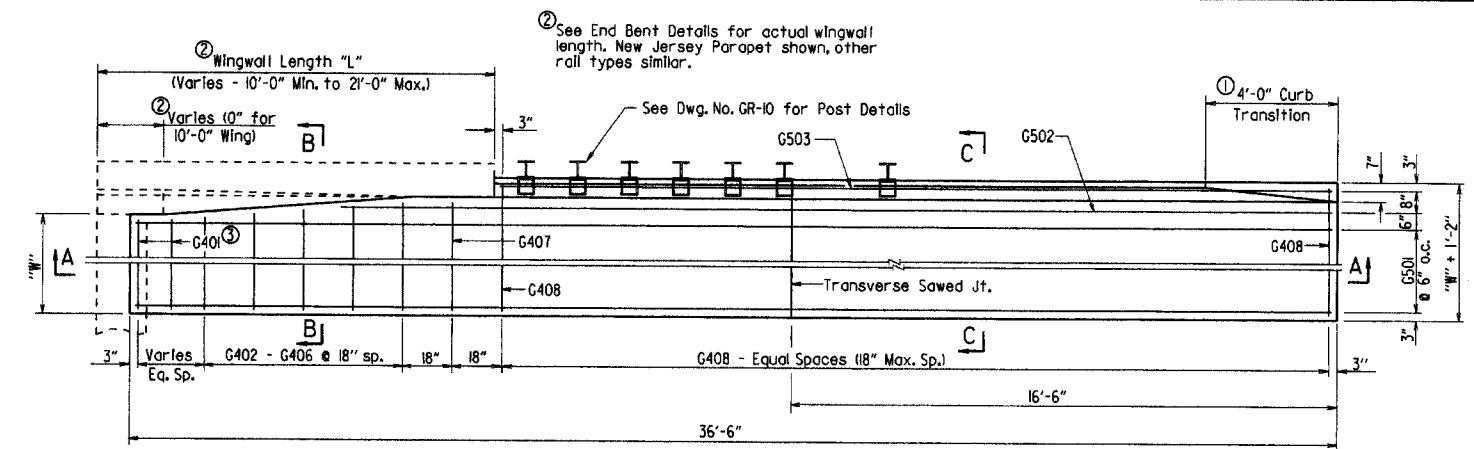
All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.  
 All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.  
 Approach Gutters will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.

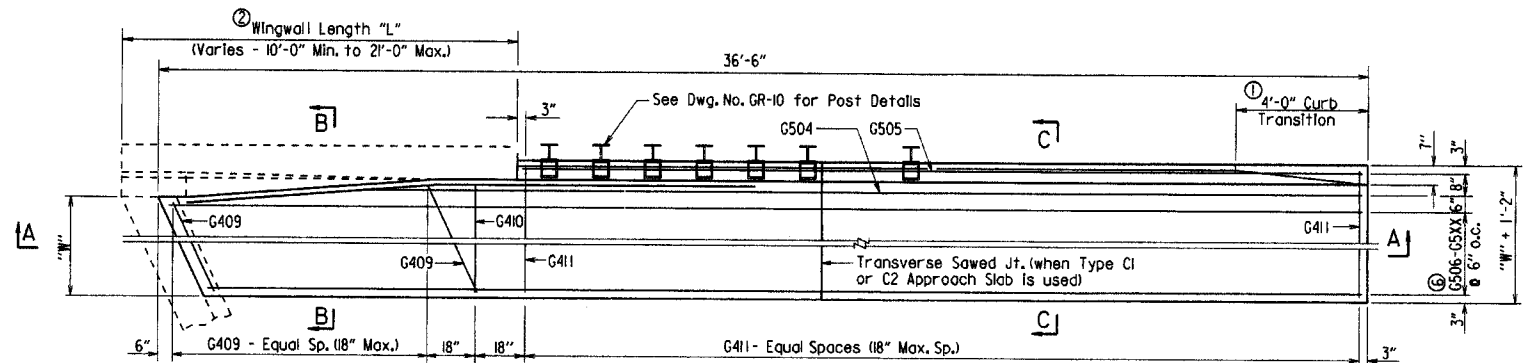
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 CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 1'-0"  
 DESIGNED BY: STD. DATE: or As Shown  
 DRAWING NO. 55030A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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							JOB NO.	
							TYPE C GUTTERS	55030C

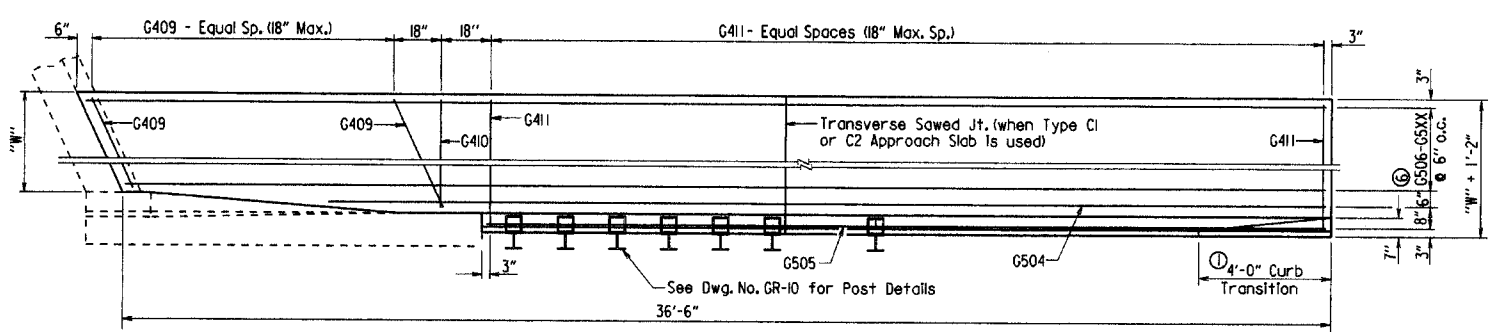


③ Provide G401 bars @ 18" max. spacing. Number of G401 bars vary with wingwall length. No G401 bars required for 10'-0" wingwalls.

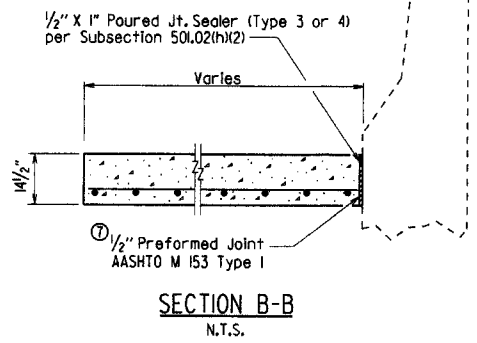
HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



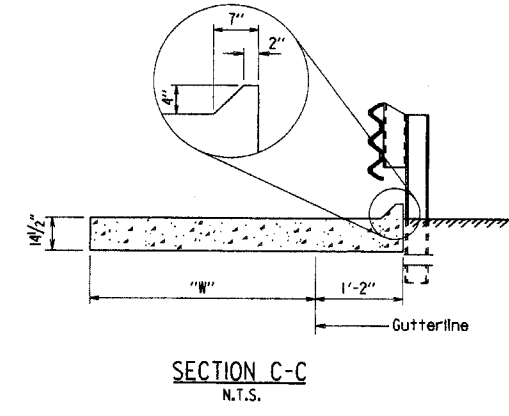
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.  
Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION B-B  
N.T.S.



SECTION C-C  
N.T.S.

BAR LIST FOR ONE TYPE C GUTTER

Mark	No. Req'd. for Width "W"				Length
	4'-0"	6'-0"	8'-0"	10'-0"	
G401	④	④	④	④	"W" - 4"
G402-G406	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 2"
G407	1	1	1	1	"W" + 3"
G408	④	④	④	④	"W" + 10"
G501	8	12	16	20	36'-2"
G502	1	1	1	1	(4'-11") - "L"
G503	1	1	1	1	(3'-2") - "L"
G409	④	④	④	④	⑤
G410	1	1	1	1	"W" + 3"
G411	④	④	④	④	"W" + 10"
G504	1	1	1	1	⑤
G505	1	1	1	1	⑤
G506-G5XX	1 each	1 each	1 each	1 each	⑤

④ No. Req'd. varies with Skew and Wingwall Length.  
⑤ Bar Lengths vary with Skew and Wingwall Length.  
⑥ G513 for "W" = 4'  
G517 for "W" = 6'  
G521 for "W" = 8'  
G525 for "W" = 10'

QUANTITIES FOR ONE SQUARE APPROACH GUTTER  
(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
4	445	8.30
6	630	11.55
8	810	14.80
10	995	18.10

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

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.  
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.  
Approach Gutters will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE C APPROACH GUTTERS

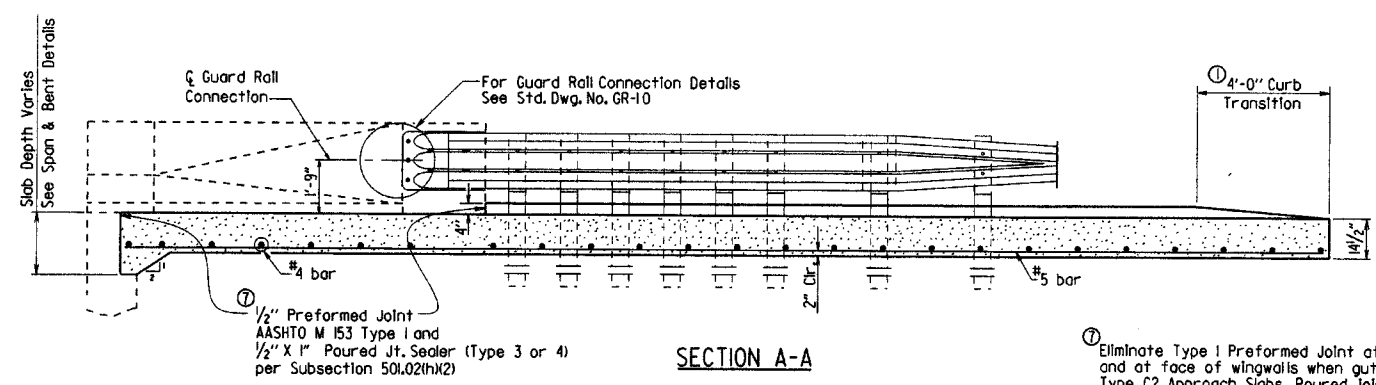
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

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CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 1'-0"  
DESIGNED BY: STD. DATE: or As Shown

DRAWING NO. 55030C

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

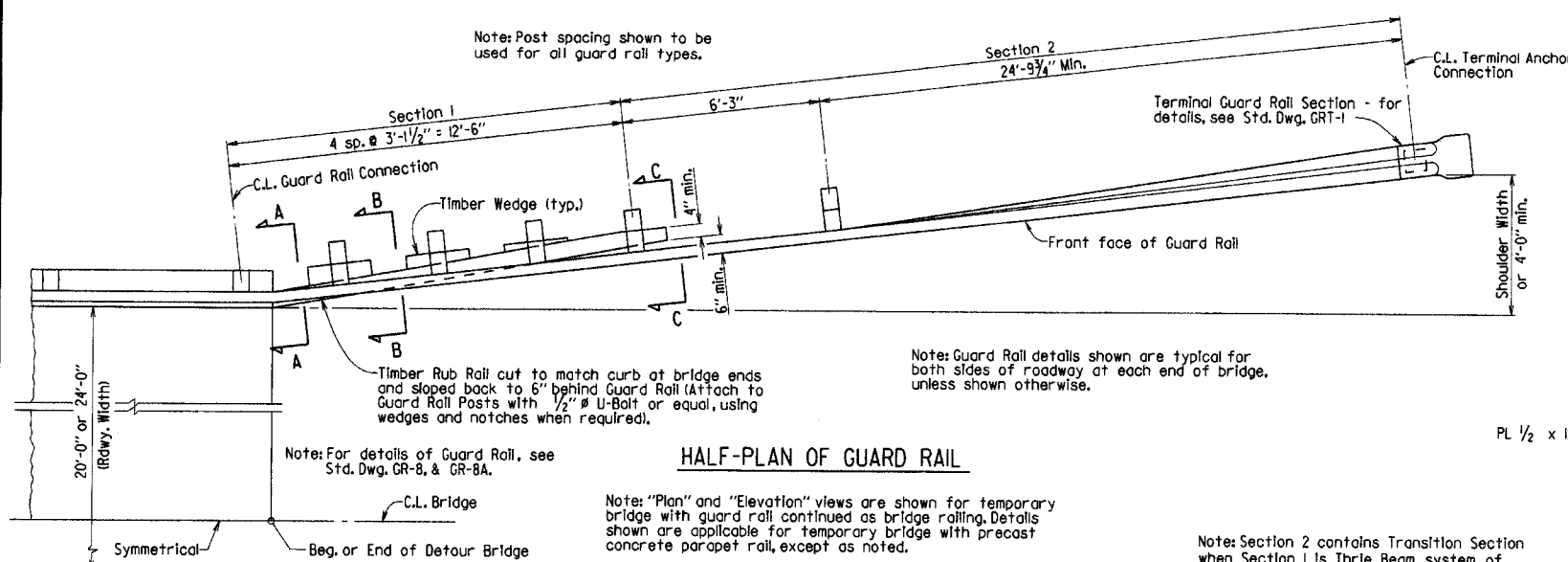
① Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type C2 Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.



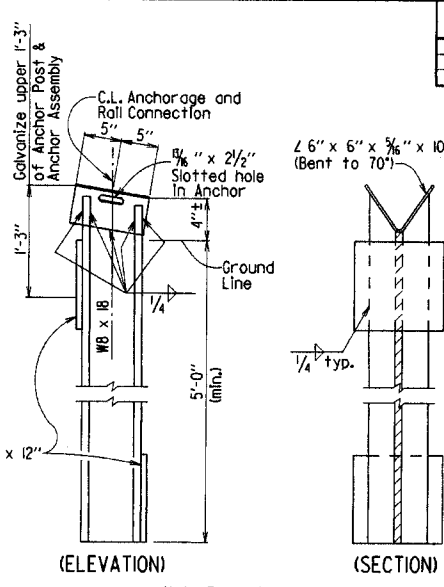
SECTION A-A



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		105	
							JOB NO.	
							TEMP. BRIDGE	55054



**HALF-PLAN OF GUARD RAIL**



**DETAILS OF TERMINAL ANCHOR POST**

**GENERAL NOTES**

Bridge End Protection is required on both sides of roadway at both ends of temporary bridge. The end protection system shall consist of a minimum of two end sections (Section 1 and Section 2). If additional guard rail is used, it shall be placed in Section 2 and shall have a maximum post spacing of 6'-3".

If W-Beam Guard Rail is also used as Bridge Rail, it shall be continuous from terminal anchor post to terminal anchor post with splices as shown on Std. Dwg. GR-8.

A doubled guard rail beam section (One W-Beam Rail section or one Thrie Beam Rail section nested inside the other) shall be required for Section 1 if the guard rail is not continued as bridge rail, but connects directly to a precast concrete parapet bridge rail end.

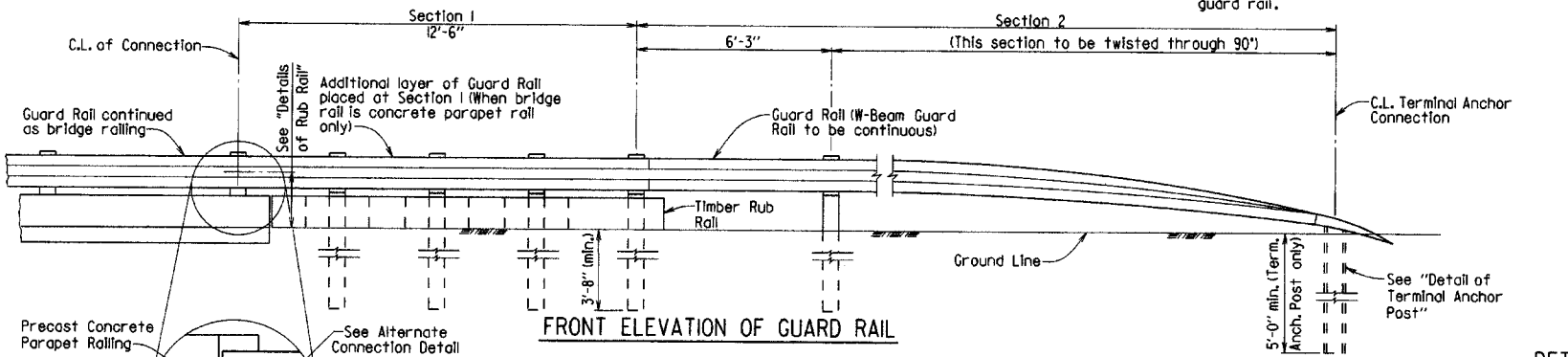
Rub rails shown in Section 1 are representative of members required to transition the curb or wheel guard section to a minimum distance behind the face of guard rail.

Timber rub rail, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

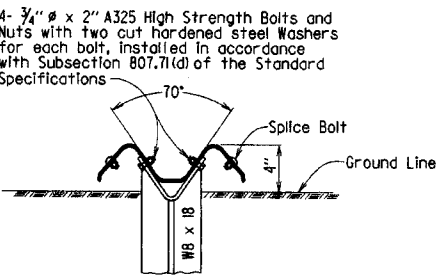
Except as noted, bolts shall conform to the requirements of ASTM A 307 and minimum dimensions as shown. Malleable or cast iron washers to be used under all bolt heads and nuts bearing on timber. High strength bolts shall conform to Section 807.

Guard rail as described in Subsection 617.01 of the Standard Specifications and these plans shall be constructed in accordance with Subsection 617.03. Subsection 617.02 is modified to allow the use of materials consistent with the requirements of Section 603.

Payment: The bridge end protection system completed and accepted will not be paid for directly, but shall be included in the contract unit price bid per linear foot for temporary bridge structure, which price shall be full compensation for furnishing materials and erecting guard rail, line posts, blockouts, rub rails, terminal anchor posts, etc. and for all labor, tools, equipment and incidentals necessary to complete the work.



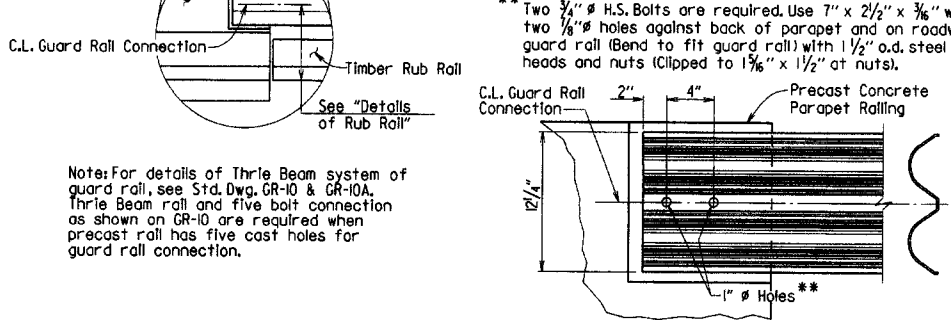
**FRONT ELEVATION OF GUARD RAIL**



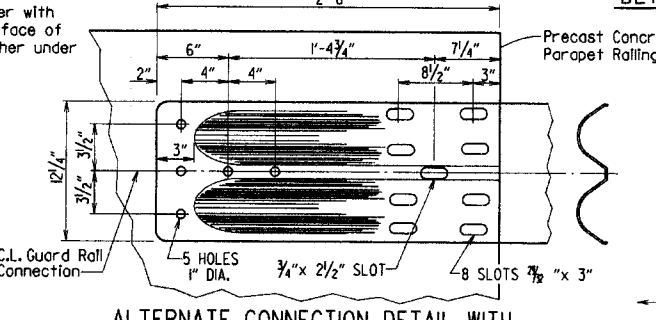
**DETAILS OF TERMINAL ANCHOR CONNECTION**

**GUARD RAIL CONNECTION COMBINATIONS**

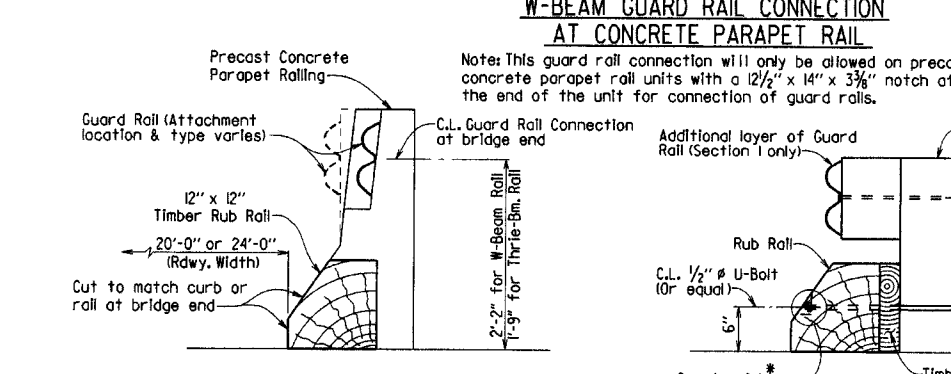
BRIDGE RAIL TYPE	GUARD RAIL AND CONNECTION TYPE
Guard Rail continued as bridge railing	W-Beam Guard Rail. See Std. Dwg. GR-8 for splice details.
Concrete Parapet with 12 1/2" x 14" x 3 3/8" notch and two cast in holes	W-Beam Guard Rail fastened with two high-strength bolts as shown; blunt end on guard rail. Guard Rail doubled at Section 1.
Concrete Parapet with Concrete Insert Anchor assembly (4-Bolt embedded Anchor) flush with rail face	W-Beam Guard Rail fastened with four high-strength bolts; Special End Shoe. Guard Rail doubled at Section 1.
Concrete Parapet with 5 cast in holes	Thrie Beam Guard Rail; five high-strength through bolts with back-up plate; special end shoe as shown on Std. Dwg. GR-10. Guard Rail doubled at Section 1. Section 2 contains transitional rail and W-Beam Guard Rail.



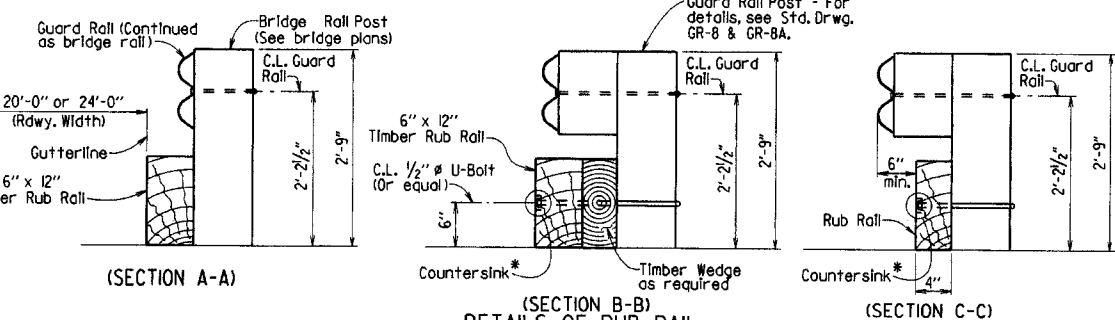
**W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL**



**ALTERNATE CONNECTION DETAIL WITH SPECIAL END SHOE FOR W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL**



**DETAILS OF RUB RAIL (CONC. PARAPET BRIDGE RAIL)**



**DETAILS OF RUB RAIL (CONTINUOUS W-BEAM RAIL)**

**STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE BRIDGE END PROTECTION SYSTEM**



ROUTE SEC.  
**ARKANSAS STATE HIGHWAY COMMISSION**  
 LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-17-14  
 CHECKED BY: AMS DATE: 4-17-14  
 DESIGNED BY: STD. DATE: FILENAME: b55054.dgn  
 SCALE: No Scale

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BRIDGE ENGINEER

DRAWING NO. 55054

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		106	
				JOB NO.		TEMP. BRIDGE		55055

GENERAL NOTES

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 2002 Edition, with current interim specifications.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2014 Edition, with applicable special provisions and supplemental specifications.

SEISMIC PERFORMANCE ZONE: I

DESIGN LIVE LOADS: H 15-44 (No Overload).

DESIGN DEAD LOADS: 50 lbs. per cu. ft. for lumber  
150 lbs. per cu. ft. for concrete

Precast Concrete Units shall comply with the requirements of AHTD standard drawings and special provisions. Drawings for old style units are within the drawing series 5291 thru 5307 and 14800 thru 14899. New style units (Current Design) are within the drawing series 15190 thru 15400.

Load Factor Design is used for the new style precast concrete units. Allowable Stress Design is used for the old style precast concrete units and timber components. The allowable unit stresses used assume normal duration of loading for stress grades of sawn lumber and are as follows:

fb=200 psi  
fv=85 psi

Concrete shall be Class S with a minimum 28 day compressive strength f'c = 3500 psi unless otherwise noted.

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

Structural Steel shall be AASHTO M 270, Grade 36 unless otherwise noted.

Timber piling shall comply with Section 818 of the Standard Specifications and shall be driven to a minimum bearing capacity of 20 tons per pile. Steel piling shall be HP12x53 and shall be driven to a minimum bearing capacity of 44 tons per pile.

Malleable or cast iron washers shall be used under all bolt heads and nuts bearing on timber. Standard washers shall be provided under all bolt heads and nuts in connection with concrete.

Bolts shall conform to the requirements of ASTM A 307, ASTM A 307 Threaded Rods may be used in lieu of bolts. Minimum dimensions are shown for bolts, dowels, and drift pins.

Grout placed around Drift Pins in piles shall be allowed to cure for 72 hours before caps are used to support the superstructure. Grout to consist of one part portland cement to two parts sand.

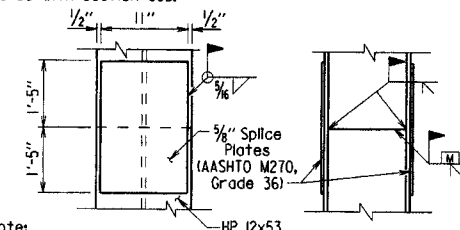
Melted sulfur may be used in lieu of grout placed around drift pins. The superstructure may be placed as soon as the sulfur has hardened.

Bent caps to be handled from points approximately 5' from the ends.

Timber material, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

For additional notes concerning "Bridge End Protection System", see Std. Dwg. 55054.

Unless otherwise noted, the Temporary Bridge Structure shall comply with and be paid for in accordance with Section 603.



Note: The Contractor may for his own convenience and at his own expense provide as many as three splices per pile for steel bearing piling. Minimum spacing between splices shall be 5 ft. A proprietary steel pile splicer sufficient to develop the full strength of the section may be substituted for the details shown. Pile splicers shall be installed in accordance with manufacturer's recommendations.

PILE SPLICE DETAIL  
SHEET 1 OF 2

STANDARD DETAILS FOR  
TEMPORARY BRIDGE STRUCTURE  
PRECAST CONCRETE SPANS  
24' ROADWAY WIDTH

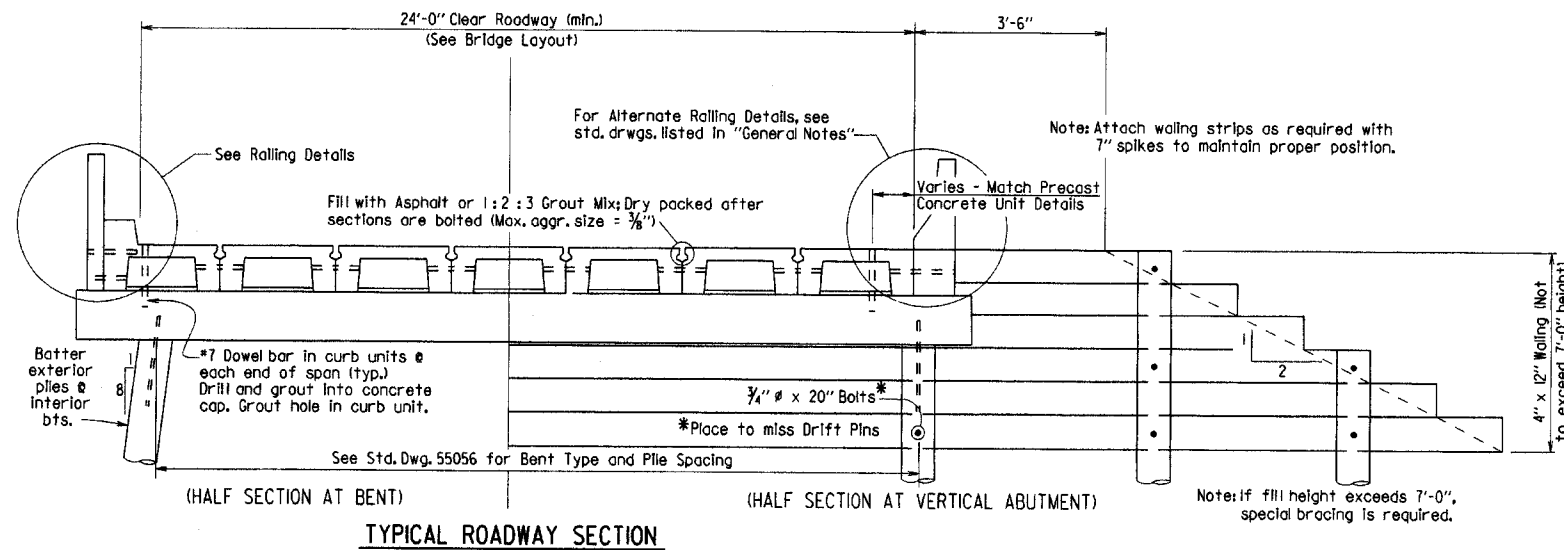
ROUTE SEC.  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

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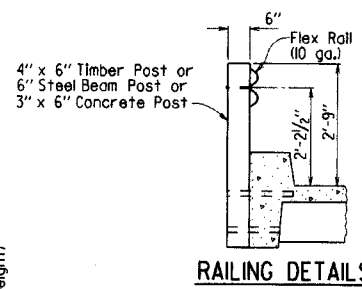
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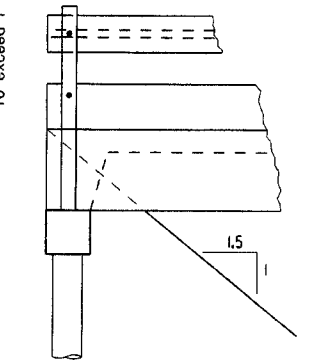
BRIDGE ENGINEER



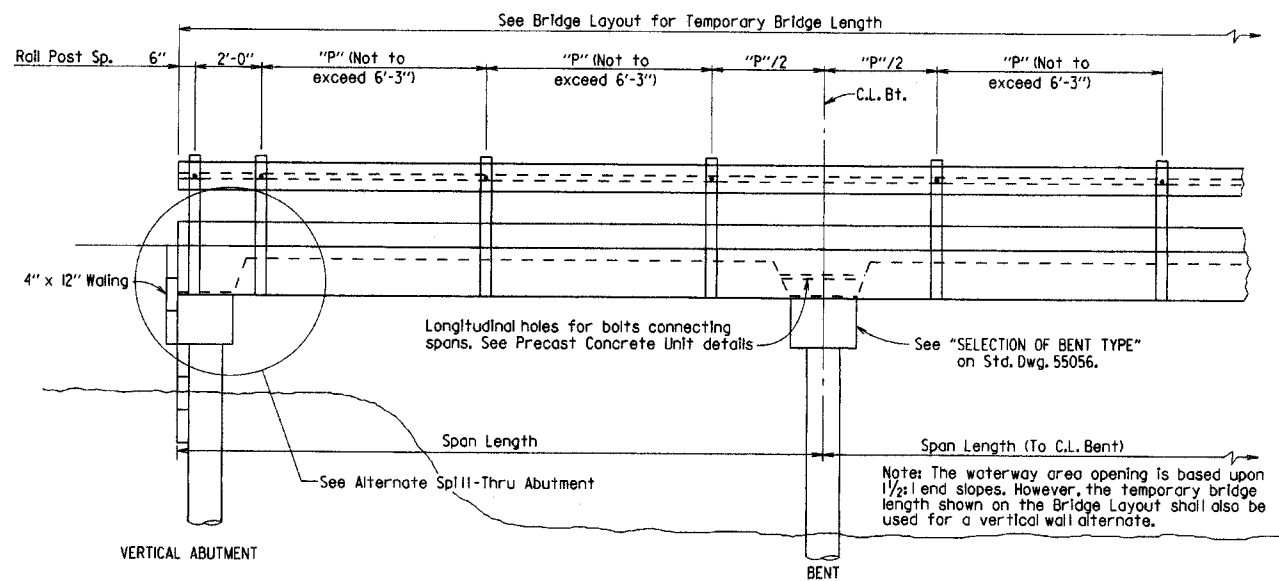
TYPICAL ROADWAY SECTION



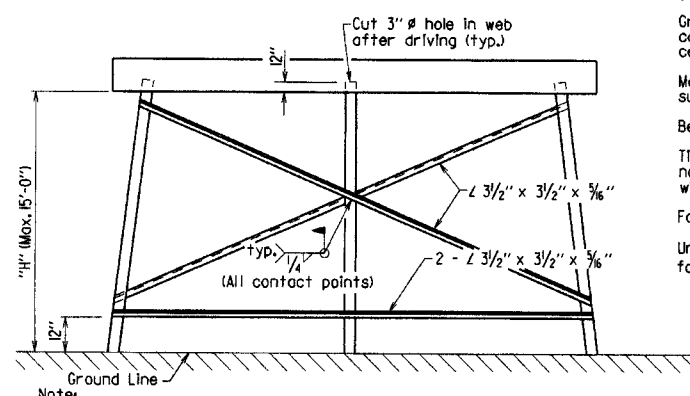
RAILING DETAILS



ALTERNATE SPILL-THRU ABUTMENT



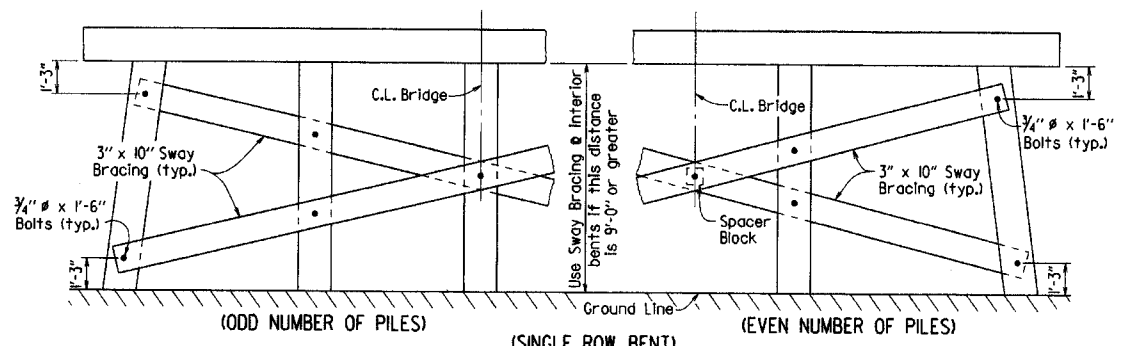
LONGITUDINAL SECTION



Note: All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment for any bracing required shall be considered incidental to Item 603 "Temporary Bridge Structure".

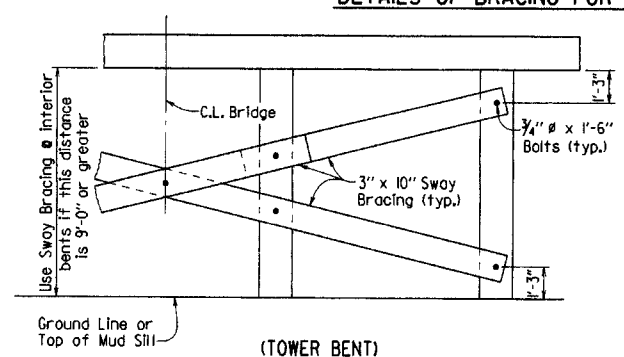
Omit bottom bracing when "H" is less than 10'. Omit all bracing when "H" is less than 5'. When "H" exceeds 15', additional X-bracing is required to provide a maximum unbraced pile length of 14'.

DETAILS OF BRACING FOR STEEL PILES



DETAILS OF SWAY BRACING FOR TIMBER PILES

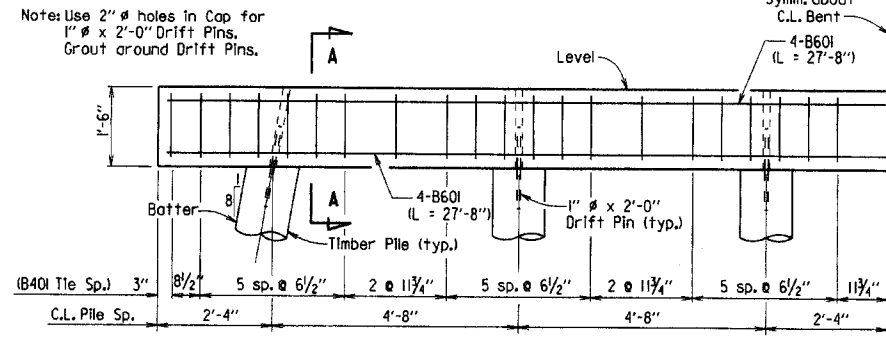
Note: Sway Bracing, if required, shall be used on both lines of piles for Tower Bents.



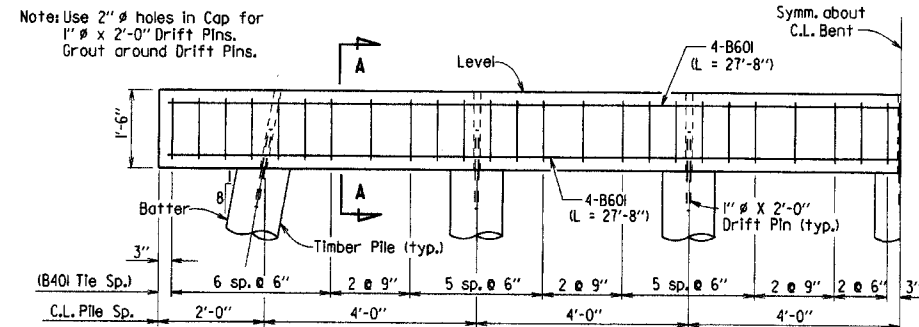
(TOWER BENT)

This document was originally issued and sealed by Carl J. Fuseller, PE No. 7510, on April 17, 2014. This copy is not a signed and sealed document.

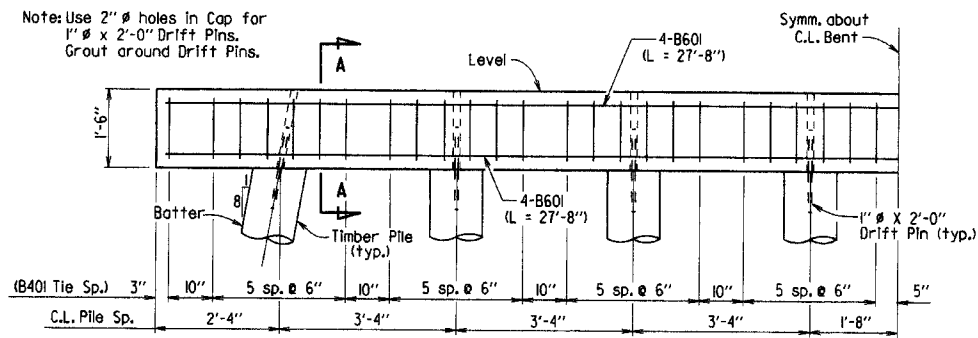
Note: Reinforcing steel in cap shall be placed to not interfere with dowel bars.



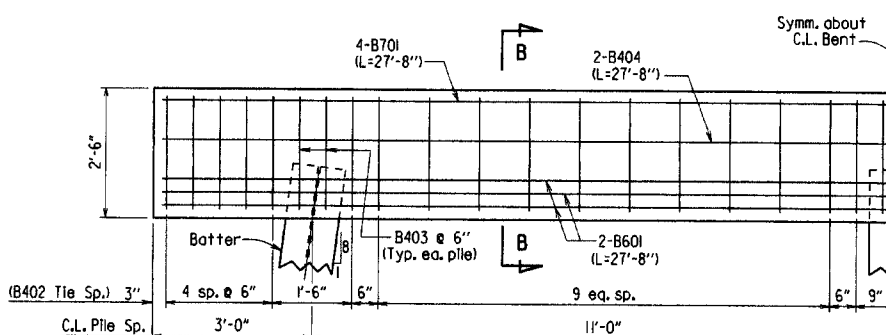
**PRECAST CAP & TIMBER PILES**  
 $(\text{"S1"} + \text{"S2"} \leq 38')$



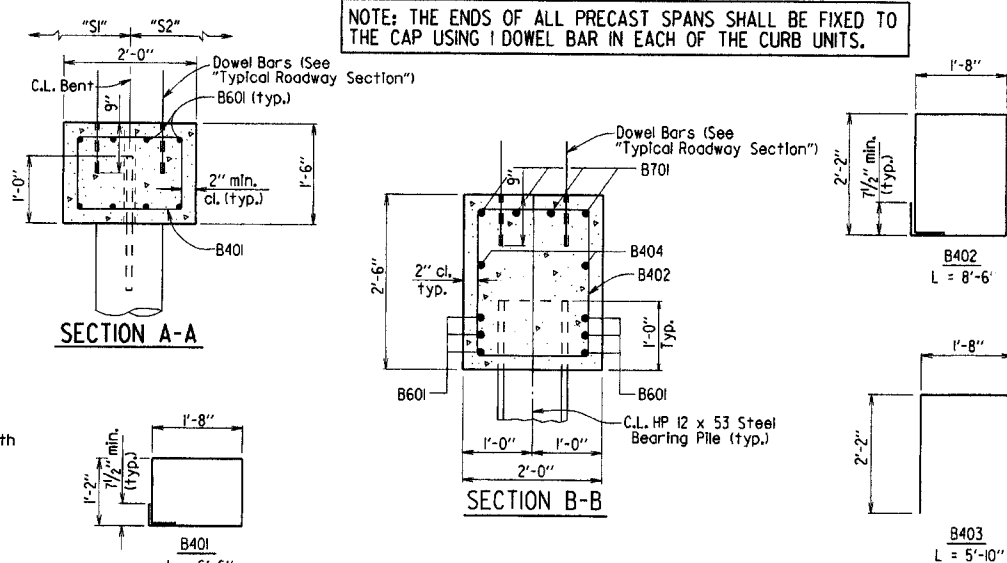
**PRECAST CAP & TIMBER PILES**  
 $(38' < \text{"S1"} + \text{"S2"} \leq 50')$



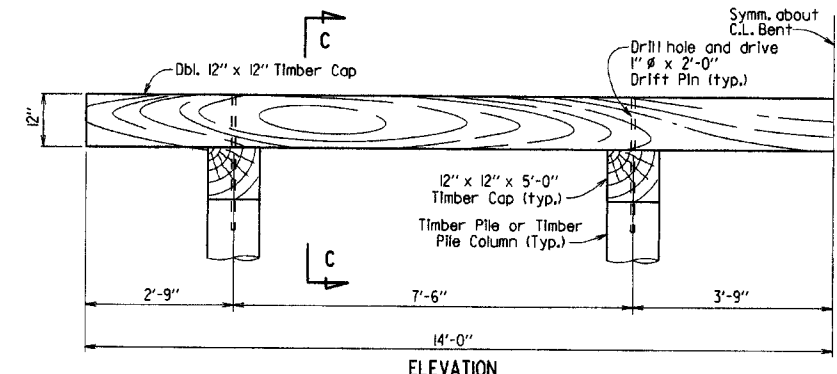
**PRECAST CAP & TIMBER PILES**  
 $(50' < \text{"S1"} + \text{"S2"} \leq 62')$



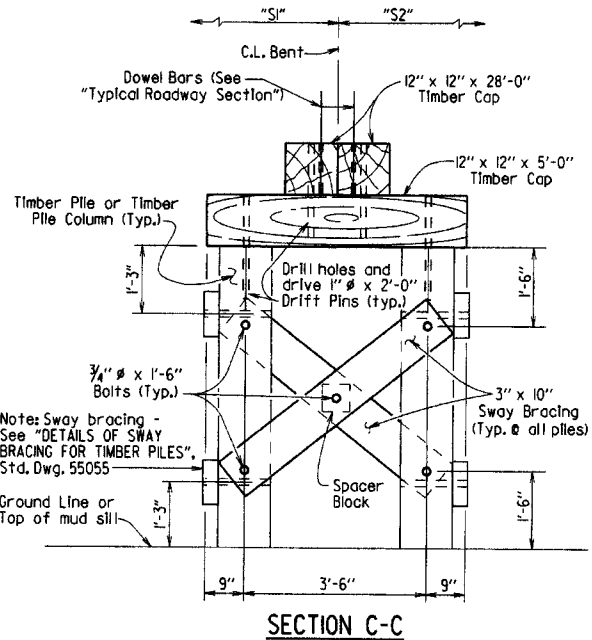
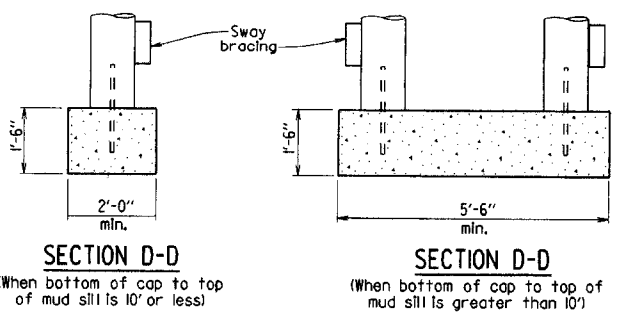
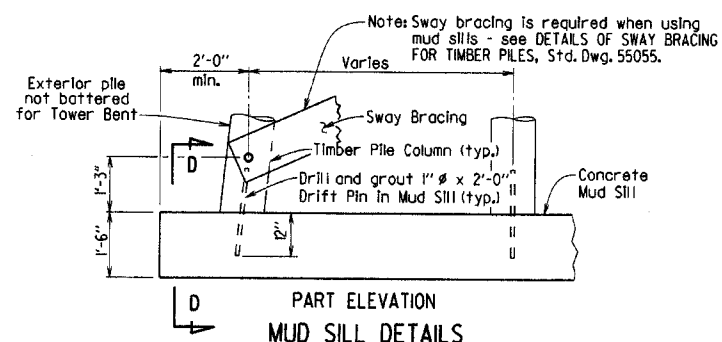
**CAST IN PLACE CAP & HP 12X53 PILES**



NOTE: THE ENDS OF ALL PRECAST SPANS SHALL BE FIXED TO THE CAP USING 1 DOWEL BAR IN EACH OF THE CURB UNITS.



