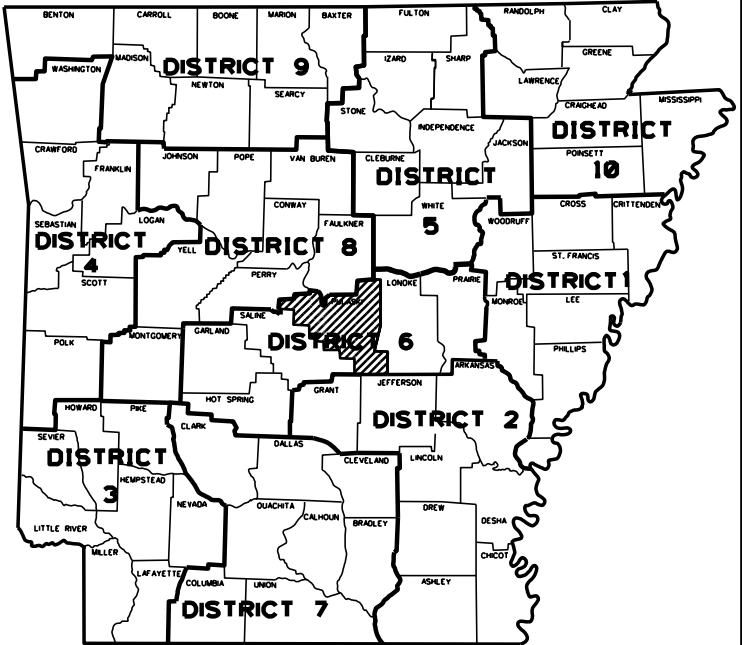


ARKANSAS DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION PLANS FOR STATE HIGHWAY

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.		061472	1	101
				2 HWY 161 STR. & APPRS. (PULASKI & LONOKE COS.) (S)				

HWY 161 STR. & APPRS.  
(PULASKI & LONOKE COS.) (S)

(PULASKI & LONOKE COS.)  
ROUTE 161  
JOB 061472  
NOT TO SCALE  
R10W



ARKANSAS HIGHWAY DIST. 6

DESIGN TRAFFIC DATA

DESIGN YEAR	2042
2022 ADT	1500
2042 ADT	1700
2042 DHV	180
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	5%
DESIGN SPEED	60 MPH

VICINITY MAP

BRIDGE CONSTRUCTION DATA

- ① STA. 22+70.54 BRIDGE END  
BRIDGE NO. 07386  
144'-0" COMPOSITE W-BEAM UNIT  
40' CLEAR ROADWAY  
146'-3-5/8" BRIDGE LENGTH  
STA. 24+16.84 BRIDGE END

HWY. 161 PROJECT COORDINATES

	BEGIN	MID-POINT	END
LATITUDE	N 34° 40' 44.20"	N 34° 40' 50.63"	N 34° 40' 57.07"
LONGITUDE	W 92° 05' 53.24"	W 92° 05' 52.10"	W 92° 05' 50.99"
STATION	15+75.00	22+32.50	28+90.00

JOB 061472

GROSS LENGTH OF PROJECT	1315.00	FT	OR	0.249	MILES
NET LENGTH OF ROADWAY	1168.70	FT	OR	0.221	MILES
NET LENGTH OF BRIDGE	146.30	FT	OR	0.028	MILES
NET LENGTH OF PROJECT	1315.00	FT	OR	0.249	MILES



THIS PROJECT WAS DESIGNED BY THE  
MEMPHIS DISTRICT CORPS OF ENGINEERS.  
THE INITIALS OR SIGNATURES AND REGIS-  
TRATION DESIGNATIONS OF INDIVIDUALS  
APPEAR ON THESE PROJECT DOCUMENTS  
WITHIN THE SCOPE OF THEIR EMPLOY-  
MENT AS REQUIRED BY ER 1110-1-8152.  
SIGNATURES INDICATE OFFICIAL RECOM-  
MENDATION OF ALL DRAWINGS IN THIS SET.

APPROVED BY:

Elizabeth M. Burks 7/25/22  
CHIEF ENGR. CONST.

BM161BRIDGE\_002  
7/7/2022

INDEX OF SHEETS				
SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.	DATE
1	TITLE SHEET			
2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3 - 5	TYPICAL SECTIONS OF IMPROVEMENT			
6 - 7	SPECIAL DETAILS			
8 - 10	TEMPORARY EROSION CONTROL DETAILS			
11 - 14	MAINTENANCE OF TRAFFIC			
15	PERMANENT PAVEMENT MARKING DETAILS			
16 - 18	QUANTITIES			
19	SCHEDULE OF BRIDGE QUANTITIES	07386	58587	
20	SUMMARY OF QUANTITIES AND REVISIONS			
21 - 23	SURVEY CONTROL DETAILS			
24	PLAN AND PROFILE SHEETS - HWY 161			
25 - 26	PLAN AND PROFILE SHEETS - DETOUR RD			
27	PLAN AND PROFILE SHEETS - CANAL 1000			
28 - 29	PLAN AND PROFILE SHEETS - NORTH DITCH			
30	LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 1 of 3)	07386	58588	
31	LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 2 of 3)	07386	58589	
32	LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 3 of 3)	07386	58590	
33	DETAILS OF END BENTS (SHEET 1 of 2)	07386	58591	
34	DETAILS OF END BENTS (SHEET 2 of 2)	07386	58592	
35	DETAILS OF INTERMEDIATE BENTS (SHEET 1 of 2)	07386	58593	
36	DETAILS OF INTERMEDIATE BENTS (SHEET 2 of 2)	07386	58594	
37	ELASTOMERIC BEARINGS DETAILS	07386	58595	
38	DETAILS OF 144'-0" CONTINUOUS W-BEAM UNIT (SHEET 1 of 6)	07386	58596	
39	DETAILS OF 144'-0" CONTINUOUS W-BEAM UNIT (SHEET 2 of 6)	07386	58597	
40	DETAILS OF 144'-0" CONTINUOUS W-BEAM UNIT (SHEET 3 of 6)	07386	58598	
41	DETAILS OF 144'-0" CONTINUOUS W-BEAM UNIT (SHEET 4 of 6)	07386	58599	
42	DETAILS OF 144'-0" CONTINUOUS W-BEAM UNIT (SHEET 5 of 6)	07386	58600	
43	DETAILS OF 144'-0" CONTINUOUS W-BEAM UNIT (SHEET 6 of 6)	07386	58601	
44	DETAIL OF TYPE SPECIAL APPROACH GUTTERS	07386	58602	
45 - 75	NOT USED			
76 - 101	CROSS SECTIONS			

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

TABLE OF STANDARD DRAWINGS

TITLE	BRIDGE NO.	DRWG.NO.	DATE
STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		55000	2-27-14
STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES		55001	2-27-14
STANDARD DETAILS PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS		55005	3-24-16
STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATES		55010	5-11-21
DETAILS FOR CONCRETE FILLED STELL SHELL PILES AND PILE ENCASEMENTS		55021	3-24-16
STANDARD DETAILS FOR TYPE C2 PPROACH SLAB		55040C2	2-27-14
CONCRETE DITCH PAVING		CDP-1	12-8-16
DETAILS OF DRIVEWAYS & STREET TURNOUTS		DR-2	5-19-22
FLARED END SECTION		FES-1	10-18-96
FLARED END SECTION		FES-2	10-18-96
GUARDRAIL DETAILS		GR-6	05-19-22
GUARDRAIL DETAILS		GR-8	11-07-19
GUARDRAIL DETAILS		GR-9	11-07-19
GUARDRAIL DETAILS		GR-10	11-07-19
GUARDRAIL DETAILS		GR-11	11-07-19
GUARDRAIL DETAILS		GR-12	5-14-20
CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	2-27-14
METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	2-27-14
PAVEMENT MARKING DETAILS		PM-1	6-1-17
DETAILS OF PIPE UNDERDRAIN		PU-1	12-8-16
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	11-7-19
STANDARD HIGHWAY SIGNS & SUPPORTS ASSEMBLIES		SHS-1	9-12-13
U-CHANNEL POST ASSEMBLIES		SHS-2	7-25-19
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	11-7-19
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	11-7-19
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	8-12-21
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-4	11-7-19
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-5	11-7-19
TEMPORARY EROSION CONTROL DEVICES		TEC-1	11-16-17
TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
TEMPORARY EROSION CONTROL DEVICES		TEC-4	7-26-12

GENERAL NOTES:

- GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
- ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
- 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.
- 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.
- ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.

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
100-3	CONTRACTOR'S LICENSE
100-4	DEPARTMENT NAME CHANGE
102-2	ISSUANCE OF PROPOSALS
105-4	MAINTENANCE DURING CONSTRUCTION
107-2	RESTRAINING CONDITIONS
108-1	LIQUIDATED DAMAGES
108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
210-1	UNCLASSIFIED EXCAVATION
303-1	AGGREGATE BASE COURSE
306-1	QUALITY CONTROL AND ACCEPTANCE
307-1	CEMENT
308-1	CEMENT
400-1	TACK COATS
400-4	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6	LIQUID ANTI-STRIP ADDITIVE
400-7	TRACKLESS TACK
404-3	DESIGN OF ASPHALT MIXTURES
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
410-4	EVALUATION PF ACHM SUBLOT REPLACEMENT MATERIAL
501-2	CEMENT
600-2	INCIDENTAL CONSTRUCTION
603-1	LANE CLOSURE NOTIFICATION
604-1	RETROFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
605-1	CONCRETE DITCH PAVING
606-1	PIPE CULVERTS FOR SIDE DRAINS
617-1	GUARDRAIL TERMINAL (TYPE 2)
620-1	MULCH COVER
800-1	STRUCTURES
802-3	CONCRETE FOR STRUCTURES
802.4	CEMENT
804-2	REINFORCING STEEL FOR STRUCTURES
807-2	STEEL STRUCTURES
808-1	INSTALLATION OF ELASTOMERIC BEARINGS
808-2	ELASTOMERIC BEARINGS
JOB 061472	AIRPORT CLEARANCE REQUIREMENTS
JOB 061472	BIDDING REQUIREMENTS AND CONDITIONS
JOB 061472	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 061472	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 061472	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 061472	CLAY LINER
JOB 061472	COLD MILLING - COUNTY PROPERTY
JOB 061472	CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB 061472	CONCRETE DITCH PAVING
JOB 061472	COORDINATION OF WORK
JOB 061472	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 061472	ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB 061472	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 061472	MANDATORY ELECTRONIC CONTRACT
JOB 061472	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 061472	PARTNERING REQUIREMENTS
JOB 061472	PLASTIC PIPE
JOB 061472	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 061472	PRICE ADJUSTMENT FOR FUEL
JOB 061472	SHORING FOR CULVERTS
JOB 061472	SOIL STABILIZATION
JOB 061472	STORM WATER POLLUTION PREVENTION PLAN
JOB 061472	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 061472	UNPAINTED WEATHERING STRUCTURAL STEEL
JOB 061472	UTILITY ADJUSTMENTS
JOB 061472	VALUE ENGINEERING
JOB 061472	WARM MIX ASPHALT

GENERAL NOTES CONT'D:

- 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.
- 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.
- THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.
- THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT, 404(B)(1) VOLUME 10, APPENDIX D, SECTION VII FOR BAYOU METO CANAL 1000 AND ASSOCIATED ACTIVITIES. THIS CAN BE LOCATED AT THE WEBSITE: HTTP://WWW.MVM.USACE.ARMY.MIL/MISSIONS/PROJECTS/BAYOU-METO-BASIN-PROJECT/REPORTS/
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
- THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

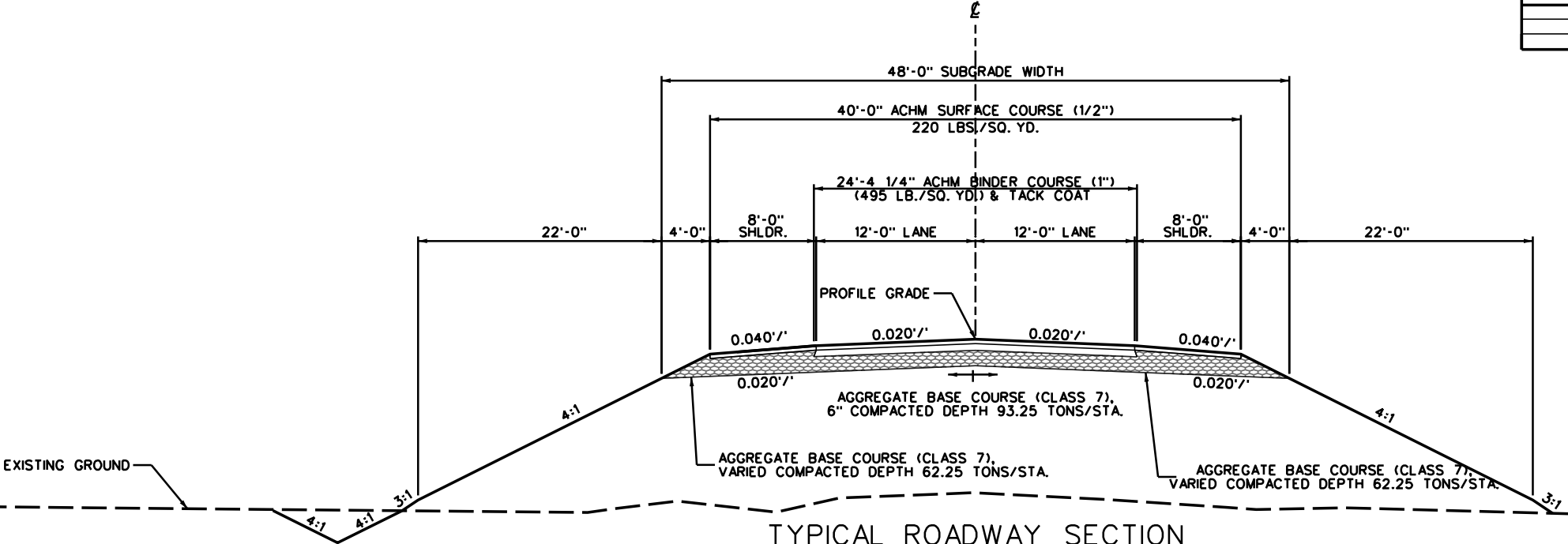
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				6	ARK.			
				JOB NO.		061472	2	101

2 INDEX OF SHEETS, GOV. SPECS. & GEN. NOTES

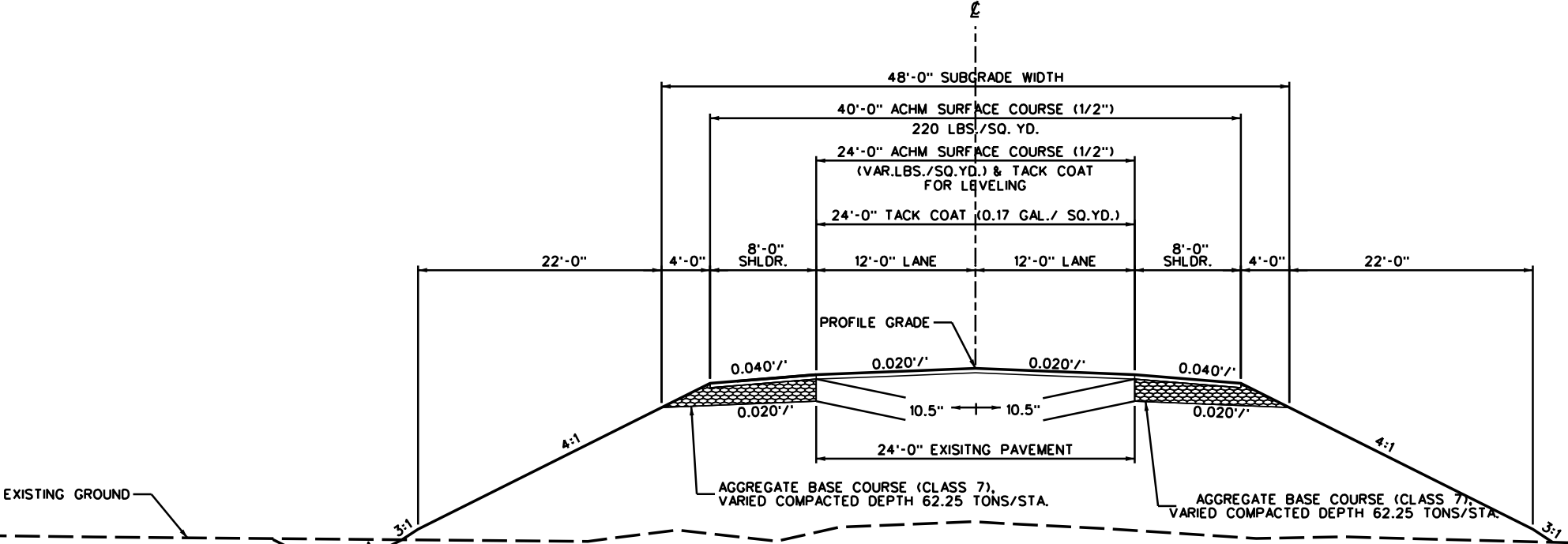


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				6	ARK.			
				JOB NO.		061472	3	101

2 TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL ROADWAY SECTION  
STA. 16+98.00 TO 22+70.54  
STA. 26+16.84 TO 27+19.00

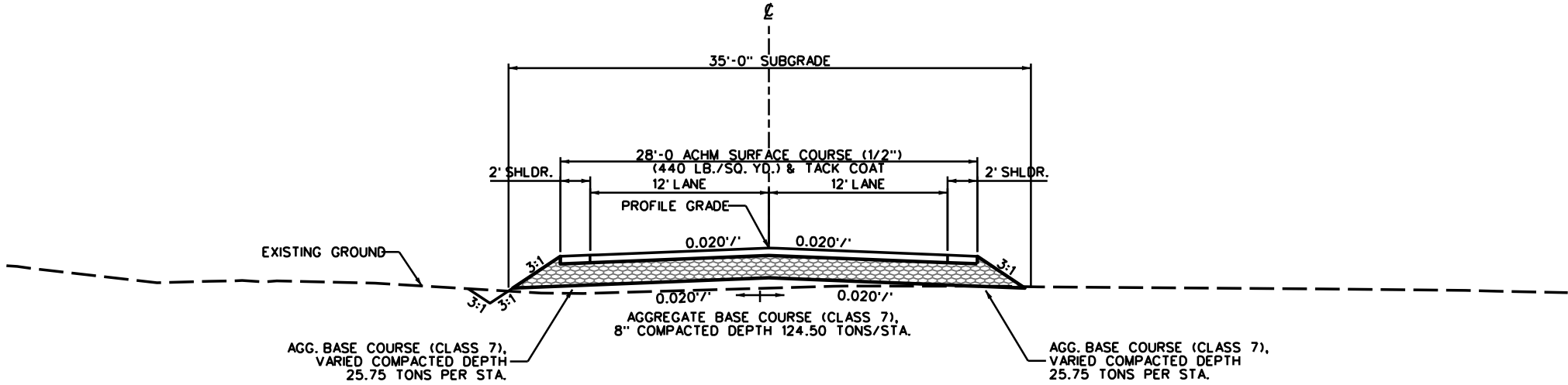


TYPICAL ROADWAY SECTION  
STA. 15+75.00 TO 16+98.00  
STA. 27+19.00 TO 28+90.00

- \*NOTES:
- REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
  - THE THICKNESS OF THE AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1/2" 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" (50MM) OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

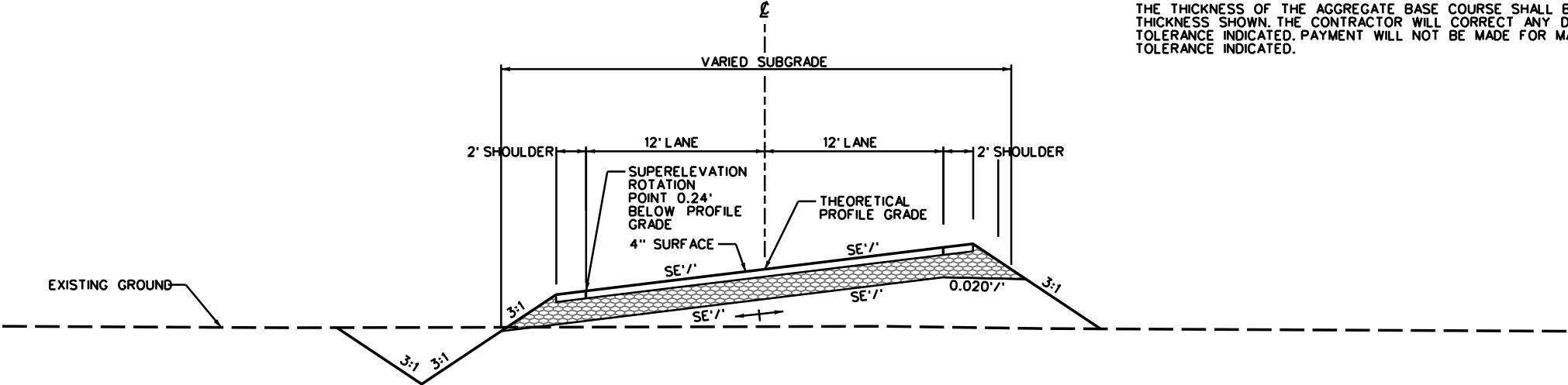
TYPICAL SECTION OF IMPROVEMENT

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.		061472	4	101
				2	TYPICAL SECTIONS OF IMPROVEMENT			



TYPICAL DETOUR SECTION - NORMAL CROWN  
STA. 13+57.62 TO 18+01.09  
STA. 28+91.66 TO 32+25.46

NOTES:  
REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.  
THE THICKNESS OF THE AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" 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.

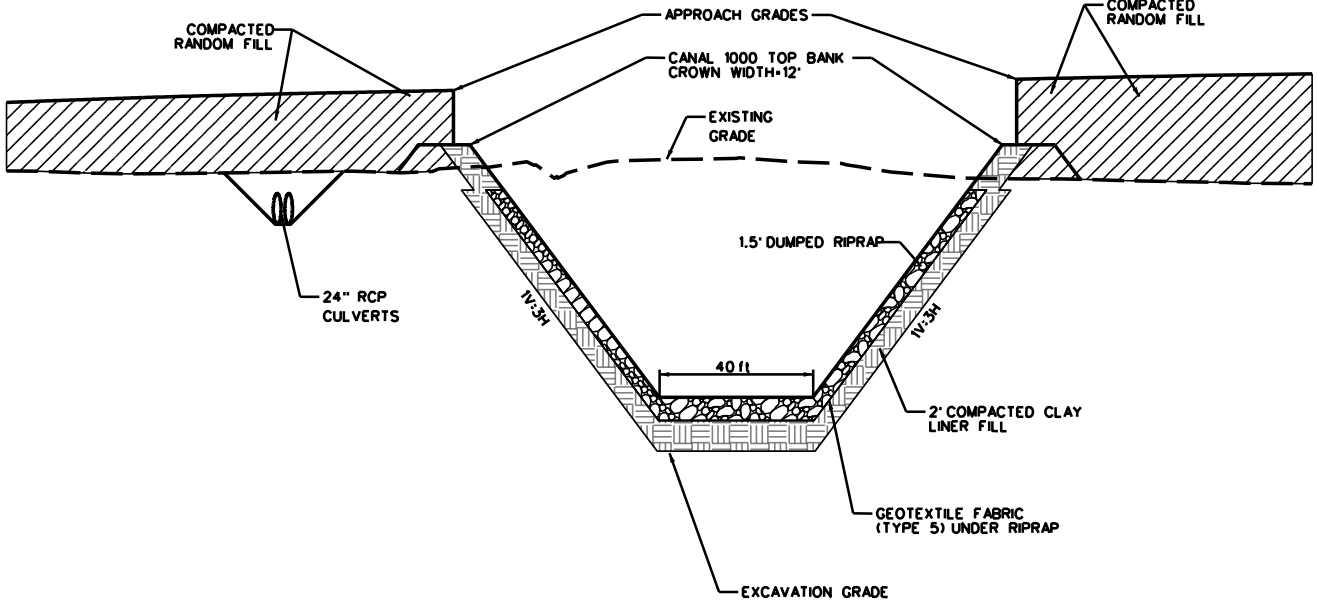


TYPICAL DETOUR SECTION - SUPERELEVATION  
STA. 18+01.09 TO 28+91.66

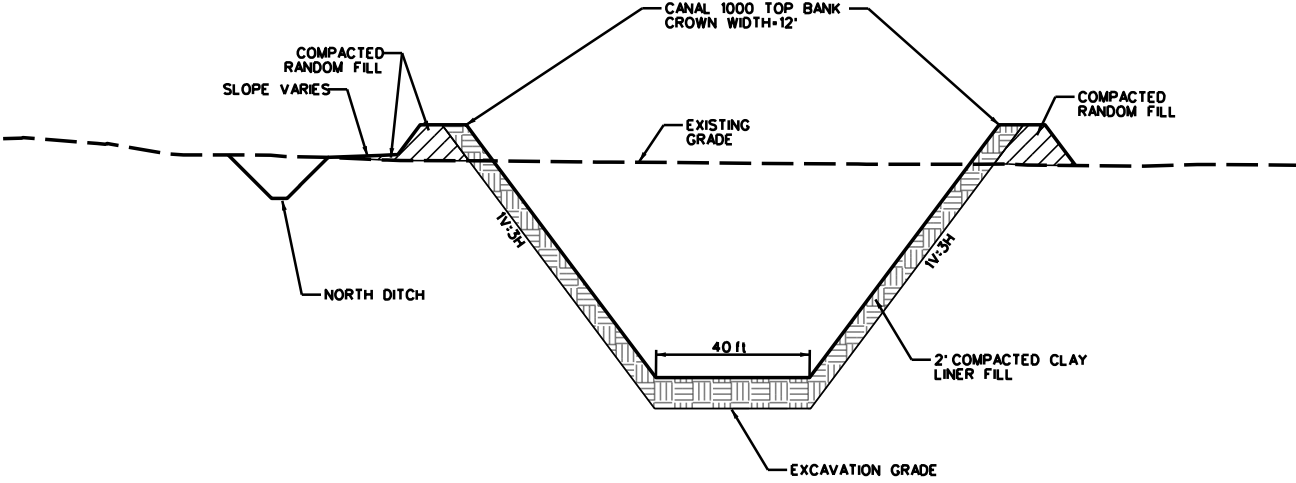


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				JOB NO.		061472	5	101
②				TYPICAL SECTIONS OF IMPROVEMENT				

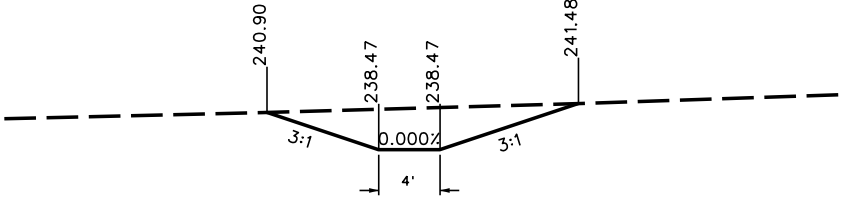
2



TYPICAL CANAL SECTION STA 105+85.00 TO 107+05.00  
N.T.S.



TYPICAL CANAL SECTION STA 105+00 TO 105+85.00 &  
STA 107+05.00 TO 109+00.00  
N.T.S.

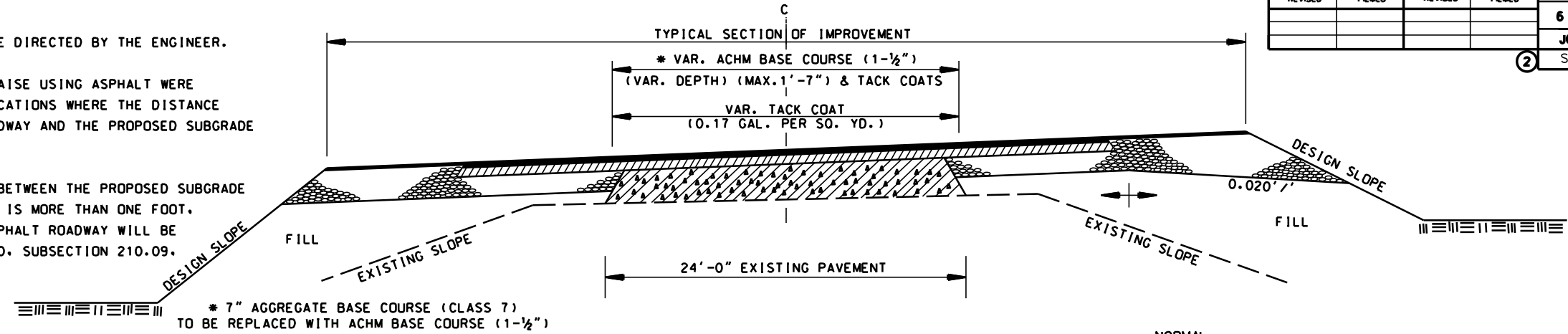


TYPICAL NORTH DITCH SECTION STA 0+89.00 TO 12+62.80  
N.T.S.

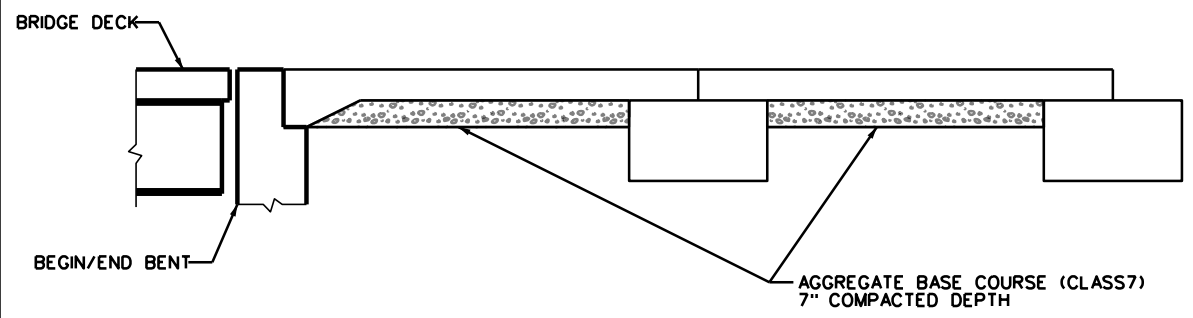
NOTES:

- (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.

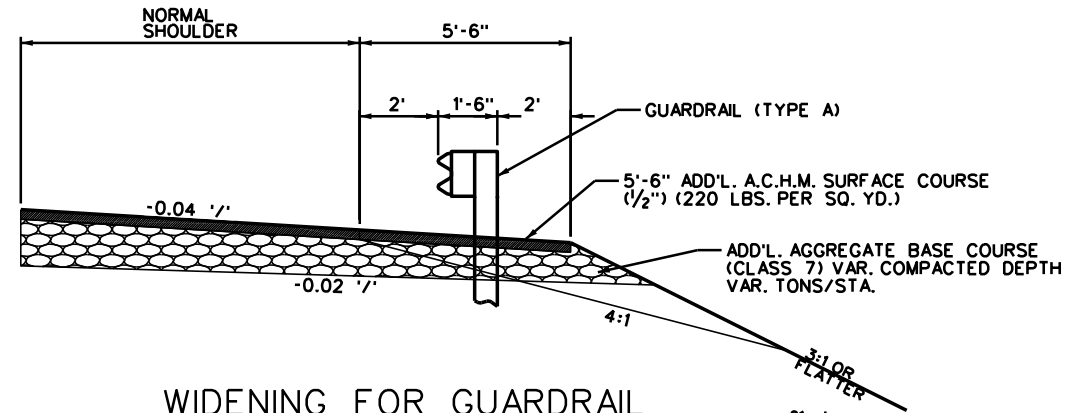
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				6	ARK.			
				JOB NO.	061472	6	101	
SPECIAL DETAILS								



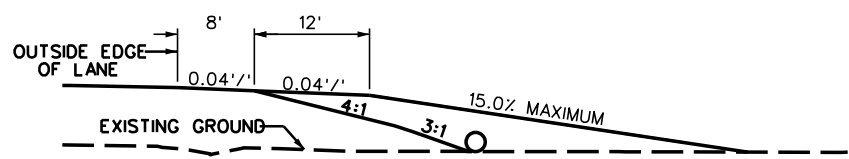
METHOD OF GRADE RAISE



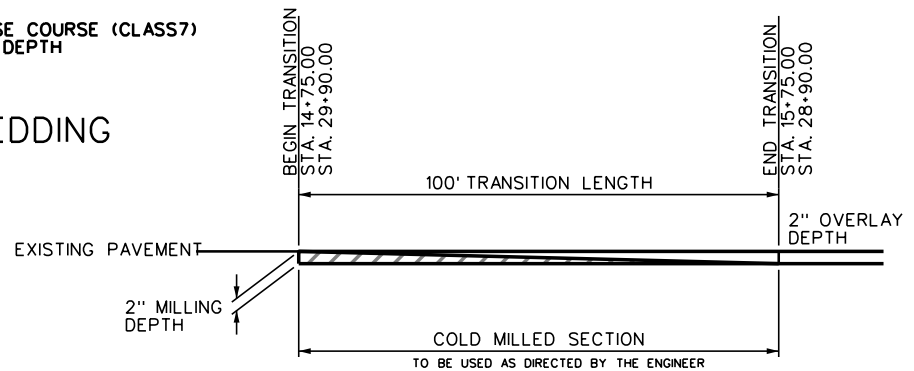
DETAIL FOR APPROACH SLAB BEDDING



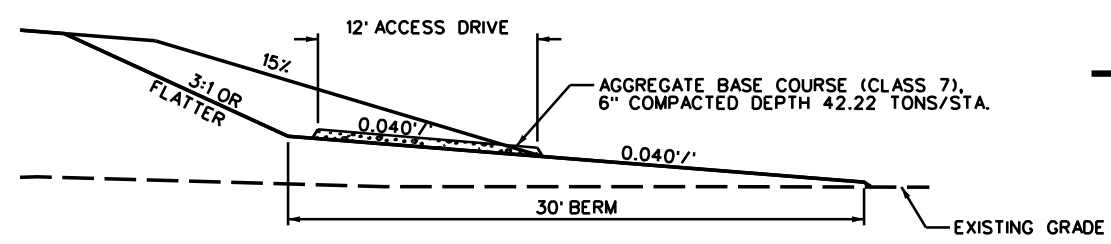
WIDENING FOR GUARDRAIL



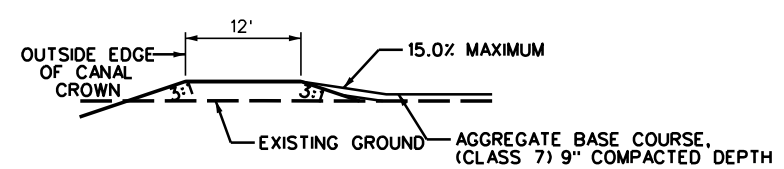
DETAIL FOR DRIVEWAY ACCESS



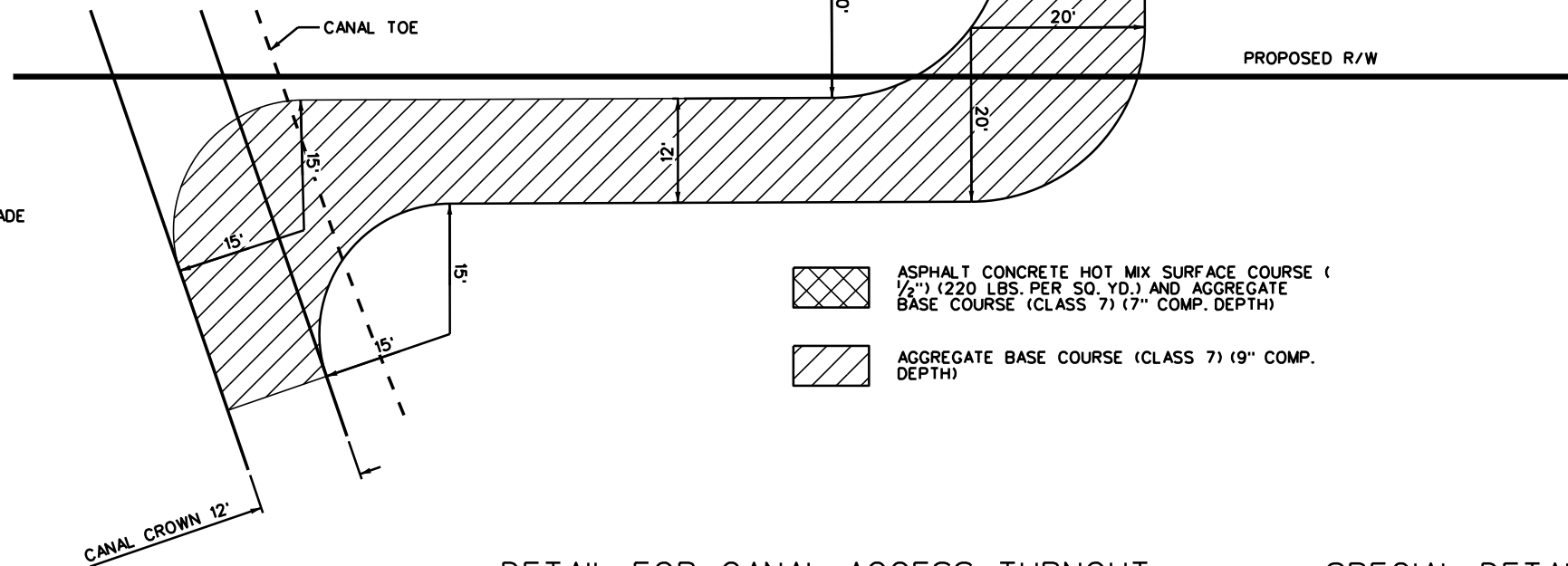
DETAIL FOR MILLED TRANSITION TO EXISTING PAVEMENT



DETAIL FOR CANAL TO HWY 161 ACCESS



DETAIL FOR CANAL ACCESS



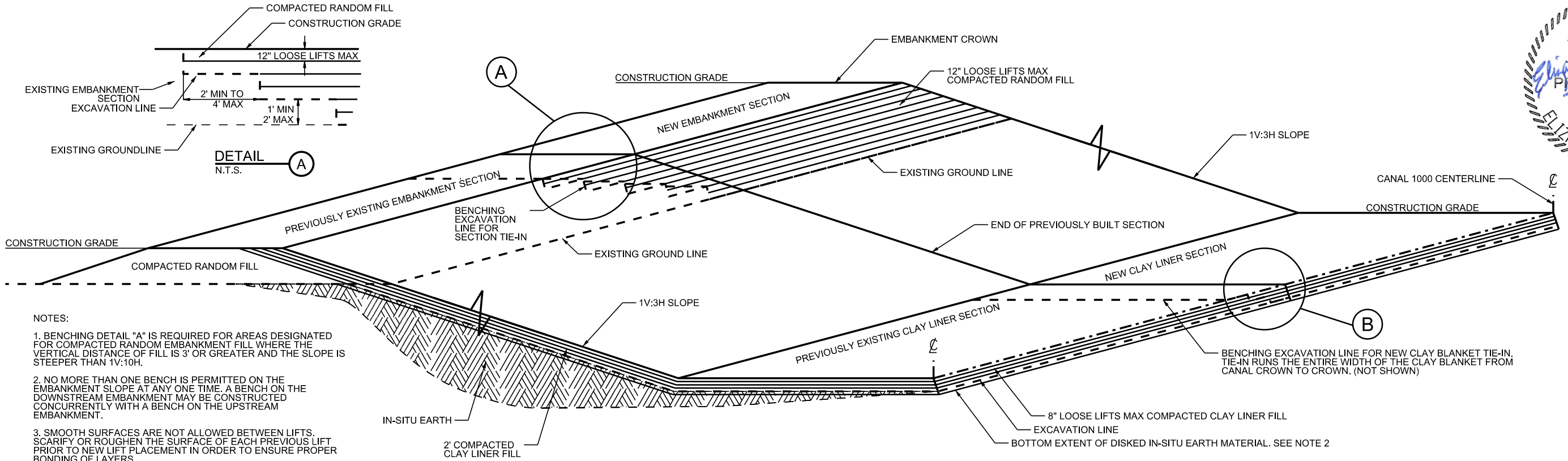
DETAIL FOR CANAL ACCESS TURNOUT

- ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) (7" COMP. DEPTH)
- AGGREGATE BASE COURSE (CLASS 7) (9" COMP. DEPTH)

SPECIAL DETAILS

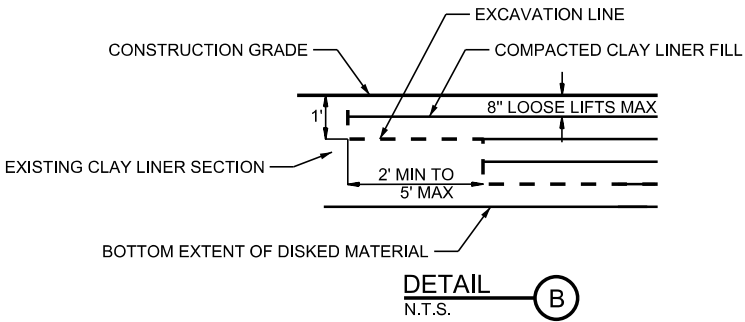
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061472	7	101

2 SPECIAL DETAILS



- NOTES:
1. BENCHING DETAIL "A" IS REQUIRED FOR AREAS DESIGNATED FOR COMPACTED RANDOM EMBANKMENT FILL WHERE THE VERTICAL DISTANCE OF FILL IS 3' OR GREATER AND THE SLOPE IS STEEPER THAN 1V:10H.
  2. NO MORE THAN ONE BENCH IS PERMITTED ON THE EMBANKMENT SLOPE AT ANY ONE TIME. A BENCH ON THE DOWNSTREAM EMBANKMENT MAY BE CONSTRUCTED CONCURRENTLY WITH A BENCH ON THE UPSTREAM EMBANKMENT.
  3. SMOOTH SURFACES ARE NOT ALLOWED BETWEEN LIFTS. SCARIFY OR ROUGHEN THE SURFACE OF EACH PREVIOUS LIFT PRIOR TO NEW LIFT PLACEMENT IN ORDER TO ENSURE PROPER BONDING OF LAYERS.

HALF CANAL PROFILE ISOMETRIC  
END SECTION- RANDOM FILL BENCHING DETAIL  
NOT TO SCALE



- NOTES:
1. THE ELEVATION OF THE CANAL EMBANKMENT SHALL HAVE REACHED FULL DESIGN HEIGHT BEFORE PREPARATION OF THE CLAY LINER FOUNDATION AND SUBSEQUENT PLACEMENT OF FILL.
  2. THE ENTIRE SURFACE ON OR AGAINST WHICH THE CLAY LINER SHALL BE PLACED AGAINST IN-SITU EARTH SHALL BE THOROUGHLY DISKED TO A DEPTH OF 6 INCHES AND RE-COMPACTED PRIOR TO PLACEMENT OF CLAY LINER FILL. DISKING SHALL BE PERFORMED IN TWO ORTHOGONAL DIRECTIONS TO ADEQUATELY DISTURB THE EXISTING SOIL STRUCTURE.
  3. EACH CLAY LINER LIFT SHALL BE PLACED FROM EMBANKMENT CROWN TO CROWN PRIOR TO COMPACTION. ALL LIFTS SHALL BE COMPACTIONED IN PASSES MADE PERPENDICULAR TO THE CANAL CENTERLINE.
  4. THE CONTRACTOR SHALL AVOID CREATING SEAMS IN THE LINER PARALLEL TO CANAL CENTERLINE. SECTIONS OF THIS LINER CONSTRUCTED AT DIFFERENT TIMES MAY BE TIED TOGETHER WITH BENCHING DETAIL "B". WHERE THE BENCHING SEAM IS CONSTRUCTED PERPENDICULAR TO THE CANAL CENTERLINE.
  5. SMOOTH SURFACES ARE NOT ALLOWED BETWEEN LIFTS. SCARIFY OR ROUGHEN THE SURFACE OF EACH PREVIOUS LIFT PRIOR TO NEW LIFT PLACEMENT IN ORDER TO ENSURE PROPER BONDING OF LAYERS.

CANAL CROSS SECTION -  
CLAY LINER DETAIL  
NOT TO SCALE

SPECIAL DETAILS

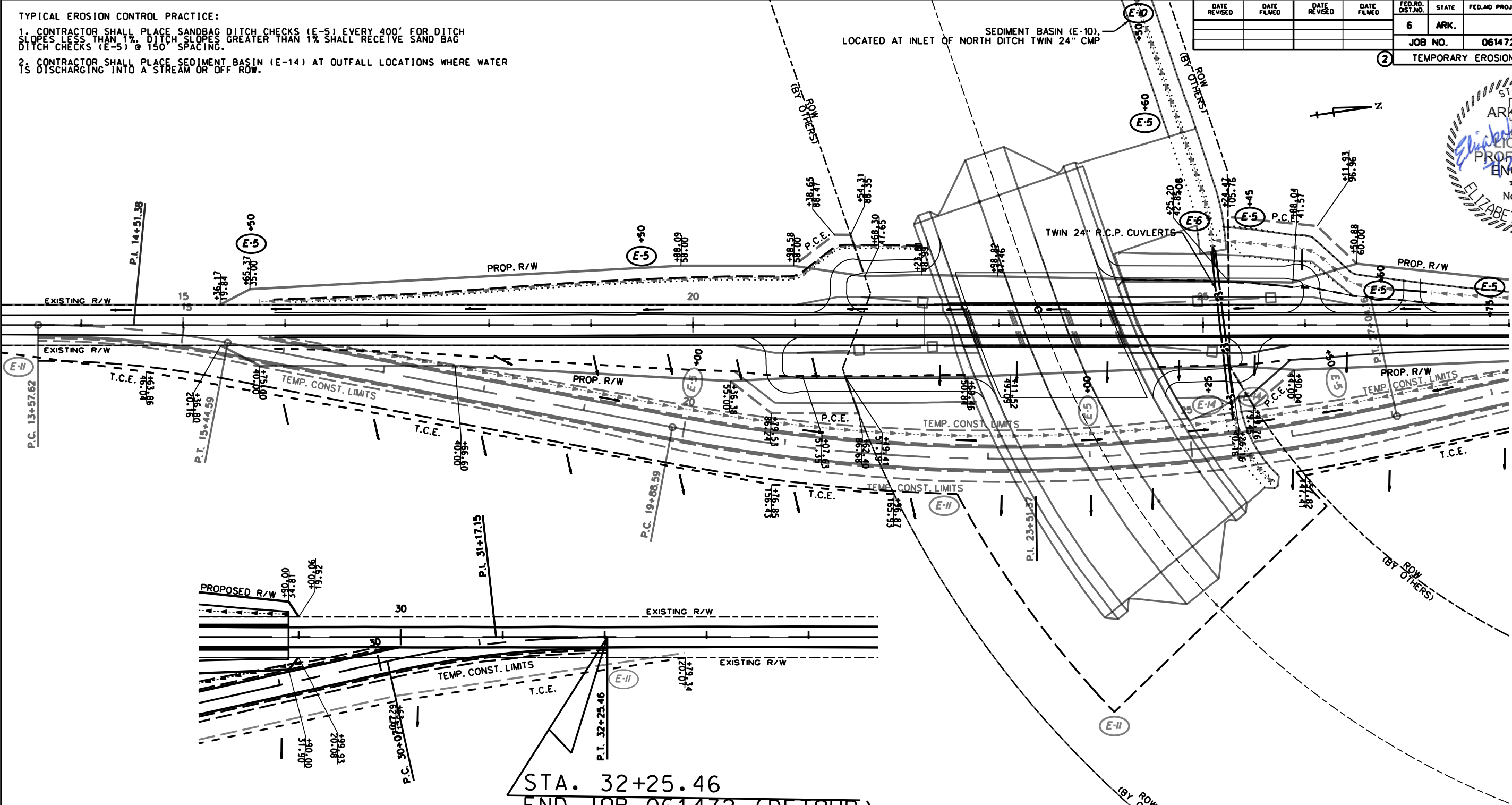




TYPICAL EROSION CONTROL PRACTICE:  
1. CONTRACTOR SHALL PLACE SANDBAG DITCH CHECKS (E-5) EVERY 400' FOR DITCH SLOPES LESS THAN 1%. DITCH SLOPES GREATER THAN 1% SHALL RECEIVE SAND BAG DITCH CHECKS (E-5) @ 150' SPACING.  
2. CONTRACTOR SHALL PLACE SEDIMENT BASIN (E-14) AT OUTFALL LOCATIONS WHERE WATER IS DISCHARGING INTO A STREAM OR OFF ROW.

SEDIMENT BASIN (E-10),  
LOCATED AT INLET OF NORTH DITCH TWIN 24" CMP

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	9	101	
				TEMPORARY EROSION CONTROL				



STA. 32+25.46  
END JOB 061472 (DETOUR)

REVISIONS

DATE OF REVISION	REVISION

STA.	STA.	SIDE	SAND BAGS DITCH CHECKS (E-5)(BAGS)	ROCK DITCH CHECKS (E-6) (CU. YD.)	SILT FENCE (E-11) (LIN. FT.)	SEDIMENT BASIN (E-14) (CU. YD.)
25+08		LT.		10		
25+27		RT.		10		
25+45		LT.	22			
26+60		LT.	22			
27+75		LT.	22			
27+97		RT.	22			

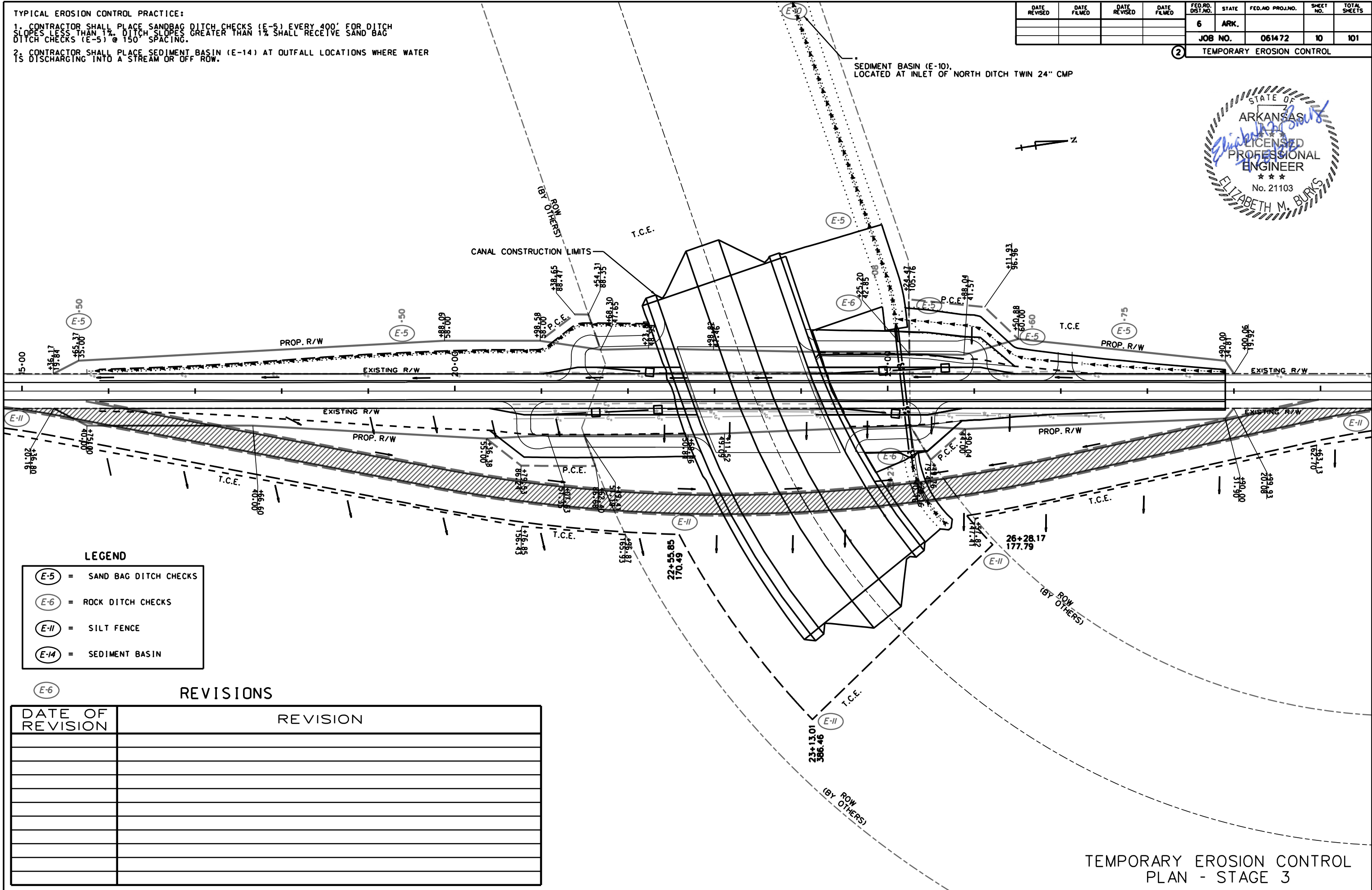
LEGEND	
(E-5)	= SAND BAG DITCH CHECKS
(E-6)	= ROCK DITCH CHECK
(E-11)	= SILT FENCE
(E-14)	= SEDIMENT BASIN

TEMPORARY EROSION CONTROL  
PLAN - STAGE 2

TYPICAL EROSION CONTROL PRACTICE:

1. CONTRACTOR SHALL PLACE SANDBAG DITCH CHECKS (E-5) EVERY 400' FOR DITCH SLOPES LESS THAN 1%. DITCH SLOPES GREATER THAN 1% SHALL RECEIVE SAND BAG DITCH CHECKS (E-5) @ 150' SPACING.
2. CONTRACTOR SHALL PLACE SEDIMENT BASIN (E-14) AT OUTFALL LOCATIONS WHERE WATER IS DISCHARGING INTO A STREAM OR OFF ROW.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	10	101	
				2 TEMPORARY EROSION CONTROL				



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  
PLAN - STAGE 3

6/15/2022

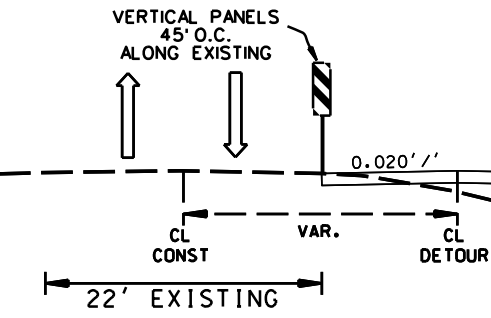
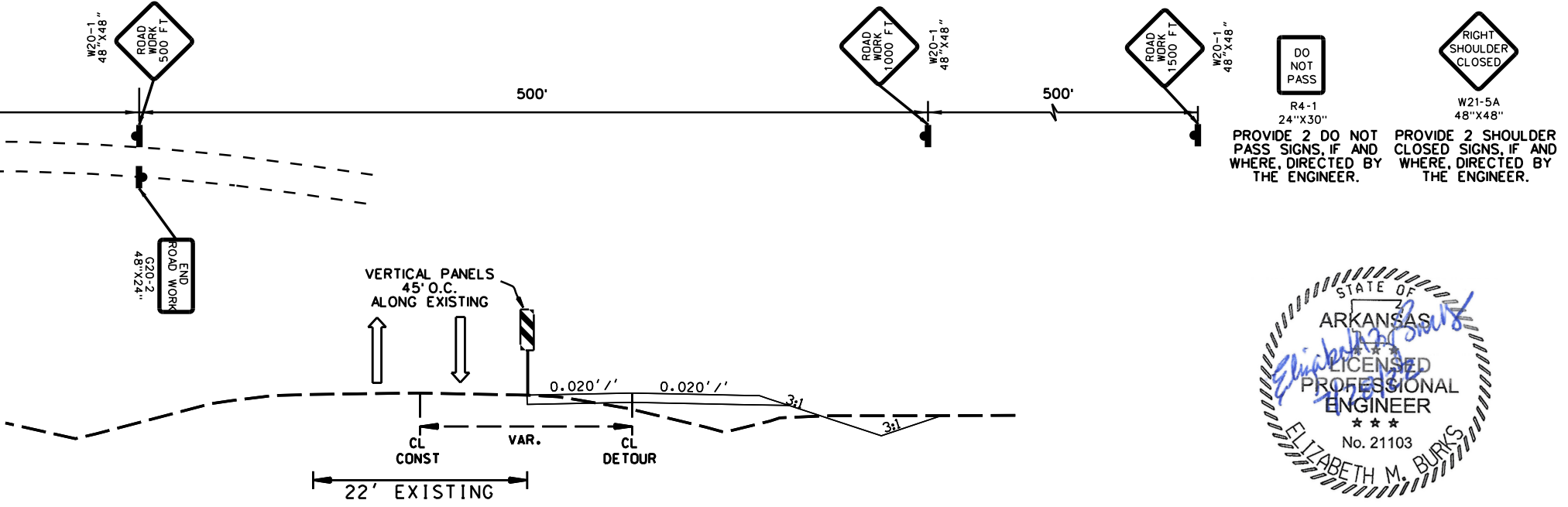
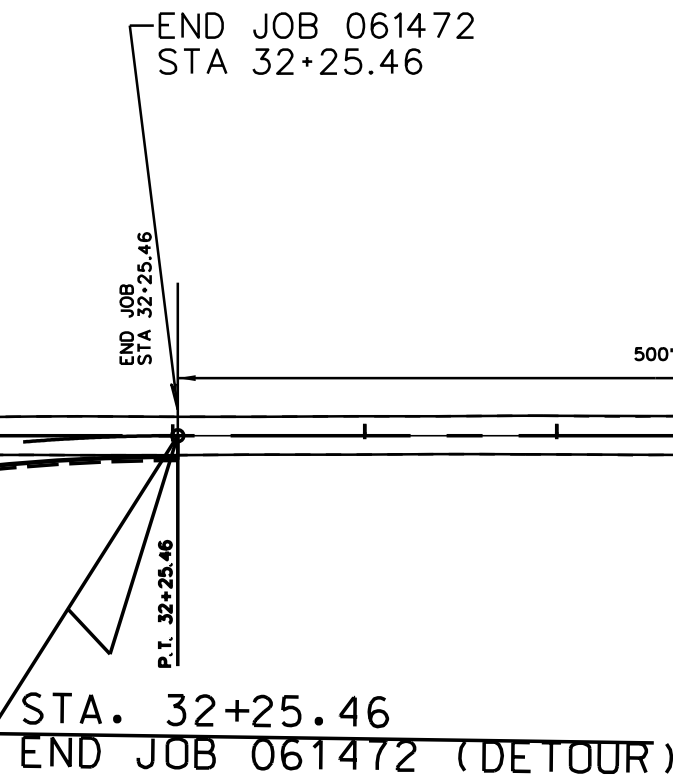
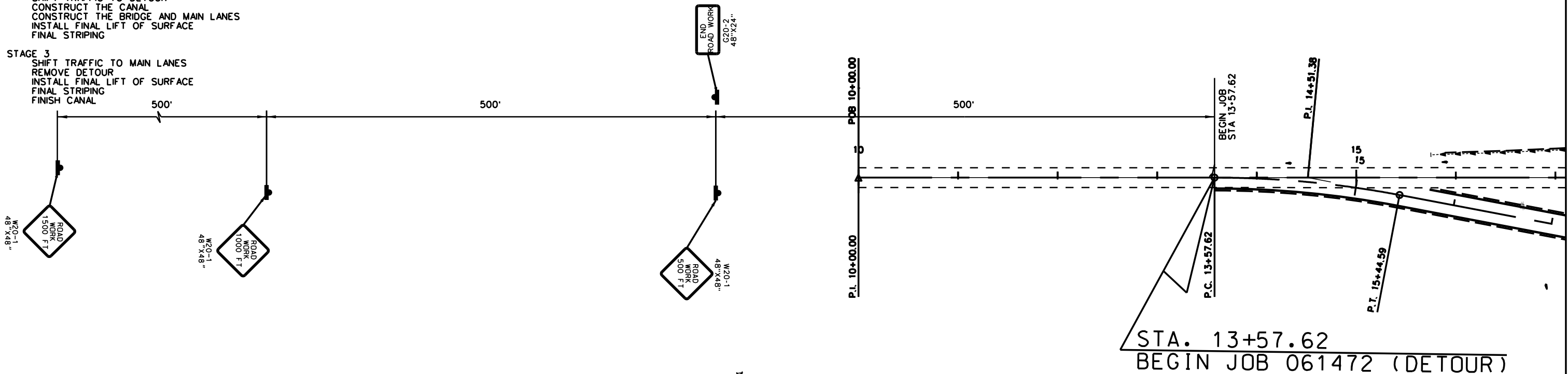
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BM161BRIDGE\_011

SEQUENCE OF OPERATIONS

- STAGE 1  
TRAFFIC ON EXISTING ROAD  
CONSTRUCT DETOUR
- STAGE 2  
SHIFT TRAFFIC TO DETOUR  
CONSTRUCT THE CANAL  
CONSTRUCT THE BRIDGE AND MAIN LANES  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING
- STAGE 3  
SHIFT TRAFFIC TO MAIN LANES  
REMOVE DETOUR  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING  
FINISH CANAL

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.	061472		11	101
				②	MAINTENANCE OF TRAFFIC DETAILS			



DO NOT PASS  
R4-1  
24"X30"

PROVIDE 2 DO NOT PASS SIGNS, IF AND WHERE, DIRECTED BY THE ENGINEER.

RIGHT SHOULDER CLOSED  
W21-5A  
48"X48"

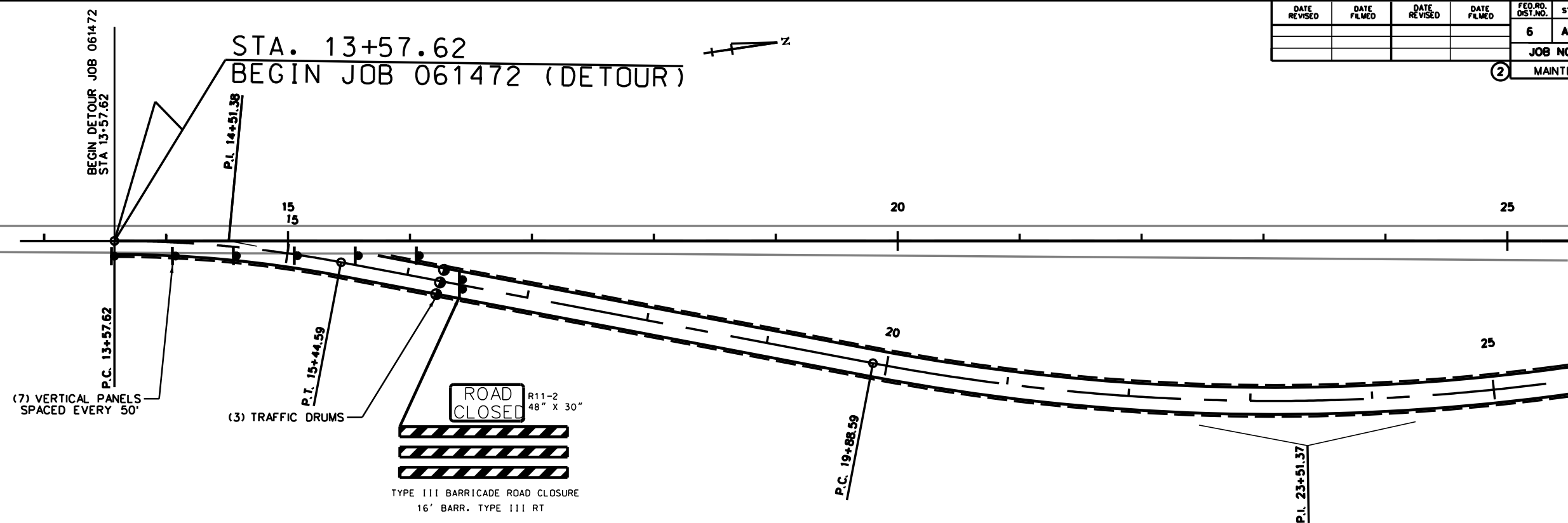
PROVIDE 2 SHOULDER CLOSED SIGNS, IF AND WHERE, DIRECTED BY THE ENGINEER.



DETAIL FOR  
STAGE 1 TRAFFIC

ADVANCE WARNING SIGNS  
MAINTENANCE OF TRAFFIC DETAILS

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.		061472	12	101
② MAINTENANCE OF TRAFFIC DETAILS								



STAGE 1  
CONSTRUCTION PAVEMENT MARKINGS (MAIN LANES)  
STA 13+50 - STA 17+00 = 350 LIN. FT.  
STA 29+00 - STA 32+30 = 330 LIN. FT.

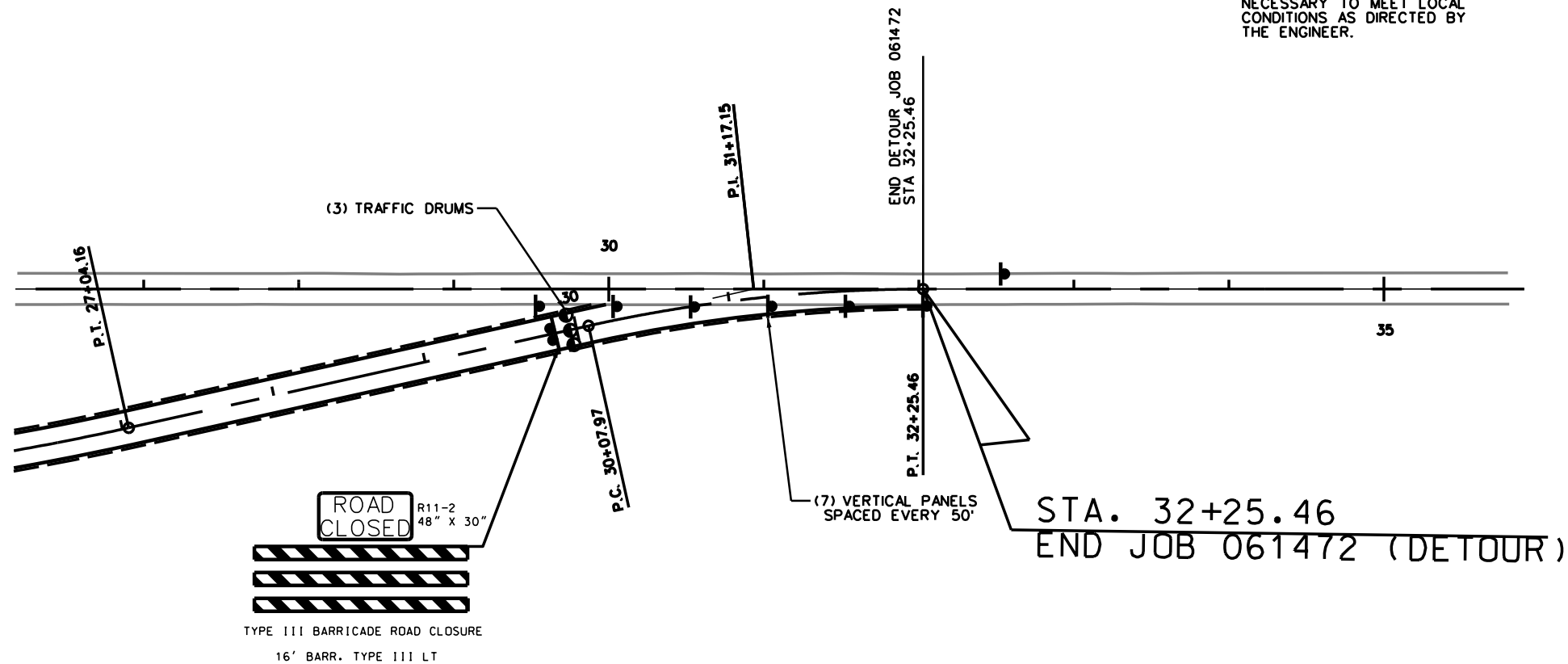
NOTE:  
TURNOUTS AND PRIVATE DRIVES  
SHALL BE MODIFIED WHERE  
NECESSARY TO MEET LOCAL  
CONDITIONS AS DIRECTED BY  
THE ENGINEER.

SEQUENCE OF OPERATIONS

STAGE 1  
TRAFFIC ON EXISTING ROAD  
CONSTRUCT DETOUR  
CONSTRUCT PAVEMENT MARKINGS  
STA 13+50 - STA 17+50  
STA 29+00 - STA 32+30

STAGE 2  
SHIFT TRAFFIC TO DETOUR  
CONSTRUCT THE CANAL  
CONSTRUCT THE BRIDGE AND MAIN LANES  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING

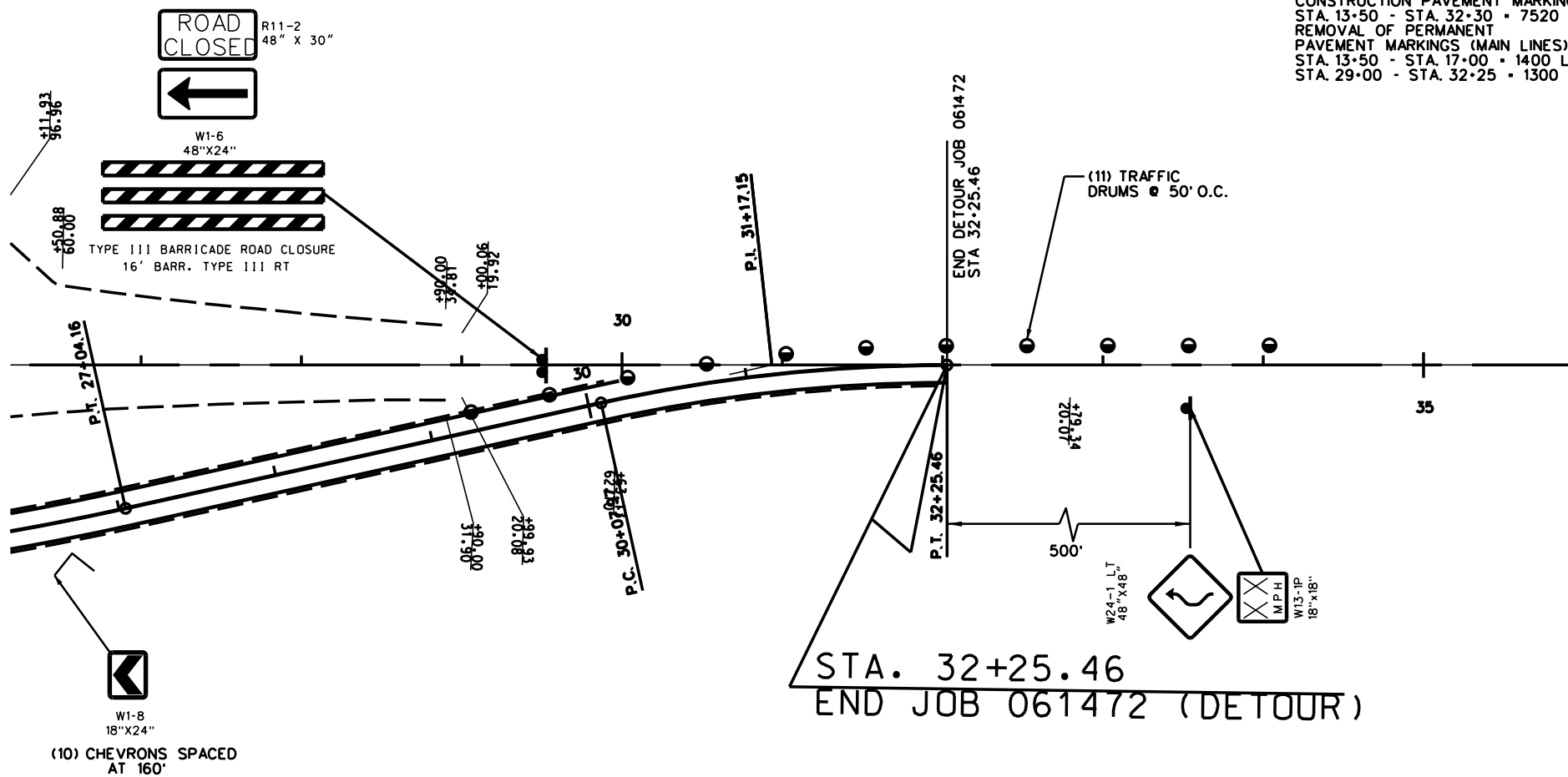
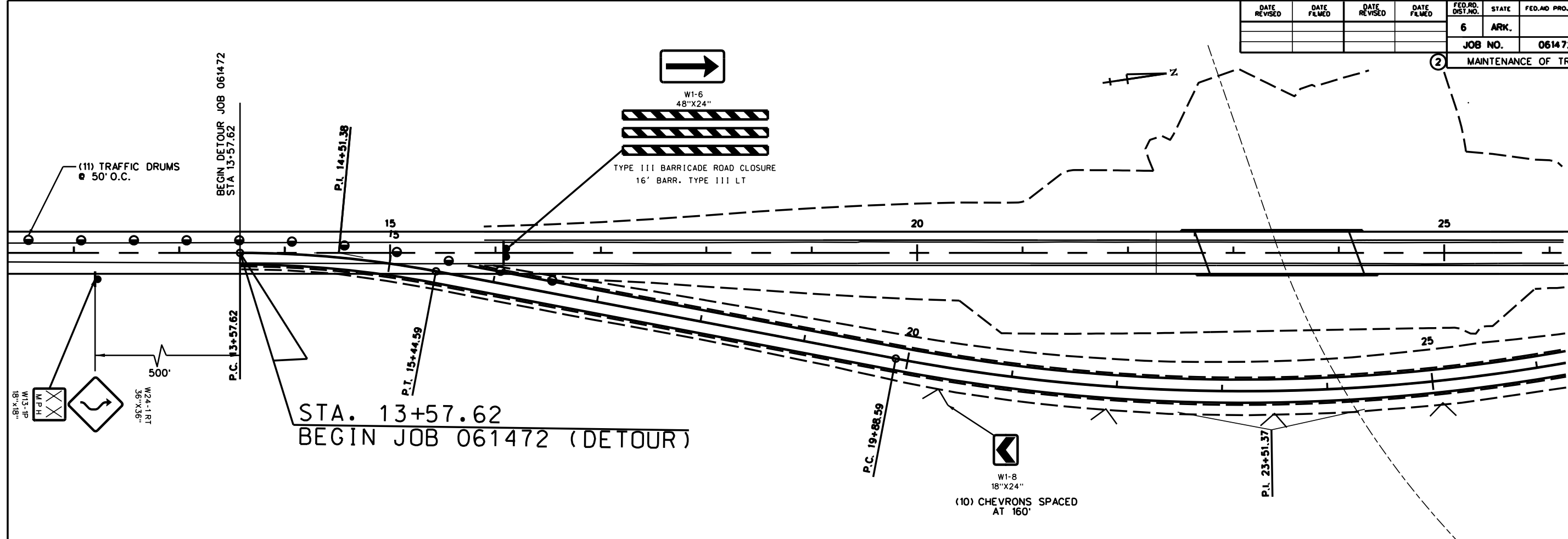
STAGE 3  
SHIFT TRAFFIC TO MAIN LANES  
REMOVE DETOUR  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING  
FINISH CANAL



STAGE 1  
MAINTENANCE OF TRAFFIC DETAILS



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.	061472	13	101	
MAINTENANCE OF TRAFFIC DETAILS								



STAGE 2  
CONSTRUCTION PAVEMENT MARKINGS (DETOUR)  
STA. 13+50 - STA. 32+30 = 7520 L.F.  
REMOVAL OF PERMANENT  
PAVEMENT MARKINGS (MAIN LINES)  
STA. 13+50 - STA. 17+00 = 1400 L.F.  
STA. 29+00 - STA. 32+25 = 1300 L.F.

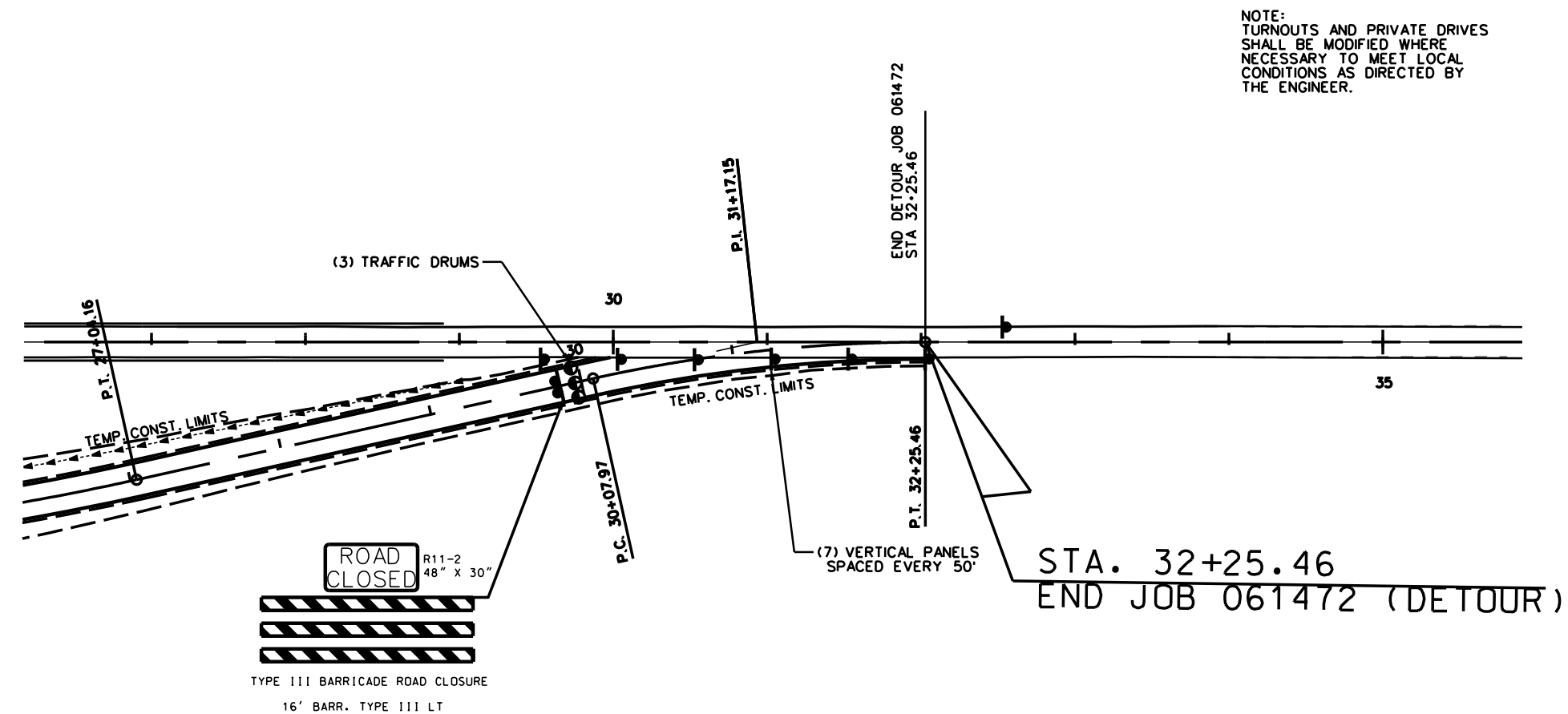
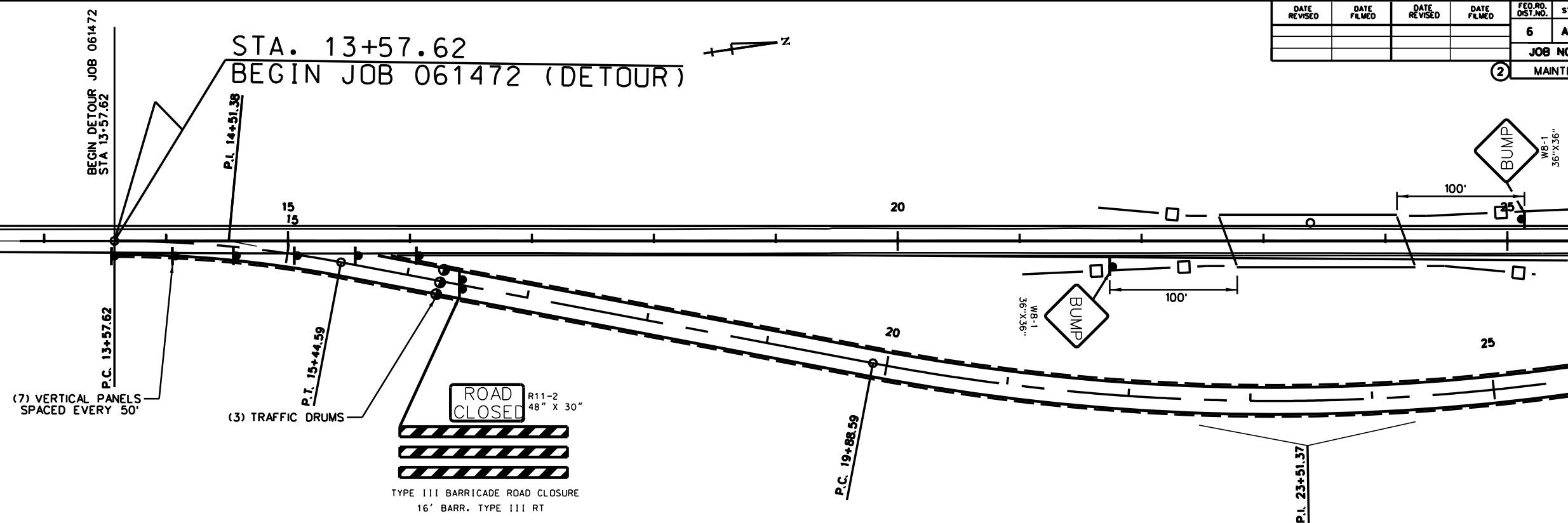
SEQUENCE OF OPERATIONS

- STAGE 1  
TRAFFIC ON EXISTING ROAD  
CONSTRUCT DETOUR
- STAGE 2  
SHIFT TRAFFIC TO DETOUR  
CONSTRUCT THE CANAL  
CONSTRUCT THE BRIDGE AND MAIN LANES  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING
- STAGE 3  
SHIFT TRAFFIC TO MAIN LANES  
REMOVE DETOUR  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING  
FINISH CANAL



STAGE 2  
MAINTENANCE OF TRAFFIC DETAILS

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.		061472	14	101
② MAINTENANCE OF TRAFFIC DETAILS								



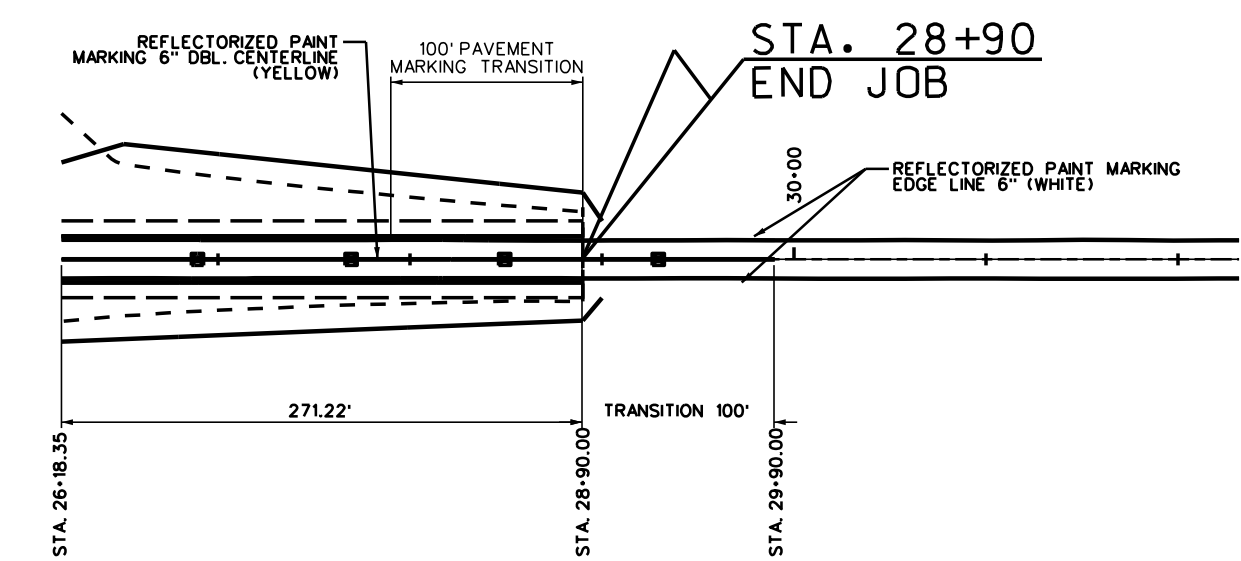
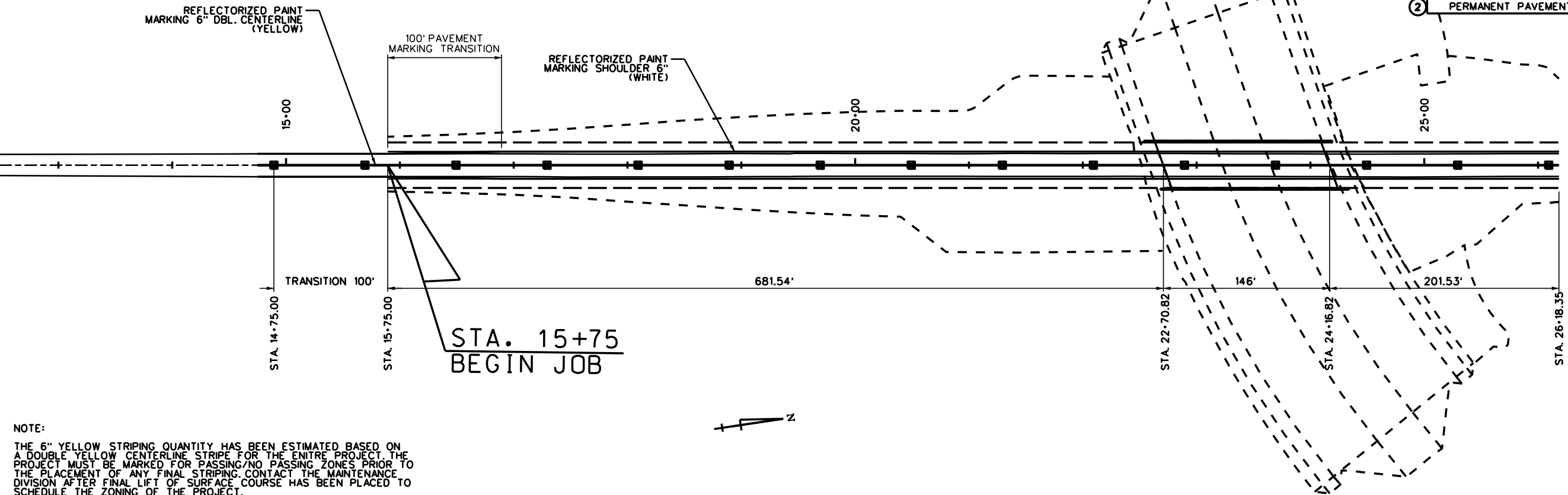
SEQUENCE OF OPERATIONS

- STAGE 1  
TRAFFIC ON EXISTING ROAD  
CONSTRUCT DETOUR  
CONSTRUCTION PAVEMENT MARKINGS  
STA. 13+50 - STA. 17+50  
STA. 29+00 - STA. 32+30
- STAGE 2  
SHIFT TRAFFIC TO DETOUR  
CONSTRUCT THE CANAL  
CONSTRUCT THE BRIDGE AND MAIN LANES  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING
- STAGE 3  
SHIFT TRAFFIC TO MAIN LANES  
REMOVE DETOUR  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING  
FINISH CANAL



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
				6	ARK.			
				JOB NO.	061472	15	101	
PERMANENT PAVEMENT MARKING DETAILS								



**SEQUENCE OF OPERATIONS**

**STAGE 1**  
TRAFFIC ON EXISTING ROAD  
CONSTRUCT DETOUR

**STAGE 2**  
SHIFT TRAFFIC TO DETOUR  
CONSTRUCT THE CANAL  
CONSTRUCT THE BRIDGE AND MAIN LANES  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING

**STAGE 3**  
SHIFT TRAFFIC TO MAIN LANES  
REMOVE DETOUR  
INSTALL FINAL LIFT OF SURFACE  
FINAL STRIPING  
FINISH CANAL

**FINAL STRIPING**

**REFLECTORIZED PAINT PAVEMENT MARKINGS**  
STA. 13+50 TO STA. 33+00  
6" WHITE EDGE LINE - 3900 L.F.  
6" DBL. YELLOW CENTERLINE - 3900 L.F.

**RAISED PAVEMENT MARKERS**  
STA. 13+50 TO STA. 33+00  
TYPE II (YEL/YEL) 80' O/C - 25 EACH







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07/28/22				6	ARK.			
				JOB NO.		061472	17	101
				② QUANTITIES				

DUMPED RIPRAP AND FILTER BLANKET

STATION	STATION	LOCATION	DUMPED RIPRAP GROUTED	FILTER BLANKET
			CU. YDS.	SQ. YDS.
0+80.25	0+97.75	OUTLET OF PIPE CULVERT - NORTH DITCH	23	34
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	25	25
TOTALS:			48	59

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

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

CONCRETE DITCH PAVING

STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
		LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
22+26	LT. OF CENTER	57.00	6.33	40.09	25.33	0.32
22+41	RT. OF CENTER	57.00	6.33	40.09	25.33	0.32
24+47	RT. OF CENTER	51.00	6.33	35.87	22.67	0.29
24+61	LT. OF CENTER	47.00	6.33	33.06	20.89	0.26

TOTALS: 149.11 94.22 1.19  
BASIS OF ESTIMATE:  
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	29
TOTAL:	29

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

DRIVEWAYS & TURNOUTS

STATION	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		18" LIN. FT.	
20+79	21+07	LT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	52.9		
21+07	22+36	LT.	MAIN LANES - CANAL ACCESS DRIVE	12			37.2		
21+42	21+65	RT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	48.6		
21+65	22+90	RT.	MAIN LANES - CANAL ACCESS DRIVE	12			76.4		
24+57	25+22	RT.	MAIN LANES - CANAL ACCESS DRIVE	12			31.9		
25+22	25+46	RT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	10.1		
24+00	25+81	LT.	MAIN LANES - CANAL ACCESS DRIVE	12			75.5		
25+81	26+07	LT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	10.1		
27+05		LT.	MAIN LANES - INSTALL 18" SIDE DRAIN	16	24.7	2.7	11.9	32	PCM-1, PCC-1, PCP-1, PCP-2
TOTALS:					123.5	13.5	354.6	32	

BASIS OF ESTIMATE:  
ACHM SURFACE COURSE (½").....94.9% MIN. AGGR.....5.1% ASPHALT BINDER  
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
18+53	34	40	46.92	92	5	52.72	3' RT. OF CENTER	0.83			ASPHALT & CONCRETE PAVEMENT AGGREGATE	
								1			A-4 (1)	BR
								3			A-4 (4)	BR
								5				
26+25	34	40	54.48	92	5	51.42	CL OF ROAD	0.79			ASPHALT & CONCRETE PAVEMENT AGGREGATE	
								1.1			A-4 (2)	BR
								3			A-4 (1)	BR
								5				

NOTE: SOIL CHARACTERISTICS TABULATED ABOVE ARE REPRESENTATIVE AT THE LOCATION OF THE SAMPLE, AND FROM SURFACE INDICATIONS ARE TYPICAL FOR THE LIMITS OF THE SAMPLE, AND FROM SURFACE INDICATIONS ARE TYPICAL FOR THE LIMITS BE RESPONSIBLE FOR VARIATIONS IN THE SOIL CHARACTERISTICS AND/OR EXTENT OF SAME DIFFERING FROM THE ABOVE TABULATIONS.

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER	APPROACH SLABS (TYPE C2)	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
22+26.24	22+50.24	APPROACH GUTTER ON LT.	14.84		1066	
24+22.54	24+46.54	APPROACH GUTTER ON LT.	14.84		1066	
22+40.84	22+64.84	APPROACH GUTTER ON RT.	14.84		1066	
24+37.14	24+61.14	APPROACH GUTTER ON RT.	14.84		1066	
22+40.84	22+64.84	APPROACH SLAB		49.15	5980	64.3
24+37.14	24+61.14	APPROACH SLAB		49.15	5980	64.3
TOTALS:			59	98	16224	129

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL									
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS	ROCK DITCH CHECKS	SILT FENCE	SEDIMENT BASIN	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL	
											(E-5)	(E-6)	(E-11)	(E-14)			
											ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	M.GAL.
ENTIRE	PROJECT	MAIN LANES	1.81	3.62	1.81	184.6	1.81										
ENTIRE	PROJECT	DETOUR	0.68	1.36	0.68	69.4	0.68										
ENTIRE	PROJECT	NORTH DITCH AND CANAL	1.37	2.74	1.37	139.7	1.37										
ENTIRE	PROJECT	STAGE 1						0.68	0.68	13.9	66		2134	266	226	345	
ENTIRE	PROJECT	STAGE 2						1.81	1.81	36.9	286						
ENTIRE	PROJECT	STAGE 3						1.37	1.37	27.9							
ENTIRE	PROJECT	TO BE USED IF AND WHEN DIRECTED BY THE ENGINEER															
TOTALS:			3.86	7.72	3.86	393.7	3.86	5.86	5.86	119.5	528	24	3134	366	326	482	

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

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.

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

7/28/2022  
BM161BRIDGE\_018

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
07/28/22				6	ARK.			
				JOB NO.		061472	18	101

2

QUANTITIES

STRUCTURES

STATION	DESCRIPTION	PIPE CULVERT ALTERNATES		24" FES PIPE CULVERT	SOLID SODDING	WATER	STD. DWG. NOS.
		ALT. 1 (CLASS III)	ALT. 2, 3, 4, 5, AND 6 (WITH CLASS III ALT. 1)				
		24"	24"				
		LIN. FT.					
25+09	DBL 24" CROSS DRAIN	157	157	2	18	0.23	PCC-1, PCM-1, PCP-1, PCP-2, FES-1, FES-2
0+89 TO 1+19	NORTH DITCH TWIN OULET CULVERTS (SHT 27)	60	60	2	9	0.11	PCC-1, PCM-1, PCP-1, PCP-2, FES-1, FES-2
TOTALS:		217	217	4	27	0.34	

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.



BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT						ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")				
				TON / STATION	TON	(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)			TOTAL GALLONS	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 64-22 TON	AVG. WID. FEET	SQ. YD.	POUND / SQ.YD.	PG 64-22 TON
						TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL WID. FEET	SQ.YD.	GALLON									
MAIN LANES																				
14+75.00	15+75.00	100' TRANSITION	100.00						20.00	222.22	37.78	37.78					20.00	222.22	220.00	24.44
15+75.00	16+98.00	NOTCH AND WIDEN	123.00	124.50	153.14				24.00	328.00	55.76	55.76					40.00	546.67	220.00	60.13
16+98.00	20+04.25	FULL DEPTH	306.25	217.75	666.86	24.35	828.58	41.43				41.43	24.35	828.58	495.00	205.07	40.00	1361.11	220.00	149.72
20+04.25	20+37.25	FULL DEPTH RT. SHOULDER TAPER	33.00	230.26	75.99	24.35	89.28	4.46				4.46	24.35	89.28	495.00	22.10	42.75	156.75	220.00	17.24
20+37.25	21+13.53	FULL DEPTH RT. SHOULDER WIDEINING	76.28	242.77	185.18	24.35	206.38	10.32				10.32	24.35	206.38	495.00	51.08	45.50	385.64	220.00	42.42
21+13.53	21+46.53	FULL DEPTH LT. SHOULDER TAPER	33.00	255.28	84.24	24.35	89.28	4.46				4.46	24.35	89.28	495.00	22.10	48.25	176.92	220.00	19.46
21+46.53	22+34.04	FULL DEPTH LT. AND RT. SHOULDER WIDEING	87.51	267.79	234.34	24.35	236.76	11.84				11.84	24.35	236.76	495.00	58.60	51.00	495.89	220.00	54.55
24+53.34	25+40.85	FULL DEPTH LT. AND RT. SHOULDER WIDEING	87.51	267.79	234.34	24.35	236.76	11.84				11.84	24.35	236.76	495.00	58.60	51.00	495.89	220.00	54.55
25+40.85	25+73.85	FULL DEPTH RT. SHOULDER TAPER	33.00	255.28	84.24	24.35	89.28	4.46				4.46	24.35	89.28	495.00	22.10	48.25	176.92	220.00	19.46
25+73.85	26+50.13	FULL DEPTH LT. WIDEINING	76.28	242.77	185.18	24.35	206.38	10.32				10.32	24.35	206.38	495.00	51.08	45.50	385.64	220.00	42.42
26+50.13	26+83.13	FULL DEPTH LT. SHOULER TAPER	33.00	230.26	75.99	24.35	89.28	4.46				4.46	24.35	89.28	495.00	22.10	42.75	156.75	220.00	17.24
26+83.13	27+19.00	FULL DEPTH	35.87	217.75	78.11	24.35	97.05	4.85				4.85	24.35	97.05	495.00	24.02	40.00	159.42	220.00	17.54
27+19.00	28+90.00	NOTCH AND WIDEN	171.00	124.50	212.90				24.00	456.00	77.52	77.52					40.00	760.00	220.00	83.60
28+90.00	29+90.00	100' TRANSITION	100.00						20.00	222.22	37.78	37.78					20.00	222.22	220.00	24.44
13+57.62	15+60.00	DETOUR WIDENING	202.38	100.63	203.65	14.00	314.81	15.74				15.74					14.00	314.81	440.00	69.26
15+60.00	30+30.00	DETOUR FULL DEPTH	1470.00	175.50	2579.85	28.00	4573.33	228.67				228.67					28.00	4573.33	440.00	1006.13
30+30.00	32+25.46	DETOUR WIDENING	195.46	100.63	196.69	14.00	304.05	15.20				15.20					14.00	304.05	440.00	66.89
15+75.00	16+98.00	GRADE RAISE	123.00						24.00	328.00	55.76	55.76						1845.00	220.00	202.95
27+19.00	28+90.00	GRADE RAISE	171.00						24.00	456.00	77.52	77.52						2565.00	220.00	282.15
ADDITIONAL FOR DETOUR SUPERELEVATION																				
18+01.09	28+91.66	ADDITIONAL AGGREGATE	1090.57	VAR.	383.58															
TOTALS:					5634.28		7361.22	368.05		2012.44	342.12	710.17		2169.03		536.85		15304.23		2254.59

BASIS OF ESTIMATE:  
ACHM SURFACE COURSE (1/2").....94.9% MIN. AGGR.....5.1% ASPHALT BINDER  
ACHM BINDER COURSE (1").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER  
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
21+56.53	22+50.28	LT. SIDE	75	1	1
20+47.25	22+66.00	RT. SIDE	150	1	1
24+21.38	26+40.13	LT. SIDE	150	1	1
24+37.10	25+30.85	RT. SIDE	75	1	1
TOTALS:			450	4	4

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	COMPACTED CLAY LINER FILL	* SOIL STABILIZATION
			CU. YD.			TON
ENTIRE	PROJECT	MAIN LANES	378	7581		
ENTIRE	PROJECT	DETOUR CONSTRUCTION	370	1650		
ENTIRE	PROJECT	DETOUR REMOVAL	3630	360		
ENTIRE	PROJECT	CANAL EXCAVATION	18645	458		
ENTIRE	PROJECT	CANAL CLAY LINER			4700	
ENTIRE	PROJECT	CHANNEL EXCAVATION - NORTH DITCH	2802			
ENTIRE	PROJECT	DRIVEWAYS	19	164		
		IF AND WHERE DIRECTED BY				100
TOTALS:			25844	10213	4700	100

\*QUANTITIES ARE ESTIMATED  
SEE SECTION 104 03 OF THE STANDARD SPECIFICATIONS

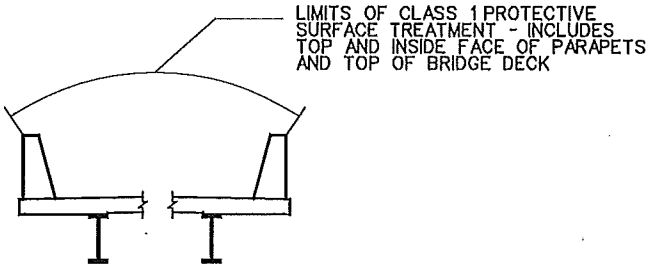
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
07/28/22				6	ARK.			
						JOB NO.	061472	19 101
				2	07386	QUANTITIES	58587	

SCHEDULE OF BRIDGE QUANTITIES JOB 061472

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	SP, SS & 802	SP, SS & 802	SP & 803	SS & 804	SS & 804	SS & 805	SS & 805	SS & 805	SP, SS & 807	SS & 808	SS & 809	812	SS & 816	SS & 816
			ITEM	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE ( GRADE 60 )	EPOXY COATED REINFORCING STEEL ( GRADE 60 )	STEEL SHELL PILING ( 18" DIA. )	STEEL SHELL PILING ( 24" DIA. )	PILE ENCASEMENT	STRUCTURAL STEEL IN BEAM SPANS ( M270, GRADE 50W )	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET
			UNIT	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	LIN. FT.	EACH	CU. YD.	SQ. YD.
07386	HIGHWAY 161 OVER CANAL 1000		BENT 1 (INCLUDES WING WALLS)	45.60		0.3	7151	3187	350				1413.5				
			BENT 2	24.50			2379			340	80		2091.5				
			BENT 3	24.50			2379			340	80		2091.5				
			BENT 4 (INCLUDES WING WALLS)	45.60		0.3	7151	3187	320				1413.5				
			144' CONT. COMP. W-BM UNIT		138	15.1		45153				103320		92	1	883	1729
			TOTALS FOR JOB 061472	140.20	138	15.7	19060	51527	670	680	160	103320	7010.0	92	1	883	1729

① PILES AND PILE ENCASEMENT SHALL CONFORM TO AHTD STD. DWG. NO 55021



SURFACE TREATMENT DETAIL

QUALITY CONTROL

CONTRACTOR ACCEPTANCE TESTING SHALL BE PER AHTD'S MANUAL OF FIELD SAMPLING AND TESTING PROCEDURES.

THE CONTRACTOR SHALL PROVIDE SUBMITTALS SHOWING CONFORMANCE OF ALL TESTING EQUIPMENT AND PROCEDURES, TECHNICIAN QUALIFICATIONS AND LABORATORY CERTIFICATIONS PER AHTD'S MANUAL OF FIELD SAMPLING AND TESTING PROCEDURES.



SCHEDULE OF BRIDGE QUANTITIES  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES  
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: TLW DATE: FEB 2020 FILENAME: b061472\_q1.dgn  
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN  
DESIGNED BY: TLW DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58587

## 2 SUMMARY OF QUANTITIES AND REVISIONS



ITEM NUMBER	ITEM		QUANTITY	UNIT
SP, SS & 210	UNCLASSIFIED EXCAVATION		25844	CU. YD.
SP & 210	COMPACTED EMBANKMENT		10213	CU. YD.
SP & 210	COMPACTED EMBANKMENT (CLAY LINER)		4700	CU. YD.
SP & 210	SOIL STABILIZATION		100	TON
SP, SS & 303	AGGREGATE BASE COURSE (CLASS 7)		6118	TON
SS & 401	TACK COAT		760	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		514	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		23	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		2152	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		116	TON
SP & 412	COLD MILLING ASPHALT PAVEMENT		444	SQ. YD.
SP, SS & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		25	TON
SP, SS & 415	ACHM PATCHING OF EXISTING ROADWAY		100	TON
SP, SS & 504	APPROACH SLABS		98	CU. YD.
SP, SS & 504	APPROACH GUTTERS		59	CU. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SS & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS & 604	SIGNS		316	SQ. FT.
SS & 604	BARRICADES		32	LIN. FT.
SS & 604	TRAFFIC DRUMS		22	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		8200	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		2700	LIN. FT.
SS & 604	VERTICAL PANELS		14	EACH
SP, SS & 605	CONCRETE DITCH PAVING (TYPE B)		149	SQ. YD.
SP, SS, & 606	18 " SIDE DRAIN		32	LIN. FT.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	217	LIN. FT.
SS & 606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	217	LIN. FT.
SS & 606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		4	EACH
SS & 606	SELECTED PIPE BEDDING		29	CU. YD.
SS & 617	GUARDRAIL (TYPE A)		450	LIN. FT.
SS & 617	GUARDRAIL TERMINAL (TYPE 2)		4	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL		4	EACH
SS & 620	MULCH COVER		9.72	ACRE
620	SEEDING		3.86	ACRE
620	LIME		7.72	TON
620	WATER		514.7	M.GAL.
621	TEMPORARY SEEDING		5.86	ACRE
621	SILT FENCE		3134	LIN. FT.
621	SAND BAG DITCH CHECKS		528	BAG
621	SEDIMENT BASIN		366	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		326	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		482	CU. YD.
621	ROCK DITCH CHECKS		24	CU. YD.
623	SECOND SEEDING APPLICATION		3.86	ACRE
624	SOLID SODDING		121	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")		3900	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")		3900	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		49	EACH
SS & 804	REINFORCING STEEL - ROADWAY (GRADE 60)		16224	POUND
SS & 816	FILTER BLANKET		59	SQ. YD.
SS & 816	DUMPED RIPRAP (GROUTED)		48	CU. YD.

ITEM NUMBER	ITEM	QUANTITY	UNIT
	<b>STRUCTURES OVER 20' SPAN</b>		
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
SP, SS & 802	CLASS S CONCRETE BRIDGE	140.20	CU YD
SP, SS & 802	CLASS S(AE) CONCRETE-BRIDGE	138.00	CU YD
SP & 803	CLASS 1 PROTECTIVE SURFACE TREATMENT	15.7	GAL.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	19060	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	51527	POUND
SS & 805	STEEL SHELL PILING (18" DIA)	670	LIN. FT.
SS & 805	STEEL SHELL PILING (24" DIA)	680	LIN. FT.
SS & 805	PILE ENCASEMENT	160	LIN. FT.
SP, SS & 807	STRUCTURAL STEEL IN BEAMS SPANS (M270, GRADE 50W)	103320	POUND
SS & 808	ELASTOMERIC BEARINGS	7010.0	CU IN
SS & 809	SILICONE JOINT SEALANT	92	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
SS & 816	DUMPED RIP RAP	883	CU YD
SS & 816	FILTER BLANKET	1729	SQ YD

[illegible]

## SUMMARY OF QUANTITIES AND REVISIONS

BM161BRIDGE\_020



Project Name: 061472  
Date: 1/21/2016  
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, GRID.  
Units: U.S. SURVEY FOOT

DATE REVISED	DATE PLANNED	DATE REVISED	DATE PLANNED	FED. PROJ. DIST. NO.	STATE	FED. AND PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06472	21	101

② SURVEY CONTROL DETAILS

Point	Name	Northing	Easting	Elev	Feature	Description
I		2044924.3760	1274498.6560	242.39	CTL	JMAI000702=20+00
108		2045297.4970	1272527.6400	253.33	CTL	JMAI000701=0+06
108		2044483.5860	1278975.4610	240.46	CTL	JMAI000703=67+72
III		2046113.7440	1283038.3400	247.60	CTL	JMAI000704=116+20
II4		2049068.0660	1284435.6300	245.52	CTL	JMAI000705=156+92
II4		2049248.6740	1288311.9390	240.23	CTL	JMAI000706=195+87
II4		2051954.6060	1288387.6410	240.11	CTL	JMAI000707=222+94
170		2044380.0460	1282474.0620	245.51	CTL	REBAR AHTD AL CAP
171		2045100.7310	1282174.9010	245.59	CTL	REBAR AHTD AL CAP
172		2045853.9790	1282979.8230	247.06	CTL	REBAR AHTD AL CAP
173		2046609.7450	1283147.2700	247.08	CTL	REBAR AHTD AL CAP

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

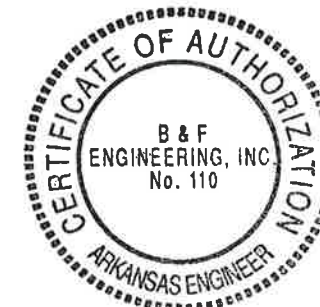
BASIS OF BEARING;  
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE  
DETERMINED FROM GPS CONTROL POINTS: 880088-880088A  
CONVERGENCE ANGLE: 00-03-16 LEFT AT LT:34-40-59.1LG:092-05-50.8  
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

CANAL 1000 CL ALIGNMENT				
POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
501	PT	86+74.22	1281114.2391	2045651.508
502	PC	92+54.38	1281601.9625	2045336.9689
503	PT	98+59.83	1282181.9896	2045223.0892
504	PC	106+18.80	1282928.0739	2045362.3521
505	PT	116+01.75	1283571.3719	2046023.2358

HIGHWAY 161 CL ALIGNMENT				
POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
8000	POB	10+00.00	1282747.3680	2044036.1050
8001	POE	36+04.09	1283127.5822	2046612.2896

DETOUR DITCH CL ALIGNMENT				
POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
508	POB	10+00.00	1282747.3680	2044036.1050
509	PC	13+57.62	1282799.5828	2044389.8925
510	PT	15+44.59	1282844.0229	2044571.2183
511	PC	19+88.59	1282989.6453	2044990.6580
512	PT	27+04.16	1283082.6286	2045695.2217
513	PC	30+07.97	1283060.8540	2045998.2475
514	PT	32+25.46	1283068.9697	2046215.1533
515	POE	36+26.90	1283127.5822	2046612.2896

NORTH DITCH CL ALIGNMENT				
POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
516	POB	0+00		
517	PC	2+91.46		
518	PCC	3+97.50	1281922.2396	2045410.0565
519	PT	6+23.59	1282147.0419	2045409.8718
520	PC	13+21.04	1282832.6532	2045537.8233
521	PT	13+63.80	1282875.2036	2045541.1319
522	PC	15+34.03	1283045.37	2045536.1448
523	PT	16+29.17	1283132.5507	2045568.0908
524	PC	17+73.19	1283239.7063	2045664.3255
	PT	21+89.01	1283434.5803	2046022.56



ALL COORDINATES ARE ARKANSAS  
STATE PLANE GRID (SOUTH ZONES).  
CONTRACTOR SHALL CONVERT TO  
GROUND COORDINATES FOR STAKEOUT.

ALL COORDINATES ARE ARKANSAS  
STATE PLANE GRID (SOUTH ZONE).  
CONTRACTOR SHALL CONVERT TO  
GROUND COORDINATES FOR STAKEOUT.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472		22	101
2 SURVEY CONTROL DETAILS								



CANAL 1000  
CENTERLINE

NORTH DITCH  
CENTERLINE

### NORTH DITCH CURVE DATA

PI=13+42.50  
Delta 12°14'59.67" RT.  
T=21.46'  
L=42.76'  
R=200.00'  
P.C.=13+21.04  
P.T.=13+63.80

### NORTH DITCH CURVE DATA

PI=15+84.04  
Delta 43°36'18.83" L.T.  
T=50.00'  
L=95.19'  
R=125.00'  
P.C.=15+34.03  
P.T.=16+29.17

BEGIN DETOUR JOB 061472  
STA. 13+57.62

### DETOUR CURVE DATA

PI=14+51.38  
Delta 10°45'02.04" RT.  
T=5.75'  
L=93.76'  
R=186.97'  
P.C.=13+57.62  
P.T.=15+24.89  
e=NO SUPER

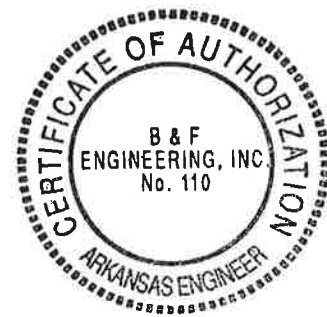
### DETOUR CURVE DATA

PI=23+51.37  
Delta 23°15'22.28"  
D=3.25°  
T=362.78'  
L=715.57'  
P.C.=19+89.59  
P.T.=27+04.16  
e=0.061'/'  
Ls=250'

### CANAL 1000 CURVE DATA

PI=11+83.13  
Delta 70°23'56.17" L.T.  
D=7.16°  
T=564.33'  
L=982.95'  
R=800.00'  
P.C.=106+19  
P.T.=116+02

### SURVEY CONTROL DETAILS



\$DATE\$  
\$FILE\$

DATE REVISION	DATE PLUMED	DATE REVISION	DATE PLUMED	FIG. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	06472		23	100
2 SURVEY CONTROL DETAILS								

CANAL 1000 CURVE DATA

PI=95+72.43  
Delta 43°21'42.87"L.T.  
D= 7.6°  
T= 318.05'  
L=605.45'  
R= 800.00'  
P.C.=92+54  
P.T.=98+60

PI 95+72.43

PT 98+59.83

NORTH DITCH CURVE DATA

PI=3+46.80  
Delta 40°30'03.82"L.T.  
D= 5.34°  
T= 106.03'  
L= 150.00'  
R= 150.00'  
P.C.=2+91.46  
P.C.C.=3+97.50

PI 3+46.80

PCC 3+97.50

NORTH DITCH CURVE DATA

PI=5+11.85  
Delta 21°14'11.31"L.T.  
D= 14.36°  
T= 226.03'  
L= 610.00'  
R= 610.00'  
P.C.C.=3+97.50  
PT=6+23.59

PI 5+11.85

PT 6+23.59

DETOUR CURVE DATA

PI=31+17.15  
Delta 12°30'20.23"RT.  
D= 5.75°  
T= 109.88'  
L= 217.49'  
P.C.=30+07.97  
PT=32+25.46  
e=NO SUPER

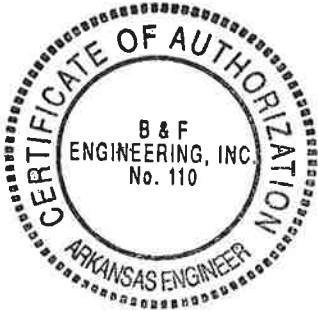
PN:111  
PD: COE MONUMENT

PI 31+17.15

PT 32+25.46

END DETOUR JOB 061472  
STA. 32+25.46

HIGHWAY 151  
CENTERLINE

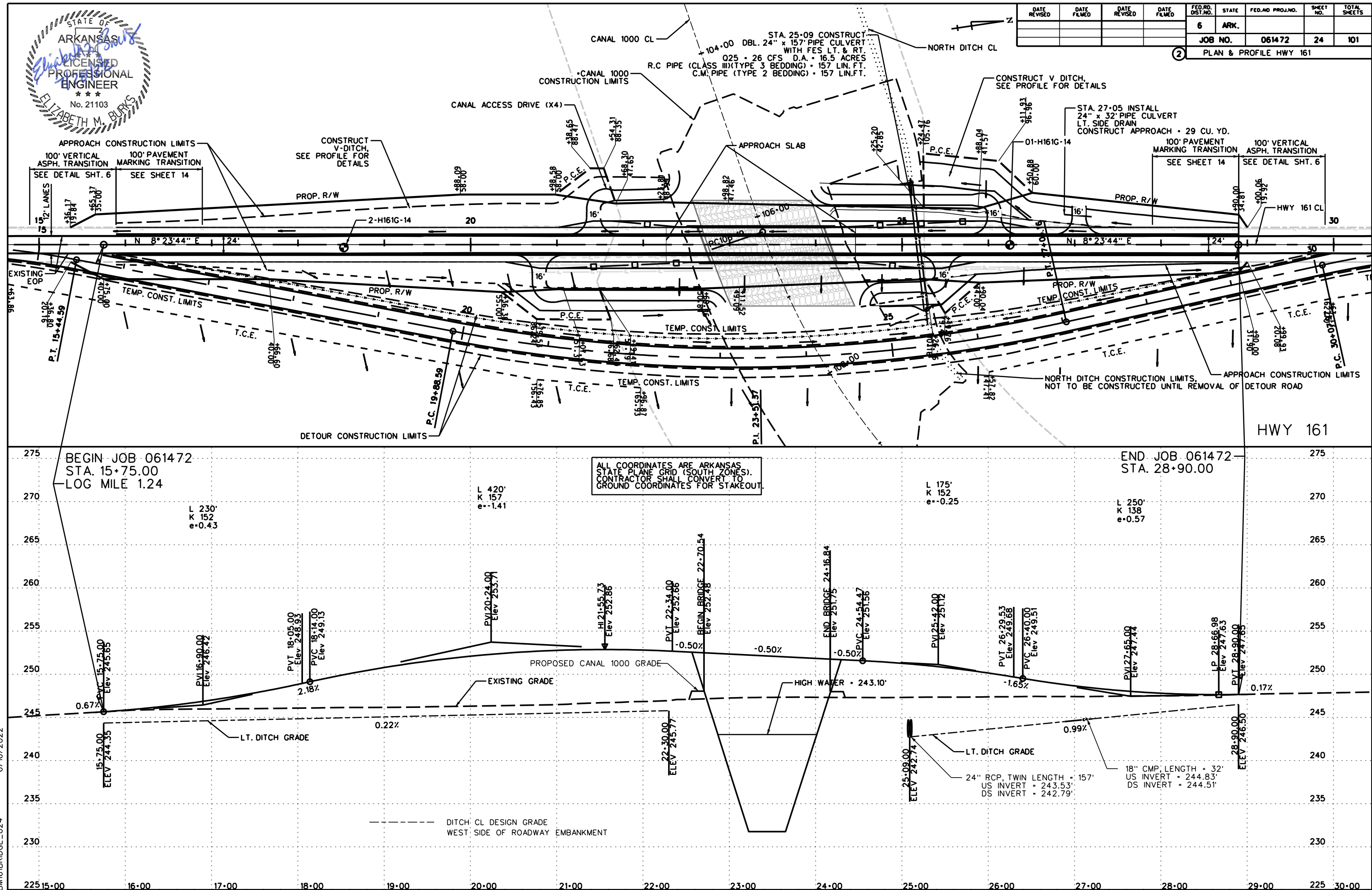


ALL COORDINATES ARE ARKANSAS  
STATE PLANE GRID (SOUTH ZONE).  
CONTRACTOR SHALL CONVERT TO  
GROUND COORDINATES FOR STAKEOUT.





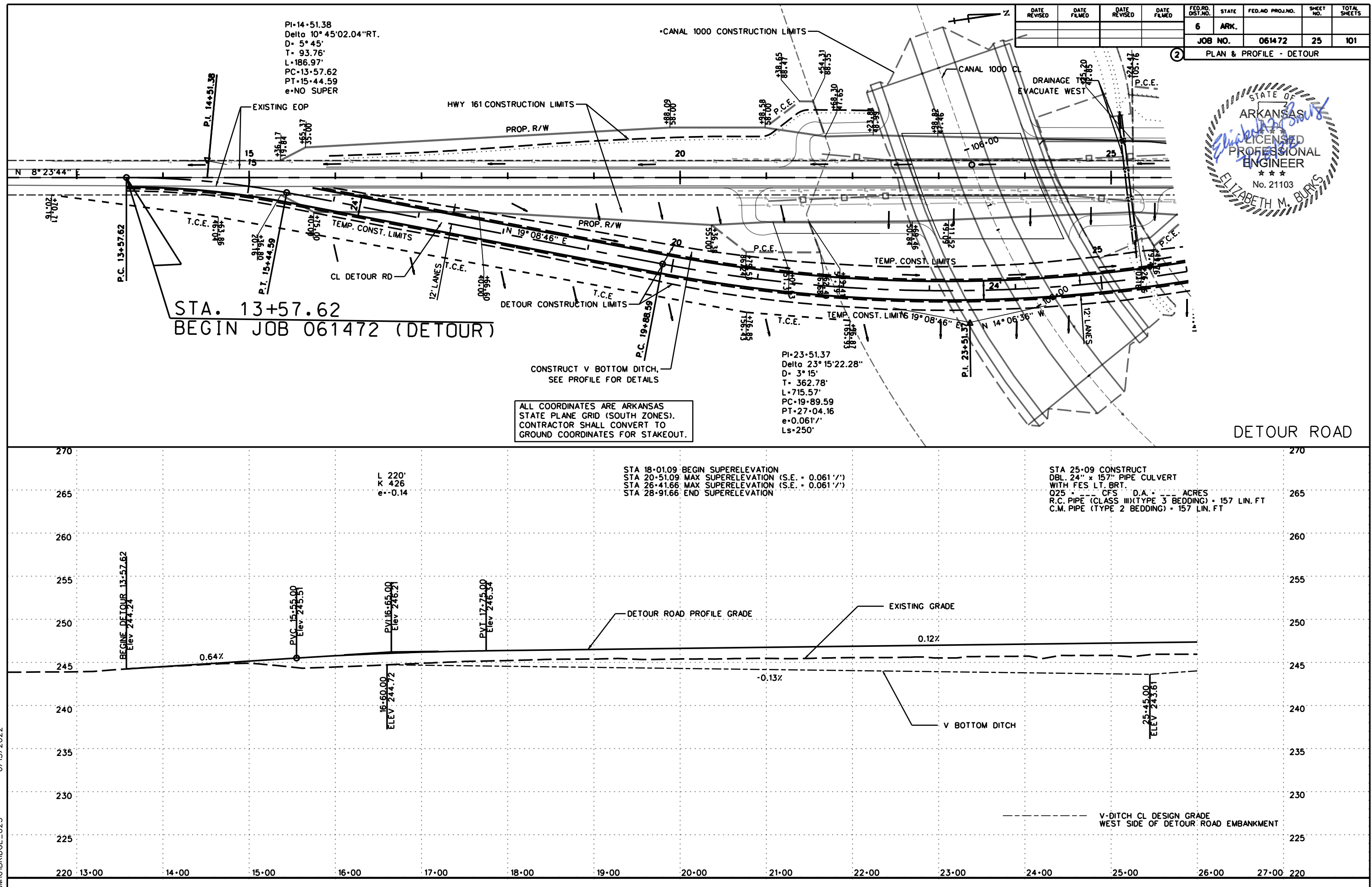
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. NO. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	24	101	
				PLAN & PROFILE HWY 161				





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.	061472	25	101	
PLAN & PROFILE - DETOUR								

## 2 PLAN & PROFILE - DETOUR





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.		061472	26	101

2 PLAN & PROFILE - DETOUR



PI=23+51.37  
Delta 23°15'22.28"  
D= 3'15"  
T= 362.78'  
L=715.57'  
PC=19+89.59  
PT=27+04.16  
e=0.061'/'  
Ls=250'

PI=31+17.15  
Delta 12°30'20.23"RT.  
D= 5.75'  
T= 109.18'  
L=217.49'  
PC=30+07.97  
PT=32+25.46  
e=NO SUPER

ALL COORDINATES ARE ARKANSAS  
STATE PLANE GRID (SOUTH ZONES).  
CONTRACTOR SHALL CONVERT TO  
GROUND COORDINATES FOR STAKEOUT.

STA. 32+25.46  
END JOB 061472 (DETOUR)

DETOUR ROAD

STA 18+01.09 BEGIN SUPERELEVATION  
STA 20+51.09 MAX SUPERELEVATION (S.E. = 0.061'/'')  
STA 26+41.66 MAX SUPERELEVATION (S.E. = 0.061'/'')  
STA 28+91.66 END SUPERELEVATION

END DETOUR JOB 061472  
STA 32+25.46

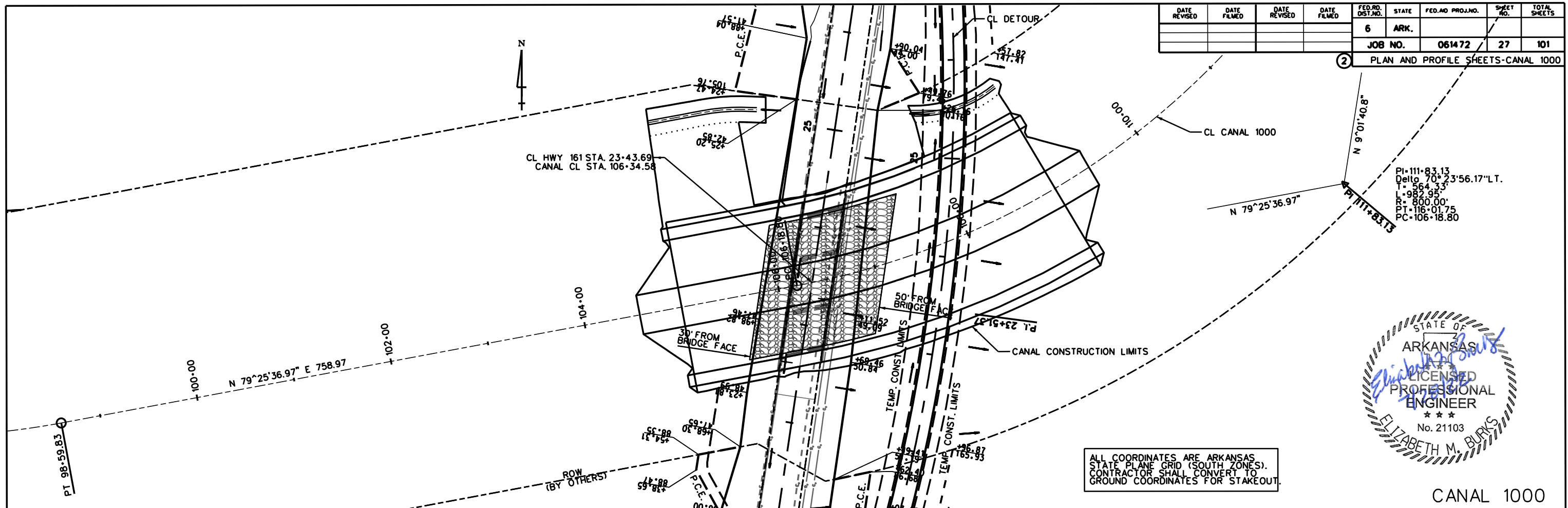
DETOUR ROAD PROFILE GRADE

EXISTING GRADE

V-DITCH CL DESIGN GRADE  
WEST SIDE OF DETOUR ROAD EMBANKMENT

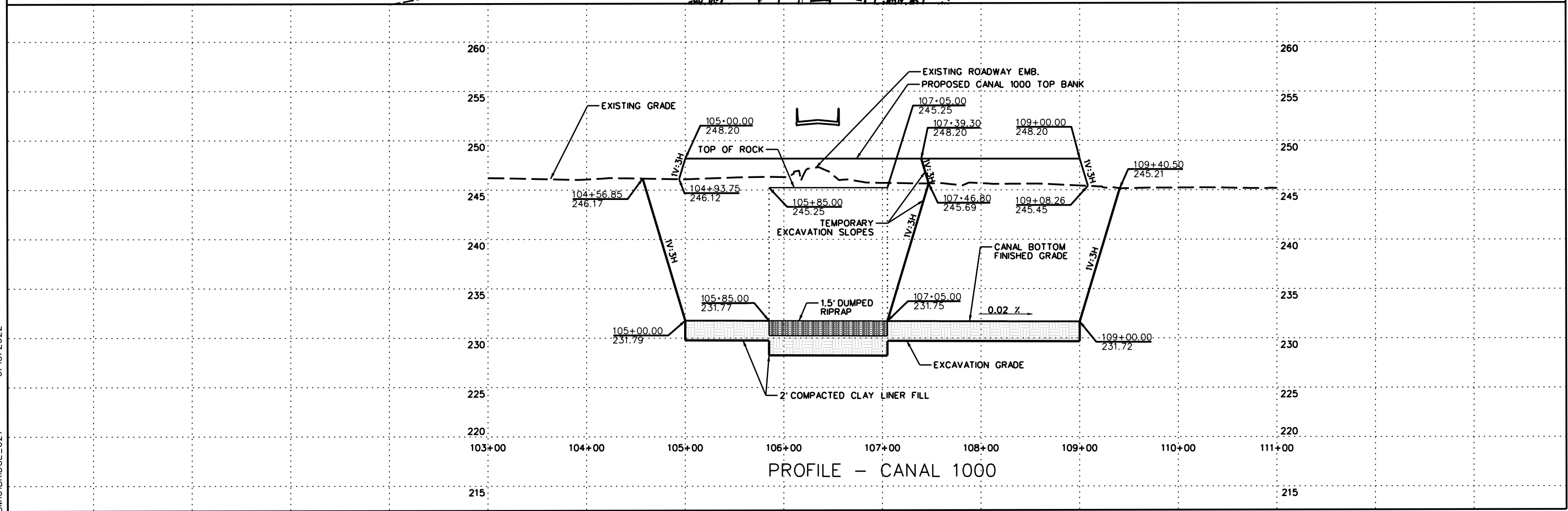
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				6	ARK.			
				JOB NO.	061472	27	101	

PLAN AND PROFILE SHEETS-CANAL 1000



ALL COORDINATES ARE ARKANSAS STATE PLANE GRID (SOUTH ZONES). CONTRACTOR SHALL CONVERT TO GROUND COORDINATES FOR STAKEOUT.