**TOWER BENT - TIMBER CAP & PILES**

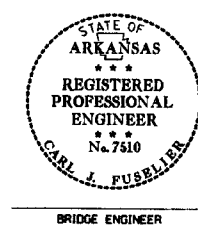


**SHEET 2 OF 2**  
**STANDARD DETAILS FOR**  
**TEMPORARY BRIDGE STRUCTURE**  
**PRECAST CONCRETE SPANS**  
**24' ROADWAY WIDTH**

ROUTE \_\_\_\_\_ SEC. \_\_\_\_\_  
**ARKANSAS STATE HIGHWAY COMMISSION**  
 LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-17-14 FILENAME: b55055.dgn  
 CHECKED BY: AMS DATE: 4-17-14 SCALE: No Scale  
 DESIGNED BY: STD. DATE: \_\_\_\_\_

DRAWING NO. 55056



BRIDGE ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		107	
							JOB NO.	
							TEMP. BRIDGE	55056

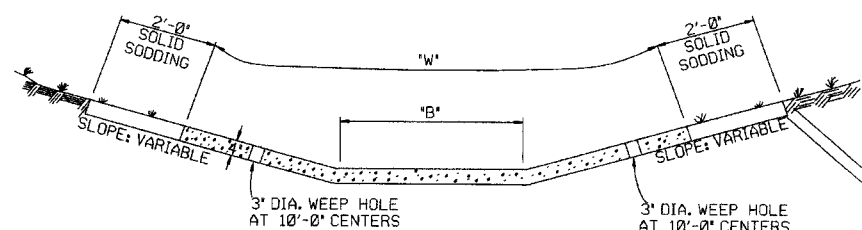
**SELECTION OF BENT TYPES**

- These temporary bridge drawings provide the following bent types:
- Driven timber piles with precast concrete cap.
  - Driven steel HP 12x53 piles with cast in place concrete cap.
  - Tower bent with driven timber piles and timber cap.
  - Mud sill with timber pile columns and precast concrete cap.
  - Tower bent with mud sill and timber pile columns and timber cap.

Guidelines to be used in determining the appropriate bent type are:

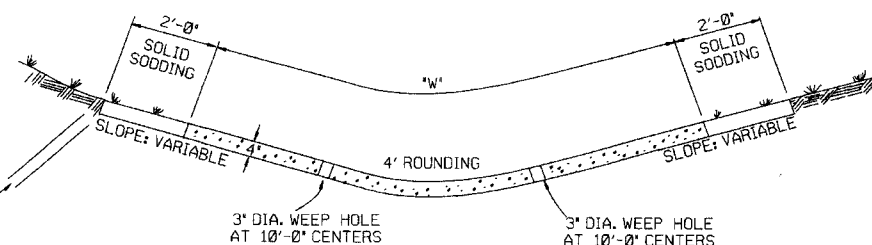
- 1) Driven piles may be used at intermediate bents if a pile penetration of at least 15' below the ground line can be obtained. At end bents, a pile penetration of at least 5' below the bottom of cap is required. Pile penetration measurements at end bents can include embankment, but fill material may not be placed around intermediate bent piles in order to meet the 15' requirement.
- 2) If driven timber piles are used at intermediate bents and the distance from the bottom of cap to ground line exceeds 15' at any intermediate bent, tower bents must be used at the minimum rate of one tower bent for every 160' of total bridge length. Tower bents, when required, shall be placed at the bent location(s) having the greatest distance from bottom of cap to ground line.
- 3) If piles cannot be practically driven at a bent, mud sills shall be used. All soft and yielding material shall be removed from the bearing area before placing the sill concrete.
- 4) Timber piles shall be used as columns in mud sills. The column spacing shall be the same as that used for driven timber pile bents for the appropriate span lengths involved.
- 5) If a mud sill is to be used and the distance from the bottom of cap to ground line is more than 10', a tower bent with mud sill must be used at that location.
- 6) A timber cap may be used only if tower bents are used.

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



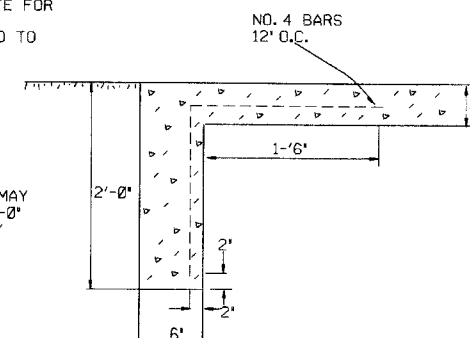
TYPE A

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 DETAIL FOR CONCRETE DITCH PAVING

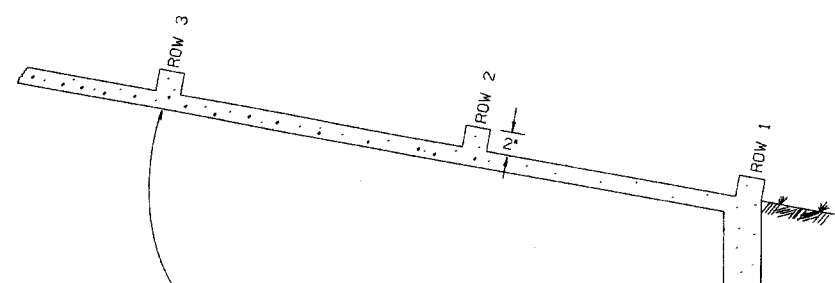
GENERAL NOTES:

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.

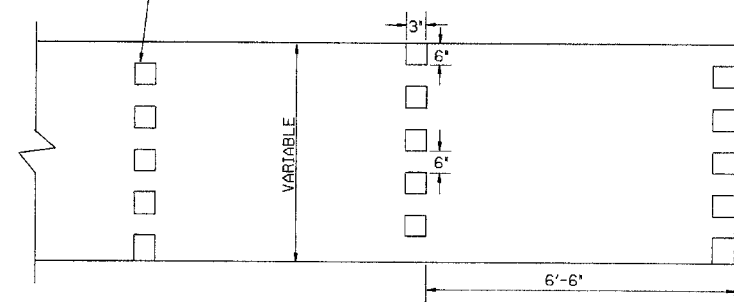
SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

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.



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNINCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



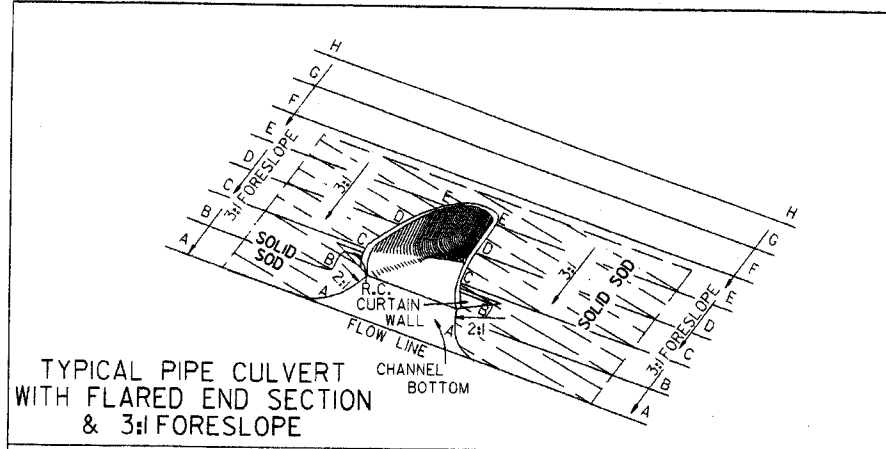
ENERGY DISSIPATORS  
(NO SCALE)

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	508-11-1-84
11-1-84	ADDED EXCAVATION DETAILS ADDED	
10-2-72	REVISED AND REDRAWN	508-10-2-72
DATE	REVISION	DATE FILM'D

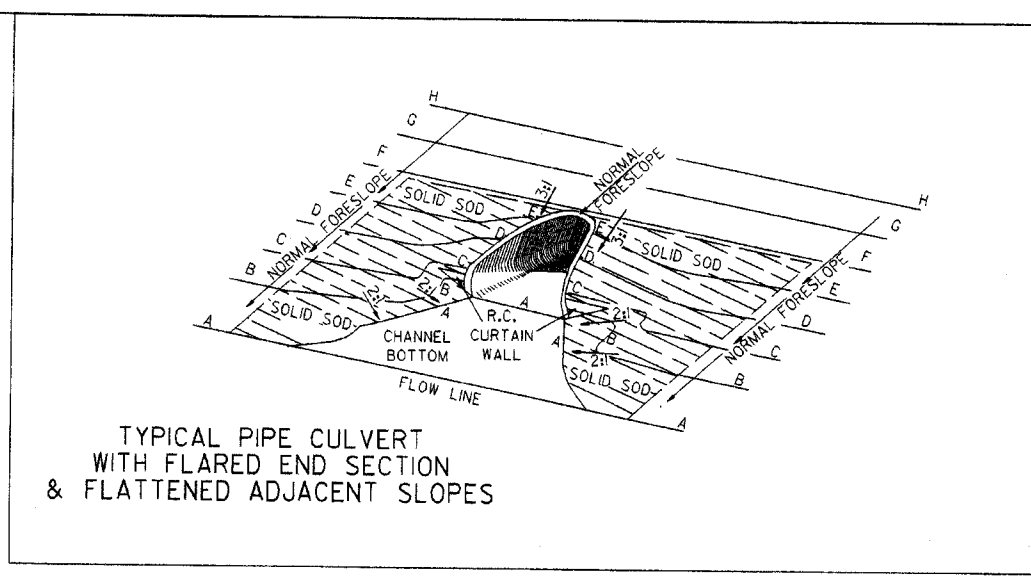
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

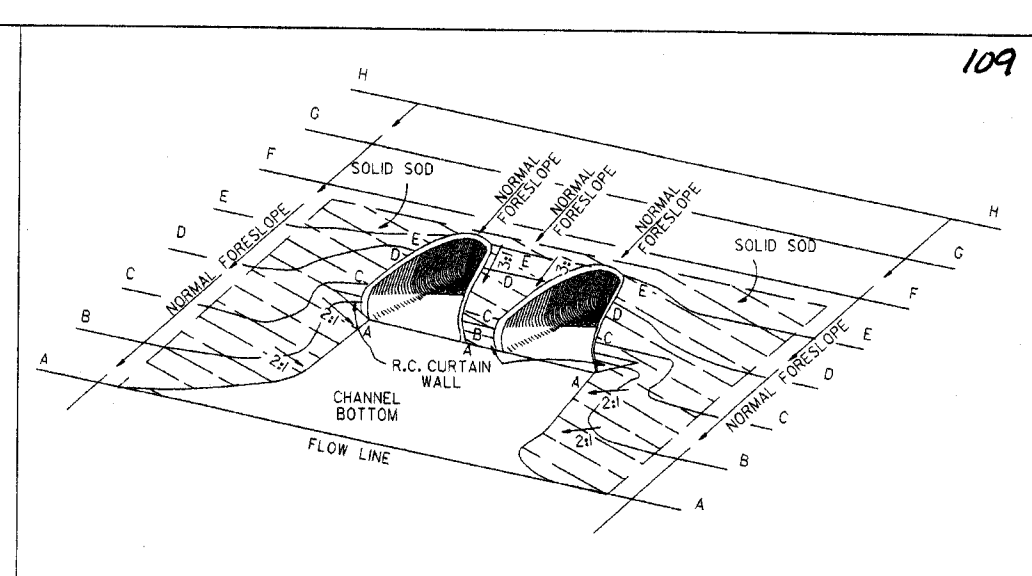
STANDARD DRAWING CDP-1



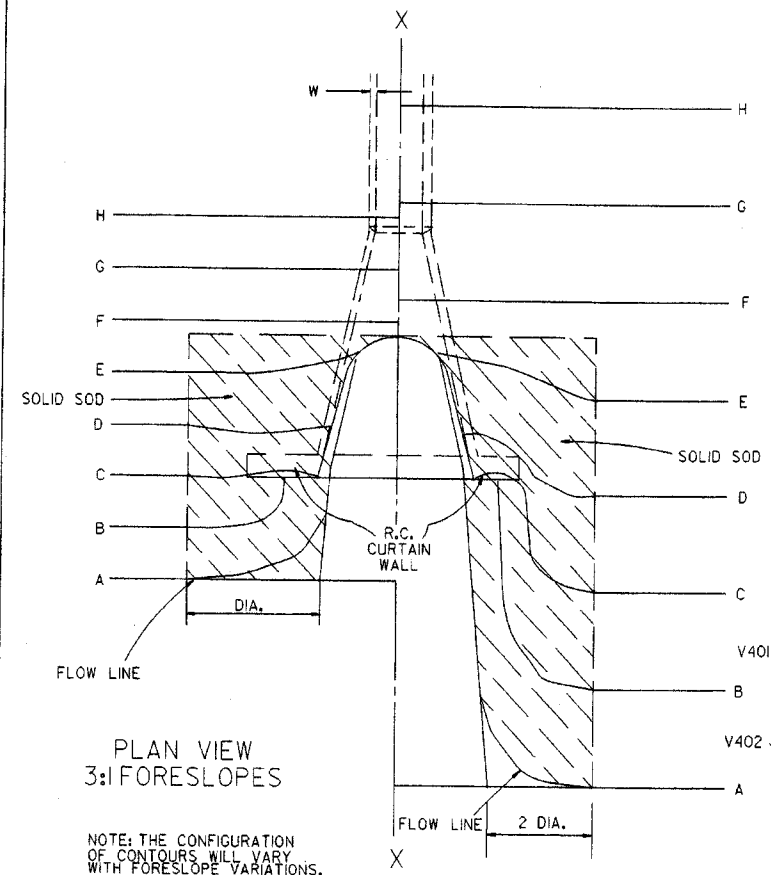
TYPICAL PIPE CULVERT WITH FLARED END SECTION & 3:1 FORESLOPE



TYPICAL PIPE CULVERT WITH FLARED END SECTION & FLATTENED ADJACENT SLOPES



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



PLAN VIEW 3:1 FORESLOPES

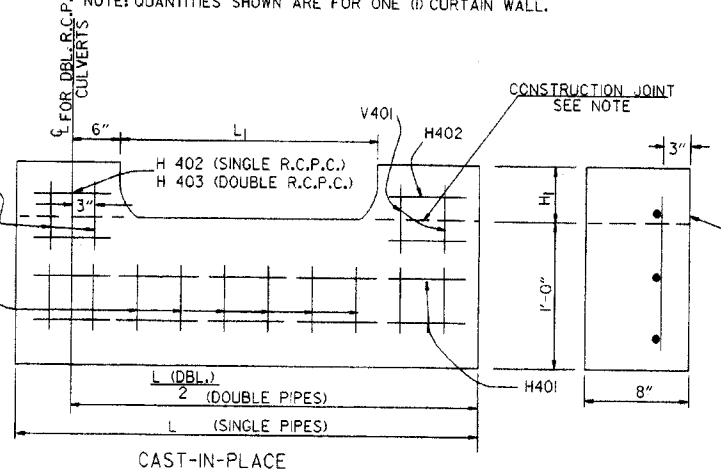
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

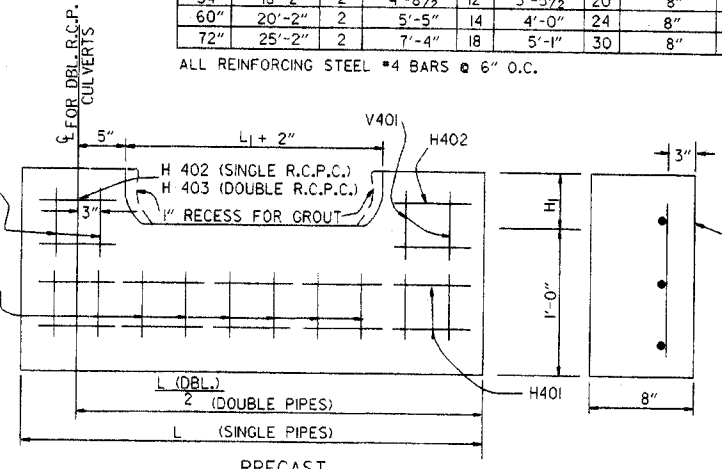
PIPE DIA.	H <sub>1</sub>	L <sub>1</sub>	L	L (DBL.) / 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC. CU. YDS.	REINF. STEEL LBS.	CONC. CU. YDS.	REINF. STEEL LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1 1/2"	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'-9 1/2"	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.



R.C. CURTAIN WALL DETAILS

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.

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11 1/2"	4	1'-7 1/2"	8	8"	8	12'-2"	2	1'-11 1/2"	4	8"	2	1'-7 1/2"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8 1/2"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8 1/2"	12	8"	18
30"	10'-8"	2	2'-4 1/2"	4	1'-11 1/2"	10	8"	12	17'-8"	2	2'-4 1/2"	4	8"	2	1'-11 1/2"	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'-9 1/2"	8	2'-9 1/2"	16	8"	15	23'-8"	2	3'-9 1/2"	8	8"	4	2'-9 1/2"	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'-8 1/2"	12	3'-5 1/2"	20	8"	17	27'-8"	2	4'-8 1/2"	12	8"	6	3'-5 1/2"	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

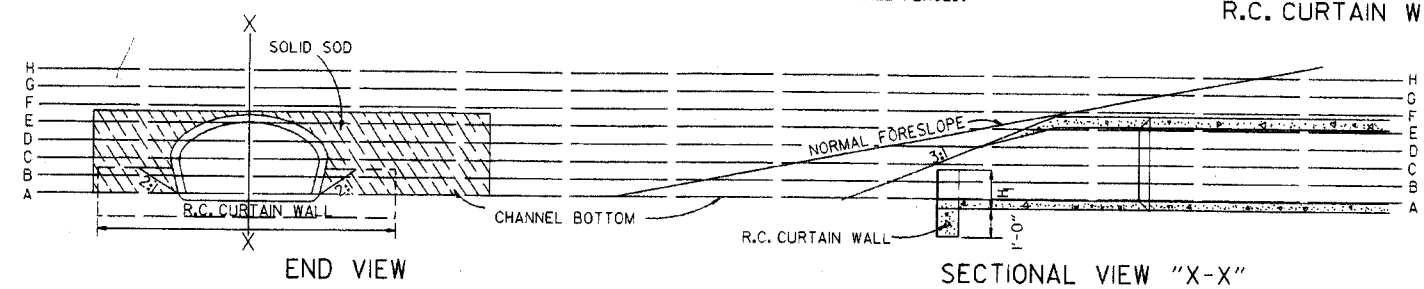
ALL REINFORCING STEEL #4 BARS @ 6" O.C.

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C.			DOUBLE R.C.P.C.		
	3:1	4:1	6:1	3:1	4:1	6:1
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 3/4".
  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 PAYING 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"

10-18-96 ADDED NOTE TO SOLID SODDING	10-28-96	ARKANSAS STATE HIGHWAY COMMISSION
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.		
3-2-91 ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES		
5-15-80 ADDED PRECAST WALL & GENERAL NOTES		
10-2-72 REVISED AND REDRAWN		
DATE	REVISION	FILMED
		STANDARD DRAWING FES-1

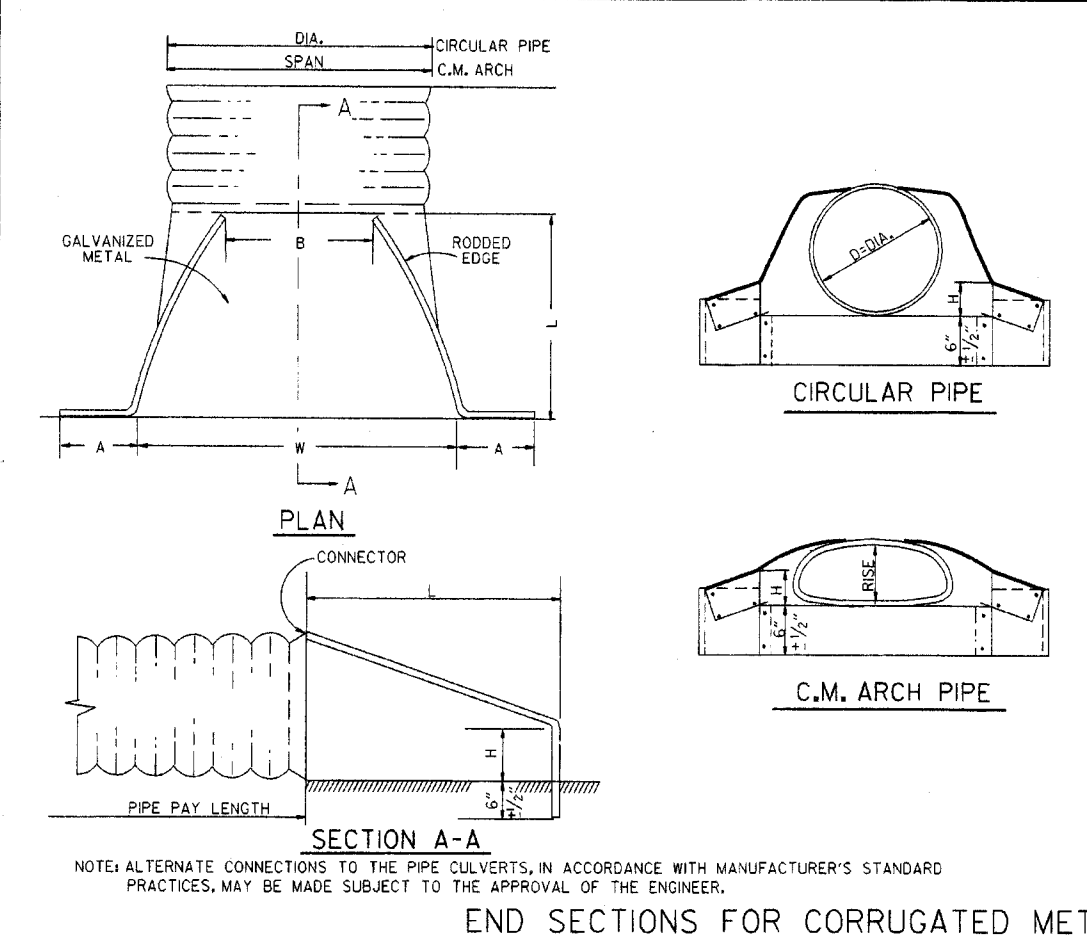
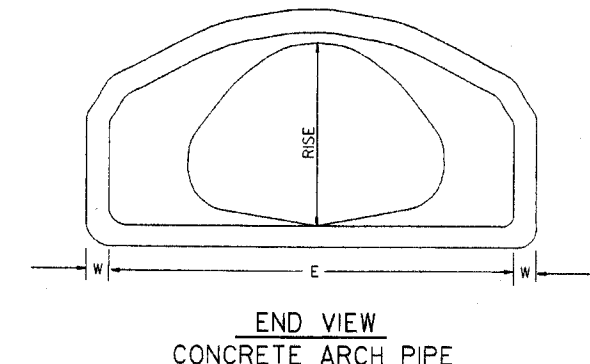
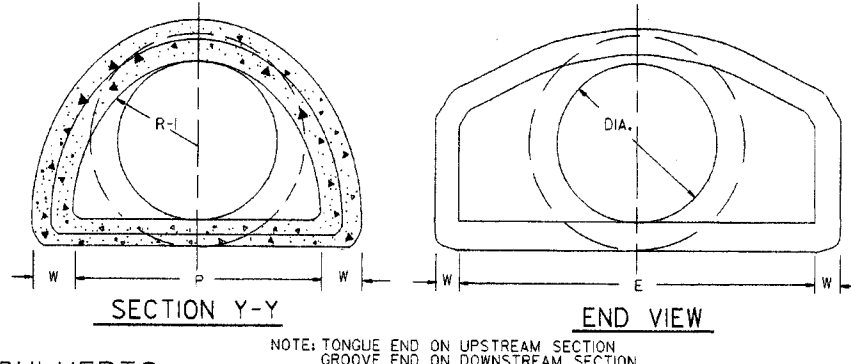
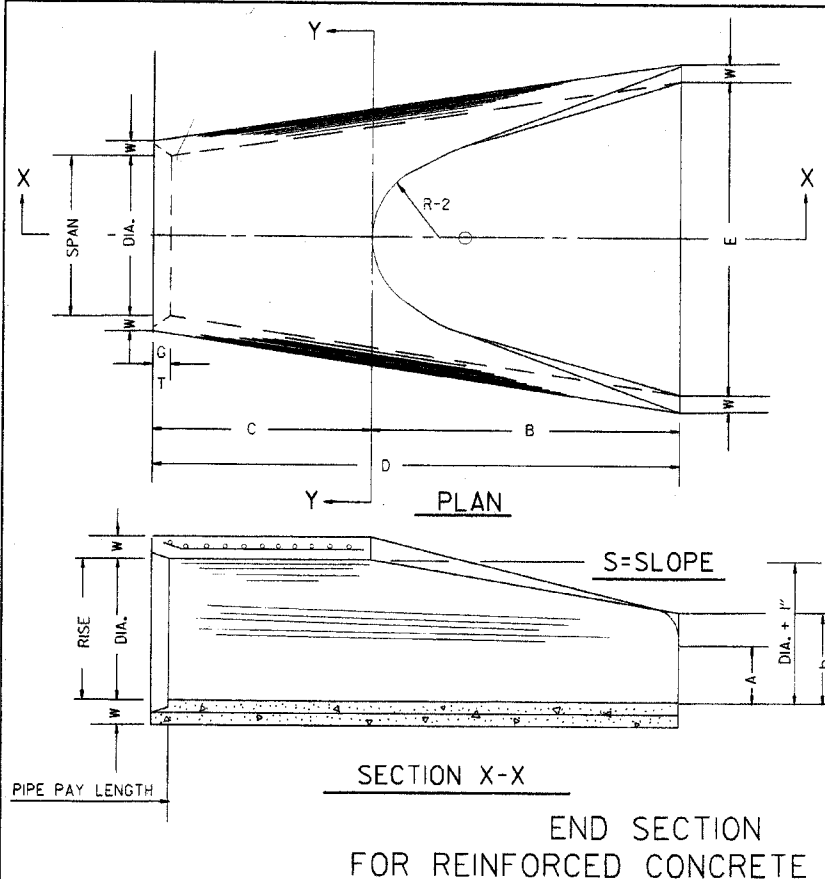
TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-11 1/2"	4'-0"	3:1	25"	33 3/8"	16 1/8"	14"	2 1/2"	1600	1'-1 1/2"
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-3 3/4"	5'-0"	3:1	31"	37"	18 1/2"	15"	3 1/4"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 1/4"	8'-1 1/4"	6'-0"	3:1	37"	47 1/8"	24 5/8"	20"	3 3/4"	4100	1'-8"
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 1/8"	27 1/2"	22"	3 1/2"	5380	2'-2 1/2"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	22"	3 1/2"	6550	2'-6"
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 1/8"	24"	4"	8750	2'-10 1/2"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	36 1/8"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 3/8"	38 3/8"	24"	5"	13250	4'-6"

ARCH PIPE

EQUIV. DIA.	SPAN		RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
INCHES														
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1 1/2"	2 1/2:1
18	22	22	13 1/2	14	2 1/2"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32 3/8"	13"	2 1/2"	2 1/2:1
21	26	26	15 1/2	16	2 3/4"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34 3/8"	14"	2 1/2"	2 1/2:1
24	28 1/2	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 1/8"	15"	2 1/2"	2 1/2:1
30	36 1/4	36	22 1/2	23	3 1/2"	10"	3'-1"	3'-0 1/2"	6'-1 1/2"	6'-0"	47 1/8"	20"	3"	2 1/2:1
36	43 3/4	44	26 3/8	27	4"	10 1/2"	4'-0"	2'-1 1/4"	6'-1 1/2"	6'-6"	54 3/8"	22"	3 1/2"	2 1/2:1
42	51 1/8	51	31 3/8	31	4 1/2"	11 1/2"	4'-7"	1'-10 1/4"	6'-5 1/4"	7'-2"	59 1/2"	23"	3 3/4"	2 1/2:1
48	58 1/2	59	36	36	5"	1'-3"	5'-3"	2'-10 3/4"	8'-1 1/4"	7'-10"	70 3/8"	24"	4 1/4"	2 1/2:1
54	65	65	40	40	5 1/2"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/8"	24"	4 3/4"	2 1/2:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 3/8"	24"	5"	2 1/4:1

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

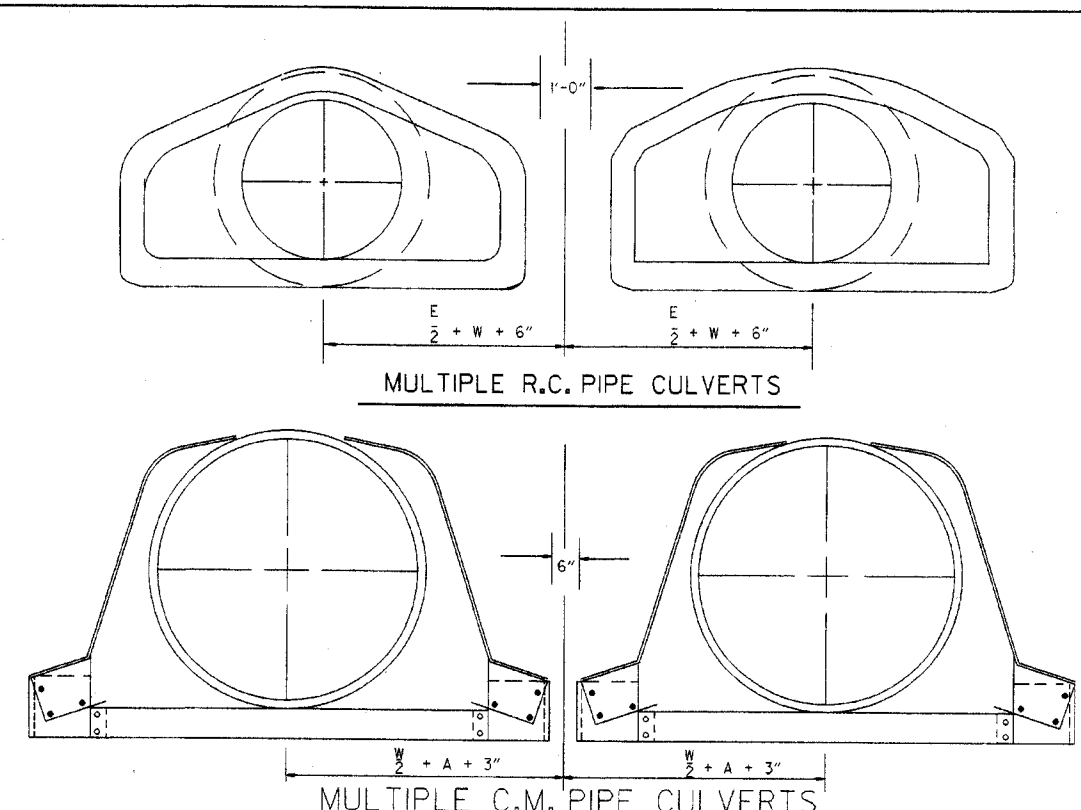


CIRCULAR PIPE

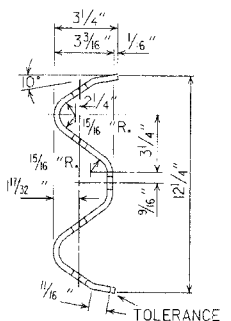
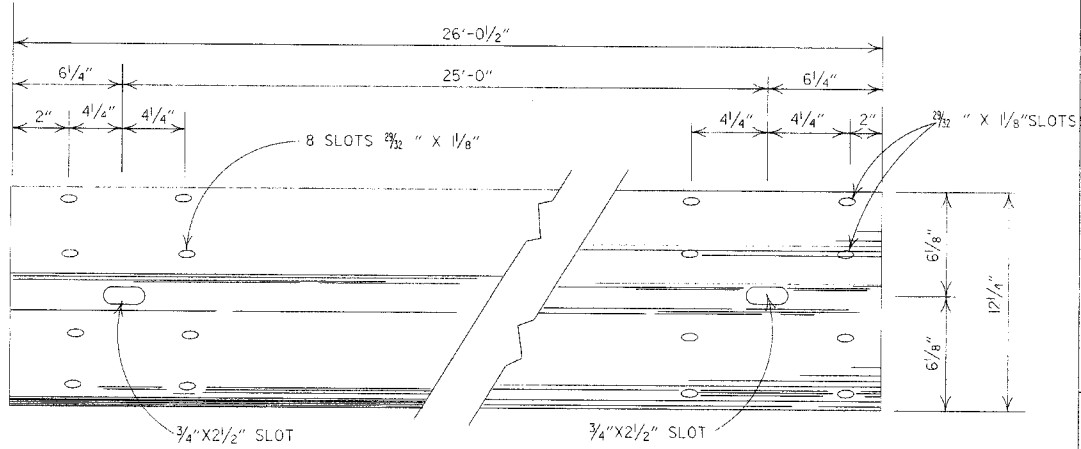
D. DIA.	GAUGE	A	B. MAX.	H	L	W	S
12	16	6	6	6	21	24	2 1/2:1
15	16	7	8	6	26	30	2 1/2:1
18	16	8	10	6	31	36	2 1/2:1
21	16	9	12	6	36	42	2 1/2:1
24	16	10	13	6	41	48	2 1/2:1
30	14	12	16	8	51	60	2 1/2:1
36	14	14	19	9	60	72	2 1/2:1
42	12	16	22	11	69	84	2 1/2:1
48	12	18	27	12	78	90	2 1/2:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1 3/4:1
66	12	18	36	12	87	120	1 1/2:1
72	12	18	39	12	87	126	1 1/3:1

C.M. ARCH PIPE

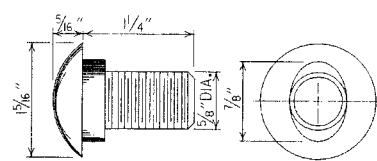
EQUIV. DIA.	SPAN	RISE	A	B. MAX.	H	L	W	S	GAUGE
15"	17	13	7	9	6	19	30	2 1/2:1	16
18"	21	15	7	10	6	23	36	2 1/2:1	16
21"	24	18	8	12	6	28	42	2 1/2:1	16
24"	28	20	9	14	6	32	48	2 1/2:1	16
30"	35	24	10	16	6	39	60	2 1/2:1	14
36"	42	29	12	18	8	46	75	2 1/2:1	14
42"	49	33	13	21	9	53	85	2 1/2:1	12
48"	57	38	18	26	12	63	90	2 1/2:1	12
54"	64	43	18	30	12	70	102	2 1/4:1	12
60"	71	47	18	33	12	77	114	2 1/4:1	12



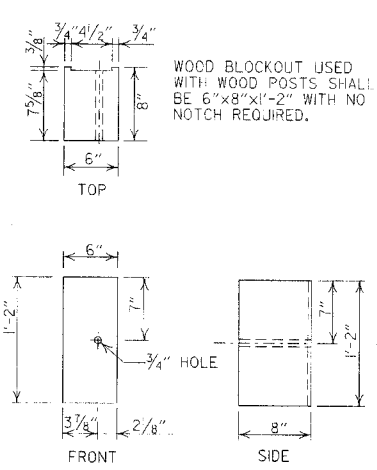
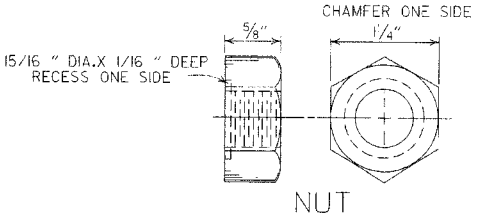
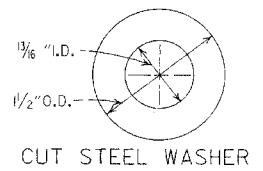
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96	ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80	
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78	
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75	FLARED END SECTION
12-5-74	REMOVED NOTE 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	STANDARD DRAWING FES-2
DATE	REVISION	FILMED	



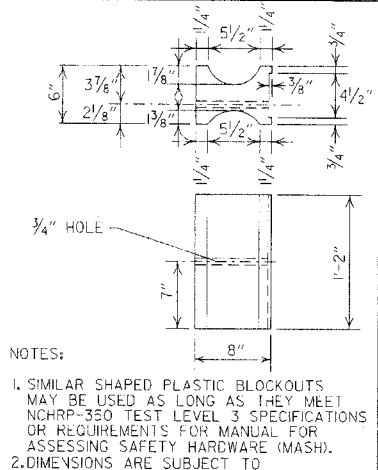
DETAILS OF W-BEAM GUARD RAIL  
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



SPLICE BOLT  
POST BOLT - SAME EXCEPT LENGTH

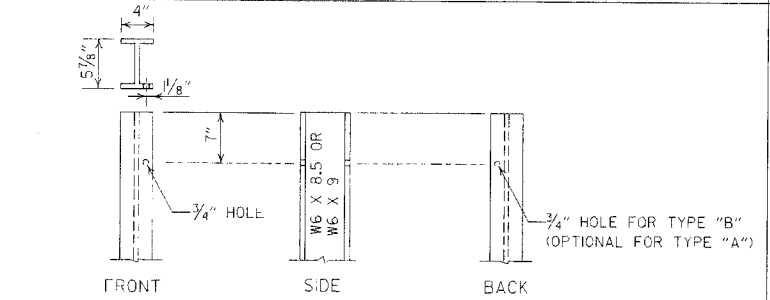


WOOD BLOCKOUT (W-BEAM)

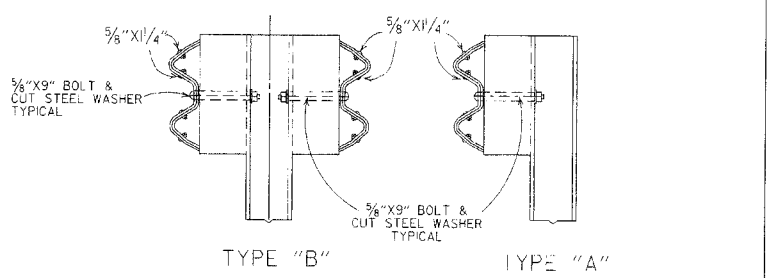


PLASTIC BLOCKOUT (W-BEAM)

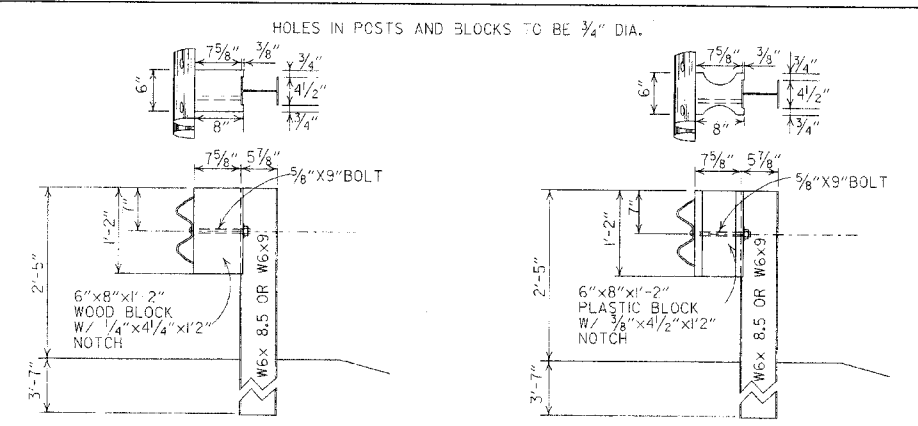
NOTES:  
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).  
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.



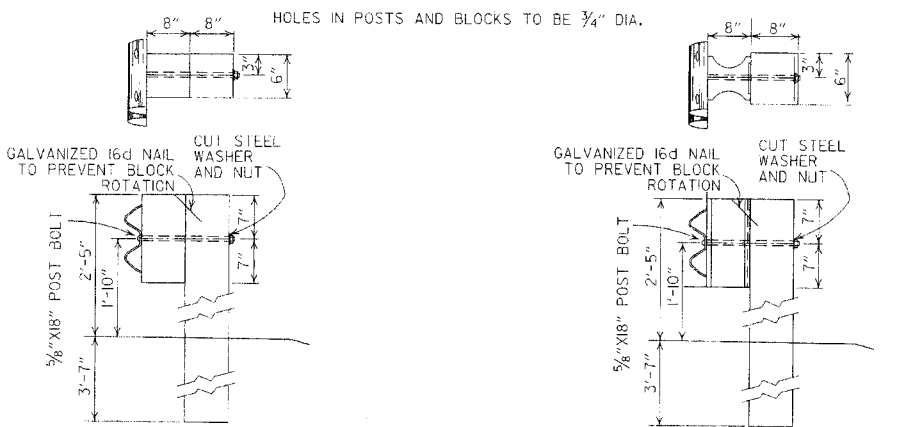
STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



WOOD BLOCKOUT CONNECTIONS  
PLASTIC BLOCKOUT CONNECTIONS  
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



WOOD BLOCKOUT CONNECTIONS  
PLASTIC BLOCKOUT CONNECTIONS  
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

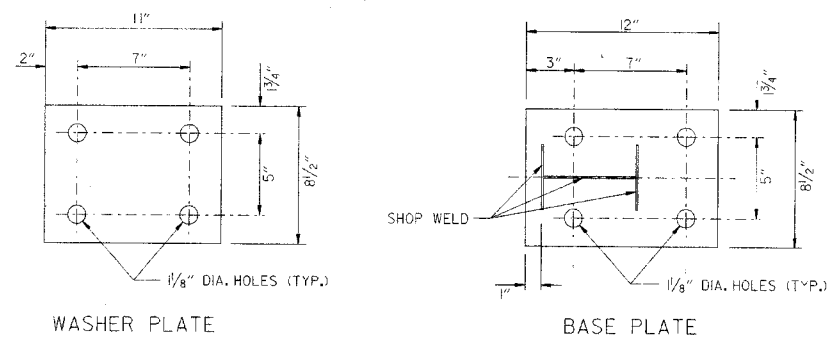
ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.  
WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.  
W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.  
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.  
ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.  
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 (1350 f) SOUTHERN PINE.  
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-5-09	ADDED REFERENCE TO WASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	ADDED PLASTIC BLOCKOUT	
8-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED ALT. STEEL POST SIZE	
8-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED WASHER NOTE	8-15-91
8-2-90	REV. GEN. NOTE & DEPTH OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87
DATE	REVISION	DATE FILE

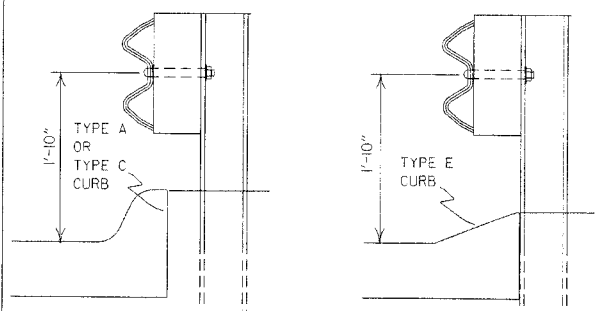
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8



Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.