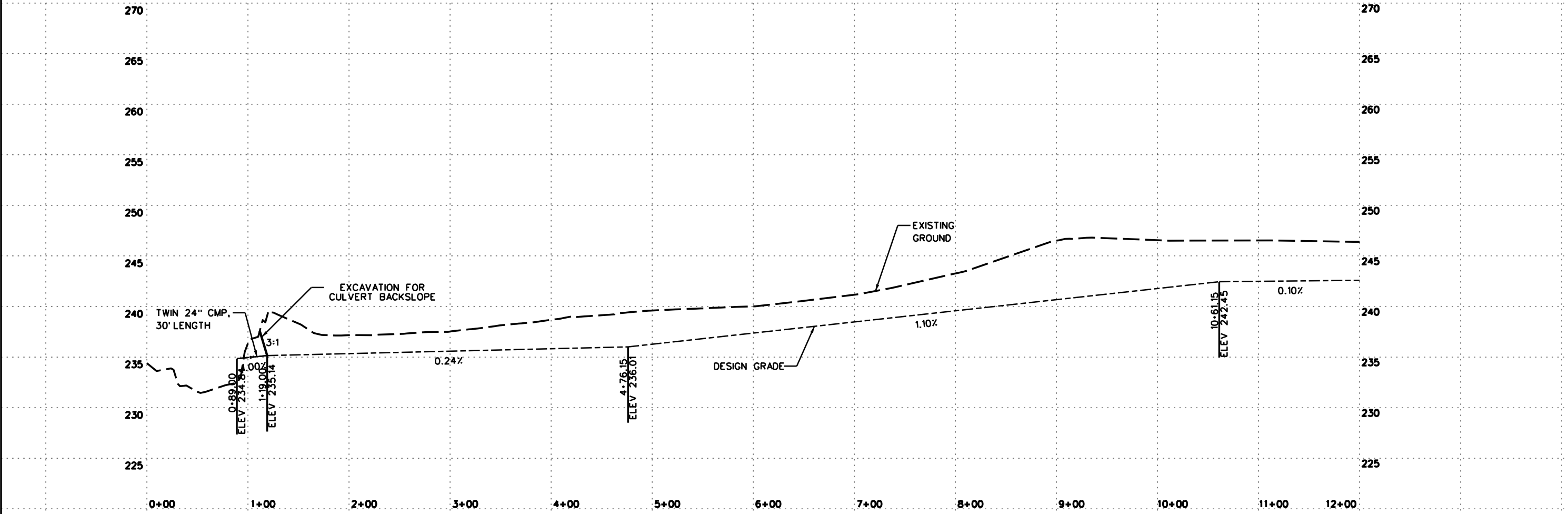
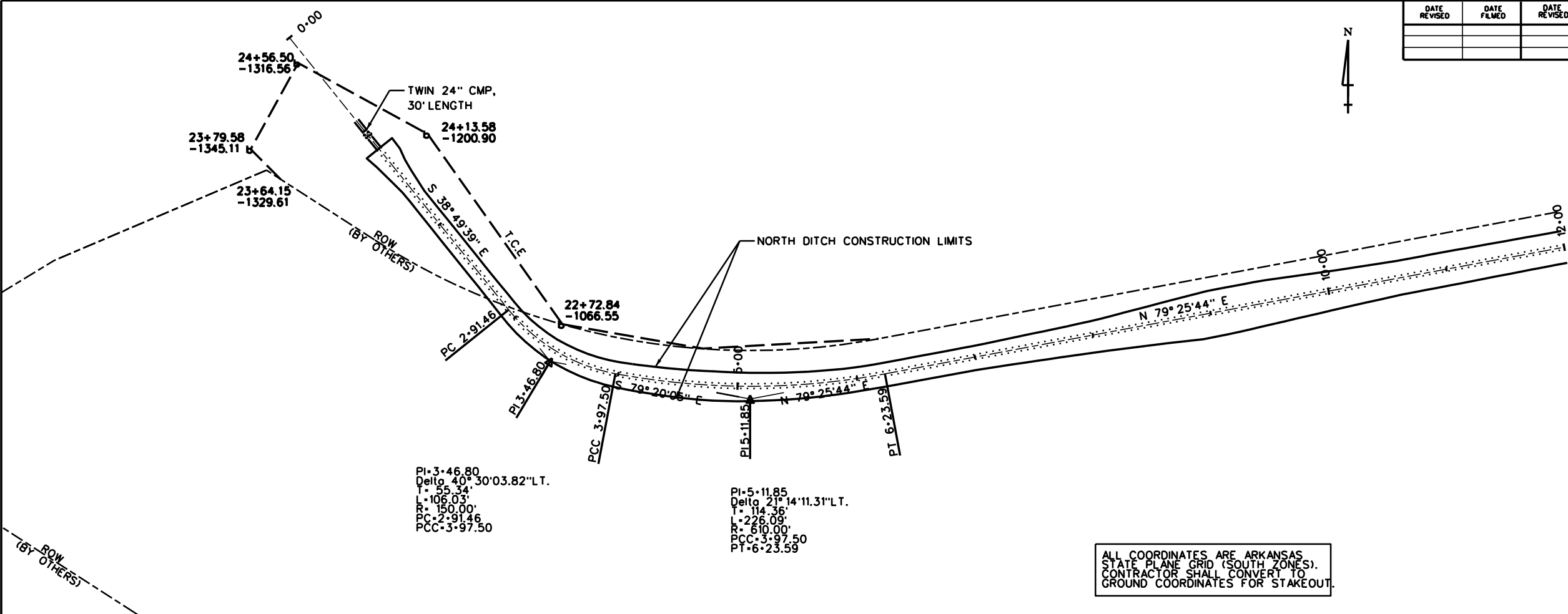
CANAL 1000



PROFILE - CANAL 1000

6/15/2022  
BM161BRIDGE\_027

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
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				(2) NORTH DITCH PLAN AND PROFILE				

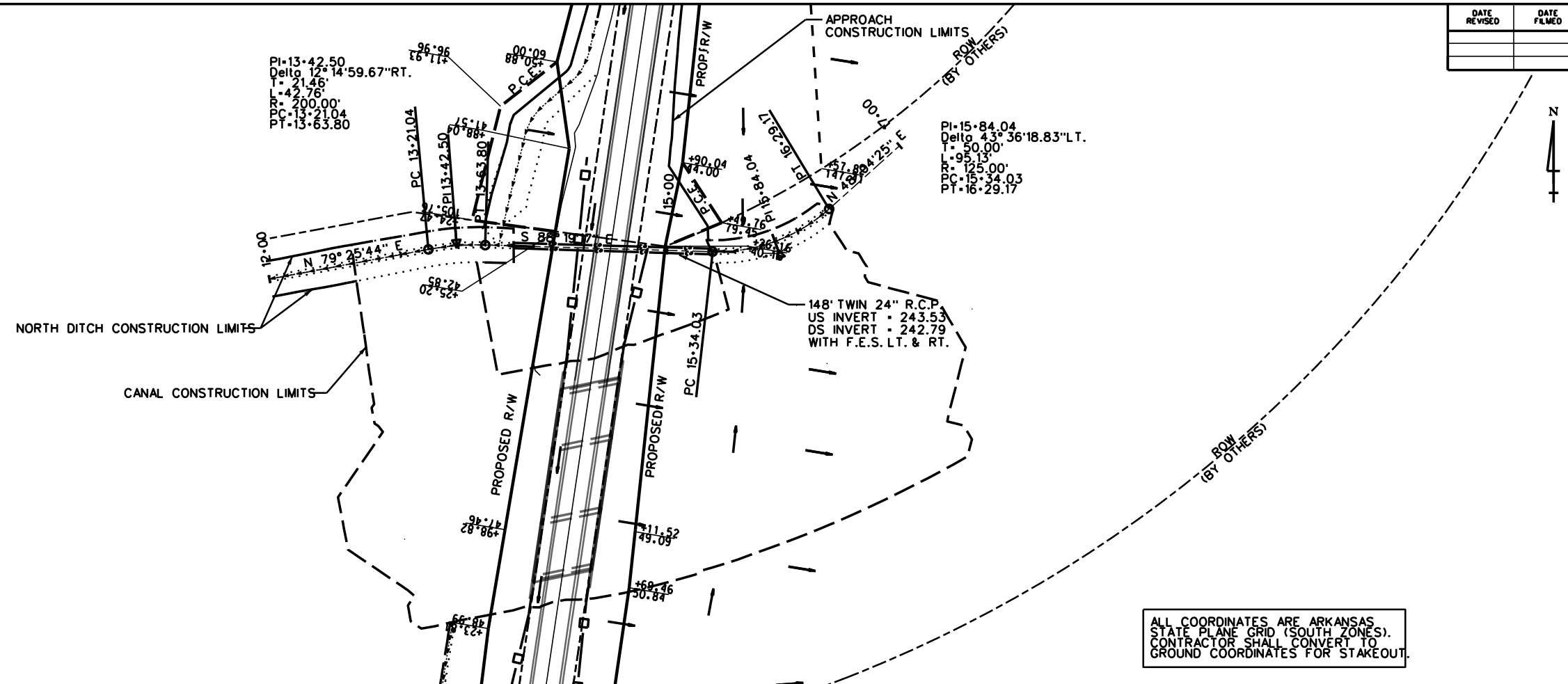




DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061472	29	101

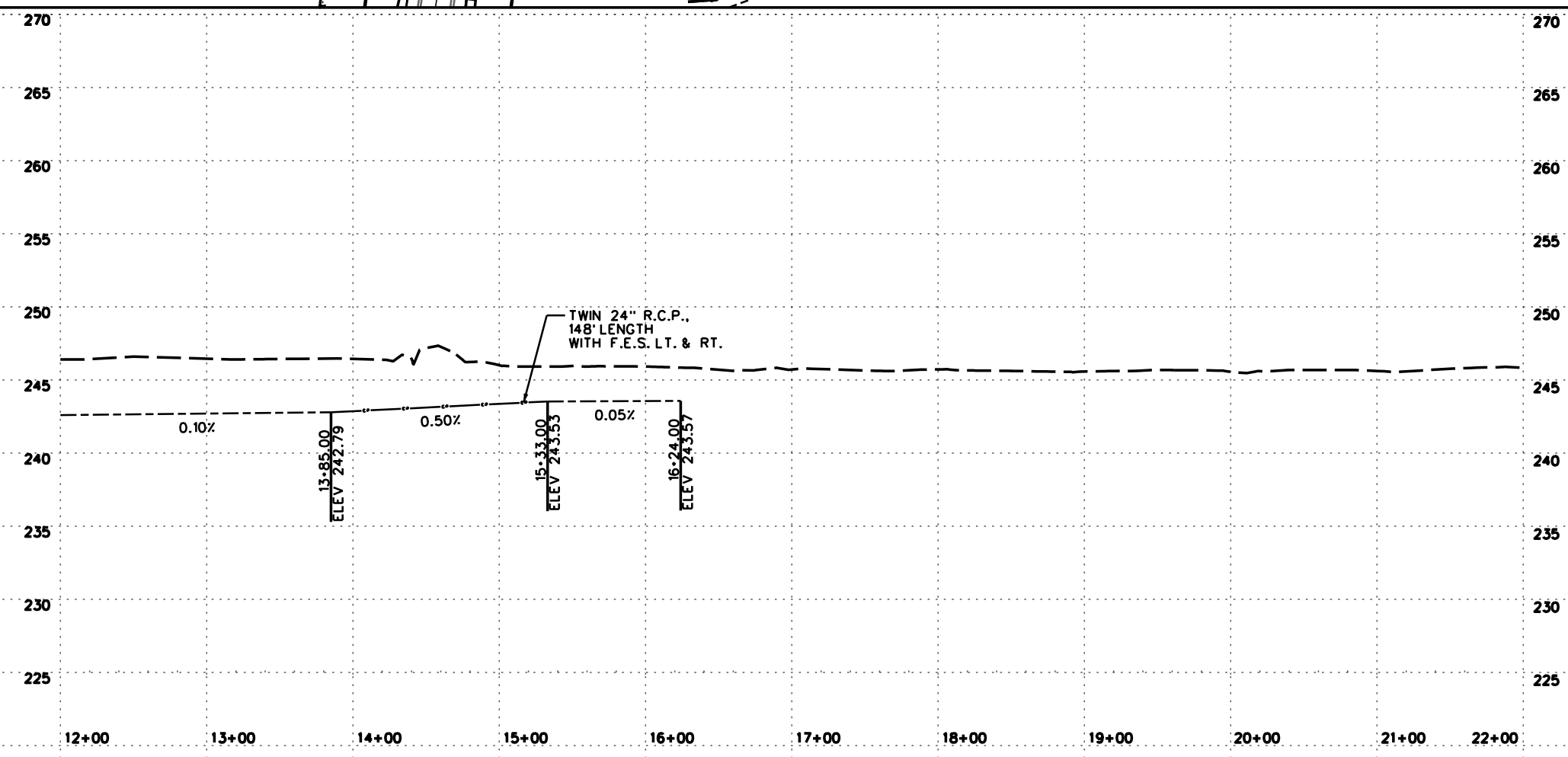
2 NORTH DITCH PLAN AND PROFILE

STATE OF ARKANSAS  
 ELIZABETH M. BURNS  
 LICENSED PROFESSIONAL ENGINEER  
 No. 21103



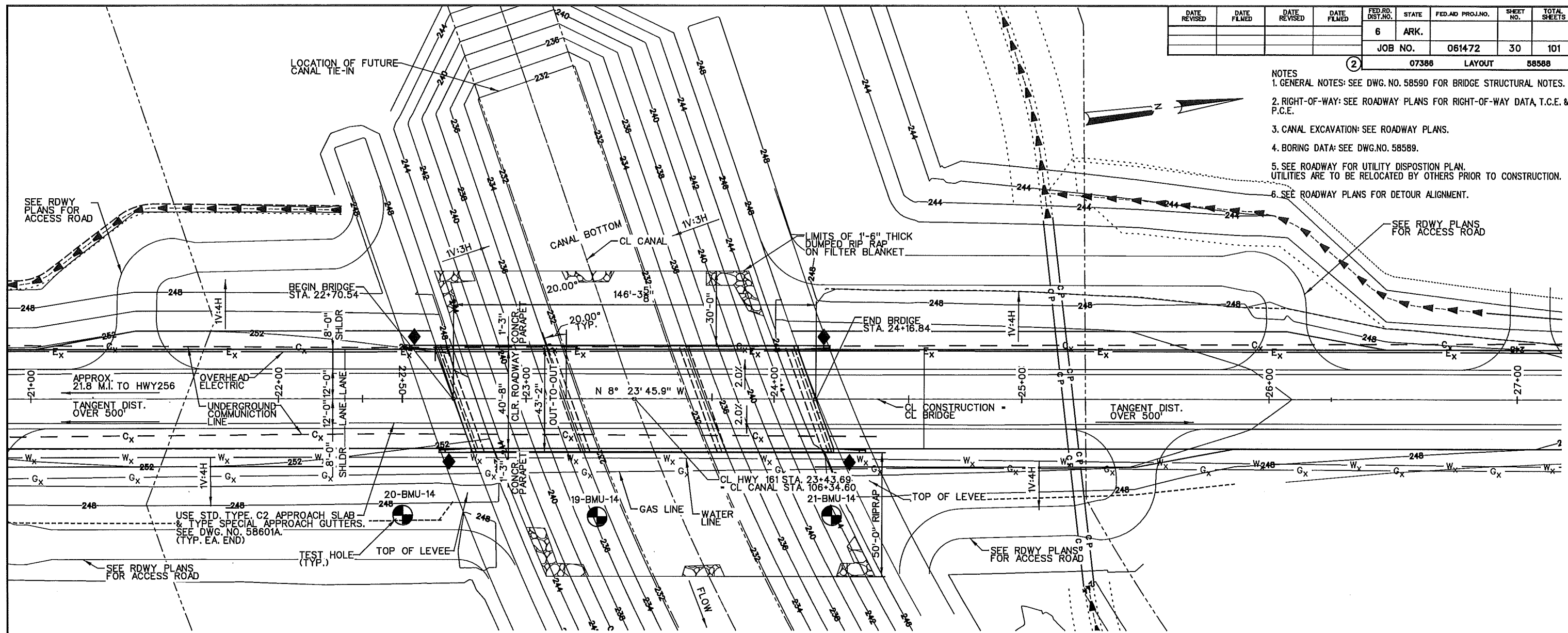
ALL COORDINATES ARE ARKANSAS STATE PLANE GRID (SOUTH ZONES). CONTRACTOR SHALL CONVERT TO GROUND COORDINATES FOR STAKEOUT.

NORTH DITCH



DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472		30	101
				07386	LAYOUT		58588	

- NOTES
1. GENERAL NOTES: SEE DWG. NO. 58590 FOR BRIDGE STRUCTURAL NOTES.
  2. RIGHT-OF-WAY: SEE ROADWAY PLANS FOR RIGHT-OF-WAY DATA, T.C.E. & P.C.E.
  3. CANAL EXCAVATION: SEE ROADWAY PLANS.
  4. BORING DATA: SEE DWG. NO. 58589.
  5. SEE ROADWAY FOR UTILITY DISPOSITION PLAN. UTILITIES ARE TO BE RELOCATED BY OTHERS PRIOR TO CONSTRUCTION.
  6. SEE ROADWAY PLANS FOR DETOUR ALIGNMENT.



NOTE: STATIONS & ELEVATIONS SHOWN ARE ALONG C.L. BRIDGE. ELEVATIONS ARE AT WORKING POINT

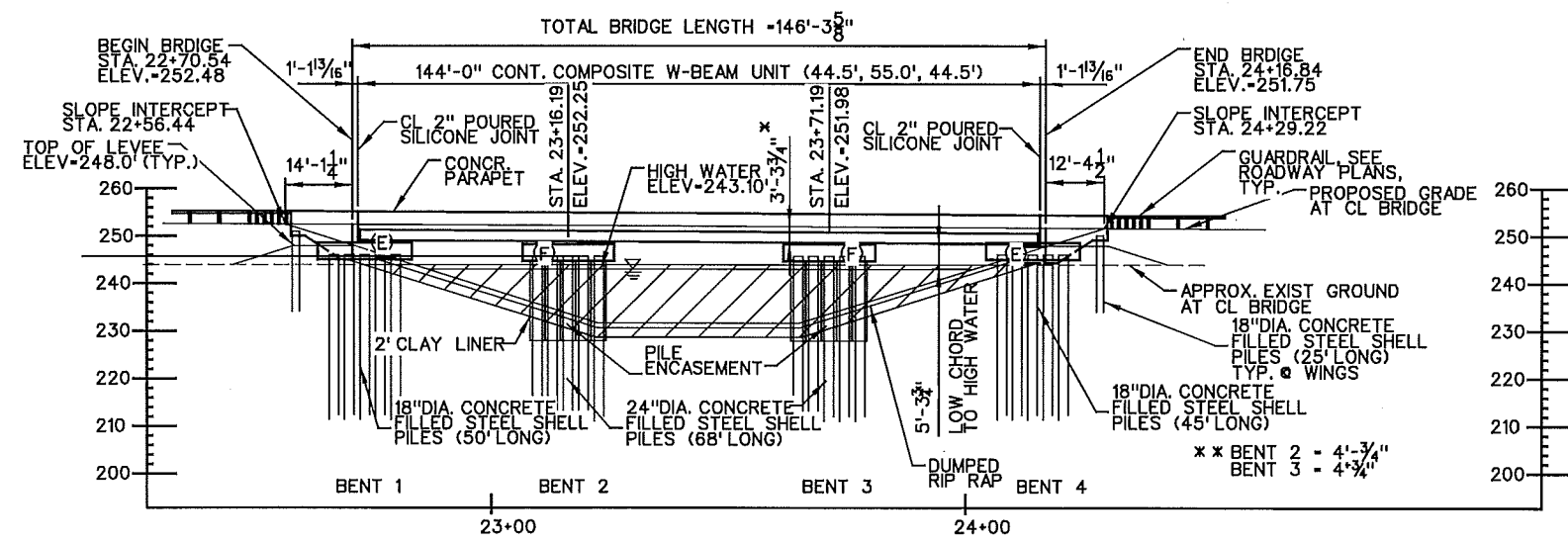
### LEGEND

- (F) FIXED
- (E) EXPANSION
- ◆ GUARD RAIL CONNECTION TO PARAPET TRANSITION
- + CL DECK AT CL BRIDGE TO LOW STEEL
- + + CL DECK AT CL BRIDGE TO LOW SIDE TOP OF CAP
- ▨ EXCAVATION LIMITS, SEE ROADWAY FOR QUANTITIES
- TEST HOLE
- ▨ PLAN VIEW EXCAVATION LIMITS, SEE ROADWAY FOR QUANTITIES

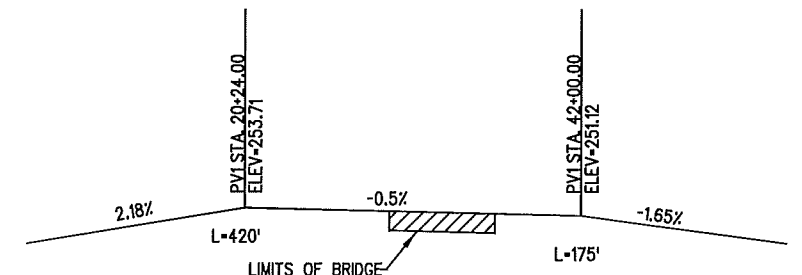
### HYDRAULIC DATA

DRAINAGE AREA = 0.05 SQ. MI.  
 MAIN CANAL LENGTH FOR CANAL 1000 = 7.95 MI.  
 CANAL FREEBOARD = 4 FT  
 HISTORIC HIGHWATER ELEVATION = N/A  
 MAXIMUM PUMPED DISCHARGE = 1750 CFS.  
 FREQUENCY DISCHARGE = N/A  
 HECRAS STATION = 106+35.50

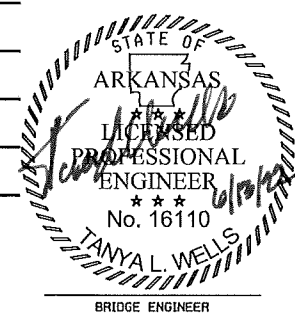
PLAN  
SCALE: 1"=20'



ELEVATION  
SCALE: 1"=20'



VERTICAL CURVE DATA  
GRADE LINE AT CL BRIDGE

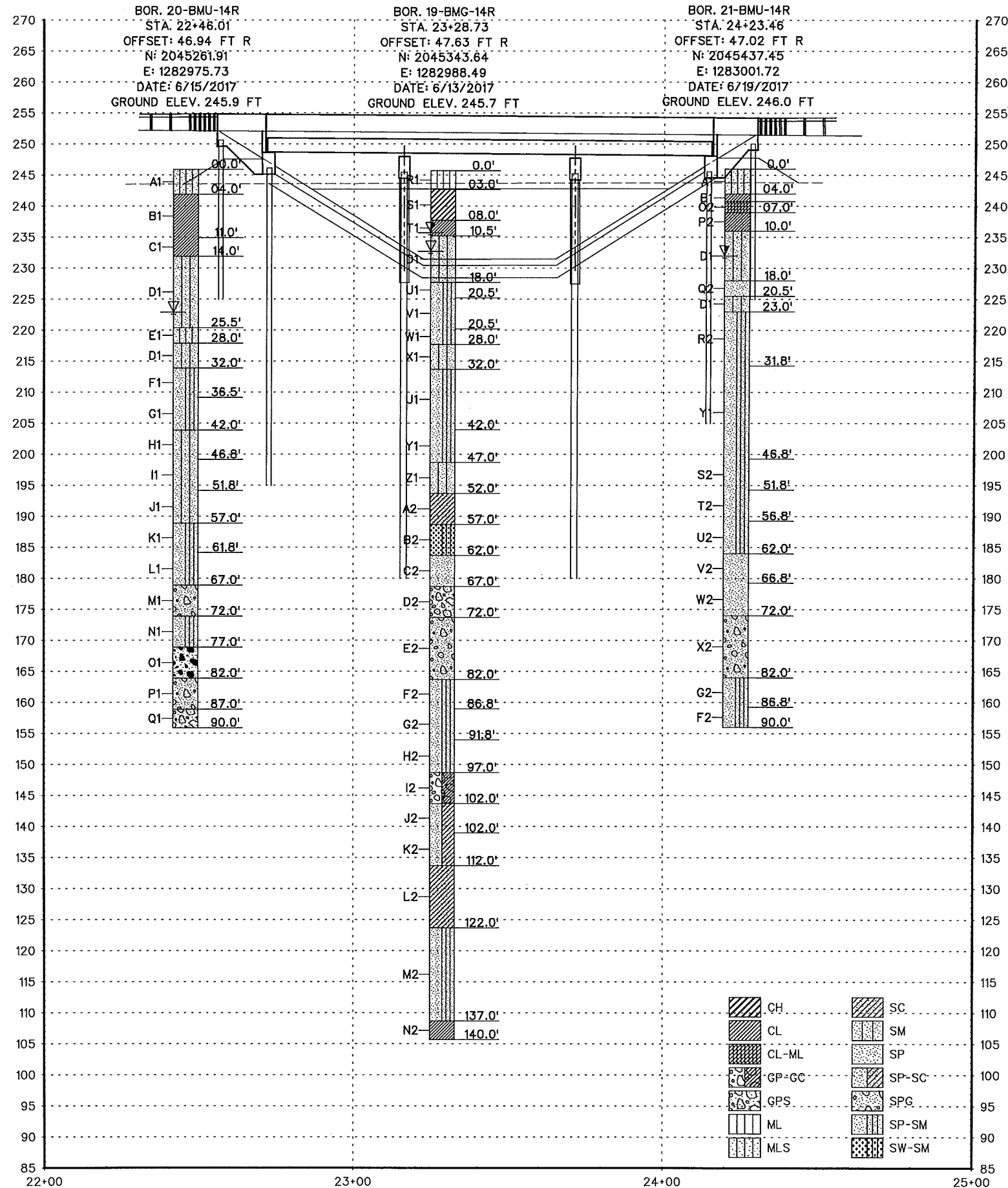


SHEET 1 OF 3  
 LAYOUT OF BRIDGE  
 HIGHWAY 161 OVER CANAL 1000  
 LONOKE & PULASKI COUNTIES  
 ROUTE 161 SEC. 5  
 ARKANSAS STATE HIGHWAY COMMISSION  
 LITTLE ROCK, ARK.  
 DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472\_11.dgn  
 CHECKED BY: DR DATE: FEB 2020 SCALE: 1"=20'  
 DESIGNED BY: TLW DATE: FEB 2020  
 BRIDGE NO. 07386 DRAWING NO. 58588

13-JUN-2022  
 b061472\_11

b061472\_b1 13-JUN-2022

ELEVATION



PROFILE - HWY 161 BORINGS

"N60" VALUES

20-BMU-14

18.5'-20.0', N-21  
21.0'-22.5', N-18  
23.5'-25.0', N-25  
26.0'-27.5', N-15  
28.5'-30.0', N-18  
33.5'-35.0', N-14  
38.5'-40.0', N-35  
43.5'-45.0', N-15  
48.5'-50.0', N-18  
53.5'-55.0', N-21  
58.5'-60.0', N-68  
63.5'-65.0', N-33  
68.5'-70.0', N-32  
73.5'-75.0', N-26  
78.5'-80.0', N-44  
83.5'-85.0', N-57  
88.5'-90.0', N-35

19-BMG-14

1.0'-2.5', N-8  
3.5'-5.0', N-0  
6.0'-7.5', N-2  
8.5'-10.0', N-8  
11.0'-12.5', N-15  
13.5'-15.0', N-15  
16.0'-17.5', N-18  
18.5'-20.0', N-26  
21.0'-22.5', N-33  
23.5'-25.0', N-32  
26.0'-27.5', N-22  
28.5'-30.0', N-42  
33.5'-35.0', N-21  
38.5'-40.0', N-14  
43.5'-45.0', N-36  
48.5'-50.0', N-21  
53.5'-55.0', N-21  
58.5'-60.0', N-21  
63.5'-65.0', N-88  
68.5'-70.0', N-16  
73.5'-75.0', N-26  
78.5'-80.0', N-26  
83.5'-85.0', N-92  
88.5'-90.0', N-95  
93.5'-95.0', N-54  
98.5'-100.0', N-100+  
103.5'-105.0', N-37  
108.5'-110.0', N-75  
113.5'-115.0', N-70  
118.5'-120.0', N-70  
123.5'-125.0', N-98  
128.5'-130.0', N-70  
133.5'-135.0', N-70  
138.5'-140.0', N-60

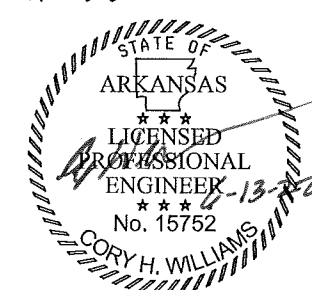
21-BMU-14

16.0'-17.5', N-18  
18.5'-20.0', N-30  
21.0'-22.5', N-22  
23.5'-25.0', N-22  
26.0'-27.5', N-22  
28.5'-30.0', N-19  
33.5'-35.0', N-37  
38.5'-40.0', N-39  
43.5'-45.0', N-44  
48.5'-50.0', N-36  
53.5'-55.0', N-42  
58.5'-60.0', N-100+  
63.5'-65.0', N-26  
68.5'-70.0', N-44  
73.5'-75.0', N-40  
78.5'-80.0', N-37  
83.5'-85.0', N-88  
88.5'-90.0', N-100+

NOTE: "N60" values were found by taking the observed field "N" values and multiplying by an energy correction factor of 1.4

BORING LEGEND

A1-Brown, SILT (ML) with sand, rootlets  
B1-Soft, brown, lean CLAY (CL), oxidized  
C1-Medium stiff, brown, lean CLAY (CL), oxidized  
D1-Medium dense, brown, fine, silty SAND (SM)  
E1-Stiff, brown, fine, sandy SILT (ML)  
F1-Medium dense, gray, fine, poorly graded SAND with silt (SP-SM), organic matter  
G1-Dense, tan, fine, poorly graded SAND with silt (SP-SM), organic matter  
H1-Medium dense, brown, fine to medium, silty SAND (SM)  
I1-Medium dense, brown, fine to medium, silty SAND (SM), clay strata or lenses  
J1-Medium dense, gray, fine to medium, silty SAND (SM), organic matter, oxidized, traces of gravel  
K1-Very dense, tan, fine to medium, poorly graded SAND with silt (SP-SM), few gravel  
L1-Dense, tan, fine to medium, poorly graded SAND with silt (SP-SM), trace of gravel  
M1-Dense, tan, fine to coarse, poorly graded SAND (SP) with gravel  
N1-Medium dense, gray, fine to coarse, poorly graded SAND with silt (SP-SM)  
O1-Dense, gray, fine, well graded GRAVEL (GW) with sand  
P1-Very dense, tan, fine to medium, poorly graded SAND (SP) with gravel  
Q1-Dense, brown, fine, poorly graded GRAVEL (GP) with sand  
R1-Medium stiff, brown, SILT (ML)  
S1-Very soft, brown, fat CLAY (CH), traces of organic matter  
T1-Medium stiff, brown, lean CLAY (CL), silt strata or lenses  
U1-Medium dense, tan, fine, poorly graded SAND with silt (SP-SM)  
V1-Dense, brown, fine, poorly graded SAND with silt (SP-SM)  
W1-Medium dense, tan, fine, poorly graded SAND with silt (SP-SM)  
X1-Dense, tan, fine, poorly graded sand with silt (SP-SM)  
Y1-Dense, tan, fine, poorly graded SAND with silt (SP-SM)  
Z1-Medium dense, gray, fine, silty SAND (SM), traces of organic matter  
A2-Medium dense, tan, fine, clayey SAND (SC), clay strata or lenses  
B2-Medium dense, brown, fine to coarse, well graded SAND with silt (SW-SM)  
C2-Very dense, gray, fine, poorly graded sand (SP)  
D2-Medium dense, gray, poorly graded GRAVEL (GP) with sand  
E2-Medium dense, gray, fine to coarse, poorly graded SAND (SP) with gravel  
F2-Very dense, gray, fine to coarse, poorly graded SAND with silt (SP-SM)  
G2-Very dense, tan, fine to coarse, poorly graded SAND with silt (SP-SM)  
H2-Very dense, brown, fine to coarse, poorly graded SAND with silt (SP-SM), clay strata or lenses  
I2-Very dense, brown, fine to coarse, poorly graded GRAVEL (GP-GC) with clay and sand, clay strata or lenses  
J2-Dense, gray, fine, poorly graded SAND with clay (SP-SC), clay strata or lenses  
K2-Very dense, gray, fine, poorly graded SAND with clay (SP-SC), clay strata or lenses, lignite fragments  
L2-Very dense, gray, fine, clayey SAND (SC)  
M2-Very dense, gray, fine, poorly graded SAND with silt (SP-SM)  
N2-Hard, gray, lean CLAY (CL)  
O2-Brown, sandy silty CLAY (CL-ML)  
P2-Brown, sandy lean CLAY (CL)  
Q2-Medium dense, tan, fine, poorly graded SAND (SP)  
R2-Medium dense, brown, fine, poorly graded SAND with silt (SP-SM)  
S2-Dense, brown, fine, poorly graded SAND with silt (SP-SM), traces of clay  
T2-S2-Dense, brown, fine, poorly graded SAND with silt (SP-SM), few gravel, traces of clay  
U2-S2-Very dense, tan, fine, poorly graded SAND with silt (SP-SM)  
V2-Medium dense, gray, fine to medium, poorly graded SAND (SP), traces of gravel  
W2-Dense, gray, fine to medium, poorly graded SAND (SP), traces of gravel  
X2-Dense, gray, fine to coarse, poorly graded SAND (SP) with gravel



SHEET 2 OF 3  
LAYOUT OF BRIDGE  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES  
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472\_b1.dgn  
CHECKED BY: DATE: FEB 2020 SCALE: NO SCALE  
DESIGNED BY: RL DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58589

BRIDGE GENERAL NOTES

LAYOUT NOTES:

1. BENCH MARK: SEE ROADWAY PLANS
2. CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT (AHTD) STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION WITH APPLICABLE SUPPLEMENTAL SPECIFICATION AND SPECIAL PROVISIONS.) SECTION AND SUBSECTION REFER TO THE AHTD STANDARD CONSTRUCTION SPECIFICATION UNLESS OTHERWISE NOTED IN THE PLANS.
3. DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATION 6TH EDITION (2012) WITH 2013 INTERIM SPECIFICATIONS.
4. LIVE LOADING: HL-93  
SEISMIC PERFORMANCE ZONE: 2  
SITE CLASS: D; S (D1): 0.226g
5. MATERIALS AND STRENGTHS:  
CLASS S(AE) CONC. (SUPERSTRUCTURE)       $f_c$  = 4,000 PSI (MIN. 28 DAY COMPR .STRESS.)  
CLASS S CONCRETE (SUBSTRUCTURE)       $f'_c$  = 3,500 PSI (MIN. 28 DAY COMPR .STRESS.)  
REINFORCING STEEL (AASHTO M31 OR M322, TYPE A)       $f_y$  = 60,000 PSI  
STRUCTURAL STEEL (AASHTO M270, GR 50W)       $F_y$  = 50,000 PSI  
STRUCTURAL STEEL (AASHTO M270, GR 36)       $F_y$  = 36,000 PSI  
STRUCTURAL STEEL (ASTM A252, GR 3)       $F_y$  = 45,000 PSI (STL SHELL PILES)
6. BORING LOGS MAY BE OBTAINED FROM THE CONSTRUCTION CONTRACTS PROCUREMENT SECTION OF THE PROGRAM MANAGEMENT DIVISION.
7. PILE ENCASEMENT: PILE ENCASEMENT FOR BENTS 2 & 3 SHALL EXTEND 3 FT INTO THE GROUND AND TO THE BOTTOM OF CAP. SEE DRAWING NUMBER 55021.
8. BRIDGE DECK FINISH: CONCRETE BRIDGE DECK SHALL BE GIVEN A TINE FINISH IN ACCORDANCE WITH SUBSECTION 802.191, FOR CLASS 5 TINED BRIDGE ROADWAY SURFACE FINISH.
9. CLASS 1 PROTECTIVE SURFACE TREATMENT: CLASS 1 PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE ROADWAY SURFACE AND TO THE FACE AND TOP OF THE CONCRETE PARAPET RAIL.

10. MAINTENANCE OF TRAFFIC: SEE ROADWAY PLANS.

DRAWING LIST:

DRAWING NAME	DRAWING NUMBER
SCHEDULE OF BRIDGE QUANTITIES	58587
LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 1 OF 3)	58588
LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 2 OF 3)	58589
LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 3 OF 3)	58590
DETAILS OF END BENTS (SHEET 1 OF 2)	58591
DETAILS OF END BENTS (SHEET 2 OF 2)	58592
DETAILS OF INTERMEDIATE BENTS (SHEET 1 OF 2)	58593
DETAILS OF INTERMEDIATE BENTS (SHEET 2 OF 2)	58594
DETAILS OF CONCRETE FILLED STEEL SHELL PILING	AHTD STD DWG 55021
ELASOTMERIC BEARING DETAILS	58595
144'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 1 OF 6)	58596
144'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 2 OF 6)	58597
144'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 3 OF 6)	58598
144'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 4 OF 6)	58599
144'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 5 OF 6)	58600
144'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 6 OF 6)	58601
APPROACH GUTTER - TYPE SPECIAL	58601A
APPROACH SLAB - TYPE C2	AHTD STD DWG 55040C2

SUBSTRUCTURE GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "S" AND SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS TO BE CHAMFERED UNLESS OTHERWISE NOTED.
2. ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M322 TYPE A, GRADE 60.
3. NO PORTION OF THE BACKWALL SHALL BE CAST UNTIL THE BEAMS ARE IN PLACE. REFER TO "EXPANSION DEVICE INSTALLATION" NOTE.
4. STRUCTURAL STEEL AT THE BENTS SHALL BE AASHTO M270, GRADE 50W UNLESS OTHERWISE NOTED AND SHALL BE PAID FOR AS STRUCTURAL STEEL IN BEAM SPANS (M270, GR 50W).

5. ANCHOR BOLTS: IF ANCHOR BOLTS ARE DRILLED INTO CAP, TOP REINFORCING BARS SHALL BE PLACED TO AVOID DAMAGE.

PILING NOTES:

1. PILING FOR END BENT 1 AND 4 SHALL BE 18" DIAMETER CONCRETE FILLED STEEL SHELL PILES. END BENT 1 SHALL BE DRIVEN TO A MINIMUM ULTIMATE BEARING CAPACITY OF 120 TONS PER PILE AND DRIVEN TO MINIMUM TIP ELEVATION OF 195 FEET FOR PILES UNDER END BENT CAP .(DOES NOT INCLUDE WINGWALL PILES). END BENT 2 SHALL BE DRIVEN TO A MINIMUM ULTIMATE BEARING CAPACITY OF 120 TONS PER PILE AND DRIVEN TO MINIMUM TIP ELEVATION OF 205 FEET FOR PILES UNDER END BENT CAP .(DOES NOT INCLUDE WINGWALL PILES).
2. PILING FOR INTERIOR BENTS 2 AND 3 SHALL BE 24" DIAMETER CONCRETE FILLED STEEL SHELL PILES AND SHALL BE DRIVEN TO A MINIMUM ULTIMATE BEARING CAPACITY OF 235 TONS PER PILE. DRIVE PILES TO A MINIMUM TIP ELEVATION OF 180 FEET.
3. LENGTH OF PILING SHOWN ARE ASSUMED FOR ESTIMATING QUANTITIES ONLY. ACTUAL LENGTHS TO BE DETERMINED IN THE FIELD BY THE CONTRACTOR AS REQUIRED TO GET BEARING CAPACITIES SPECIFIED. NO PAYMENT WILL BE MADE FOR CUT-OFF OR BUILD-UP. TEST PILES ARE NOT REQUIRED BUT MAY BE DRIVEN FOR THE CONTRACTOR'S INFORMATION IN ACCORDANCE WITH SUBSECTION 805.08(g).
4. DRIVING SYSTEM: THE DRIVING SYSTEM APPROVAL AND ULTIMATE BEARING CAPACITY DETERMINATION FOR PILING SHALL BE BASED ON THE REQUIREMENTS OF SUBSECTION 805.09(b) "METHOD B -

PILING NOTES (cont'd):

- WAVE EQUATION ANALYSIS (WEAP)". IT IS ESTIMATED THAT A MINIMUM RATED HAMMER ENERGY OF 34,500 FT-LBS. PER BLOW WILL BE REQUIRED TO OBTAIN THE ULTIMATE BEARING CAPACITY AT BENTS 1 AND 4 AND A MINIMUM RATED HAMMER ENERGY OF 55,500 FT-LBS. PER BLOW WILL BE REQUIRED TO OBTAIN THE ULTIMATE BEARING CAPACITY AT BENTS 2 AND 3.
5. ALL PILING SHALL BE DRIVEN WITH AN APPROVED AIR, STEAM, OR DIESEL HAMMER IN ACCORDANCE WITH SECTION 805.
6. PILE ANCHORAGE TO BE PLACED TO MINIMIZE INTERFERENCE WITH ANCHOR BOLTS AND REINFORCING.
7. THE CLAY LINER SHALL BE IN PLACE, WITHIN LIMITS OF THE BRIDGE OR AS REQUIRED BY THE ENGINEER, PRIOR TO DRIVING INTERIOR BENT PILES.
8. SEE AHTD STANDARD DRAWING 55021 FOR ADDITIONAL NOTES.

SUPERSTRUCTURE GENERAL NOTES:

CONCRETE:

1. ALL CONCRETE SHALL BE CLASS "S" AND SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS TO BE CHAMFERED UNLESS OTHERWISE NOTED.
2. 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.
3. CONCRETE IN BRIDGE SUPERSTRUCTURE SHALL BE PLACED, CONSOLIDATED AND SCREEDDED OFF FOR THE ENTIRE POUR BEFORE ANY CONCRETE HAS TAKEN ITS INITIAL SET. THIS MAY REQUIRE THE USE OF A RETARDING AGENT.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M322 TYPE A, GRADE 60. 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 REINFORCING STEEL BRIDGE (GRADE 60). ALL REINF. SHALL HAVE 2" COVER UNLESS NOTED OTHERWISE ON THE DRAWINGS.

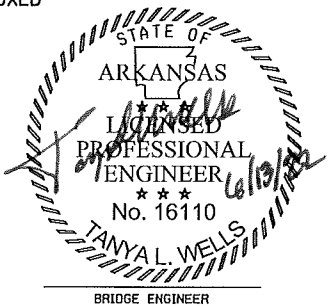
2. REINFORCING TABLES: BAR SIZES ARE INDICATED BY THE FIRST NUMBER IN THE REINFORCING BAR MARK IDENTIFICATION.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 50W UNLESS OTHERWISE NOTED AND SHALL BE PAID FOR AS STRUCTURAL STEEL IN BEAM SPANS (M270, GR 50W). GRADE 50W STEEL SHALL NOT BE PAINTED. ALL EXPOSED SURFACES SHALL BE CLEANED IN ACCORDANCE WITH SUBSECTION 807.84(g) UNLESS OTHERWISE NOTED. STRUCTURAL STEEL COMPLETELY EMBEDDED IN CONCRETE MAY BE AASHTO M270, GR 36 OR GR 50 UNLESS OTHERWISE NOTED.
2. DRAWINGS SHOW GENERAL FEATURES OF DESIGN ONLY. SHOP DRAWINGS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS, SUBMITTED AND APPROVED BEFORE FABRICATION IS BEGUN.
3. REQUESTS FOR SUBSTITUTION OF STRUCTURAL STEEL SHAPES SHOWN WITH SHAPES OF GREATER SIZE MUST BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL. STEEL SHAPES 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.
4. BEAMS AND FIELD SPLICE PLATES ARE CONSIDERED MAIN LOAD CARRYING MEMBERS AND SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05. THIS WORK AND MATERIAL WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM STRUCTURAL STEEL IN BEAM SPANS, (M270, GR 50W).
5. ALL BEAMS SHALL BE BLOCKED IN THEIR TRUE POSITION IN THE SHOP WITH WEBS HORIZONTAL IN GROUPS AS SPECIFIED IN SUBSECTION 807.54(B)(2). THE CAMBER, LENGTH OF SECTIONS, AND DISTANCE BETWEEN BEARINGS SHALL BE MEASURED WITH THE BEAMS IN THEIR TRUE POSITION AND THIS INFORMATION SHALL BECOME PART OF THE PERMANENT RECORDS FOR THIS JOB. THE COMPONENT PARTS SHALL BE MATCH MARKED IN THIS ASSEMBLY AND THESE MARKS SHALL BE SHOWN ON THE ERECTION DIAGRAM. ALL BEAM DIMENSION ARE BASE ON A TEMPERATURE OF 60 DEGREES F. A TOLERANCE OF 1/4" +/- IS ALLOWED FOR CAMBER.
6. 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 (ALONG LONGITUDINAL LENGTH OF THE PLATES).
7. ALL WELDING THAT IS TO BE DONE DURING FABRICATION OF STRUCTURAL STEEL, INCLUDING TEMPORARY WELDS, SHALL BE DETAILED ON THE SHOP DRAWINGS AND SUBMITTED FOR APPROVAL. IF ADDITIONAL WELDS ARE REQUIRED, WHETHER PERMANENT OR TEMPORARY, A FORMAL REQUEST WITH DETAILED DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL; HOWEVER, ADDITIONAL WELDS USED FOR ATTACHING FALSE WORK SUPPORT DEVICES OR SCREED RAIL SUPPORTS TO THE STRUCTURAL STEEL THAT DO NOT EXCEED THE LIMITATION SUBSECTION 802.13 WILL NOT REQUIRE APPROVAL PRIOR TO CONSTRUCTION. ALL WELDING SHALL CONFORM TO SUBSECTION 807.26. WELDING PROCEDURES SHALL LIMIT PLATE DEFORMATION OF THE WEB DURING WELDING OF STIFFENERS.
8. FIELD CONNECTIONS SHALL BE BOLTED WITH HIGH-STRENGTH BOLTS PER SUBSECTION 807.06 AND SHALL BE 3/4" DIAMETER BOLTS UNLESS OTHERWISE NOTED. OPEN HOLES SHALL BE 13/16" DIAMETER UNLESS OTHERWISE NOTED. BOLTS SHALL BE PLACED WITH HEADS ON THE OUTSIDE FACE OF THE EXTERIOR BEAM WEBS AND ON THE BOTTOM OF THE BEAM FLANGES. HOLES FOR DIAMETER HIGH-STRENGTH BOLTS MAY BE 15/16" DIAMETER IF A WASHER IS SUPPLIED FOR USE UNDER BOTH THE NUT AND HEAD OF THE BOLT. CONTRACTOR SHALL MAINTAIN PLATE INTEGRITY DURING WELDING OF STIFFNER TO WEBS OF BEAM.
9. 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.
10. ALL STUD SHEAR CONNECTORS SHALL BE GRANULAR FLUX FILLED, SOLID FLUXED OR EQUAL AND SHALL BE AUTOMATICALLY END WELDED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.

TABLE OF WELDS

MATERIAL THICKNESS OF THICKER PART JOINED (INCHES)	MINIMUM SIZE OF FILLET WELD (INCHES)	SINGLE PASS WELD MUST BE USED
TO 3/4" INCLUSIVE	3/4"	
OVER 3/4"	7/16"	



SHEET 3 OF 3  
LAYOUT OF BRIDGE  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES

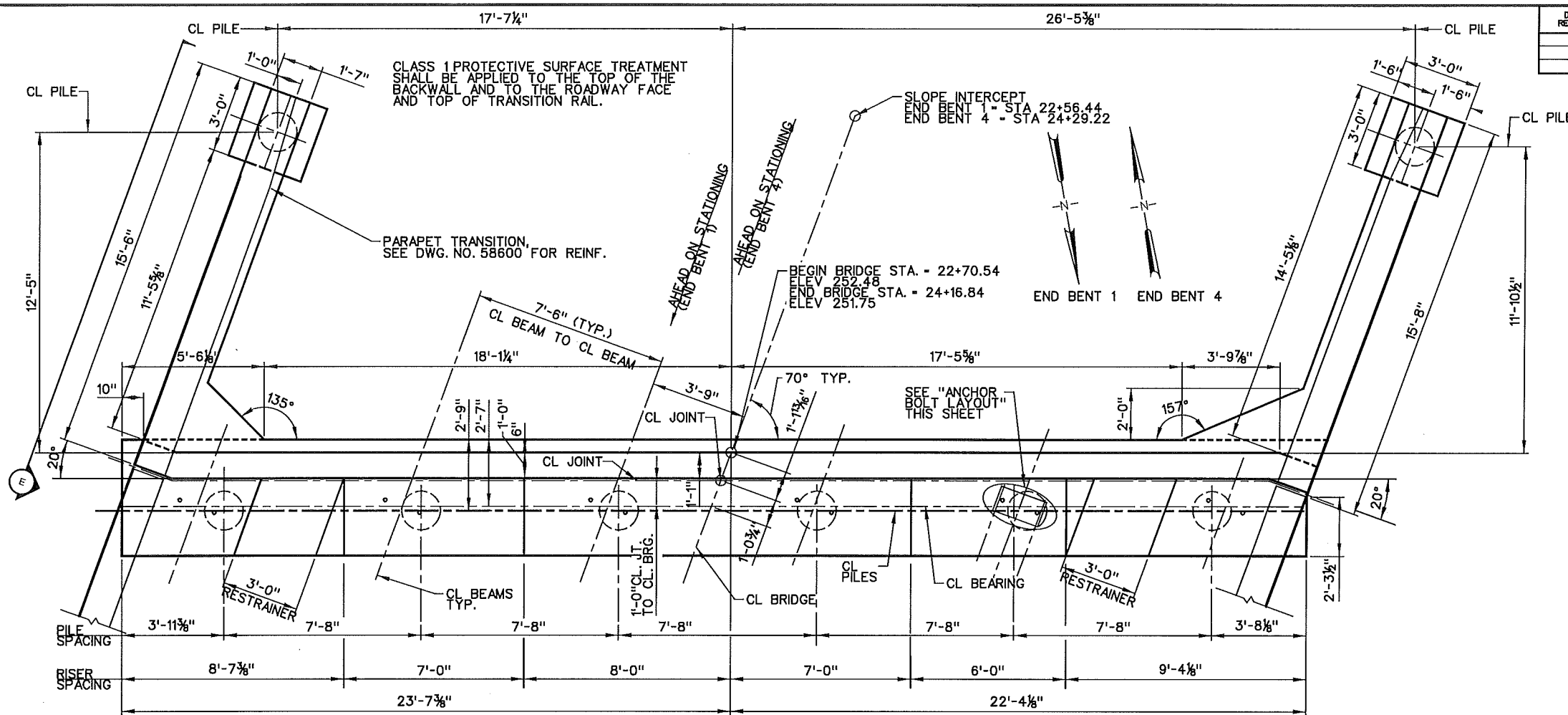
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: TLW      DATE: FEB 2020      FILENAME: b061472\_n1.dgn  
CHECKED BY: DR      DATE: FEB 2020      SCALE: NO SCALE  
DESIGNED BY: TLW      DATE: FEB 2020  
BRIDGE NO. 07386      DRAWING NO. 58590

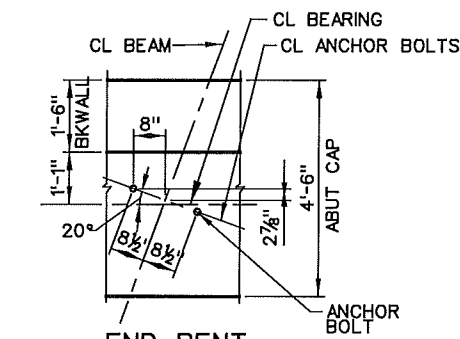


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				6	ARK.			
				JOB NO.	061472	33	101	
				07386	END BENT	58591		



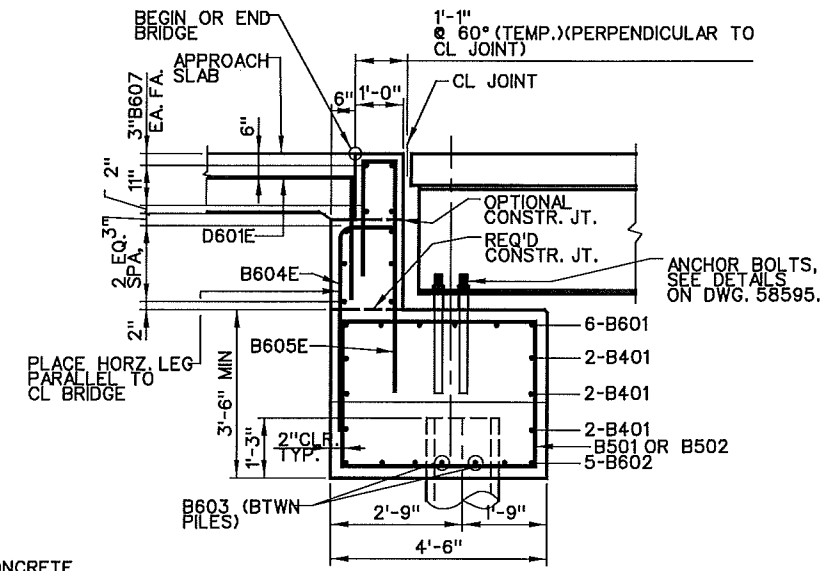
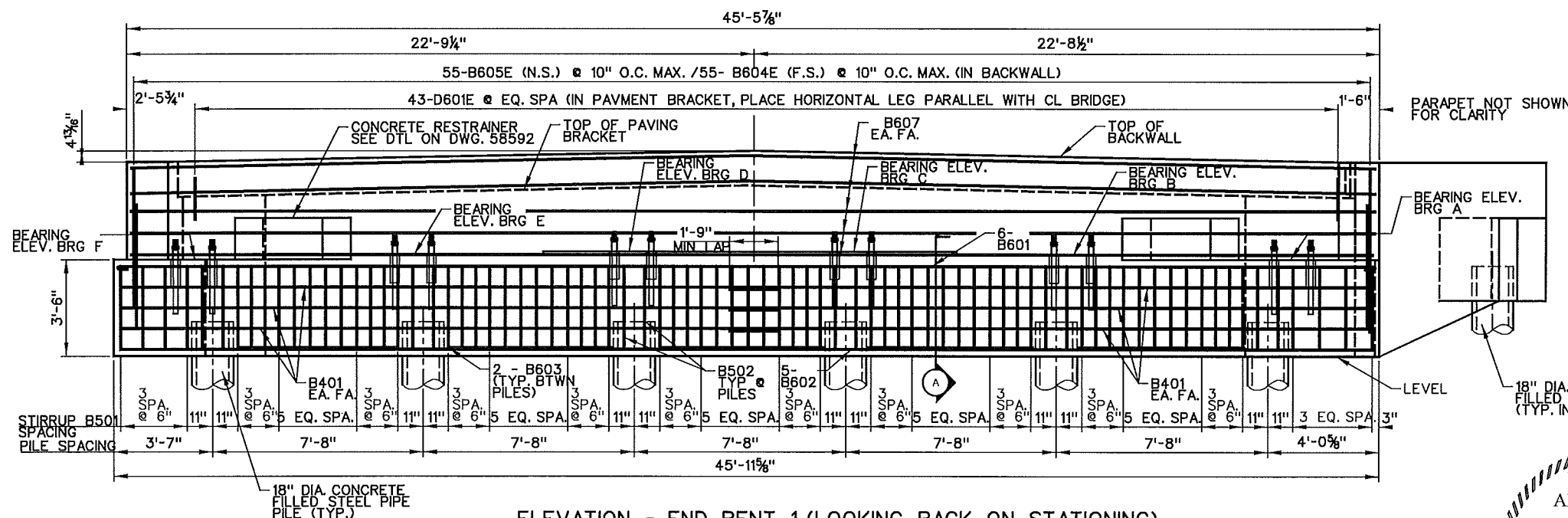
END BENT ELEVATIONS

BEARING	END BENT	END BENT 4
BRG A	248.85	248.19
BRG B	249.02	248.33
BRG C	249.18	248.46
BRG D	249.19	248.45
BRG E	249.06	248.29
BRG F	248.92	248.12
PILE CUT-OFF	246.67	245.94



END BENT ANCHOR BOLT LAYOUT  
SCALE: 1/2" = 1'-0"

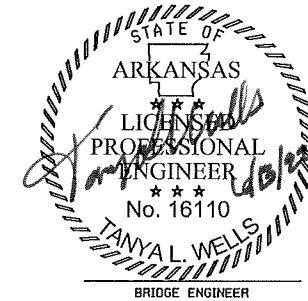
PLAN  
SCALE: 3/8" = 1'-0"



SECTION A-A  
SCALE: 1/2" = 1'-0"

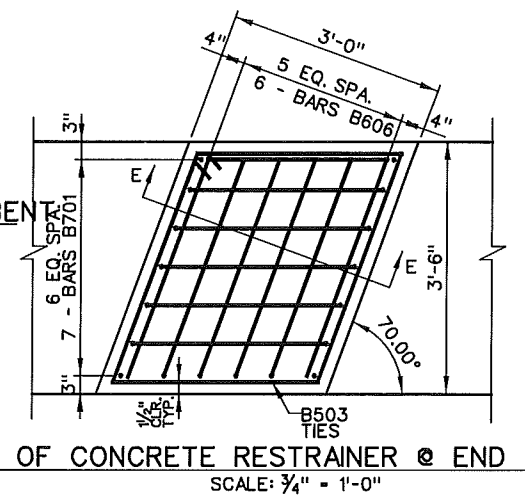
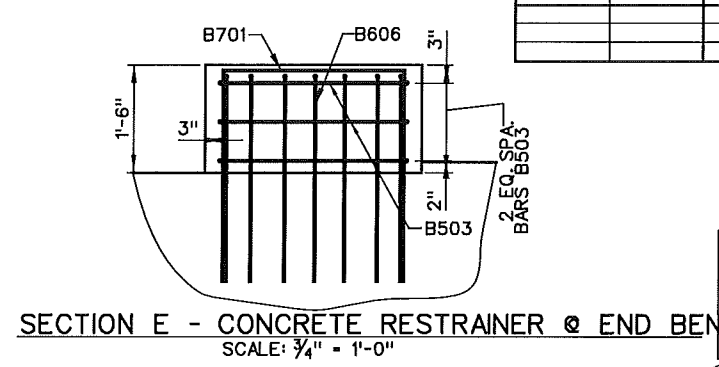
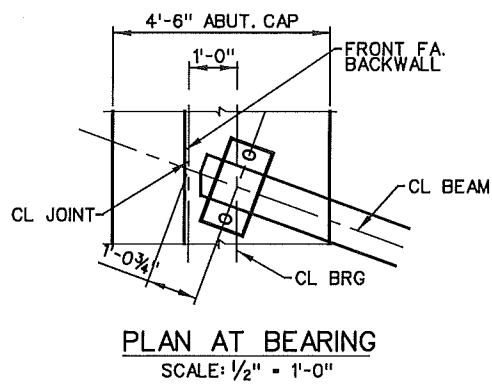
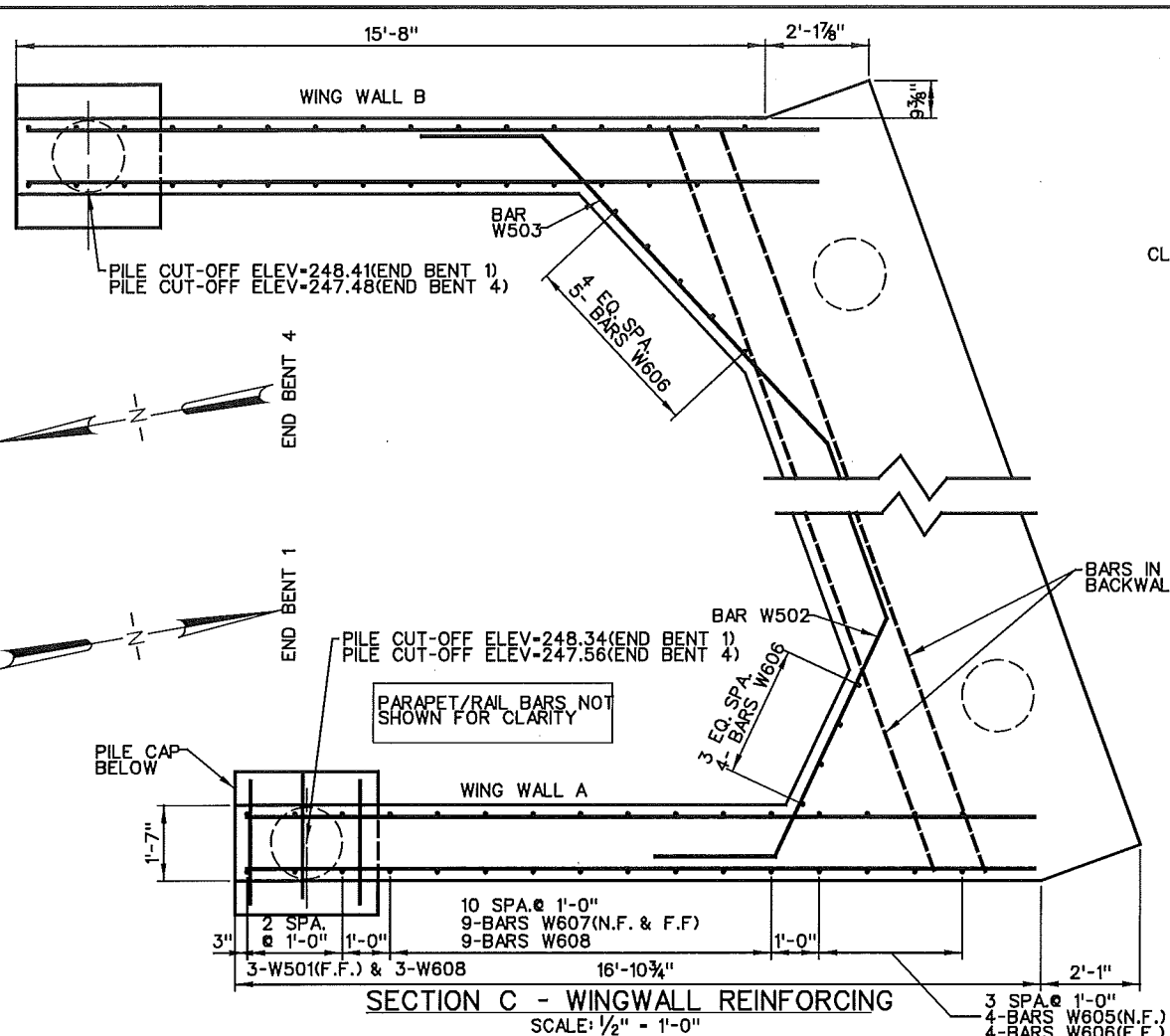
ELEVATION - END BENT 1 (LOOKING BACK ON STATIONING)  
ELEVATION - END BENT 4 (LOOKING AHEAD ON STATIONING)  
SCALE: 3/8" = 1'-0"

- NOTES:
- FOR GENERAL NOTES, SEE DWG. NO. 58590.
  - FOR DETAILS OF ELASTOMERIC BEARING PADS, SEE DWG. NO. 58595.
  - FOR "BAR LIST" & "BAR BENDING DIAGRAM", SEE DWG. NO. 58592.
  - FOR WINGWALL DETAILS, SEE DWG. NO. 58592.



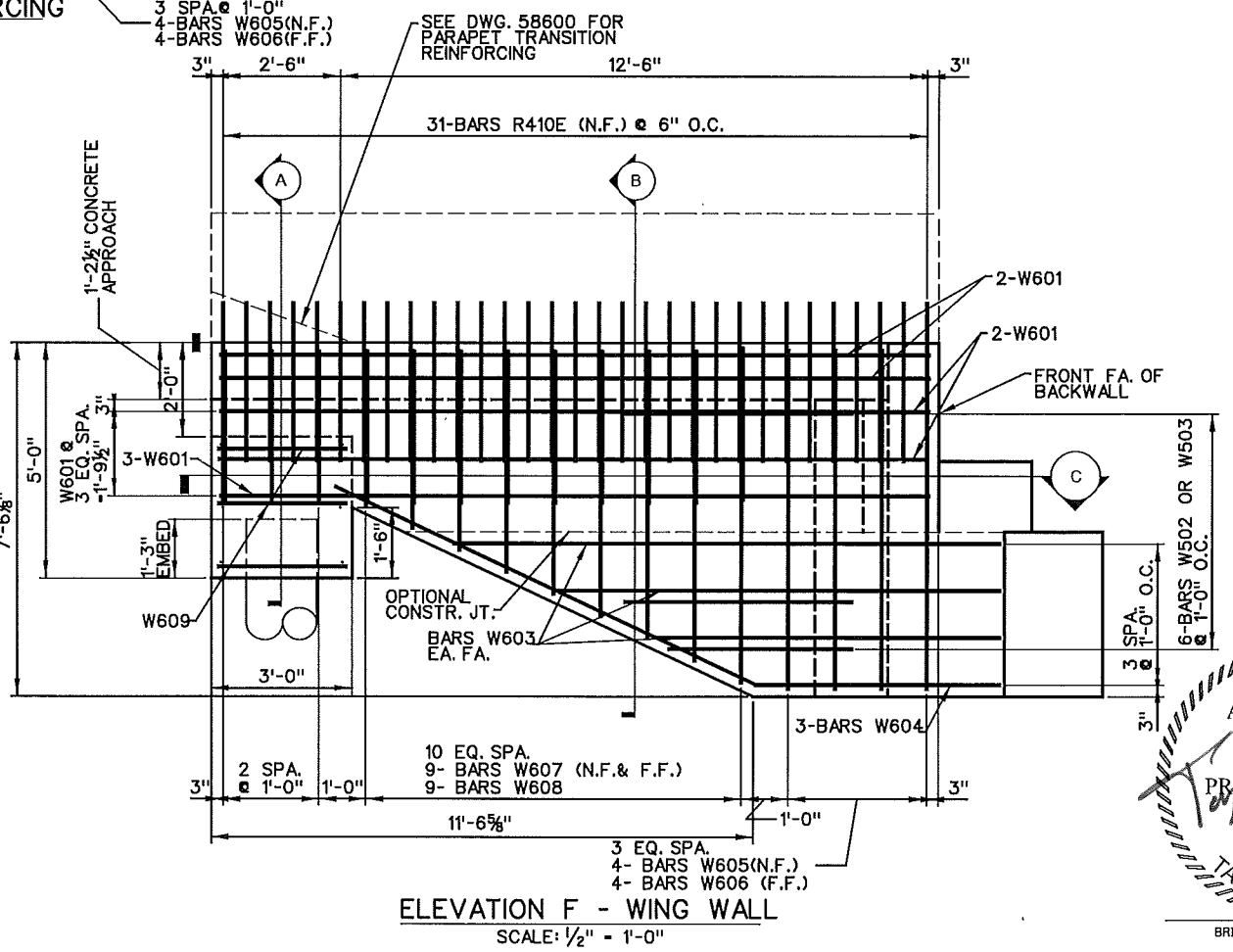
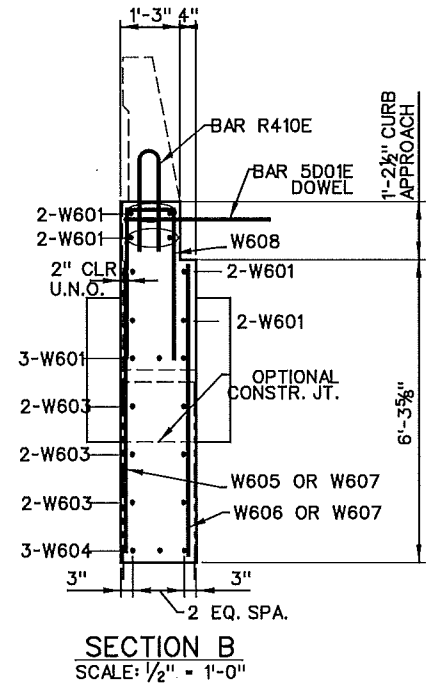
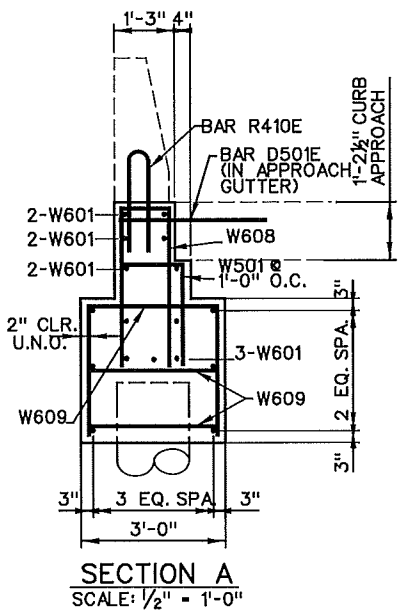
SHEET 1 OF 2  
DETAILS OF END BENTS  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES  
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472\_a11.dgn  
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN  
DESIGNED BY: TLW DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58591

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	34	101	
				07388	END BENT	58592		



BAR LIST - PER END BENT (2 REQ'D)										BAR BENDING DIAGRAMS	
MARK	NO.	REQ'D	LENGTH	A	B	C	P.D.	BAR BEND			
B401	12	23'-9"					STR				
B607	20	23'-6"					STR				
B501	68	15'-2"	3'-2"	4'-2"	6"	2 1/2"	TYPE C				
B502	12	10'-4"	3'-2"	4'-2"		2 1/2"	TYPE D				
B503	6	13'-0"	3'-4"	2'-10"	6 1/4"	3 3/4"	TYPE J				
B601	6	46'-11"	6"	45'-7"		4 1/2"	TYPE A				
B602	5	45'-7"					STR				
B603	10	5'-10"					STR				
B604E	55	6'-5"	5'-9"	1'-4"		4 1/2"	TYPE B				
B605E	55	9'-1"	6'-6"	2'-3"	8"	2 1/2"	TYPE I				
B606	12	8'-11"	3'-0"	3'-3"		4 1/2"	TYPE D				
B701	14	10'-0"	3'-10"	2'-9"		5 1/4"	TYPE D				
D601E	43	4'-10"	2'-6"	2'-6"		4 1/2"	TYPE B				
W501	3	6'-0"	2'-0"	1'-3"		2 1/2"	TYPE B				
W502	12	10'-6"					TYPE H				
W503	12	13'-9"					TYPE F				
W601	22	15'-2"					STR				
W603	12						STR				
W604	6	15'-0"	9'-10"	5'-2"	5 1/4"		TYPE G				
W605	8	7'-2"					STR				
W606	24	6'-5"					STR				
W607	36						STR				
W608	24	7'-2"	3'-3"	1'-0"		4 1/2"	TYPE D				
W609	6	11'-10"	2'-8"	2'-8"	1'-0"		TYPE C				
R410E	62	3'-9"	1'-10"			3 3/4"	TYPE E				
D501E	28	5'-7"	2'-6"			3 3/4"	TYPE E				

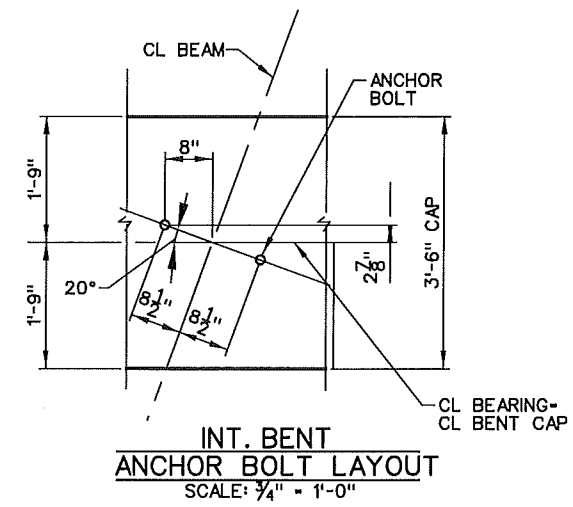
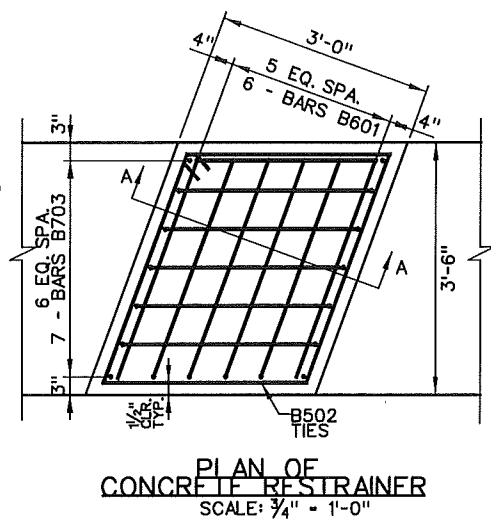
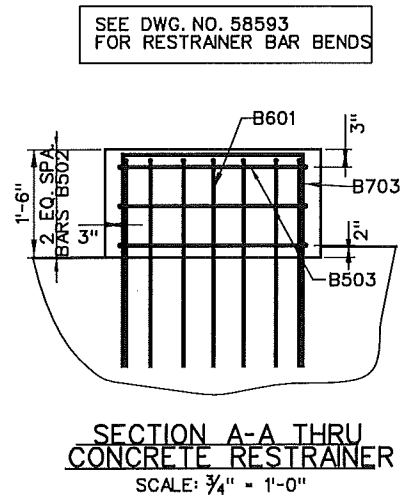
- DIMENSIONS ARE OUT TO OUT OF BARS.
- \* DENOTES BARS IN CONCRETE RESTRAINERS.
- DIMENSION VARIES 11'-7" TO 7'-4" IN 2'-1/2" INCREMENTS (3 BARS/SET, 2 SETS/WING) 9'-5 1/2" AVE.
- DIMENSION VARIES 3'-3" TO 7'-0" IN 5 5/8" INCREMENTS (9 BARS/SET, 2 SET/WING) 5'-1 1/2" AVE.



SHEET 2 OF 2  
DETAILS OF END BENTS  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES  
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: M.J.H. DATE: FEB 2020 FILENAME: b061472\_a12.dgn  
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN  
DESIGNED BY: T.L.W. DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58592



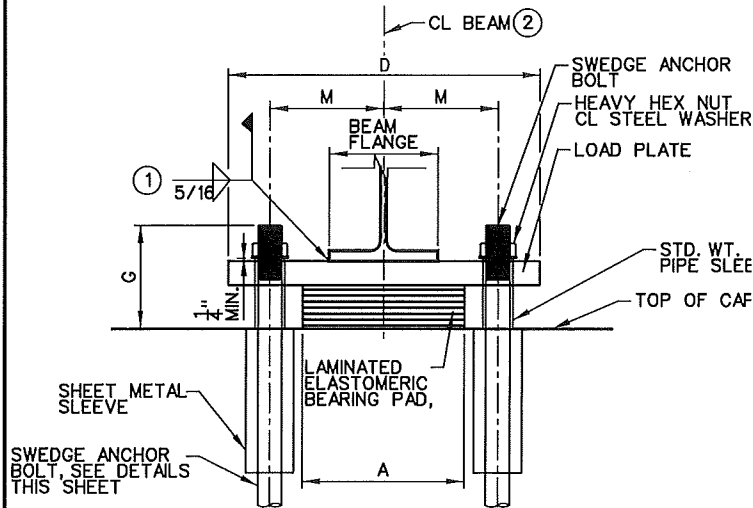
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				JOB NO.	061472		36	101
				2	07386	INT BENT	58594	



SHEET 2 OF 2  
DETAILS OF INTERMEDIATE BENTS  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES  
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472\_a22.dgn  
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BRIDGE NO. 07386 DRAWING NO. 58594

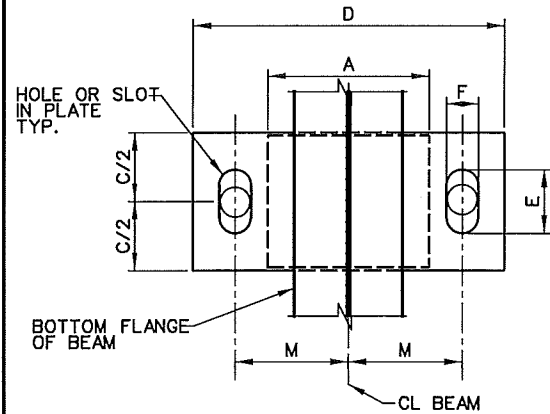


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				JOB NO.	061472	37	101	
				07386	ELAST. BEARINGS	58595		

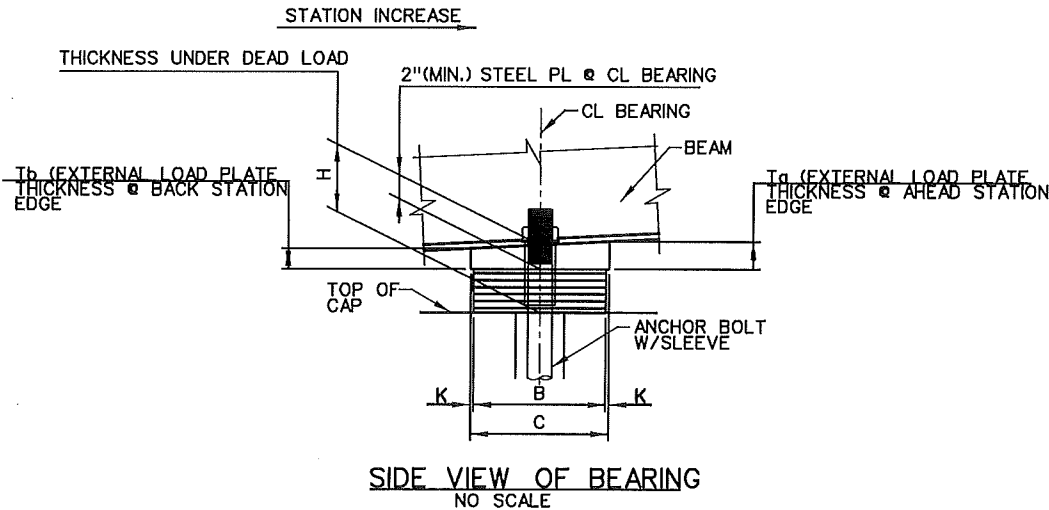


ELEVATION VIEW OF BEARING  
NO SCALE

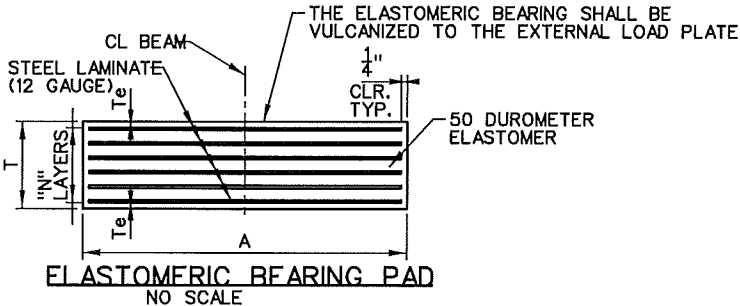
- CARE SHALL BE TAKEN TO ENSURE THAT THE EXTERNAL LOAD PLATE IS IN FULL AND COMPLETE CONTACT WITH THE BEAM OR GIRDER FLANGE BEFORE WELDING BEGINS.
- CL ELASTOMERIC PAD SHALL BE ALIGNED WITH CL BEAM.



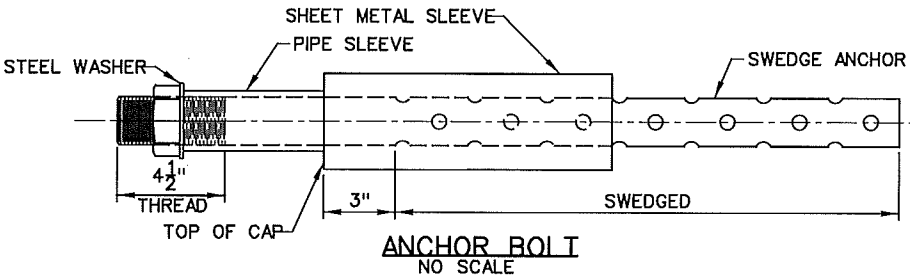
PLAN OF BEARING  
NO SCALE



UNLESS OTHERWISE APPROVED BY THE ENGINEER, WELDING OF THE EXTERNAL LOAD PLATE AT EXPANSION BEARINGS TO THE 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.



te = THICKNESS OF ELASTOMER COVER ON TOP AND BOTTOM OF PAD  
ti = THICKNESS OF ELASTOMER BETWEEN STEEL LAMINATE  
N = NUMBER OF ELASTOMER LAYERS OF THICKNESS ti



ANCHOR BOLT  
NO SCALE

#### ANCHOR BOLT NOTE:

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 SLEEVES SHALL BE CAST IN PLACE AS SHOWN. SLEEVES SHALL BE DRY PACKED WITH STYROFOAM, URETHANE FOAM OR APPROVED EQUAL PRIOR TO POURING OF CONCRETE. AFTER POURING OF THE CAP AND PRIOR TO ERECTION OF STRUCTURAL STEEL, THE DRY PACK SHALL BE REMOVED AND HOLES FOR THE ANCHOR BOLTS SHALL BE ACCURATELY DRILLED INTO THE MASONRY. BOLTS PLACED IN DRILLED HOLES SHALL BE ACCURATELY SET AND FIXED USING A QPL APPROVED EPOXY OR NON-SHRINK GROUT THAT COMPLETELY FILLS THE HOLES. GALVANIZED SHEET METAL SLEEVES WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO THE ITEM "STRUCTURAL STEEL IN BEAM SPANS (M270, GR. 50W)

TABLE OF FABRICATOR VARIABLES

MAXIMUM DESIGN LOAD - SERVICE 1 LIMIT STATE							ELASTOMERIC PAD							EXTERNAL LOAD PLATE							ANCHOR BOLT						
Bridge No.	LOCATION		BEARING TYPE	NO. of BEARINGS EACH BENT	MAXIMUM DESIGN LOAD (KIPS)	G	H	A	B	N	Ti	Te	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	To	Tb	ANCHOR BOLT		PIPE SLEEVE SIZE (' X L)	SHEET METAL SLEEVE SIZE (' X L)	STEEL WASHER SIZE (O.D.)
	BENT NO(S).	BEAM OR GIRDER NO.																					(' X L)	GRADE			
07386	1 & 4	ALL	EXP.	6	78	7 <sup>5</sup> / <sub>16</sub> "	3 <sup>13</sup> / <sub>16</sub> "	13"	10"	2	1/2"	1/4"	3 @ 12 Go.	1 <sup>3</sup> / <sub>16</sub> "	11"	22"	3"	2 <sup>1</sup> / <sub>4</sub> "	1/2"	8 <sup>1</sup> / <sub>2</sub> "	1.97"	2.03"	1 <sup>1</sup> / <sub>2</sub> " X 24"	55	1 <sup>1</sup> / <sub>2</sub> " X 4 <sup>1</sup> / <sub>8</sub> "	3" X 9"	3"
	2 & 3	ALL	FIX	6	121	8"	4 <sup>7</sup> / <sub>16</sub> "	13"	11"	3	1/2"	1/4"	4 @ 12 Go.	2 <sup>7</sup> / <sub>16</sub> "	12"	22"	3"	3 <sup>3</sup> / <sub>8</sub> "	1/2"	8 <sup>1</sup> / <sub>2</sub> "	1.97"	2.03"	2" X 30"	55	2 <sup>1</sup> / <sub>2</sub> " X 4 <sup>3</sup> / <sub>4</sub> "	4" X 9"	3 <sup>3</sup> / <sub>4</sub> "



ELASTOMERIC BEARINGS DETAILS  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES

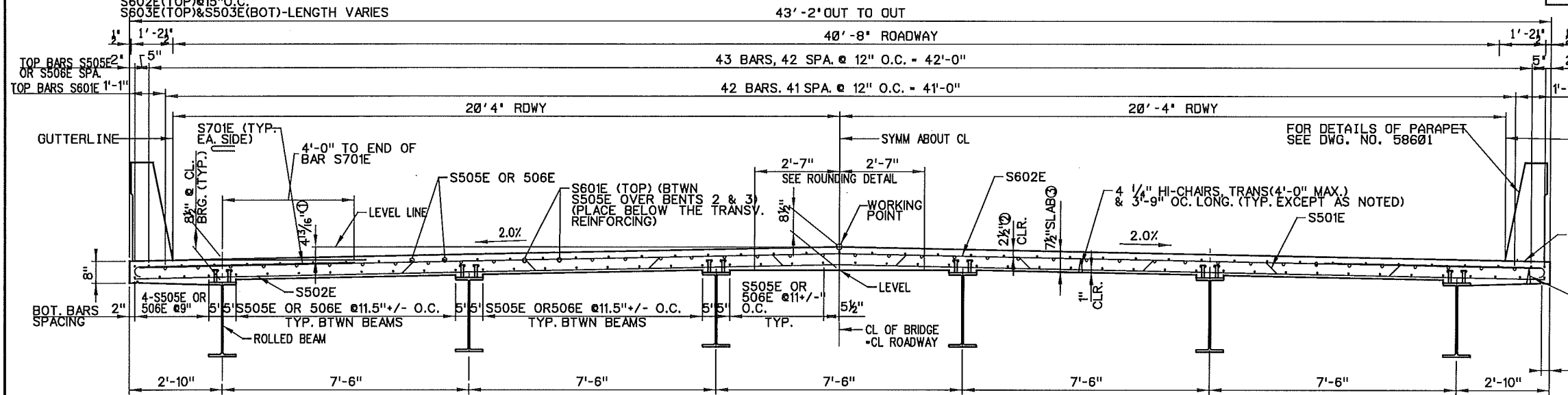
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472\_b22.dgn  
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN  
DESIGNED BY: TLW DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58595

TRANSVERSE SLAB REINFORCING  
S501E(TOP) @ 15" O.C. (BENT UP OVER BMS)  
S502E(BOT) @ 15" O.C.  
S701E(TOP)-OVERHANGS  
S602E(TOP) @ 15" O.C.  
S603E(TOP) & S503E(BOT)-LENGTH VARIES

LONGITUDINAL SLAB REINFORCING  
S601E-TOP(OVER INT. SUPPORTS)  
S505E & S506E-TOP & BOT (AS SHOWN)

NOTE: AT THE CONTRACTOR'S OPTION, TWO STRAIGHT EPOXY COATED  
#5 BARS MAY BE SUBSTITUTED FOR BAR S501E. PAYMENT FOR REINFORCING  
WILL BE BASED ON THE WEIGHT OF BAR S501E.

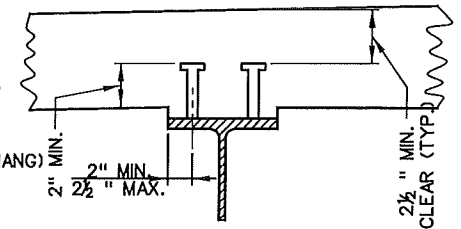
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				6	ARK.			
				JOB NO.	061472	38	101	
				07386	CONT. UNIT	58598		



TYPICAL SECTION  
SCALE: 1/2" = 1'-0"

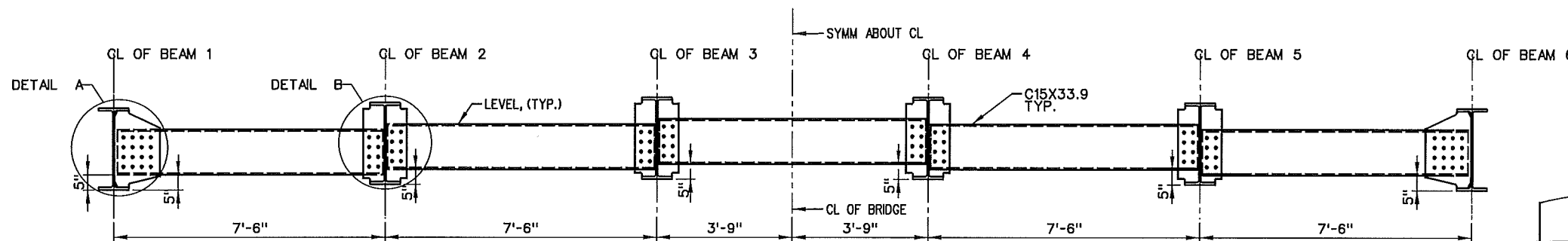
SEE DWG. NO. 58601  
FOR REINF. BAR BENDS

- ① WORKING POINT TO GUTTERLINE.
- ② TOLERANCE: MINUS = 1/4"; PLUS EQUAL TO THE AMOUNT OF SLAB THICKENING USED TO MEET SLAB THICKNESS TOLERANCE. "SEE ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".
- ③ SEE "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"

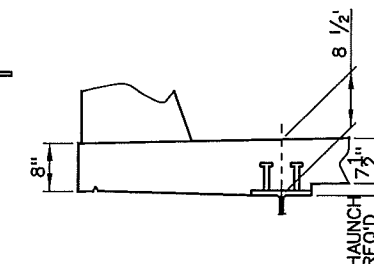


SHEAR STUD DETAIL

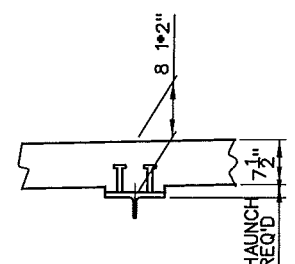
STUD SHEAR CONNECTORS SHOWN SHALL BE 7/8" X 4" LONG, GRANULAR FLUX FILLED, SOLID FLUXED OR EQUAL AND AUTOMATICALLY END WELDED TO THE BEAM FLANGE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER. SEE TYPICAL BEAM ELEVATION ON DWG. NO. 58597 FOR SHEAR STUD SPACING.



TYPICAL DIAPHRAGM SECTION  
SCALE: 1/2" = 1'-0"



EXTERIOR BEAM



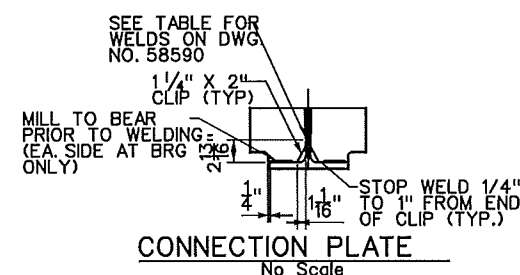
INTERIOR BEAM

### ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

TOLERANCE WHEN REMOVABLE DECK FORMING IS USED IS 1/2" MIN. - 1/4" MAX. HAUNCH FORMING IS REQUIRED AND SHALL BE ADJUSTED TO MAINTAIN SLAB THICKNESS TOLERANCE.

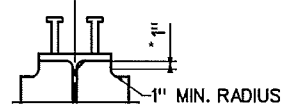
HAUNCH DIMENSION MAY VARY WITHIN THE FOLLOWING LIMITS TO MAINTAIN THE GRADE AND SLAB THICKNESS TOLERANCE:  
MINIMUM OCCURS WHEN TOP FLANGE CONTACTS BOTTOM REINFORCING STEEL  
MAXIMUM = TOP FLANGE THICKNESS PLUS 1/2"  
NO INCREASE IN CONCRETE AND STRUCTURAL STEEL QUANTITIES WILL BE MADE TO MAINTAIN TOLERANCES.

TOLERANCES SHOWN ARE APPLICABLE ONLY WHEN REMOVABLE DECK FORMING IS USED. SEE STD. DWG. 55005 FOR TOLERANCES WHEN PERMANENT STEEL DECK FORMS ARE USED. PAYMENT FOR CONCRETE SHALL BE MADE BASED ON REMOVABLE DECK FORMING.

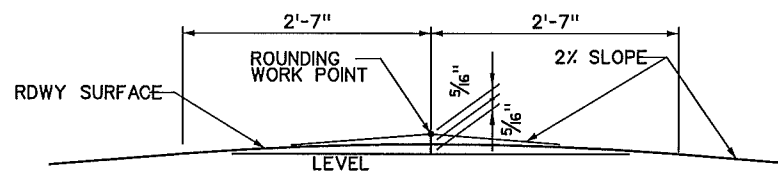


CONNECTION PLATE  
No Scale

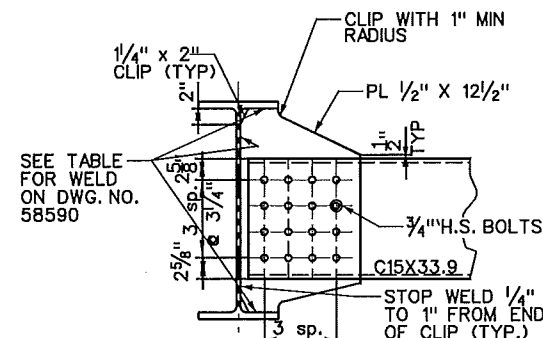
\* IF PERMANENT STEEL BRIDGE DECK FORMS ARE USED, THE FABRICATOR SHALL CLIP THE PLATE AS NECESSARY TO ACCOMMODATE THE DECKFORM SUPPORT.



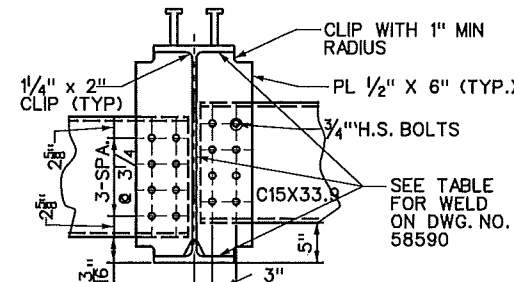
STD. COPING DETAIL  
No Scale



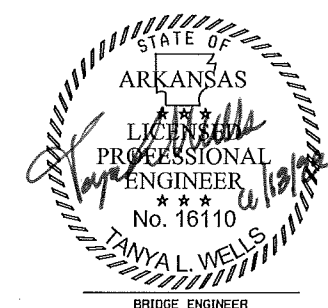
ROADWAY ROUNDING DETAIL  
No Scale



DETAIL A  
No Scale



DETAIL B  
No Scale

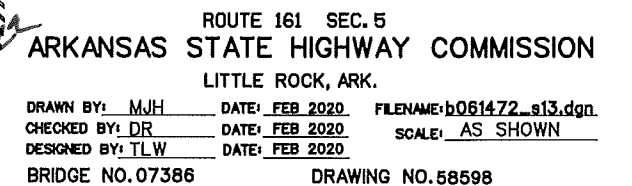


SHEET 1 OF 6  
DETAILS OF 144'-0" CONT  
COMPOSITE W-BEAM UNIT  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES

ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

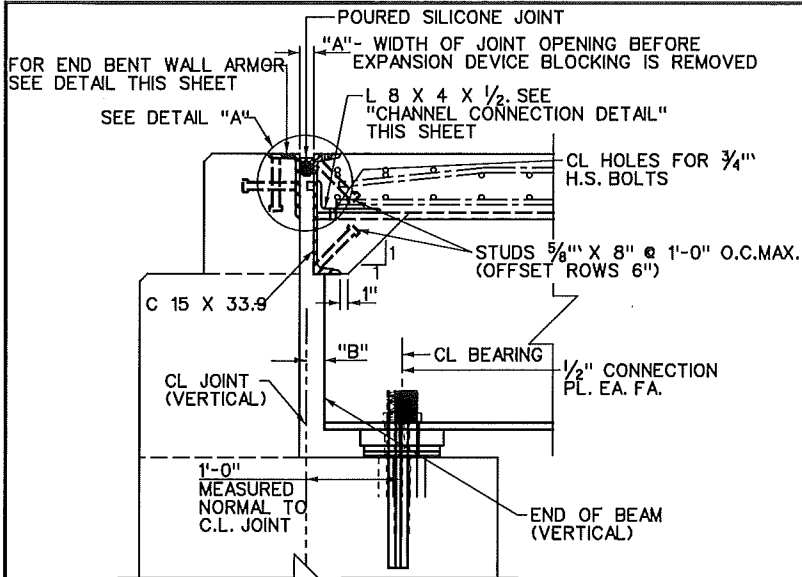
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CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN  
DESIGNED BY: TLW DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58598







DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	41	101	
				07386	CONT. UNIT	58599		



SECTION THRU SILICONE JOINT

NOTE: SECTION TAKEN NORMAL TO CL JOINT.

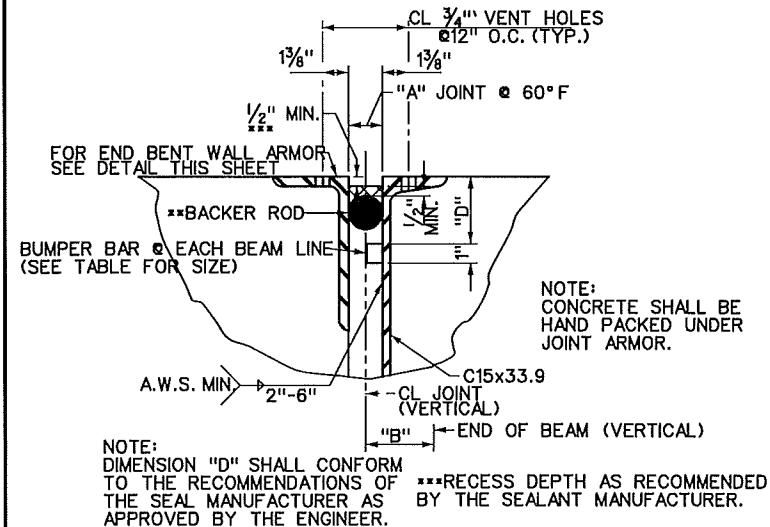
SILICONE JOINT DATA					
"A" WIDTH PERPENDICULAR TO JOINT AT 24 HOUR AVERAGE TEMPERATURE * OF:			"B" PERPENDICULAR TO JOINT AT 60°F	"D"	BUMPER BAR SIZE
40°F	60°F	80°F			
2 1/8"	2"	1 7/8"	2 1/8"	3 1/2"	1" X 1" X 12"

\* 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 BY INTERPOLATION OF TABLE. THE TEMPERATURE LIMITATIONS RECOMMENDED BY THE SEALANT MANUFACTURER SHALL BE OBSERVED. THE SEALANT MAY BE INSTALLED IN SKEWED JOINTS ONLY WHEN THE AVERAGE 24 HOUR AIR TEMPERATURE IS BETWEEN 40°F AND 80°F.

\*\* BACKER ROD NOTE: USE AN APPROXIMATELY 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 THAN CAN BE SEALED IN THE SAME DAY.

THE CONTRACTOR SHALL VERIFY SEPARATION OF THE BACKER ROD FROM THE JOINT MATERIAL AFTER THE JOINT MATERIAL HAS SET.

NOTE: EACH EXPANSION JOINT DEVICE SHALL BE BLOCKED IN THE SHOP BY THE FABRICATOR TO THE DIMENSION SHOWN FOR 60°F AND THE BLOCKING DETAILS SHALL BE SHOWN ON THE SHOP DRAWINGS. BLOCKING SHALL BE PLACED WITHIN 2' OF EACH END OF THE DEVICE AND WITH A MAXIMUM SPACING OF 8'.



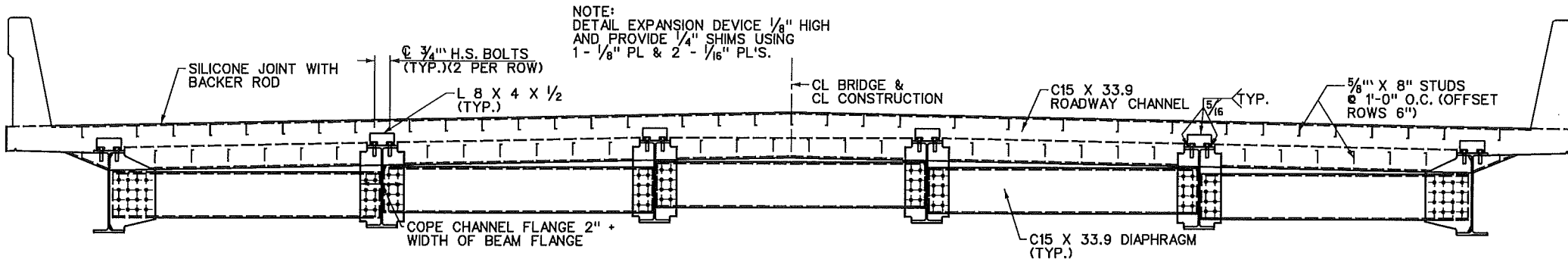
DETAIL "A"

ONE OF TWO DIFFERENT BLOCKING SYSTEMS IS REQUIRED DEPENDING ON THE TYPE OF SPAN FINISHING MACHINE THAT IS USED.

FOR TRANSVERSE STRIKE -OFF- PLATE, ANGLE, OR OTHER SHAPES ATTACHED TO CHANNEL AND ANGLE FOR BLOCKING.

FOR LONGITUDINAL STRIKE -OFF- BOLT & SPACER ATTACHED TO CHANNELS AND ANGLE FOR BLOCKING.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE



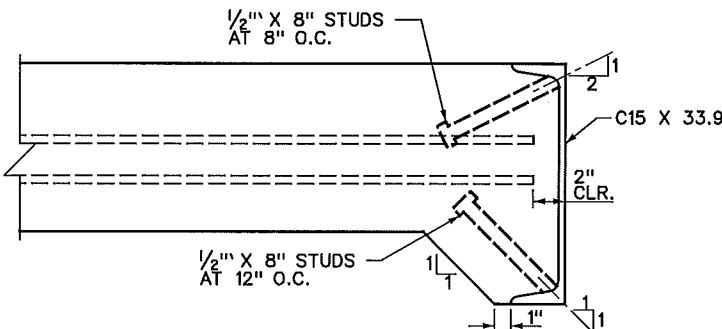
SECTION NEAR EXP. JOINT @ END BENT NO.1 (LOOKING AHEAD)

NOTE: DETAILS @ END BENT NO.4 ARE SIMILAR.

NOTES: FOR GENERAL NOTES SEE DWG. NO. 58590.

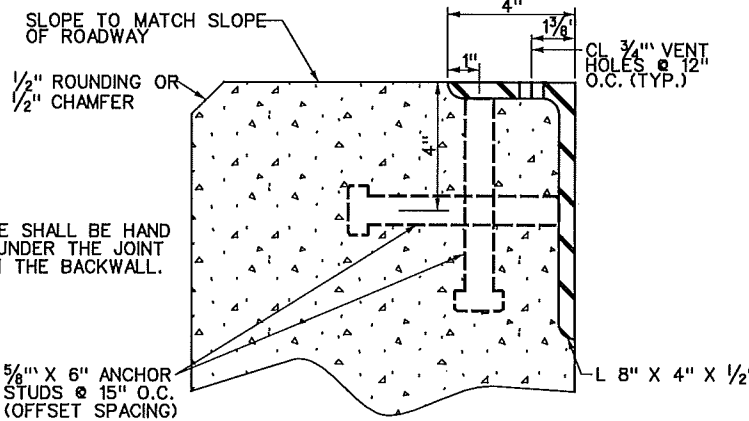
CLASS 1 PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE ROADWAY SURFACE AND TO THE ROADWAY FACE AND TOP OF THE CONCRETE PARAPET RAIL.

FOR POURED SILICONE JOINT DETAILS SEE THIS SHEET.

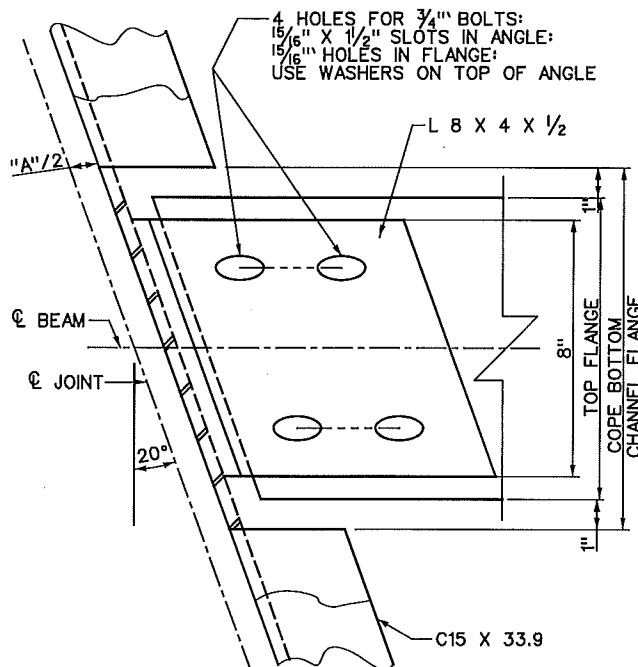


DETAILS OF ALTERNATIVE ANCHORS

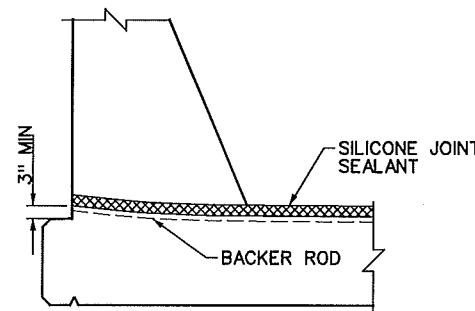
NOTE: AS AN ALTERNATIVE TO 5/8" STUDS, 1/2" X 8" STUDS SPACED AS SHOWN MAY BE USED. USE WEIGHT OF 5/8" STUDS AS BASIS OF MEASUREMENT OF STRUCTURAL STEEL IN ANCHORS.



END BENT WALL ARMOR DETAIL



CHANNEL CONNECTION DETAIL



JOINT SEAL PLACEMENT @ CURB

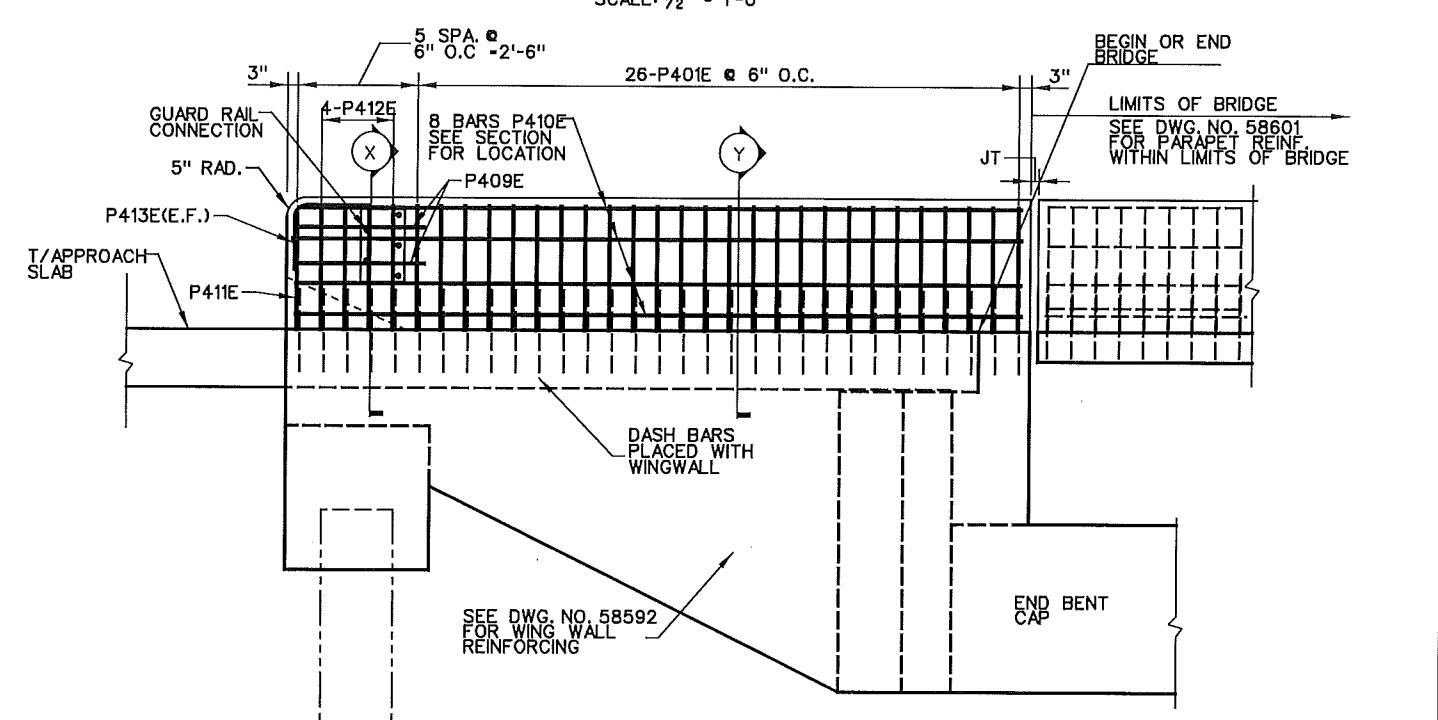
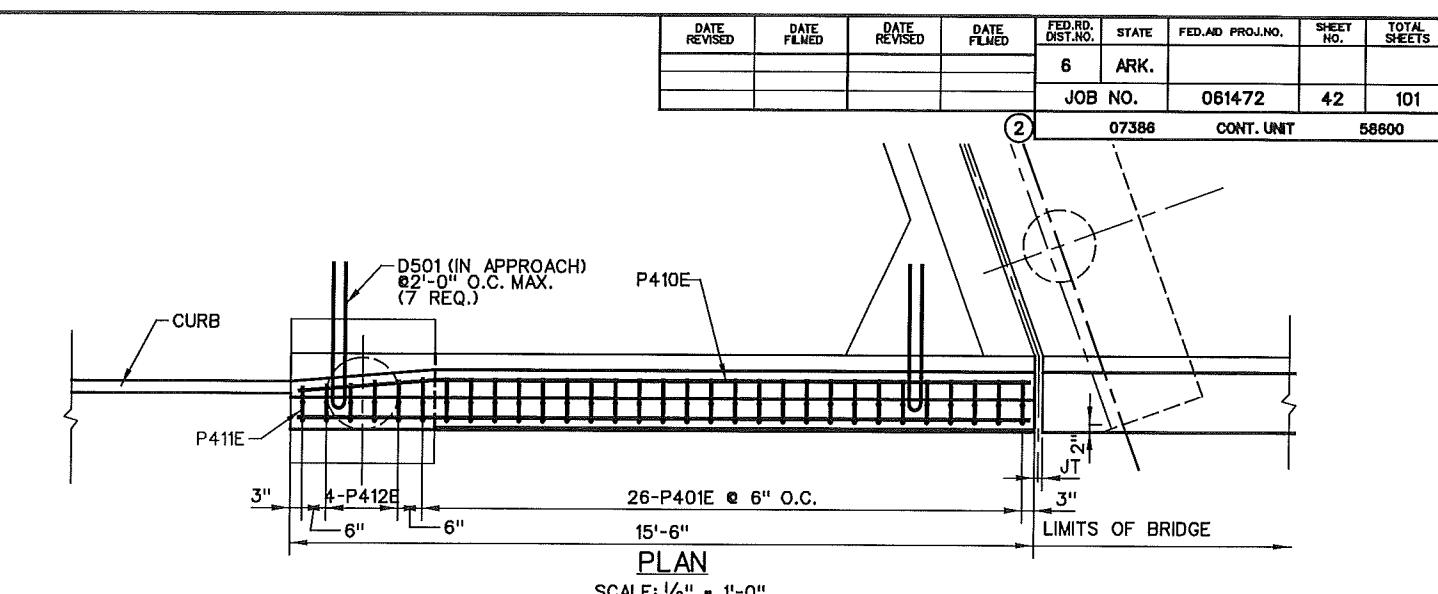
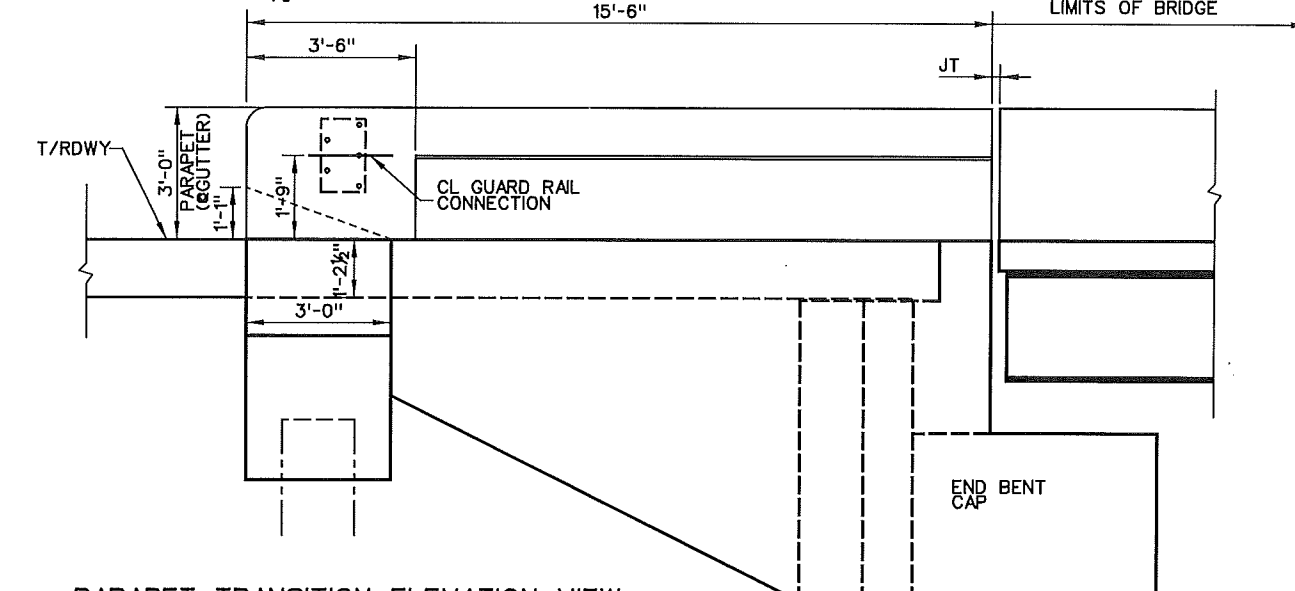
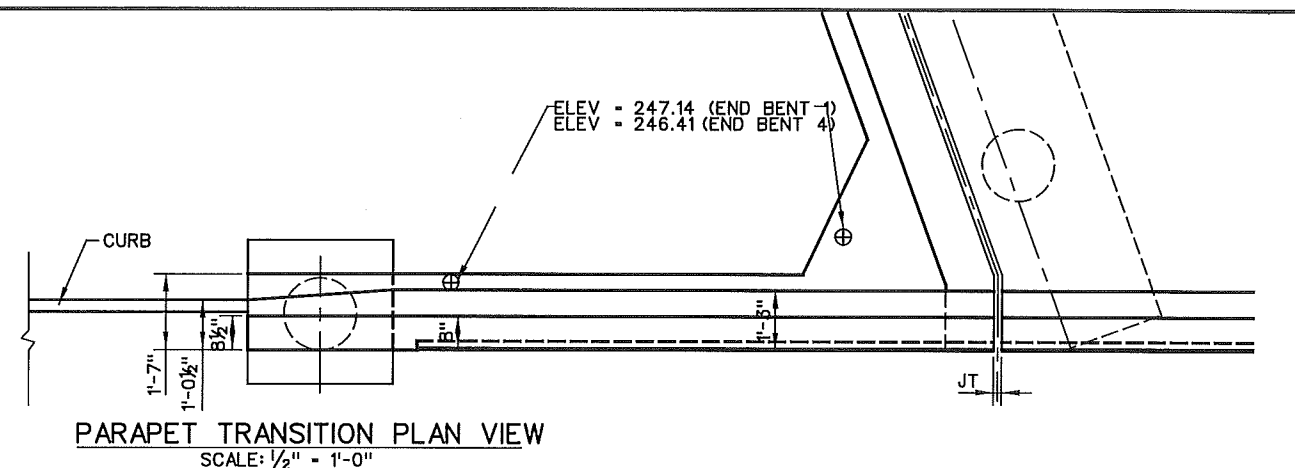


SHEET 4 OF 6  
DETAILS OF 144'-0" CONT.  
COMPOSITE W-BEAM UNIT  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES

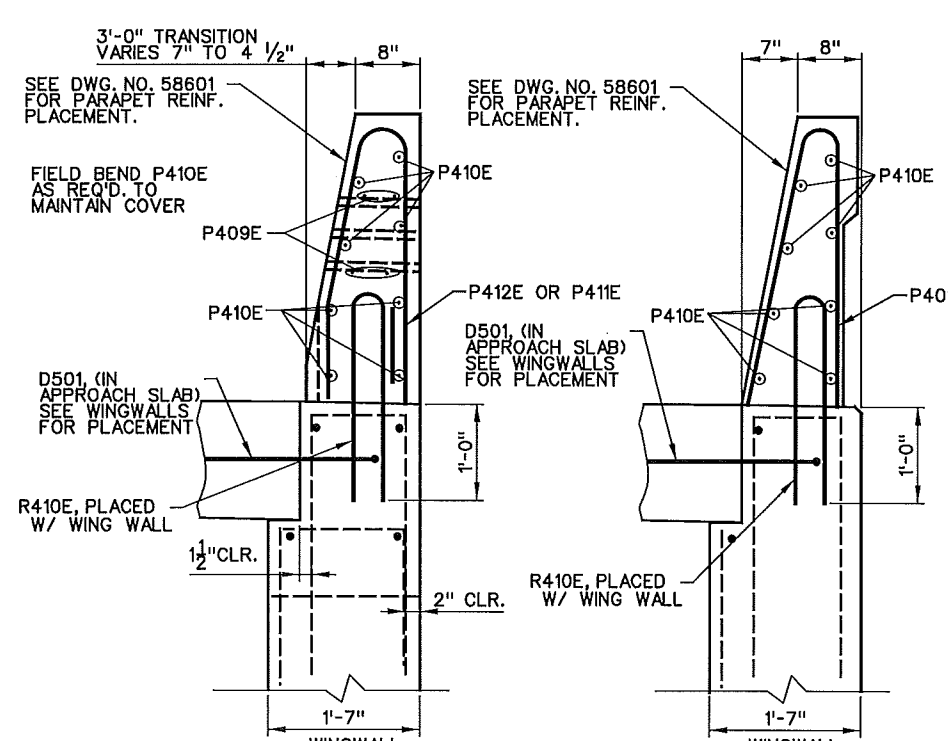
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.

DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472\_s21.dgn  
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN  
DESIGNED BY: TLW DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58599

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472		42	101
				07386	CONT. UNIT		58800	



ELEVATION  
SCALE: 1/2" = 1'-0"  
PARAPET TRANSITION REINFORCING



SECTION X  
SCALE: 1" = 1'-0"

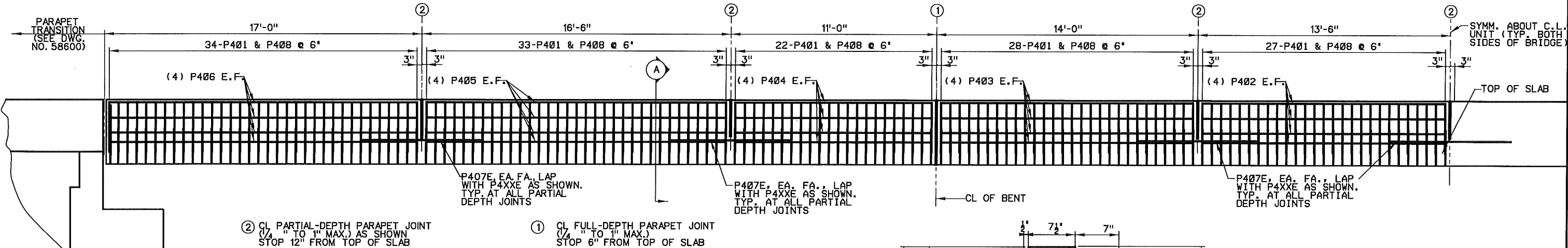
SECTION Y  
SCALE: 1" = 1'-0"



SHEET 5 OF 6  
DETAILS OF 144'-0" CONT.  
COMPOSITE W-BEAM UNIT  
HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES  
ROUTE 161 SEC. 5  
ARKANSAS STATE HIGHWAY COMMISSION  
LITTLE ROCK, ARK.  
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472\_s22.dgn  
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN  
DESIGNED BY: TLW DATE: FEB 2020  
BRIDGE NO. 07386 DRAWING NO. 58600

b061472\_s22 13-JUN-2022

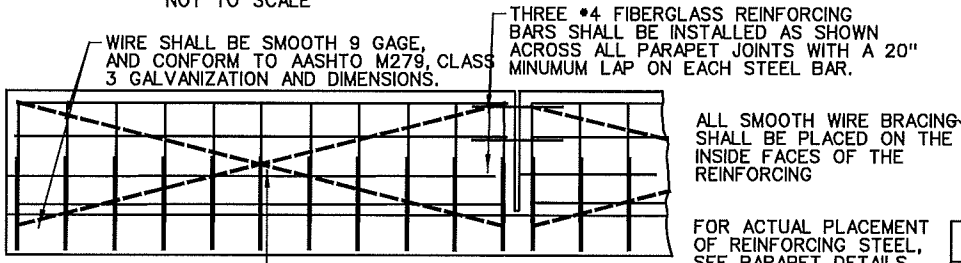
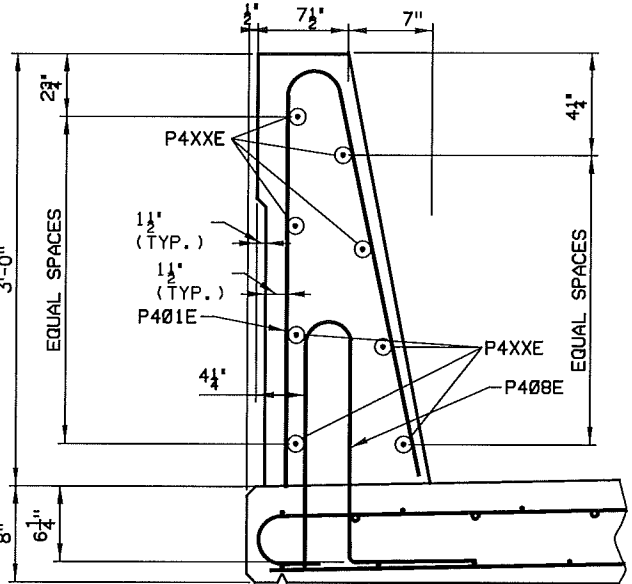
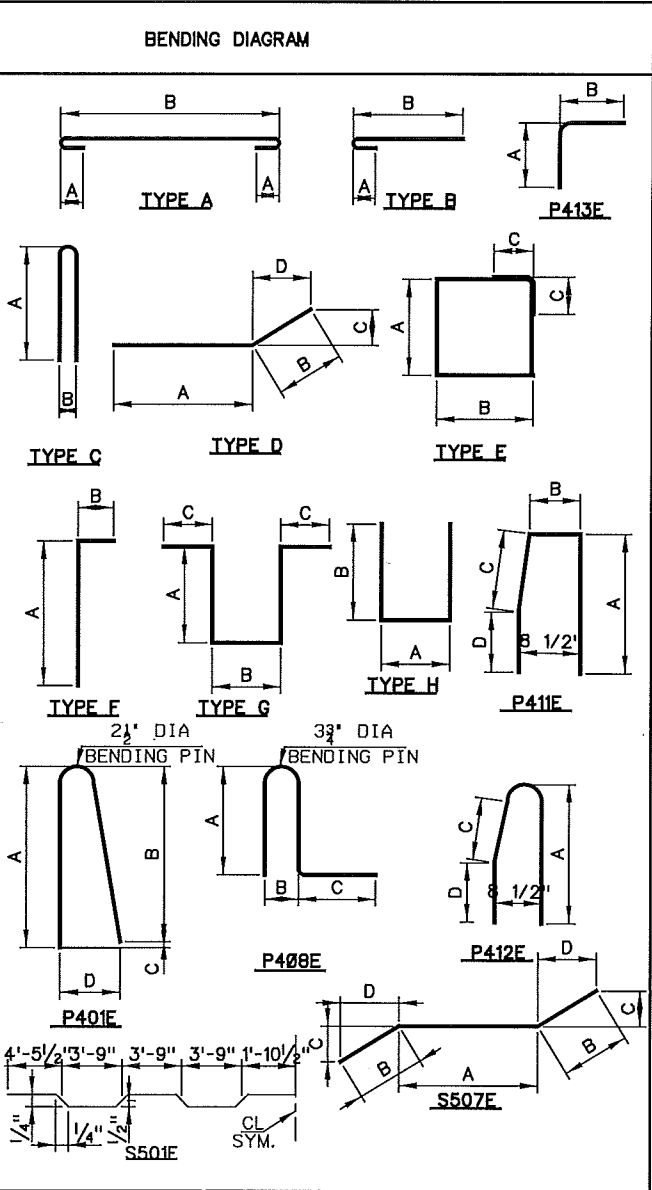
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				6	ARK.			
				JOB NO.	061472	43	101	
				07386	CONT. UNIT	58601		



SLAB & PARAPETS BAR LIST

MARK	NO. REQ'D	LENGTH	A	B	C	D	P.D.	BAR BEND
SLAB	S501E	103	44'-1"	5"	42'-11"		3 3/4"	S501E
	S502E	104	42'-10"					STR.
	S503E	38	◇					STR.
	S504E	12	8'-4"	7'-0"	1'-4"	5 5/8"	1'-3 1/2"	3 3/4" TYPE D
	S505E	186	60'-0"					STR.
	S506E	93	31'-6"					STR.
	S507E	4	45'-0"	42'-4"	1'-4"	5 1/2"	1'-3"	S507E
	S601E	84	28'-0"					STR.
	S602E	104	44'-2"	6'-0"	42'-10"		4 1/2 "	TYPE A
	S603E	38	◇					STR.
PARAPETS	S701E	226	14'-0"	6'-8"	3 3/4'		6 1/2 "	TYPE C
	P401E	700	5'-11"	2'-10 3/4	2'-10 1/4	1/2"	9 3/4"	2 1/2" P401E
	P402E	32	13'-2"					STR.
	P403E	32	14'-2"					STR.
	P404E	32	10'-8"					STR.
	P405E	32	16'-10"					STR.
	P406E	32	16'-8"					STR.
	P407E	28	5'-6"					STR.
	P408E	700	3'-6"	1'-4 1/2	4 3/4"	8"	3 3/4"	P408E
	P409E	16	3'-8"					STR.
	P410E	16	15'-2"					STR.
	P411E	4	5'-10"	2'-5"	5 1/2"	1'-4 1/2	1'-0 1/2"	P411E
	P412E	16	5'-2"	2'-10"		1'-10"	1'-0 1/2"	3 3/4" P412E
	P413E	8	3'-11"	2'-0"	2'-0"		3"	P413E

DETAILS OF PARAPET REINFORCING

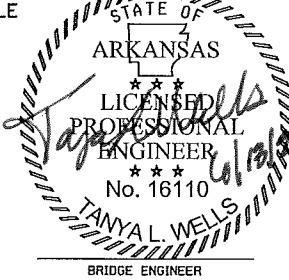


BAR TO TIGHTEN SMOOTH WIRE SHALL BE FIBERGLASS

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.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL SHEET 6 OF 6

NOT TO SCALE



DETAILS OF 144'-0" CONT COMPOSITE W-BEAM UNIT

HIGHWAY 161 OVER CANAL 1000 LONOKE & PULASKI COUNTIES

ROUTE 161 SEC. 5

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061472 s23.dgn

CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN

DESIGNED BY: TLW DATE: FEB 2020

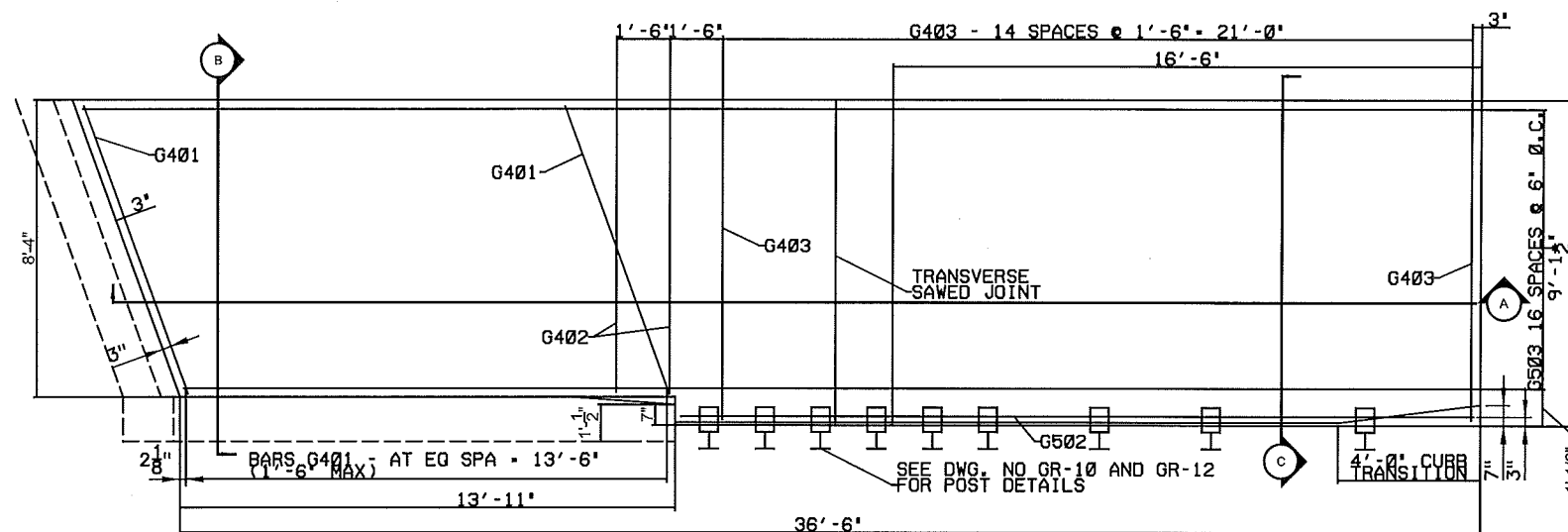
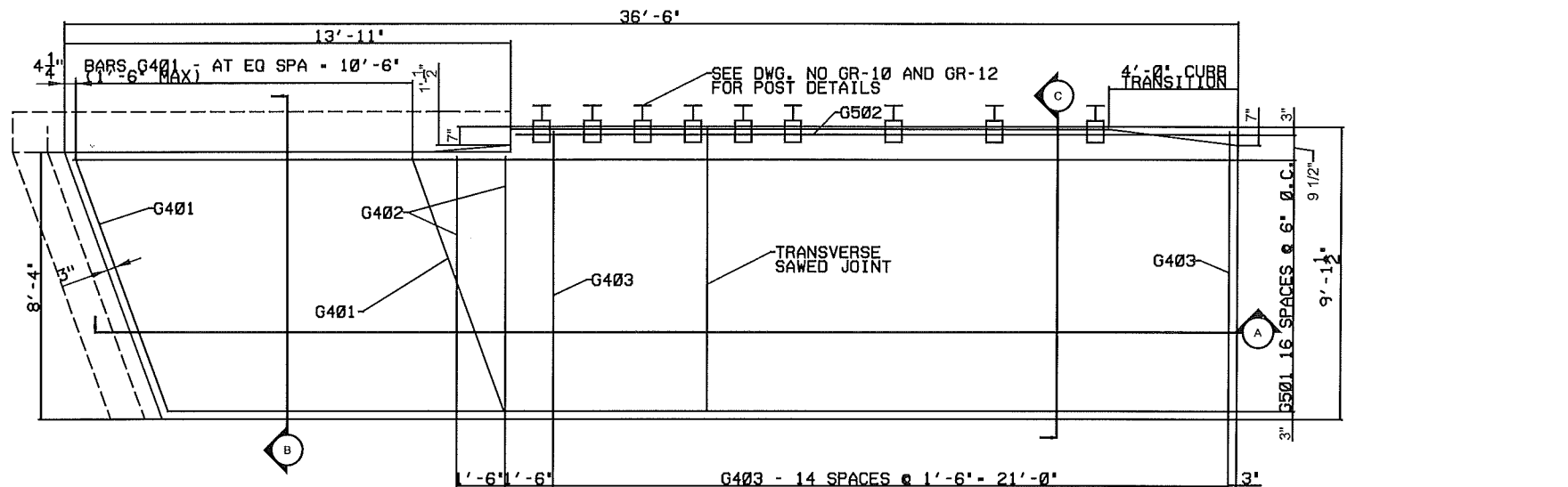
BRIDGE NO. 07386 DRAWING NO. 58601

1. DIMENSIONS ARE OUT TO OUT OF BARS.

◇ DIMENSION VARIES 39'-4" TO 8'-7" IN 1'-1 1/2" INCR. (23'-11 1/2" AVE.), 19 BARS /SET (2 SETS REQ'D)

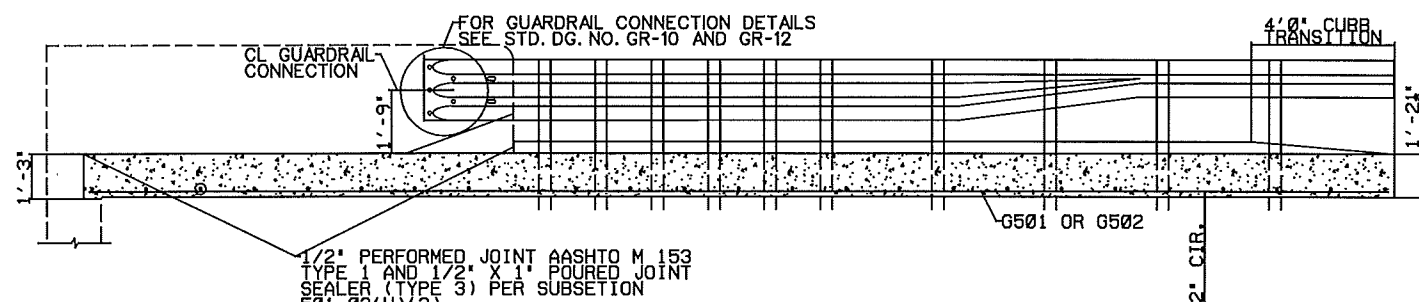
◇ DIMENSION VARIES 39'-4" TO 8'-7" IN 1'-1 1/2" INCR. (23'-11 1/2" AVE.), 19 BARS /SET (2 SETS REQ'D)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	44	101	
				07386	CONT. UNIT	58601A		



HALF PLAN OF APPROACH GUTTERS

SCALE: 3/8" = 1'-0"



SECTION A-A

SCALE 3/8" = 1'-0"

QUANTITIES FOR APPROACH GUTTER (EACH GUTTER)  
(FOR INFORMATION ONLY)

REINFORCING STEEL (LBS)	CONCRETE (CU. YDS.)
1067	14.84

#### 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.

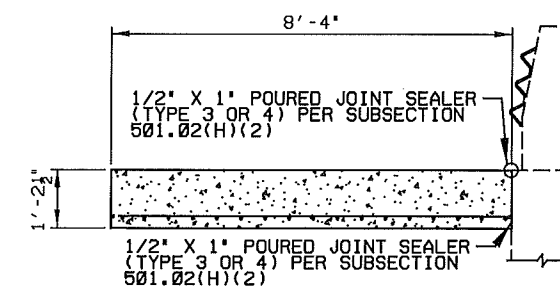
APPROACH GUTTERS WILL BE MEASURED AND PAID FOR IN ACCORDANCE WITH SECTION 504.

BAR LIST		
MARK	NO. REQ'D	LENGTH
G401	18	8'-6"
G402	4	8'-0"
G403	31	8'-9"
G501	17	①
G502	2	22'-2"
G503	17	②

NOTE: NUMBER OF BARS SHOWN IS FOR ONE BRIDGE END.