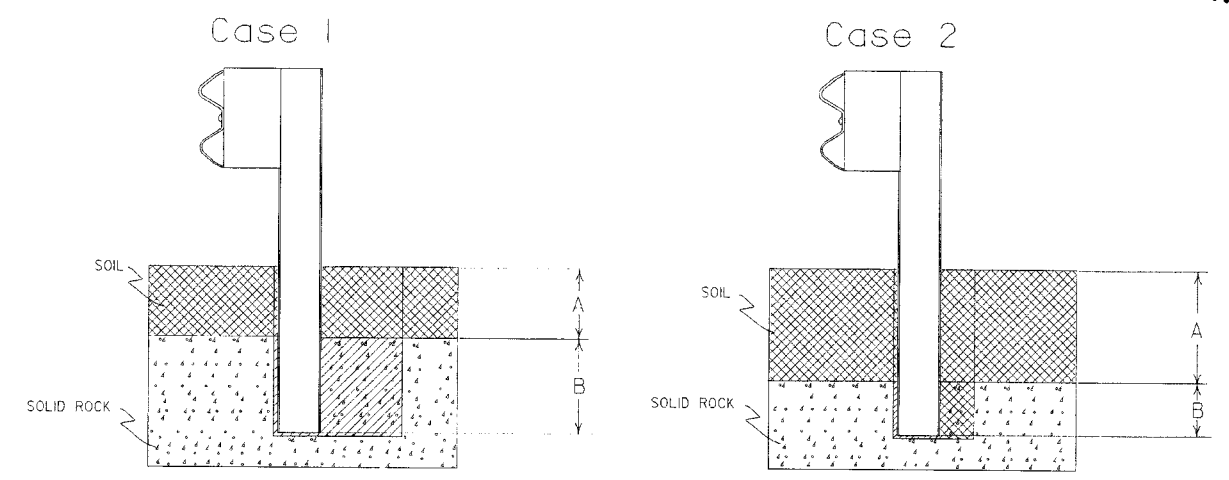


FOR DESIGN SPEEDS OF 50 MPH OR LESS  
ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

FOR DESIGN SPEEDS OF 55 MPH OR MORE  
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



Plan View Steel Posts  
Either hole configuration acceptable

Plan View Wood Posts  
Either hole configuration acceptable

Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

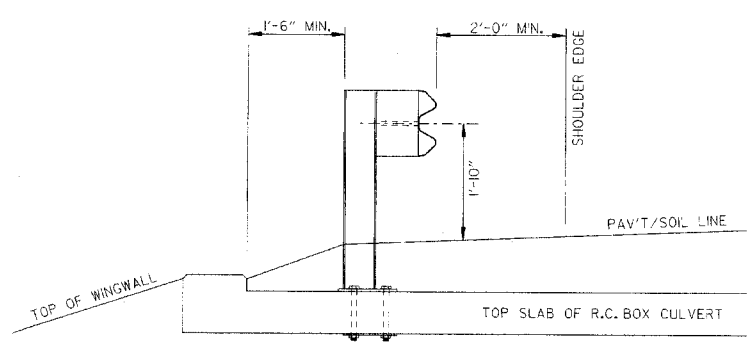
Zone A: Backfill according to Section 617.03(a).

Zone B: Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

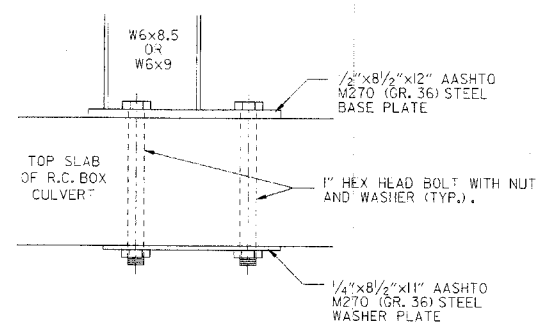
Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

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

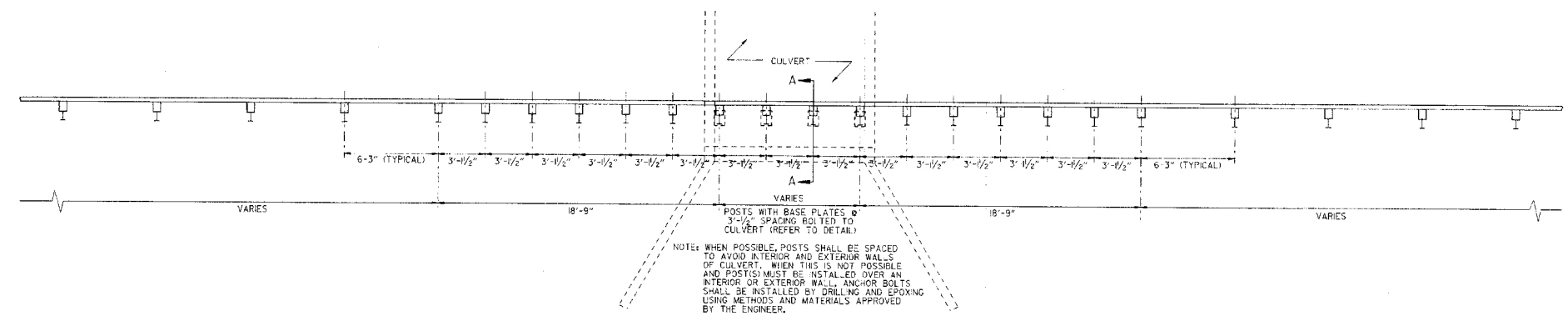
DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



SECTION A-A



DETAIL OF CONNECTION



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

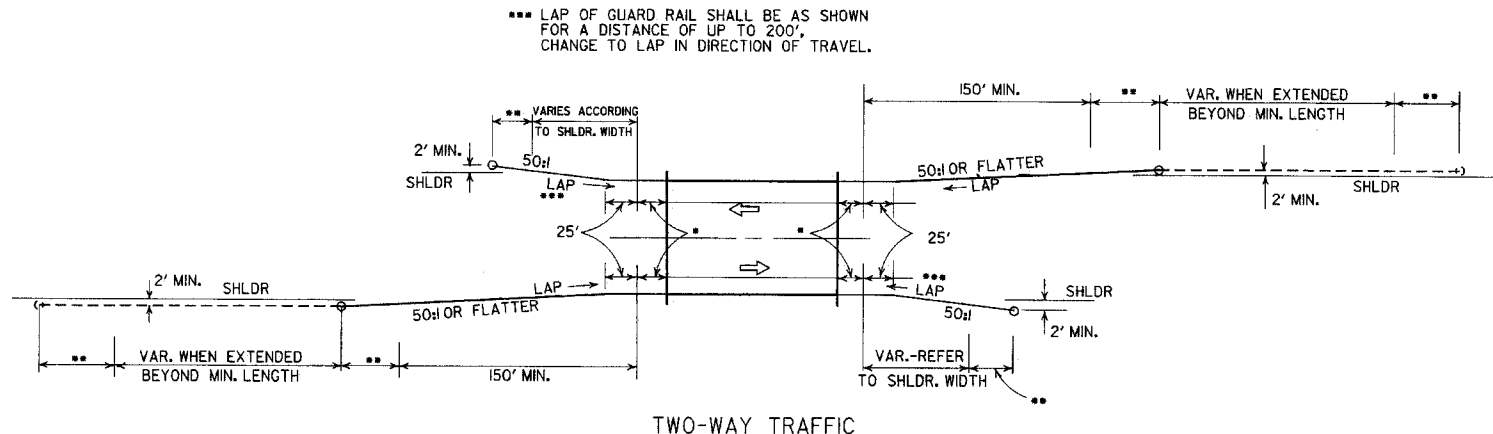
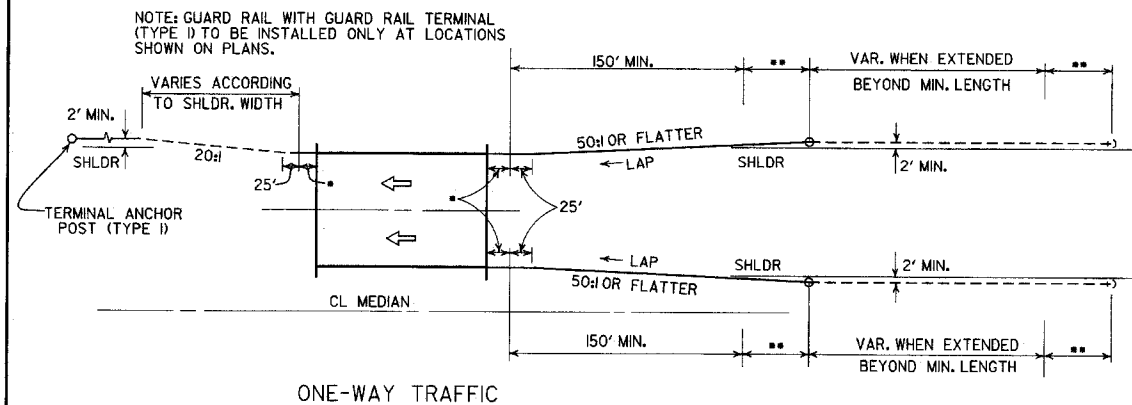
7-14-10	RAISED HEIGHT OF GUARD RAIL, 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
1-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
3-30-00	REMOVED CONCRETE INSERT ANCHOR	
8-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULVERT, DELETED DET. OF STEEL LINE POST CONN. & ADD DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK	
4-3-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
1-22-95	ADDED OPTIONAL HOLES	
6-2-94	REVISED ALTERNATE POST SIZE	
8-5-93	REVISED STEEL POST SIZE	
10-1-92	REDRAWN & REVISED	10-1-92
8-2-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
7-15-88	CONFORMED TO '98B SPECS	
3-4-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	10-30-87
10-3-87	REDRAWN & REVISED	10-3-87
DATE	REVISION	DATE FILM

ARKANSAS STATE HIGHWAY COMMISSION

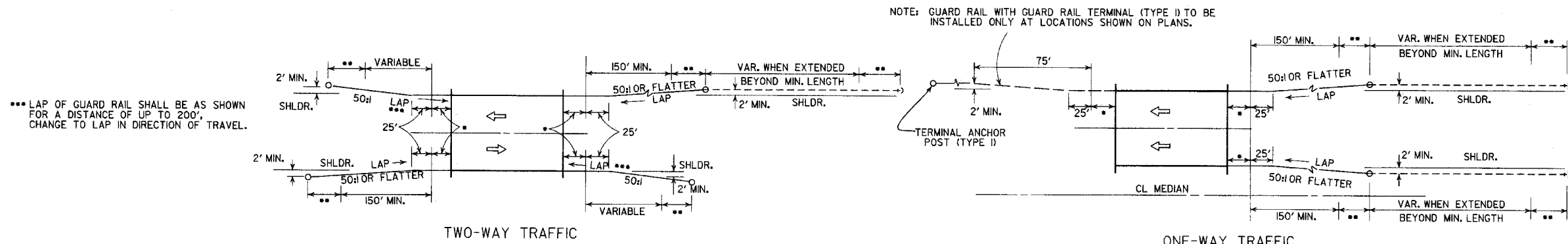
GUARD RAIL DETAILS

STANDARD DRAWING GR-8A

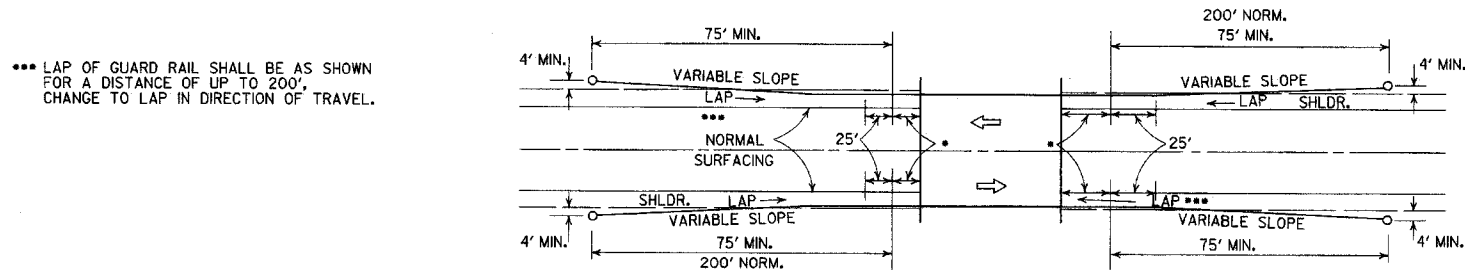




METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)



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

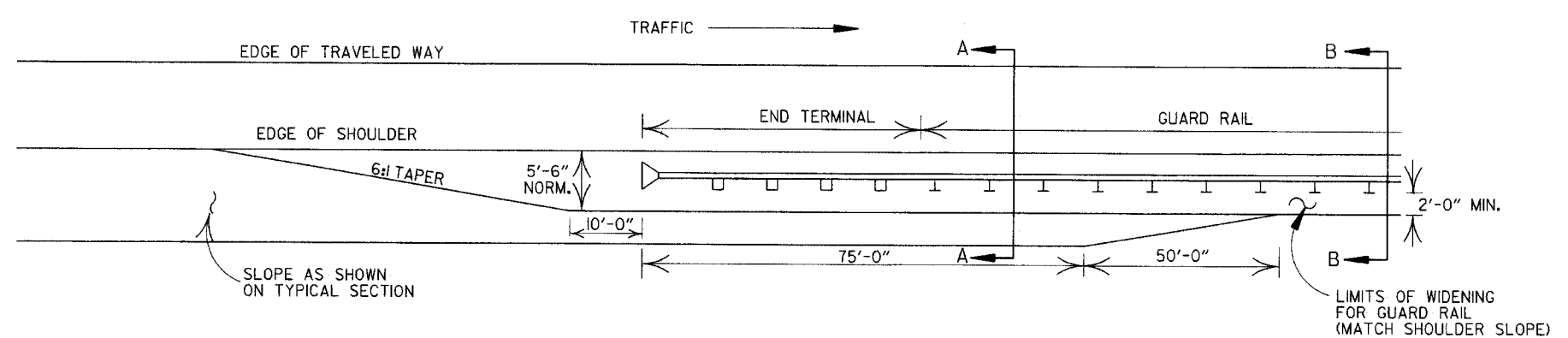


LEGEND  
 • THRIE BEAM GUARD RAIL TERMINAL  
 •• GUARD RAIL TERMINAL (TYPE 2)

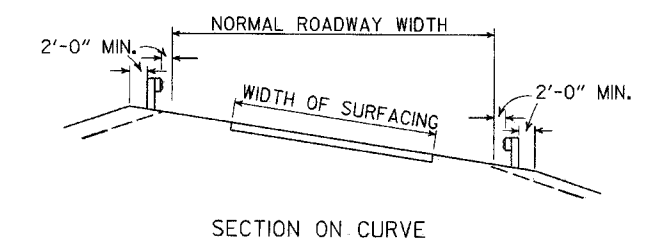
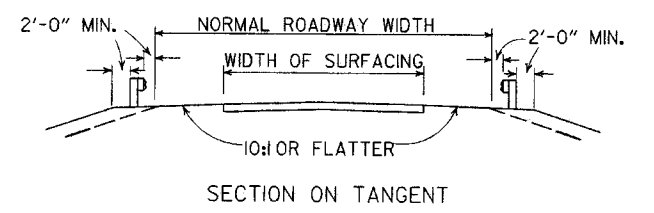
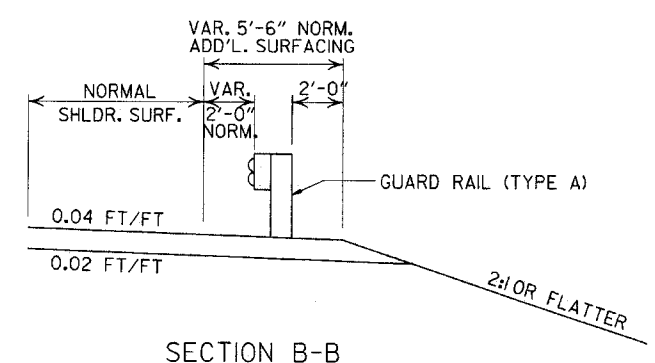
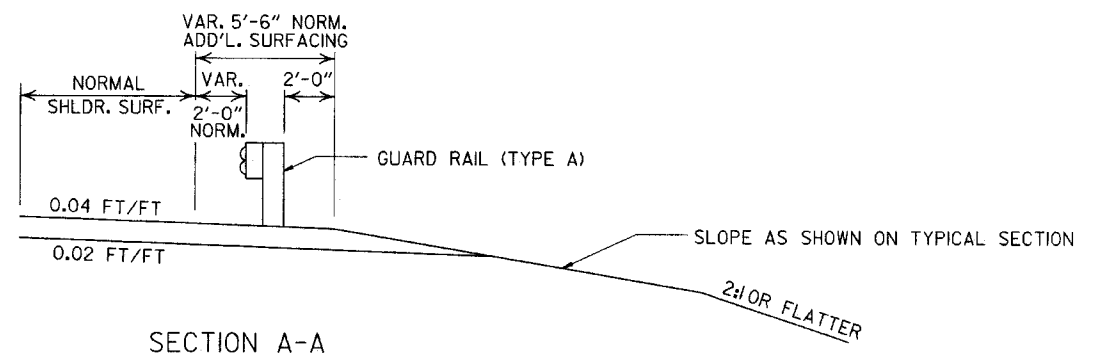
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

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

ARKANSAS STATE HIGHWAY COMMISSION  
**GUARD RAIL DETAILS**  
 STANDARD DRAWING GR-9

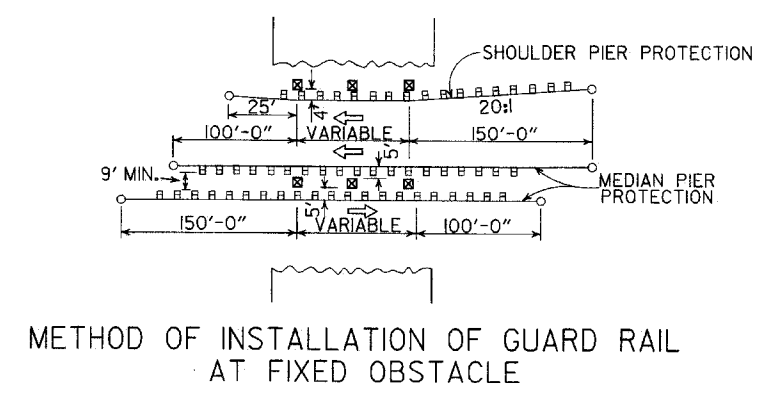


NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.



DETAILS OF WIDENING FOR GUARD RAIL

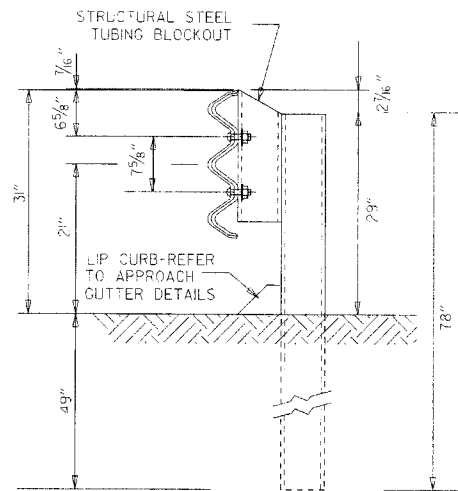
DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



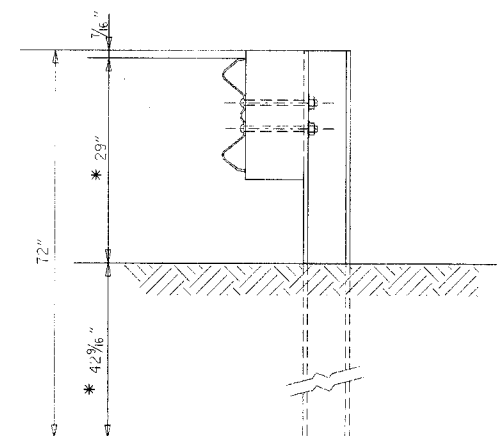
ARKANSAS STATE HIGHWAY COMMISSION			
GUARD RAIL DETAILS			
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE	FILM

STANDARD DRAWING GR-9A



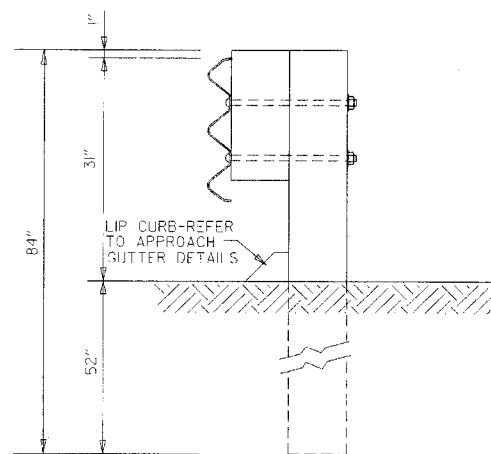


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POST  
POSTS 1-7

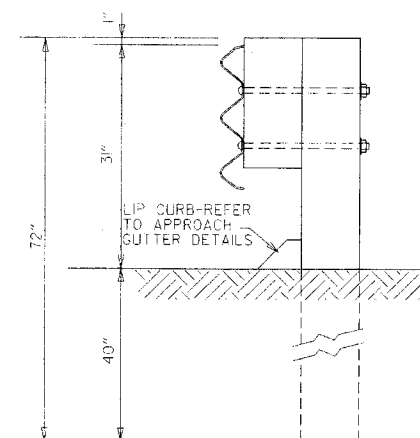


W-BEAM TO THRIE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST  
POST 8

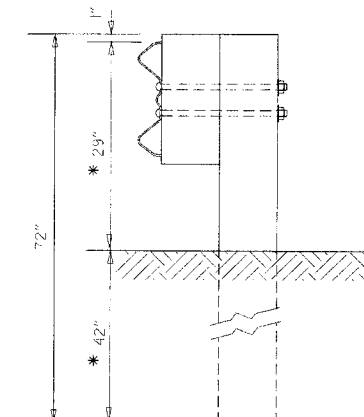
\* NOTE:  
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL WITH WOOD OR PLASTIC BLOCKOUTS & WOOD POSTS  
POSTS 1-6



THRIE BEAM RAIL WITH WOOD OR PLASTIC BLOCKOUT & WOOD POST  
POST 7



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

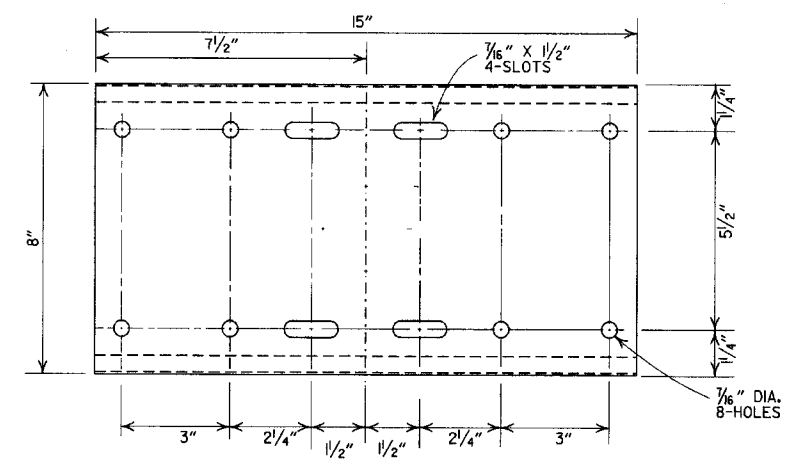
GENERAL NOTES:  
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.  
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 3.7F (1400 F) OR NO. 1 350 F SOUTHERN PINE.

ARKANSAS STATE HIGHWAY COMMISSION

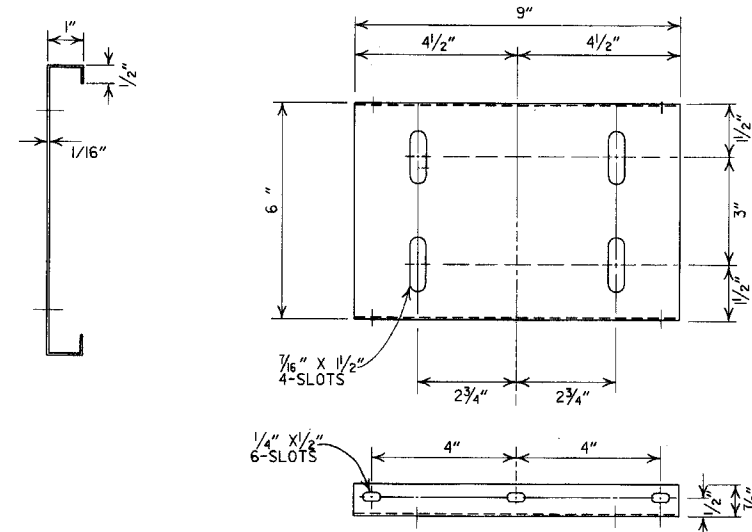
GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

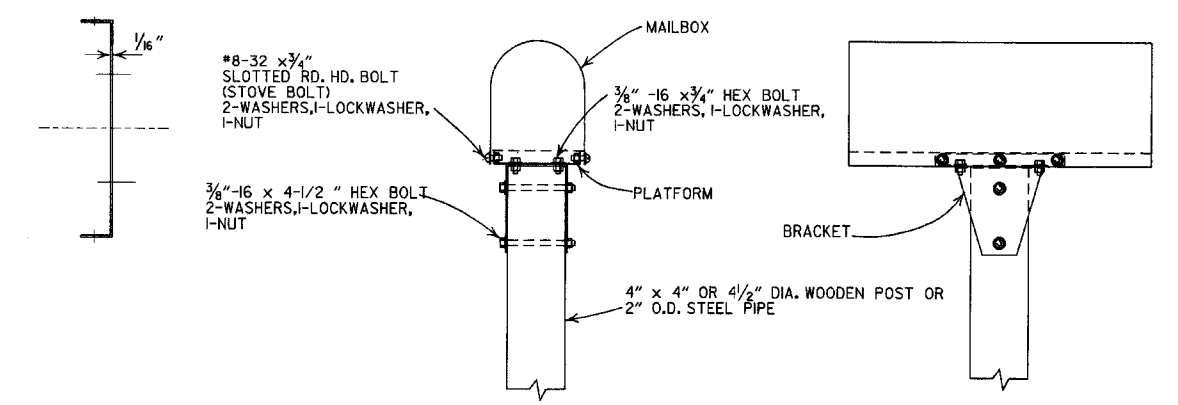
DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	



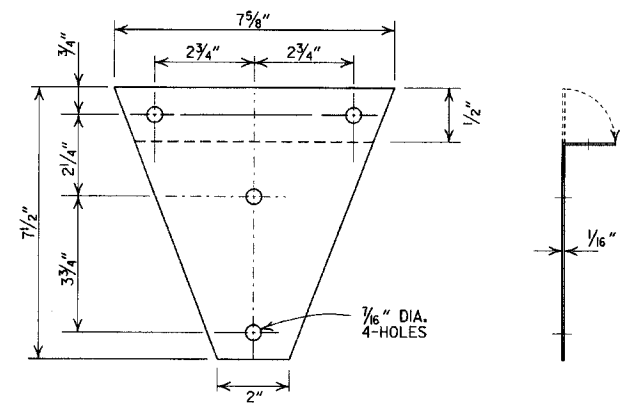
SHELF



PLATFORM

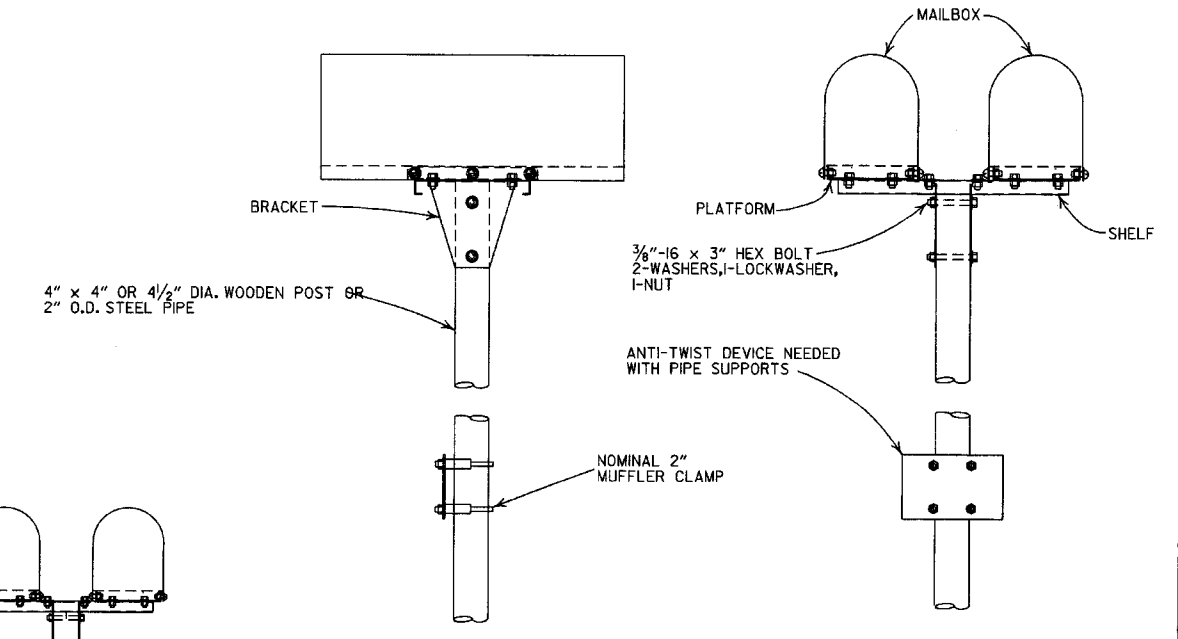


SINGLE INSTALLATION

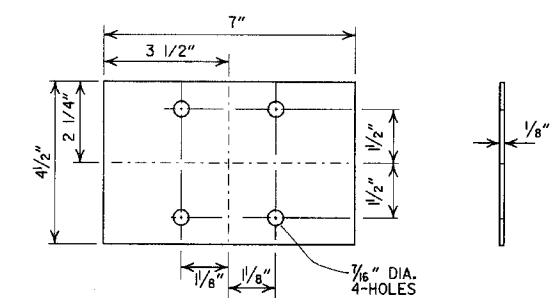


BRACKET

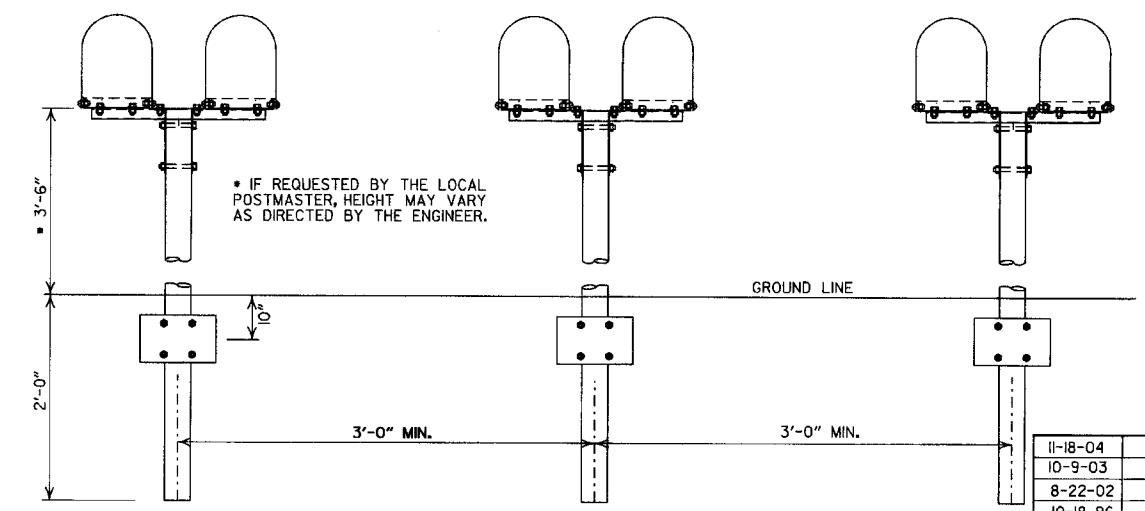
- GENERAL NOTES
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
  2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
  3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF 3/4" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X 3/4" 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.



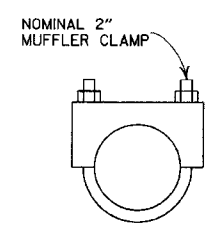
DOUBLE INSTALLATION



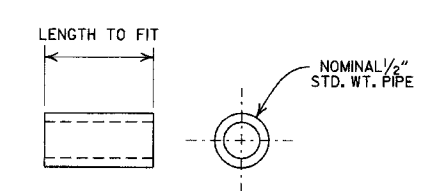
ANTI-TWIST PLATE



SPACING FOR MULTIPLE POST INSTALLATION



CLAMP



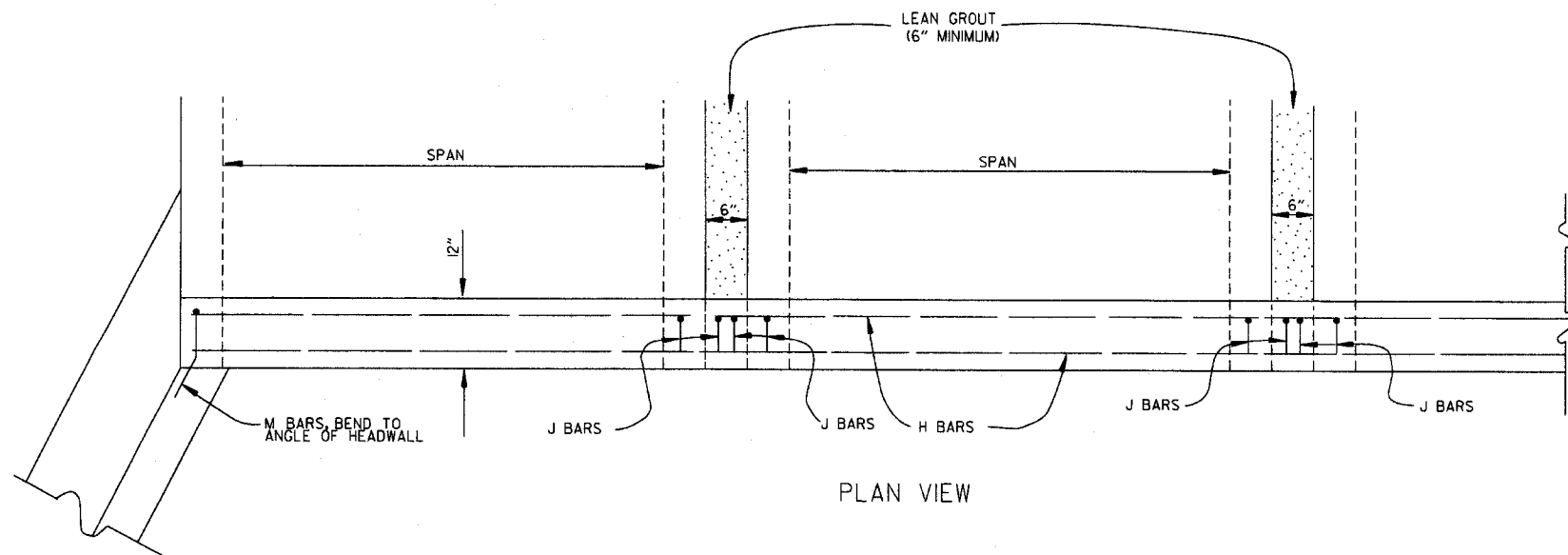
SPACER

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	120-7-15-88	ISSUED
DATE	FILMED	REVISION

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1



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

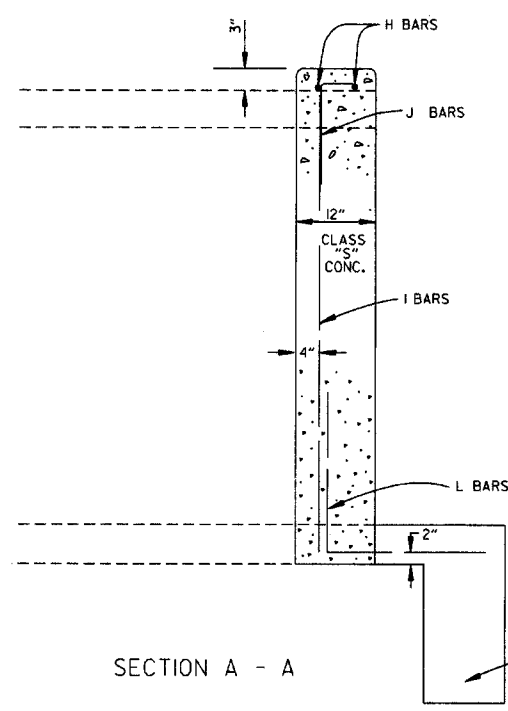
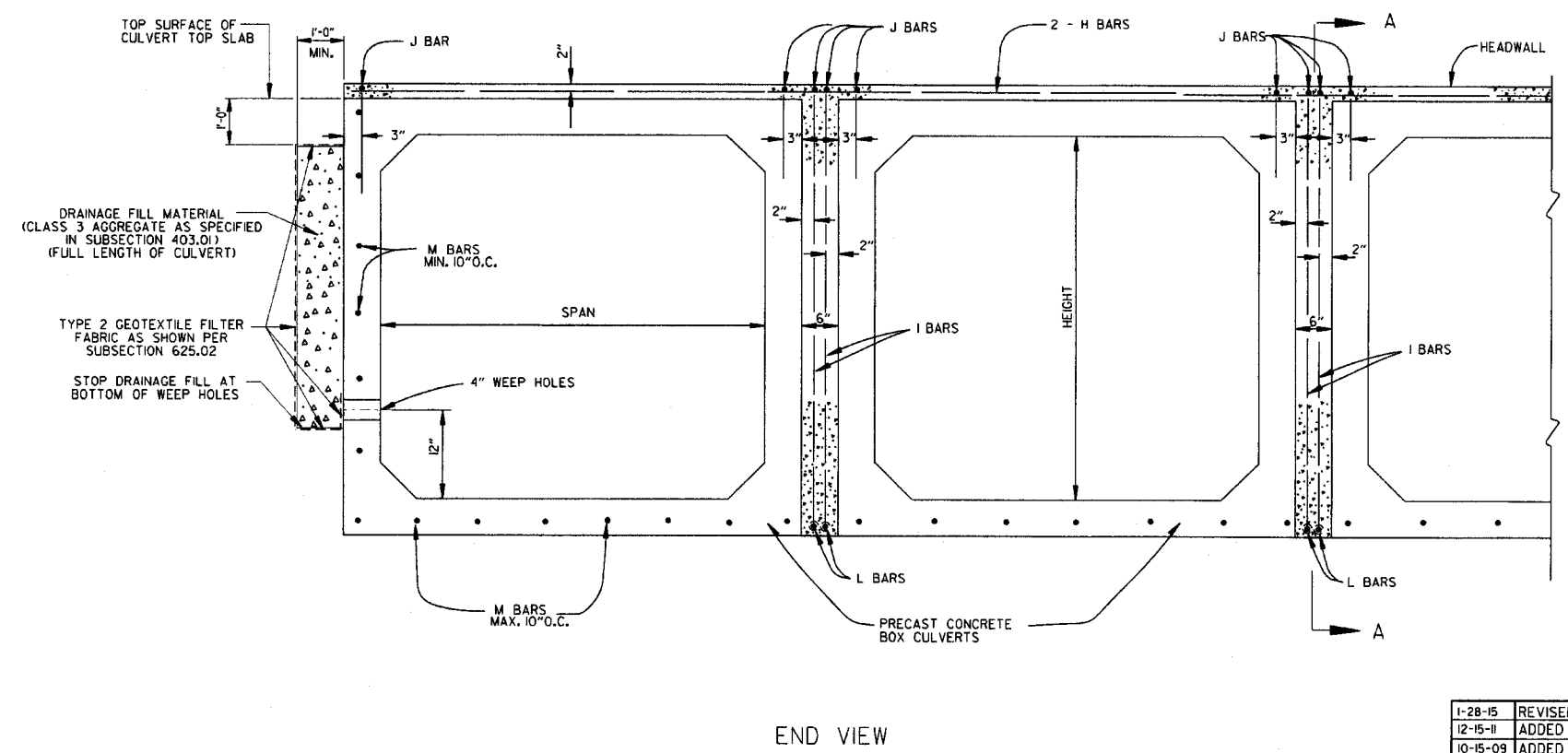
WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

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.

1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
12-15-11	ADDED NOTE & DTL'S 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	
DATE	REVISION	DATE FILMED

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	13 1/2	14
21	26	26	15 1/2	16
24	28 1/2	29	18	18
30	36 1/4	36	22 1/2	23
36	43 3/8	44	26 3/8	27
42	51 1/8	51	31 3/8	31
48	58 1/2	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	77 1/2	77
108	138	138	87 1/2	87
120	154	154	96 3/8	97
132	168 3/4	169	106 1/2	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)(II).

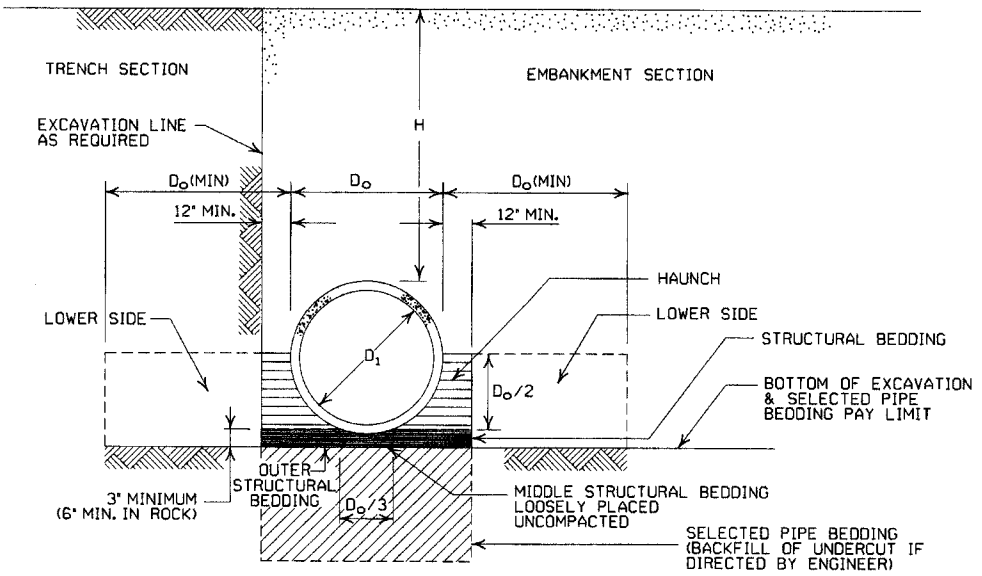
NOTE: HAUNCH AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF CONCRETE PIPE.

- LEGEND -

- D<sub>1</sub> = NORMAL INSIDE DIAMETER OF PIPE
- D<sub>o</sub> = 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

INSTALLATION TYPE	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
PIPE ID (IN.)	TYPE 1 OR 2	TYPE 3	ALL	ALL
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)

Table with columns for PIPE DIAMETER (INCHES), MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET), MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET), and METAL THICKNESS (INCHES) with sub-columns for 0.064, 0.079, 0.109, 0.138, 0.168. Includes notes for 2 3/8 inch by 1/2 inch corrugation and 3 inch by 1 inch or 5 inch by 1 inch corrugation.

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.

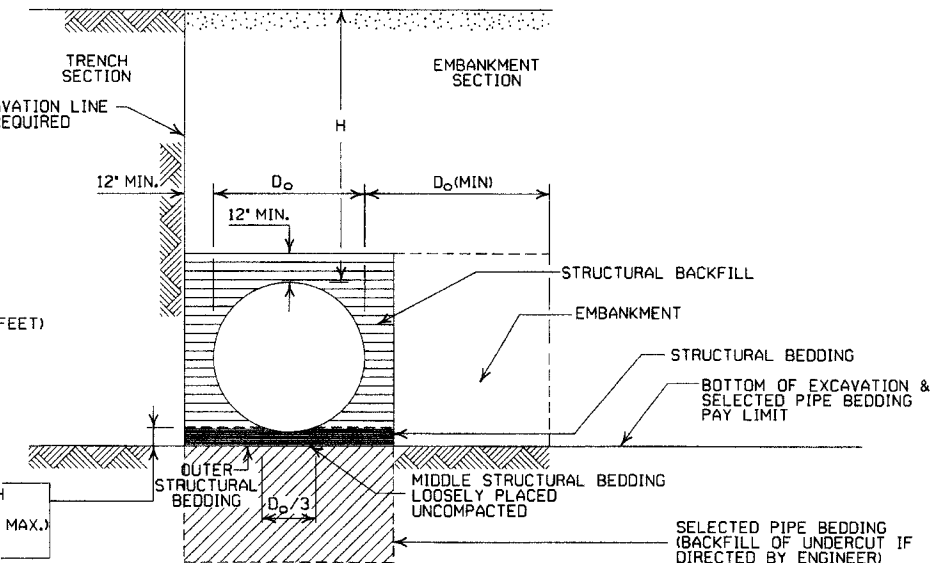
NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

Table with columns for INSTALLATION TYPE and MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING. Includes rows for TYPE 1 and TYPE 2.