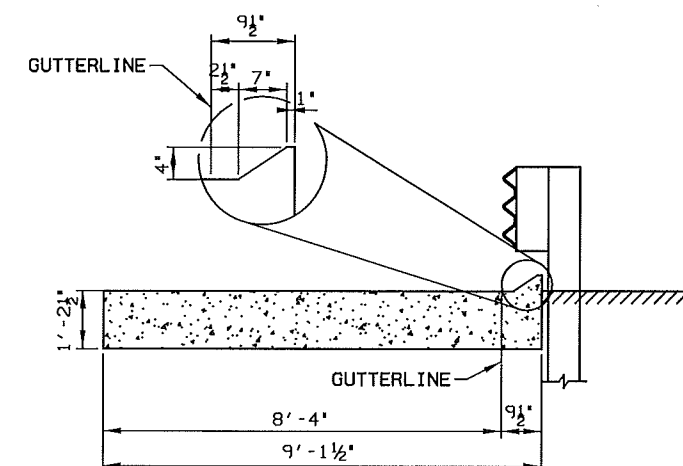
① LENGTH VARIES FROM 36'-2" TO 33'-1" (AVG = 34'-7 1/2")

② LENGTH VARIES FROM 36'-2" TO 39'-2" (AVG = 37'-8")



SECTION B-B

SCALE 1/2" = 1'-0"



SECTION C-C

SCALE 1/2" = 1'-0"

#### DETAILS OF TYPE SPECIAL APPROACH GUTTERS

HIGHWAY 161 OVER CANAL 1000  
LONOKE & PULASKI COUNTIES

ROUTE 161 SEC. 5

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

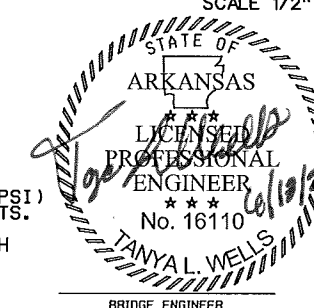
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CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN

DESIGNED BY: TLW DATE: FEB 2020

BRIDGE NO. 07386

DRAWING NO. 58601A

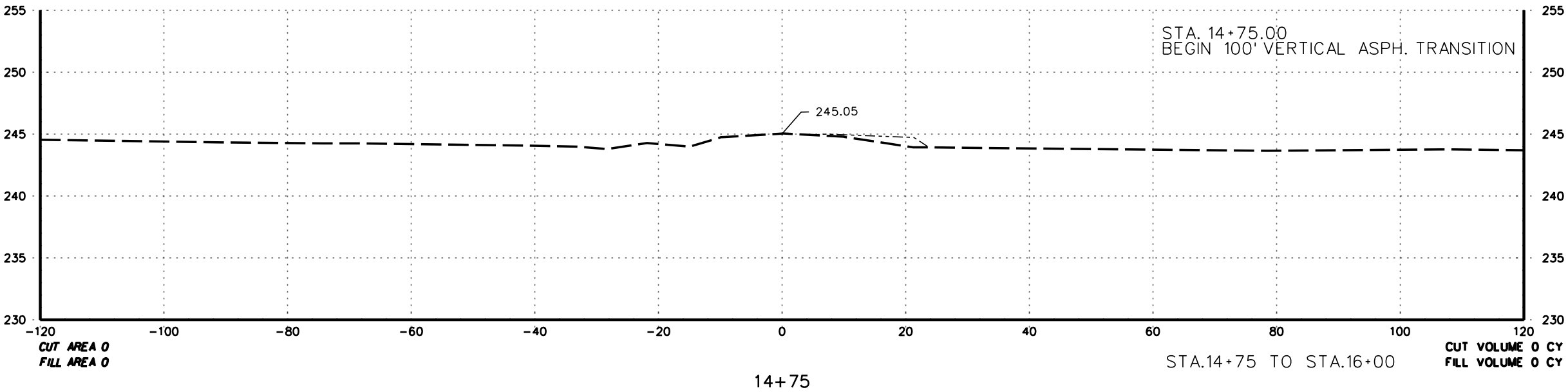
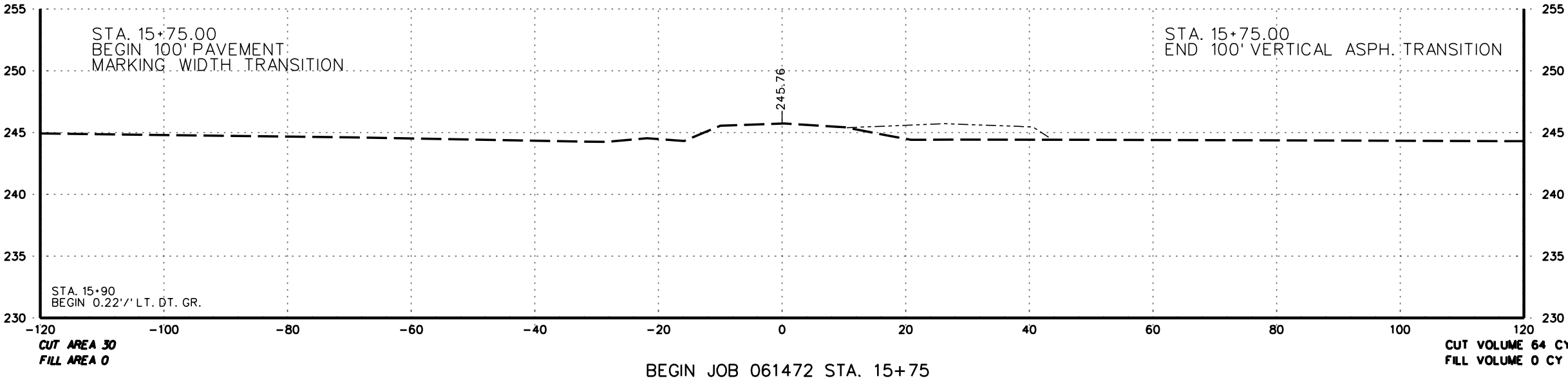
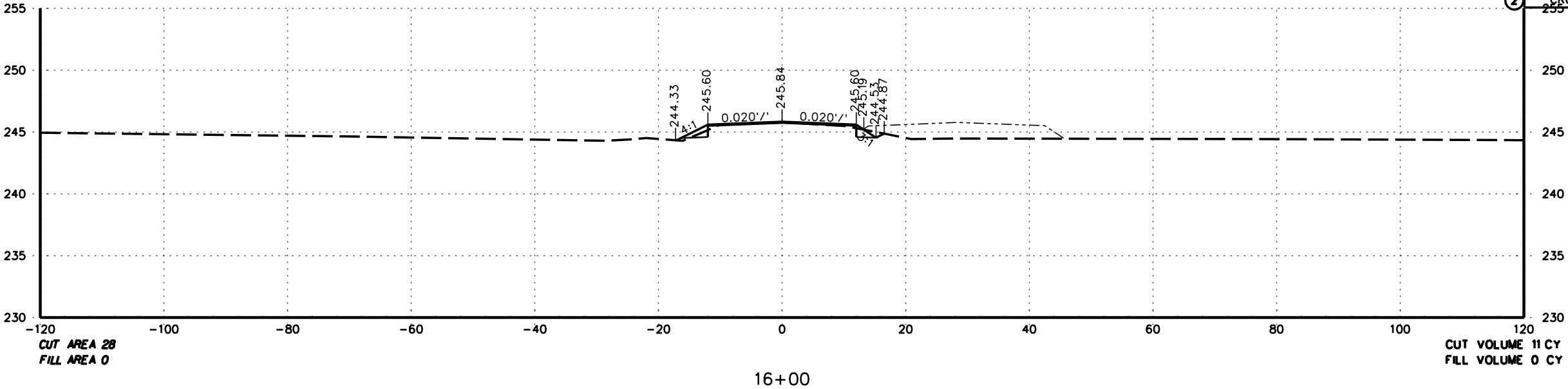




BM161BRIDGE\_076 6/10/2022

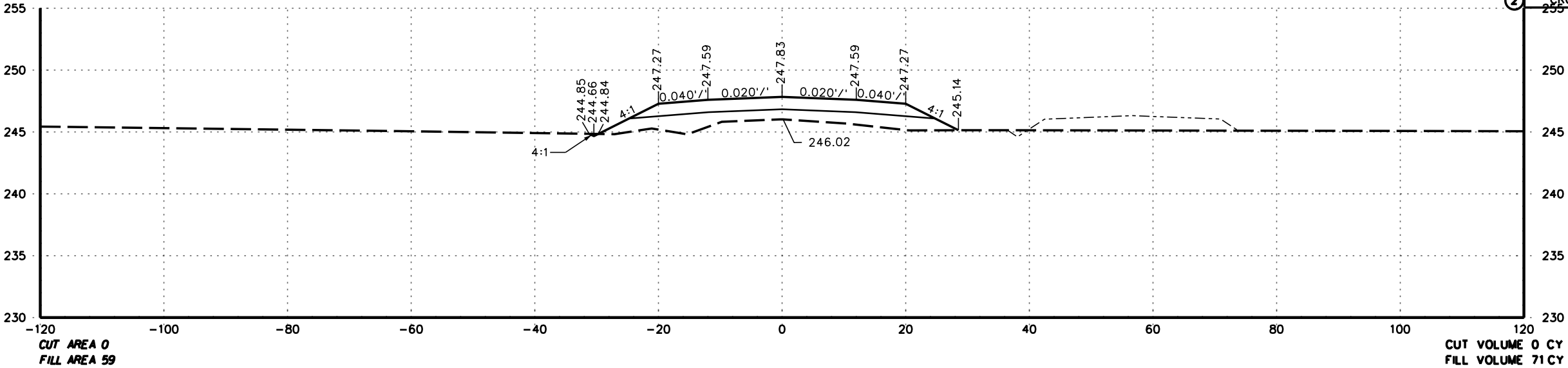
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2 CROSS SECTIONS - HWY 161

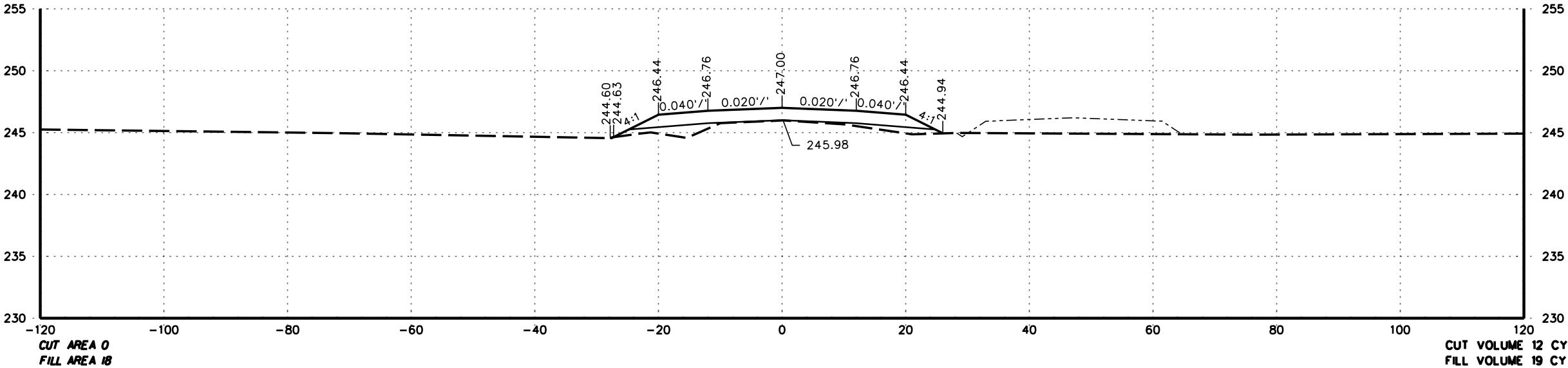


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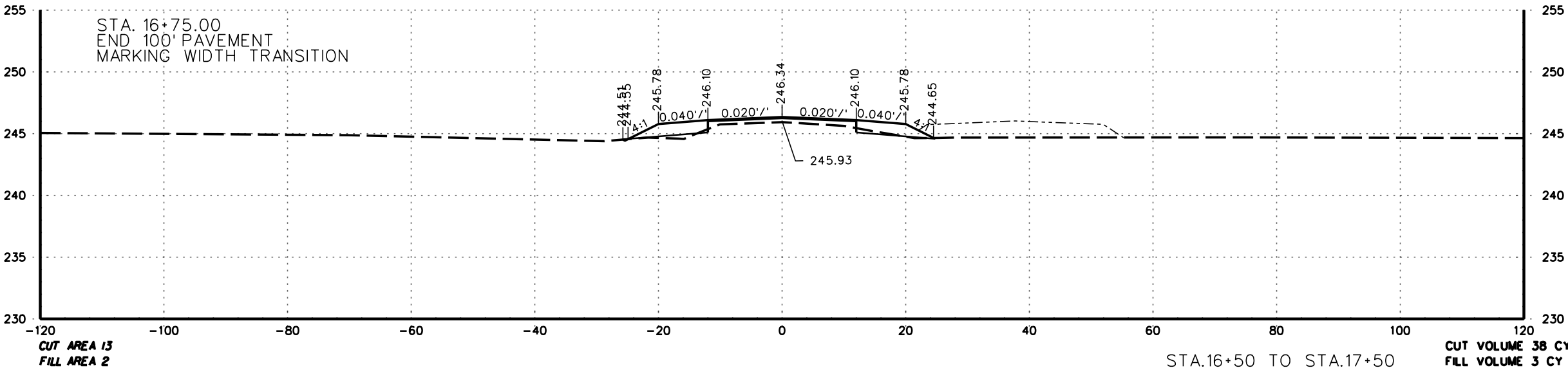
2 CROSS SECTIONS - HWY 161



17+50



17+00

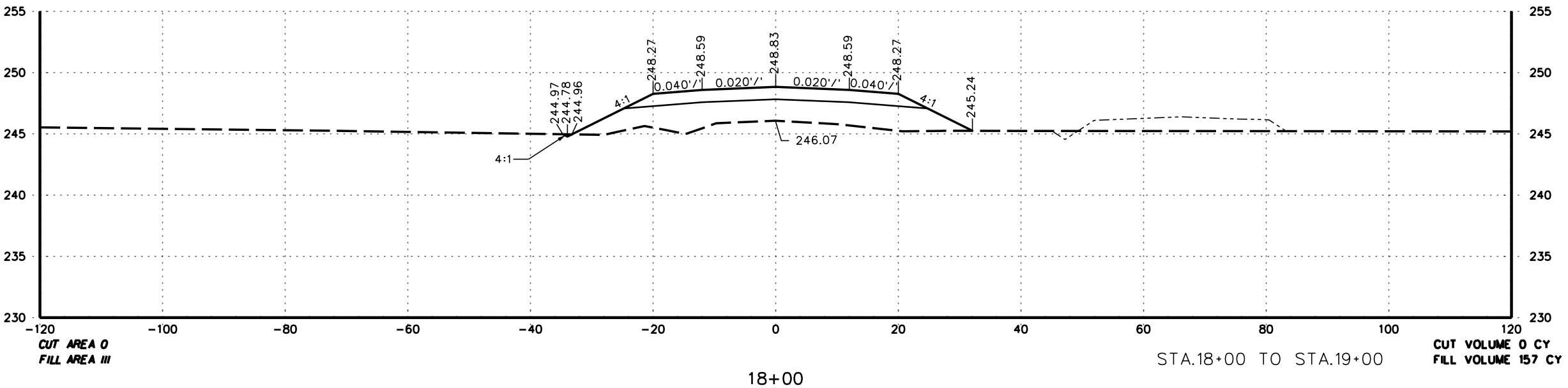
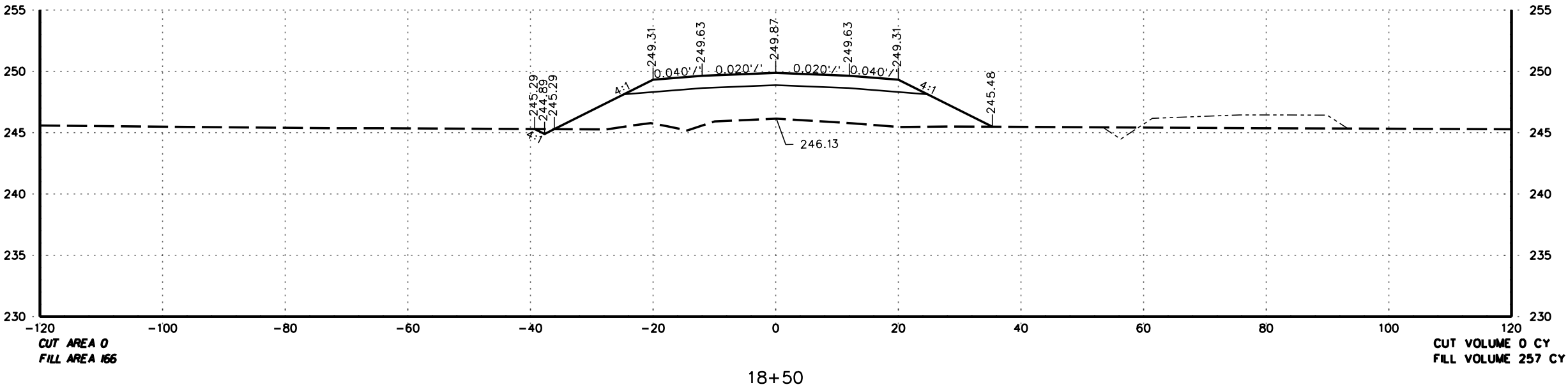
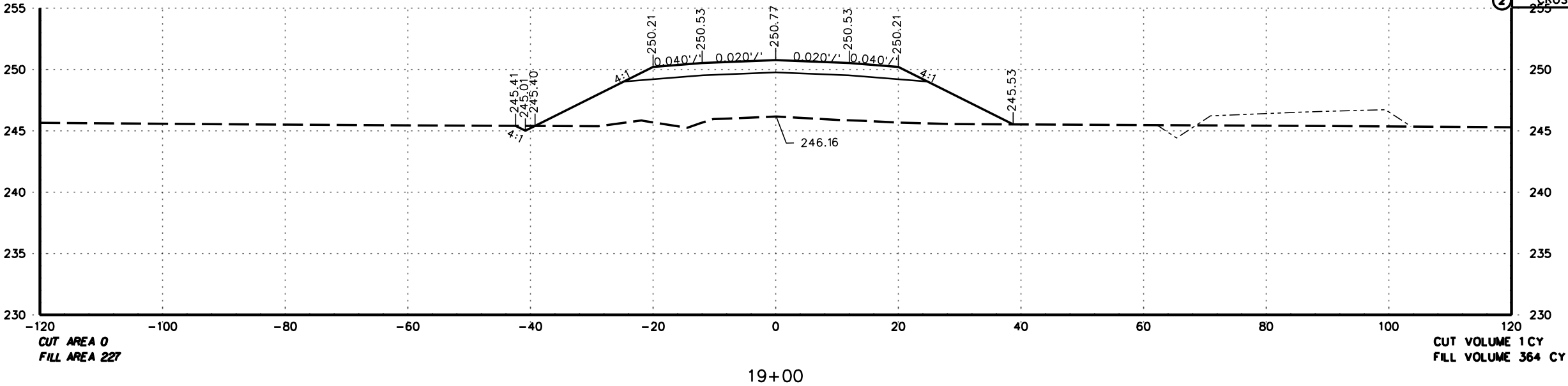


16+50

STA. 16+50 TO STA. 17+50

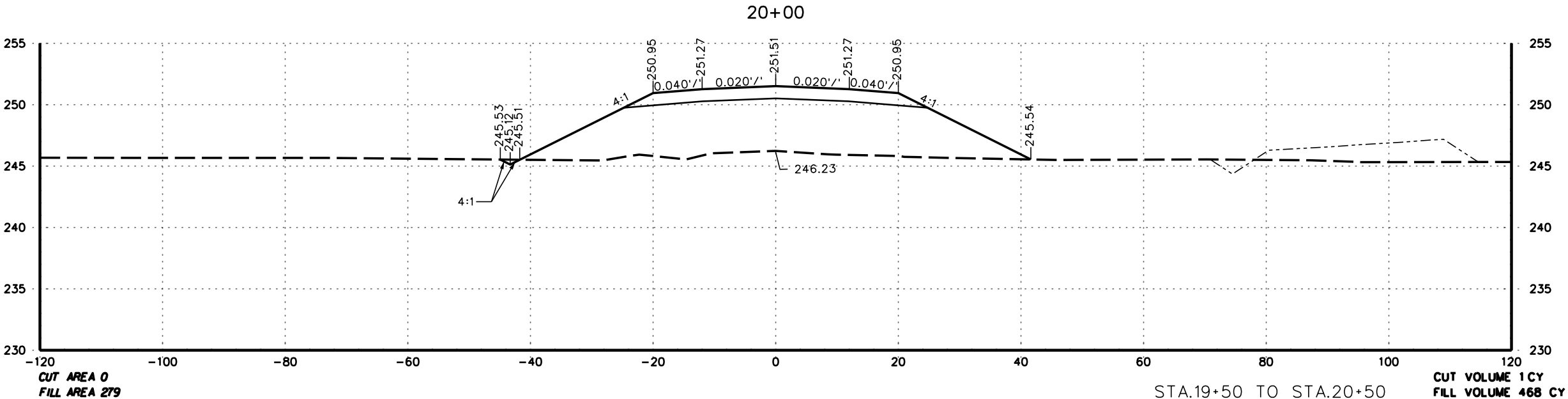
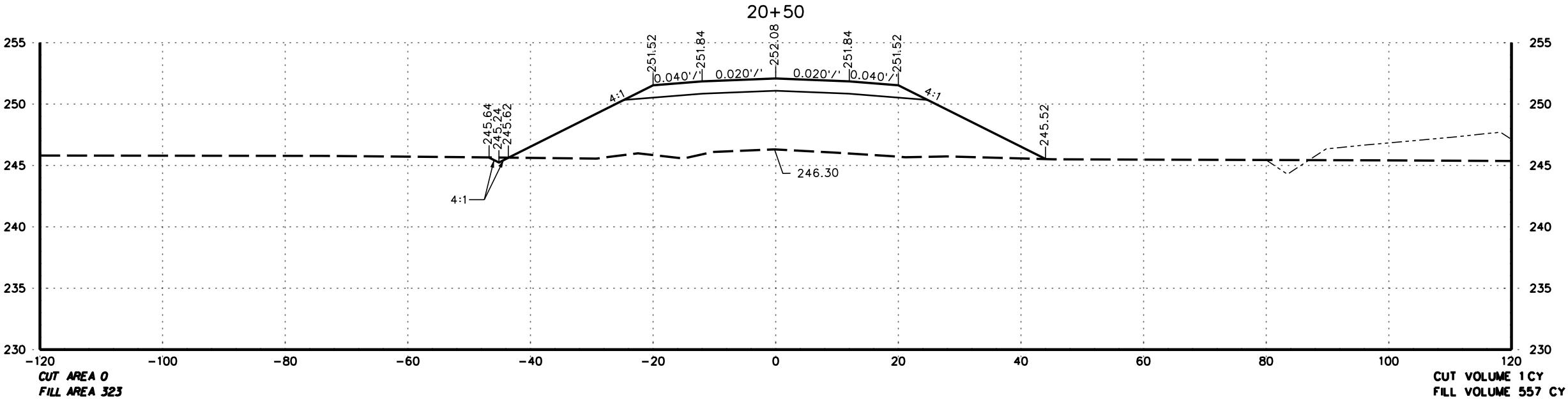
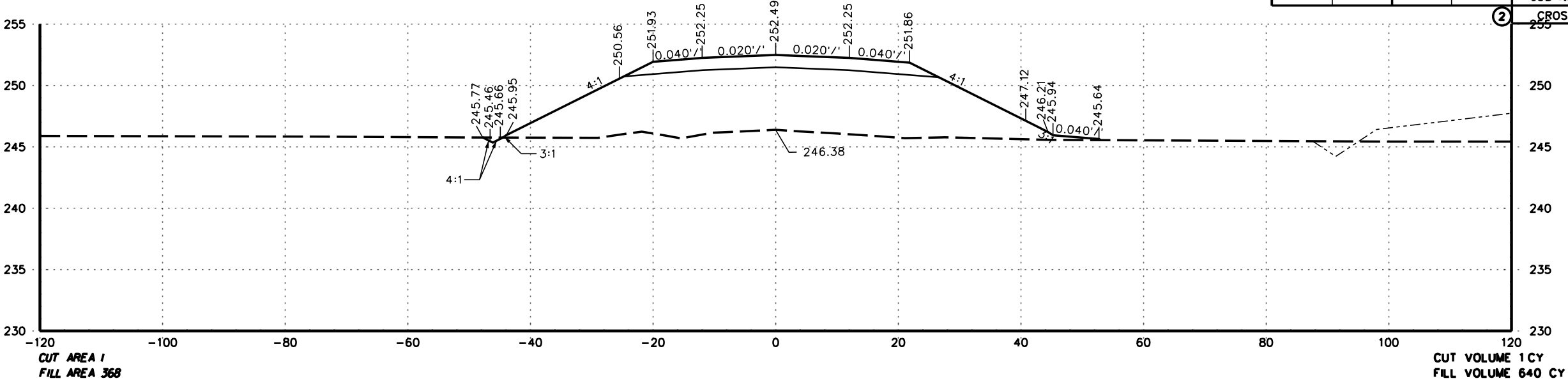
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2 CROSS SECTIONS - HWY 161



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO. 061472		79	101	

2 CROSS SECTIONS - HWY 161



STA.19+50 TO STA.20+50

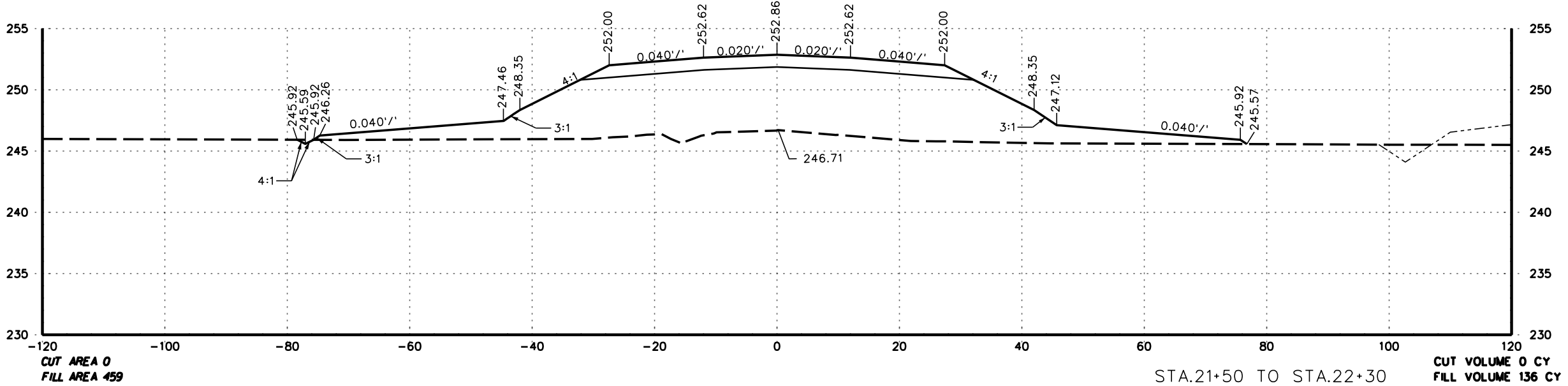
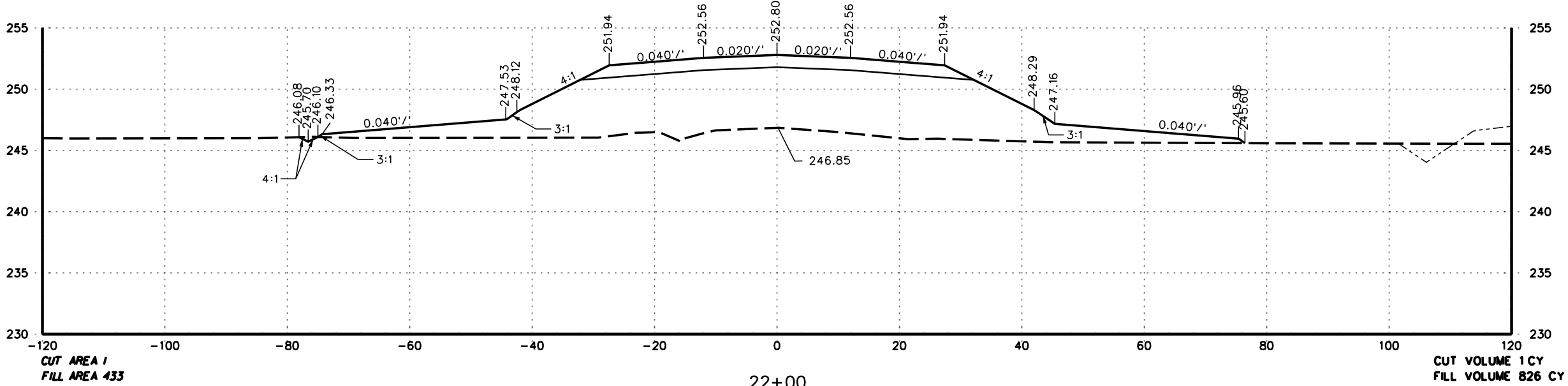
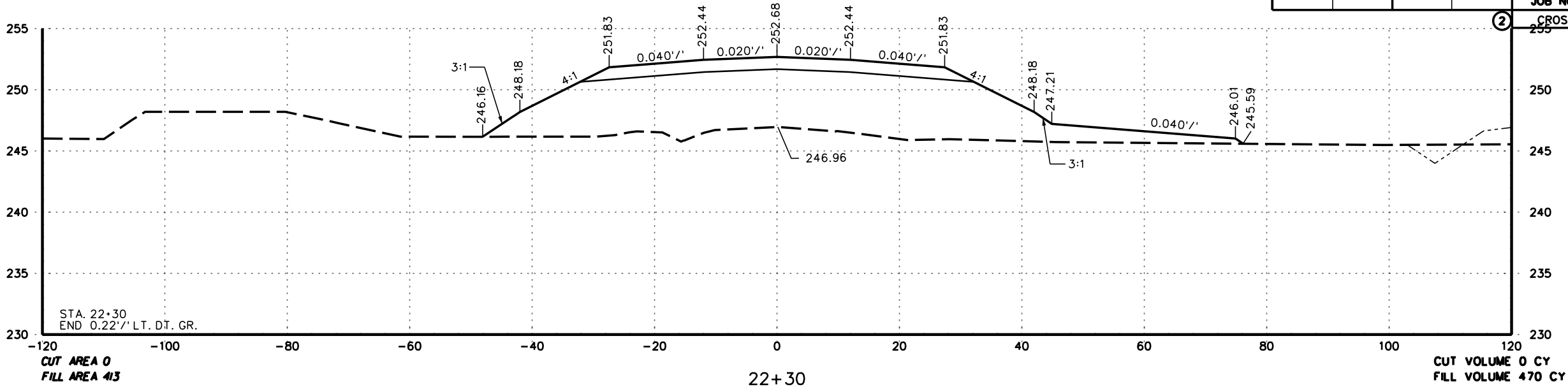
19+50





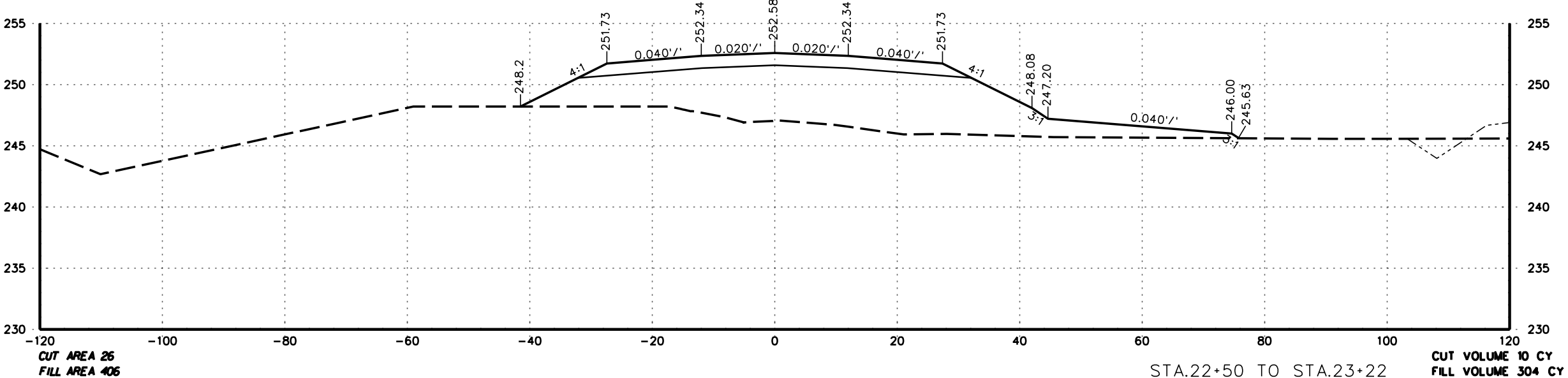
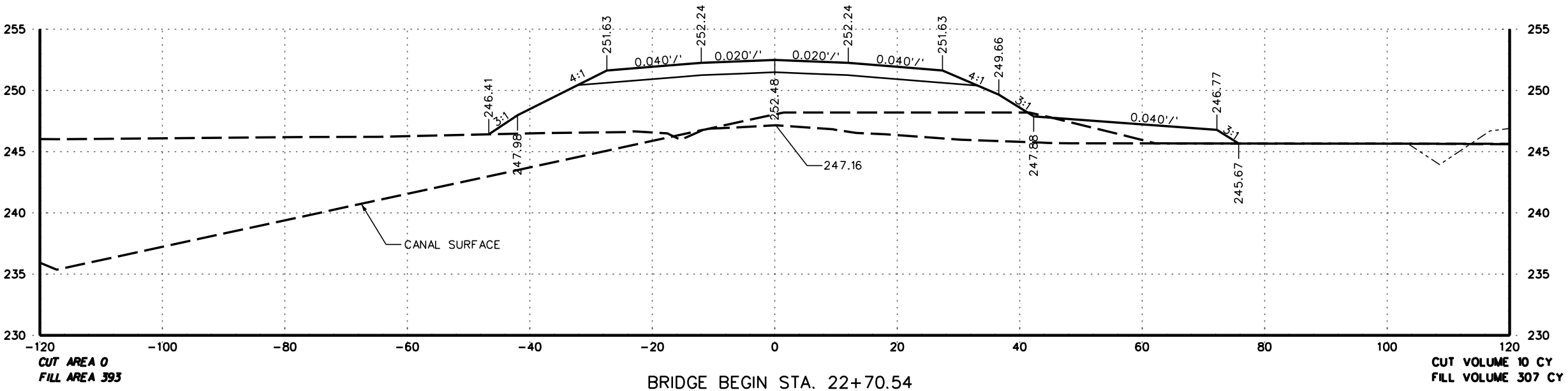
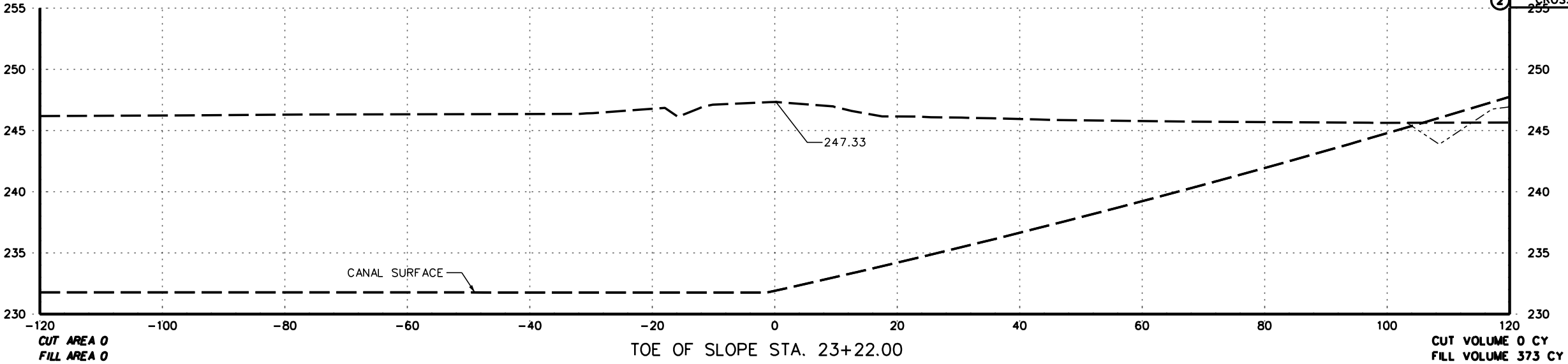
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2 CROSS SECTIONS - HWY 161



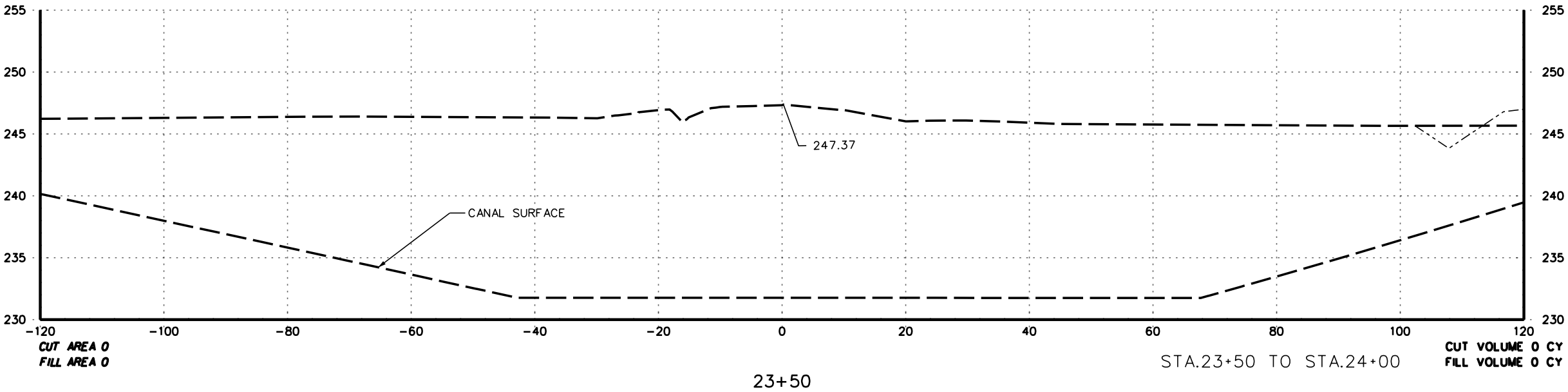
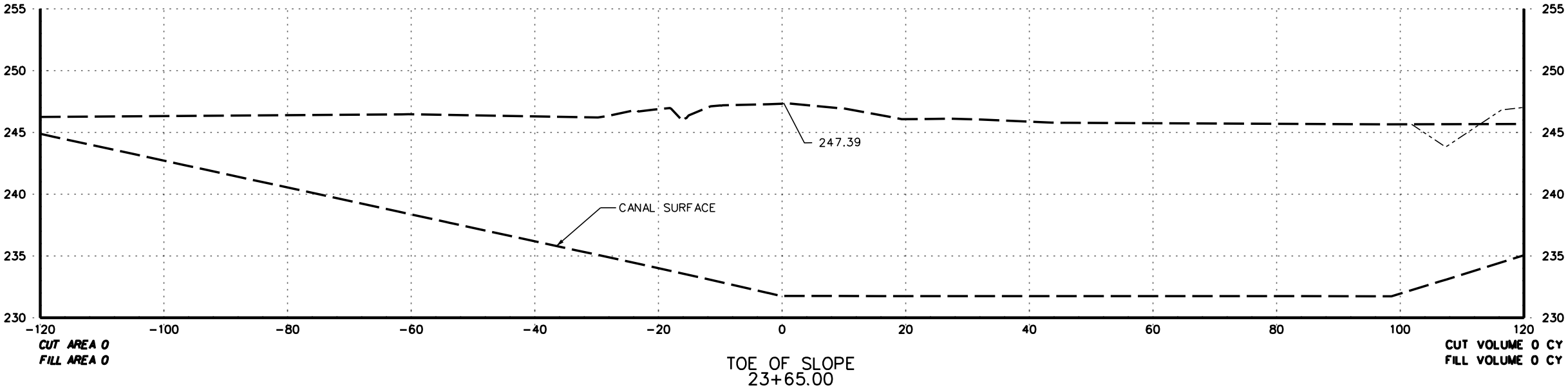
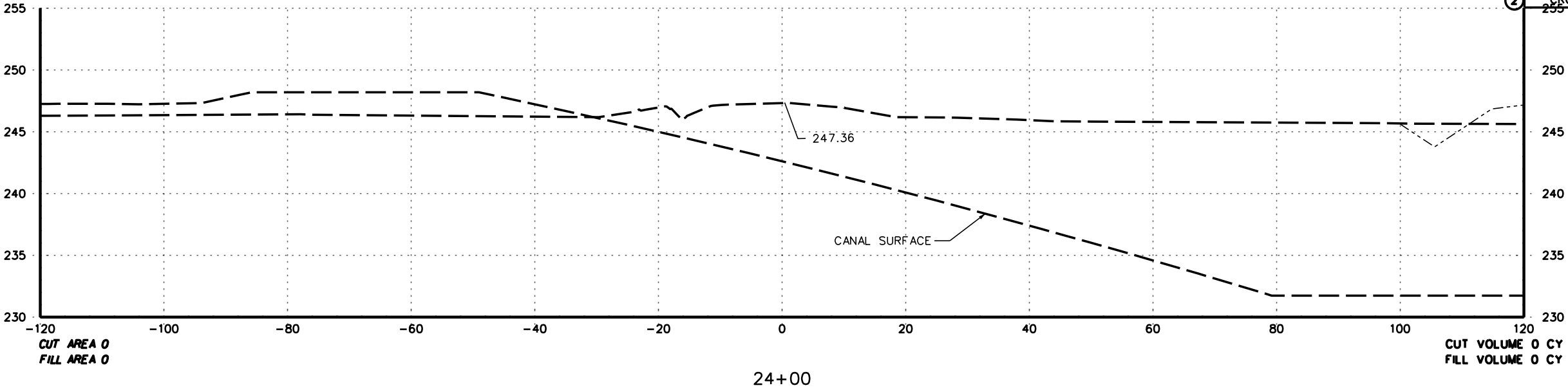
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2 CROSS SECTIONS - HWY 161



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		061472	83	101

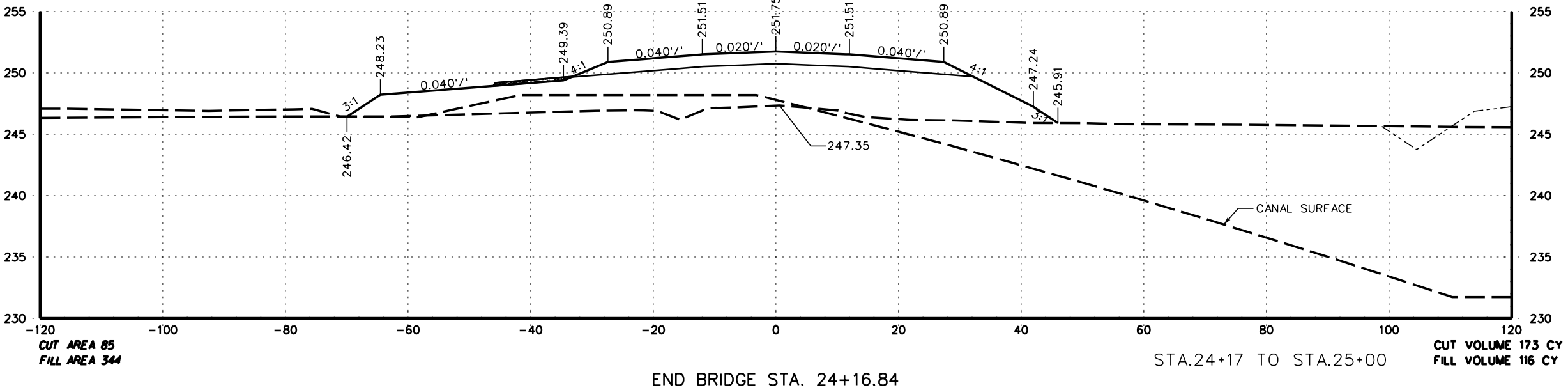
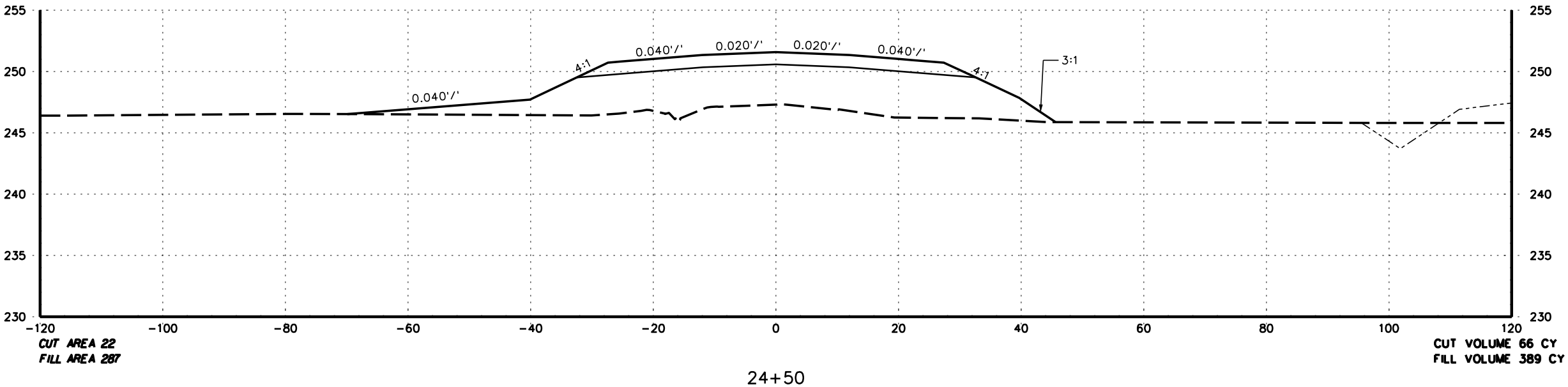
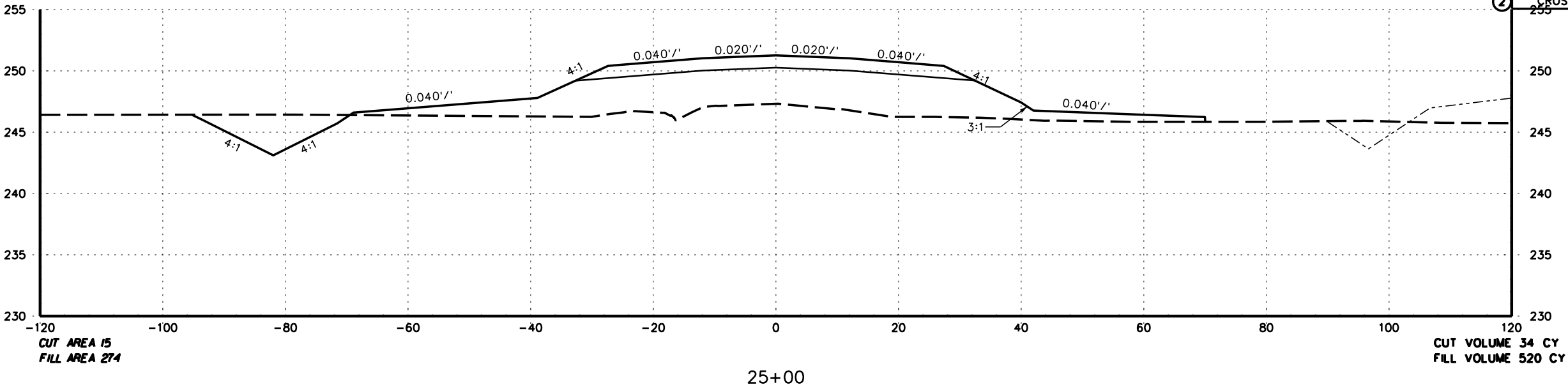
2 CROSS SECTIONS - HWY 161





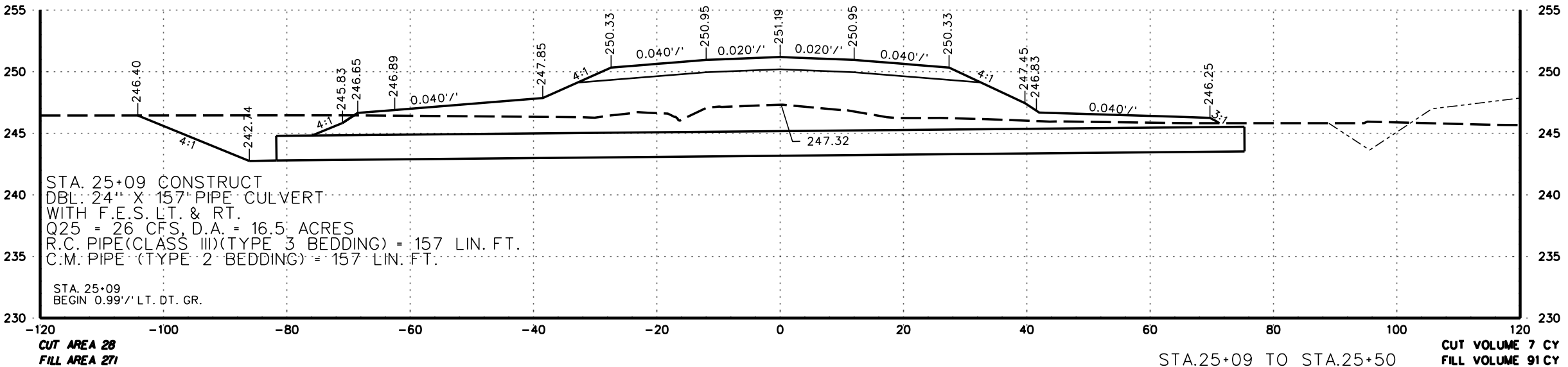
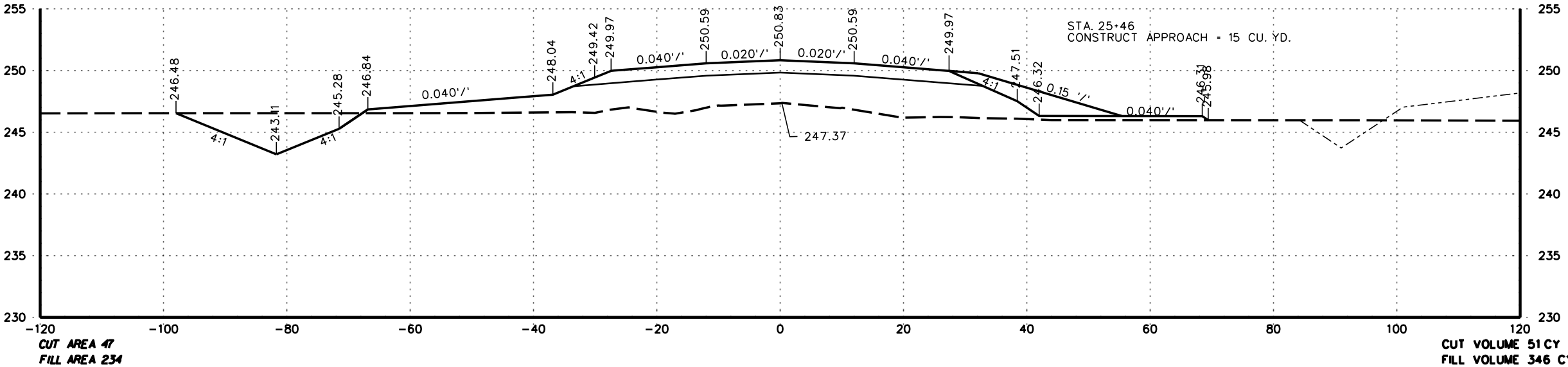
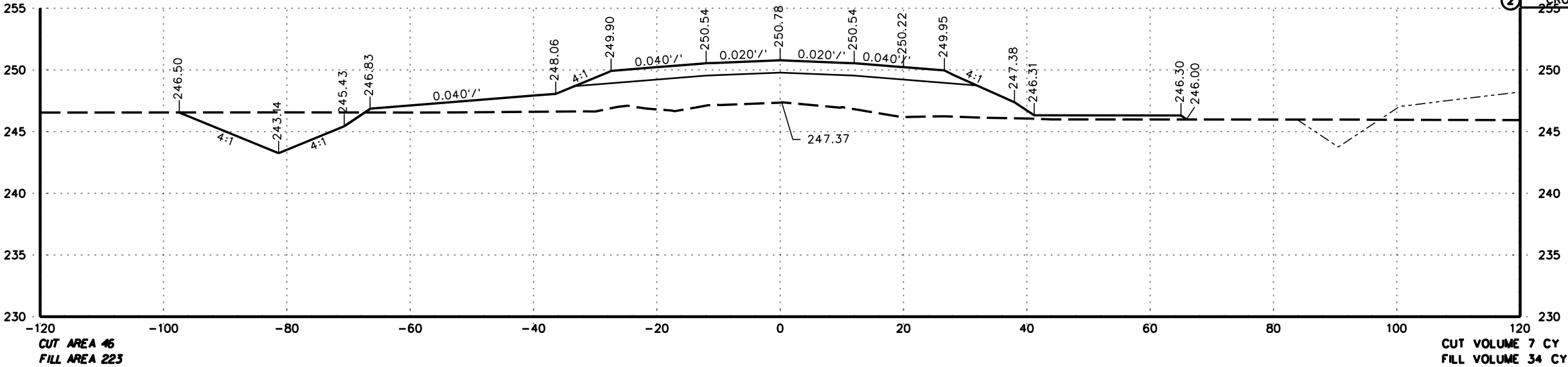
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				6	ARK.			
				JOB NO. 061472		84	101	

2 CROSS SECTIONS - HWY 161



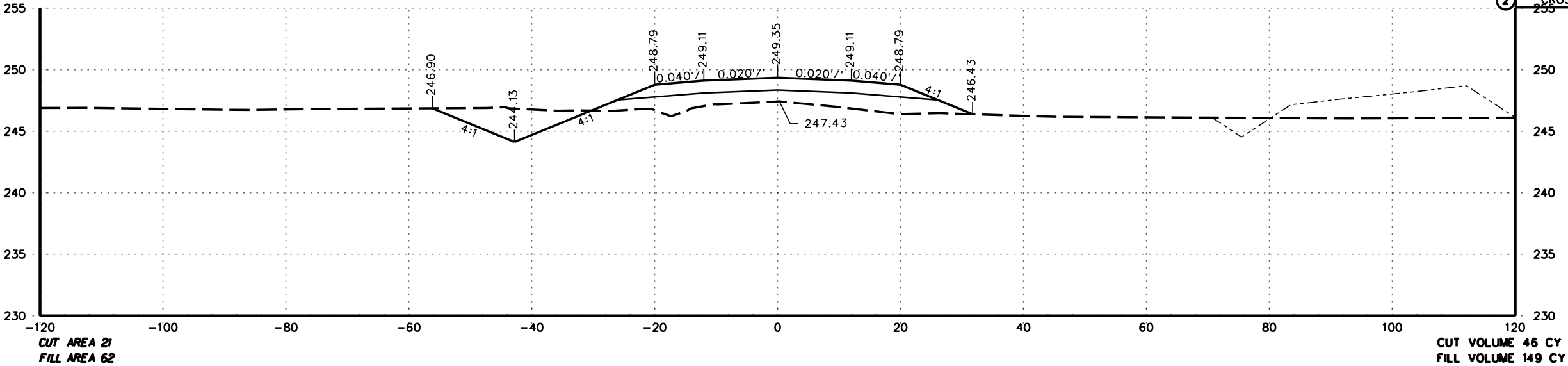
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2 CROSS SECTIONS - HWY 161

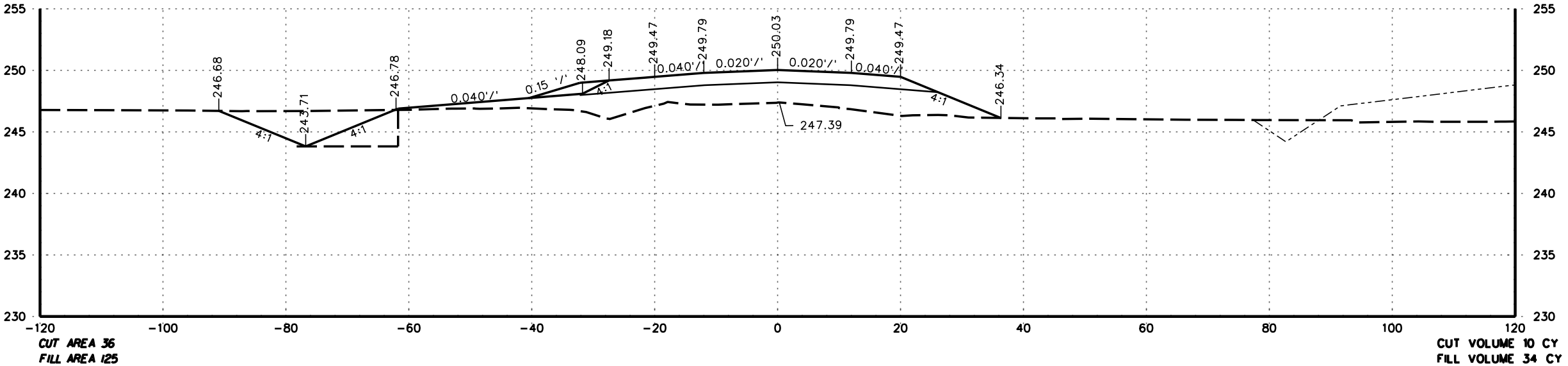


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		061472	86	101

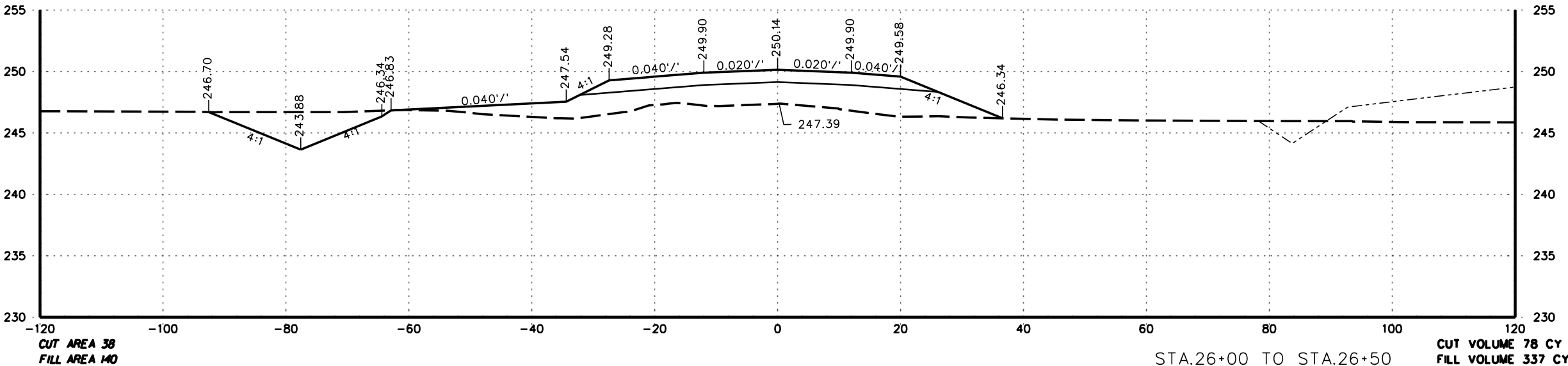
2 CROSS SECTIONS - HWY 161



26+50



26+07

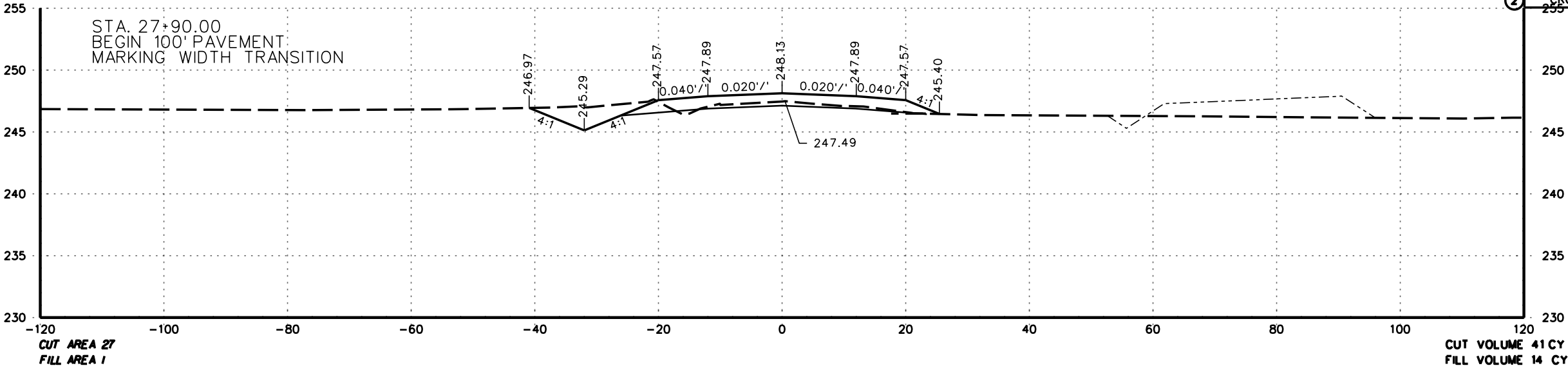


26+00

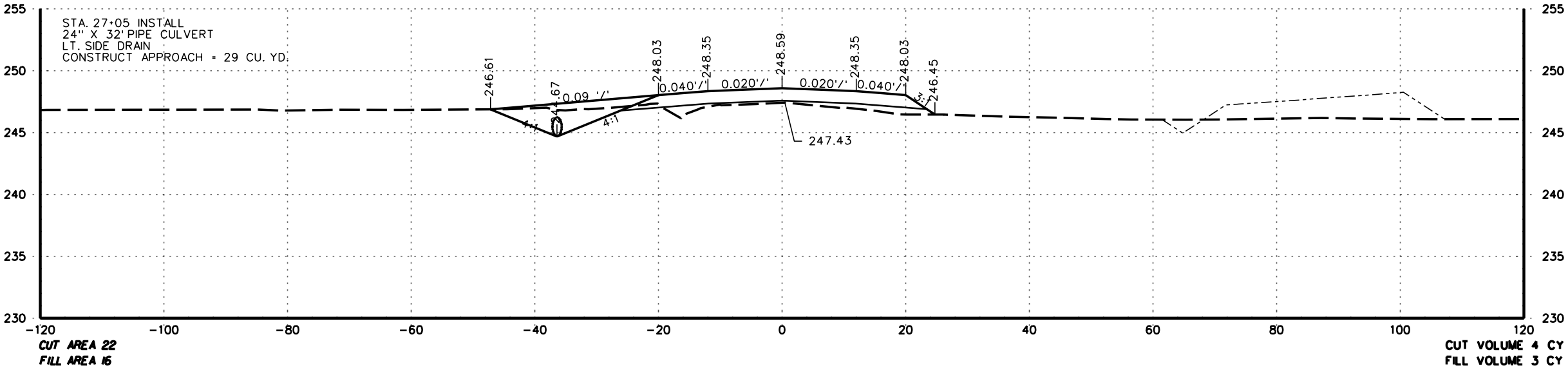
STA.26+00 TO STA.26+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AO PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	87	101	