SM-3 WILL NOT BE ALLOWED.

- LEGEND -
D\_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)

IN SOIL-MIN. EQUALS TWICE CORRUGATION DEPTH
IN ROCK-MIN. EQUALS GREATER OF:
1/2" PER FOOT OF FILL OVER PIPE (24" MAX.)
TWICE CORRUGATION DEPTH



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. INSTALLATION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2 3/8" X 1/2" 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."

CORRUGATED ALUMINUM PIPE (ROUND)

Table with columns for PIPE DIAMETER (INCHES), MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET), MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET), and METAL THICKNESS IN INCHES with sub-columns for 0.060, 0.075, 0.105, 0.135, 0.164. Includes notes for 2 3/8 inch by 1/2 inch corrugation and 3 inch by 1 inch or 5 inch by 1 inch corrugation.

EQUIVALENT METAL THICKNESSES AND GAUGES

Table with columns for METAL THICKNESS IN INCHES, GAUGE NUMBER, and sub-columns for STEEL (ZINC COATED, UNCOATED) and ALUMINUM.

CORRUGATED METAL PIPE ARCHES

Table with columns for EQUIV. DIA. (INCHES), PIPE DIMENSION SPAN X RISE (INCHES), MINIMUM CORNER RADIUS (INCHES), MIN. THICKNESS REQUIRED INCHES, MIN. HEIGHT OF FILL "H" (FT.) INSTALLATION TYPE 1, MAX. HEIGHT OF FILL "H" (FT.) INSTALLATION TYPE 1, MIN. THICKNESS REQUIRED INCHES, MIN. HEIGHT OF FILL "H" (FT.) INSTALLATION TYPE 1, MAX. HEIGHT OF FILL "H" (FT.) INSTALLATION TYPE 1. Includes notes for 2 3/8 inch by 1/2 inch corrugation and 3 inch by 1 inch or 5 inch by 1 inch corrugation.

- 1 FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.
2 WHERE THE STANDARD 2 2/3" X 1/2" 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.

Table with columns for DATE, REVISION, and DATE FILMED. Includes entries for 2-27-14, 12-15-11, 3-30-00, and 11-06-97.

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1



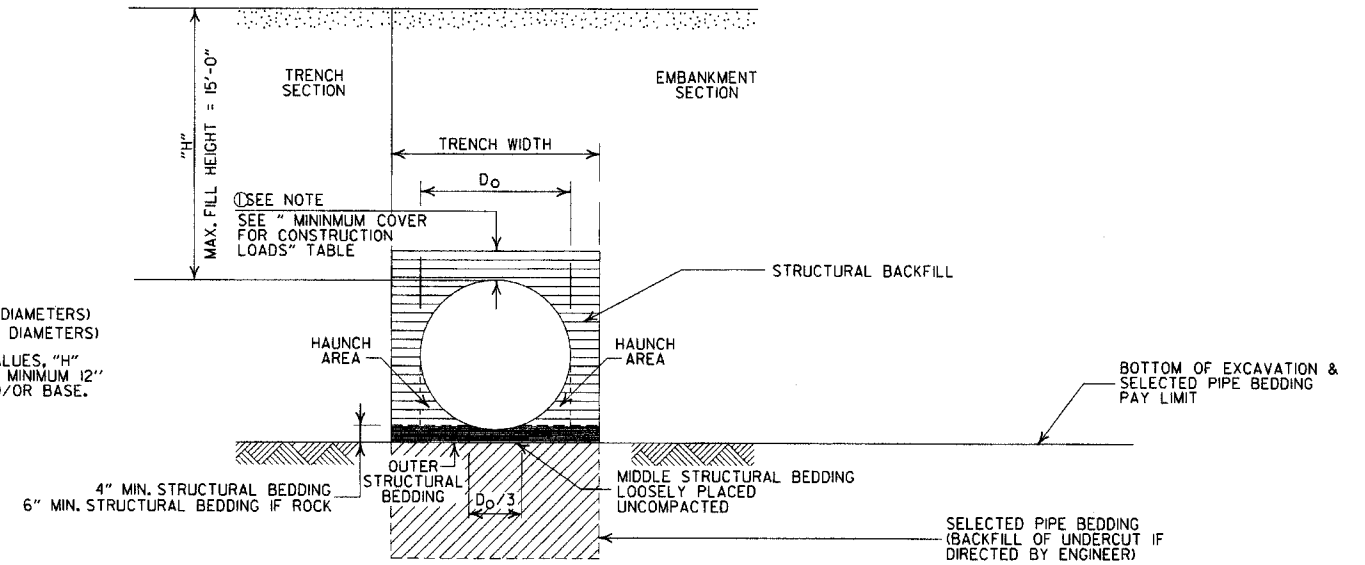
INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.
- SM3 WILL NOT BE ALLOWED.
- STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/2 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.
- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

NOTE:  
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

- 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	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"

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

CONSTRUCTION SEQUENCE

- PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
- INSTALL PIPE TO GRADE.
- COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
- 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.
- PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

- PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
- 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.
- 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.
- 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."
- 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."
- 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.
- HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- 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<sub>o</sub> = OUTSIDE DIAMETER OF PIPE
- MAX. = MAXIMUM
- MIN. = MINIMUM
- ===== = STRUCTURAL BACKFILL MATERIAL
- ===== = UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION  
PLASTIC PIPE CULVERT  
(HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1



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

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL. SM3 WILL NOT BE ALLOWED.
- STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/4 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

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 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"

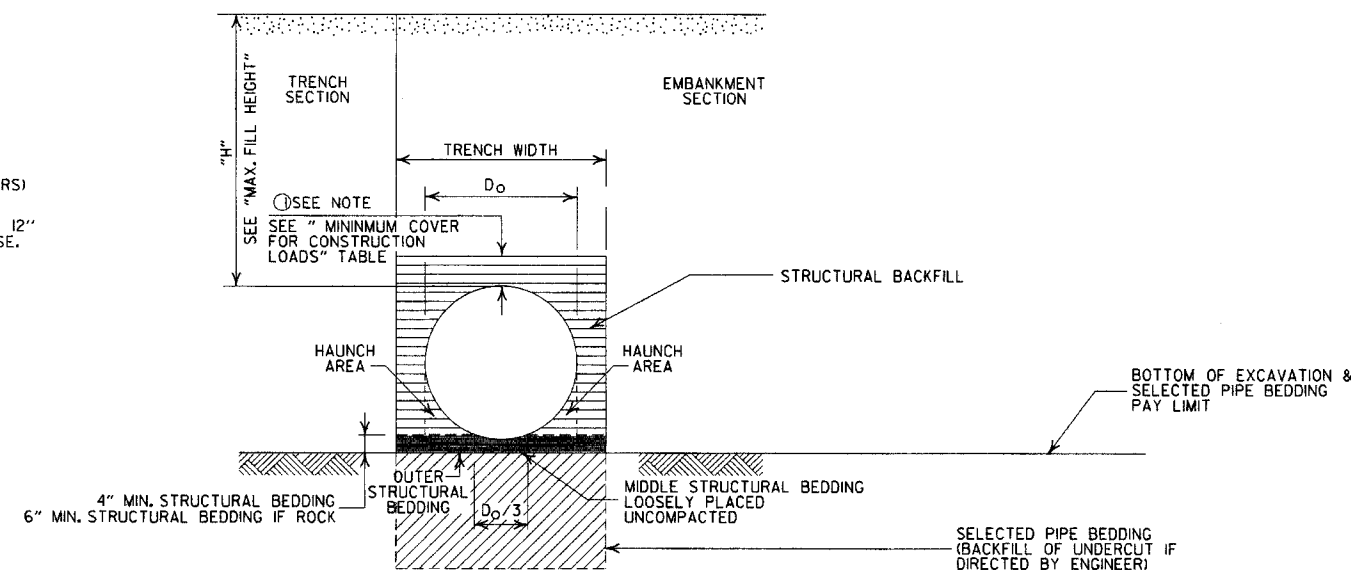
MULTIPLE INSTALLATION OF  
PVC PIPES

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

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"

- ② MINIMUM 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

- I. 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

- PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
- INSTALL PIPE TO GRADE.
- COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
- 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.
- PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

- LEGEND -

H = FILL HEIGHT (FT.)  
D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE  
MAX. = MAXIMUM  
MIN. = MINIMUM

==== = STRUCTURAL BACKFILL MATERIAL  
===== = UNDISTURBED SOIL

GENERAL NOTES

- PIPE SHALL CONFORM TO ASTM F949, CELL CLASS I2454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
- THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
- 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.
- 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 BACKFILL."
- 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."
- 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.
- PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- 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.

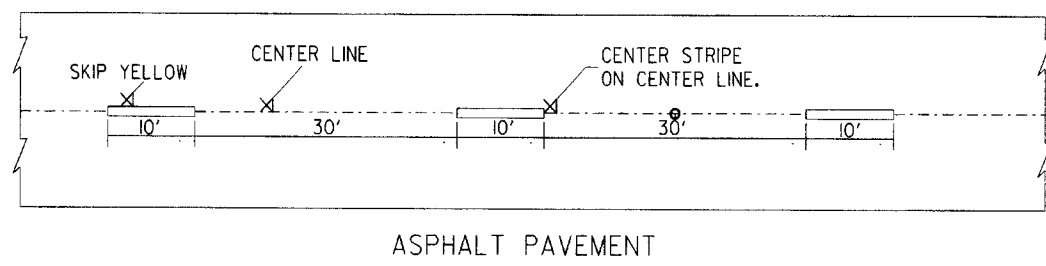
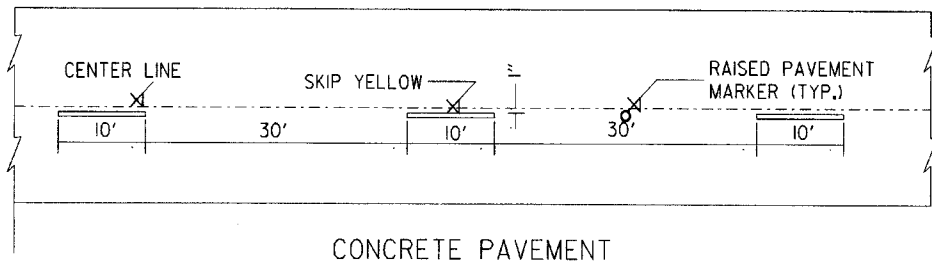
DATE	ISSUED	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE I.		
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL		
11-17-10	ISSUED		

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT  
(PVC F949)

STANDARD DRAWING PCP-2

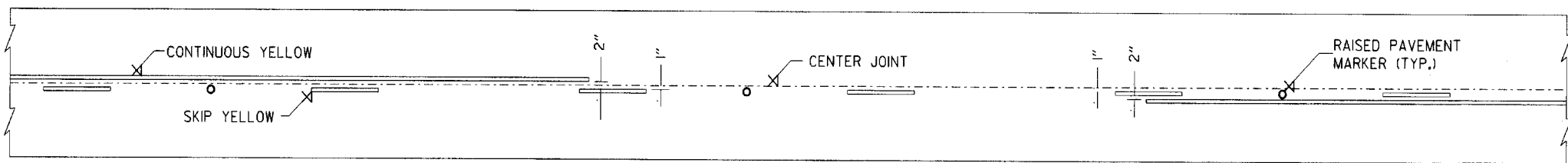




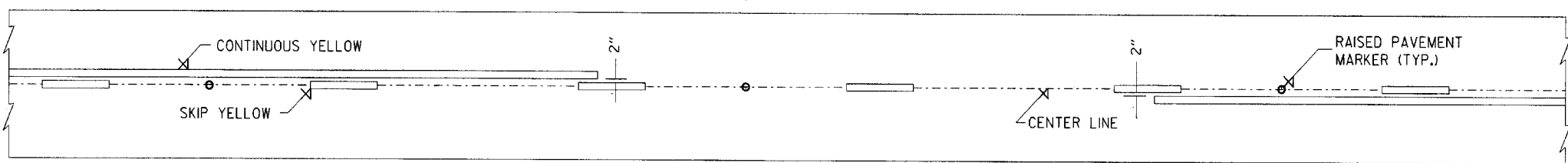
CONCRETE PAVEMENT

ASPHALT PAVEMENT

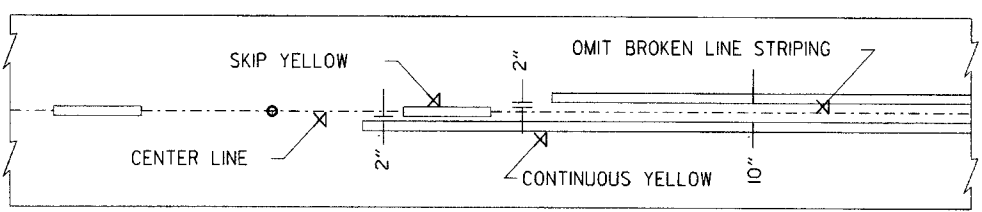
BROKEN LINE STRIPING



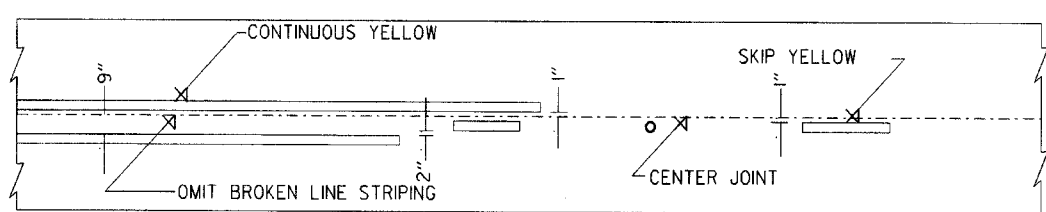
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

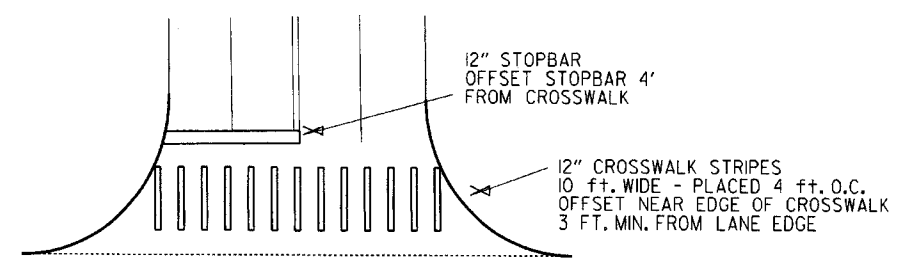


ASPHALT PAVEMENT



CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

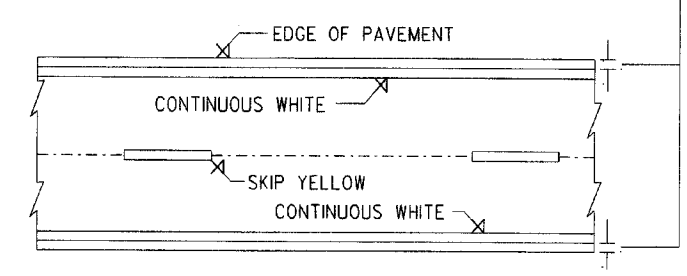


CROSSWALK AND STOPBAR DETAILS

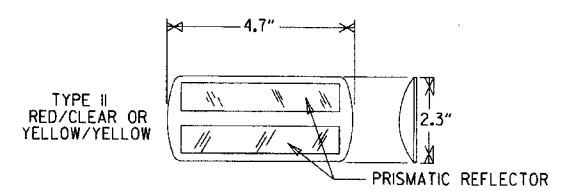
NOTES:

1. 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.

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



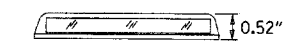
PAVEMENT EDGE LINE MARKING



TYPE II  
RED/CLEAR OR  
YELLOW/YELLOW

PRISMATIC REFLECTOR

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.

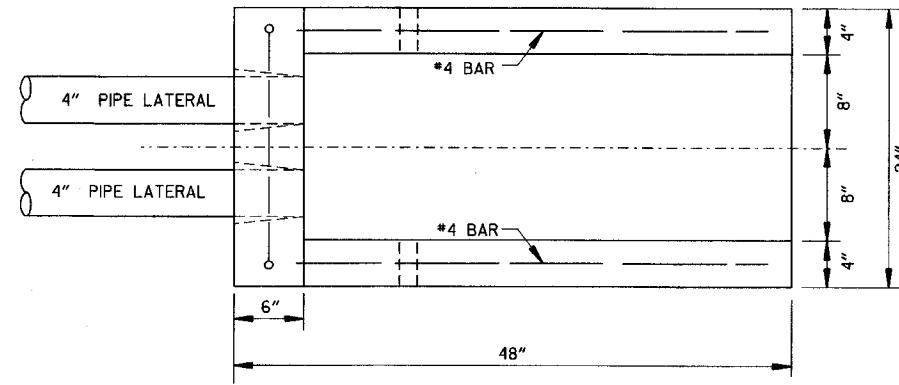
DATE	REVISION	FILMED
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PAV'T. MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD.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

ARKANSAS STATE HIGHWAY COMMISSION

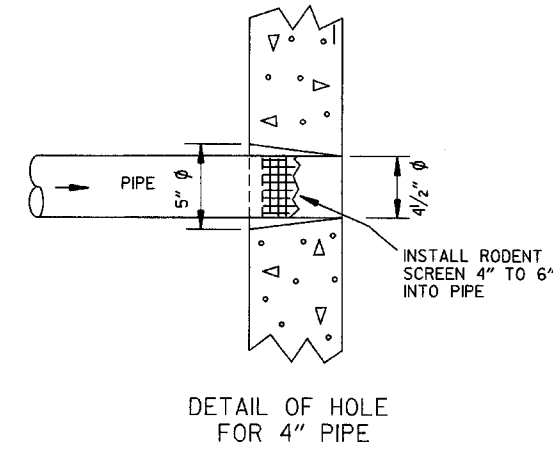
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

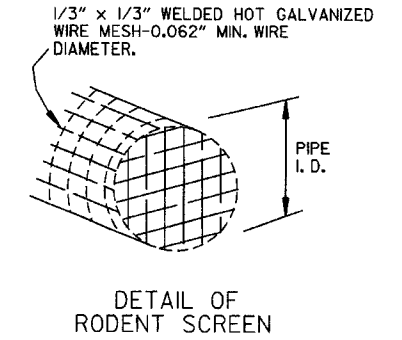
NOTE:  
 1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.  
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.  
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



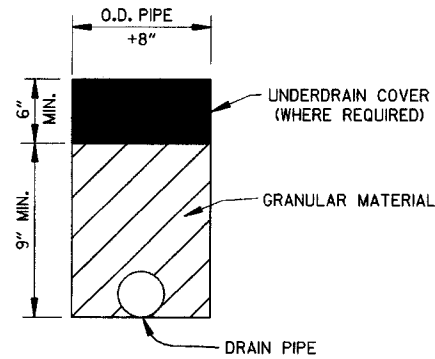
PLAN VIEW



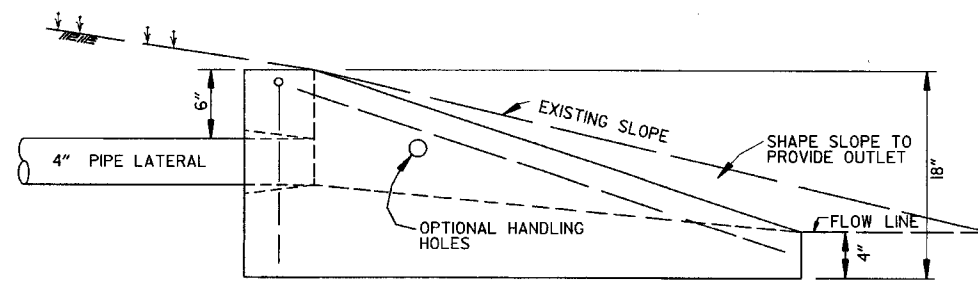
DETAIL OF HOLE FOR 4" PIPE



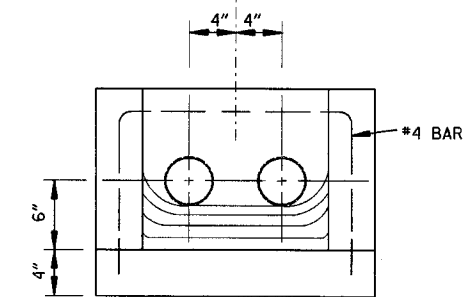
DETAIL OF RODENT SCREEN



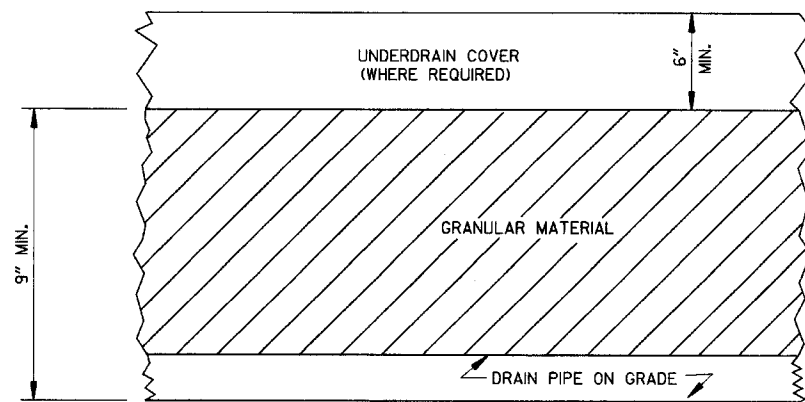
DRAIN PIPE



SIDE VIEW



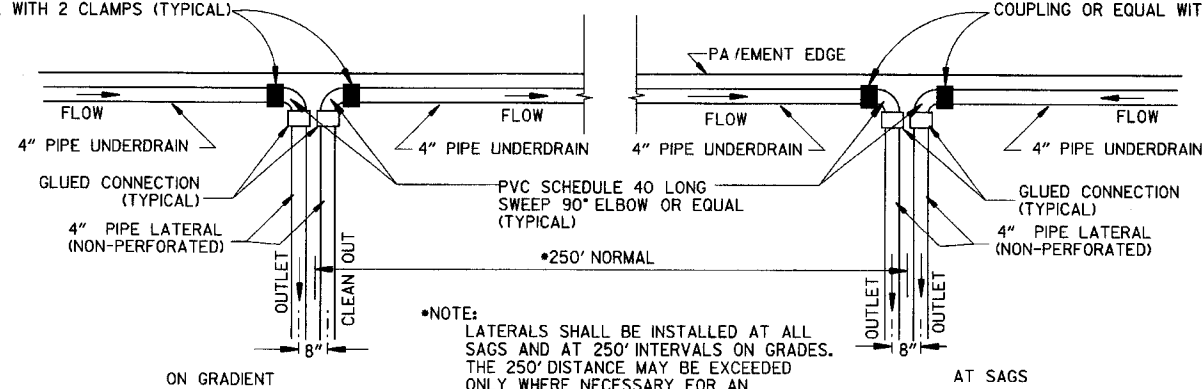
FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

FERNCO 1056-44 (4" CI/PLASTIC) OR FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC) COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)

UNDERDRAIN OUTLET PROTECTORS



NOTE:  
 LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

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.

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; 5 1/2" 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 POLYETHYLENE 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
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

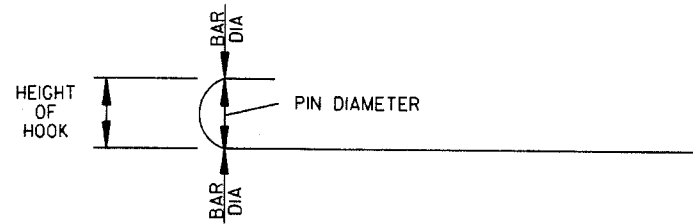
DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

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

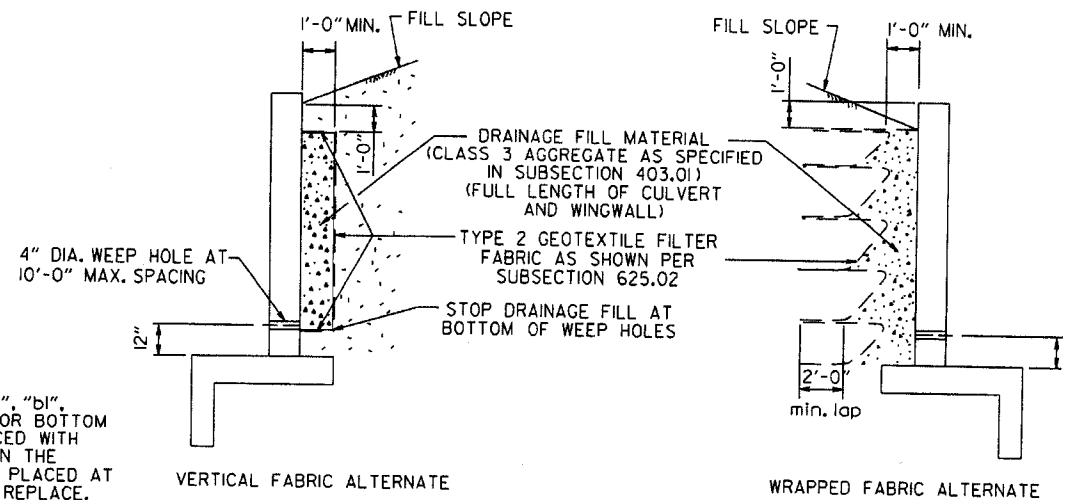
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

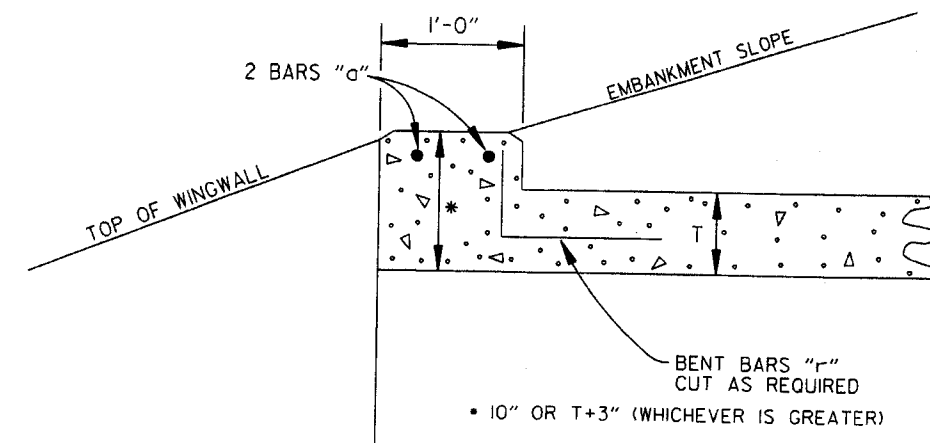
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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.

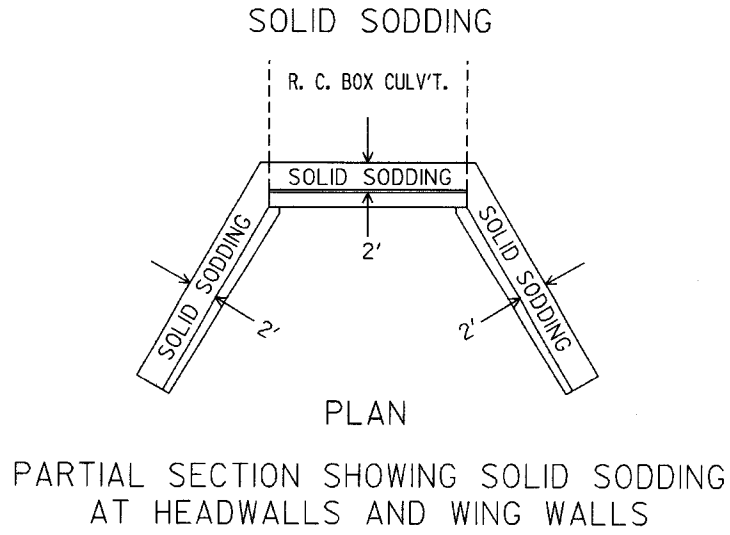
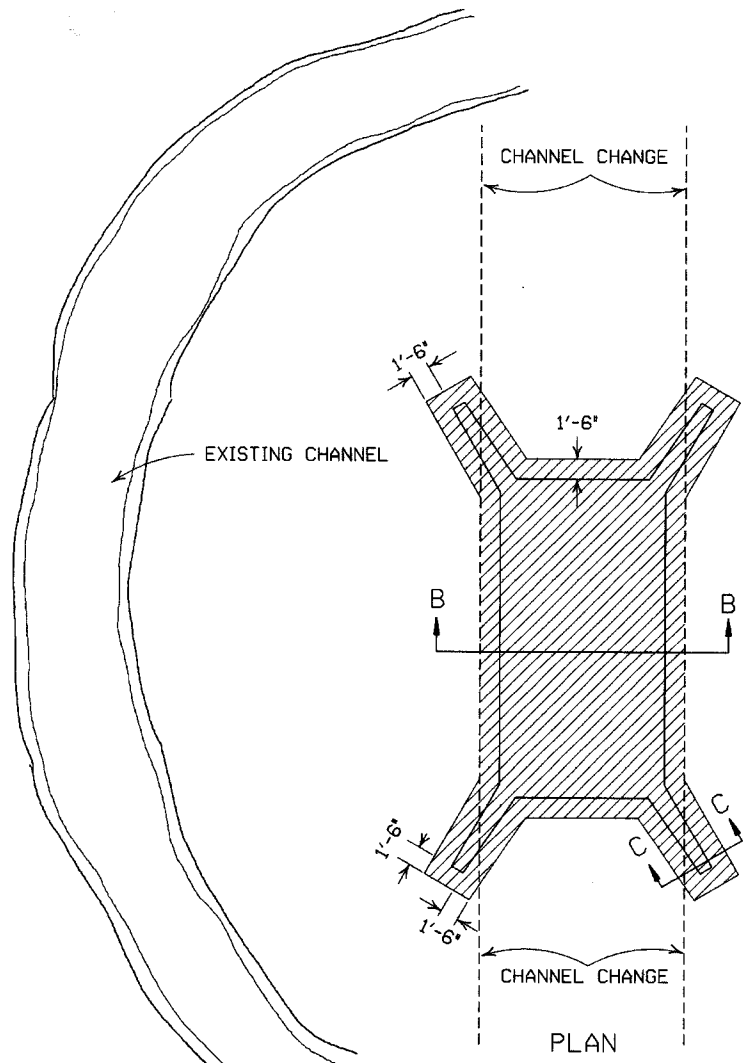
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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	

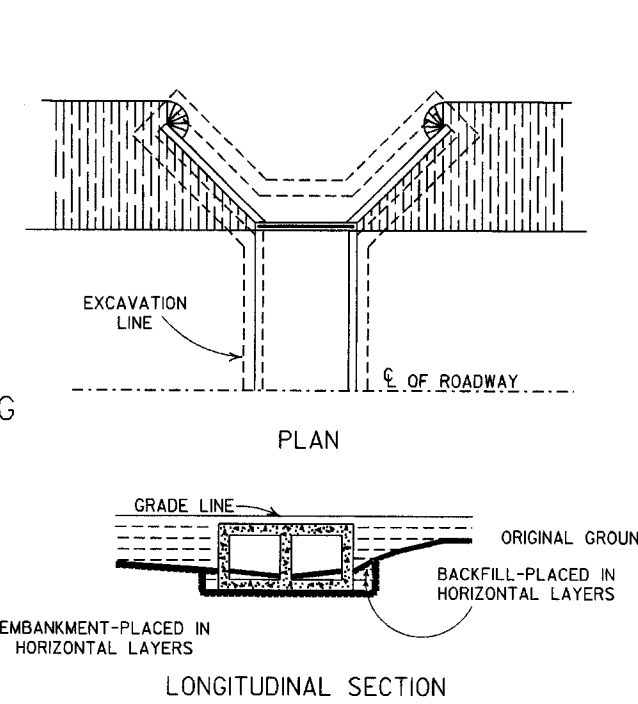
ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

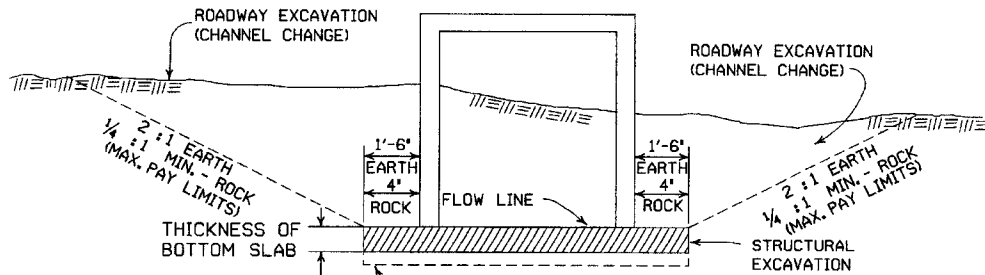
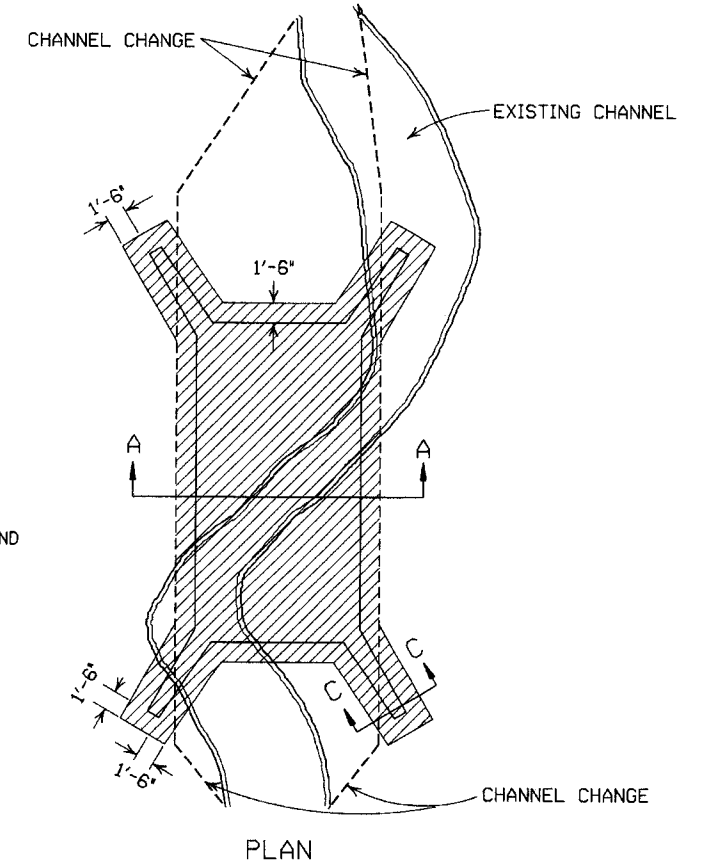
STANDARD DRAWING RCB-1



NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

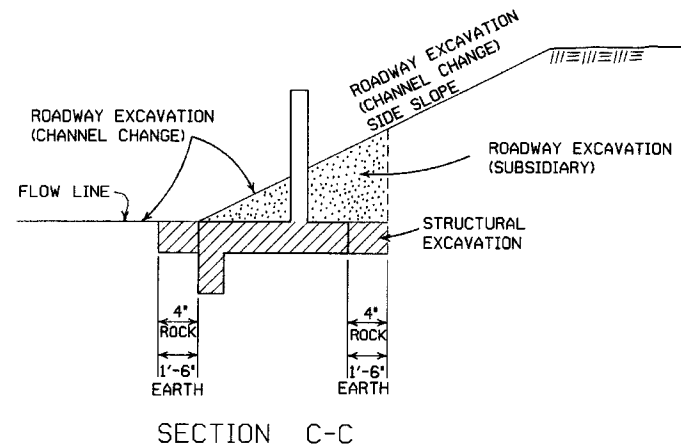


BACKFILL DETAILS FOR BOX CULVERT



SECTION B-B  
DETAILS FOR NEW CHANNELS

UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.



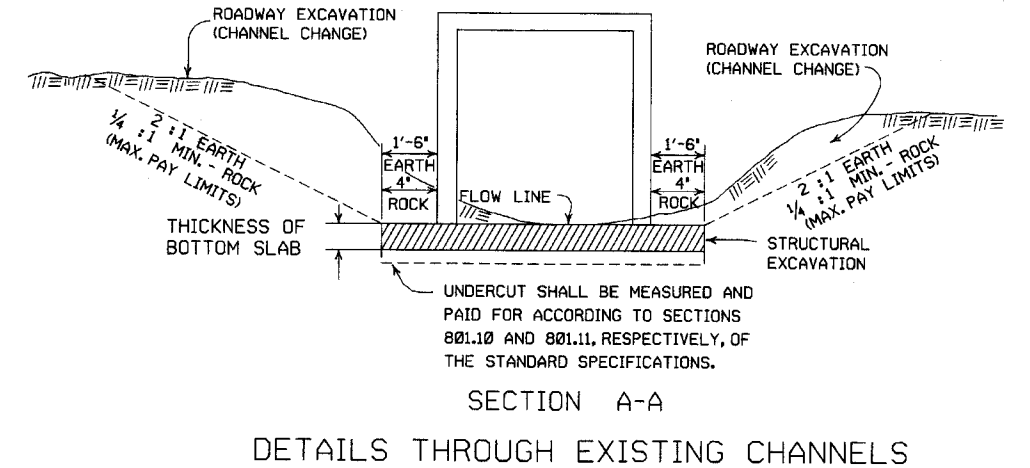
SECTION C-C

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.



SECTION A-A  
DETAILS THROUGH EXISTING CHANNELS

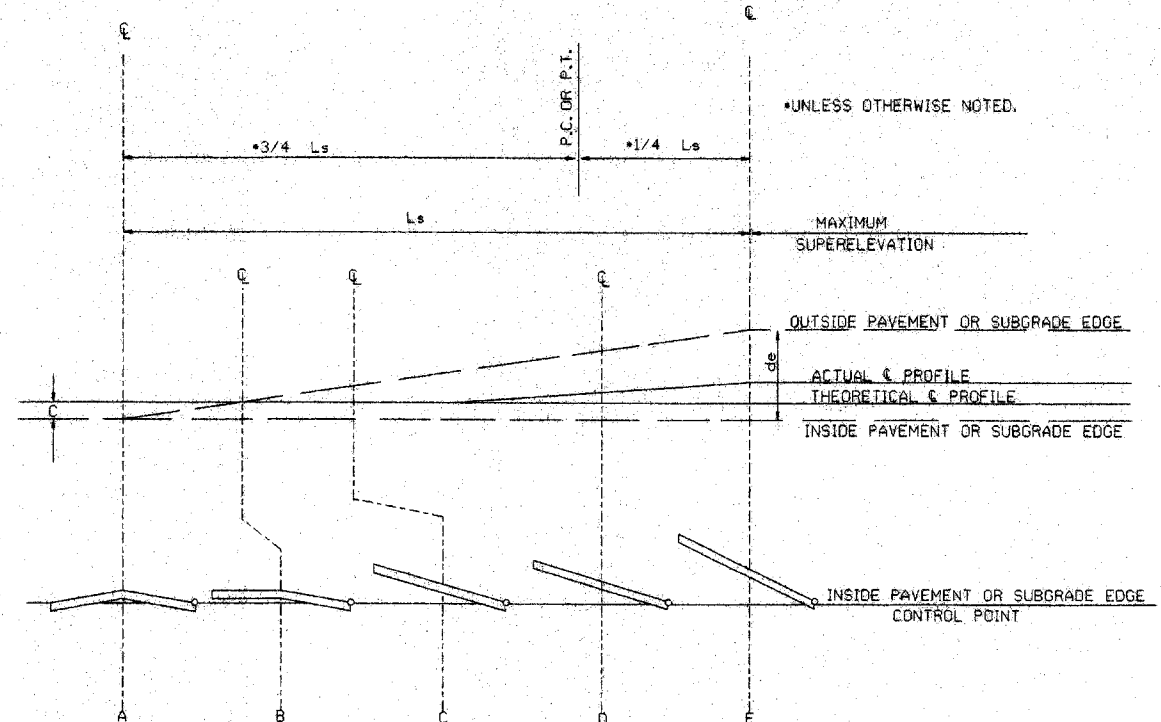
ARKANSAS STATE HIGHWAY COMMISSION	
<b>EXCAVATION PAY LIMITS, BACKFILL, &amp; SOLID SODDING FOR BOX CULVERTS</b>	
STANDARD DRAWING RCB-2	

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 AND ADDED MAXIMUM PAY LIMIT NOTES.	674-1-4-83
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72
DATE	REVISION	FILMED

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH		40 MPH		50 MPH		55 MPH		60 MPH		70 MPH	
	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE
0° 15'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
0° 30'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
0° 45'	N.C.		N.C.		N.C.		N.C.		N.C.		N.C.	
1° 00'	N.C.		N.C.		R.C.		0.021		0.023		0.028	
1° 15'	N.C.		N.C.		R.C.		0.026		0.030		0.037	
1° 30'	N.C.		N.C.		R.C.		0.032		0.037		0.046	
1° 45'	N.C.		N.C.		R.C.		0.037		0.043		0.054	
2° 00'	R.C.		R.C.		0.041	200	0.048	225	0.055	300	0.062	275
2° 15'	R.C.		R.C.		0.045		0.053		0.061		0.070	300
2° 30'	R.C.		R.C.		0.049		0.058		0.067		0.078	315
2° 45'	R.C.		R.C.		0.053	250	0.063	300	0.072	350	0.085	350
3° 00'	0.021	150	0.034	200	0.043		0.057		0.077	260	0.091	335
3° 15'	0.023		0.037		0.049		0.063		0.082	275	0.096	350
3° 30'	0.025		0.040		0.054	205	0.069	255	0.086	285	0.098	360
3° 45'	0.027		0.043		0.059	215	0.076	265	0.093	305	0.100	360
4° 00'	0.029		0.046		0.063	225	0.080	275	0.096	315		
4° 15'	0.031		0.049		0.067	240	0.083	280	0.098	320		
4° 30'	0.033		0.051		0.071	250	0.087	295	0.099	320		
4° 45'	0.037		0.056		0.078	260	0.091	300	0.098	320		
5° 00'	0.040		0.061		0.083	270	0.094	305	0.099	320		
5° 30'	0.043		0.066	185	0.088	280	0.096	305	0.100	315		
6° 00'	0.046		0.070	190	0.092	285	0.098	310				
6° 30'	0.050		0.074	200	0.095	285	0.099	310				
7° 00'	0.053		0.078	210	0.098	290	0.100	315				
7° 30'	0.056		0.081	215	0.099	290						
8° 00'	0.058		0.084	220	0.100	290						
8° 30'	0.061		0.087	225								
9° 00'	0.063		0.089	230								
10° 00'	0.066	160	0.094	235								
11° 00'	0.072	170	0.097	240								
12° 00'	0.076	175	0.099	245								
13° 00'	0.080	180	0.100	250								
14° 00'	0.083	185										
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										
21° 00'	0.098	215										
22° 00'	0.099	215										
23° 00'	0.099	215										
24° 00'	0.100	220										

**ABBREVIATIONS**  
 NC - NORMAL CROWN  
 RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE  
 e - RATE OF SUPERELEVATION (FT. PER FT.)  
 Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)  
 L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)  
 d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)  
 C - NORMAL CROWN (FT.)