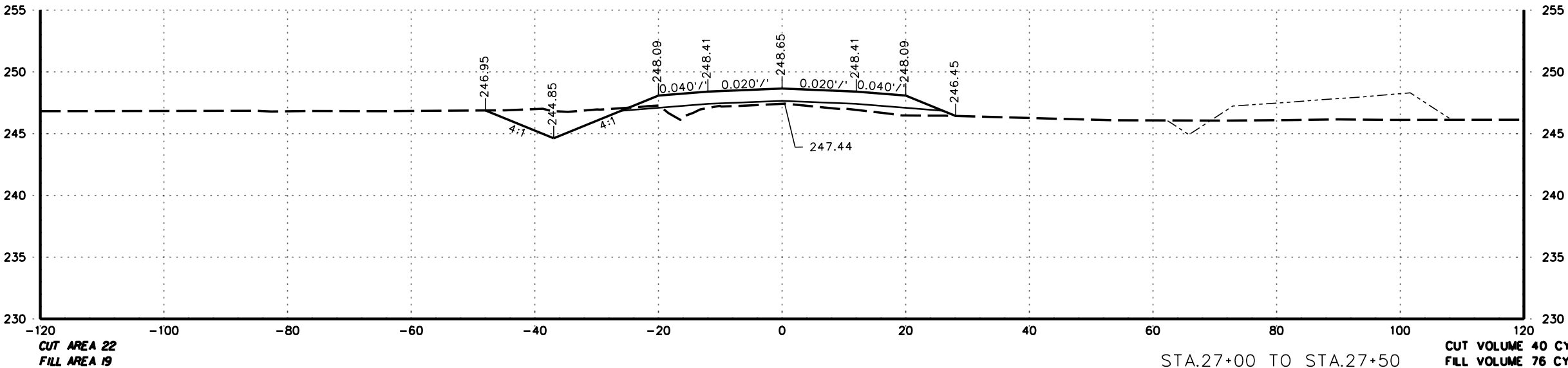
2 CROSS SECTIONS - HWY 161



27+50



27+05

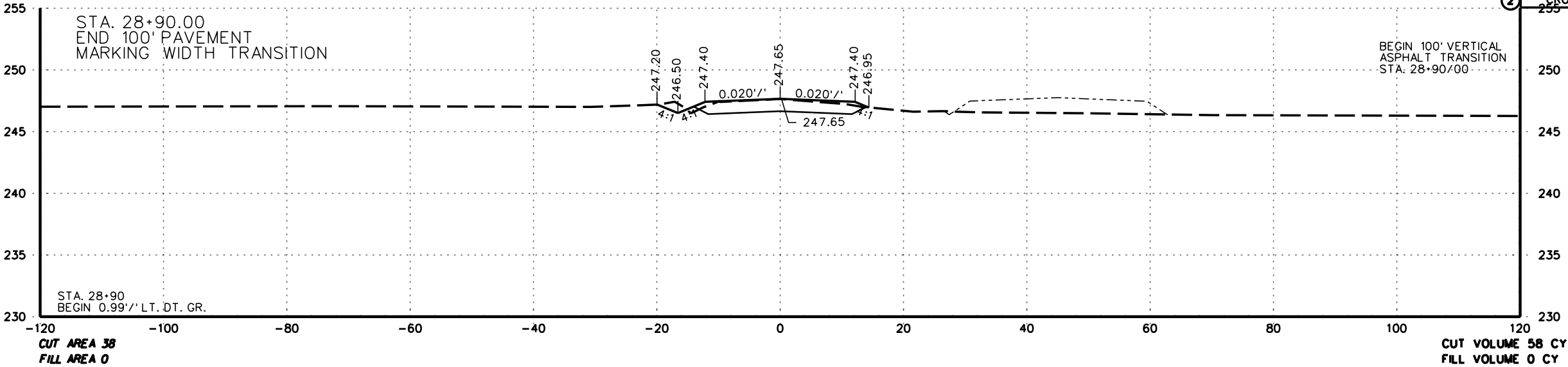


27+00

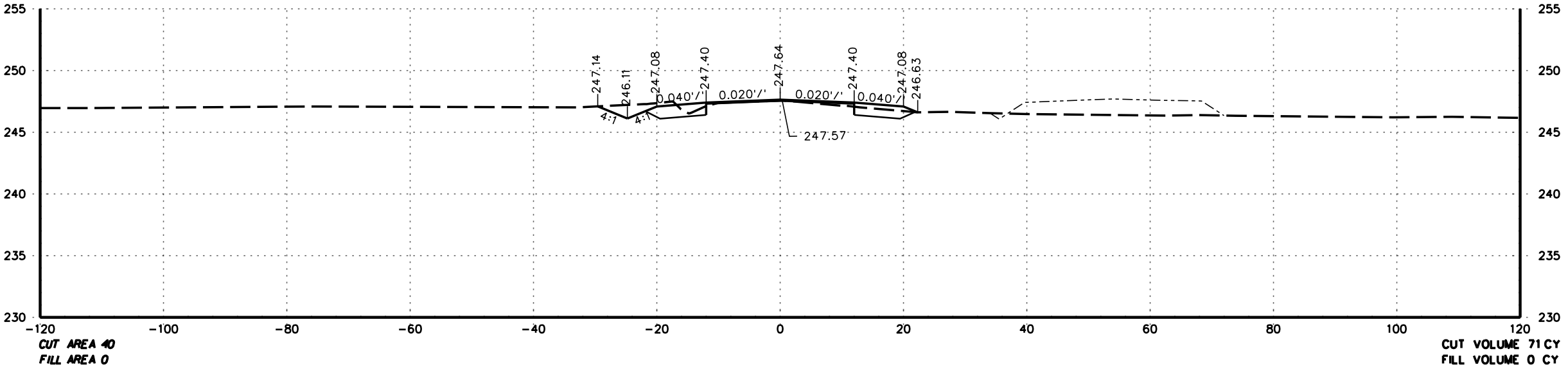
STA. 27+00 TO STA. 27+50

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.		061472	88	101

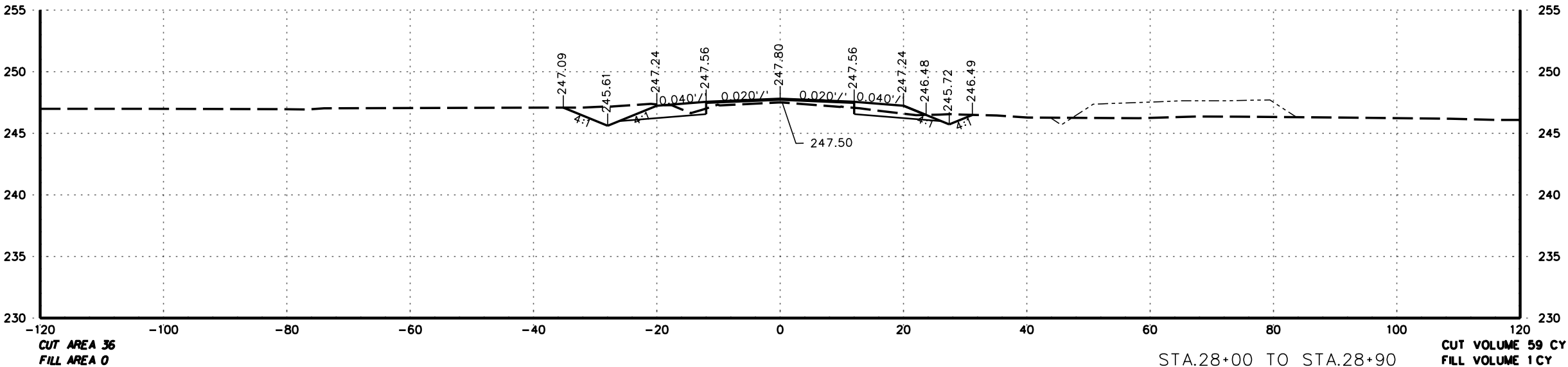
2 CROSS SECTIONS - HWY 161



END JOB 061472 STA. 161 28+90



28+50



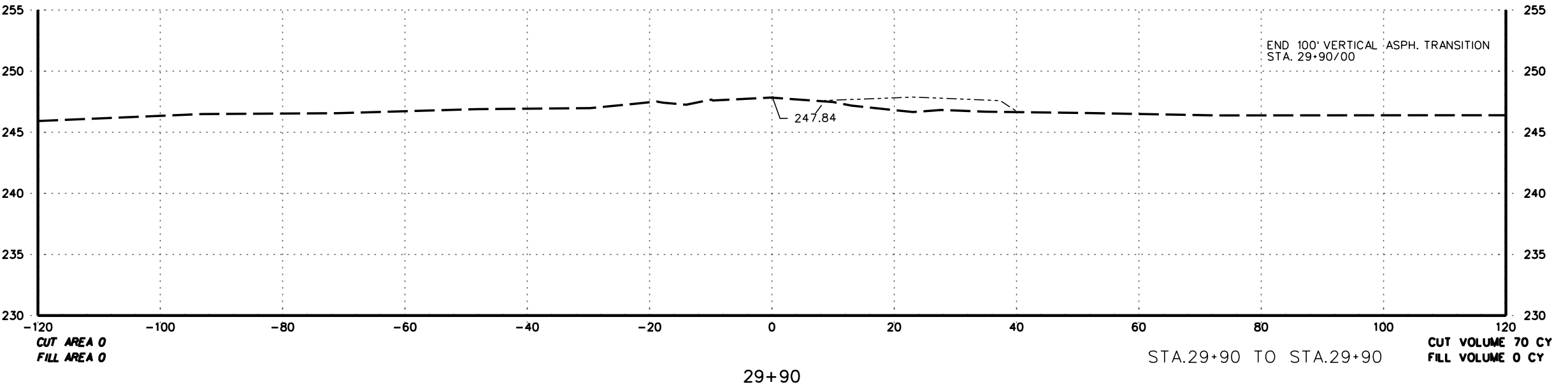
28+00

STA.28+00 TO STA.28+90



BM161BRIDGE\_089 6/15/2022

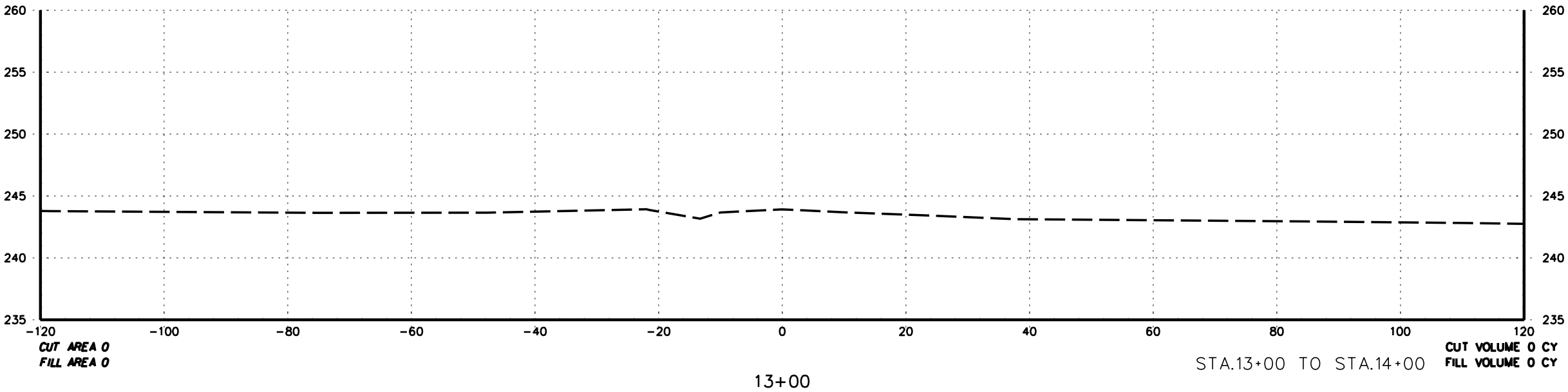
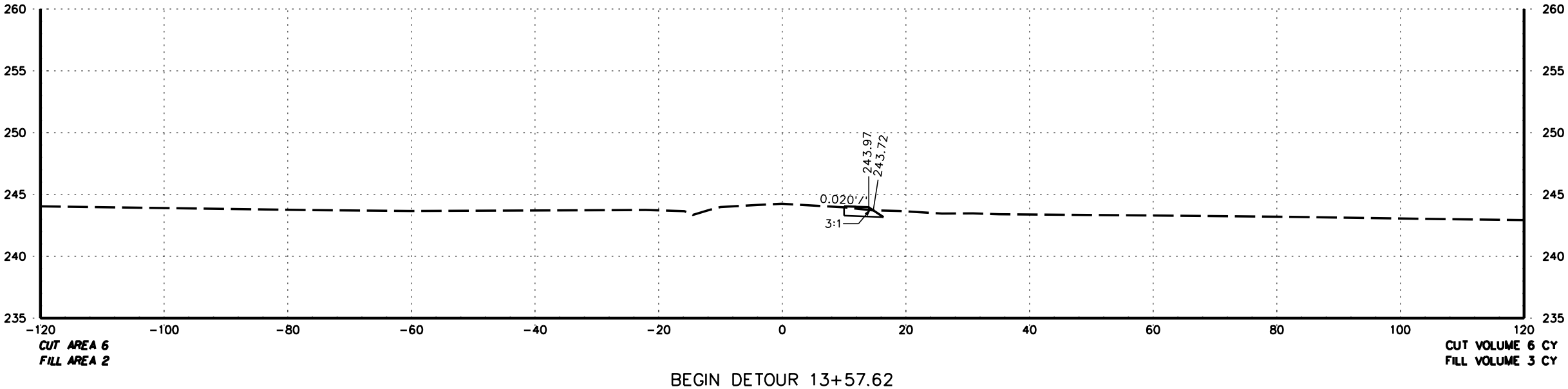
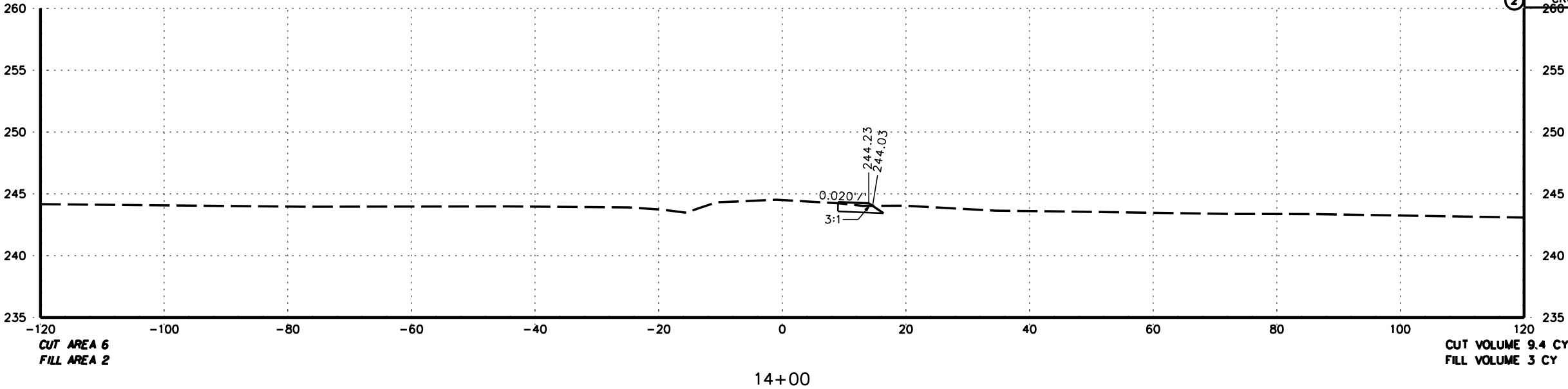
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		061472	89	101
② CROSS SECTIONS - HWY 161								



BM161BRIDGE\_090 6/15/2022

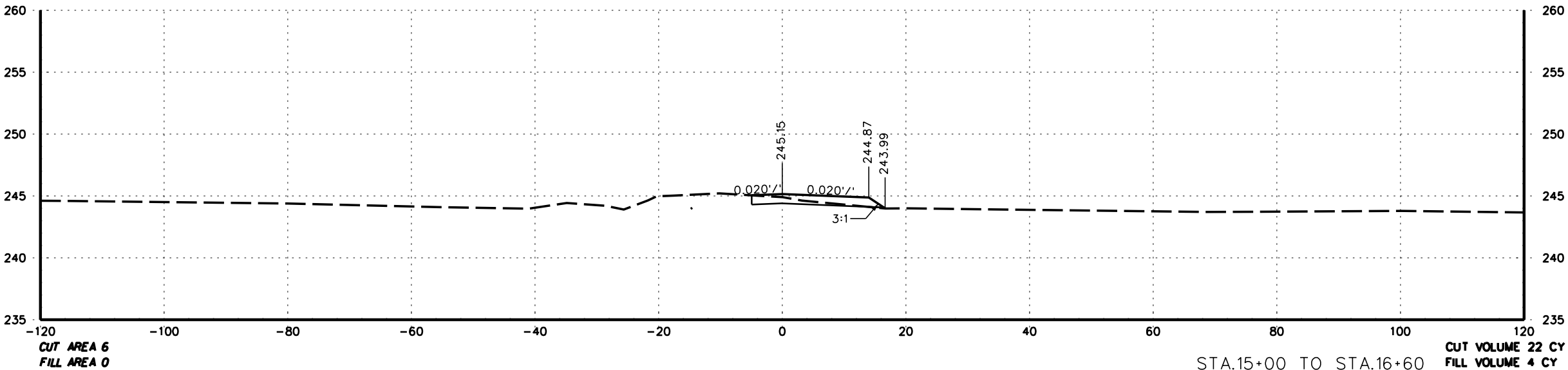
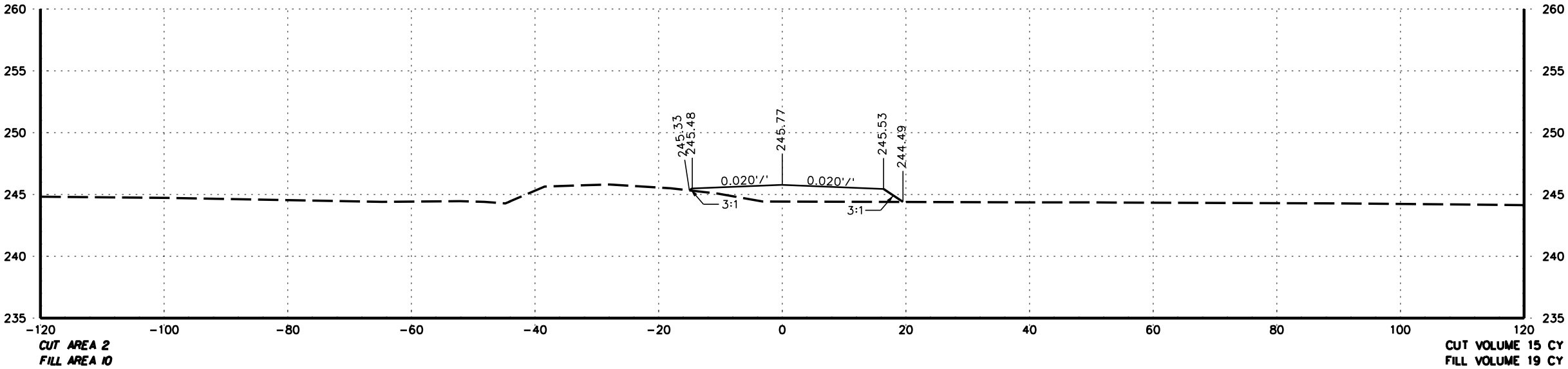
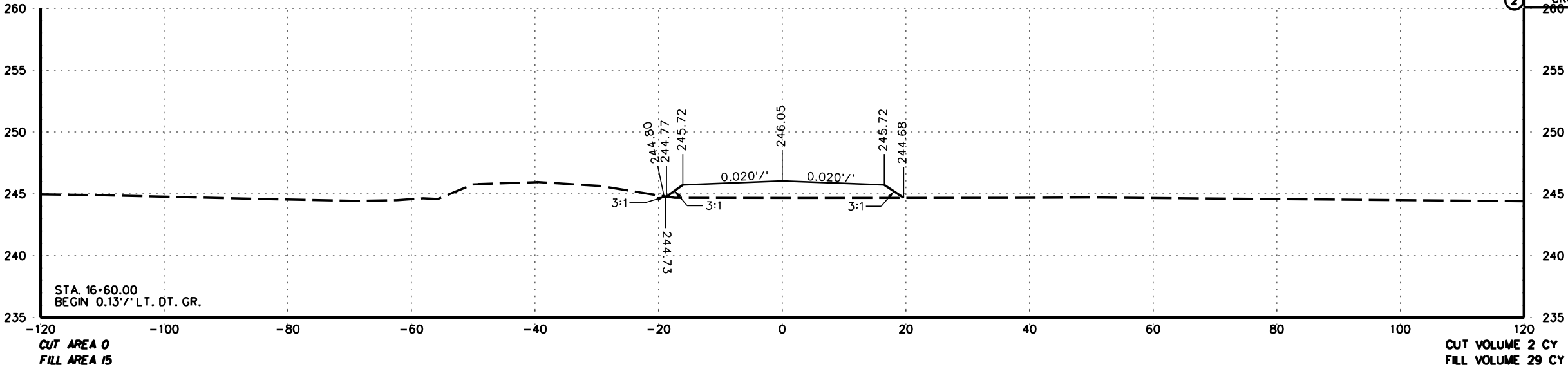
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061472	90	101

2 CROSS SECTIONS - DETOUR



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.		061472	91	101

2 CROSS SECTIONS - DETOUR



STA. 15+00 TO STA. 16+60

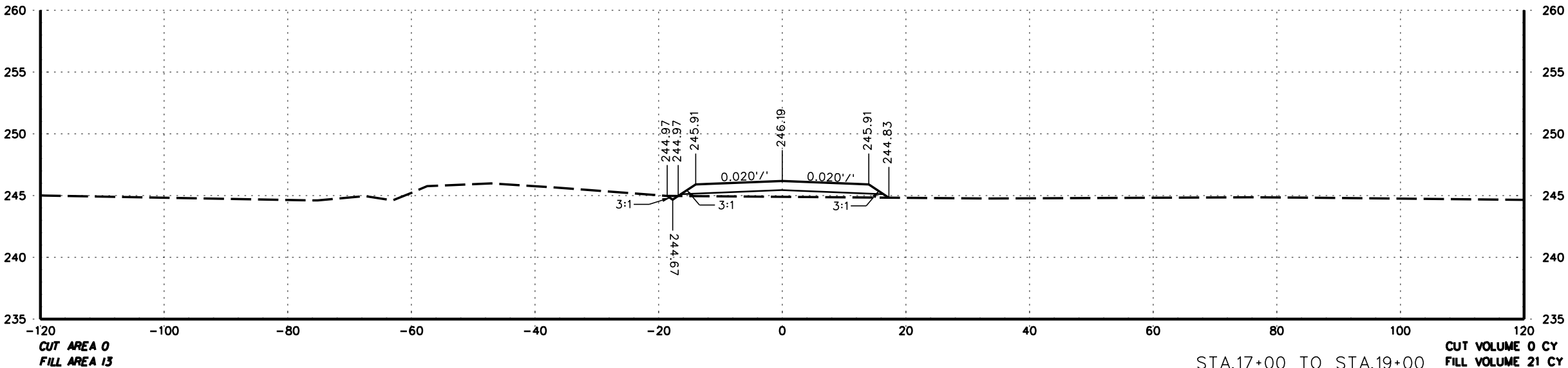
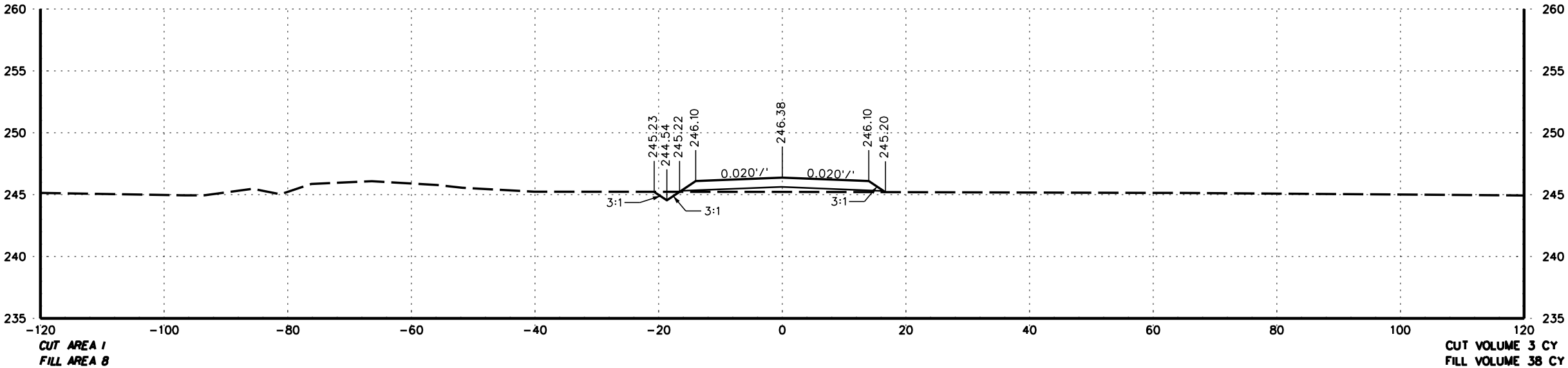
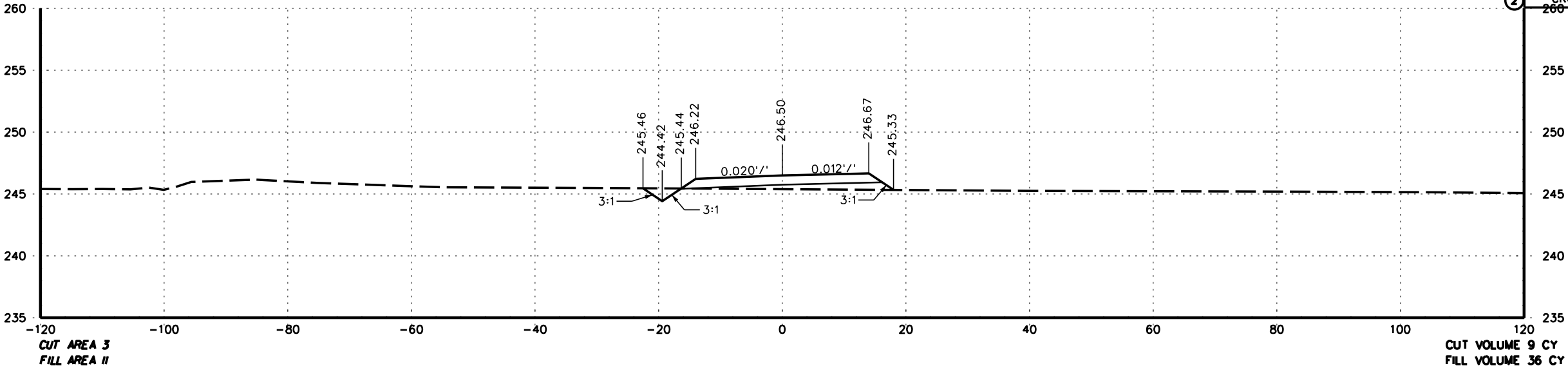
15+00

16+60

16+00

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.		061472	92	101

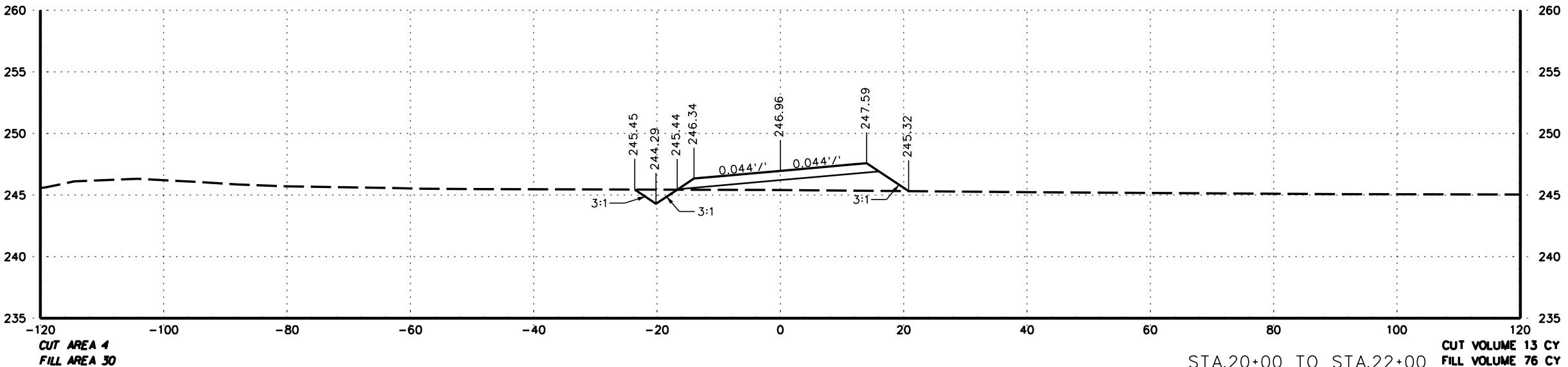
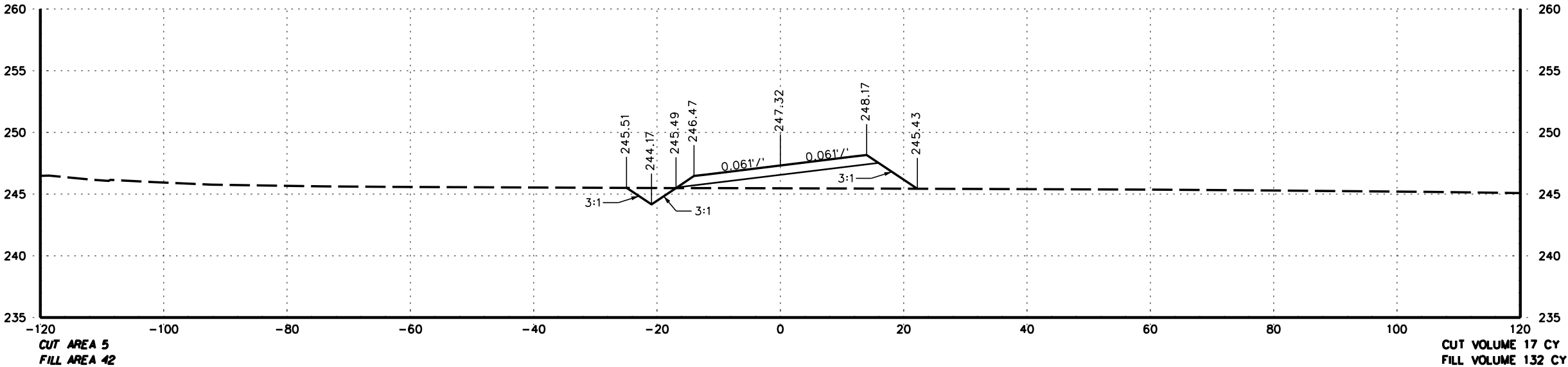
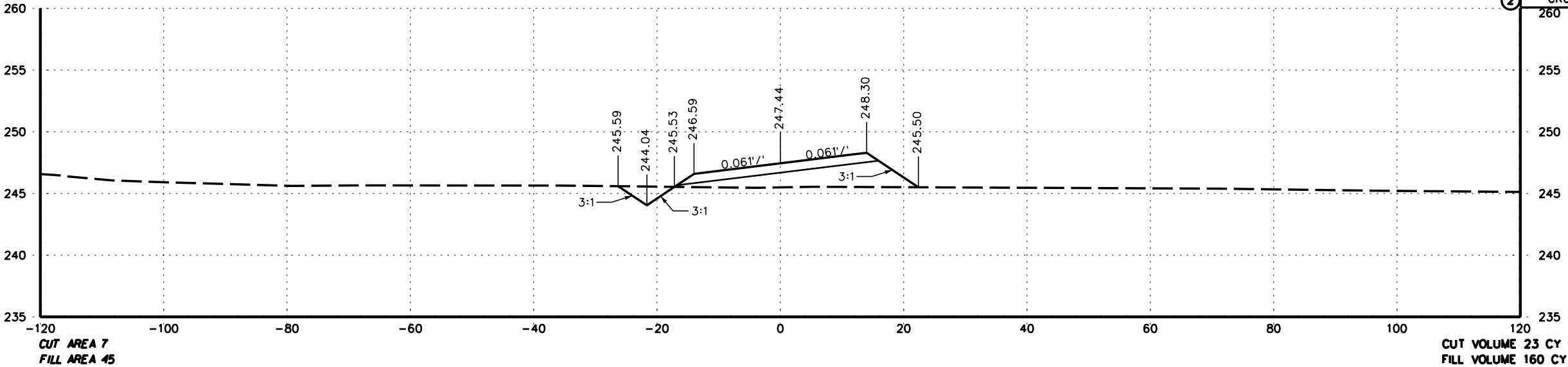
2 CROSS SECTIONS - DETOUR



STA.17+00 TO STA.19+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. 061472		93	101	

2 CROSS SECTIONS - DETOUR

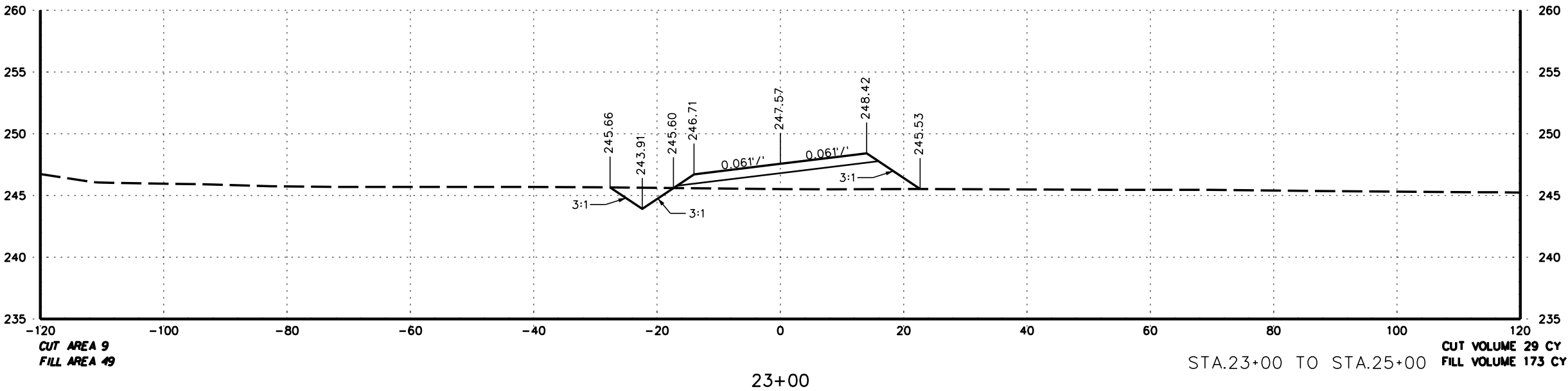
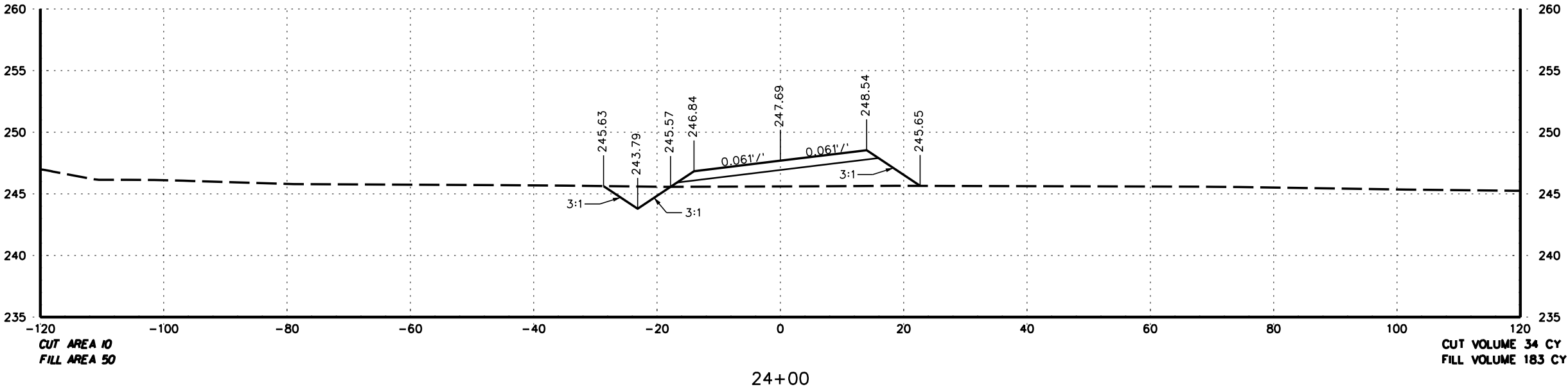
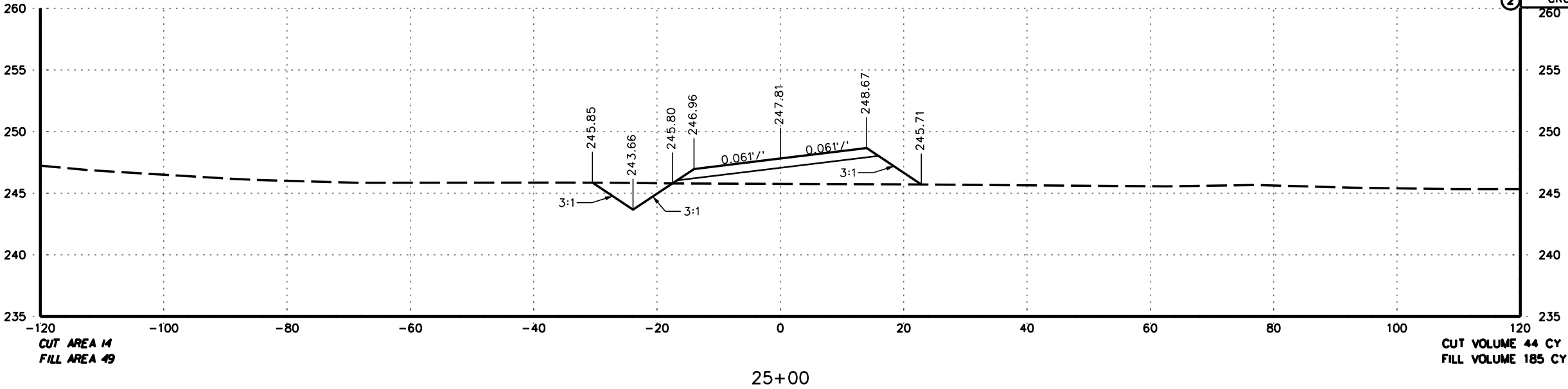


STA.20+00 TO STA.22+00



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. 061472		94	101	

2 CROSS SECTIONS - DETOUR

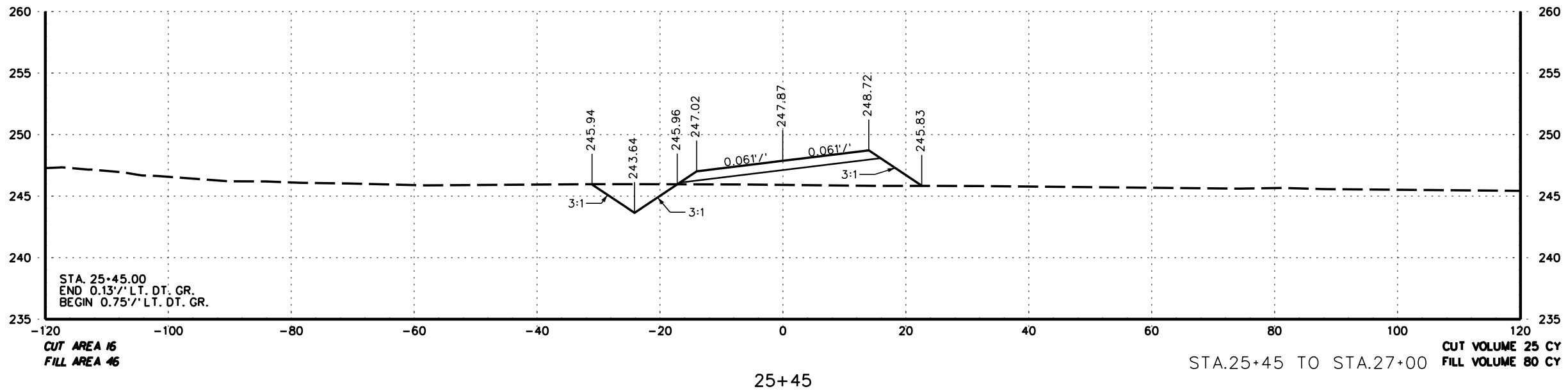
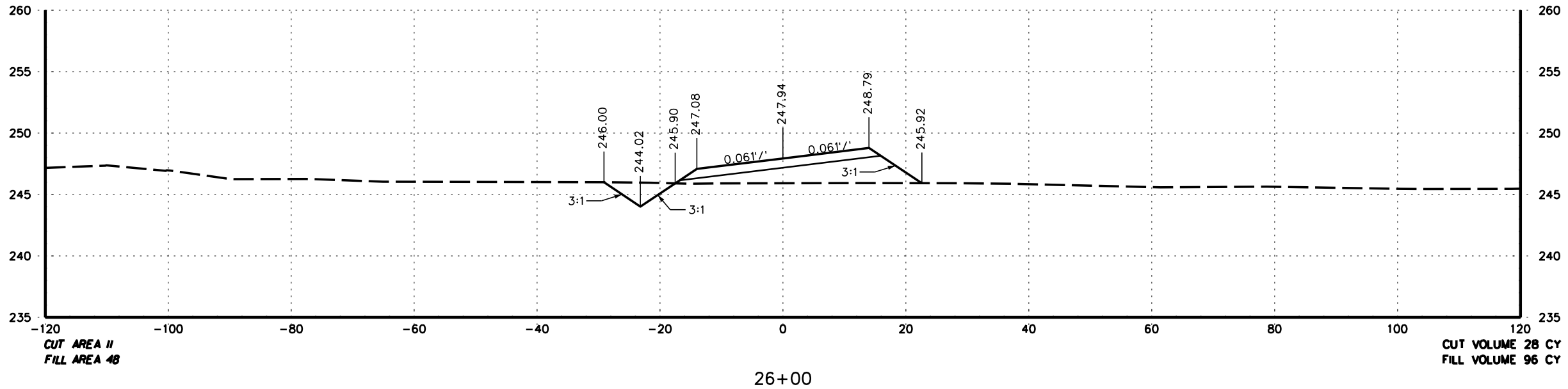
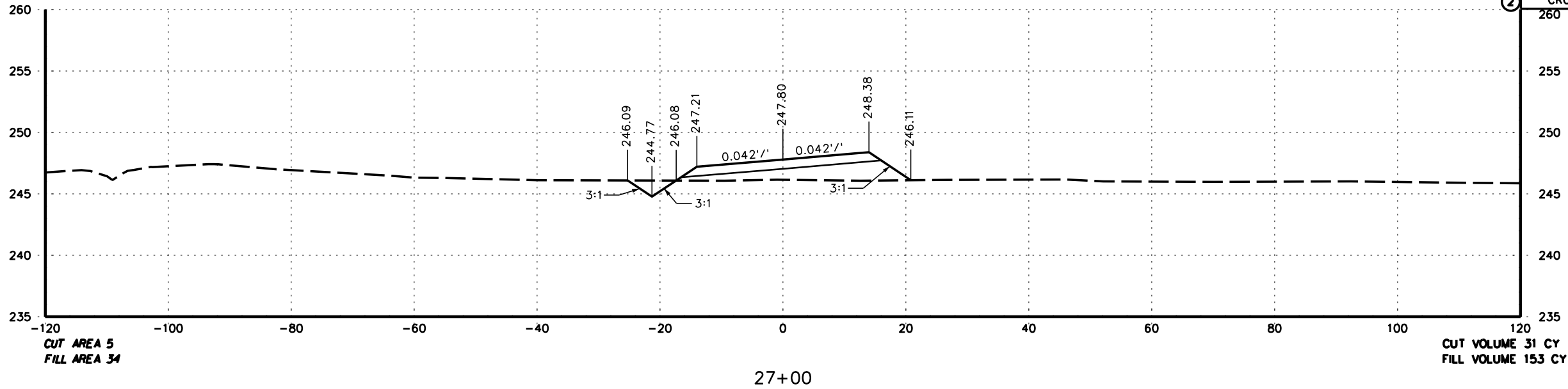


STA.23+00 TO STA.25+00

BM161BRIDGE\_095 6/15/2022

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		061472	95	101

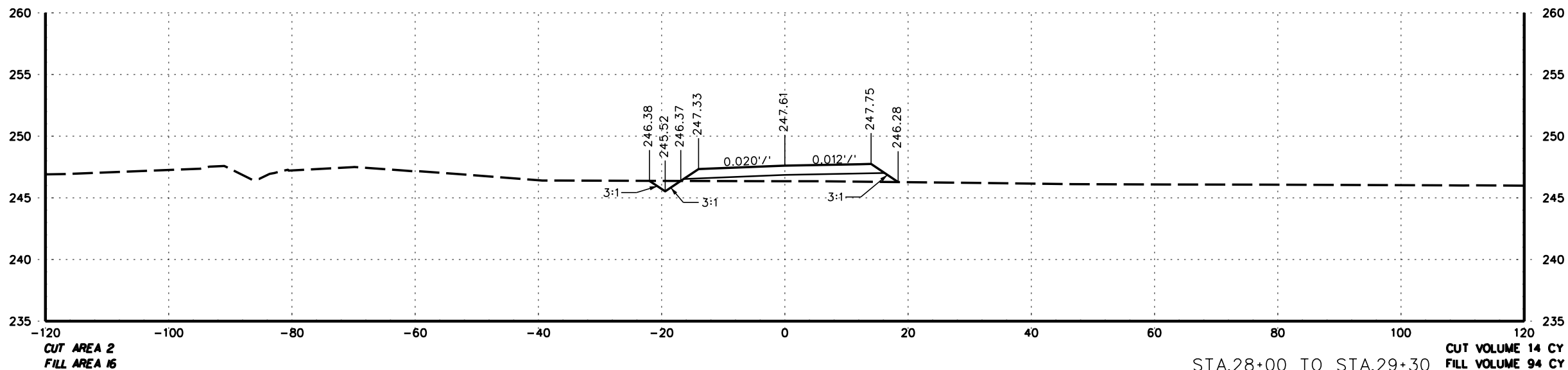
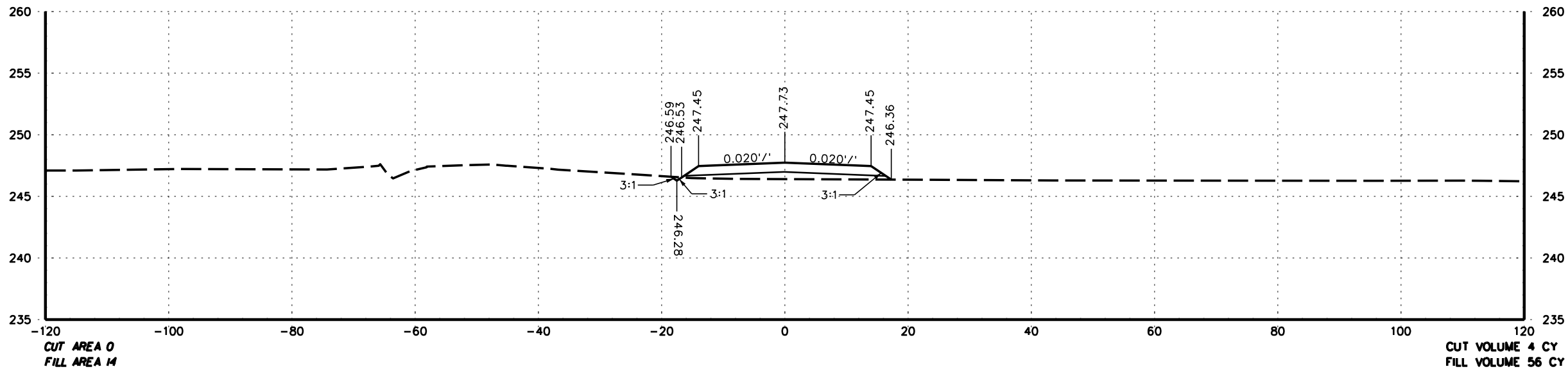
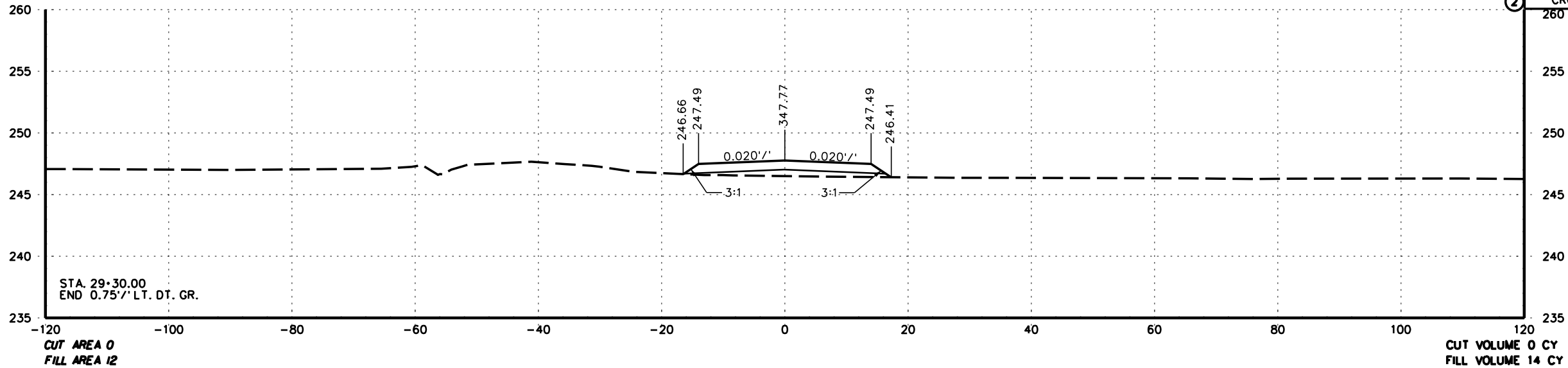
2 CROSS SECTIONS - DETOUR



STA. 25+45 TO STA. 27+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		061472	96	101

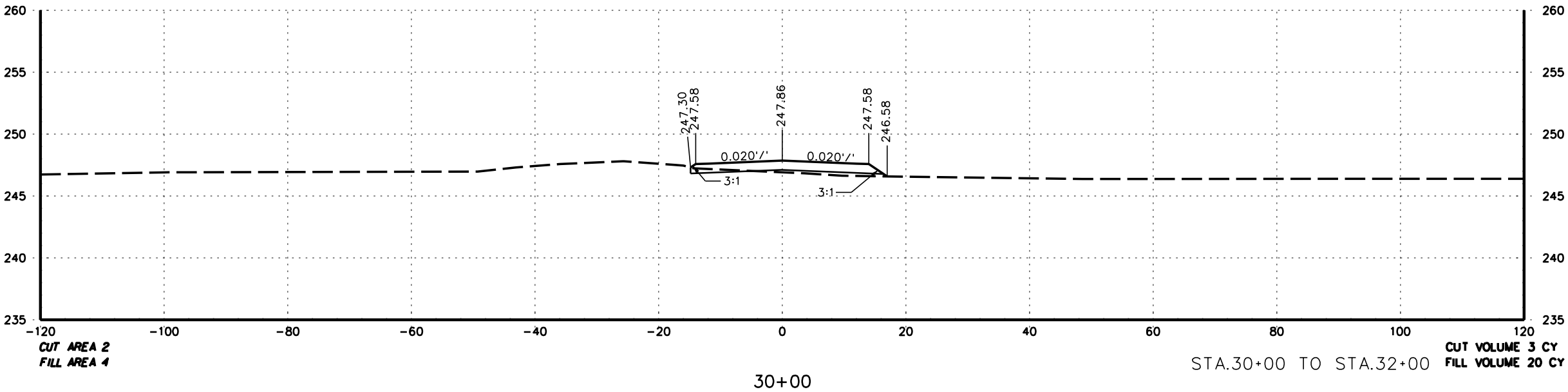
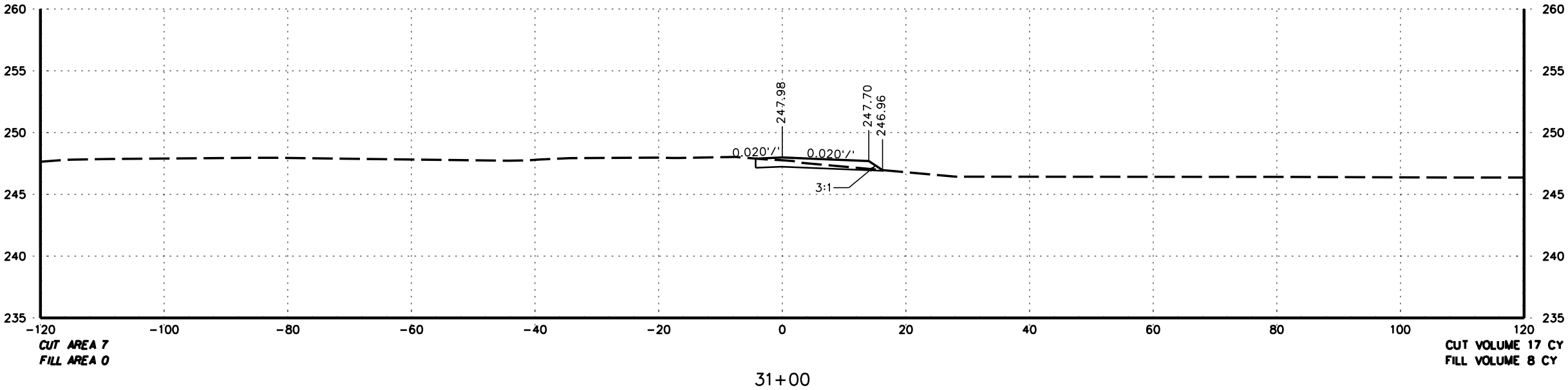
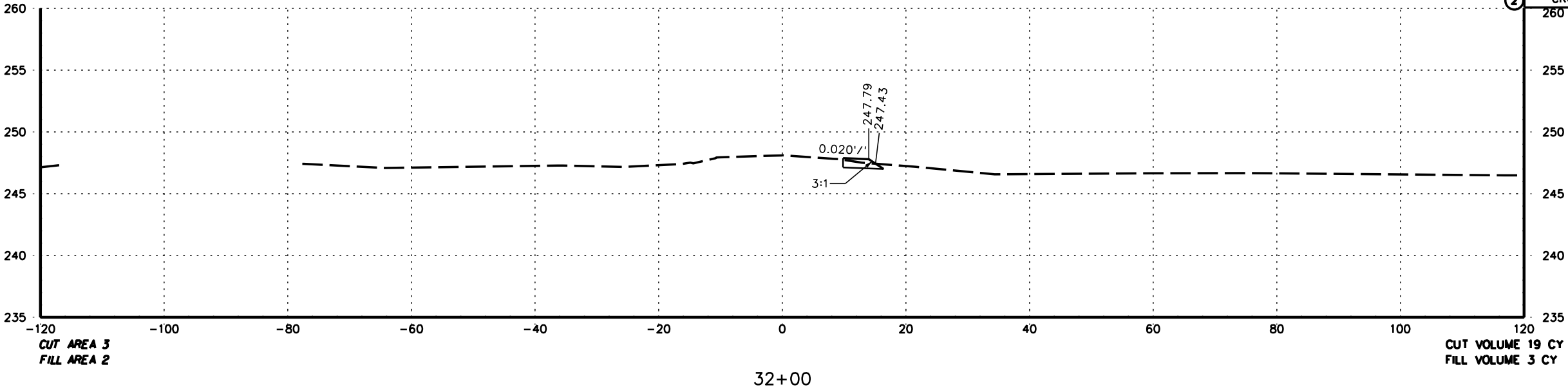
2 CROSS SECTIONS - DETOUR



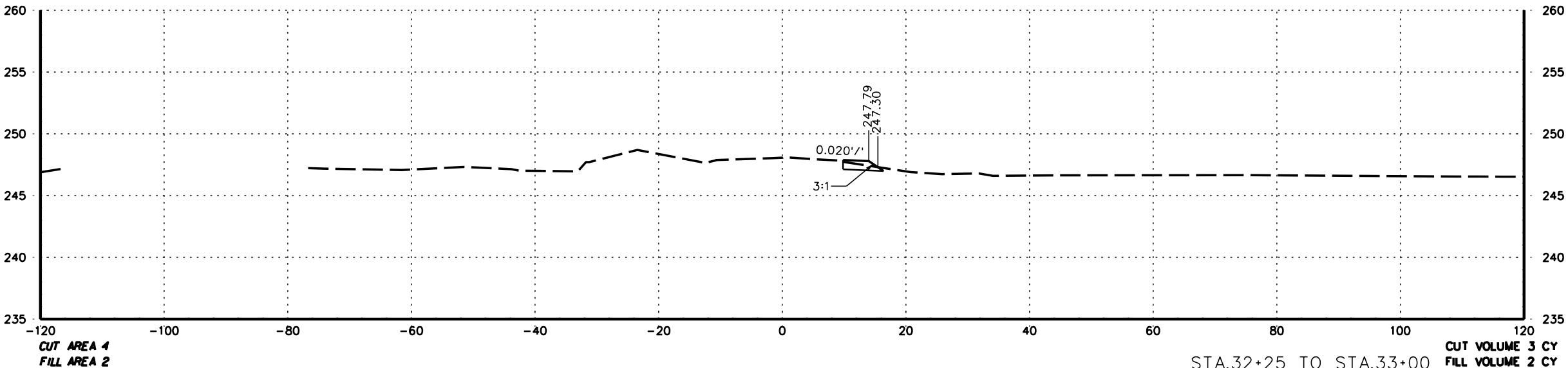
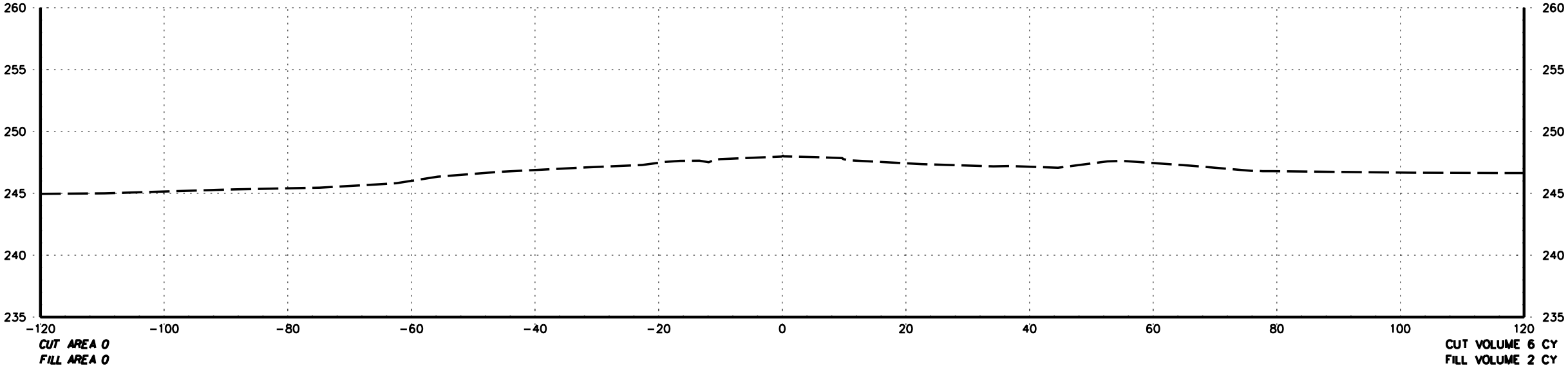
STA.28+00 TO STA.29+30

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.		061472	97	101

2 CROSS SECTIONS - DETOUR



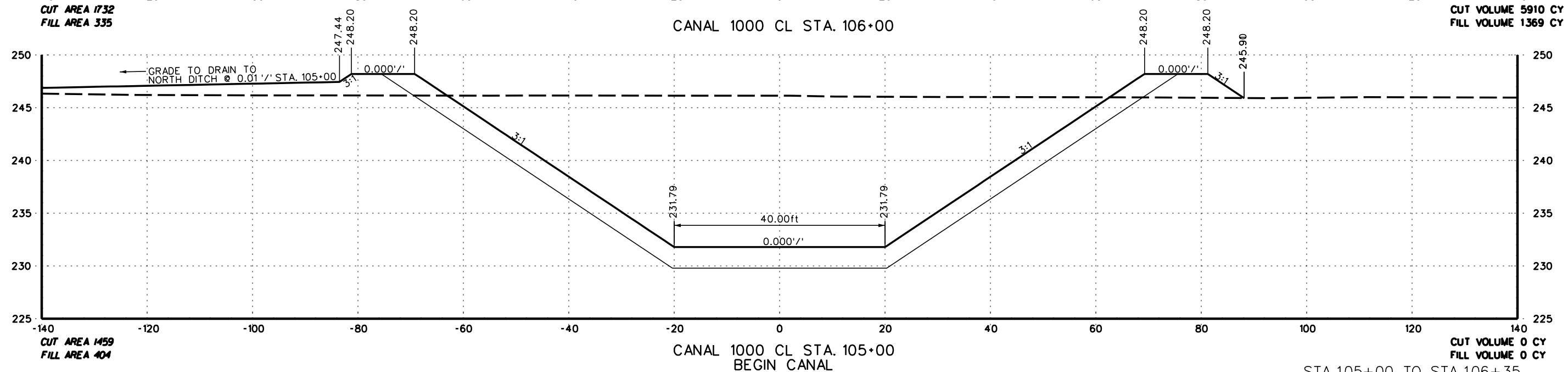
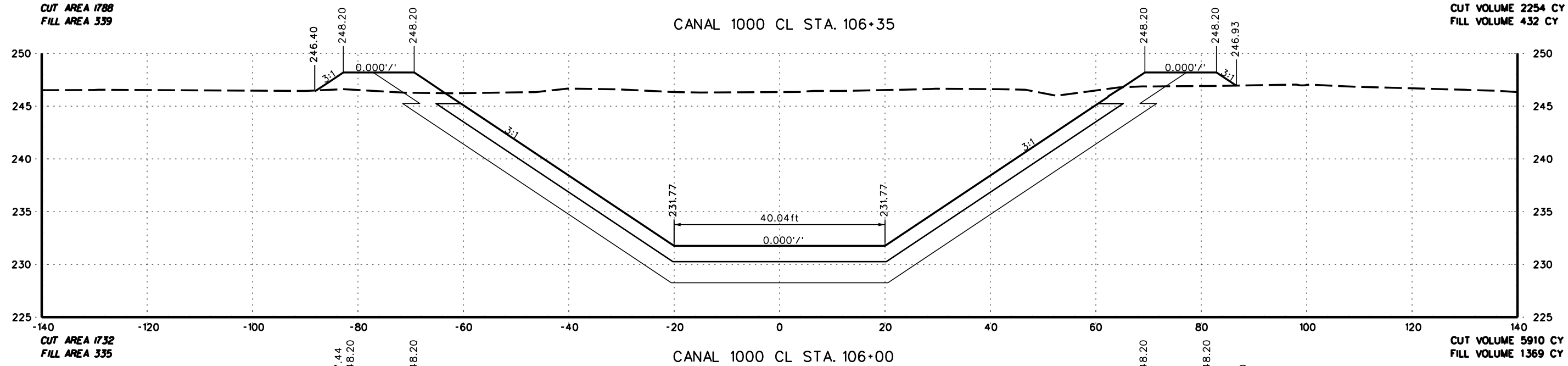
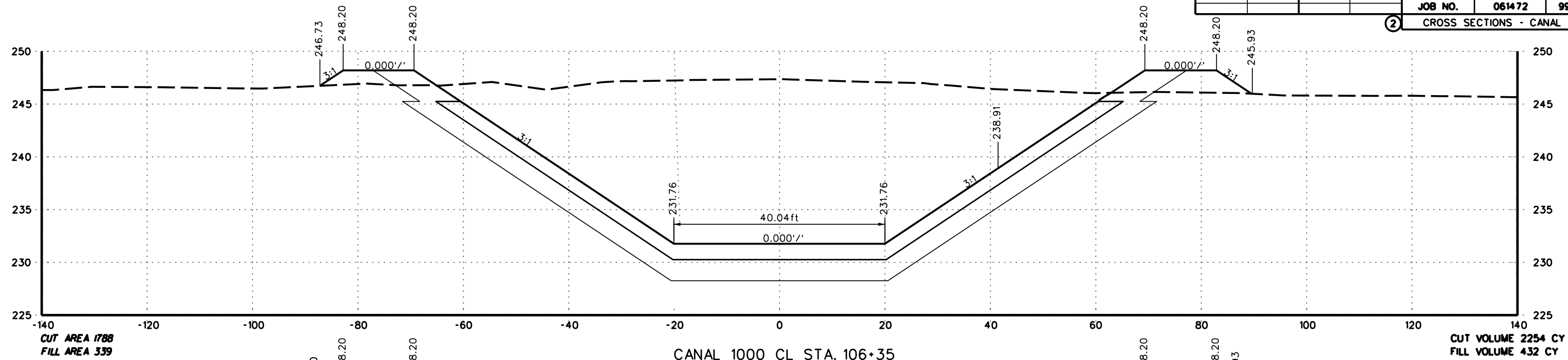
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				JOB NO.		061472	98	101
2 CROSS SECTIONS - DETOUR								



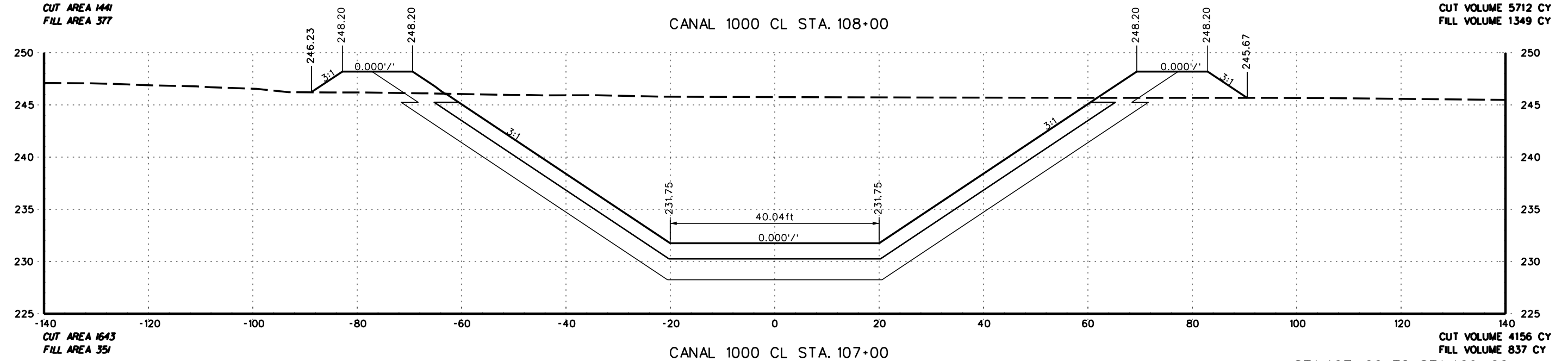
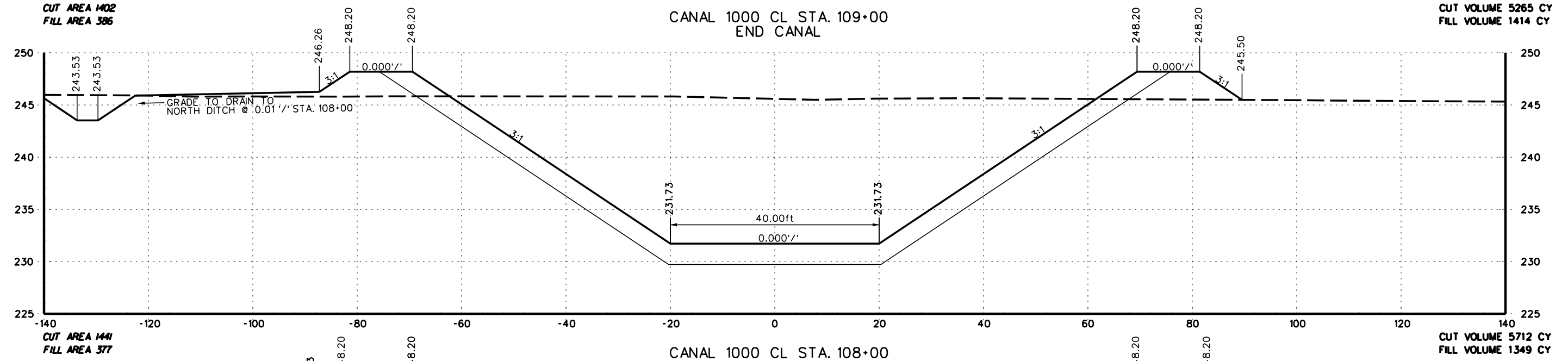
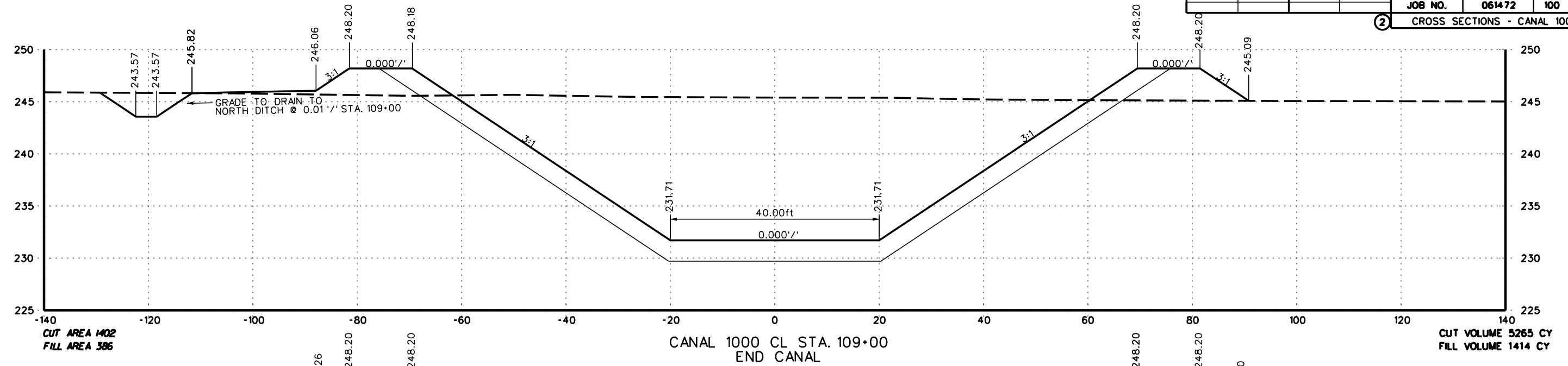


6/15/2022  
BM161BRIDGE\_099

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		061472	99	101
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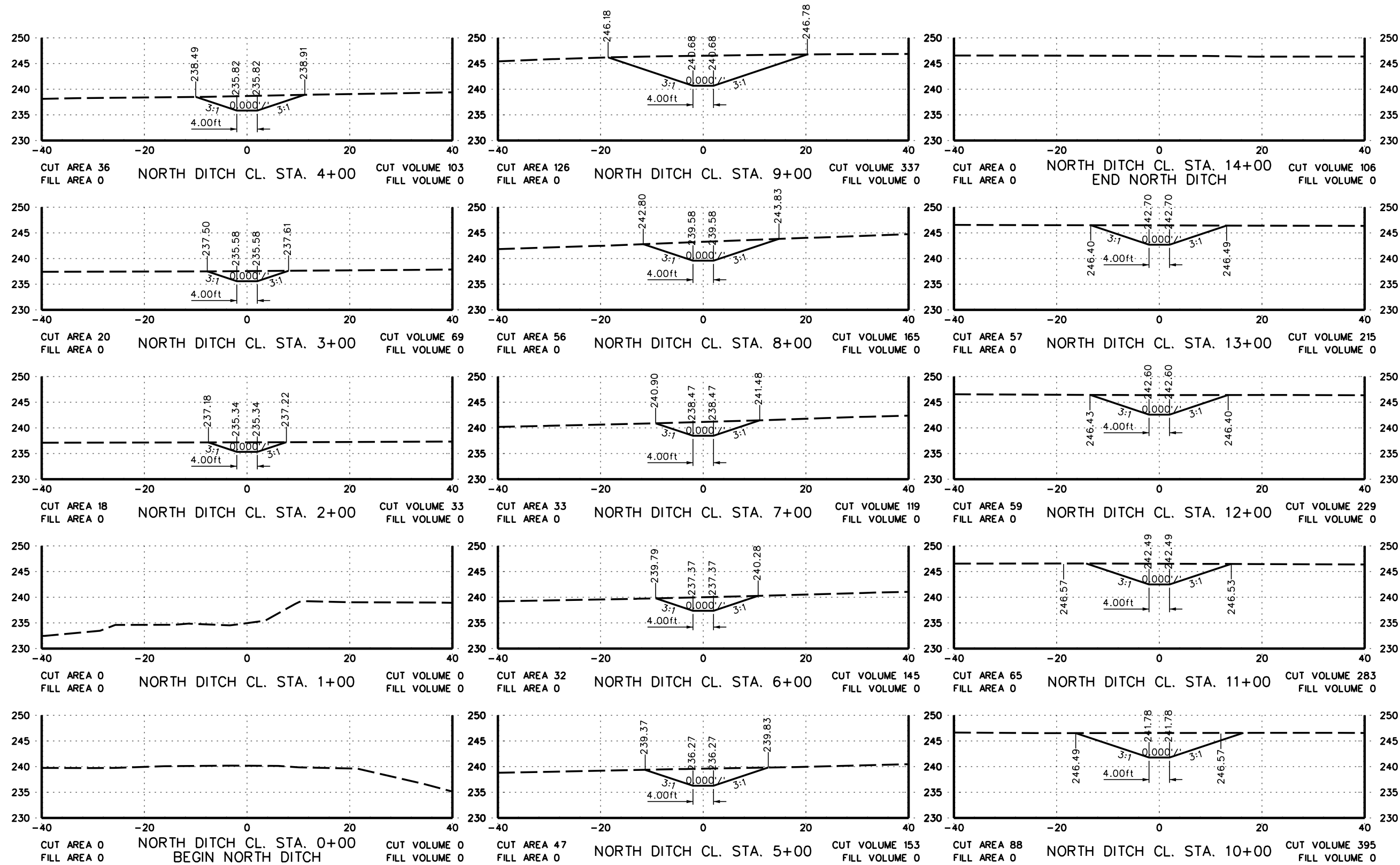
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061472	100	101	
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>20</span> <span>② CROSS SECTIONS - CANAL 1000</span> </div>								