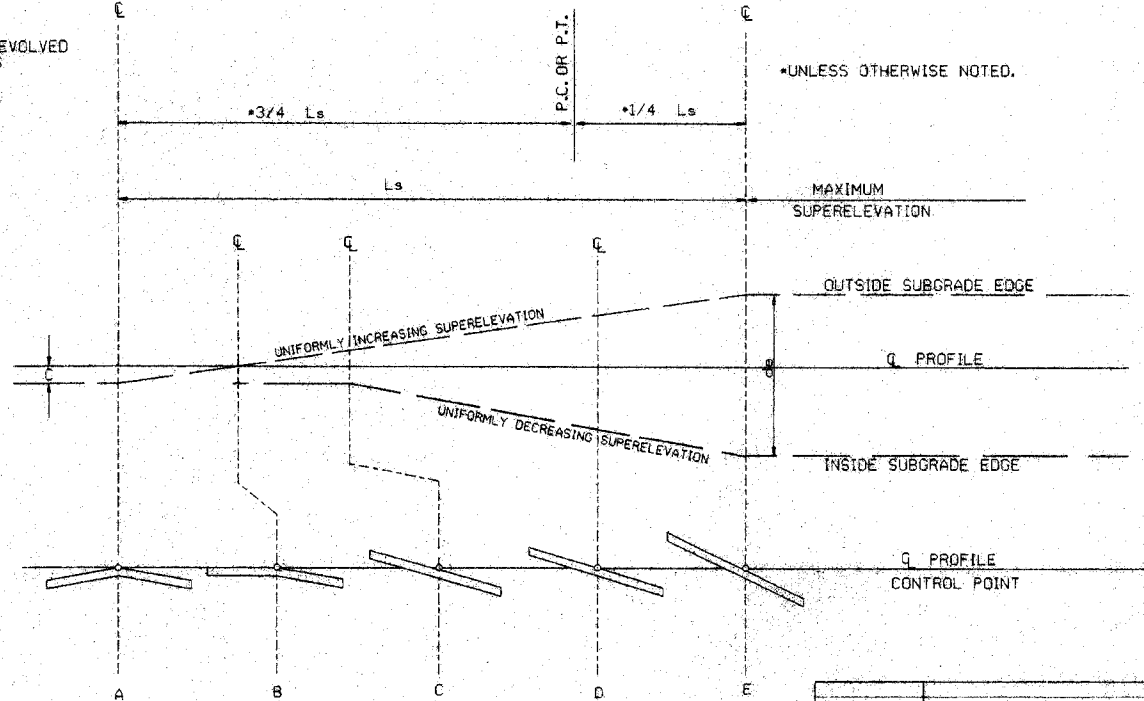


STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

- GENERAL NOTES**
- ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS.
  - SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
  - LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
  - 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 BY STRAIGHT LINE METHOD USING APPLICABLE Ls.


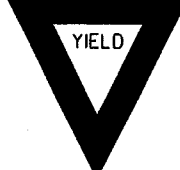



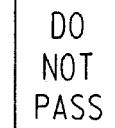



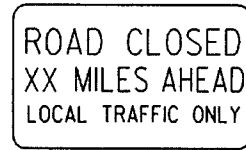
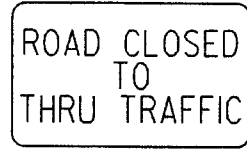
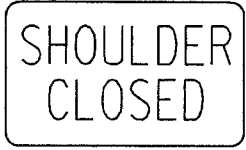




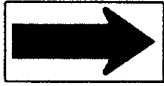

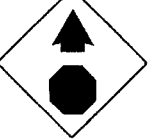
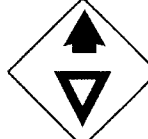
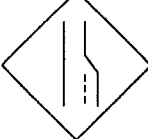
















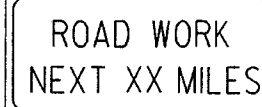
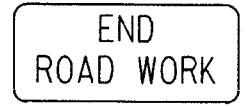
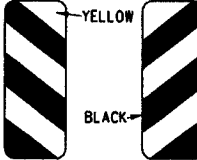


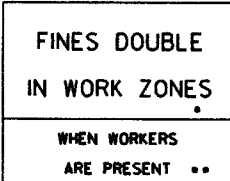


STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

SUPERELEVATION FORMULA =  $\frac{Lde}{Ls}$

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

ARKANSAS STATE HIGHWAY COMMISSION  
 TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC  
 STANDARD DRAWING SE-2

<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>W3-5</p>  <p>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</p>	<p>W3-5a</p>  <p>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>RSP-1</p>  <p>48"x30"</p>	<p>W1-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W1-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>W1-3</p>  <p>STD. 48"x48"</p>	<p>W1-4</p>  <p>STD. 48"x48"</p>	<p>W1-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>W1-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>
<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>500 FEET 24"</p> <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>	<p>W1-4b</p>  <p>STD. 48"x48"</p>
<p>W8-11</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W8-9</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>G20-1</p>  <p>60"x24"</p>	<p>G20-2</p>  <p>48"x24"</p>	<p>OM-3L OM-3R</p>  <p>12"x36"</p>	<p>M4-9</p>  <p>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</p>	<p>M4-10</p>  <p>48"x18"</p>
<p>R55-1</p>  <p>36"x60"</p> <p>• USE 6" C LETTERS •• USE 4" D LETTERS</p>						

ADVANCE DISTANCES (XXXX)

500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE AHEAD

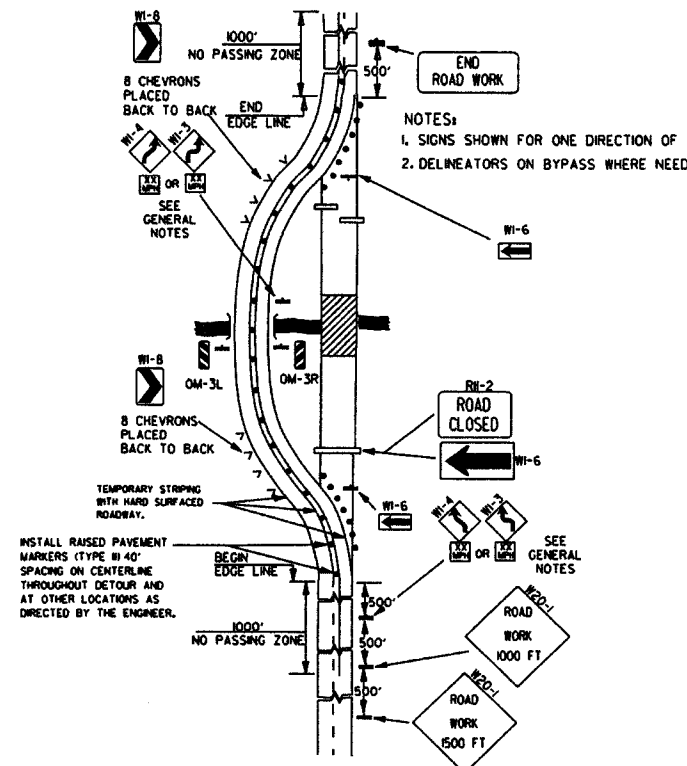
GENERAL NOTES:

- 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.
  - 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.
  - 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.
  - SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SO.FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
  - 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.
  - 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.
  - 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.
  - FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
  - 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.
  - 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.

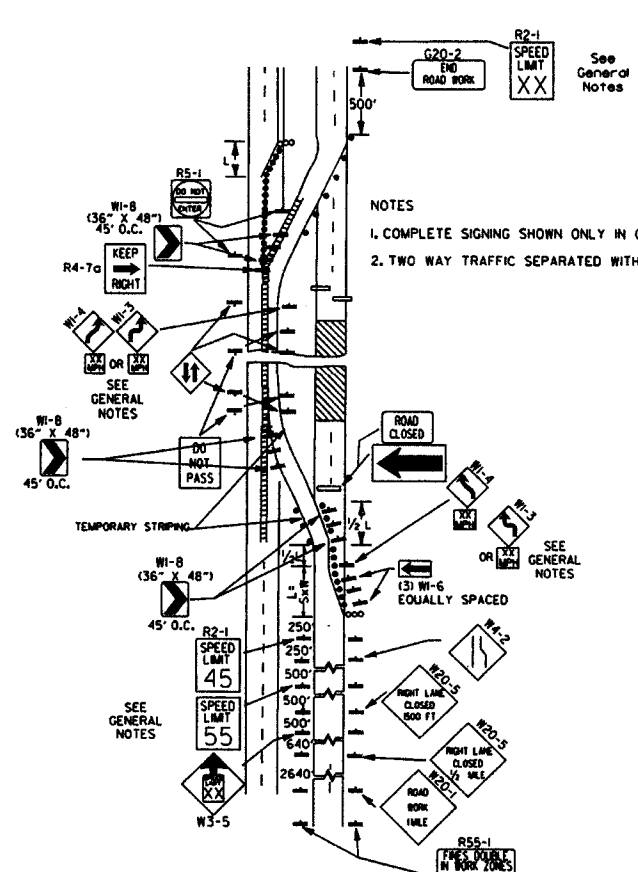
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS	
	REVISED ROAD WORK NEXT XX MILES	
12-15-1	REVISED W24-1	
1-17-10	DELETED W8-9c & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
1-16-01	REVISED NOTE 7	
3-28-00	REVISED NOTE	
1-18-98	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	
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION  
STANDARD TRAFFIC CONTROLS  
FOR HIGHWAY CONSTRUCTION  
STANDARD DRAWING TC-1

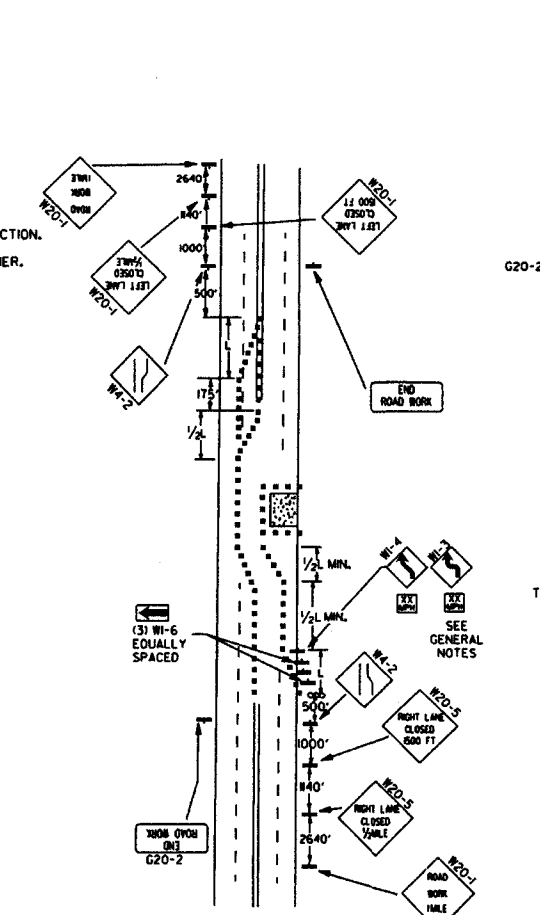




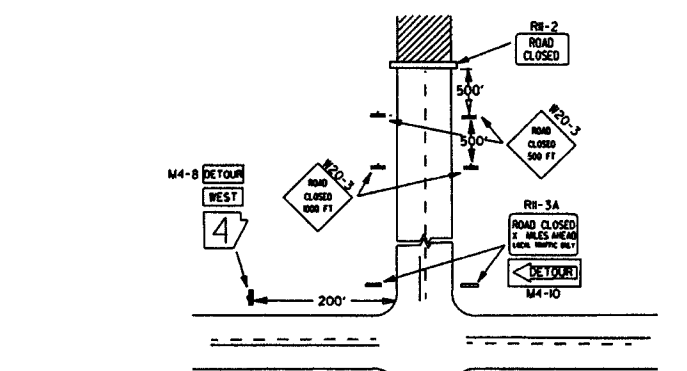
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



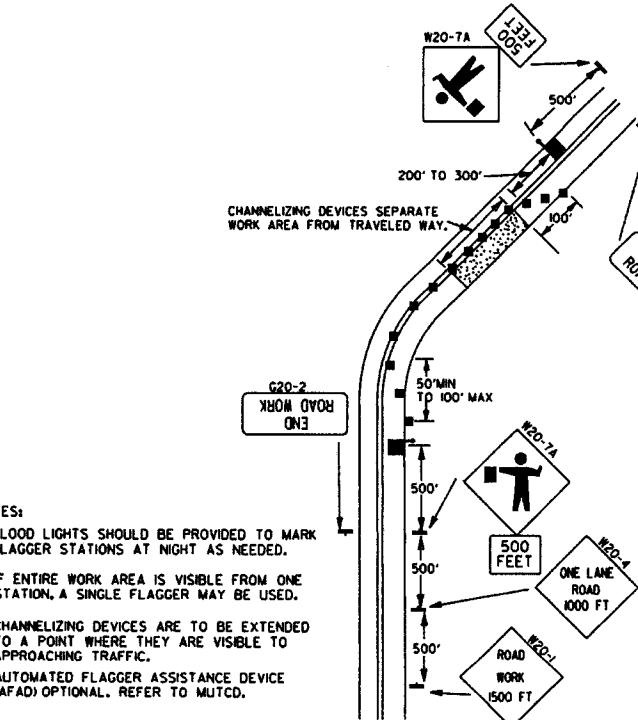
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



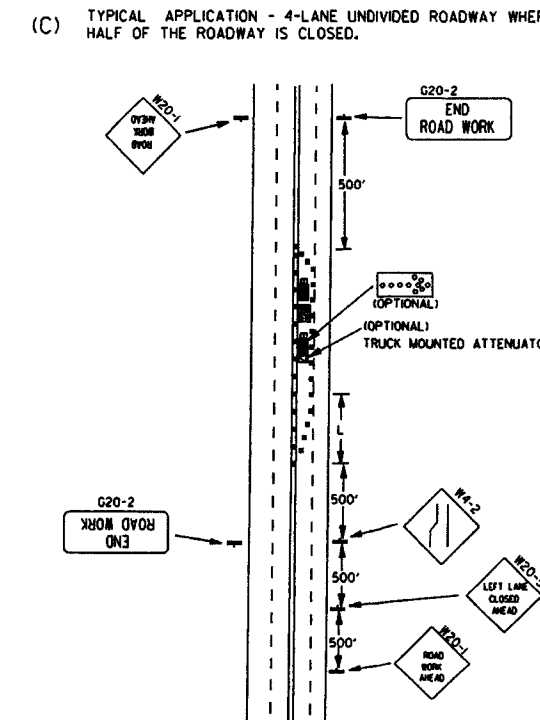
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



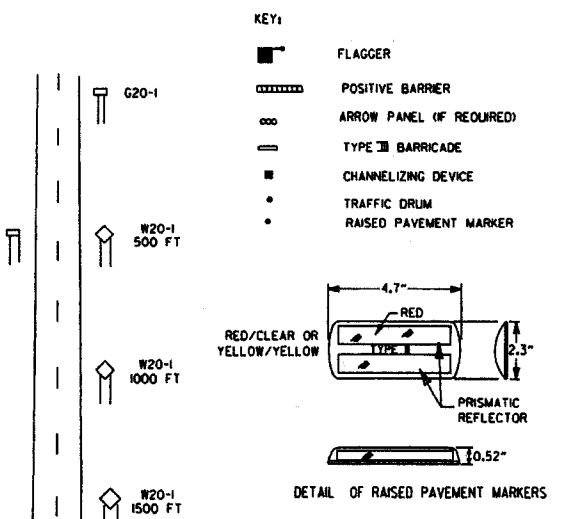
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



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



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



TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

$L = SXW$  FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:

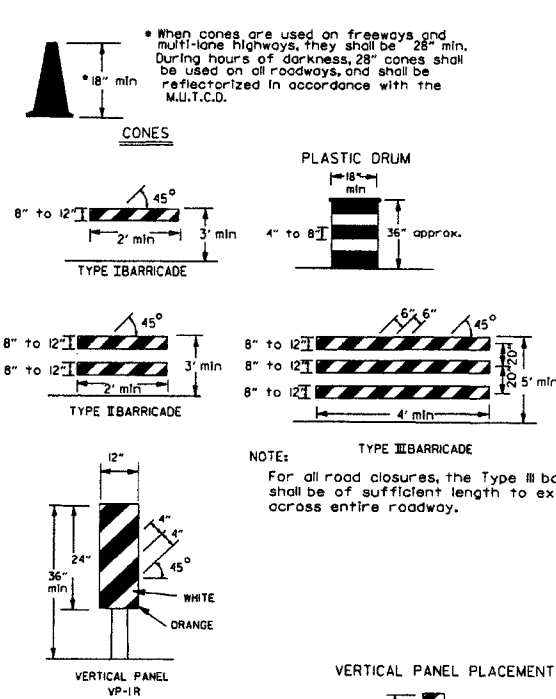
- L = MINIMUM LENGTH OF TAPER.
- S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
- W = WIDTH OF OFFSET.

- GENERAL NOTES:
- 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.
  - WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-K55 SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-145MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/4 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-10XX SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
  - WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-145 SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/4 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-KXX SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
  - 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.
  - WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
  - PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
  - 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.
  - 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	FILED
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	
3-1-10	ADDED (AFAD)	
8-20-08	REVISED SIGN DESIGNATIONS	
8-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (C) 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

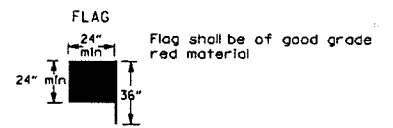
Channelizing devices



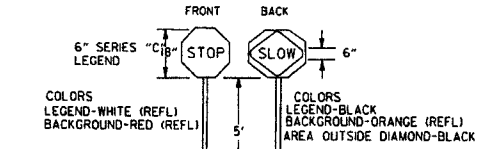
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	WB-11
1" to 3"	Edge of shoulder	WB-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

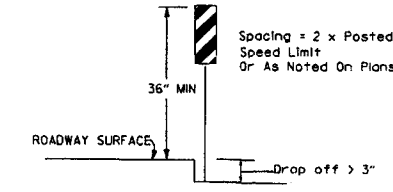
\* When shown on the plans concrete barrier will be used. When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.



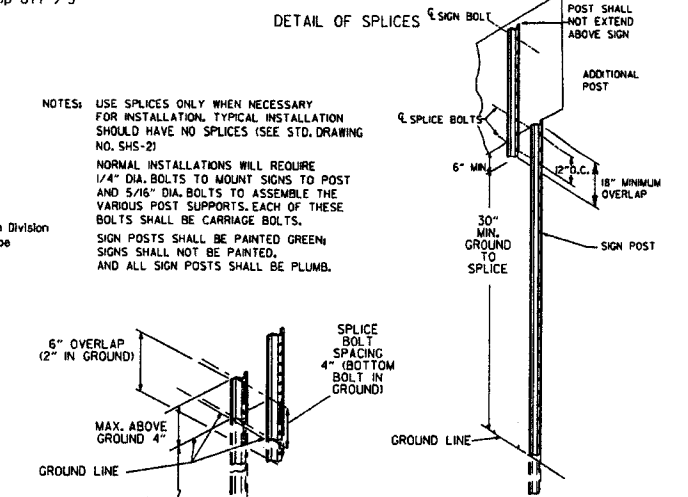
STOP SLOW PADDLE



VERTICAL PANEL PLACEMENT

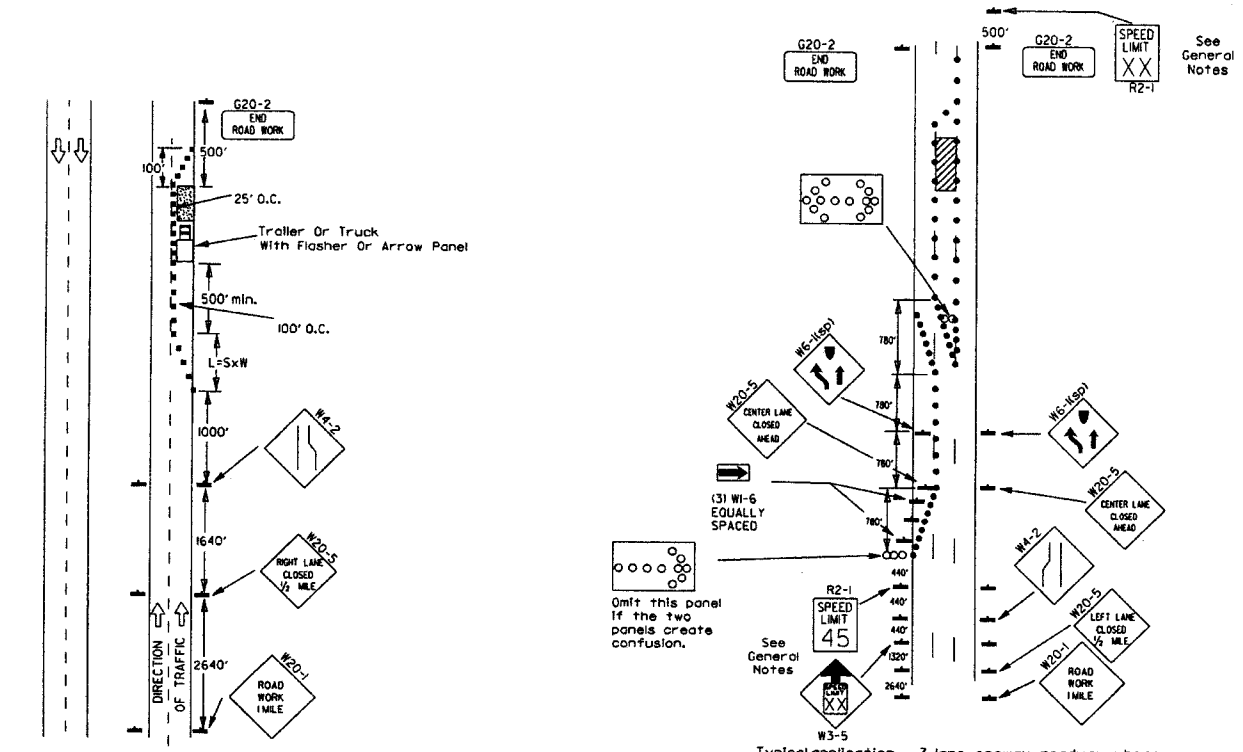


DETAIL OF SPLICES



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	
8-18-04	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

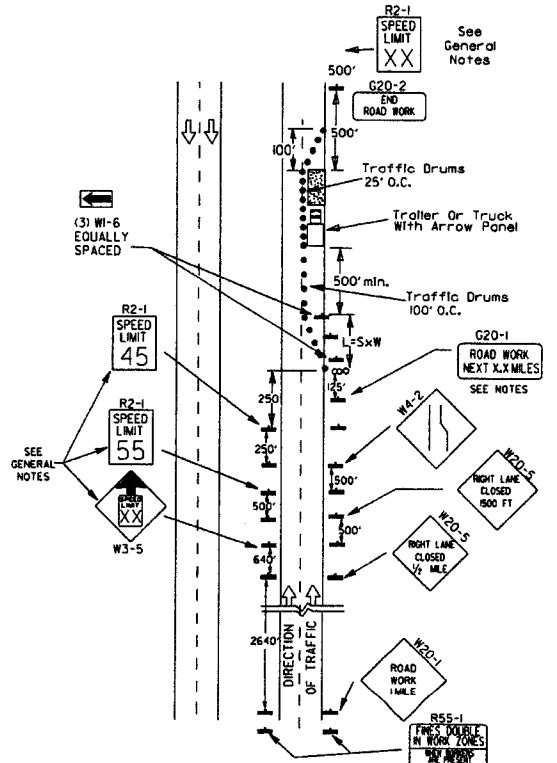


(B) Typical application - 3-lane oneway roadway where center lane is closed.

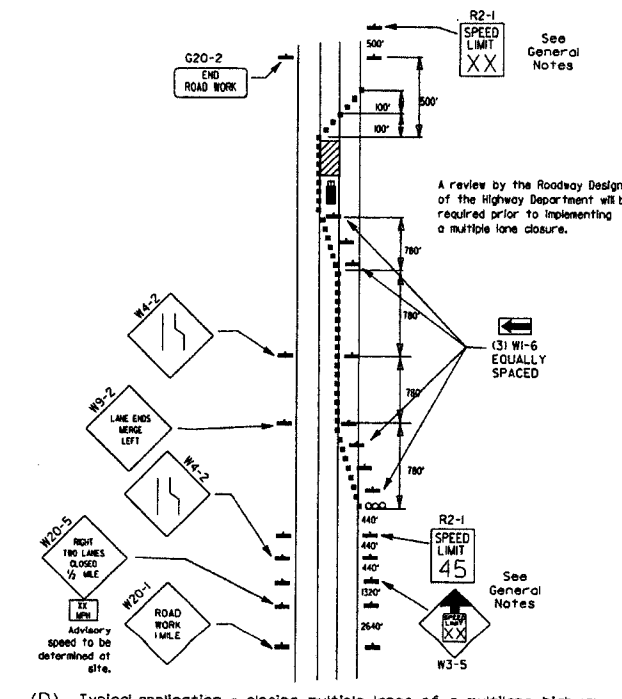
- KEY:**
- Arrow Panel (if Required)
  - Channelizing Device
  - Traffic drum

GENERAL NOTES:

- A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
- When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-(K55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-(KXX) shall be installed to match original speed limit.
- When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-(K45) shall be omitted. Additional R2-155mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-(KXX) shall be installed to match original speed limit.
- 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.
- Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
- Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
- 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.
- Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
- All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual for Assessing Safety Hardware (MASH).
- 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.

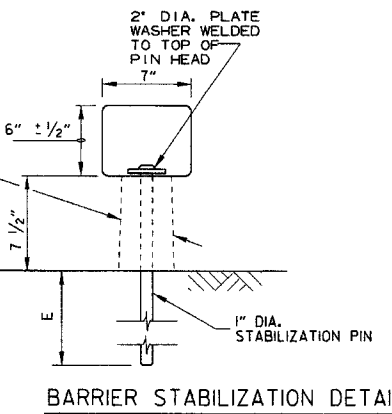
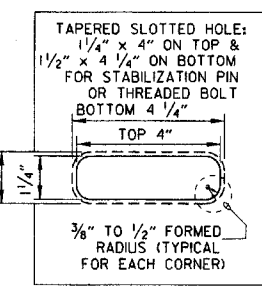
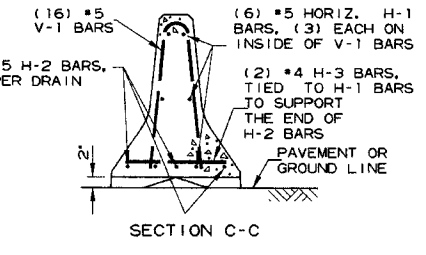
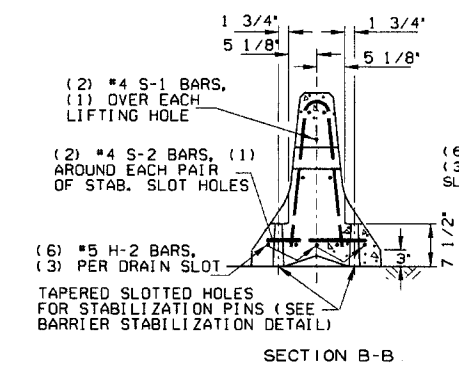
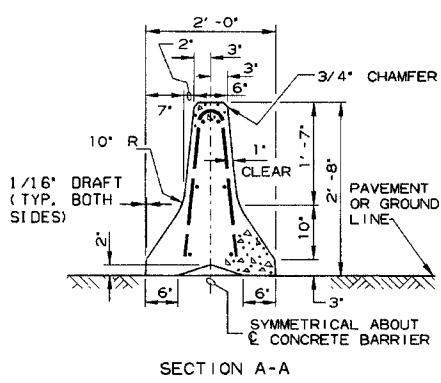
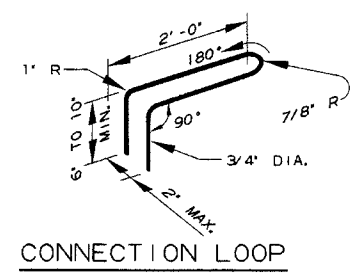
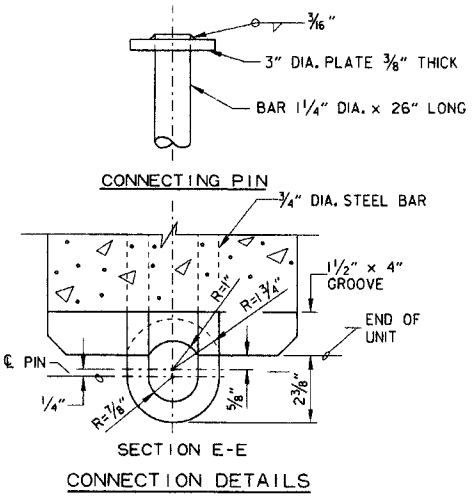


(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.



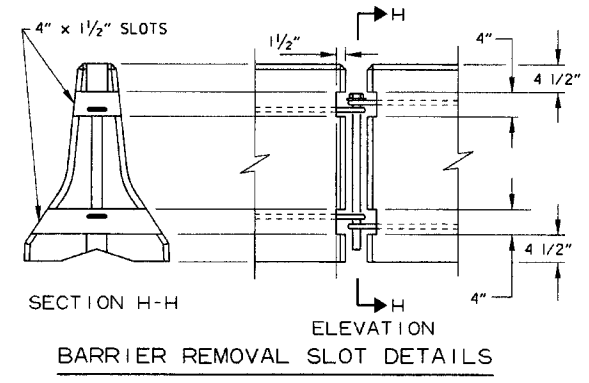
(D) Typical application - closing multiple lanes of a multi-lane highway.

REINFORCING BAR TABLE PER BARRIER UNIT			
MARK	LOCATION	BAR SIZE	(NO. BARS)
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)
S-1	OVER LIFT HOLES	#4	(2)
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S & DRAIN SLOTS	#4	(2)
V-1	VERTICAL IN BARRIER (3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)

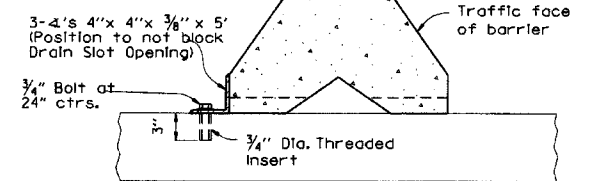


BARRIER STABILIZATION DETAIL  
ROADWAY SECTION

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

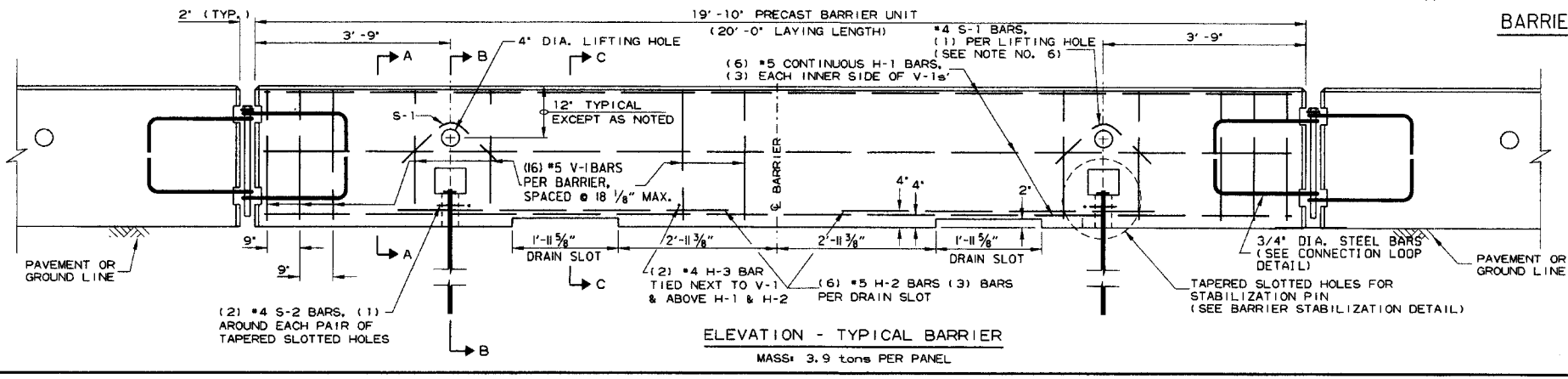


SECTION H-H  
ELEVATION  
BARRIER REMOVAL SLOT DETAILS



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

BARRIER STABILIZATION DETAIL  
BRIDGE DECKS



ELEVATION - TYPICAL BARRIER  
MASS: 3.9 tons PER PANEL

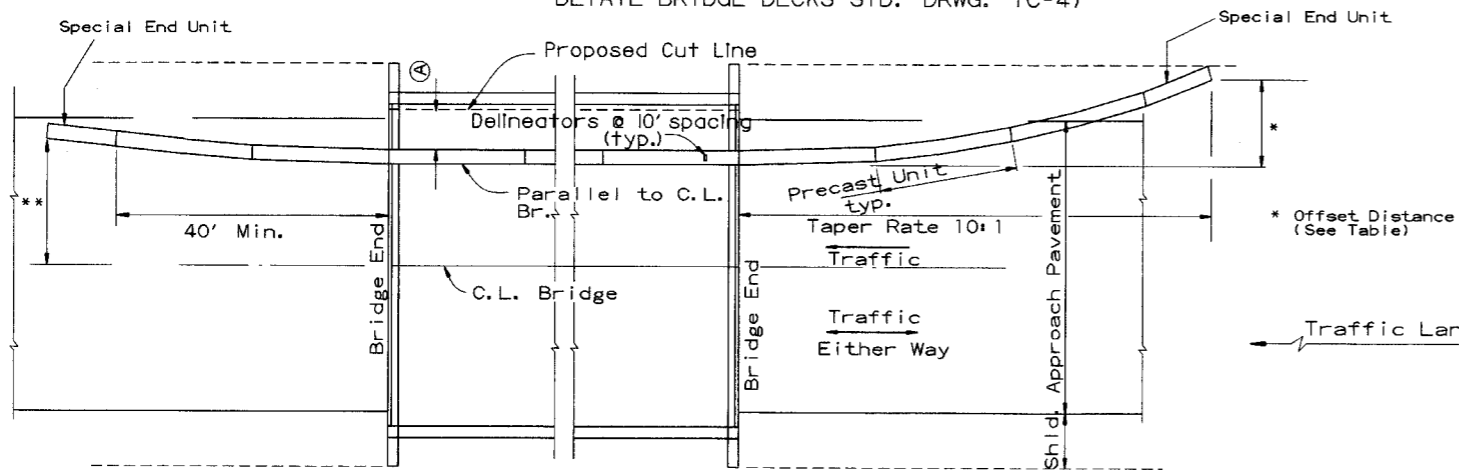
General Notes

- 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 walls 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

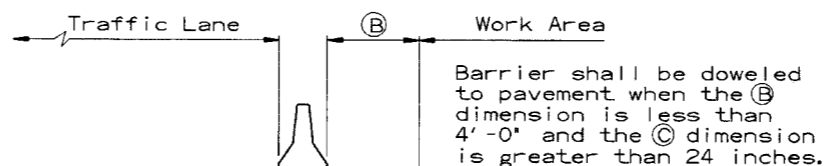
(A) 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

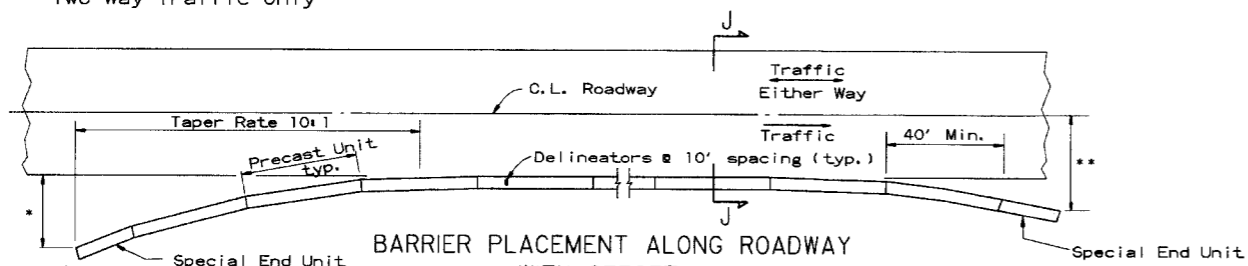
No Scale

\*\* Offset Distance for Two Way Traffic Only



SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

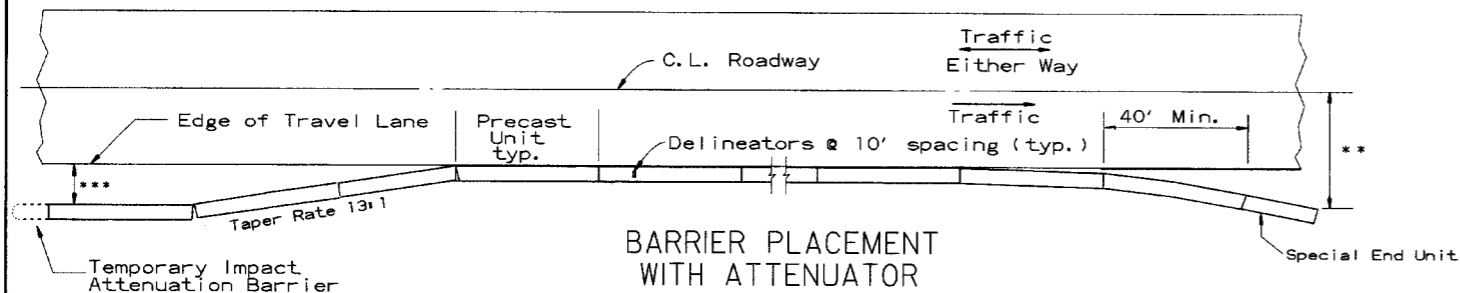
\* Offset Distance (See Table)

\*\* 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.

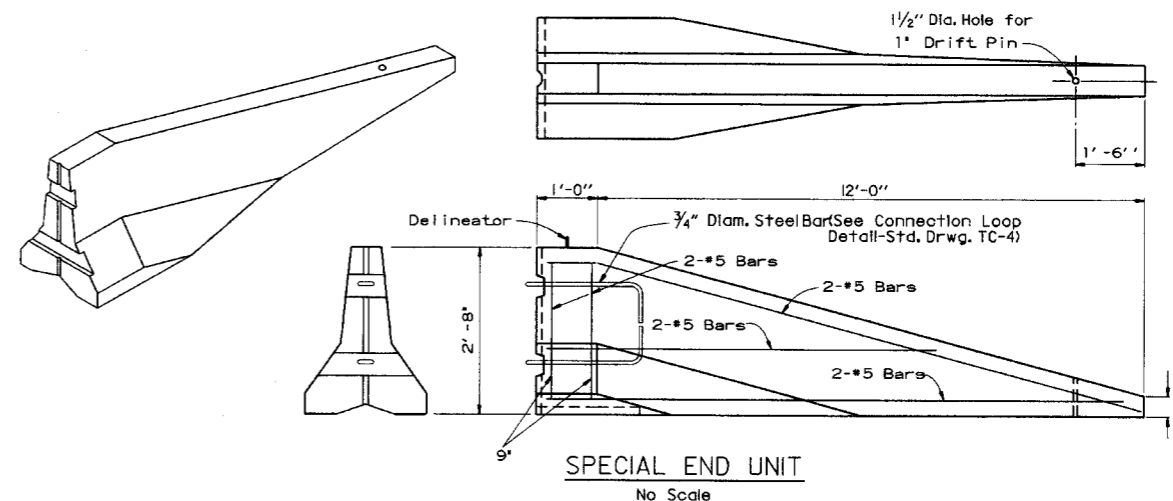


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

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

\*\* Offset Distance For Two Way Traffic Only



SPECIAL END UNIT

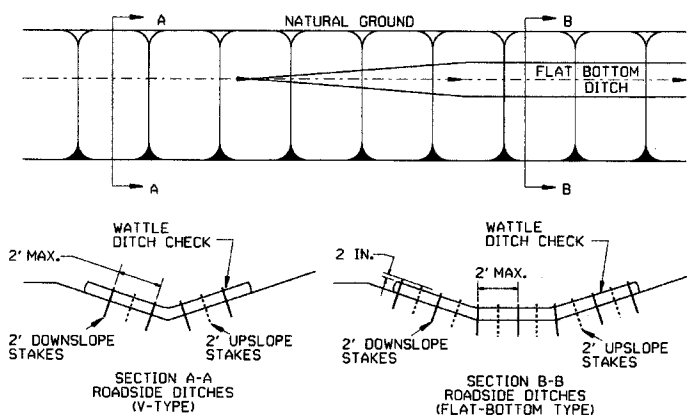
No Scale

General Notes

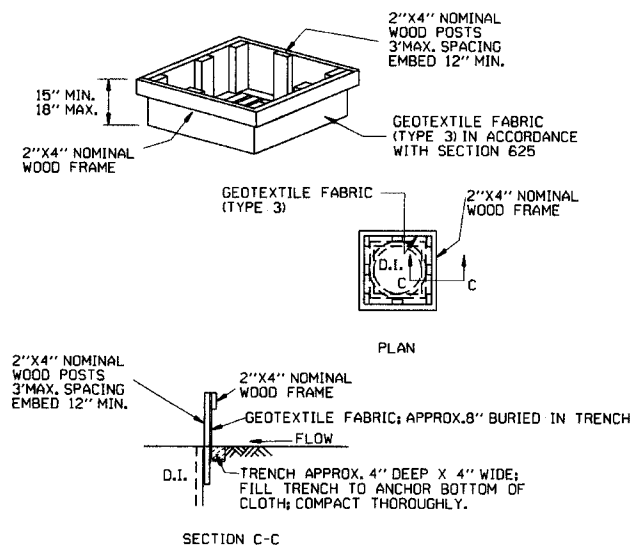
When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of 'Temporary Impact Attenuation Barrier.'

			ARKANSAS STATE HIGHWAY COMMISSION
			STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER
			STANDARD DRAWING TC-5
10-15-09	ADDED REFERENCE TO MASH		
5-25-06	REVISED BARRIER PLACEMENT		
8-22-02	ISSUED NEW DRAWING		
DATE	REVISION	FILMED	

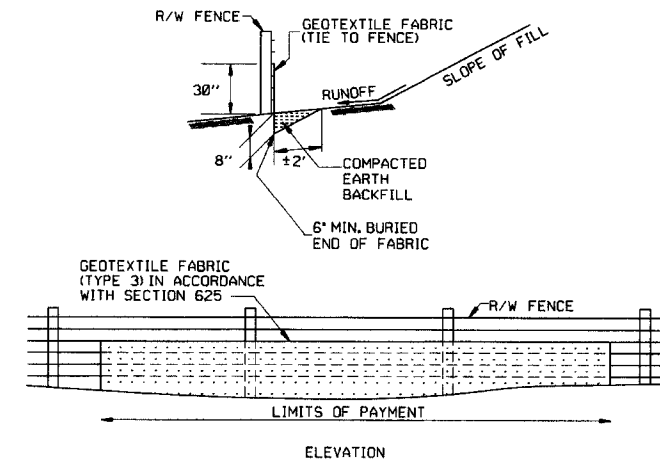
GENERAL NOTES  
 INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



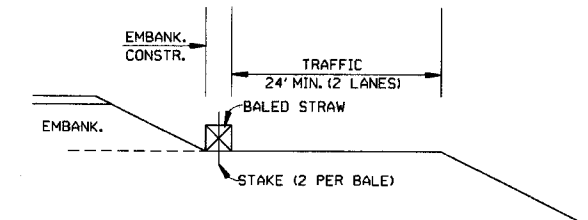
DROP INLET SILT FENCE (E-7)



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

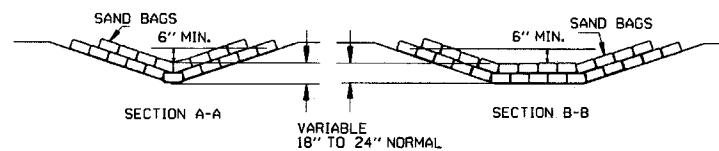
GENERAL NOTES  
 GEOTEXTILE FABRIC SHALL BE SPICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

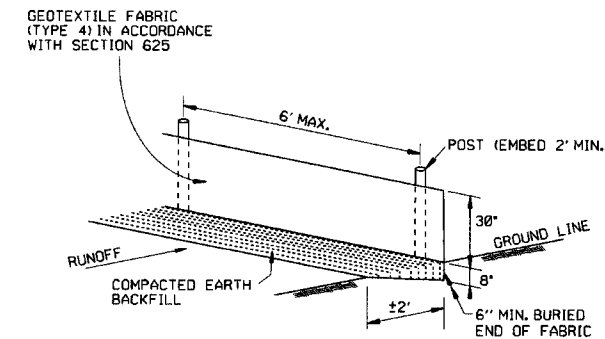


BALED STRAW FILTER BARRIER (E-2)

NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS. PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW.

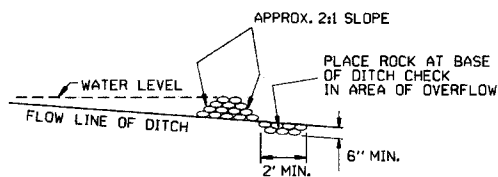


SAND BAG DITCH CHECK (E-5)



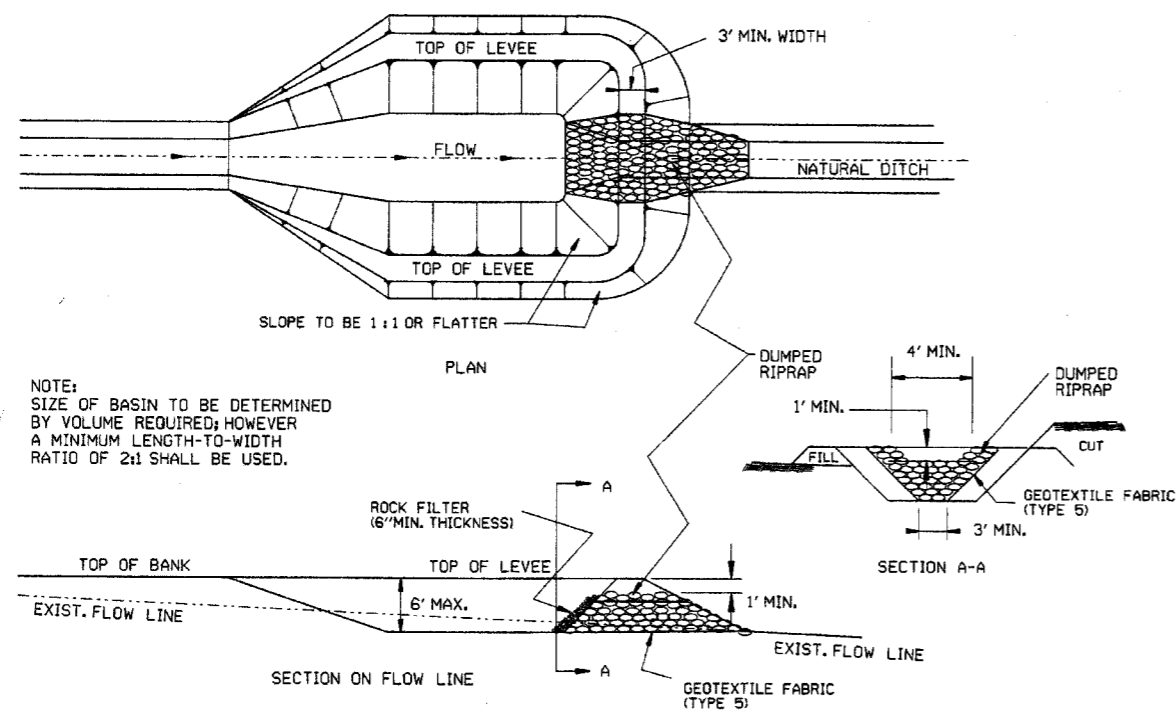
SILT FENCE (E-11)

GENERAL NOTES  
 GEOTEXTILE FABRIC SHALL BE SPICED 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.

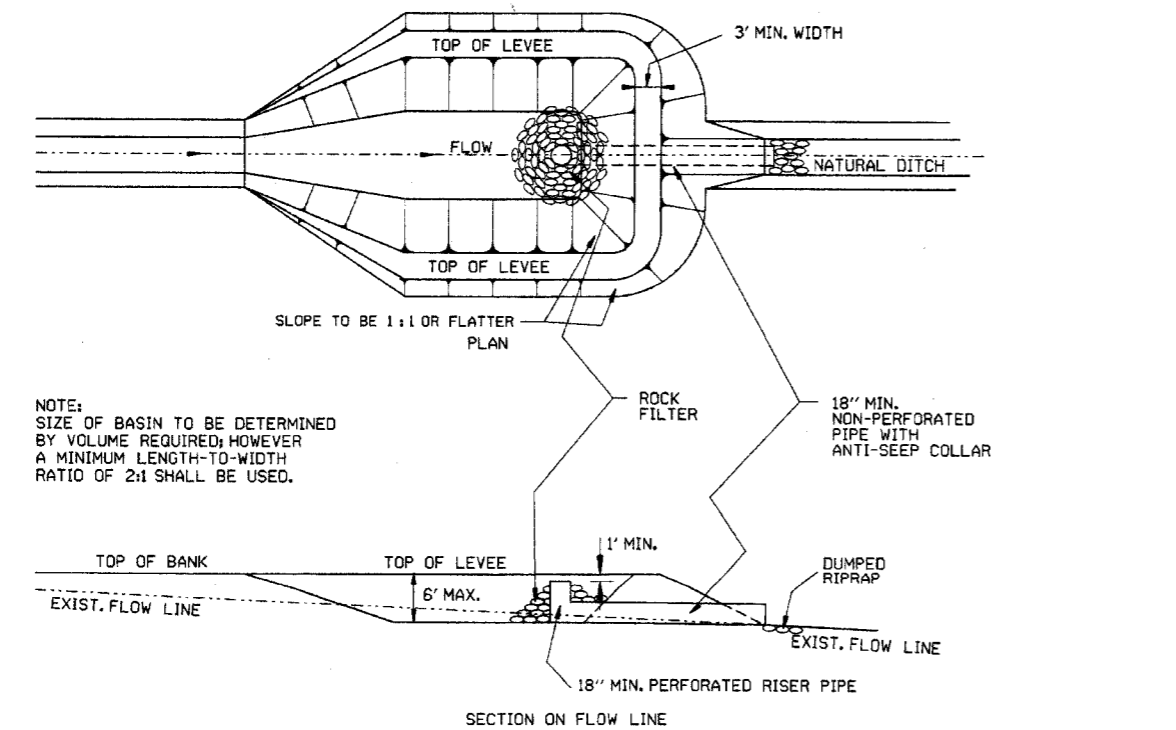


ROCK DITCH CHECK (E-6)

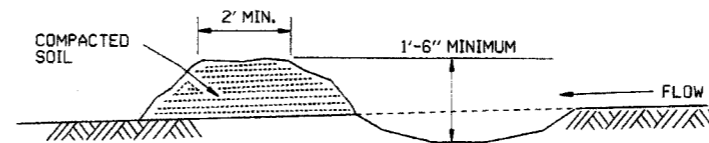
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK		ARKANSAS STATE HIGHWAY COMMISSION
11-18-98	ADDED NOTES		
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95	
7-15-94	REV. E-4 & E-11 MIN. 13\"/>		
6-2-94	REVISED E-1, 4, 7 & 11; DELETED 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	
DATE	REVISION	FILMED	STANDARD DRAWING TEC-1



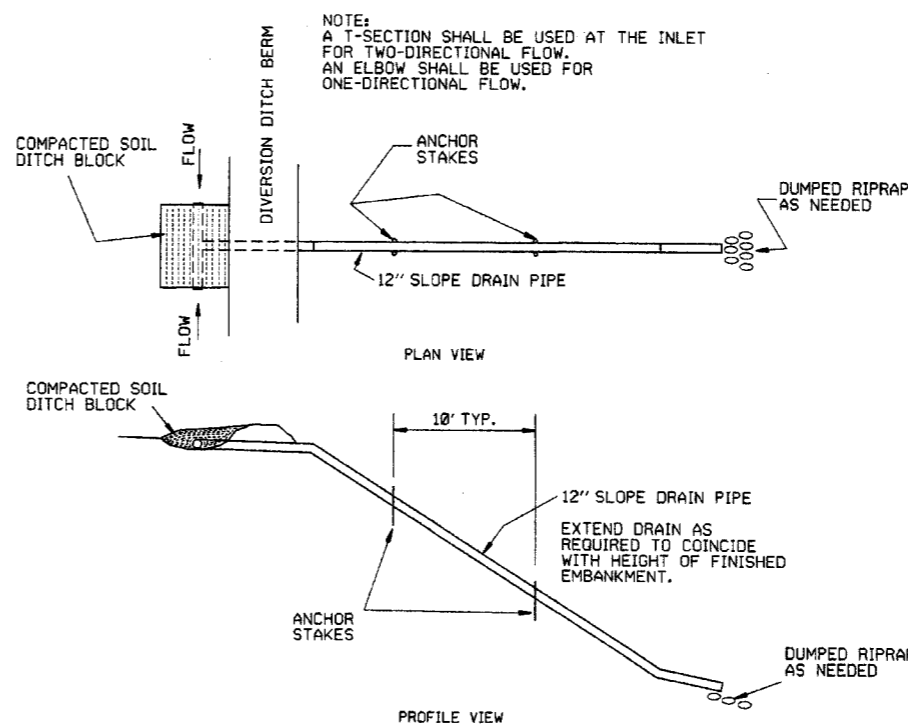
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



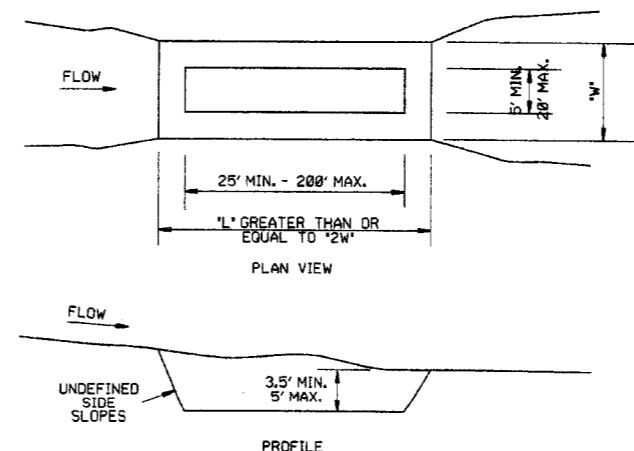
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



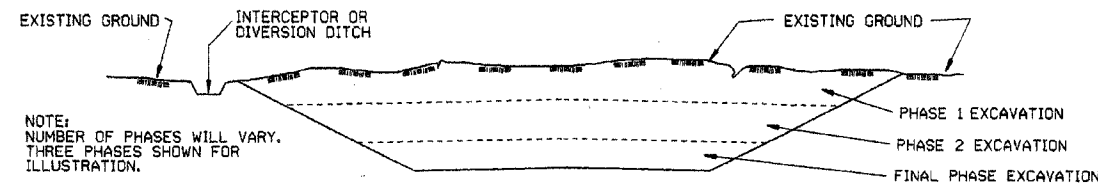
SEDIMENT BASIN (E-14)

		ARKANSAS STATE HIGHWAY COMMISSION	
		TEMPORARY EROSION CONTROL DEVICES	
		STANDARD DRAWING TEC-2	
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13		
4-1-93	ISSUED		
DATE	REVISION		FILMED

### 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



NOTE:  
NUMBER OF PHASES WILL VARY.  
THREE PHASES SHOWN FOR  
ILLUSTRATION.

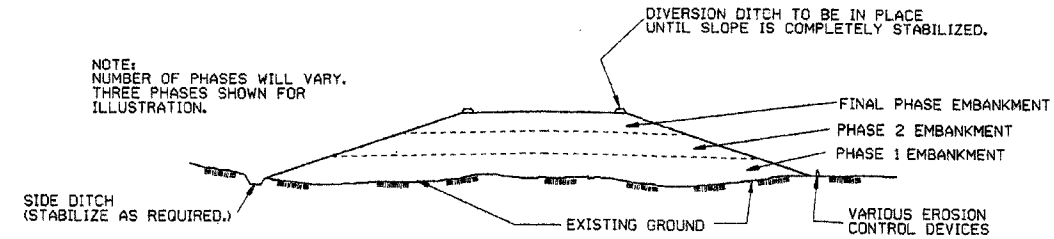
GENERAL NOTE

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



NOTE:  
NUMBER OF PHASES WILL VARY.  
THREE PHASES SHOWN FOR  
ILLUSTRATION.

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.

ARKANSAS STATE HIGHWAY COMMISSION		
TEMPORARY EROSION CONTROL DEVICES		
STANDARD DRAWING TEC-3		
11-23-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94
DATE	REVISION	FILMED

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.

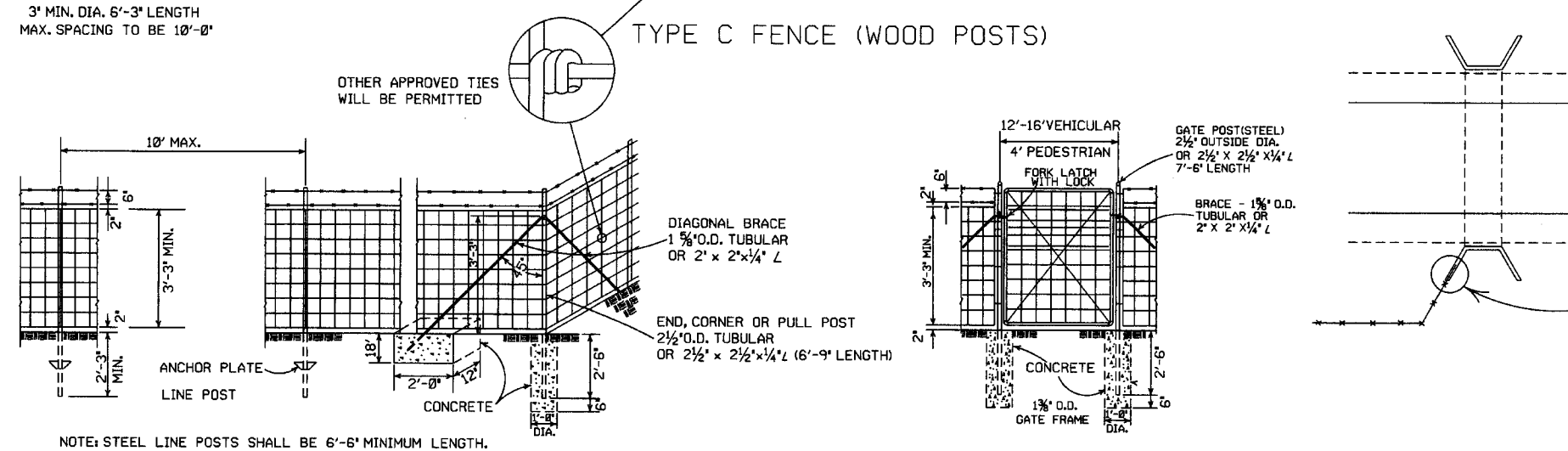
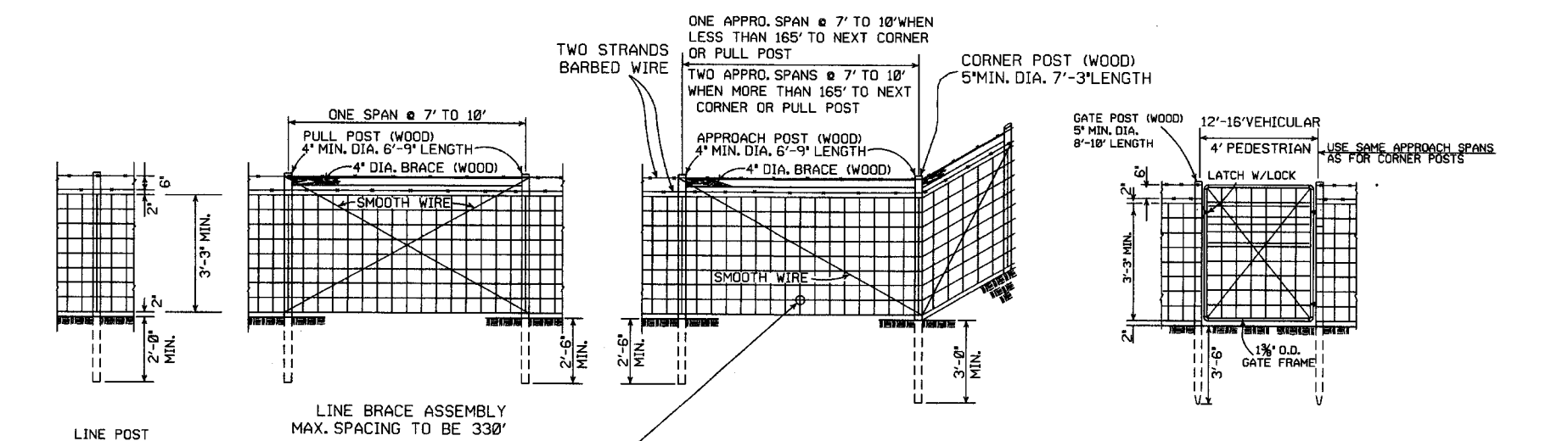
AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

NOTE: USE 3/8" X 1 1/2" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.

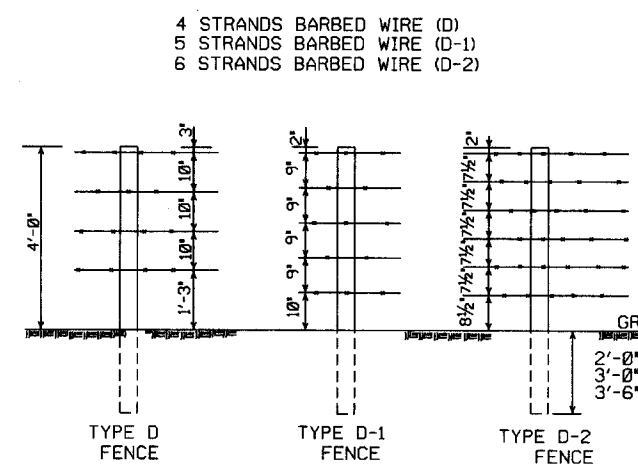
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST 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.

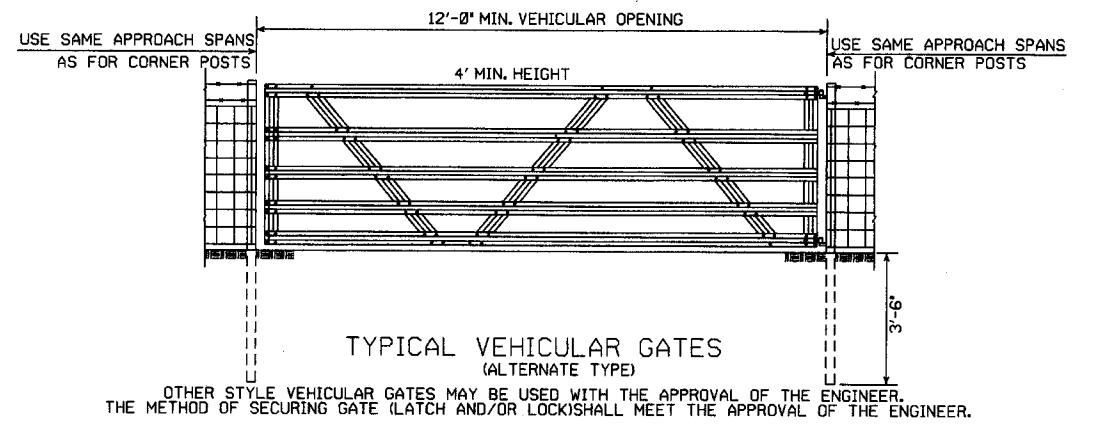
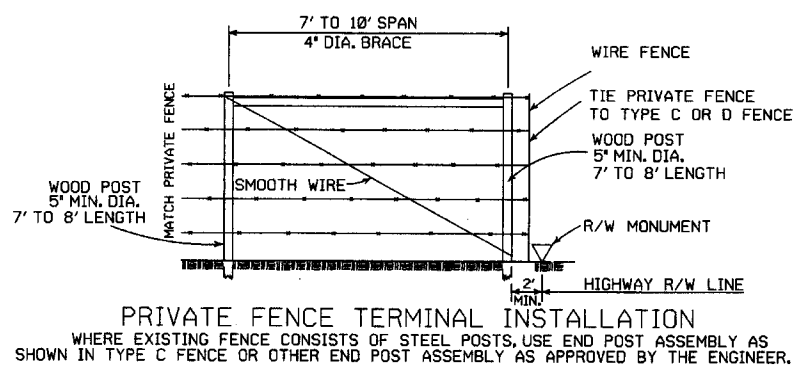
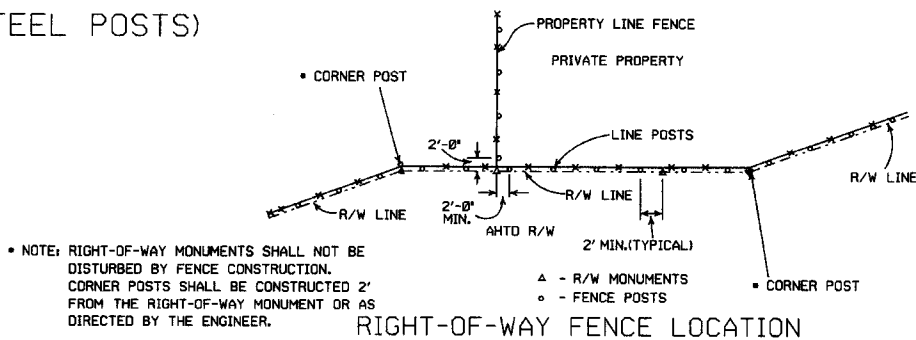
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.



TYPE C FENCE (STEEL POSTS)



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.



DATE	REVISION	FILMED
8-22-82	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-98	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

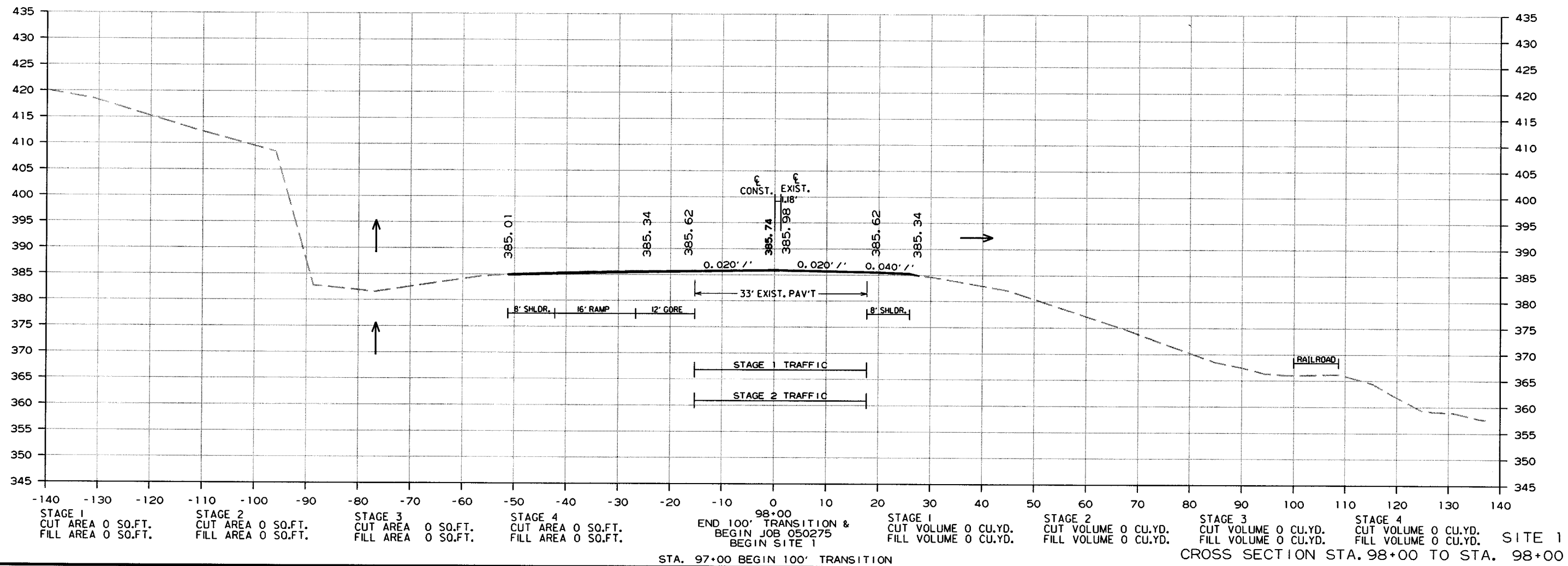
WIRE FENCE  
TYPE C AND D

STANDARD DRAWING WF-4



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275		137	167

② CROSS SECTIONS

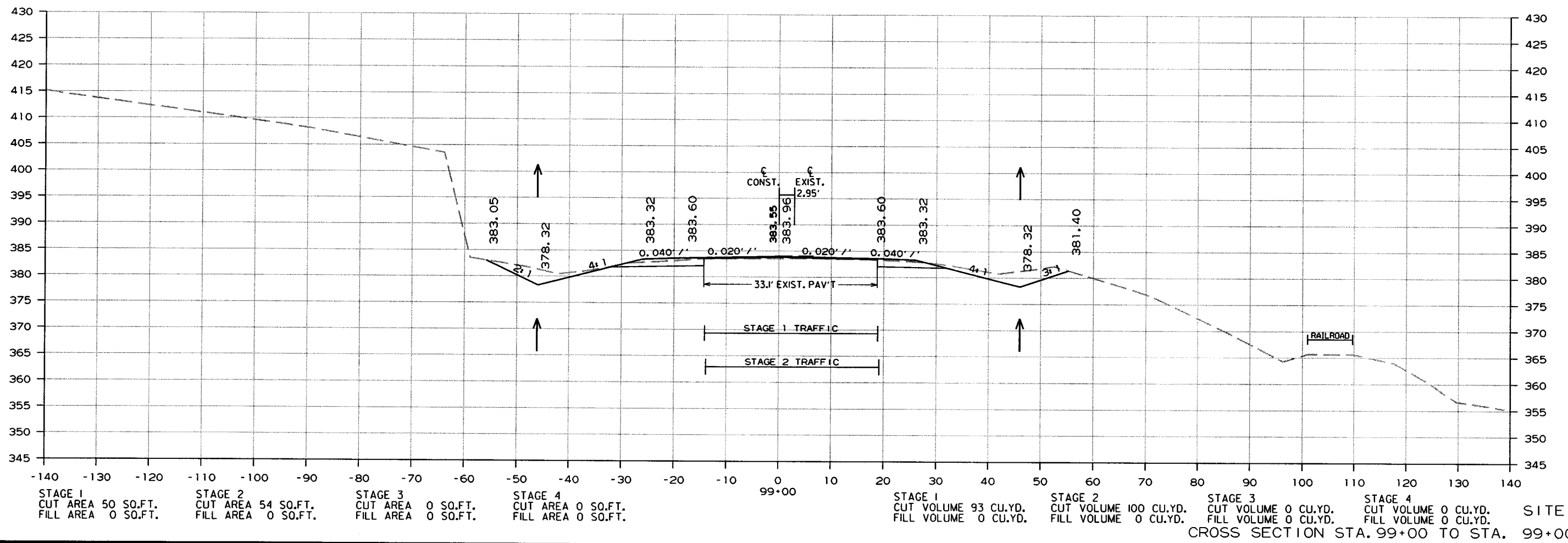


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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275		138	167

2 CROSS SECTIONS



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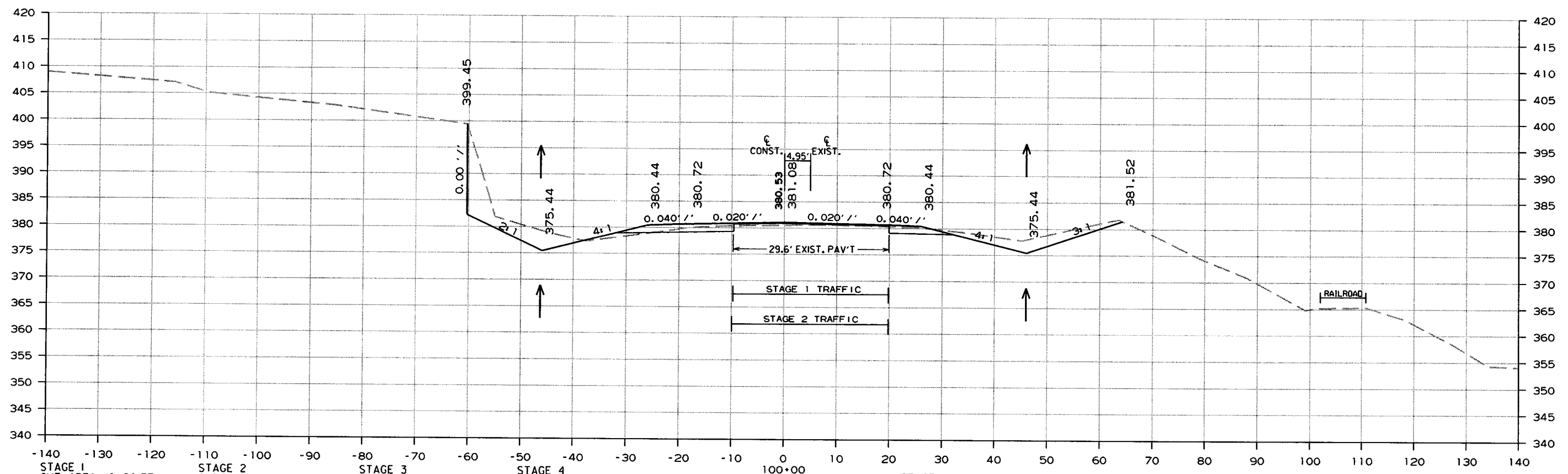
R050275.DGN

SITE 1

CROSS SECTION STA. 99+00 TO STA. 99+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.						050275	139	167

② CROSS SECTIONS



STAGE	CUT AREA (SQ.FT.)	FILL AREA (SQ.FT.)	CUT VOLUME (CU.YD.)	FILL VOLUME (CU.YD.)
STAGE 1	110	6	296	11
STAGE 2	64	0	219	0
STAGE 3	0	0	0	0
STAGE 4	0	0	0	0

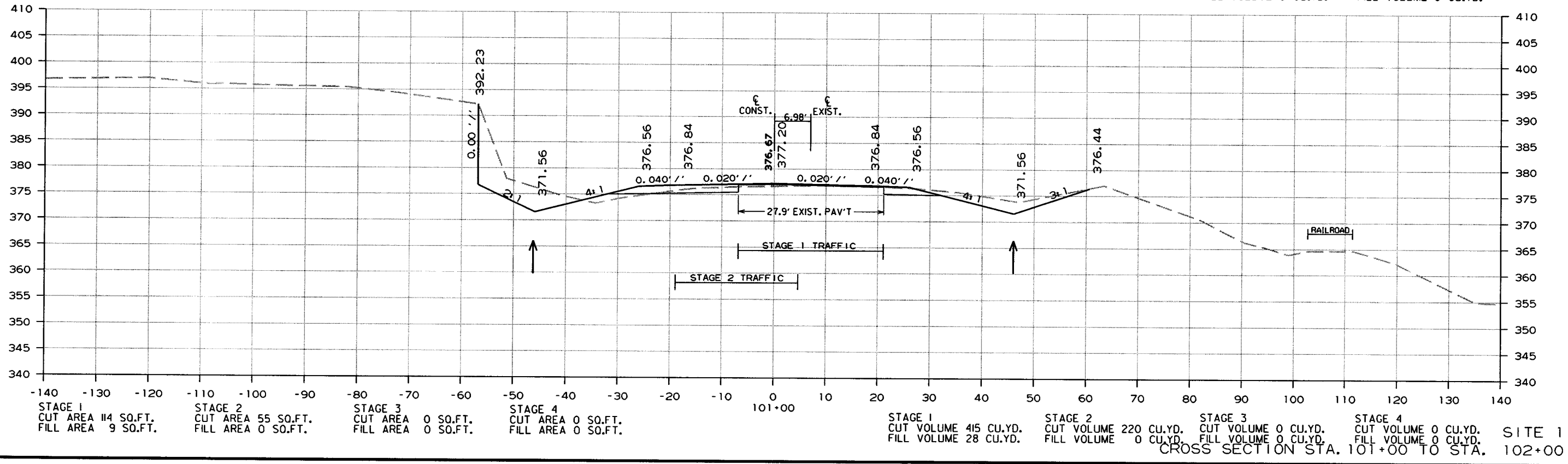
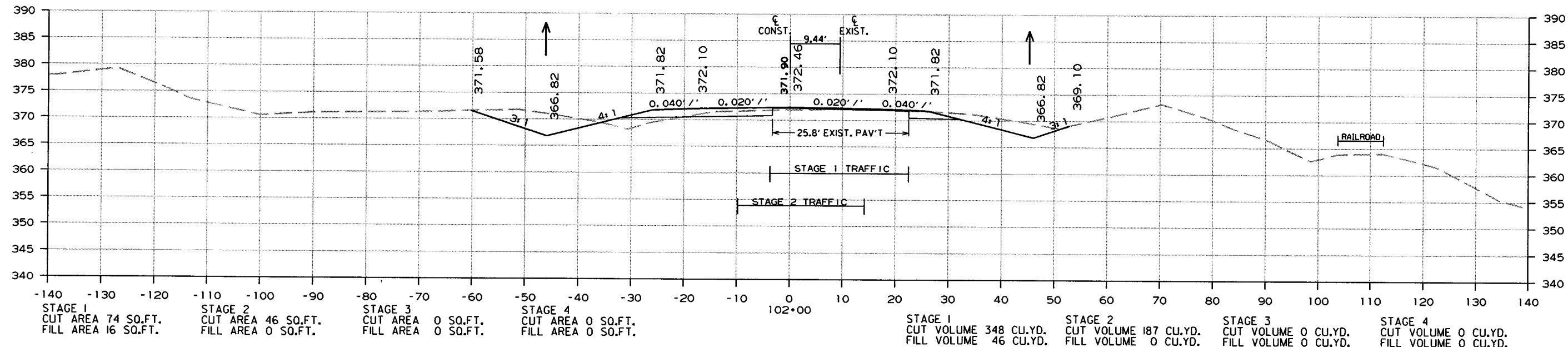
CROSS SECTION STA. 100+00 TO STA. 100+00 SITE 1

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							140	167

2 CROSS SECTIONS

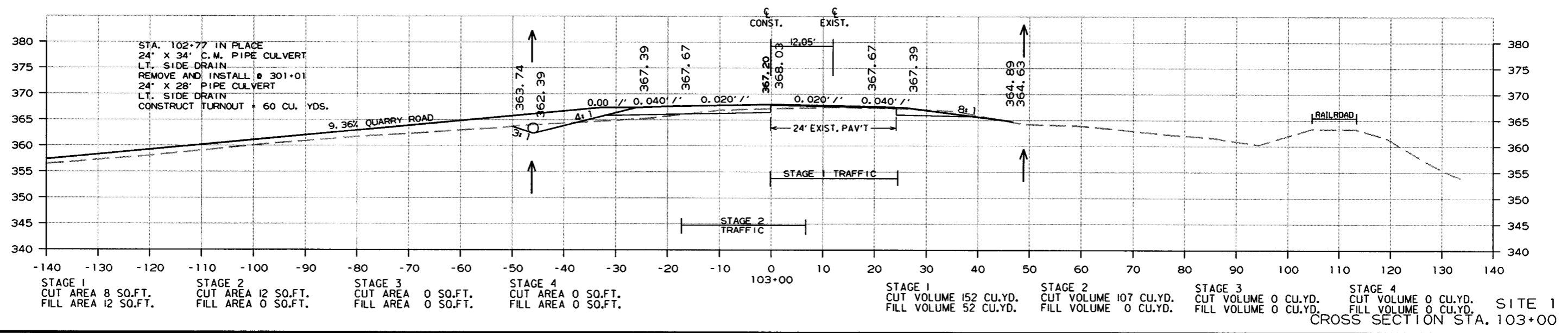


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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 050275	141	167

2 CROSS SECTIONS

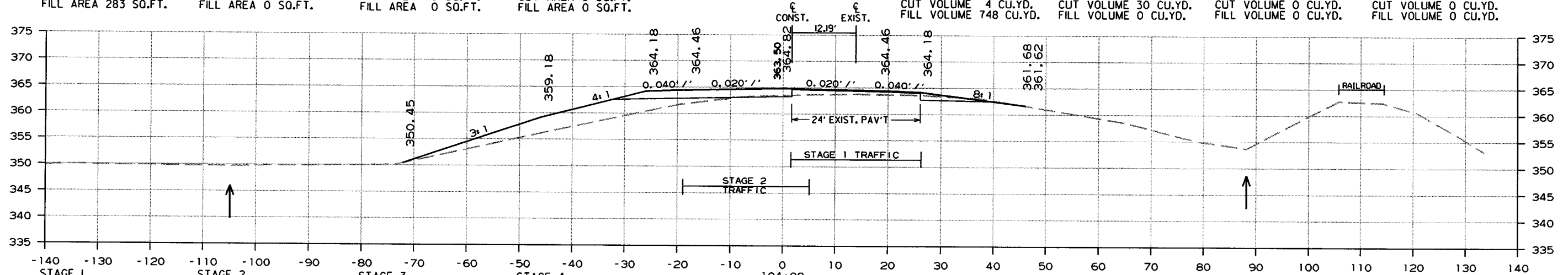
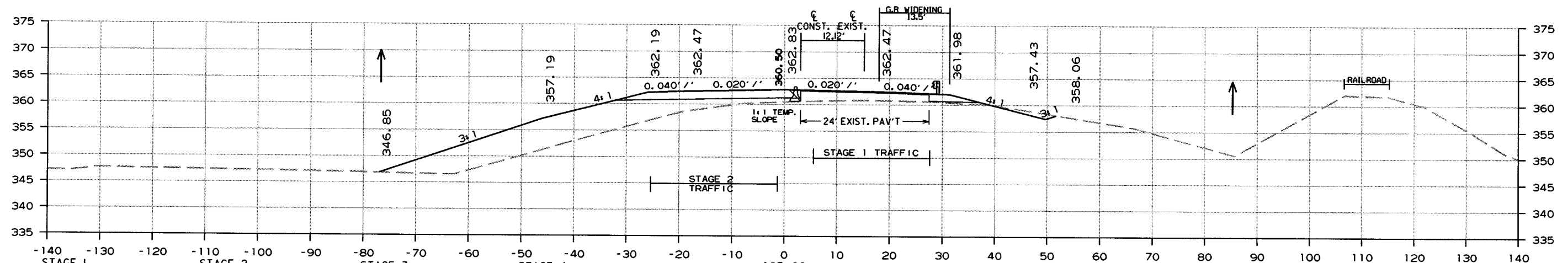


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				6	ARK.			
JOB NO. 050275						142	167	

2 CROSS SECTIONS



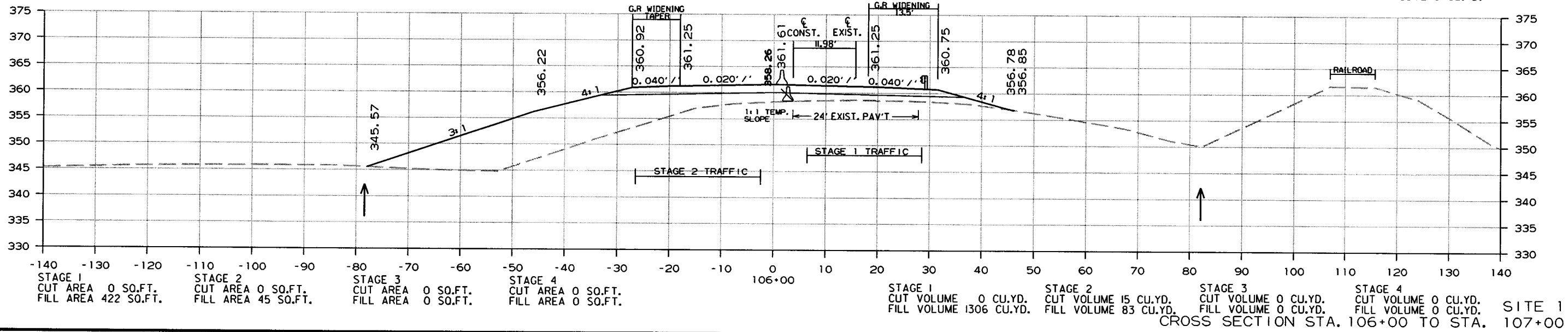
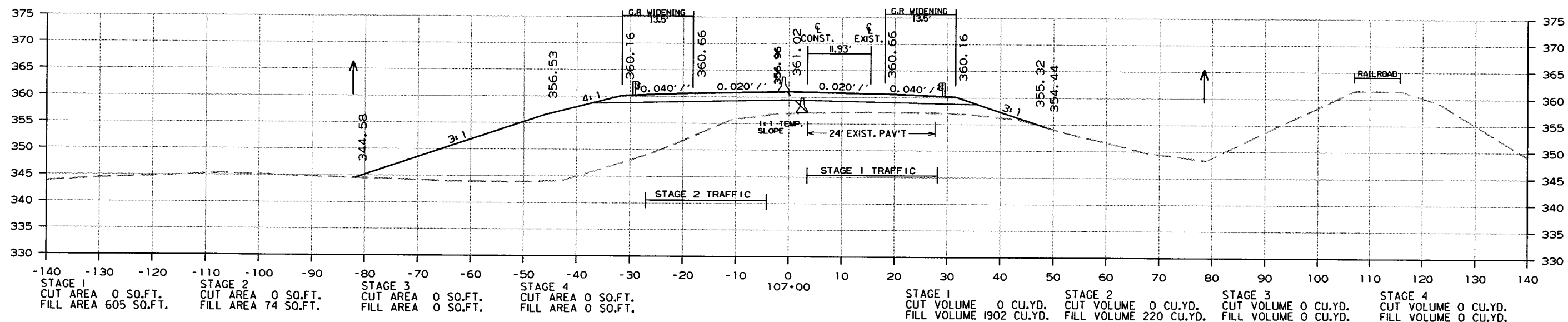
SITE 1  
CROSS SECTION STA. 104+00 TO STA. 105+00

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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. 050275							143	167

2 CROSS SECTIONS



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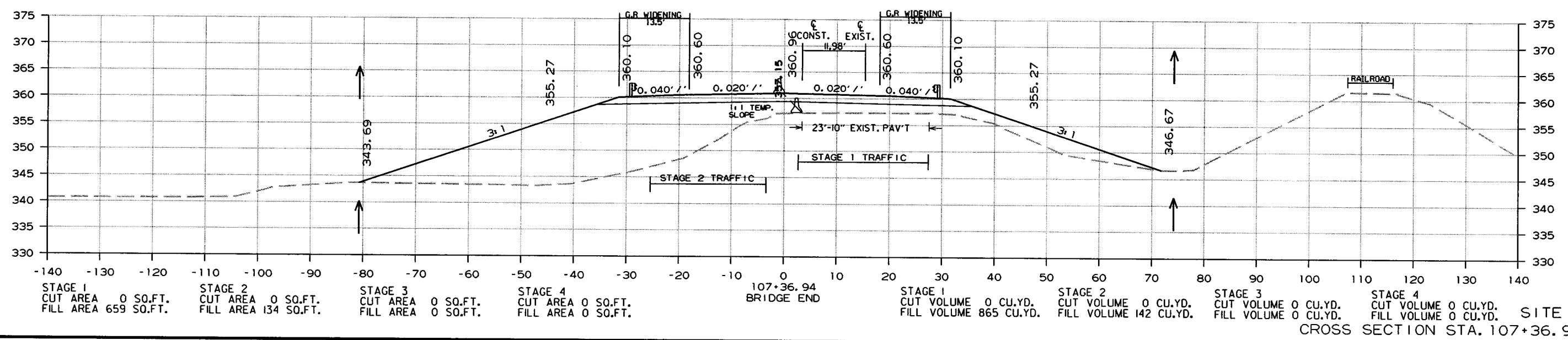
SITE 1  
CROSS SECTION STA. 106+00 TO STA. 107+00

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. 050275	144	167

2 CROSS SECTIONS

STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 2 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 3 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	108+63.92 TOE OF SLOPE	STAGE 1 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 2 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 3 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 2 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 3 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	107+63.17 TOE OF SLOPE	STAGE 1 CUT VOLUME 0 CU.YD. FILL VOLUME 320 CU.YD.	STAGE 2 CUT VOLUME 0 CU.YD. FILL VOLUME 65 CU.YD.	STAGE 3 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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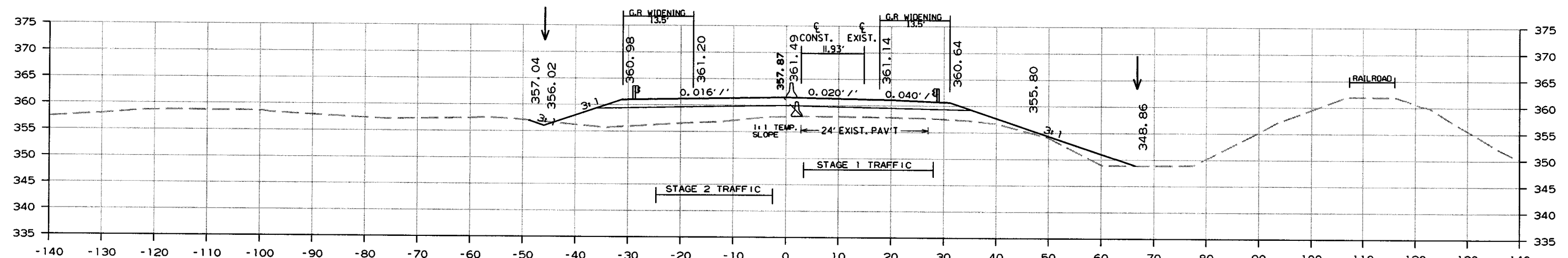
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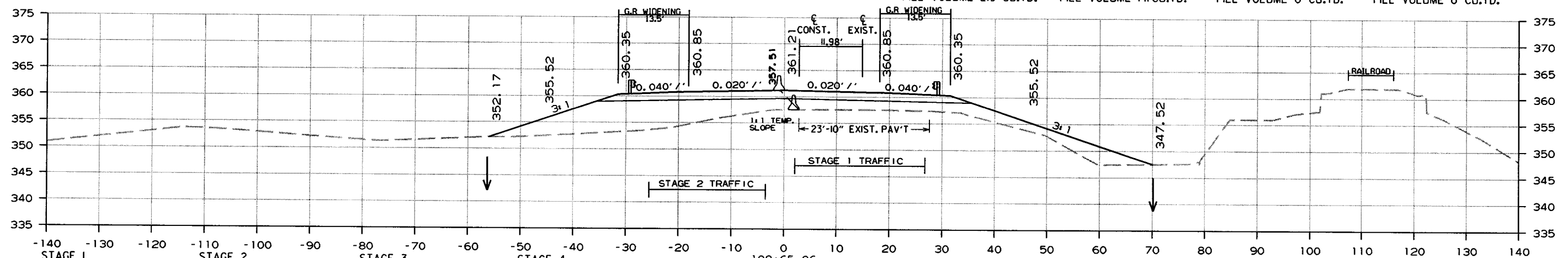