STA.107+00 TO STA.109+00

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.		061472	101	101

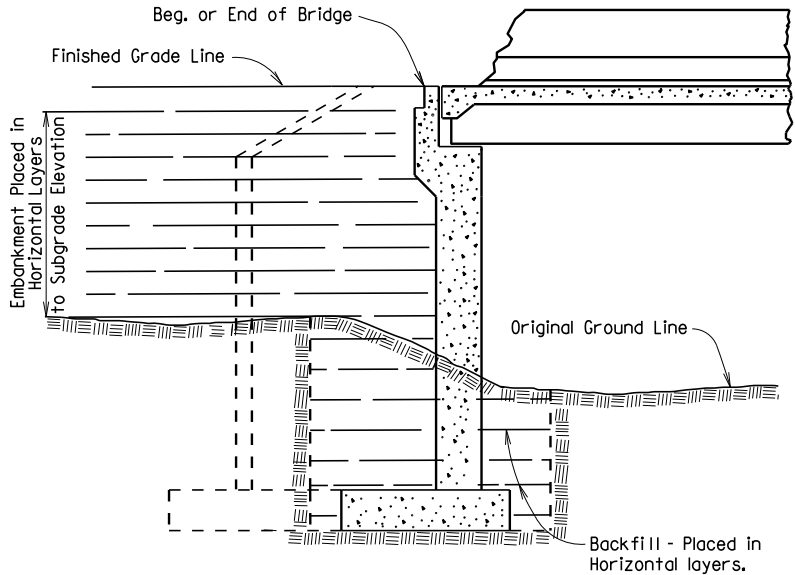
2 CROSS SECTIONS - NORTH DITCH



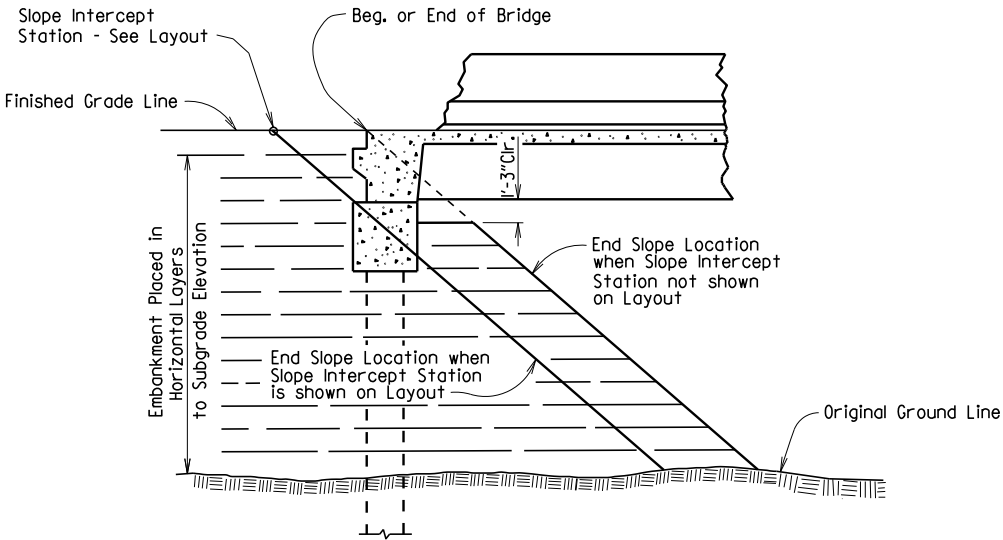
NOTE: NORTH DITCH CROSS SECTIONS HAVE A 1:1 VERTICAL TO HORIZONTAL SCALE

STA.0+00 TO STA.14+00

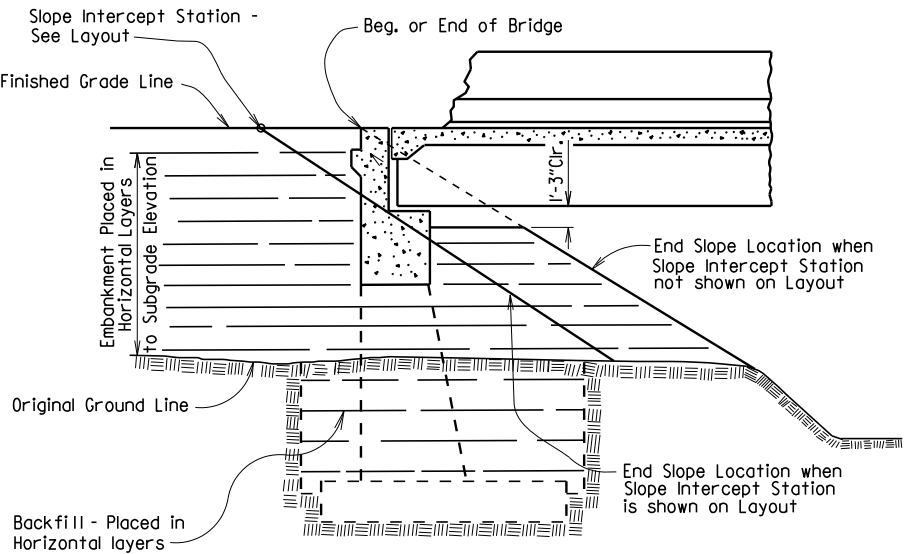
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1 EMBANKMENT & BACKFILL			55000	



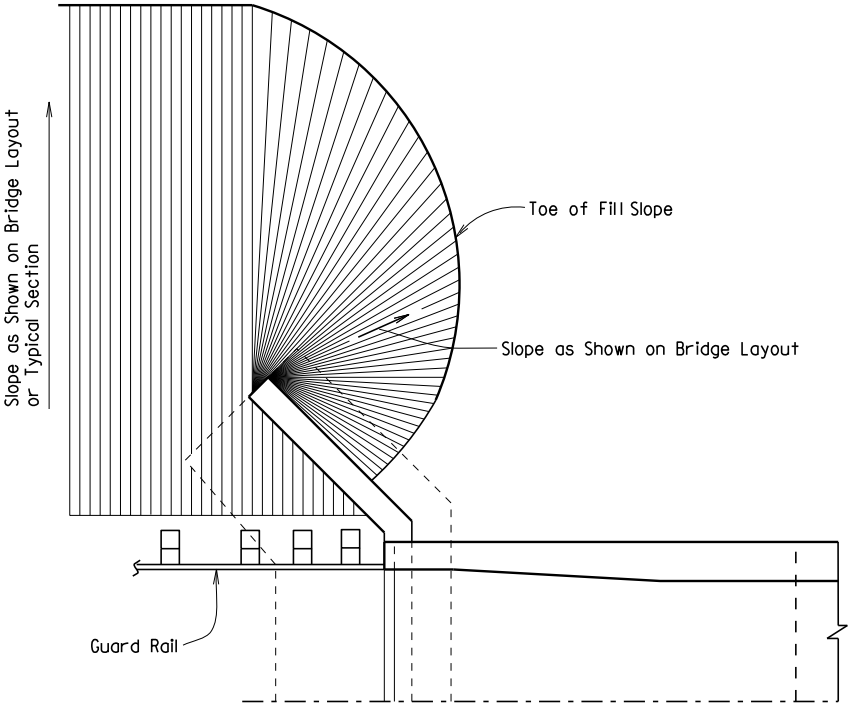
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL  
AT VERTICAL WALL ABUTMENTS



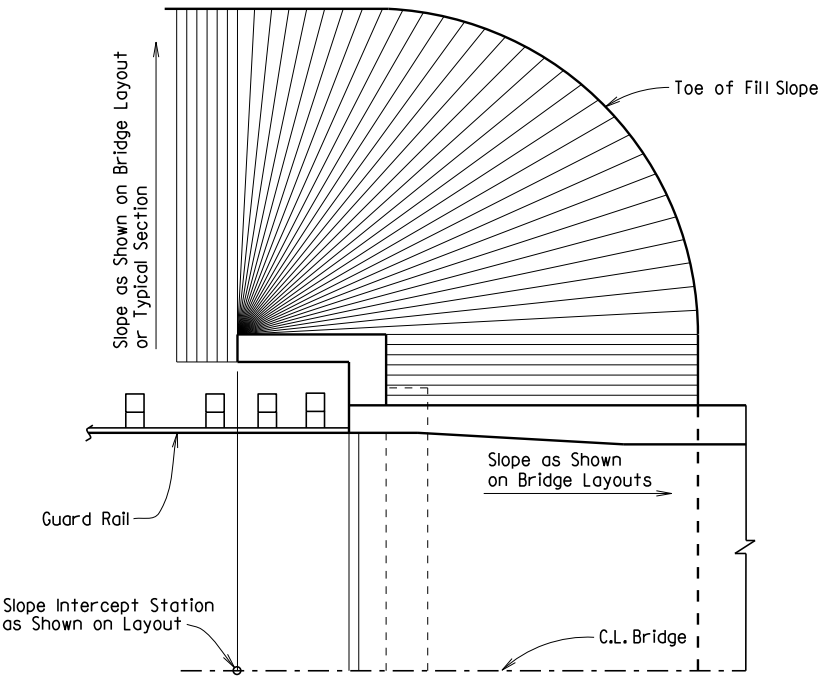
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH  
PILE END BENTS



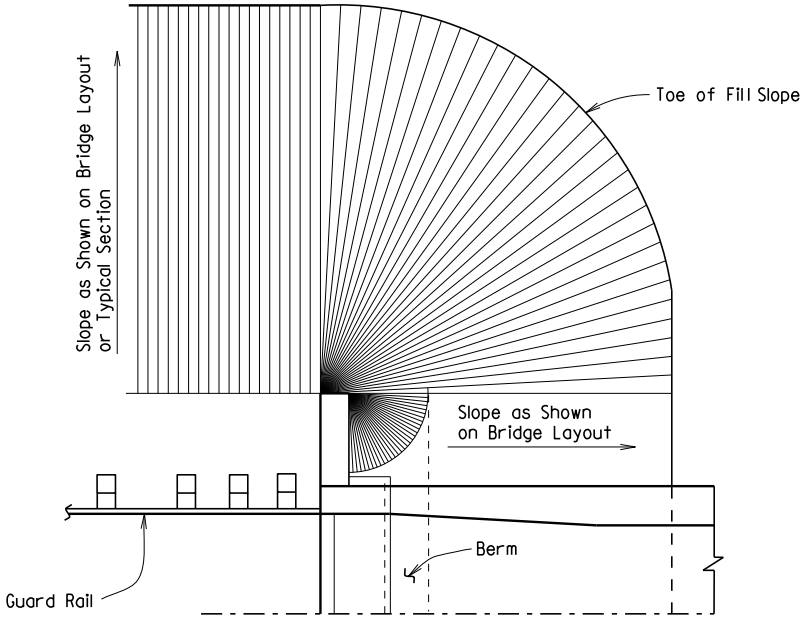
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL  
AT SPILL-THROUGH END BENTS



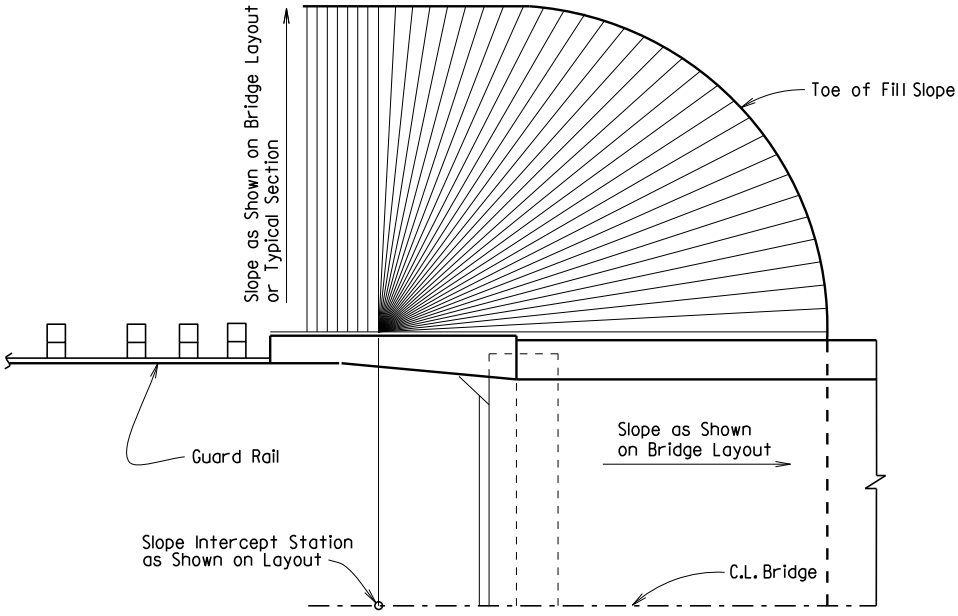
VERTICAL WALL ABUTMENTS



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

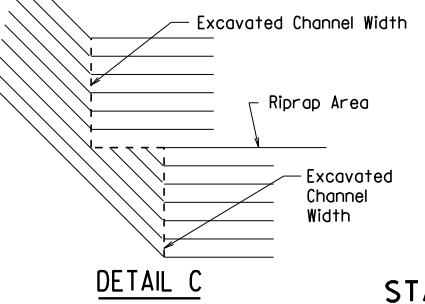
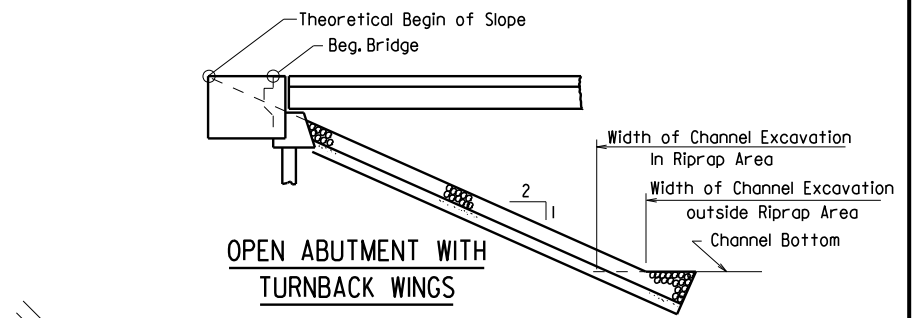
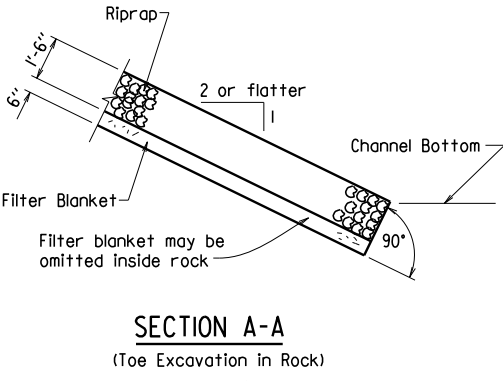
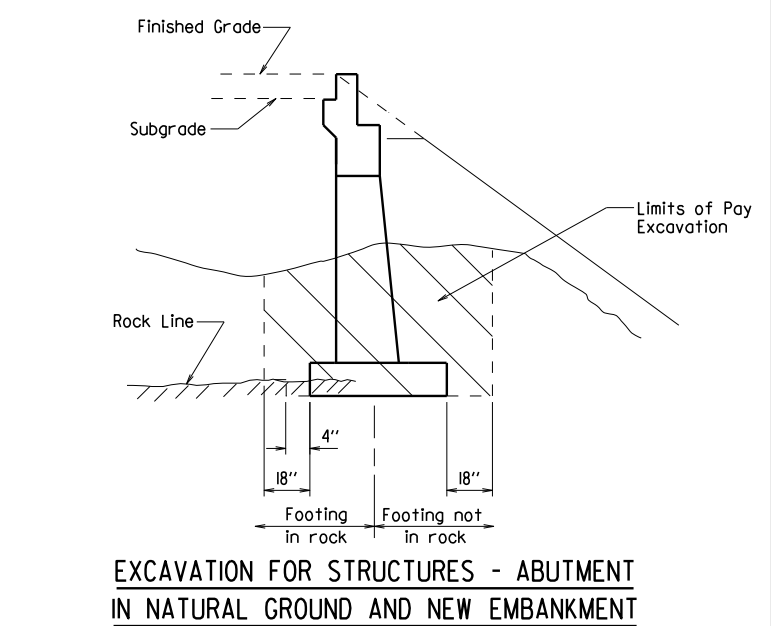
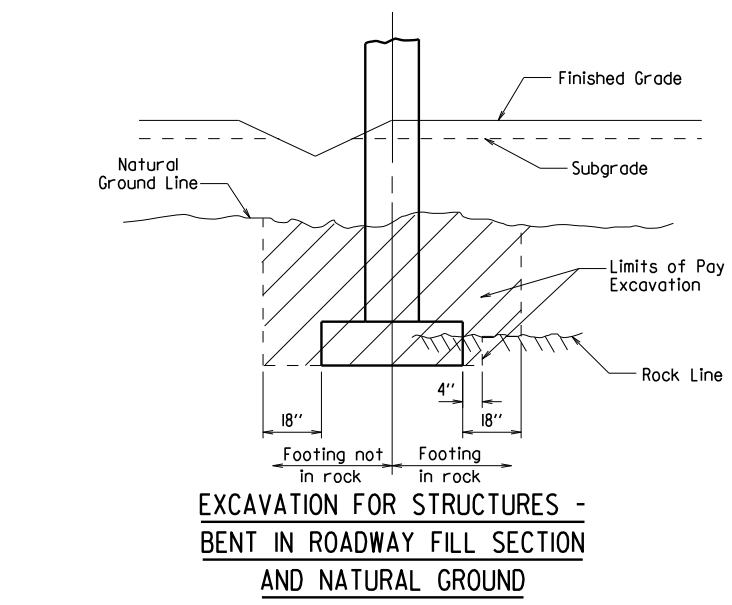
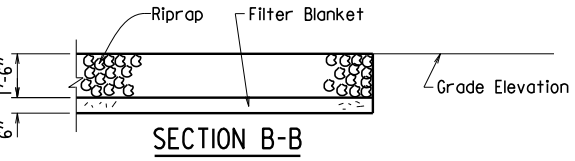
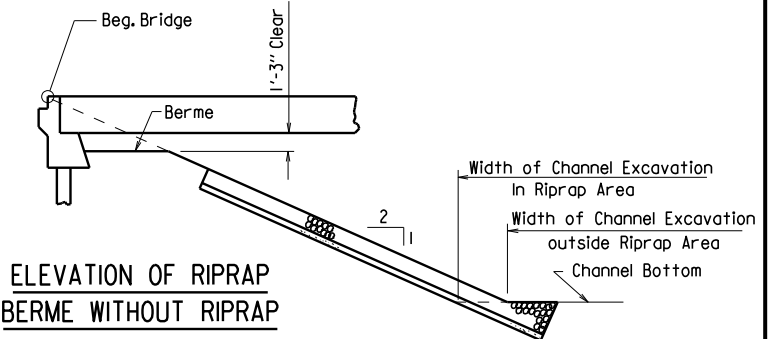
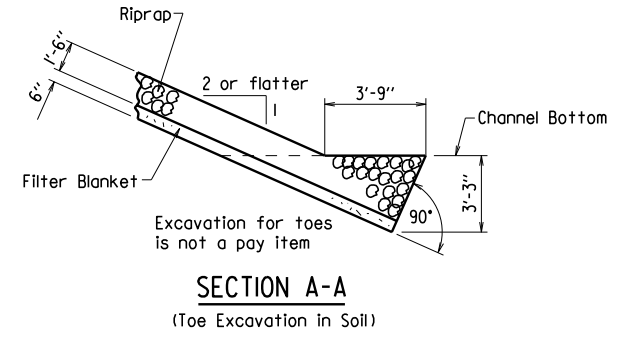
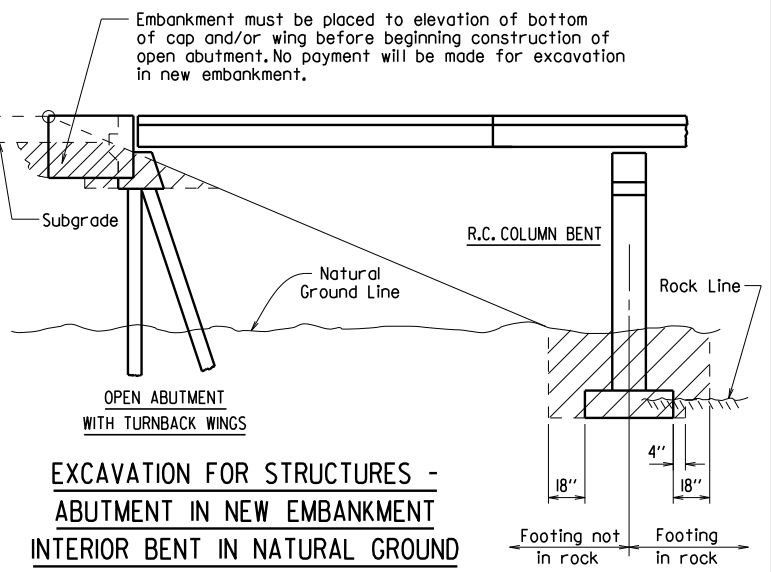
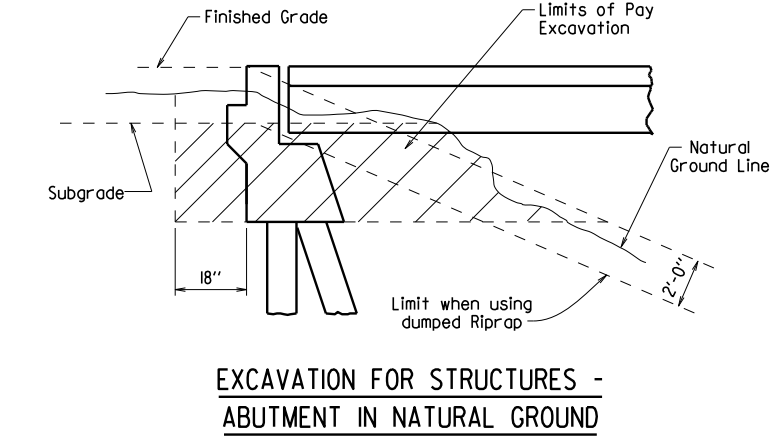
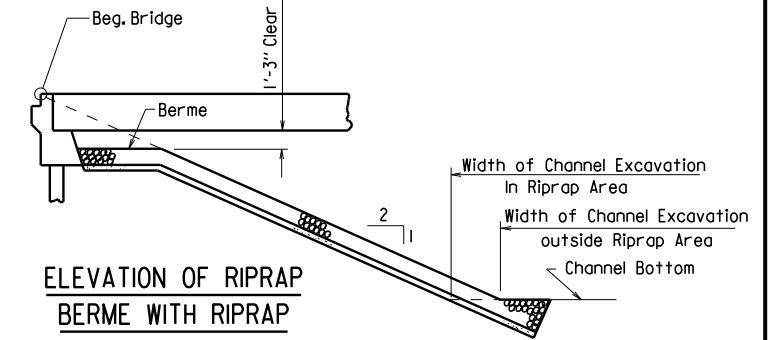
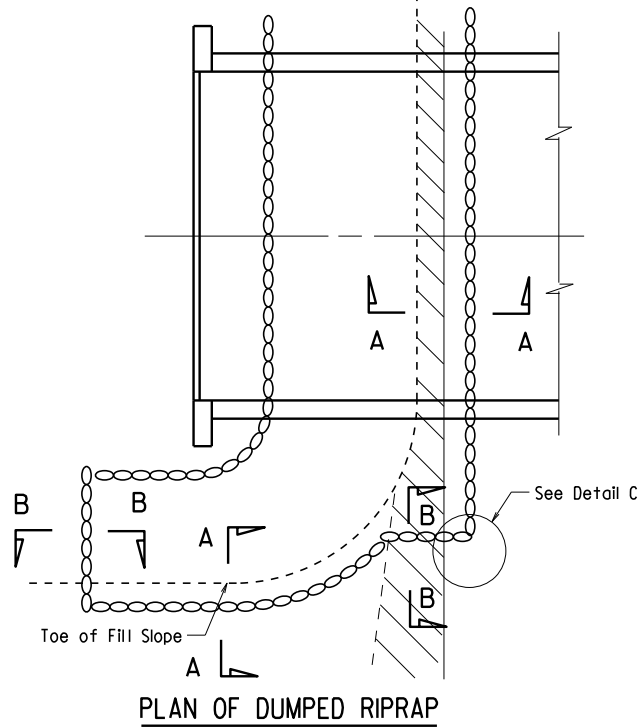
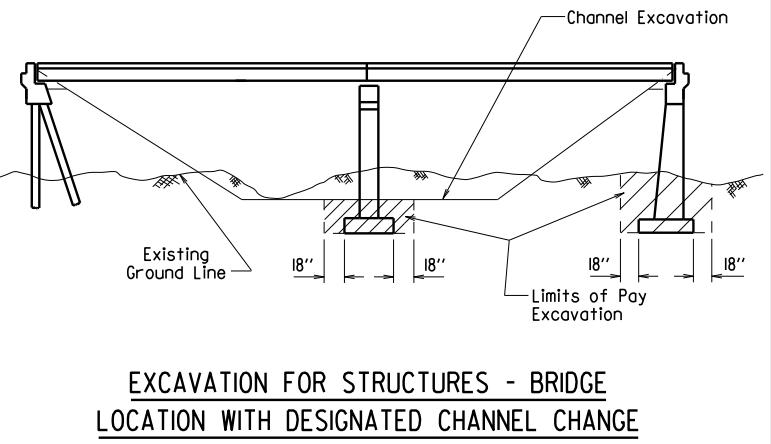
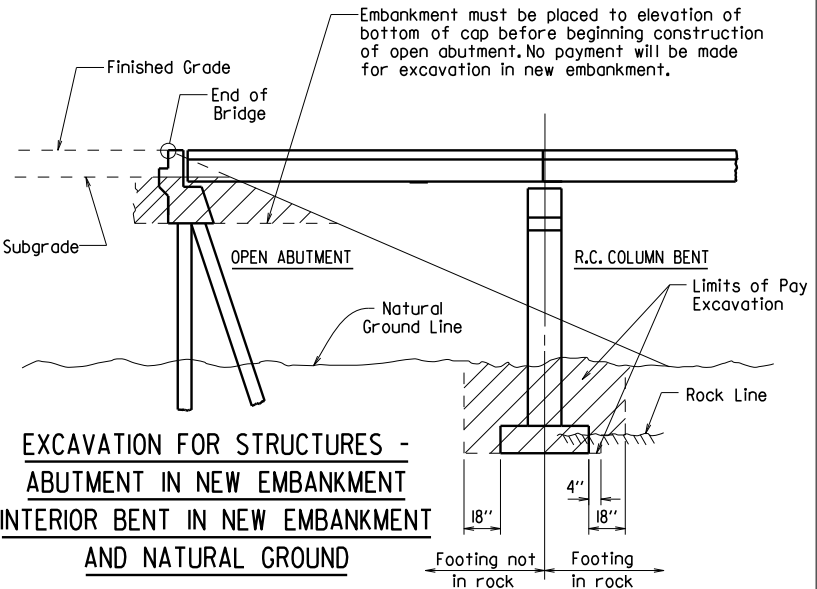
#### ARKANSAS STATE HIGHWAY COMMISSION

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.			
				JOB NO.	RIPRAP & EXCAV. 5500I			



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.

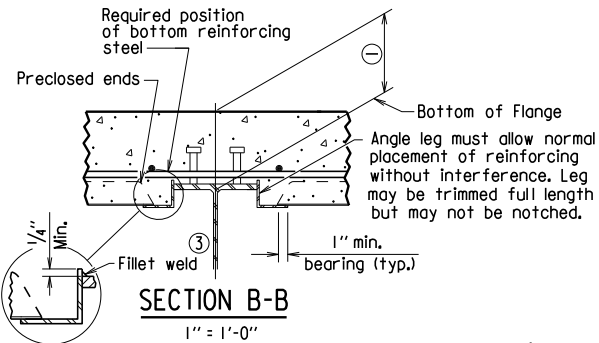
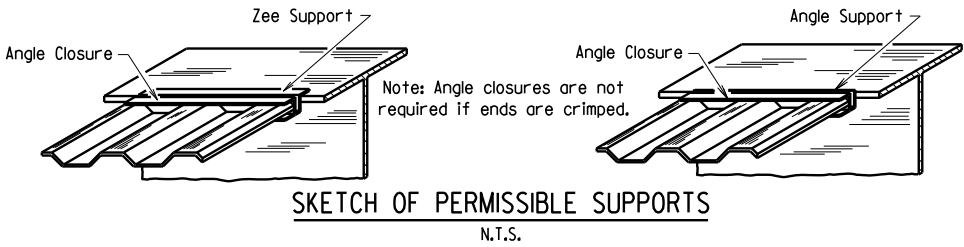
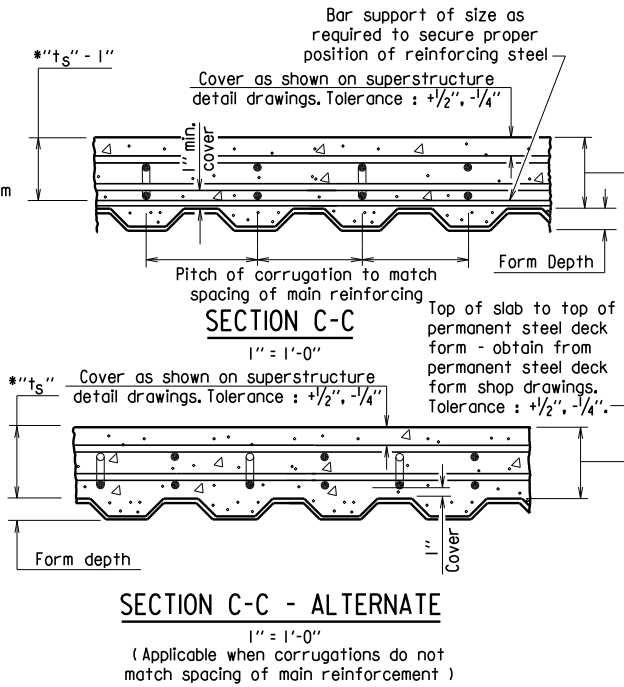
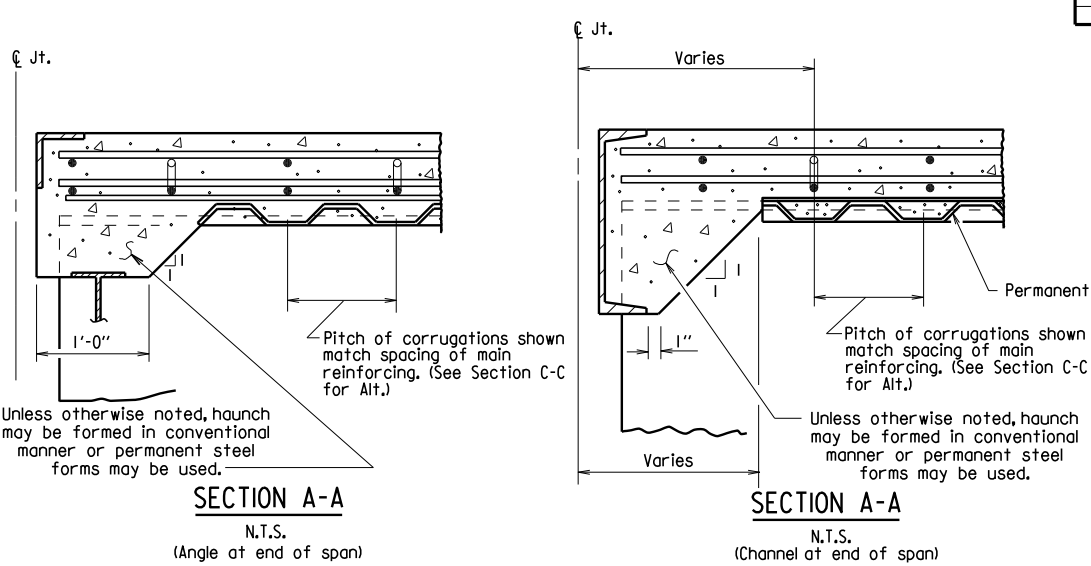
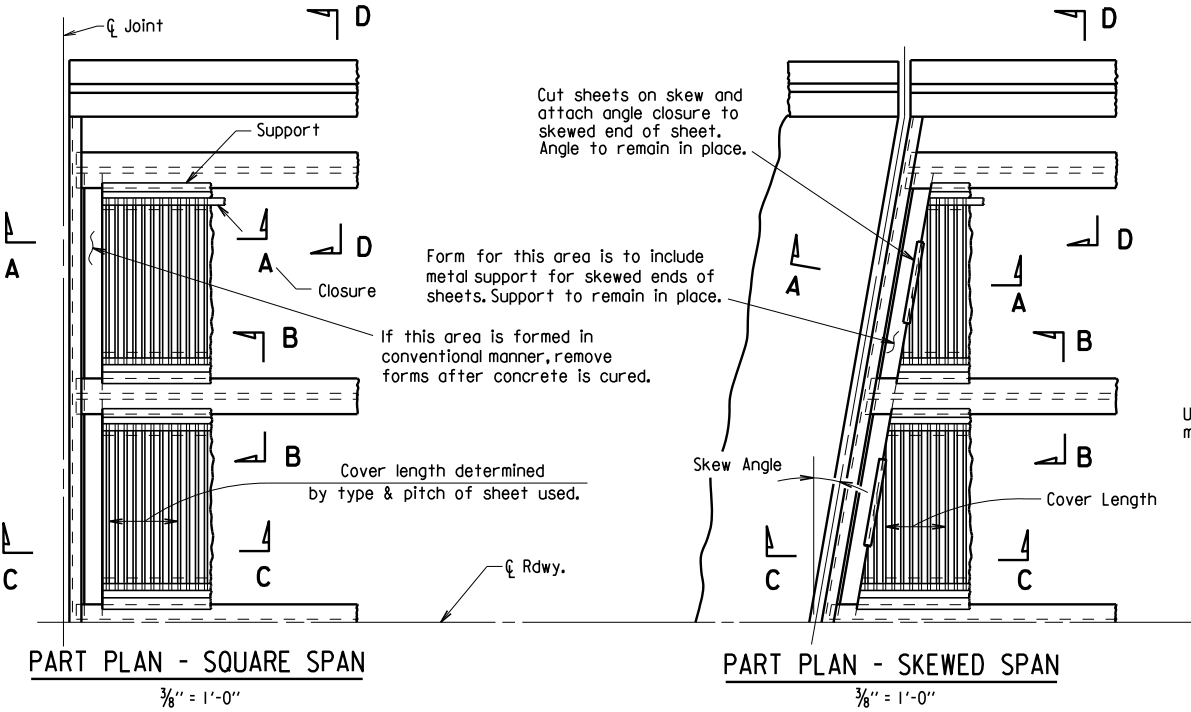
**STANDARD DETAILS FOR  
DUMPED RIPRAP AND FILTER BLANKET  
AND COMPUTING  
EXCAVATION FOR STRUCTURES  
ARKANSAS STATE HIGHWAY COMMISSION**

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b5500I.dgn  
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE  
DESIGNED BY: STD. DATE:

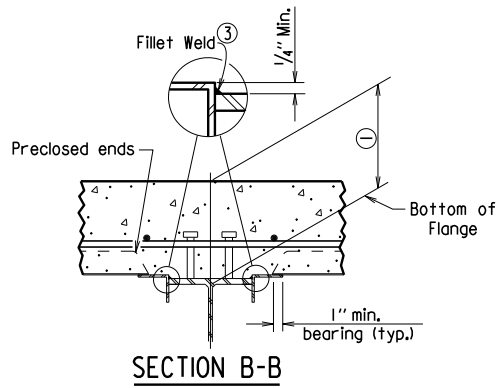


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.	BRIDGE DECK FORMS 55005			

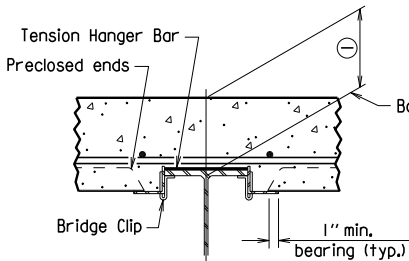


(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

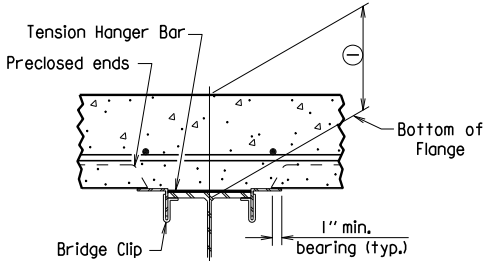
③ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



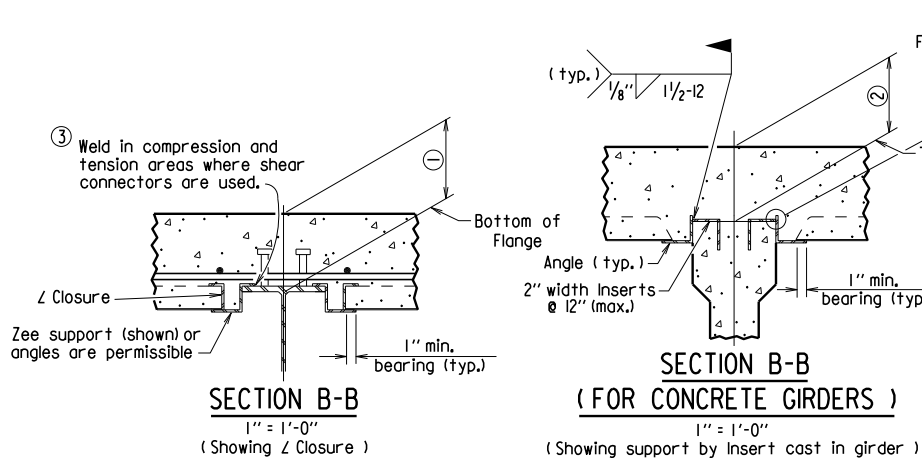
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



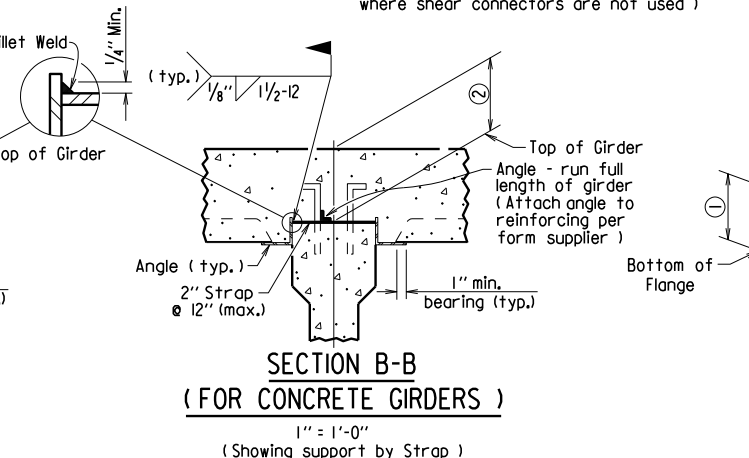
(Showing permissible support for tension flange where shear connectors are not used)



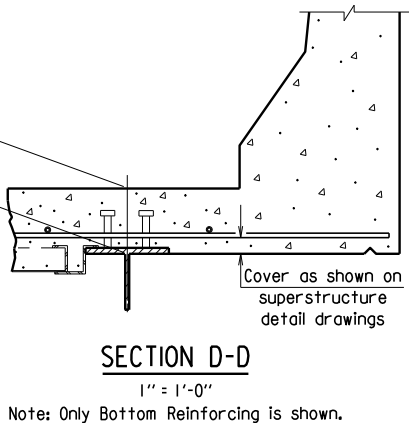
(Showing permissible support for tension flange where shear connectors are not used)



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 =  $t_s + 1 3/4"$  + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.



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



△ Revised weld dimension by KKY, Ck'd. by BEF, 3/24/16.

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 L 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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14		1-15-19		6	ARK.			
1-14-15		3-24-2020		JOB NO.				
1-17-17		5-11-2021						

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.

Line 1	Example 1	Example 2	Example 3	Example 4
Line 2	Red River	Southern	Saline	
Line 3	Relief	Railroad	River	Highway 5
		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 5/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

- 6 Revised Deputy Director/Chief Engineer  
5-11-2021 CGP Checked By: CRE
- 5 Revised Director, Deputy Director/Chief Operating Officer, Chair, Vice Chair and added New Commissioner  
3-24-2020 CGP Checked By: CRE
- 4 Revised Chair and Vice Chair Added New Commissioner  
1-15-19 CGP Checked By: CRE
- 3 Added New Commissioner  
1-17-17 KDH Checked By: CRE
- 2 Revised Chair and Vice Chair Added New Commissioner  
1-14-15 KDH Checked By: CRE
- 1 Revised Deputy Director/Chief Engineer  
Added Deputy Director/Chief Operating Officer  
12-1-14 KDH Checked By: CRE

STANDARD DETAILS FOR  
TYPE D BRIDGE NAME PLATE

ROUTE SEC.  
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

ARKANSAS HIGHWAY COMMISSION  
ROBERT S. MOORE, JR. - CHAIR  
DALTON A. "ALEC" FARMER, JR. - VICE CHAIR  
PHILIP TALDO  
KEITH GIBSON  
MARIE HOLDER  
DIRECTOR - LORIE H. TUDOR  
DEPUTY DIRECTOR/CHIEF OPERATING OFFICER - RANDY ORT  
DEPUTY DIRECTOR/CHIEF ENGINEER - REX VINES

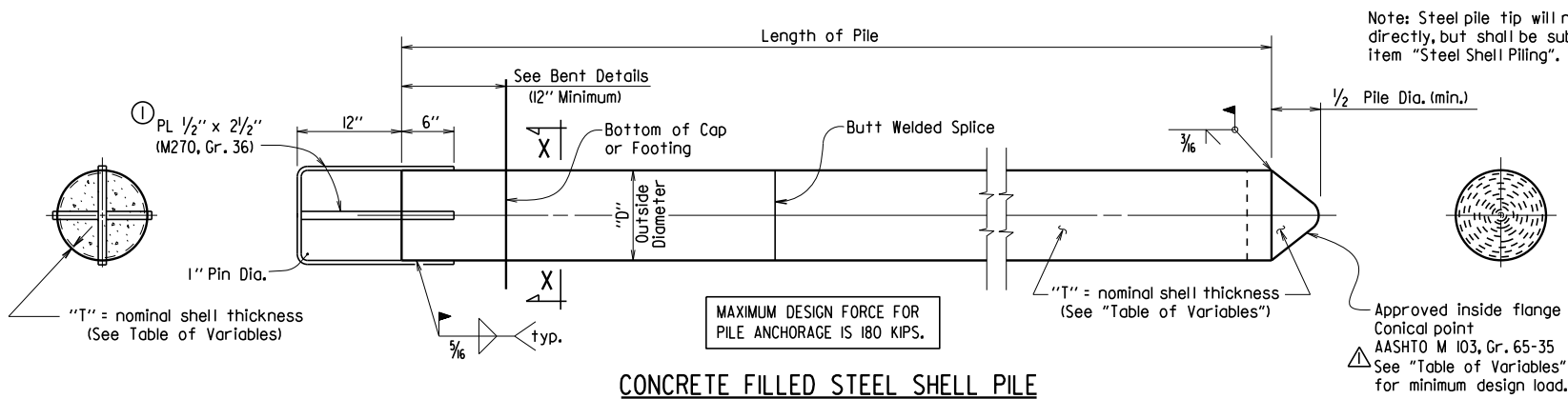
CONTRACTOR  
COMPANY NAME  
YEAR

Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples: HS20 HL-93

Place the name of the company awarded the construction contract here using 1/8" raised letters and numerals 3/8" high. Example: ABCD CONSTRUCTION, INC.

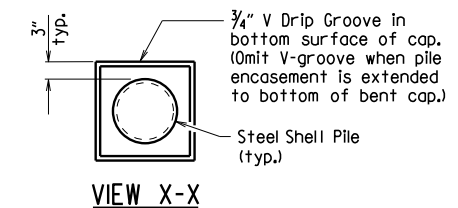
TYPICAL BRIDGE NAME PLATE

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples: A1234 05432



CONCRETE FILLED STEEL SHELL PILE

- 1 Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.
- 2 Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.



GENERAL NOTES FOR CONCRETE FILLED STEEL SHELL PILES:

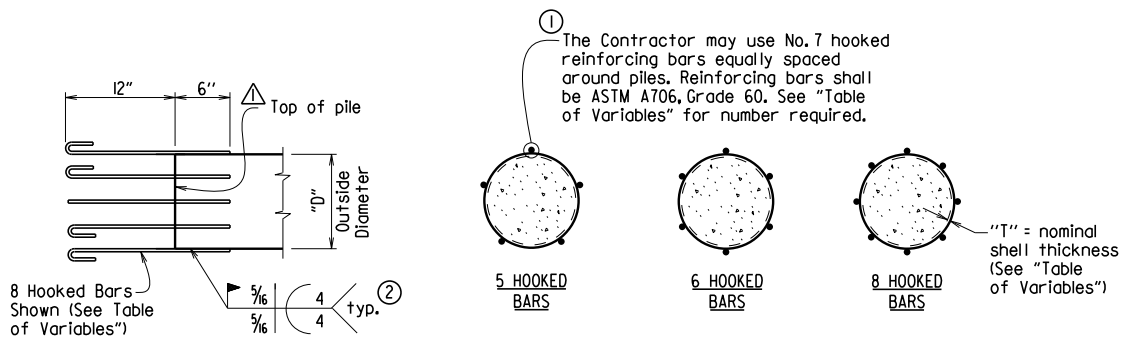
Steel shells shall conform ASTM A252, Grade 3 ( $F_y = 45,000$  psi.)

Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength,  $f'_c = 3,500$  psi. and shall be poured in the dry.

Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with Subsection 805.02.

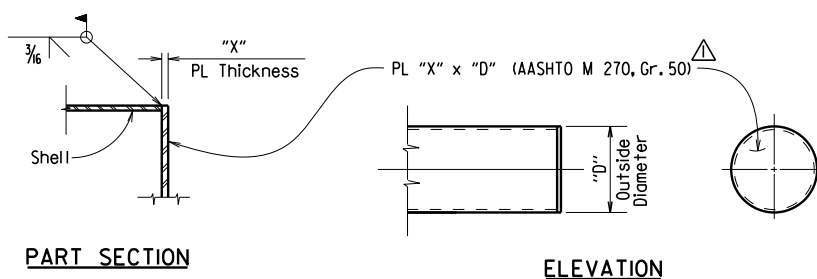
See Bridge Layout for size and estimated length of steel shell piles and for driving information.

Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".



ALTERNATE PILE ANCHORAGE DETAIL

Note: Hooked bars shall be oriented to provide the required concrete clearances shown in the plans.

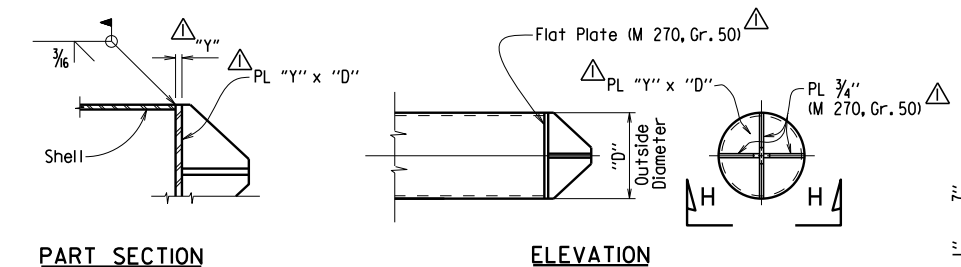


PART SECTION

ELEVATION

ALTERNATE FLAT TIP DETAIL

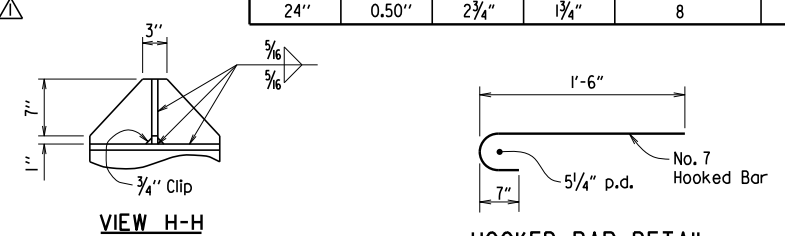
Note: The alternate flat tip detail shall not be used on steel shell piling to be driven through embankments constructed with internal geosynthetic reinforcement.



PART SECTION

ELEVATION

ALTERNATE VANED TIP DETAIL



VIEW H-H

HOOKED BAR DETAIL

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	PLATE THICKNESS "Y"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE	MINIMUM CONICAL TIP DESIGN LOAD (KIPS)
14"	0.50"	2 1/4"	1 1/2"	5	859
16"	0.50"	2 1/4"	1 1/2"	5	986
18"	0.50"	2 1/2"	1 1/2"	6	1,114
20"	0.50"	2 1/2"	1 3/4"	6	1,241
24"	0.50"	2 3/4"	1 3/4"	8	1,495

Revised and added various details by KWy, Ck'd. by BEF, 3/24/16.

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.			
				JOB NO.	STEEL SHELL PILES			55021

**GENERAL NOTES FOR PILE ENCASEMENTS:**  
 See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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.

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".

SECTION F-F (REINF. ALTERNATE)

PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Encasement to Bottom of Cap)

- 3 Unless otherwise noted on Bridge Layout.
- 4 See Bridge Layout for height of pile encasement (3'-0" Minimum).
- 5 Pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the detail for partial height encasement.

SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

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 CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

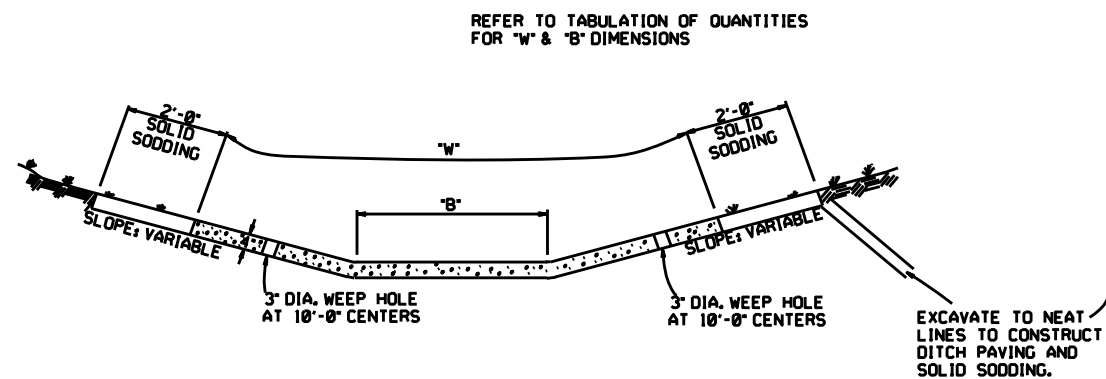
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55021.dgn  
 CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE  
 DESIGNED BY: STD. DATE: —

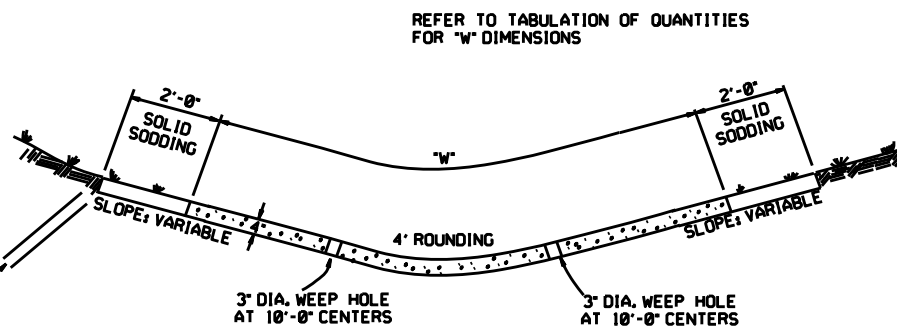
BRIDGE ENGINEER

DRAWING NO. 55021



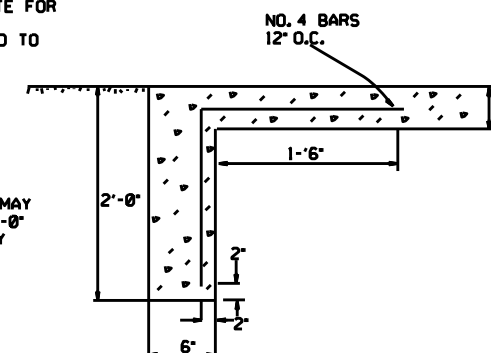


TYPE A

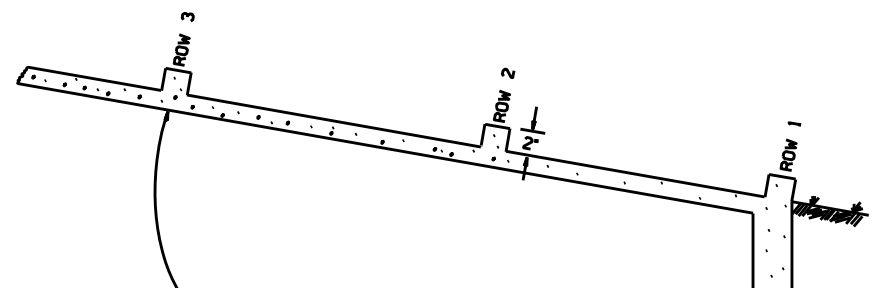


TYPE B

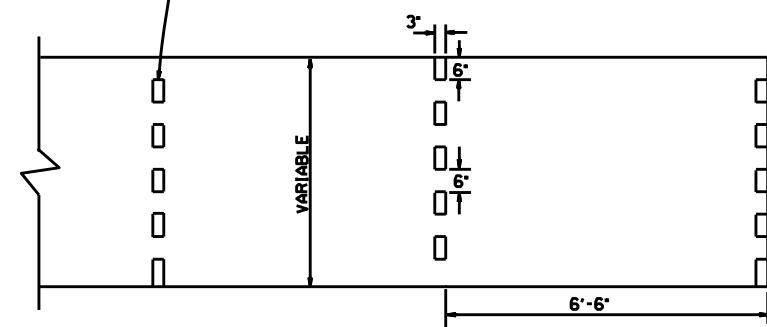
THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."



TOE WALL DETAIL FOR CONCRETE DITCH PAVING



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 INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



ENERGY DISSIPATORS  
(NO SCALE)

#### GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

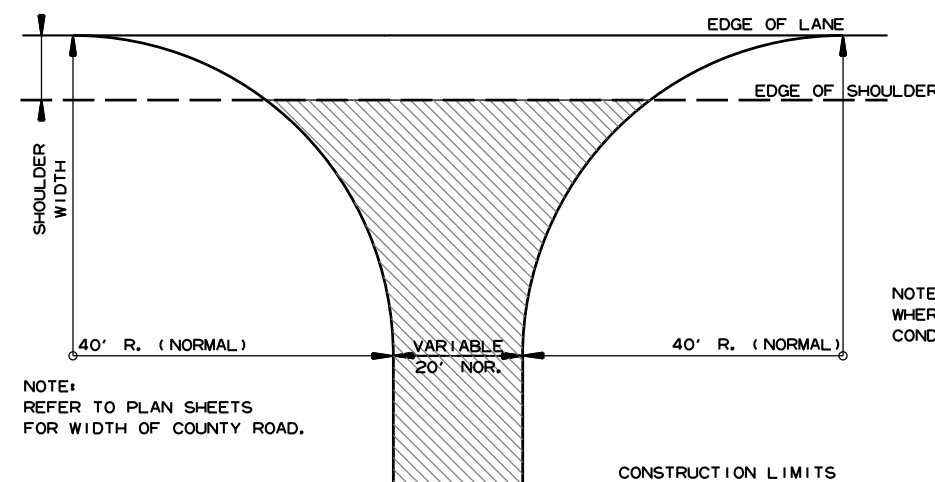
1' WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-88	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.	632-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	639-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED	
10-2-72	TYPED A & B	
	REVISED AND REDRAWN	508-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

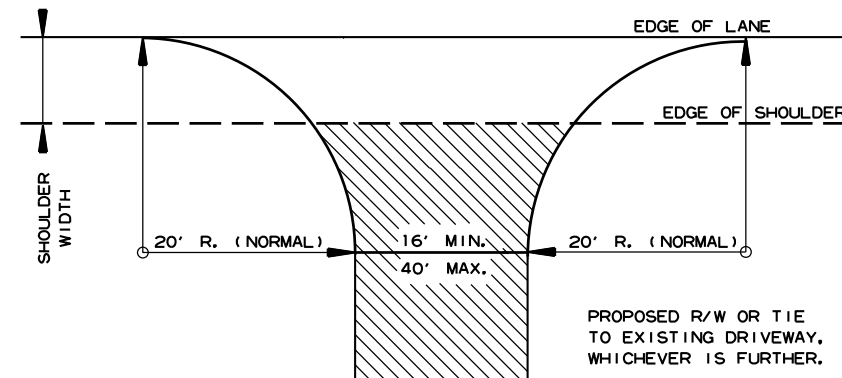
STANDARD DRAWING CDP-1



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, UNLESS OTHERWISE SPECIFIED IN PLANS.

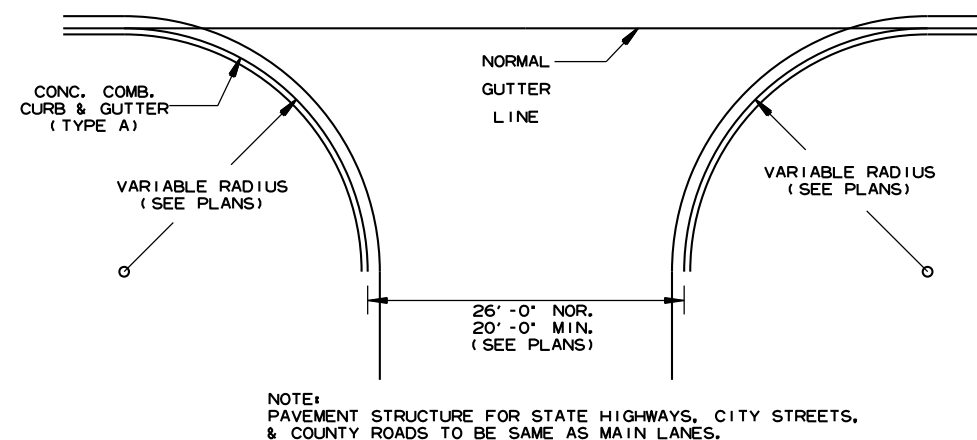
DETAIL FOR COUNTY ROAD TURNOUTS  
OPEN SHOULDER SECTION



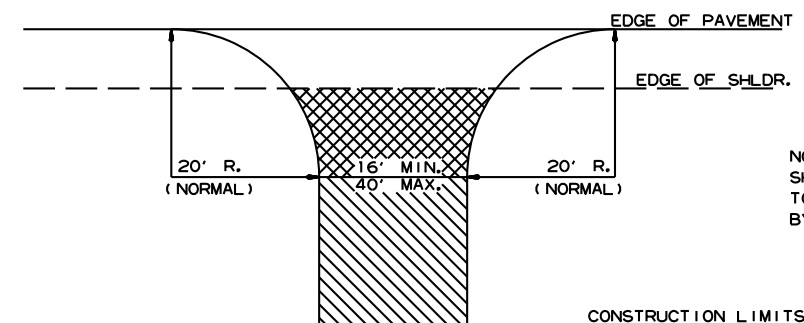
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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

DETAIL FOR DRIVEWAY TURNOUTS  
OPEN SHOULDER SECTION  
(ARTERIALS)



DETAIL OF TURNOUTS, ASPHALT STREETS,  
COUNTY ROADS & STATE HIGHWAYS  
CURB & GUTTER SECTION



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

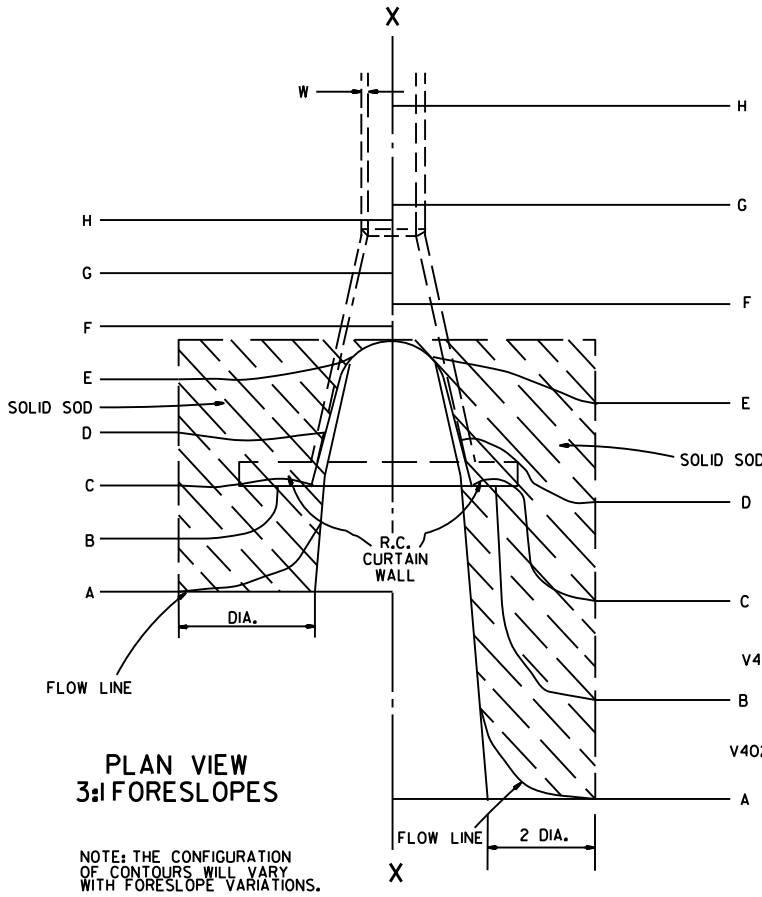
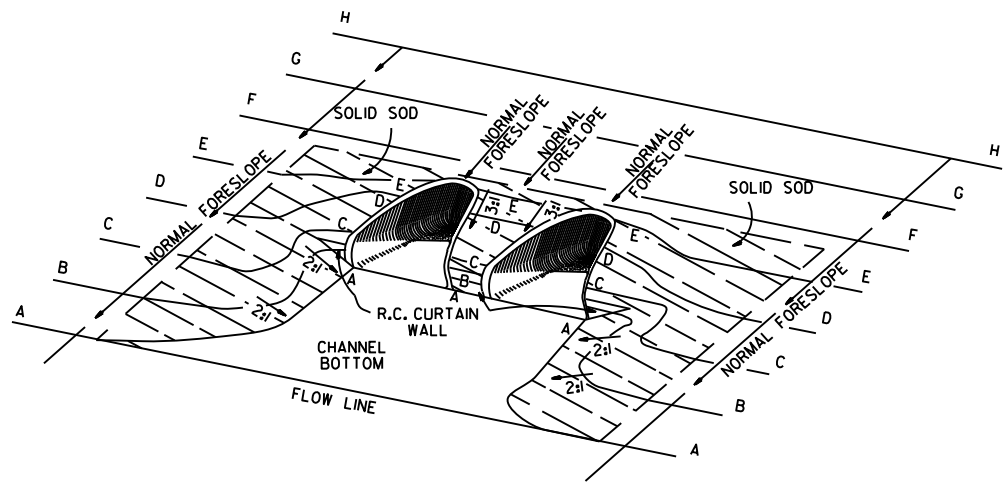
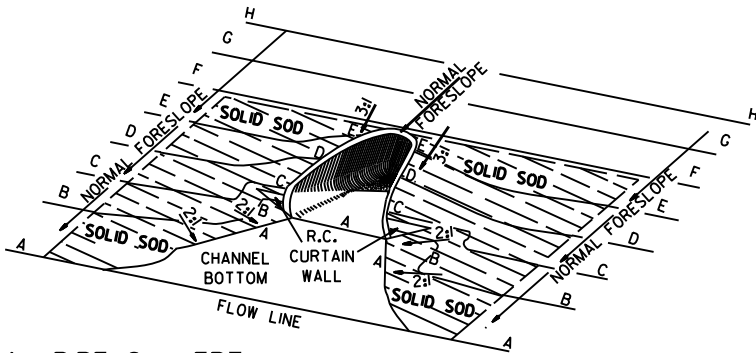
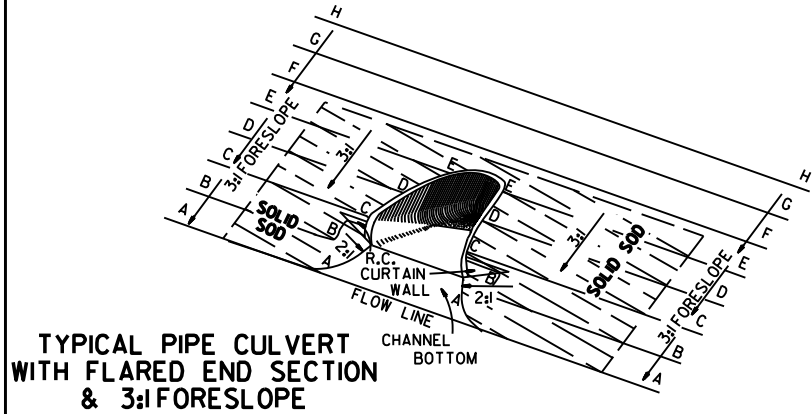
AGGREGATE BASE COURSE (CLASS 7) 9" COMP. DEPTH OR CONFORM TO EXISTING DRIVEWAY

DETAIL FOR DRIVEWAY TURNOUTS  
(COLLECTORS)

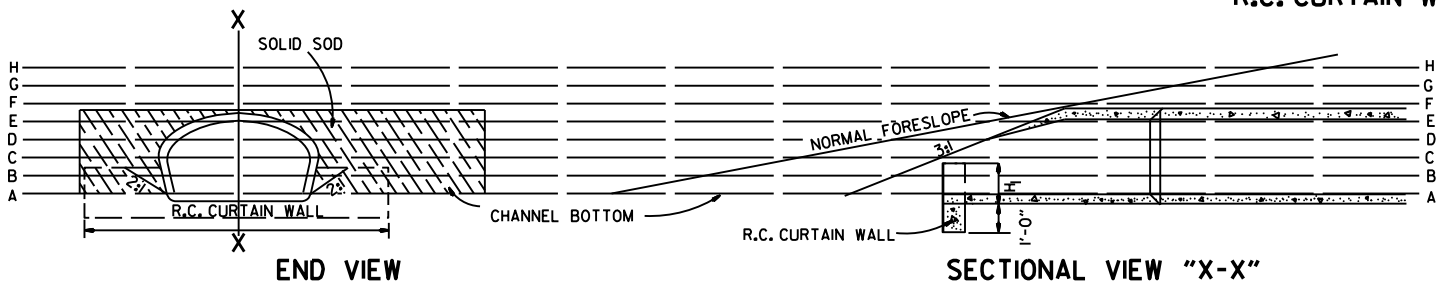
5-19-22		ISSUED
DATE REV	DATE FILMED	DESCRIPTION

ARKANSAS STATE HIGHWAY COMMISSION  
DETAILS OF DRIVEWAYS & STREET  
TURNOUTS  
STANDARD DRAWING DR-2





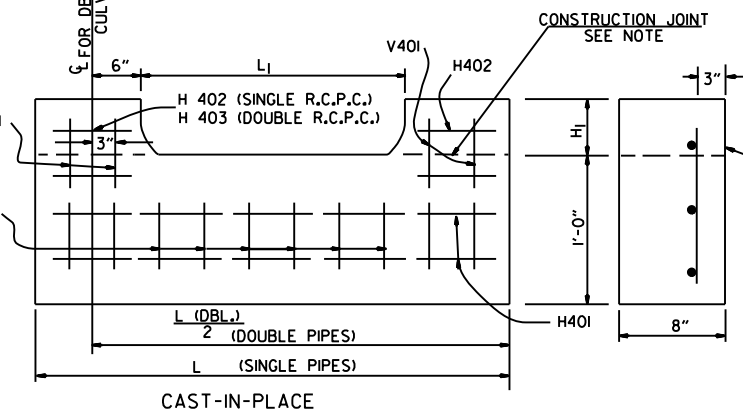
PLAN VIEW  
FLATTENED FORESLOPES



R.C. CURTAIN WALL  
DIMENSIONS & QUANTITIES

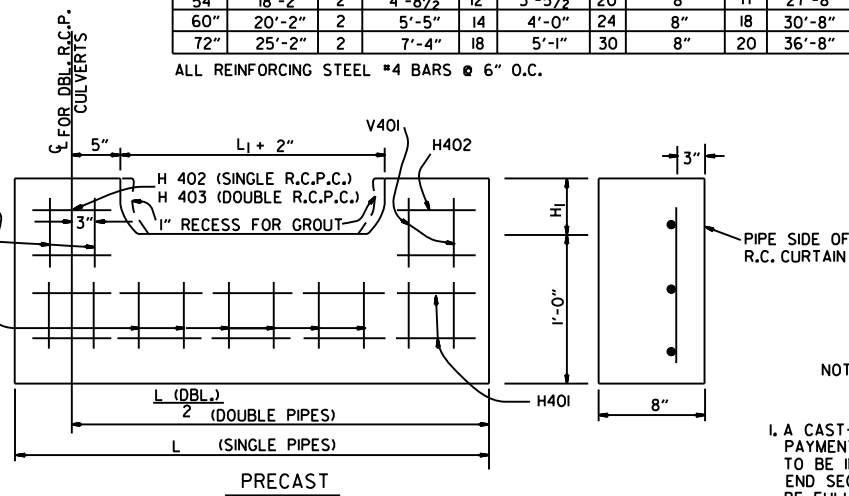
PIPE DIA.	H <sub>1</sub>	L <sub>1</sub>	L	L (DBL.) 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	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.