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							145	167

2 CROSS SECTIONS



STAGE	CUT AREA (SQ.FT.)	FILL AREA (SQ.FT.)	CUT VOLUME (CU.YD.)	FILL VOLUME (CU.YD.)
STAGE 1	2	122	1	219
STAGE 2	0	85	0	141
STAGE 3	0	0	0	0
STAGE 4	0	0	0	0



STAGE	CUT AREA (SQ.FT.)	FILL AREA (SQ.FT.)	CUT VOLUME (CU.YD.)	FILL VOLUME (CU.YD.)
STAGE 1	0	217	0	5
STAGE 2	0	133	0	3
STAGE 3	0	0	0	0
STAGE 4	0	0	0	0

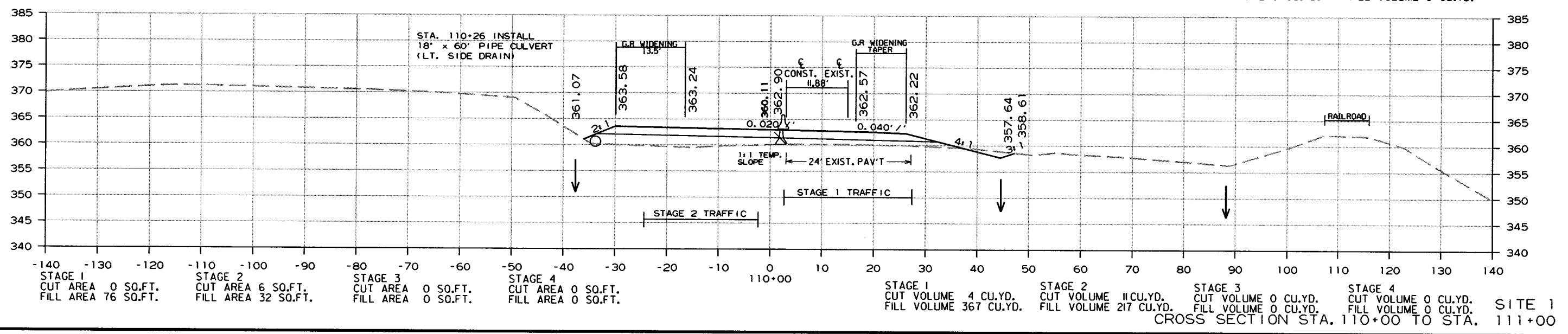
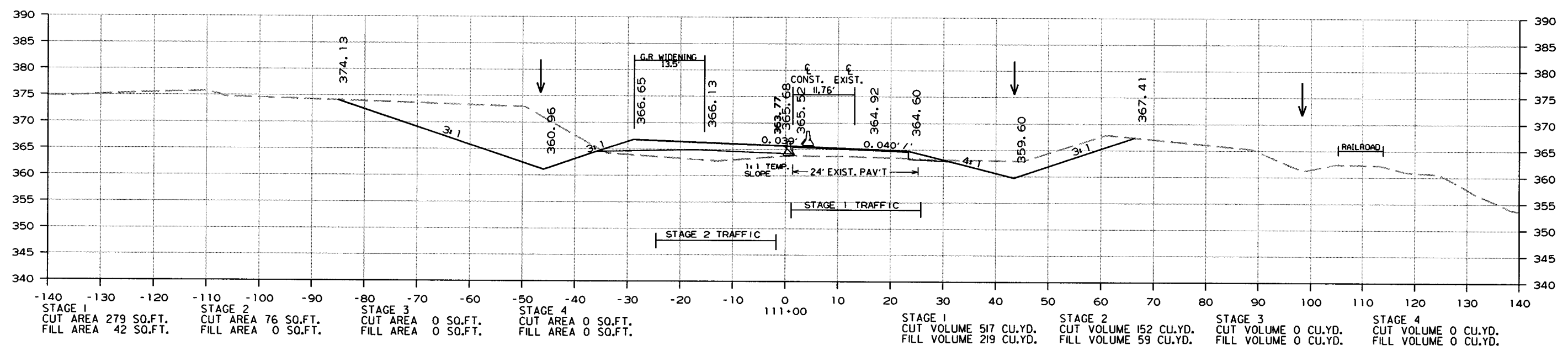
CROSS SECTION STA. 108+65.06 TO STA. 109+00

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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. 050275	146	167

2 CROSS SECTIONS



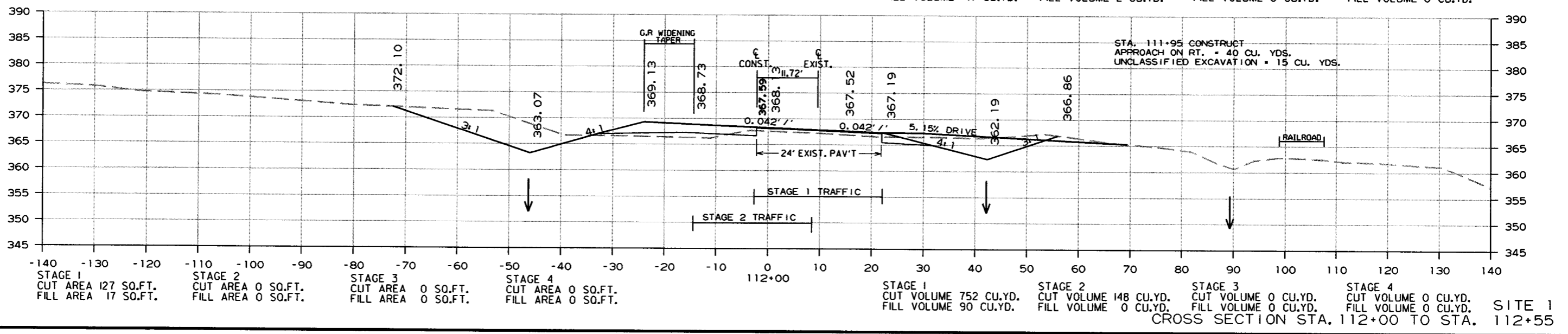
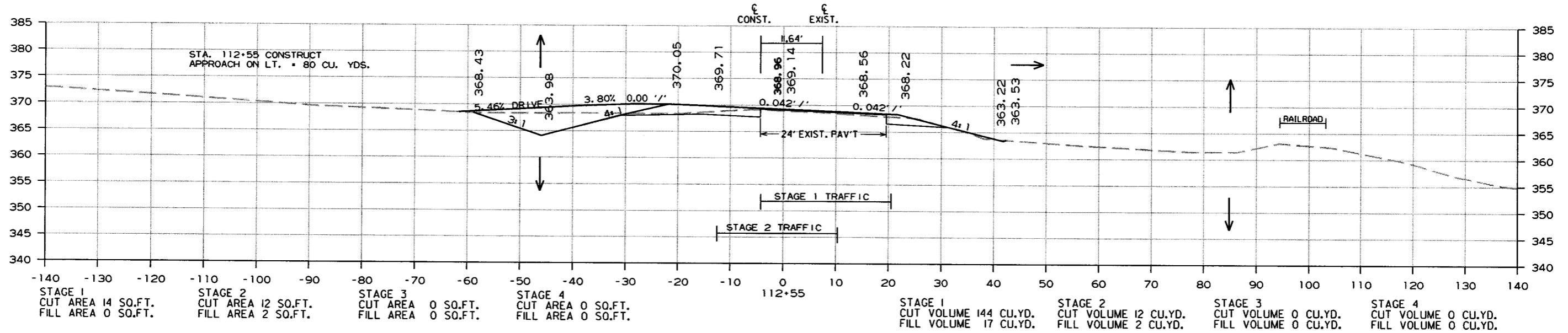
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CROSS SECTION STA. 110+00 TO STA. 111+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 050275	147	167

2 CROSS SECTIONS



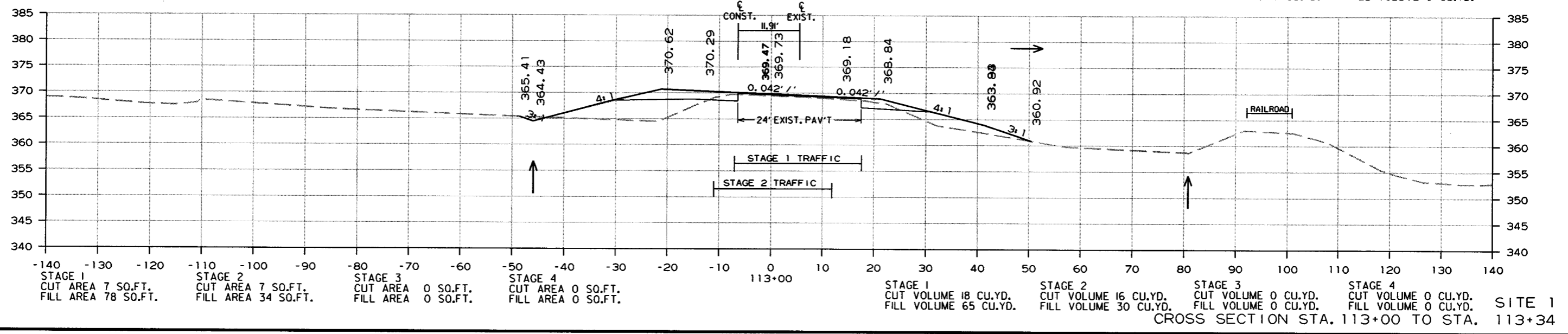
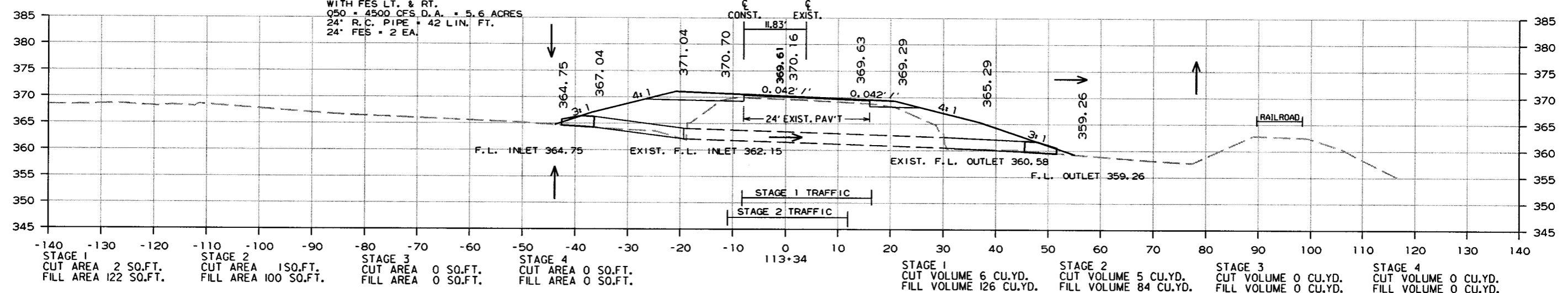
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JOB NO. 050275							148	167

2 CROSS SECTIONS

STA. 113+34 IN PLACE  
 24' X 50' R.C. PIPE CULVERT  
 WITH HDWLS LT. & RT.  
 REMOVE HDWLS LT. & RT. AND EXTEND R.C. PIPE  
 18' LT. AND 16' RT. W/ CONCRETE COLLARS  
 TO A COMPLETED LENGTH OF 84'  
 (CLASS III) (TYPE 3 BEDDING)  
 WITH FES LT. & RT.  
 Q50 = 4500 CFS D.A. = 5.6 ACRES  
 24' R.C. PIPE = 42 LIN. FT.  
 24' FES = 2 EA.



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SITE 1  
 CROSS SECTION STA. 113+00 TO STA. 113+34

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				6	ARK.			
						JOB NO. 050275	149	167

2 CROSS SECTIONS

STAGE 1  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

STAGE 2  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

STAGE 3  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

STAGE 4  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

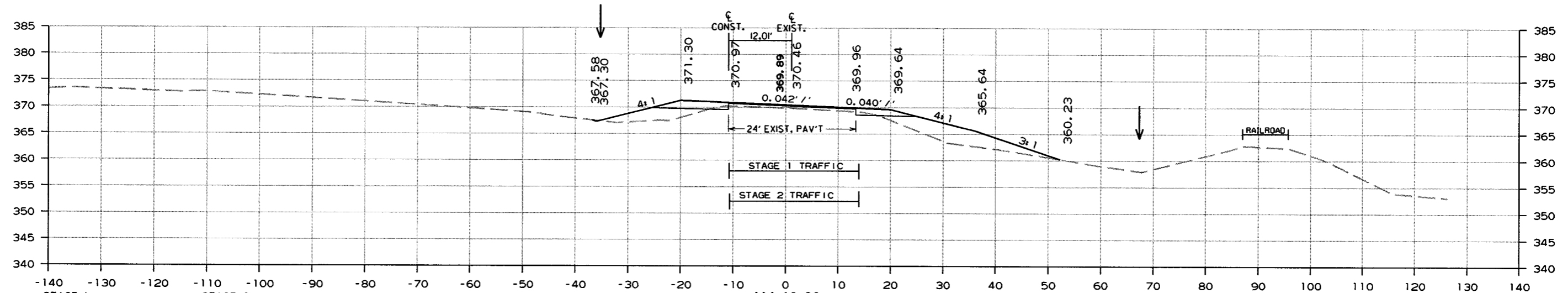
STA. 115+10.96  
END 100' TRANSITION

STAGE 1  
CUT VOLUME 3 CU.YD.  
FILL VOLUME 57 CU.YD.

STAGE 2  
CUT VOLUME 4 CU.YD.  
FILL VOLUME 128 CU.YD.

STAGE 3  
CUT VOLUME 0 CU.YD.  
FILL VOLUME 0 CU.YD.

STAGE 4  
CUT VOLUME 0 CU.YD.  
FILL VOLUME 0 CU.YD.



STAGE 1  
CUT AREA 2 SQ.FT.  
FILL AREA 31 SQ.FT.

STAGE 2  
CUT AREA 2 SQ.FT.  
FILL AREA 69 SQ.FT.

STAGE 3  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

STAGE 4  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

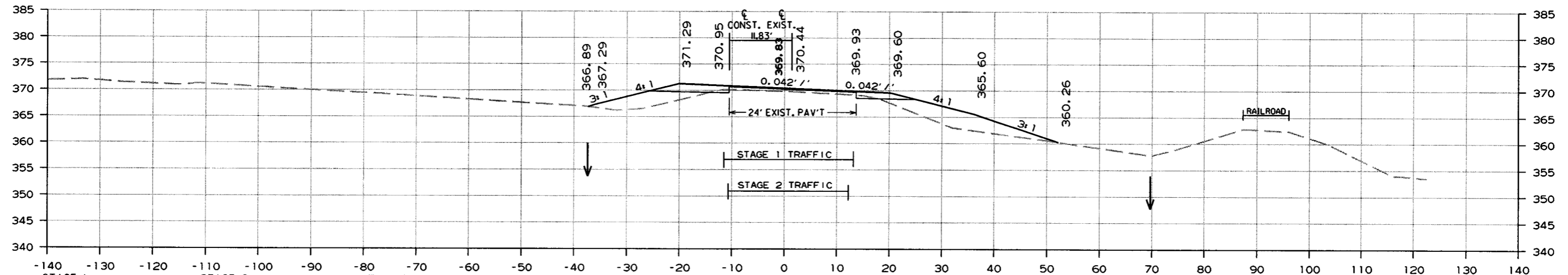
114+10.96  
END SITE 1  
BEGIN 100' TRANSITION

STAGE 1  
CUT VOLUME 1 CU.YD.  
FILL VOLUME 14 CU.YD.

STAGE 2  
CUT VOLUME 1 CU.YD.  
FILL VOLUME 28 CU.YD.

STAGE 3  
CUT VOLUME 0 CU.YD.  
FILL VOLUME 0 CU.YD.

STAGE 4  
CUT VOLUME 0 CU.YD.  
FILL VOLUME 0 CU.YD.



STAGE 1  
CUT AREA 2 SQ.FT.  
FILL AREA 40 SQ.FT.

STAGE 2  
CUT AREA 1 SQ.FT.  
FILL AREA 71 SQ.FT.

STAGE 3  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

STAGE 4  
CUT AREA 0 SQ.FT.  
FILL AREA 0 SQ.FT.

114+00

STAGE 1  
CUT VOLUME 5 CU.YD.  
FILL VOLUME 198 CU.YD.

STAGE 2  
CUT VOLUME 2 CU.YD.  
FILL VOLUME 209 CU.YD.

STAGE 3  
CUT VOLUME 0 CU.YD.  
FILL VOLUME 0 CU.YD.

STAGE 4  
CUT VOLUME 0 CU.YD.  
FILL VOLUME 0 CU.YD.

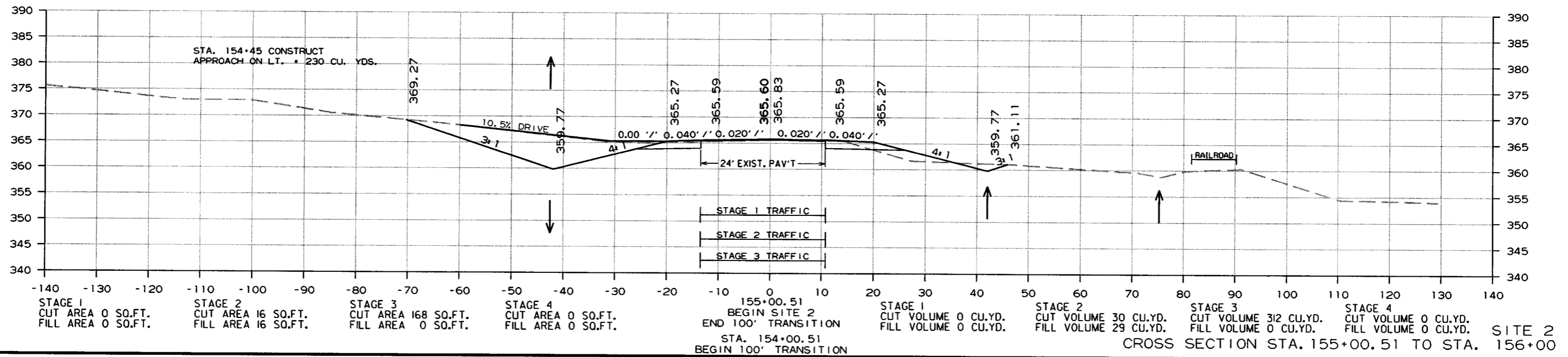
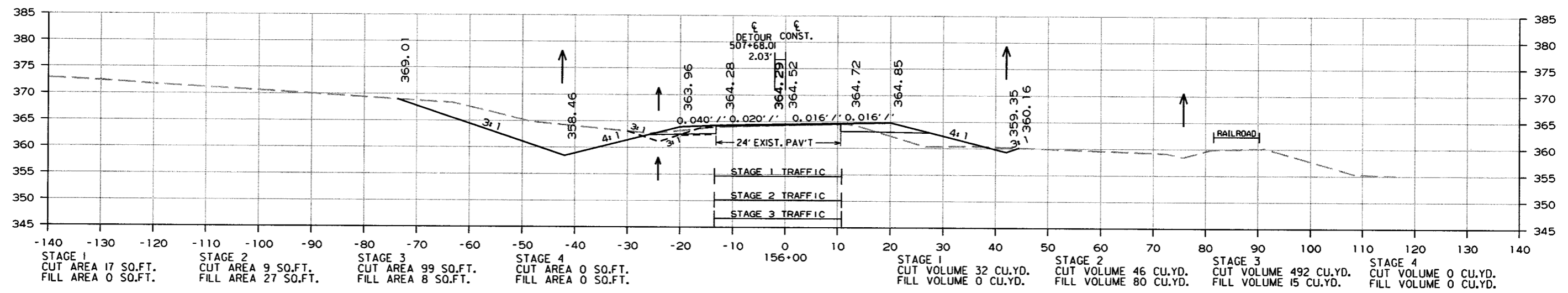
SITE 1  
CROSS SECTION STA. 114+00 TO STA. 114+10.96

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				6	ARK.			
JOB NO. 050275							150	167

2 CROSS SECTIONS

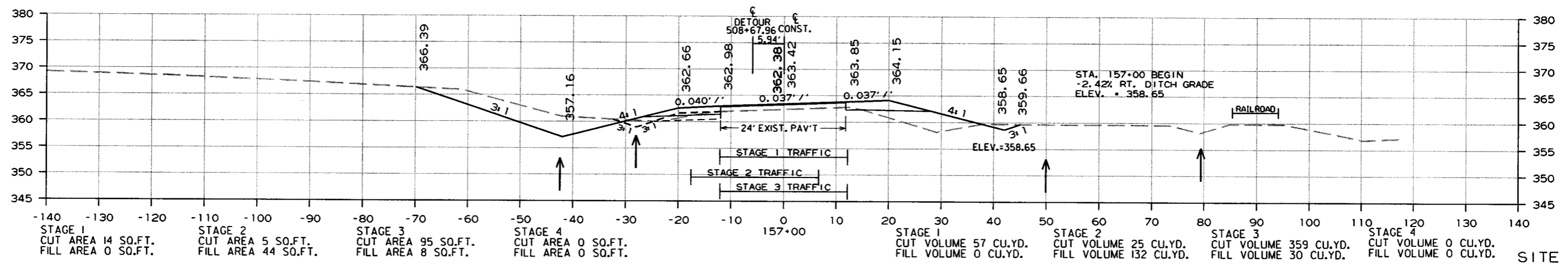
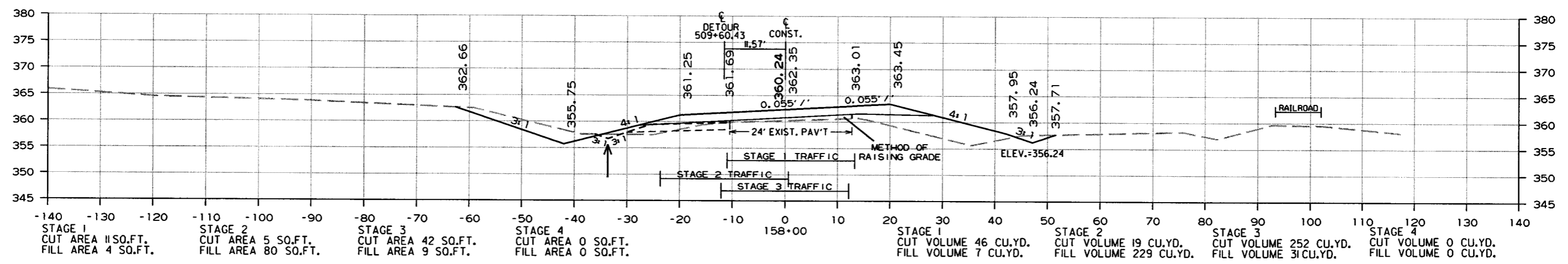
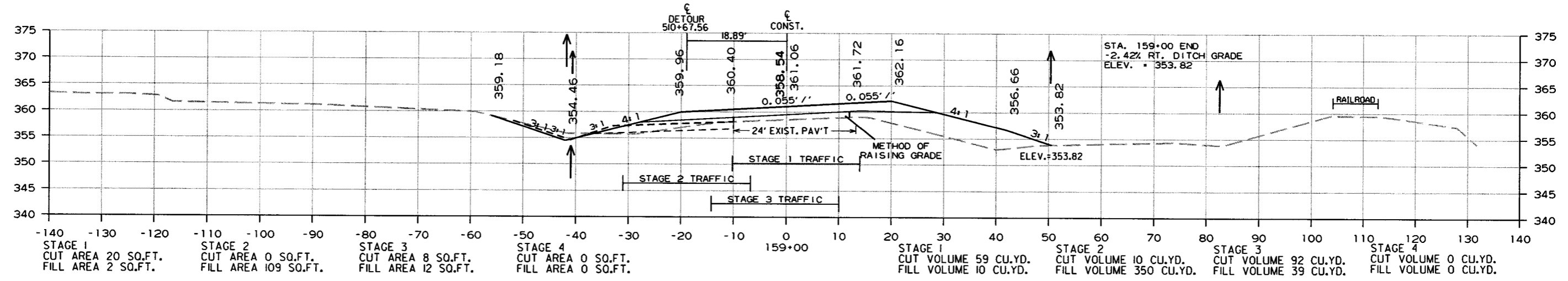


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JOB NO. 050275							151	167

2 CROSS SECTIONS

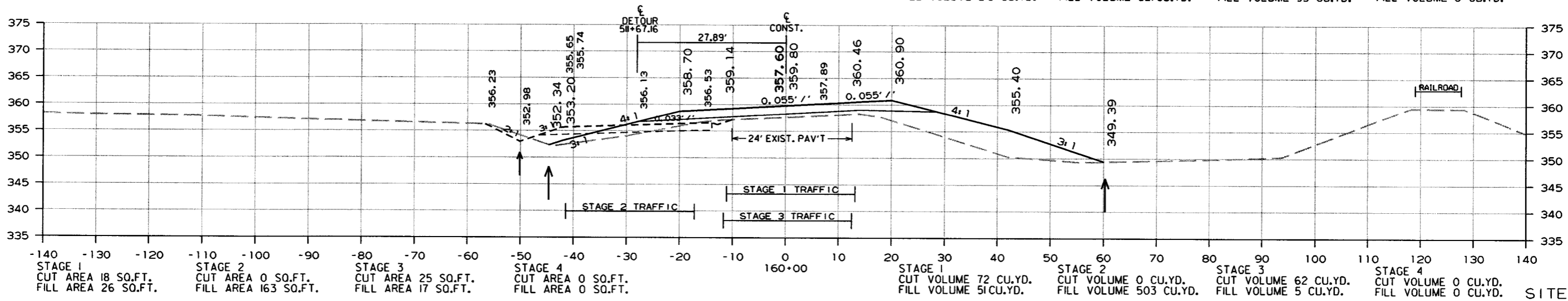
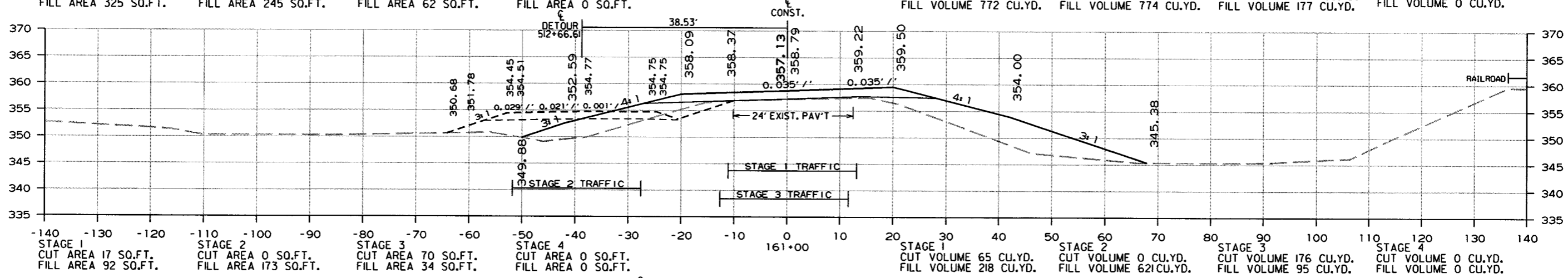
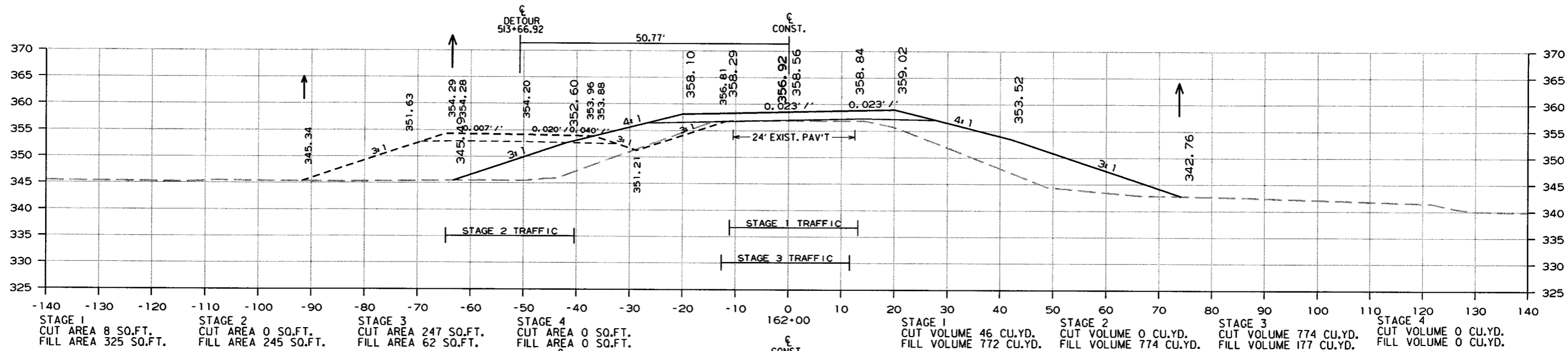


7/19/2016

R050275.DCN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							152	167

2 CROSS SECTIONS



SITE 2  
CROSS SECTION STA. 160+00 TO STA. 162+00

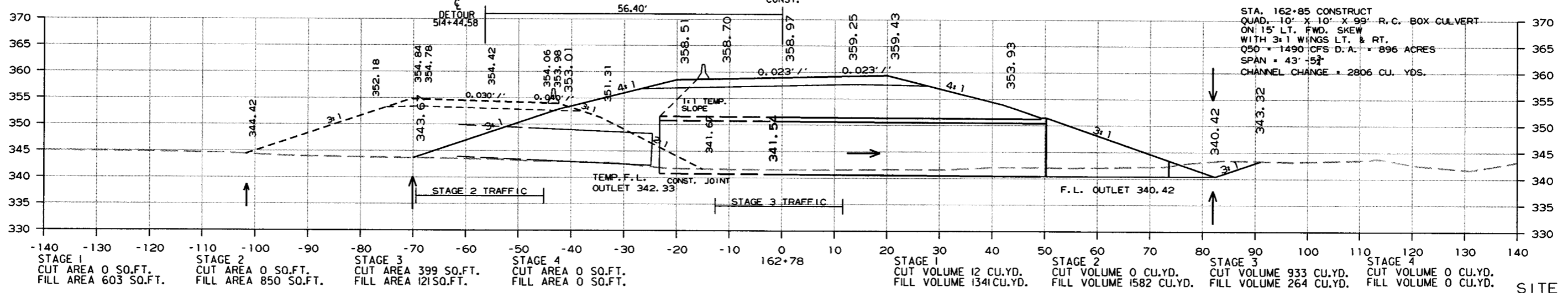
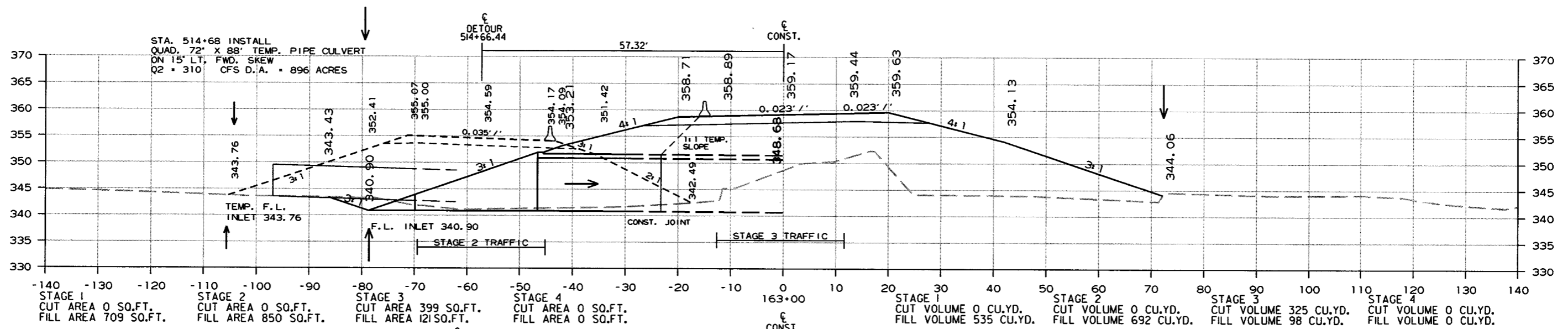
7/19/2016

R050275.DCN



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 050275							153	167

2 CROSS SECTIONS



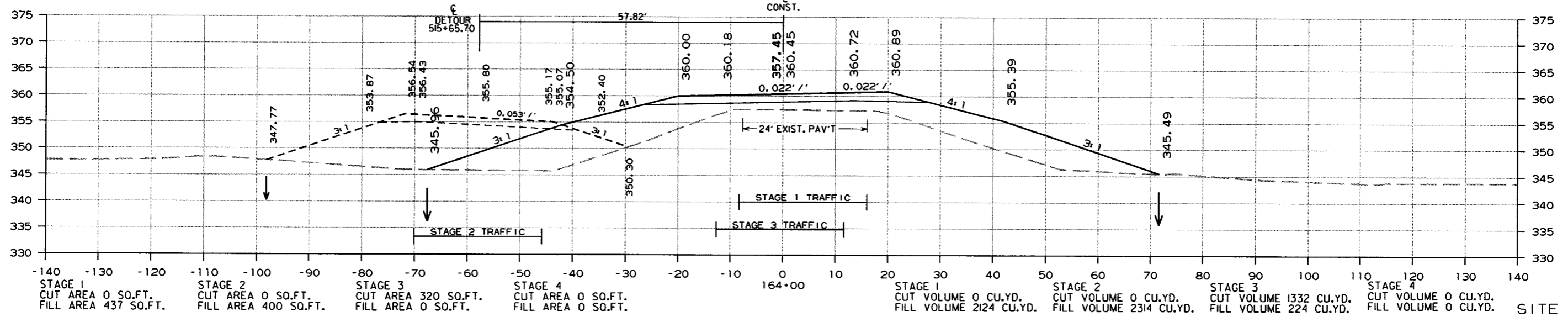
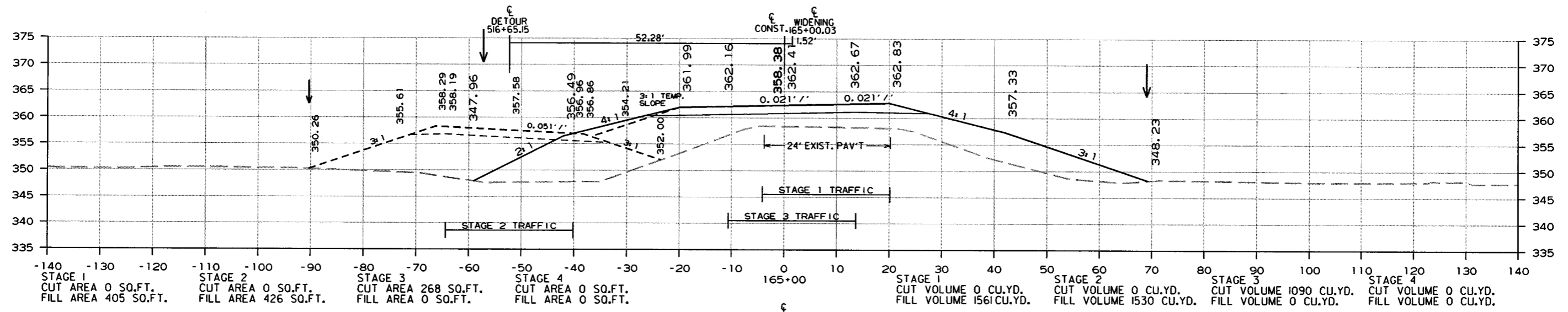
SITE 2  
CROSS SECTION STA. 162+78 TO STA. 163+00

7/19/2016

R050275.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. 050275	154	167

2 CROSS SECTIONS



SITE 2

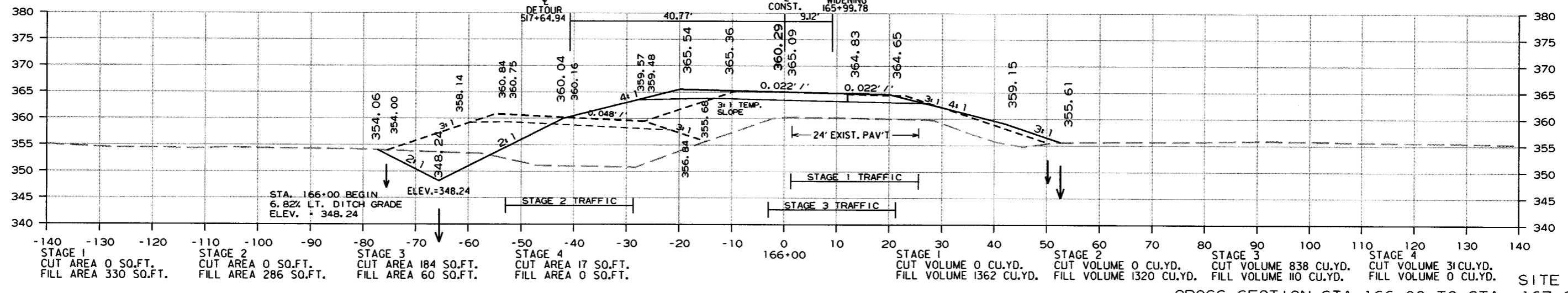
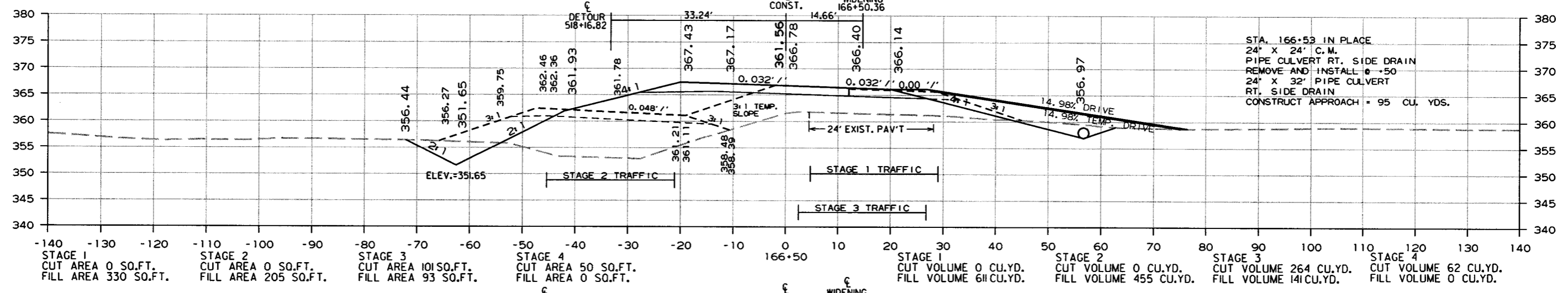
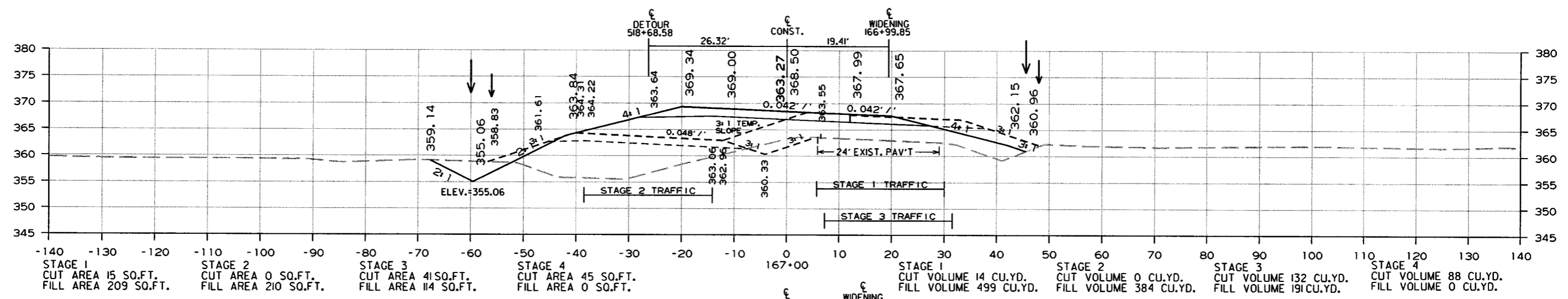
CROSS SECTION STA. 164+00 TO STA. 165+00

7/19/2016

R050275.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. 050275							155	167

2 CROSS SECTIONS

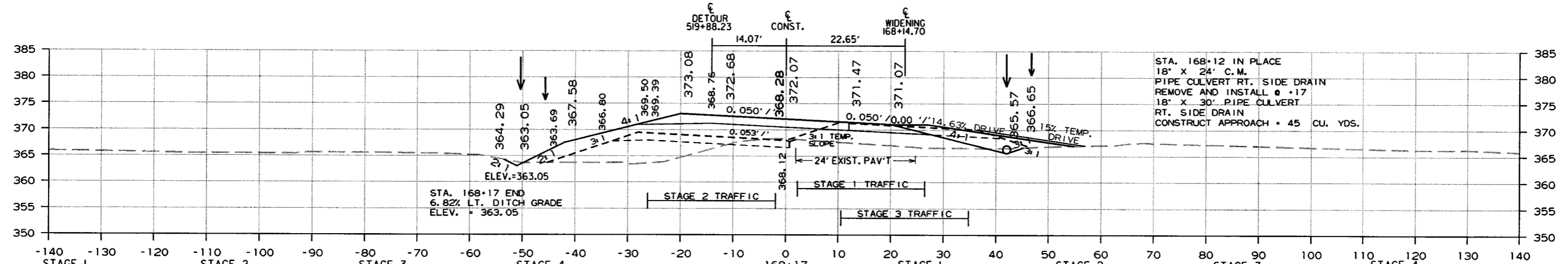


7/19/2016

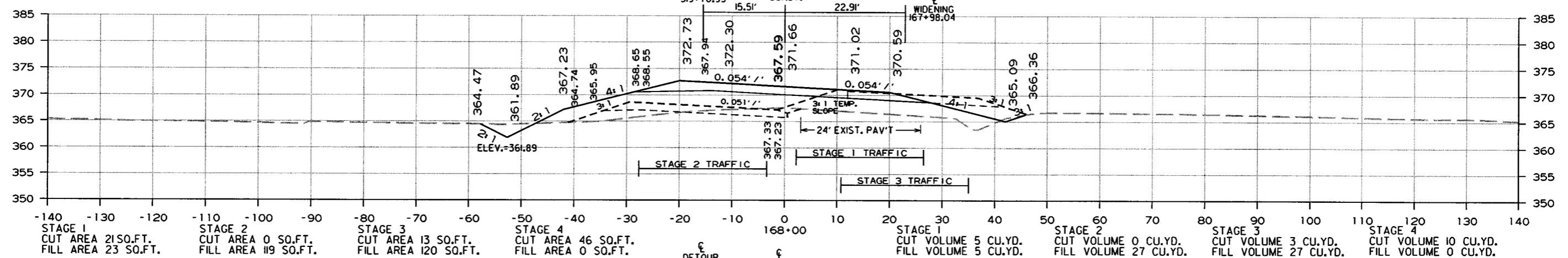
R050275.DGN

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. 050275							156	167

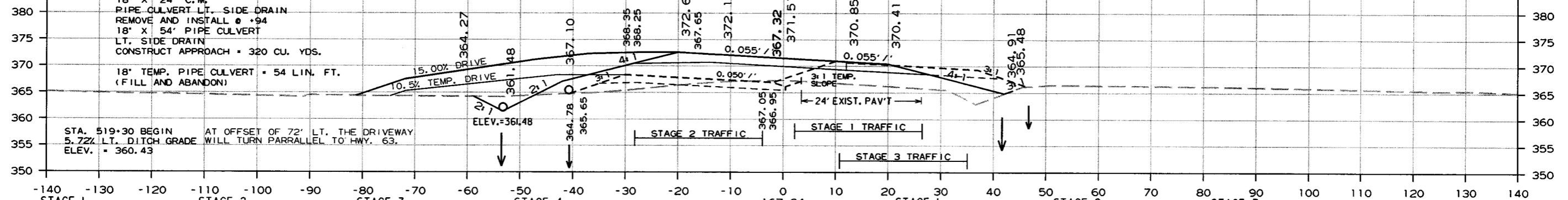
2 CROSS SECTIONS



STAGE	CUT AREA (SQ.FT.)	FILL AREA (SQ.FT.)	CUT VOLUME (CU.YD.)	FILL VOLUME (CU.YD.)
STAGE 1	12	92	11	36
STAGE 2	0	95	0	67
STAGE 3	15	113	5	73
STAGE 4	44	0	28	0



STAGE	CUT AREA (SQ.FT.)	FILL AREA (SQ.FT.)	CUT VOLUME (CU.YD.)	FILL VOLUME (CU.YD.)
STAGE 1	21	23	5	5
STAGE 2	0	119	0	27
STAGE 3	13	120	3	27
STAGE 4	46	0	10	0



STAGE	CUT AREA (SQ.FT.)	FILL AREA (SQ.FT.)	CUT VOLUME (CU.YD.)	FILL VOLUME (CU.YD.)
STAGE 1	23	20	67	399
STAGE 2	0	128	0	587
STAGE 3	16	124	99	414
STAGE 4	46	0	159	0

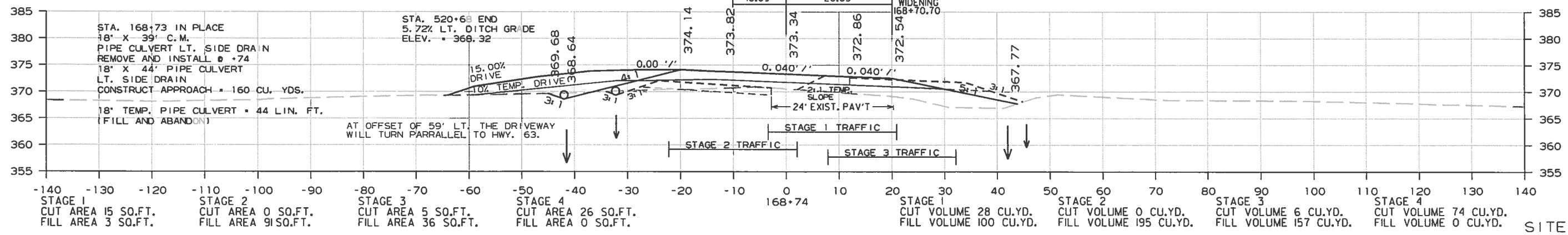
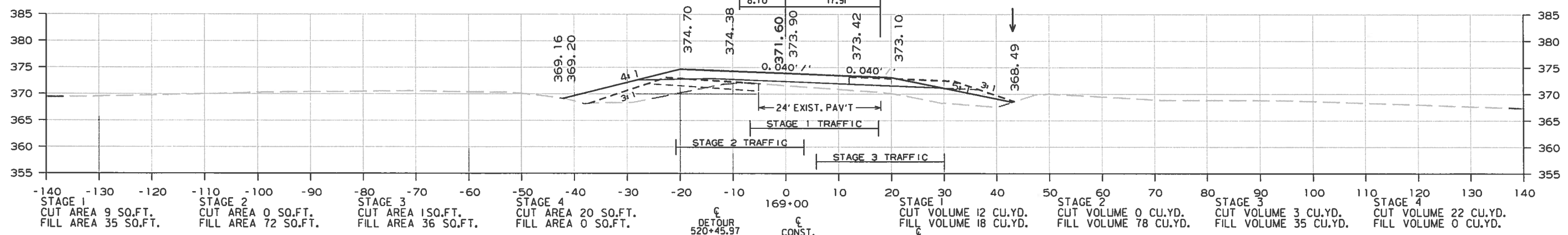
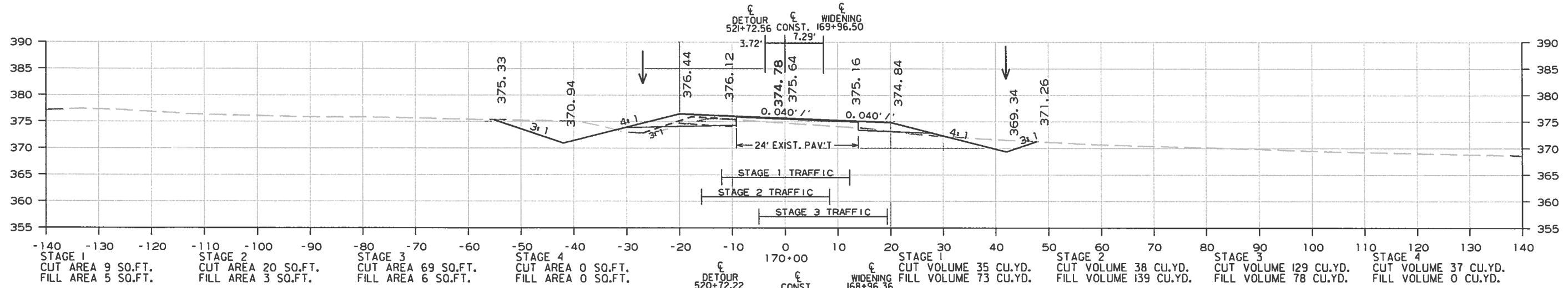
SITE 2  
CROSS SECTION STA. 167+94 TO STA. 168+17

7/19/2016

R050275.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/25/76				6	ARK.			
				JOB NO.	050275		157	167

2 CROSS SECTIONS

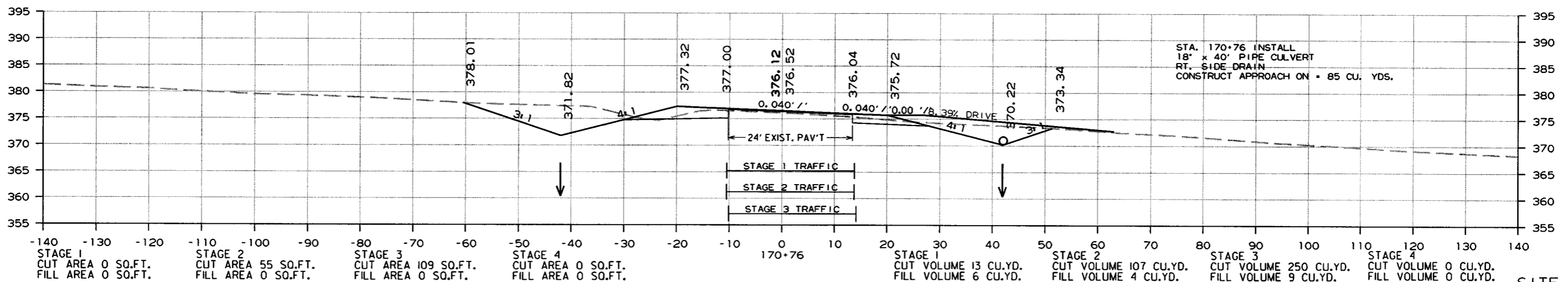
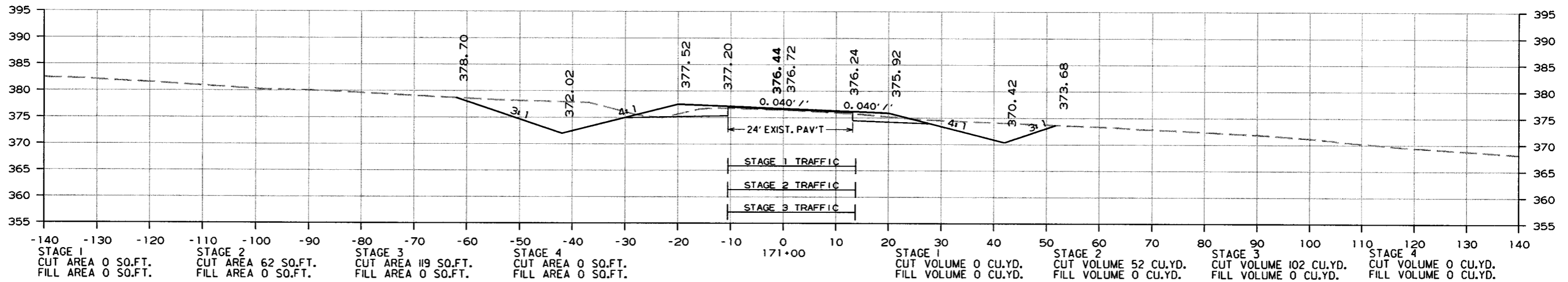
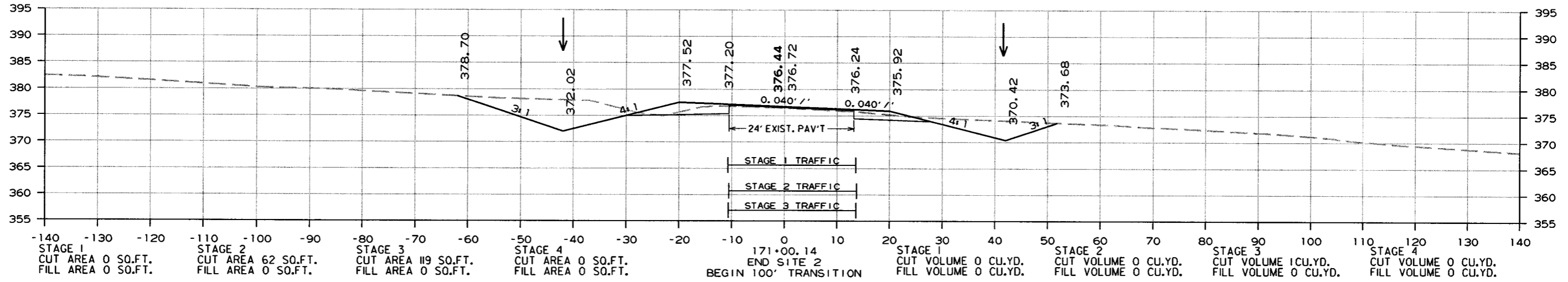


7/19/2016  
R050275.DGN

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. 050275							158	167

2 CROSS SECTIONS

STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 2 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 3 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STA. 172+00.14 END 100' TRANSITION	STAGE 1 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 2 CUT VOLUME 116 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 3 CUT VOLUME 221 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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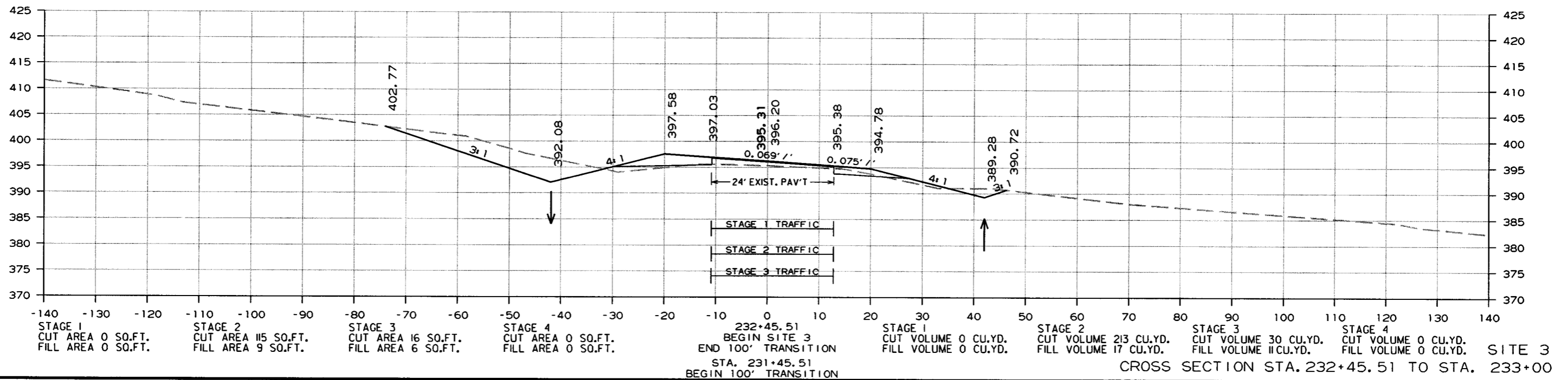
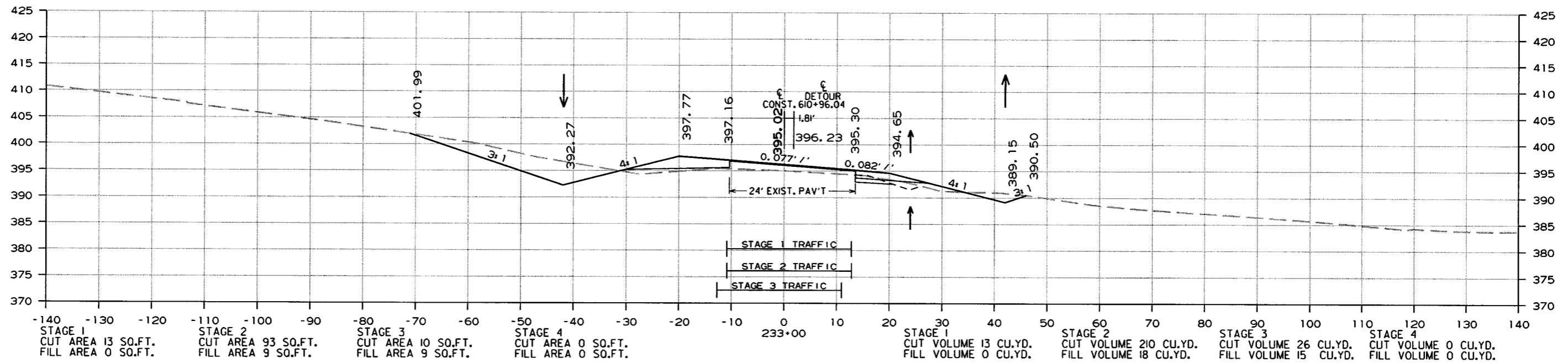
SITE 2  
CROSS SECTION STA. 170+76 TO STA. 171+00.14

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 050275	159	167

2 CROSS SECTIONS

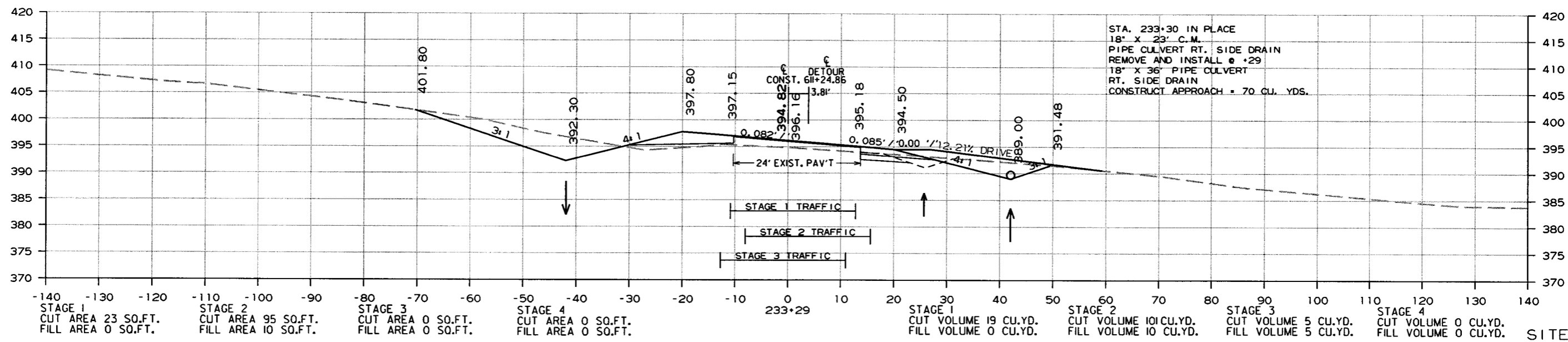
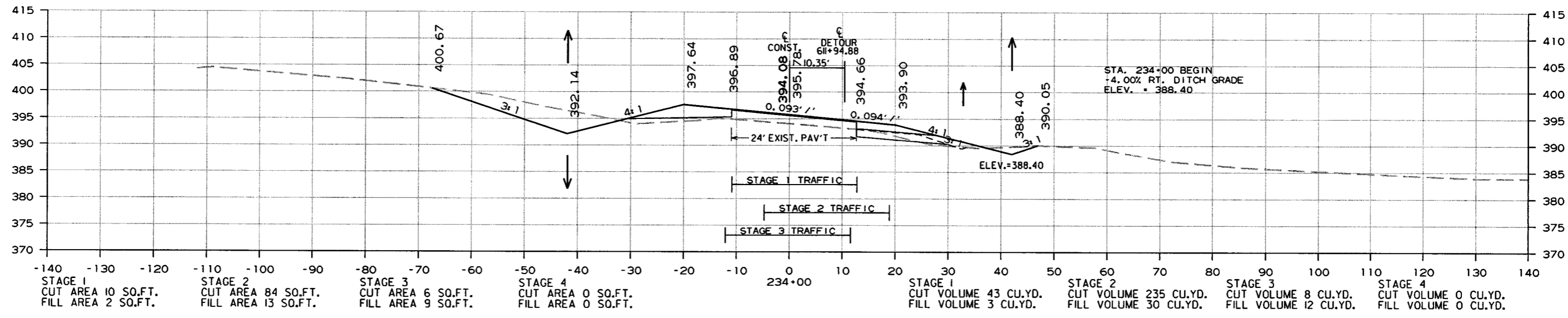


7/19/2016

R050275.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. 050275	160	167

2 CROSS SECTIONS



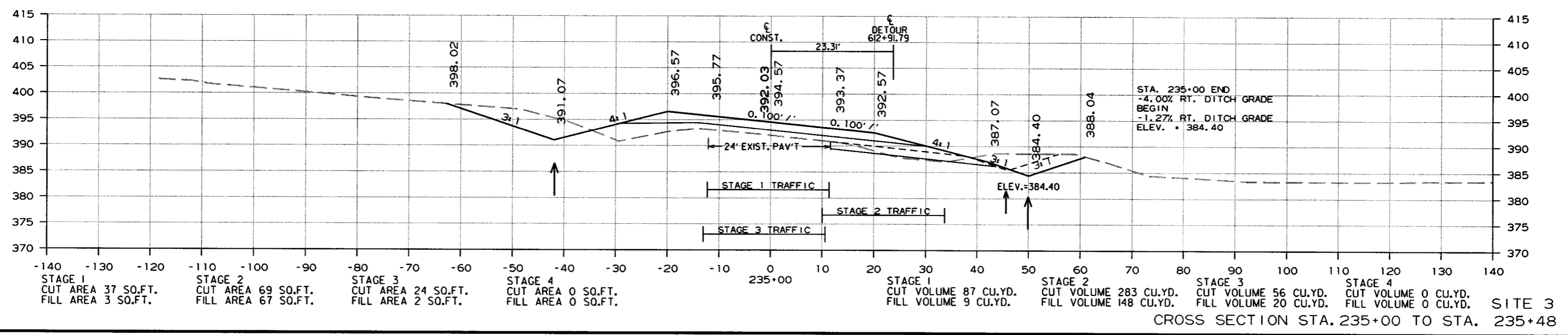
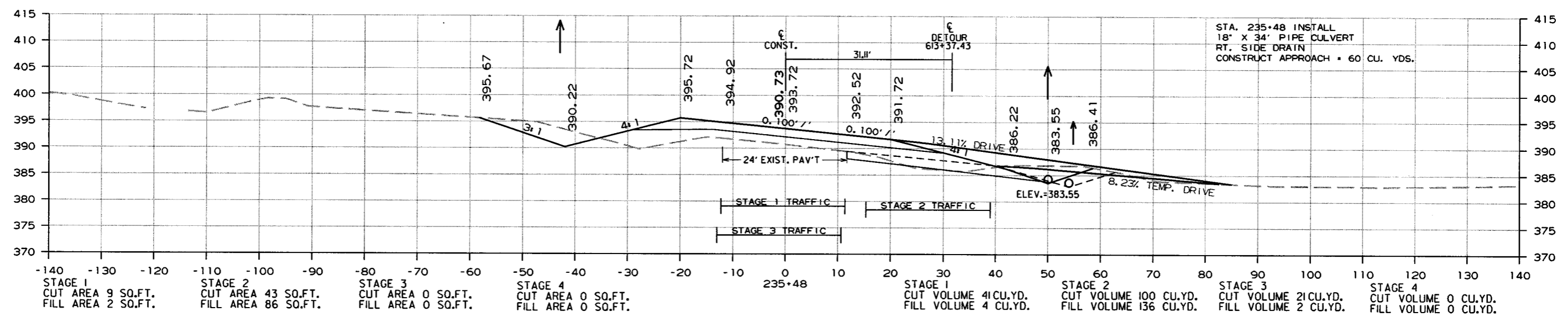
SITE 3  
CROSS SECTION STA. 233+29 TO STA. 234+00

7/19/2016  
R050275.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. 050275							161	167

2 CROSS SECTIONS

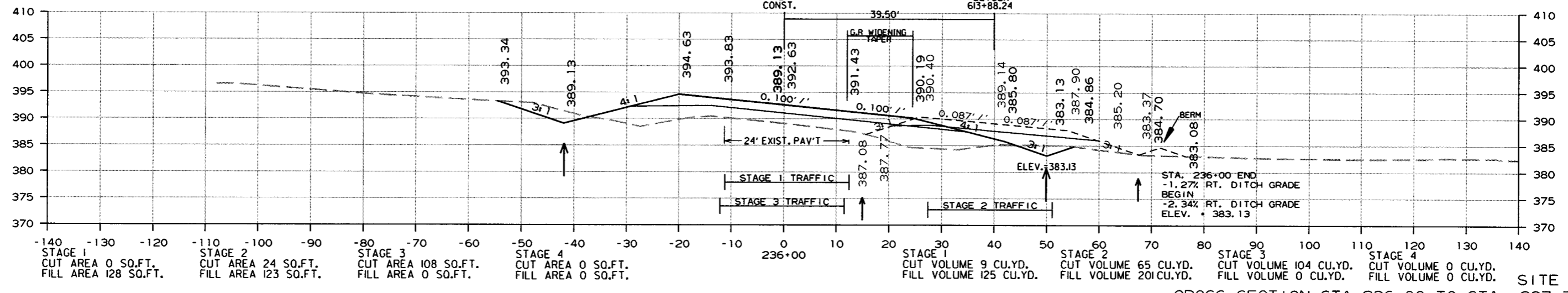
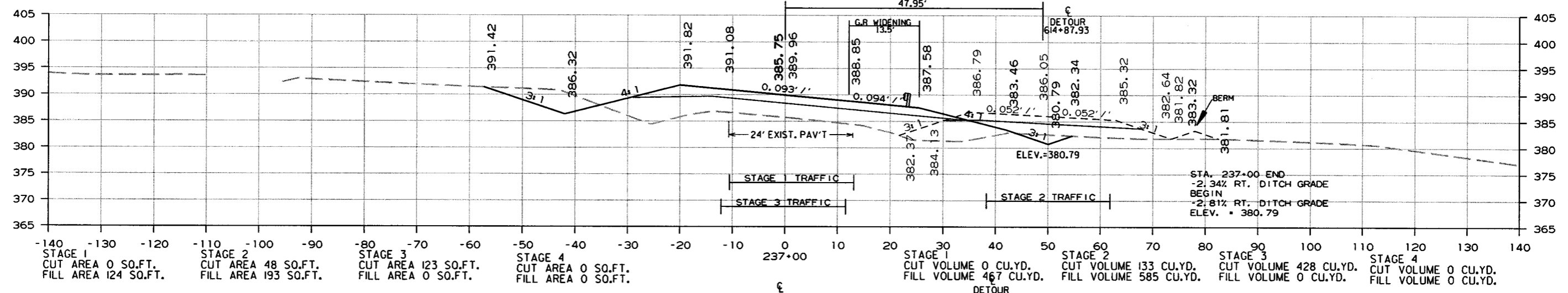
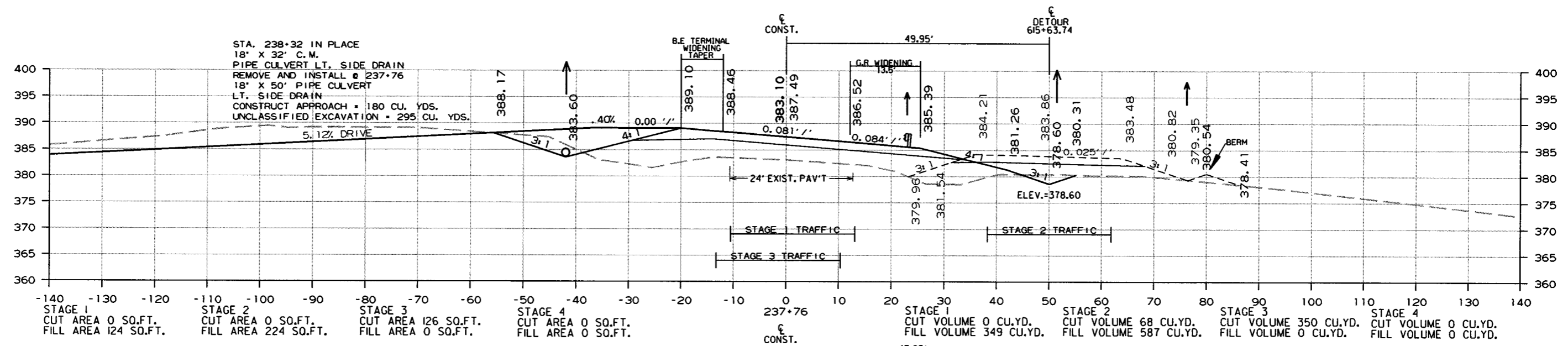


7/19/2016

R050275.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. 050275						162	167	

2 CROSS SECTIONS



7/19/2016

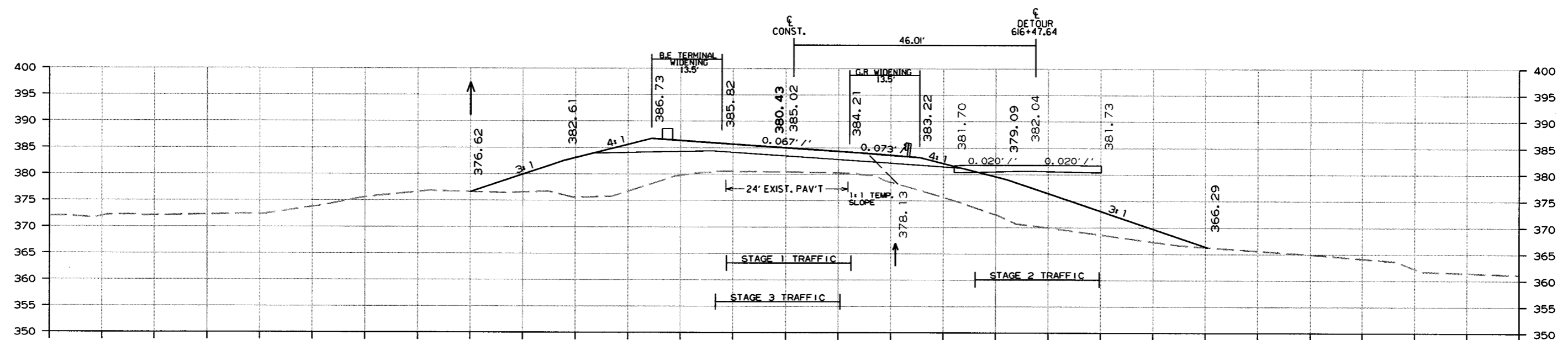
R050275.DGN

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. 050275							163	167

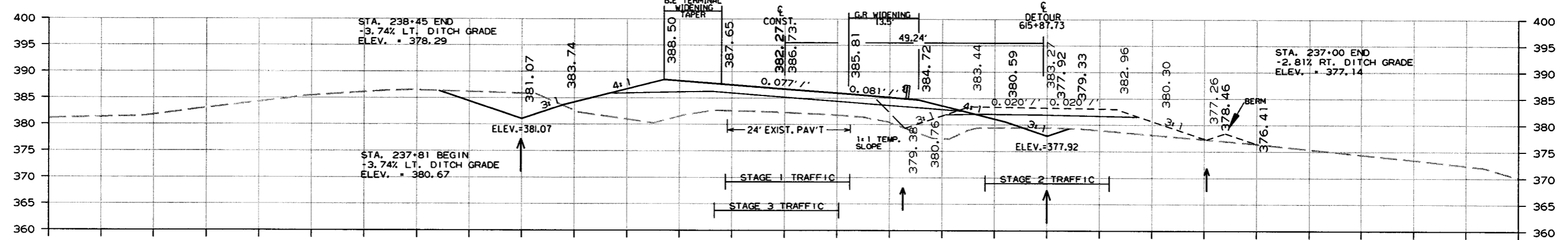
2 CROSS SECTIONS

STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 2 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 3 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	239+65.66 TOE OF SLOPE	STAGE 1 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 2 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 3 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 2 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 3 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	238+90.93 TOE OF SLOPE	STAGE 1 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 2 CUT VOLUME 0 CU.YD. FILL VOLUME 207 CU.YD.	STAGE 3 CUT VOLUME 0 CU.YD. FILL VOLUME 168 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 2 CUT AREA 0 SQ.FT. FILL AREA 361 SQ.FT.	STAGE 3 CUT AREA 0 SQ.FT. FILL AREA 293 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	238+59.94 BRIDGE END	STAGE 1 CUT VOLUME 0 CU.YD. FILL VOLUME 166 CU.YD.	STAGE 2 CUT VOLUME 65 CU.YD. FILL VOLUME 676 CU.YD.	STAGE 3 CUT VOLUME 162 CU.YD. FILL VOLUME 325 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 150 SQ.FT.	STAGE 2 CUT AREA 59 SQ.FT. FILL AREA 248 SQ.FT.	STAGE 3 CUT AREA 146 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	238+00	STAGE 1 CUT VOLUME 0 CU.YD. FILL VOLUME 122 CU.YD.	STAGE 2 CUT VOLUME 26 CU.YD. FILL VOLUME 210 CU.YD.	STAGE 3 CUT VOLUME 121 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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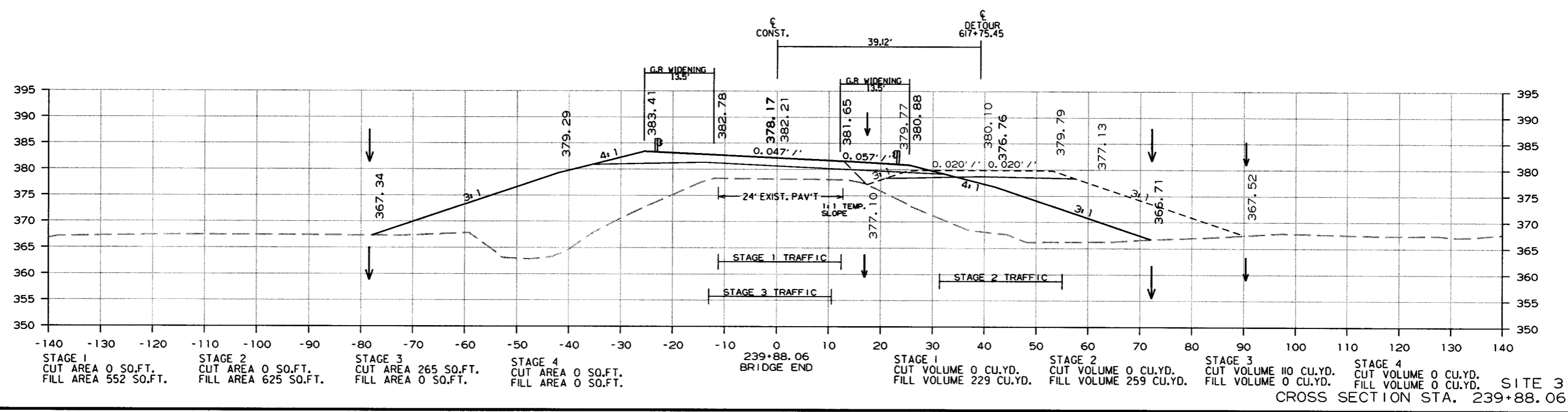
SITE 3  
CROSS SECTION STA. 238+00 TO STA. 238+59.94

7/19/2016

R050275.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.	050275		164	167

2 CROSS SECTIONS



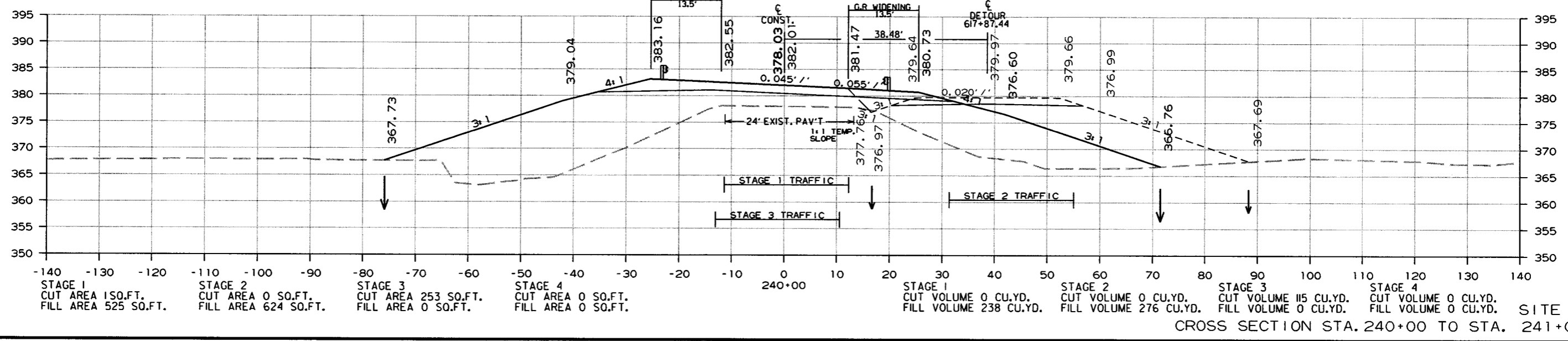
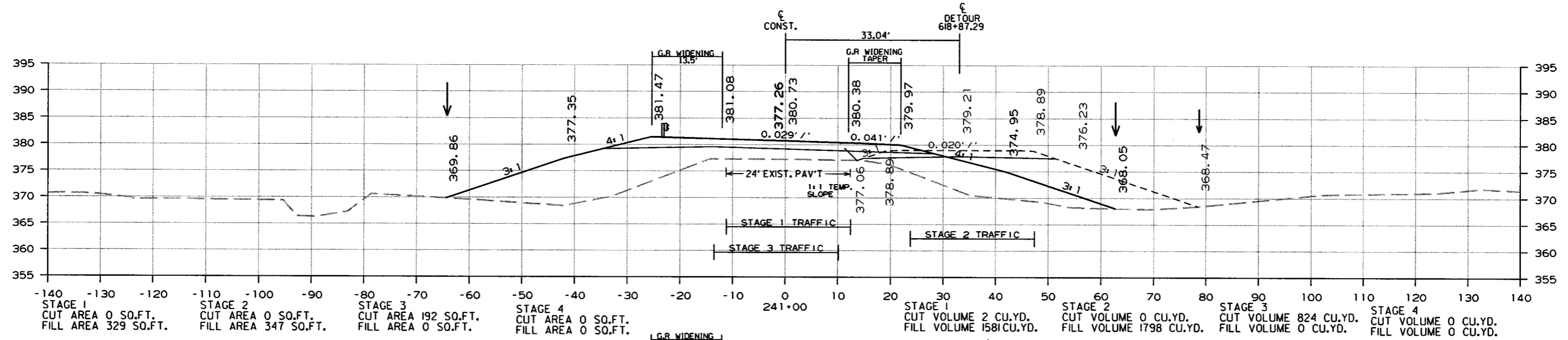
7/19/2016

R050275.DGN

SITE 3  
CROSS SECTION STA. 239+88.06

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 050275	165	167

2 CROSS SECTIONS



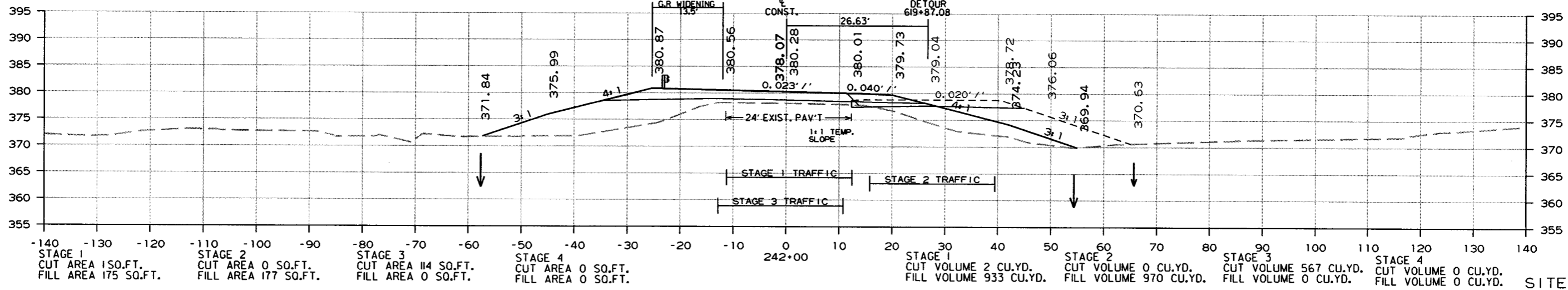
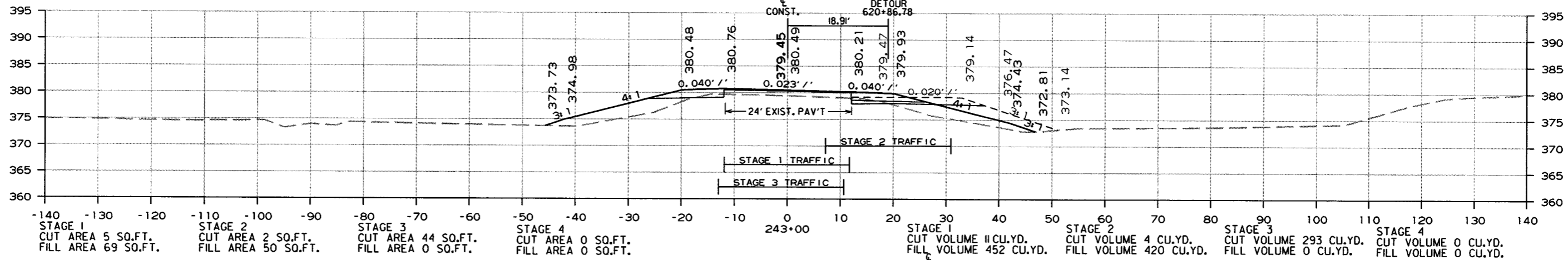
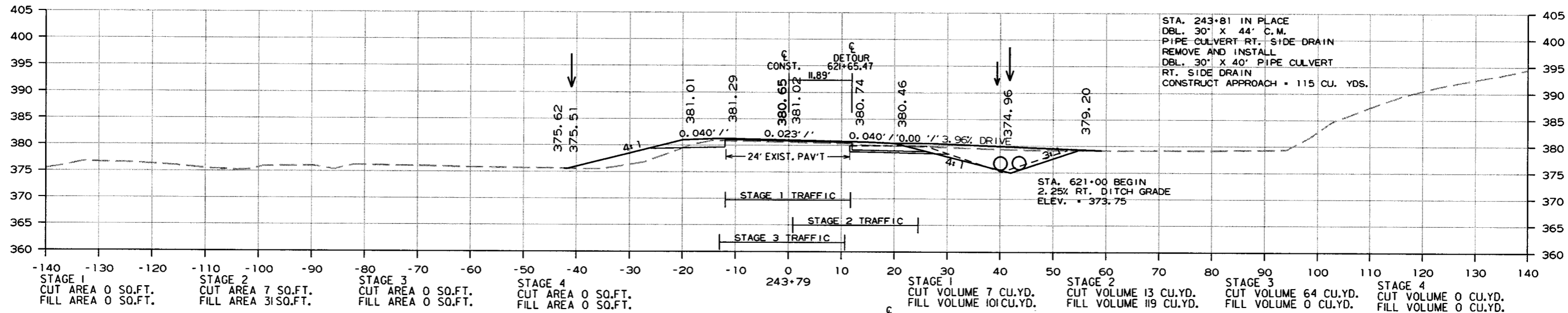
7/19/2016

R050275.DGN

SITE 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050275		166	167

2 CROSS SECTIONS

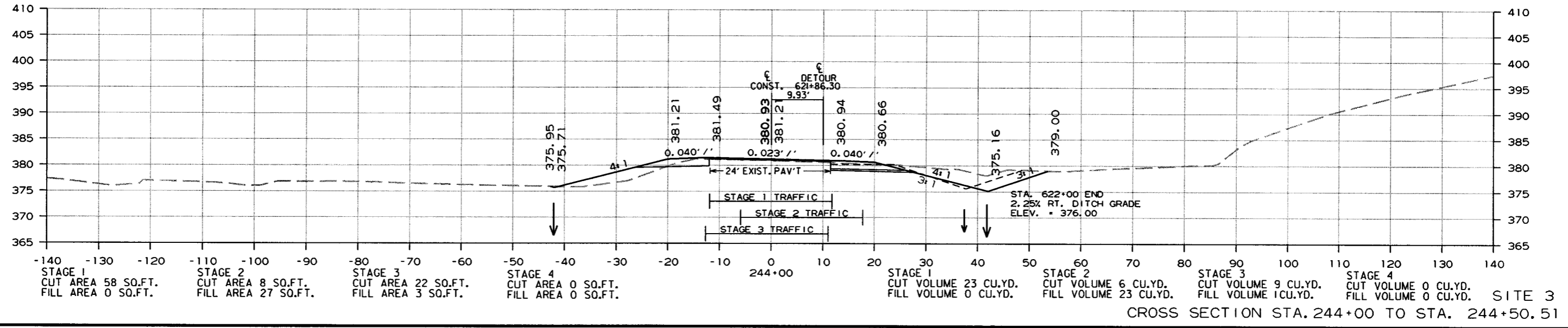
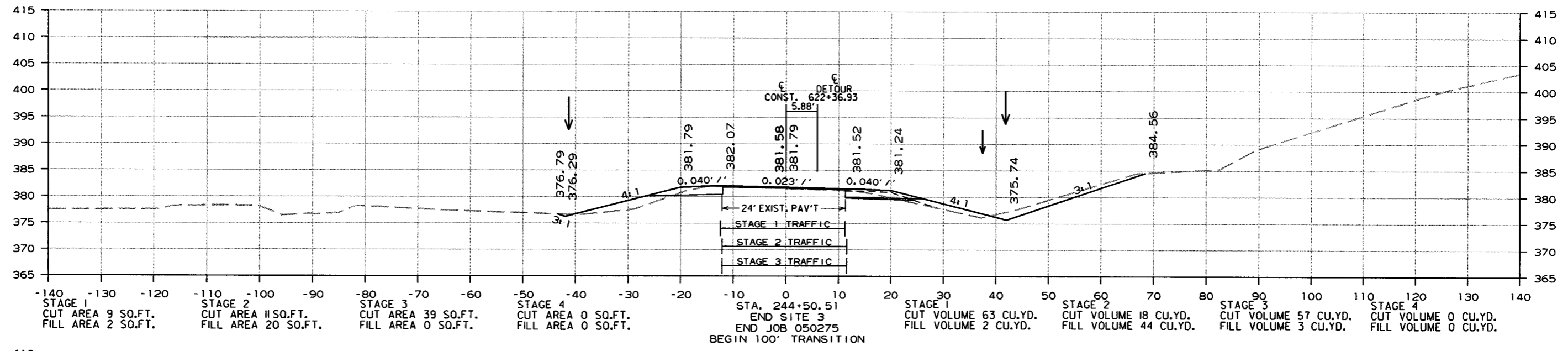


7/19/2016  
 R050275.DGN

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.						050275	167	167

② CROSS SECTIONS

STAGE 1 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 2 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 3 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STAGE 4 CUT AREA 0 SQ.FT. FILL AREA 0 SQ.FT.	STA. 245+50.51 END 100' TRANSITION	STAGE 1 CUT VOLUME 17 CU.YD. FILL VOLUME 4 CU.YD.	STAGE 2 CUT VOLUME 20 CU.YD. FILL VOLUME 37 CU.YD.	STAGE 3 CUT VOLUME 72 CU.YD. FILL VOLUME 0 CU.YD.	STAGE 4 CUT VOLUME 0 CU.YD. FILL VOLUME 0 CU.YD.
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7/19/2016  
R050275.DGN

CROSS SECTION STA. 244+00 TO STA. 244+50.51