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.

R.C. CURTAIN WALL DETAILS



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'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

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

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C.						DOUBLE R.C.P.C.					
	3:1	4:1	6:1	3:1	4:1	6:1	3:1	4:1	6:1	3:1	4:1	6:1
	SQ. YDS.						SQ. YDS.					
18"	5	7	12	6	8	13	5	7	12	6	8	13
24"	8	12	19	9	13	20	8	12	19	9	13	20
30"	13	18	29	14	19	30	13	18	29	14	19	30
36"	17	26	41	18	28	43	17	26	41	18	28	43
42"	23	35	55	25	37	57	23	35	55	25	37	57
48"	29	46	68	31	48	70	29	46	68	31	48	70
54"	35	57	85	37	59	87	35	57	85	37	59	87
60"	45	62	104	48	65	107	45	62	104	48	65	107
72"	64	92	156	67	95	159	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 PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
  4. WELDED WIRE MESH 3 x 3 W/10 x W/10 MAY BE USED IN LIEU OF REINFORCING BARS.

10-18-96	ADDED NOTE TO SOLID SODDING		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.		
3-2-81	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

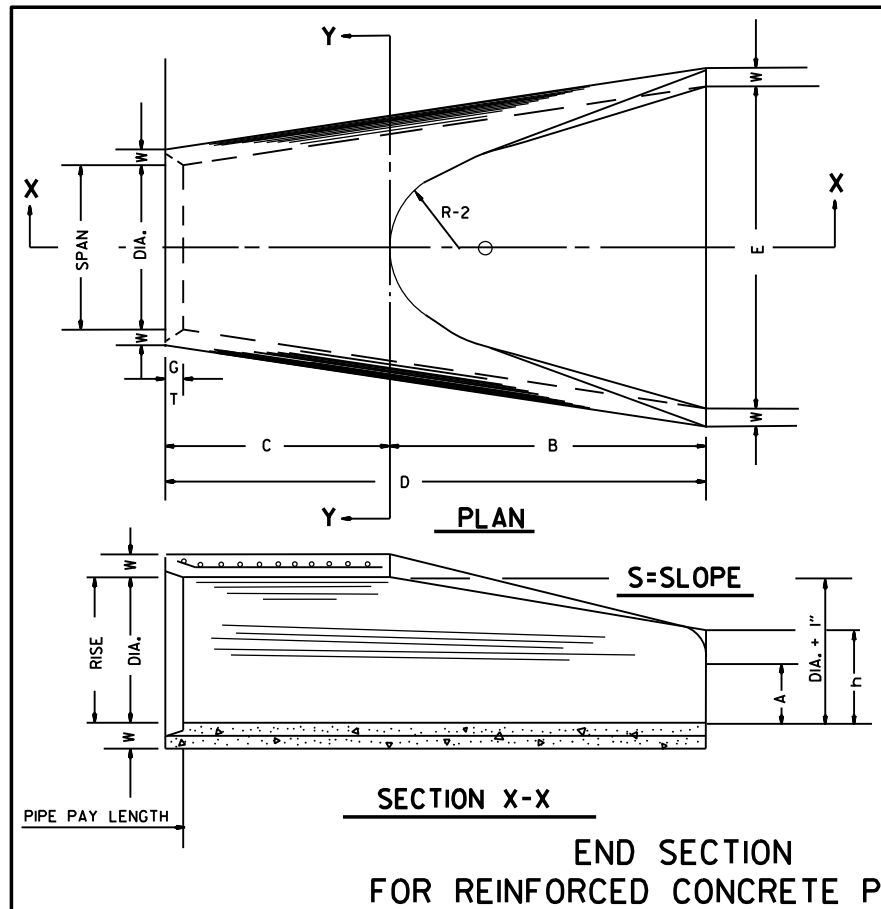
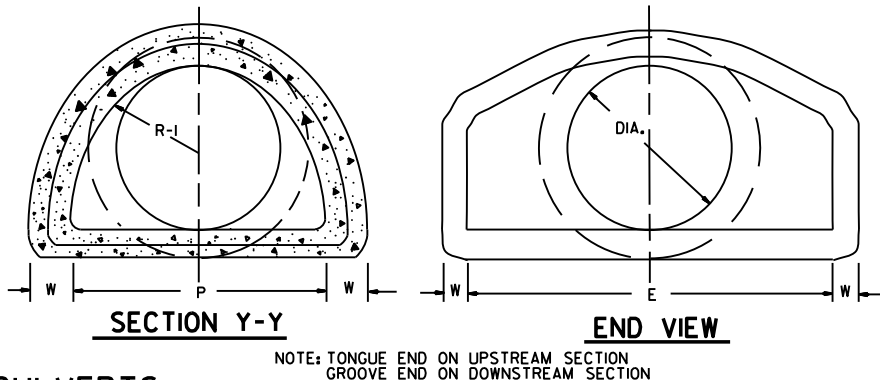
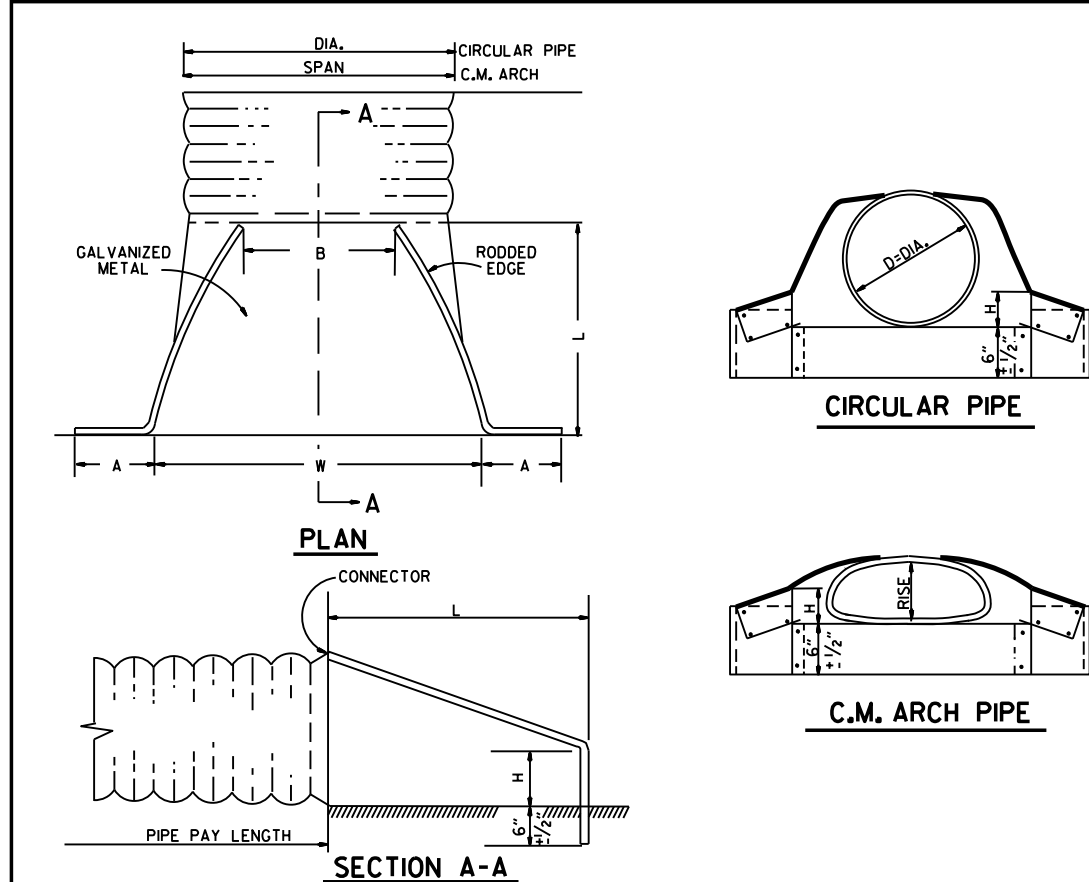
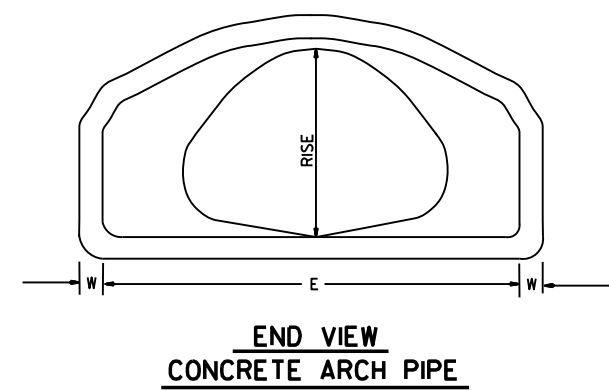


TABLE OF DIMENSIONS														
DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3:1	25"	33 3/8"	16 1/8"	14"	2 1/2"	1600	1'-1 1/2"
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 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 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 1/8"	24 1/8"	20"	3 1/2"	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 1/8"	38 1/8"	24"	5"	13250	4'-6"



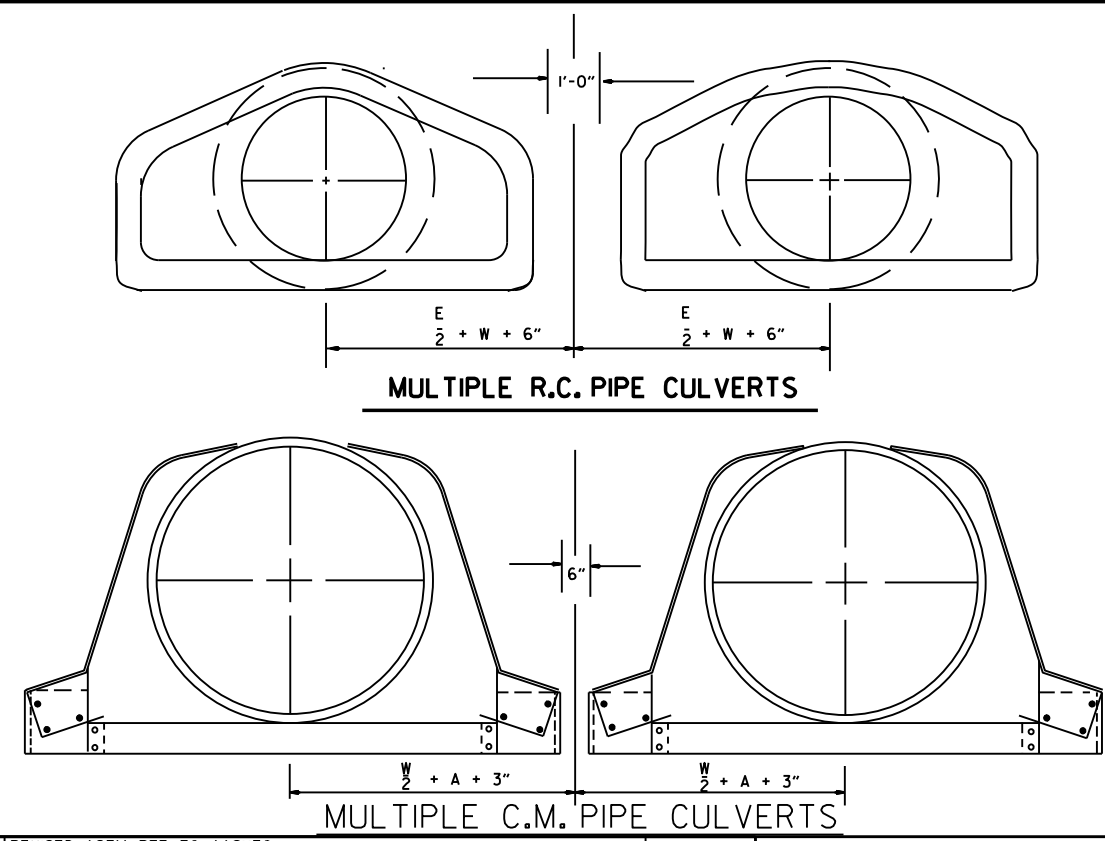
ARCH PIPE														
EQUIV. DIA.	• SPAN		• RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
INCHES														
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1 1/2"	2 1/2:1
18	22	22	13 1/2	14	2 1/2"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32 1/8"	13"	2 1/2"	2 1/2:1
21	26	26	15 1/2	16	2 3/4"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34 1/8"	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 1/2"	6'-1 1/2"	6'-6"	54 1/8"	22"	3 1/2"	2 1/2:1
42	51 1/8	51	31 5/8	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 3/4"	7'-10"	70 7/8"	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 1/4:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 1/8"	24"	5"	2 1/4:1

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



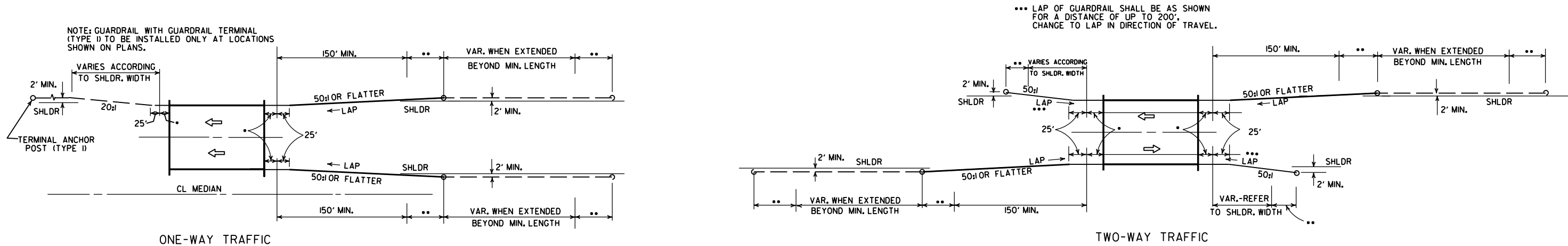
CIRCULAR PIPE								
D. DIA.	GAUGE	A 1" $\pm$	B. MAX.	H 1" $\pm$	L 1 1/2" $\pm$	W 2" $\pm$	S	
INCHES								
12	16	6	6	6	21	24	2 1/2:1	
15	16	7	8	6	26	30	2 1/2:1	
18	16	8	10	6	31	36	2 1/2:1	
21	16	9	12	6	36	42	2 1/2:1	
24	16	10	13	6	41	48	2 1/2:1	
30	14	12	16	8	51	60	2 1/2:1	
36	14	14	19	9	60	72	2 1/2:1	
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 1" $\pm$	B. MAX.	H 1" $\pm$	L 1 1/2" $\pm$	W 2" $\pm$	S	GAUGE
INCHES									
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

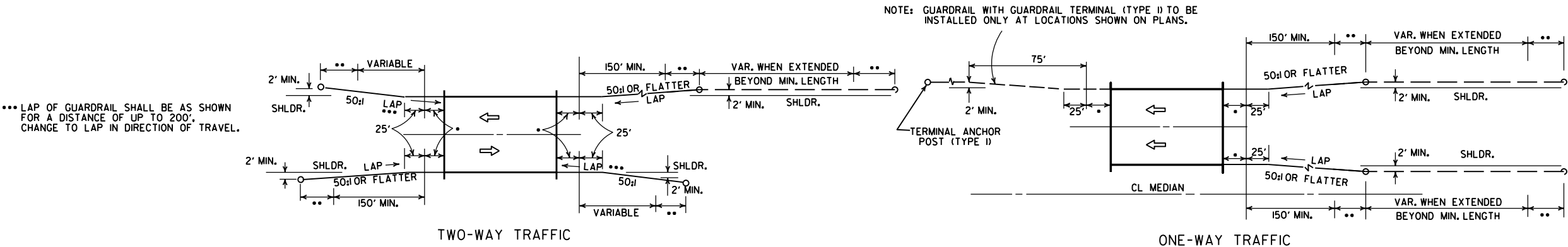


10-18-96	REVISED ASTM REF. TO AASHTO		ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80	
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78	
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75	
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	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	
DATE	REVISION	FILMED	STANDARD DRAWING FES-2

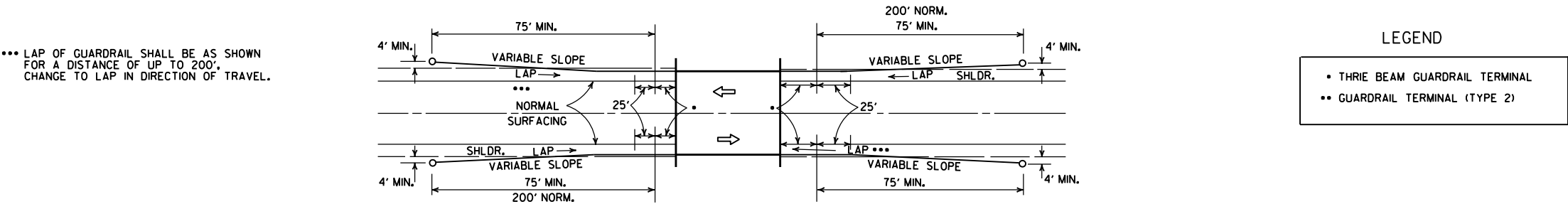
STANDARD DRAWING GR-6



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

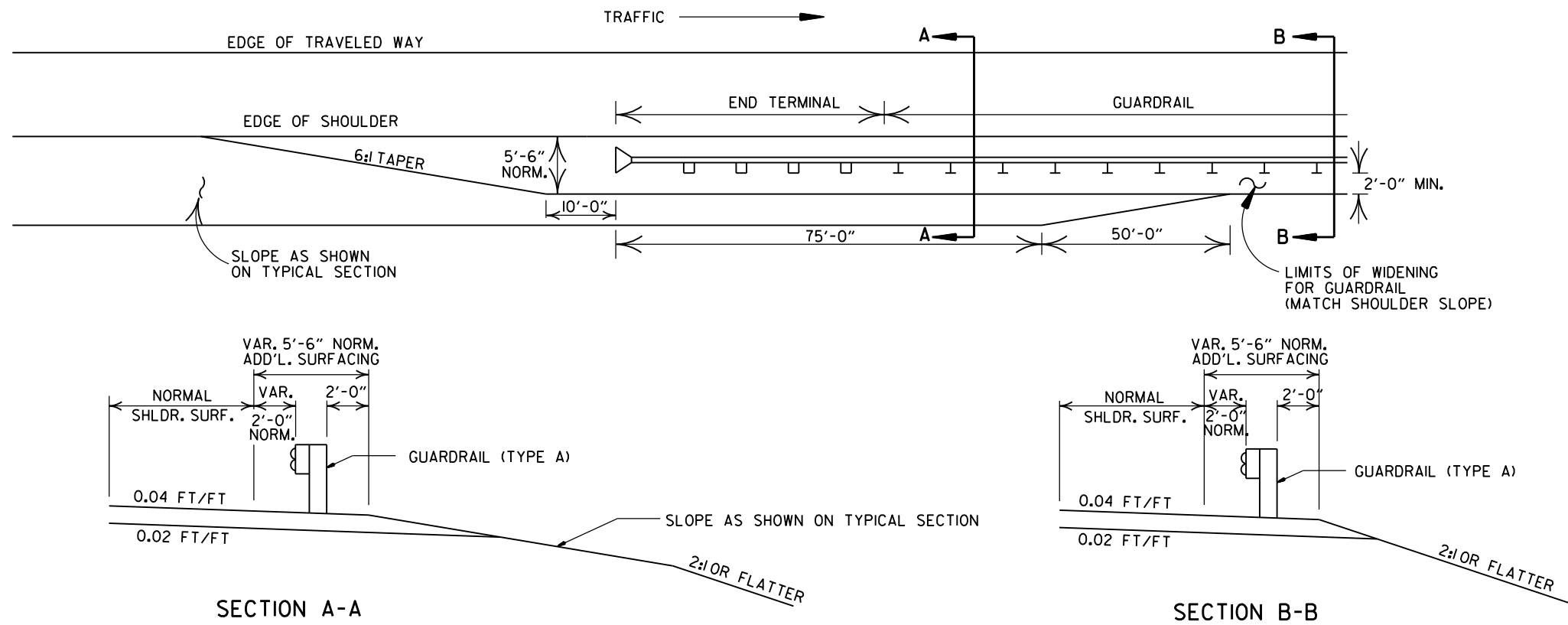


METHOD OF INSTALLATION OF GUARDRAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

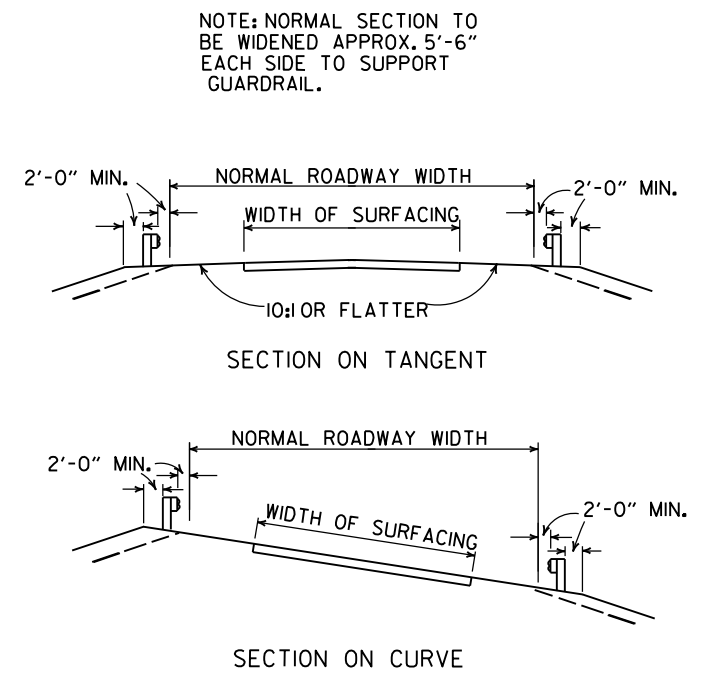


METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

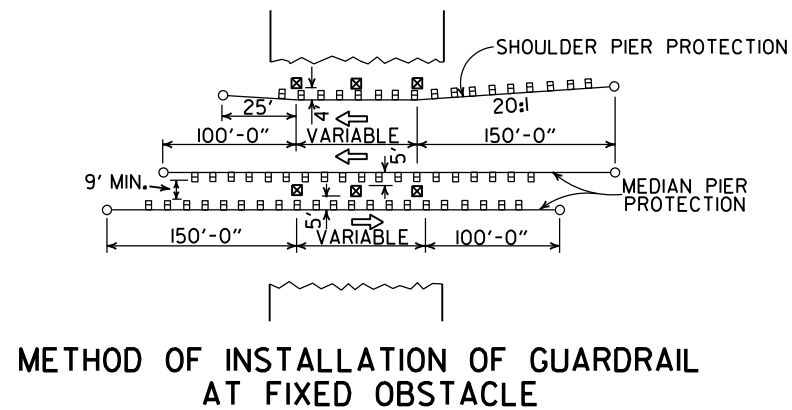
			ARKANSAS STATE HIGHWAY COMMISSION
11-07-19	RENUMBERED AND RENAMED		GUARDRAIL DETAILS
4-17-08	REVISED LAYOUTS		
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS		
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. 1)		
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00	STANDARD DRAWING GR-8
6-26-97	REVISED LAYOUT		
10-1-92	REDRAWN & REVISED	10-1-92	
10-9-87	ADDED NOTE		
DATE	REVISION	DATE	FILM



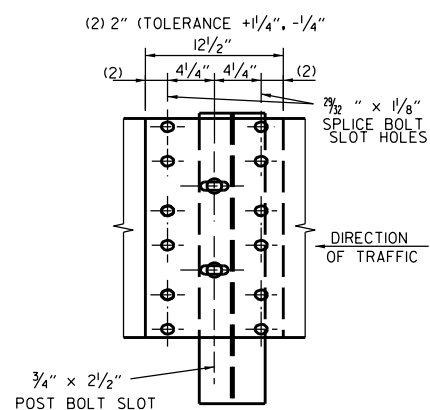
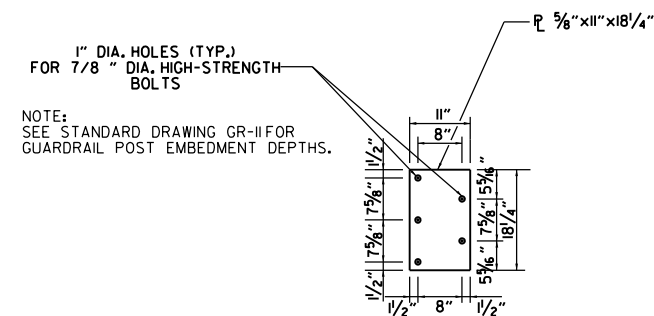
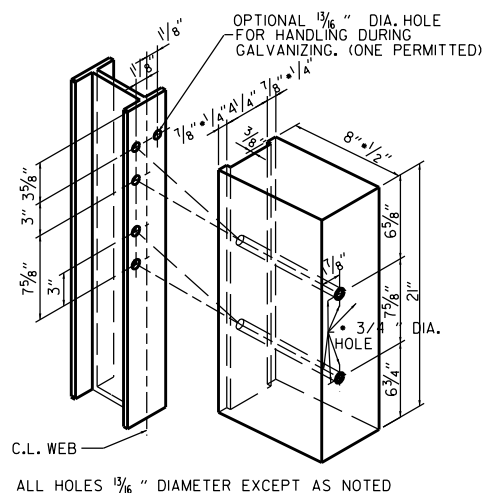
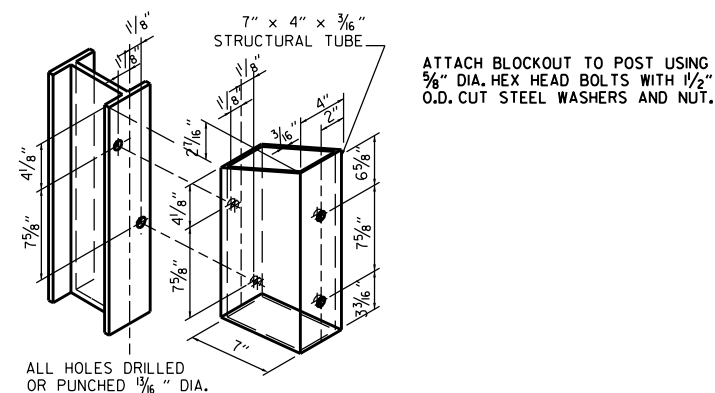
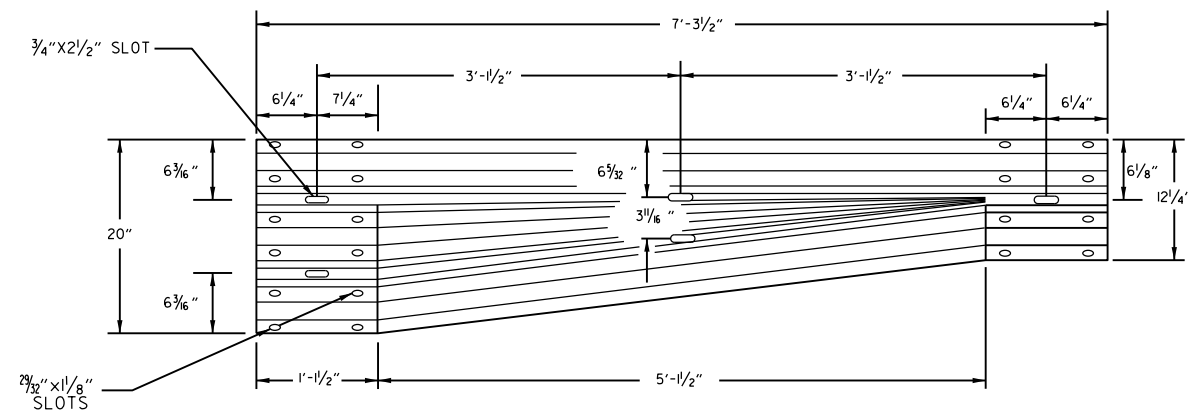
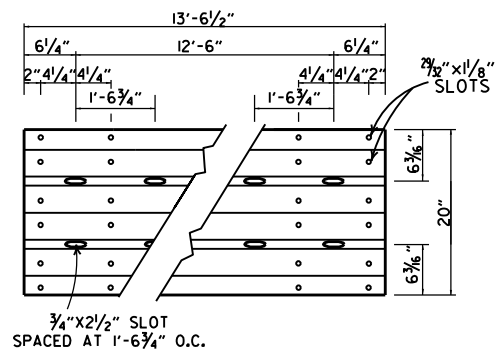
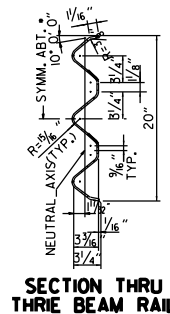
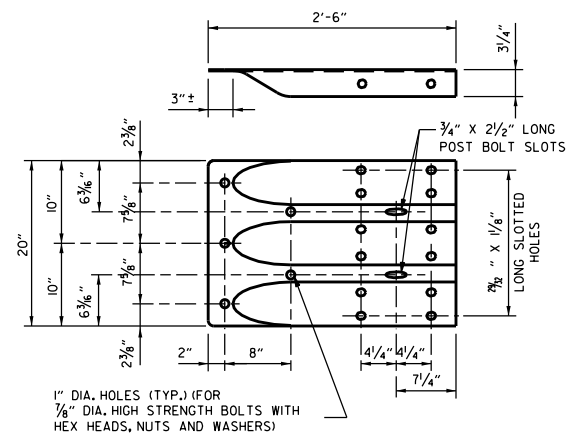
DETAILS OF WIDENING FOR GUARDRAIL



DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY



			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
			STANDARD DRAWING GR-9
11-07-19	RENUMBERED AND RENAMED		
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE FILED	



GENERAL NOTES:

THE THREE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

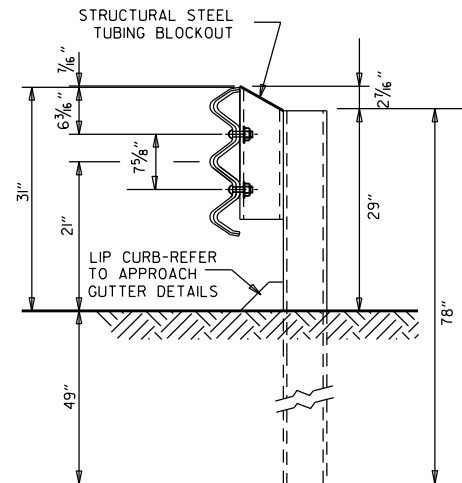
REFER TO STD. DRWG. GR-II FOR POST DETAILS.

USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

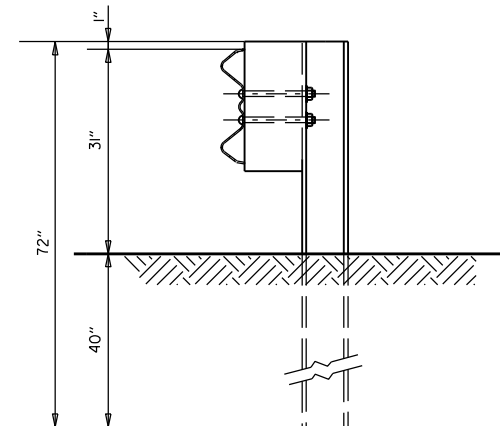
THREE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

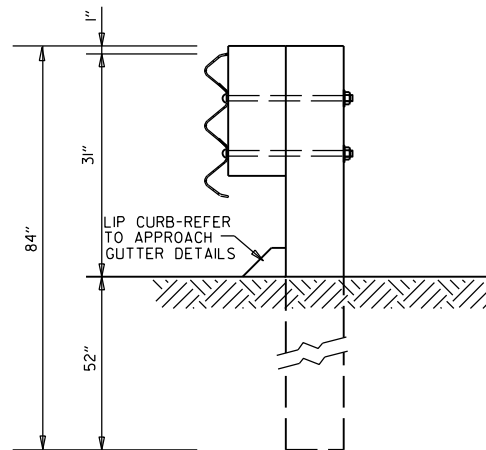
II-07-19	RENAMED AND REVISED REFERENCES		
II-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12		
07-14-10	RAISED HEIGHT OF W-BEAM 1"		
II-29-07	ADDED PLASTIC BLOCKOUTS		
II-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT		ARKANSAS STATE HIGHWAY COMMISSION
II-18-04	REVISED GENERAL NOTES		
10-9-03	REVISED GENERAL NOTES		
04-10-03	REVISED GENERAL NOTES		
08-22-02	REVISED NOTE (2)		GUARDRAIL DETAILS
06-29-00	MOVED DIMENSION LINES		
05-18-00	ADDED NOTE		
03-30-00	DRAWN & ISSUED		
DATE	REVISION	FILMED	STANDARD DRAWING GR-10



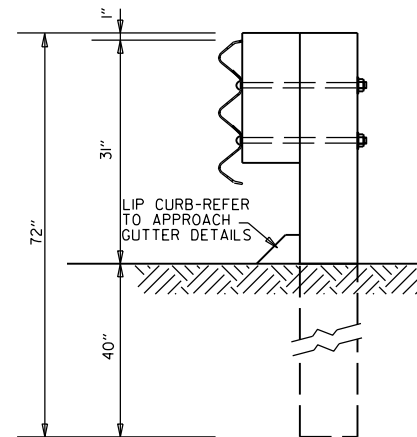
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT  
AND STEEL POST  
POSTS 1-7



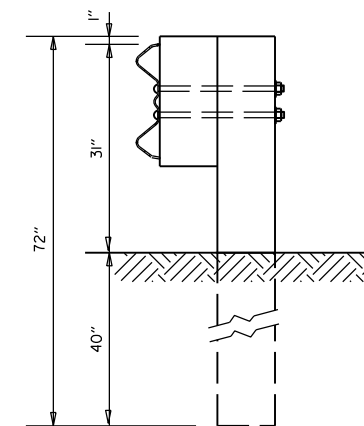
W-BEAM TO THRIE BEAM TRANSITION RAIL  
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST  
POST 8



THRIE BEAM RAIL  
WITH WOOD OR PLASTIC  
BLOCKOUTS & WOOD POSTS  
POSTS 1-6



THRIE BEAM RAIL  
WITH WOOD OR PLASTIC  
BLOCKOUT & WOOD POST  
POST 7



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

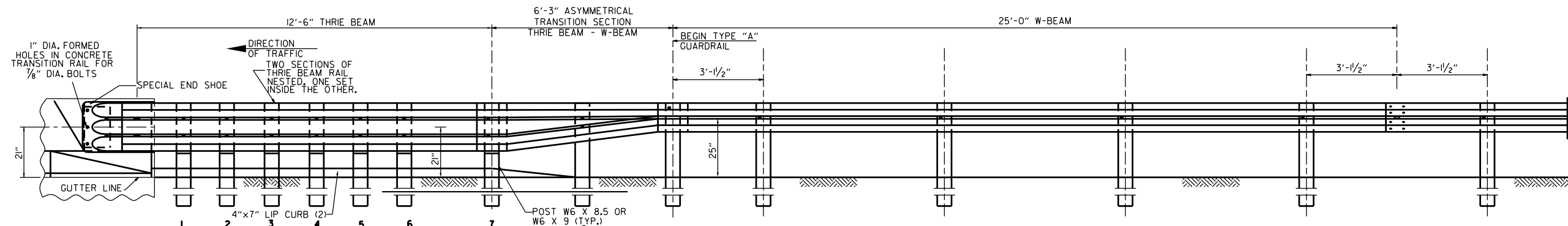
GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

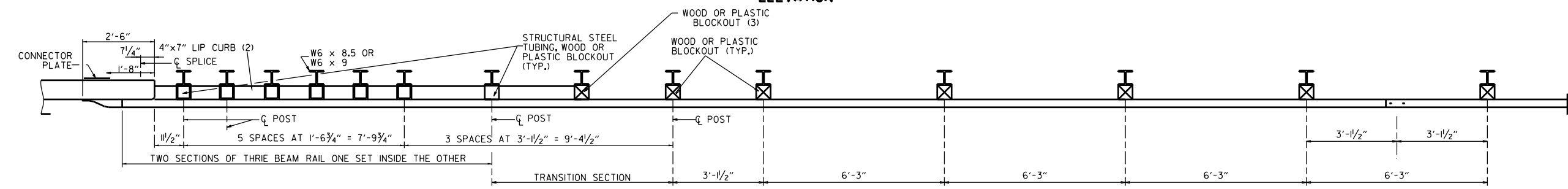
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 350 f SOUTHERN PINE.

			ARKANSAS STATE HIGHWAY COMMISSION
II-07-19	RENAMED		GUARDRAIL DETAILS
II-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-II		
07-14-10	REVISED POST 8 DIMENSIONS		
II-29-07	ADDED PLASTIC BLOCKOUTS		
08-22-02	REVISED LIP CURB NOTE		
03-30-00	DRAWN & ISSUED		STANDARD DRAWING GR-II
DATE	REVISION	FILMED	

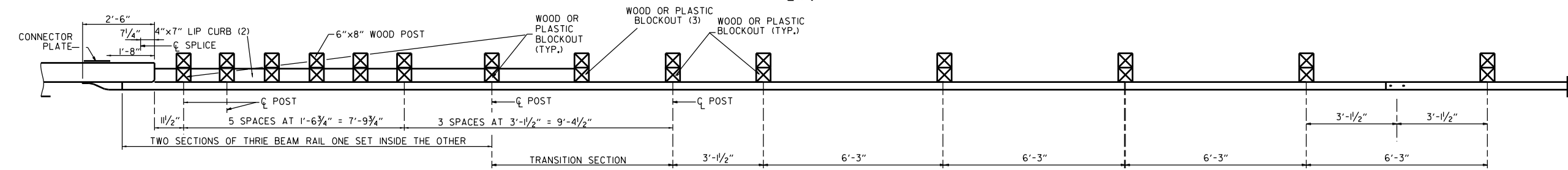




ELEVATION



PLAN



PLAN

- (1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
- (2) REFER TO APPROACH GUTTER DETAILS.
- (3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

## THRIE BEAM GUARDRAIL CONNECTION AT BRIDGE ENDS

### GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

REFER TO STD. DRWG. GR-II FOR POST DETAILS.

USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

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

POSTS SHALL NOT BE PLACED AT SPLICE LOCATIONS ALONG W-BEAM RAILS.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
05-14-20	REVISED NOTES		
11-07-19	RENAMED & REVISED REFERENCES		
11-16-17	RE-DRAWN FROM STD. DWG. GR-10 & ISSUED		
DATE	REVISION	FILMED	STANDARD DRAWING GR-12

REINFORCED CONCRETE  
ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDOT NOMINAL	AASHTO M 206	ARDOT NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43¾	44	26¾	27
42	51½	51	31¾	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87½	87
120	154	154	96¾	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE  
HORIZONTAL ELLIPTICAL  
PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

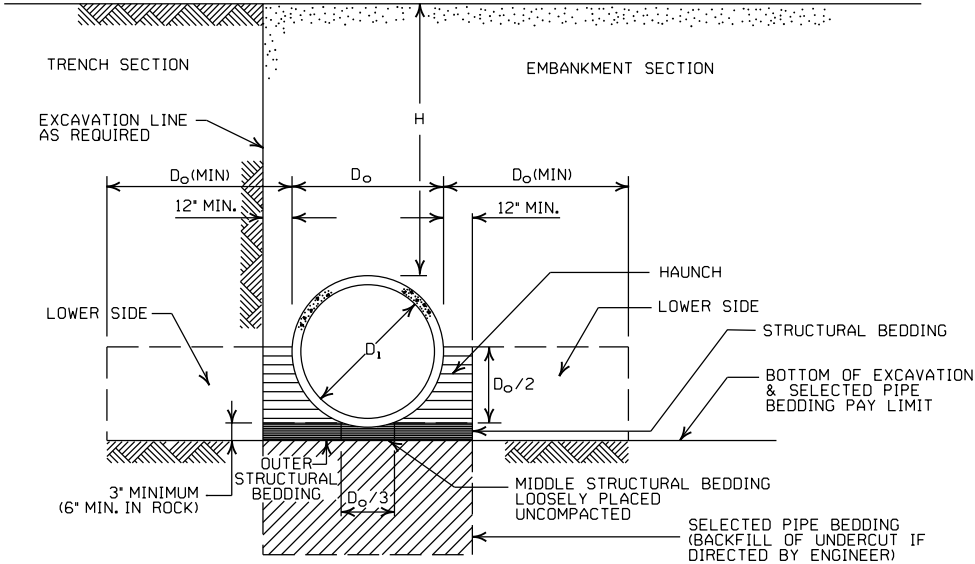
- LEGEND -

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

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

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

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

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 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.

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.

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	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT  
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1



CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINIMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)		
				INSTALLATION	INSTALLATION		INSTALLATION	INSTALLATION		
				TYPE 1	TYPE 1		TYPE 1	TYPE 1		
			2 ¾ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ¾ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM			
15	17x13	3	0.064	2	15	0.060	2	15		
18	21x15	3	0.064	2	15	0.060	2	15		
21	24x18	3	0.064	2,25	15	0.060	2,25	15		
24	28x20	3	0.064	2,5	15	0.075	2,5	15		
30	35x24	3	0.079	3	12	0.075	3	12		
36	42x29	3½	0.079	3	12	0.105	3	12		
42	49x33	4	0.079	3	12	0.105	3	12		
48	57x38	5	0.109	3	13	0.135	3	13		
54	64x43	6	0.109	3	14	0.135	3	14		
60	71x47	7	0.138	3	15	0.135	3	15		
66	77x52	8	0.168	3	15	0.164	3	15		
72	83x57	9	0.168	3	15					
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				① FOR MINIMUM COVER VALUES, "H" SHALL ② WHERE THE STANDARD 2 2/3" x ½" COR WITH A 3' x 1' OR 5' x 1' CORRUGATION OR GREATER THAN THE MAXIMUM FILL			
			INSTALLATION		INSTALLATION					
			TYPE 2	TYPE 1	TYPE 2	TYPE 1				
36	40x31	5	0.079	3	2	12				15
42	46x36	6	0.079	3	2	13				15
48	53x41	7	0.079	3	2	13				15
54	60x46	8	0.079	3	2	13				15
60	66x51	9	0.079	3	2	13				15
66	73x55	12	0.079	3	2	15				15
72	81x59	14	0.079	3	2	15				15
78	87x63	14	0.079	3	2	15	15			
84	95x67	16	0.109	3	2	15	15			
90	103x71	16	0.109	3	2	15	15			
96	112x75	18	0.109	3	2	15	15			
102	117x79	18	0.109	3	2	15	15			
108	128x83	18	0.138	3	2	15	15			

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

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

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

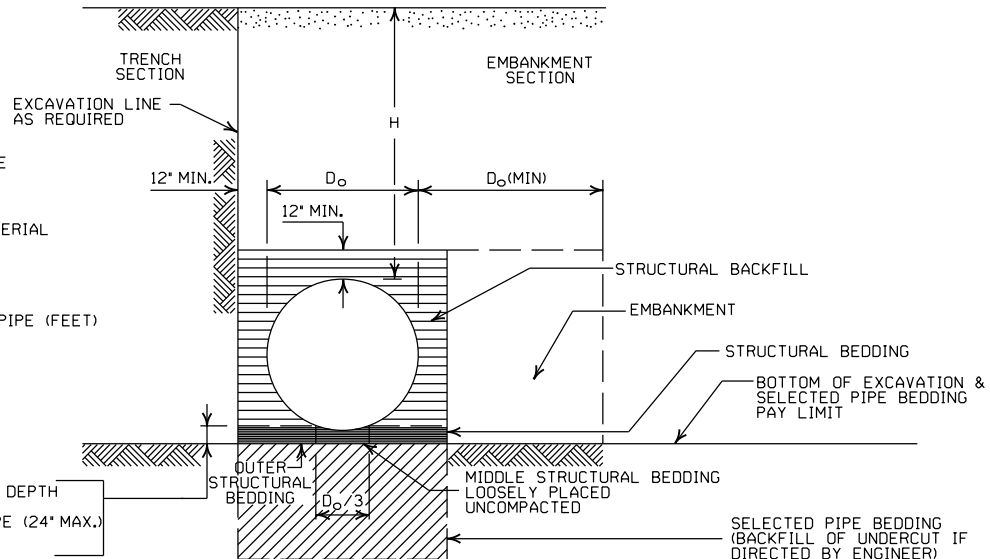
EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL		ALUMINUM	
ZINC COATED	UNCOATED		
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

- LEGEND -

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

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

② WHERE THE STANDARD 2 2/3" X 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.

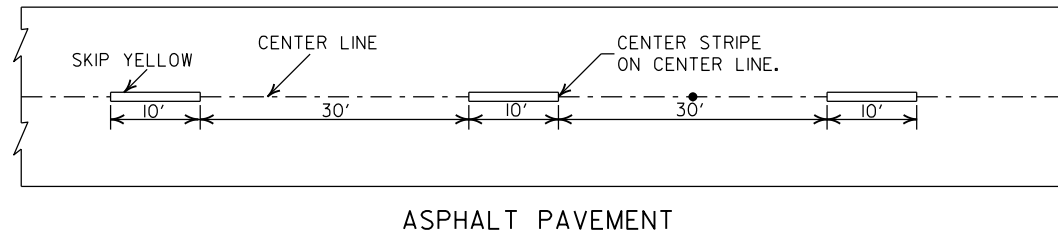
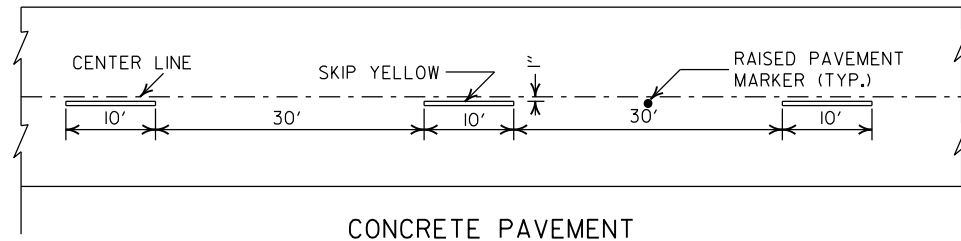
2-27-14	REVISED GENERAL NOTE 1	
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	
DATE	REVISION	DATE FILMED

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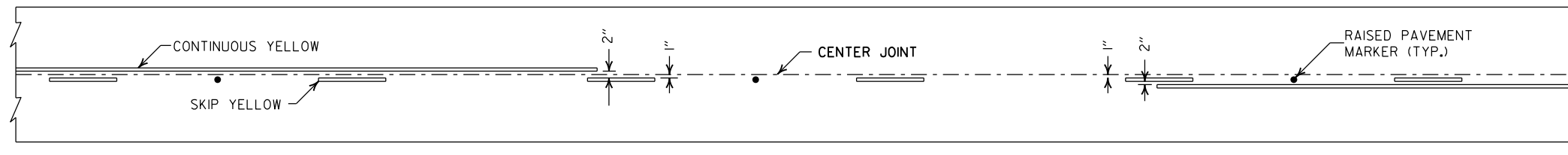
METAL PIPE CULVERT  
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

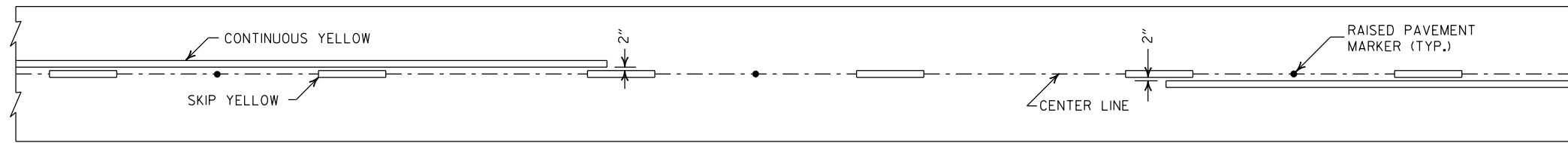




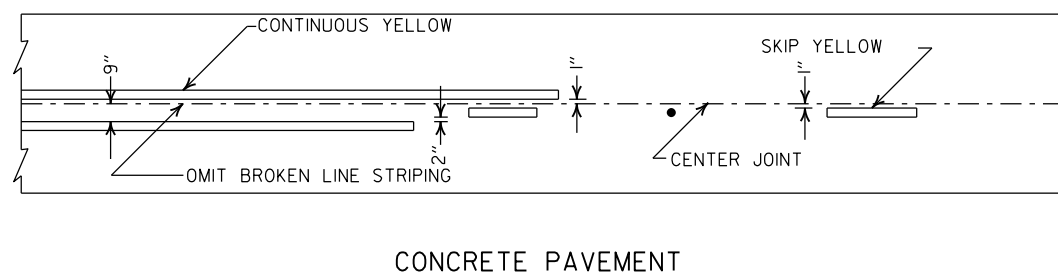
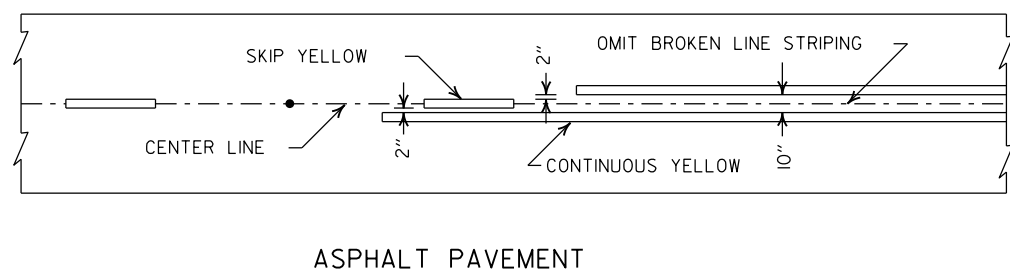
### BROKEN LINE STRIPING



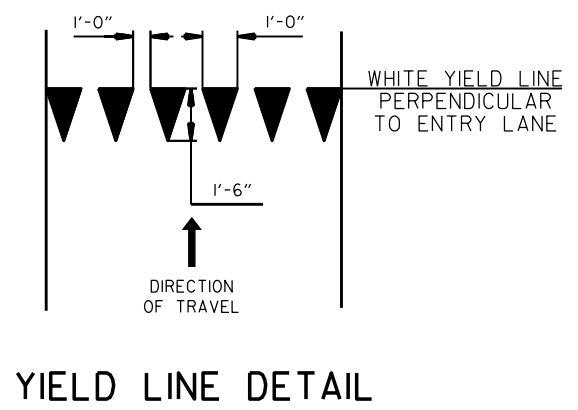
### SOLID LINE STRIPING ON CONCRETE PAVEMENT



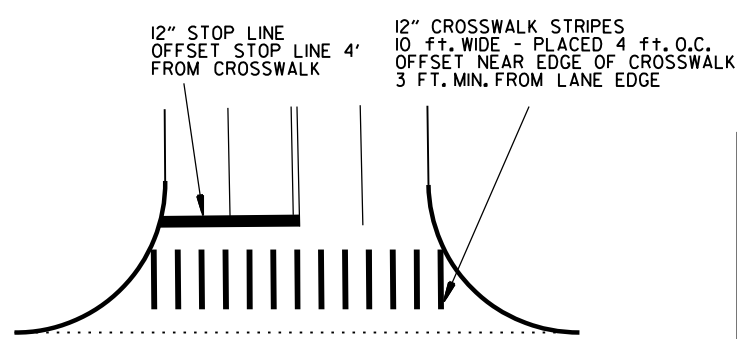
### SOLID LINE STRIPING ON ASPHALT PAVEMENT



### STRIPING AT ADJACENT NO PASSING LANES

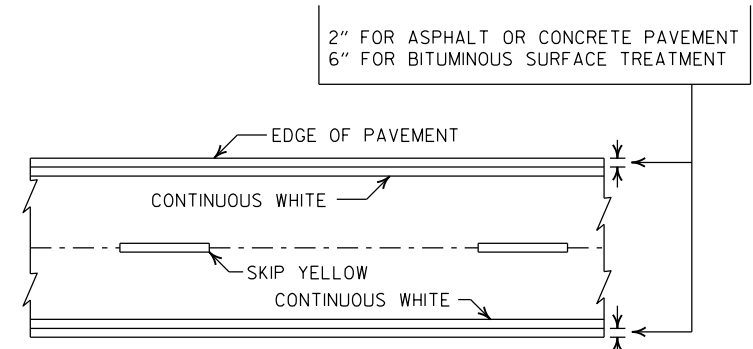


YIELD LINE DETAIL



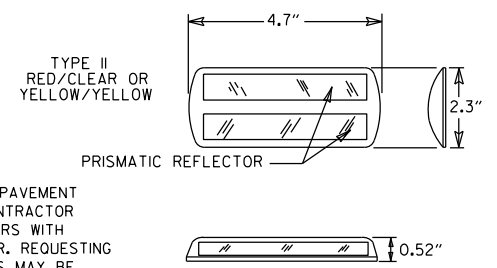
CROSSWALK AND STOP LINE DETAILS

- 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.



### PAVEMENT EDGE LINE MARKING

NOTE:  
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.



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 ARDOT QUALIFIED PRODUCTS LIST.

### DETAIL OF STANDARD RAISED PAVEMENT MARKERS

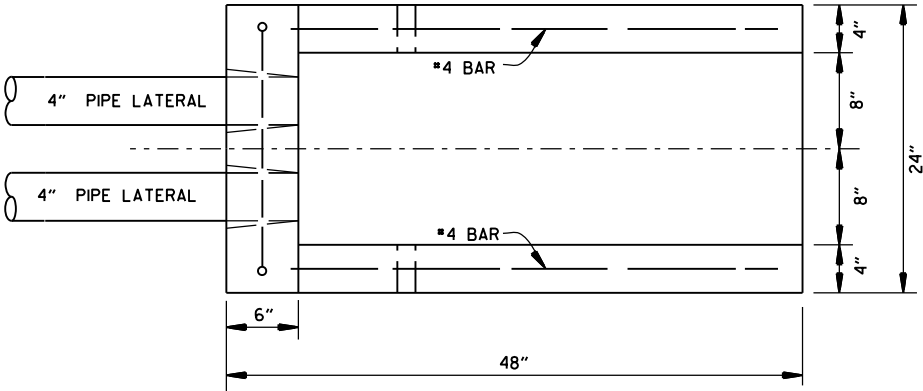
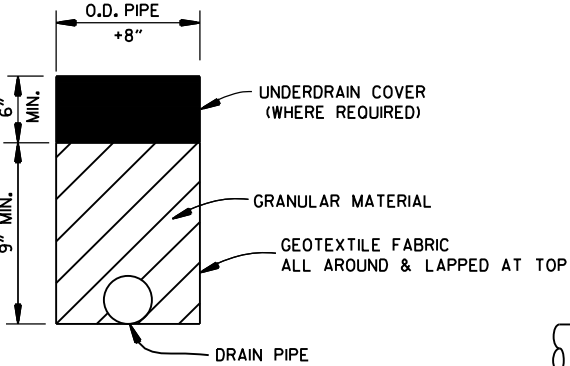
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

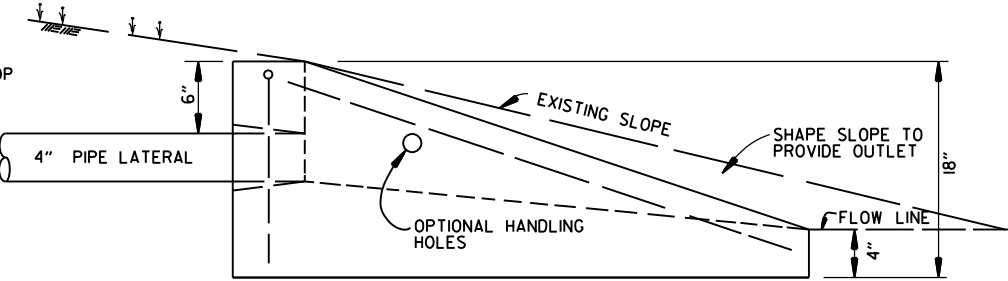
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

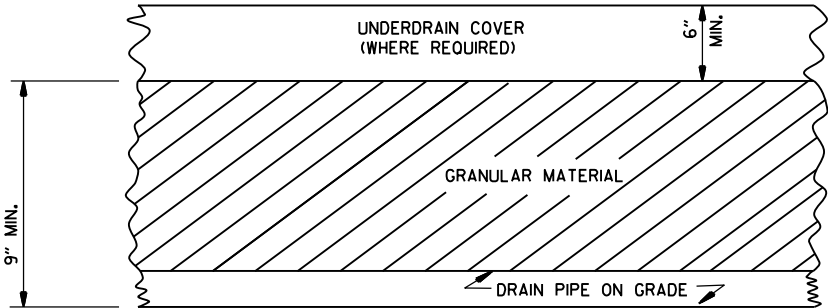
NOTE:  
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.  
2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



PLAN VIEW



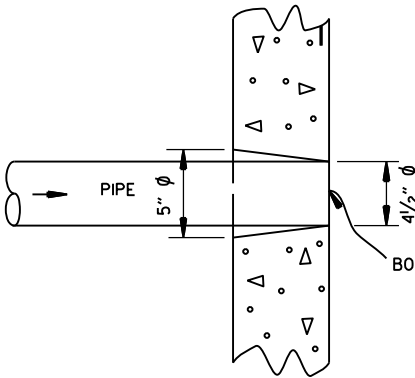
SIDE VIEW



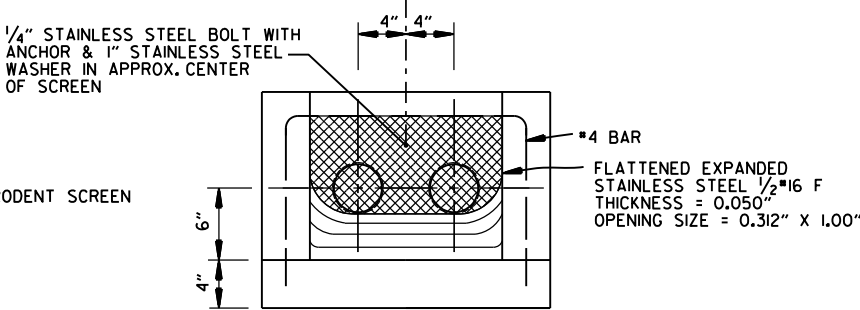
DETAILS OF PIPE UNDERDRAIN

NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE I. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.
2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.
3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS."
4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.
5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."
6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE REMOVED UNDER THE ITEM "REMOVAL AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS."
7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GROUT THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.



DETAIL OF HOLE FOR 4" PIPE

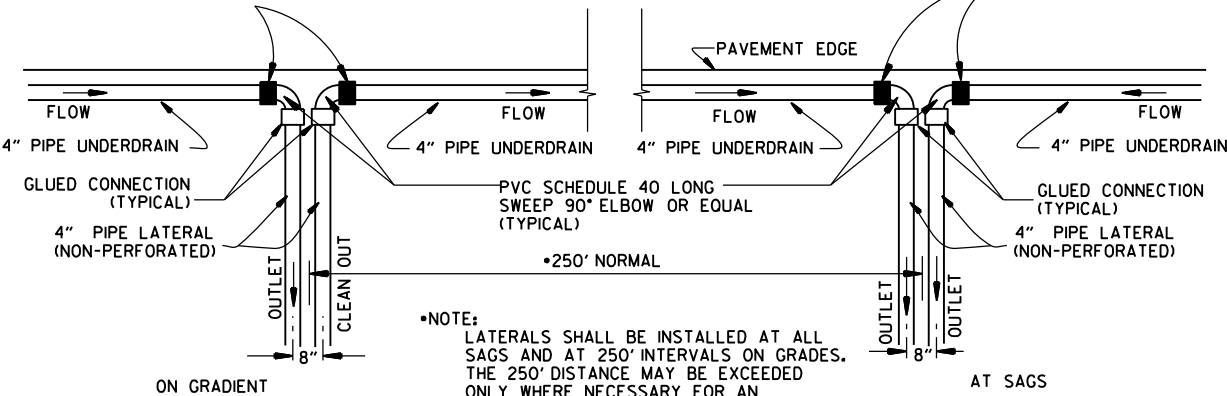


FRONT VIEW  
(DETAIL OF RODENT SCREEN)

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

FERNCO 1056-44 (4" CI/PLASTIC) OR  
FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC)  
COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)



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.

12-8-16	ADDED NOTES FOR PIPE UNDERDRAINS, REVISED RODENT SCREEN DETAIL AND NOTES, REMOVED NOTE 1 FOR GRANULAR MATERIAL, ADDED NOTE FOR GEOTEXTILE FABRIC	
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

### SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH			
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE	MINIMUM
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC			
0° 30'	NC			NC			NC			NC			NC			RC	96		RC	96		RC	96		RC	96		RC	96	0.022	101
0° 45'	NC			NC			NC			NC			RC	96		RC	96		RC	96		RC	96		RC	96		RC	96	0.032	125
1° 00'	NC			NC			NC			RC	90		0.022	101		0.026	110		0.030	120		0.034	130		0.038	139		0.042	149	0.042	149
1° 15'	NC			NC			RC	84		0.022	95		0.028	115		0.032	125		0.038	139		0.042	149		0.046	158		0.052	173	0.052	173
1° 30'	NC			RC	78		0.022	88		0.028	108		0.032	125		0.038	139		0.044	154		0.050	168		0.056	182		0.062	197	0.062	197
1° 45'	RC	72		RC	78		0.026	97		0.030	113		0.036	134		0.044	154		0.050	168		0.056	182		0.064	202		0.070	216	0.070	216
2° 00'	RC	72		0.024	86		0.028	101		0.034	122		0.042	149		0.048	163		0.056	182		0.064	202		0.070	216		0.078	235	0.080	240
2° 15'	RC	72		0.026	90		0.032	109		0.038	131		0.046	158		0.054	178		0.062	197		0.070	216		0.078	235		0.088	259		
2° 30'	0.022	75		0.028	94		0.034	113		0.042	140		0.050	168		0.058	187		0.068	206		0.076	230		0.086	254		0.096	278	0.096	278
2° 45'	0.024	79		0.030	98		0.038	122		0.046	149		0.054	178		0.064	202		0.072	221		0.082	245		0.092	269		0.100	288	0.100	288
3° 00'	0.026	83		0.034	105		0.040	126		0.050	158		0.058	187		0.068	211		0.078	235		0.088	259		0.098	283		0.100	288		
3° 15'	0.028	86		0.036	109		0.044	134		0.052	162		0.062	197		0.072	221		0.082	245		0.092	269		0.100	288					
3° 30'	0.030	90		0.038	113		0.046	139		0.056	171		0.066	206		0.076	230		0.086	254		0.096	278		0.100	288					
3° 45'	0.032	93		0.040	117		0.050	147		0.058	176		0.070	216		0.080	240		0.090	264		0.100	288								
4° 00'	0.034	97		0.042	121		0.052	151		0.062	185		0.072	221		0.084	250		0.094	274		0.100	288								
4° 15'	0.036	100		0.044	125		0.054	155		0.064	189		0.076	230		0.086	254		0.096	278		0.100	288								
4° 30'	0.036	100		0.046	129		0.056	160		0.068	198		0.078	235		0.088	259		0.098	283		0.100	288								
4° 45'	0.038	104		0.048	133		0.060	168		0.070	203		0.082	245		0.092	269		0.100	288											
5° 00'	0.040	108		0.050	137		0.062	172		0.072	207		0.084	250		0.094	274		0.100	288											
5° 30'	0.044	115		0.054	144		0.066	181		0.078	221		0.088	259		0.098	283		0.100	288											
6° 00'	0.046	119		0.058	152		0.070	189		0.082	230		0.092	269		0.100	288														
6° 30'	0.050	126		0.062	160		0.074	198		0.086	239		0.096	278		0.100	288														
7° 00'	0.052	130		0.064	164		0.078	206		0.090	248		0.098	283																	
7° 30'	0.054	133		0.068	172		0.080	210		0.092	252		0.100	288																	
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257																				
8° 30'	0.060	144		0.072	179		0.086	223		0.096	261																				
9° 00'	0.062	148		0.076	187		0.088	227		0.098	266																				
9° 30'	0.064	151		0.078	191		0.092	235		0.100	270																				
10° 00'	0.066	155		0.080	195		0.094	240																							
11° 00'	0.070	162		0.084	203		0.096	244																							
12° 00'	0.074	169		0.088	211		0.098	248																							
13° 00'	0.076	173		0.090	215		0.100	252																							
14° 00'	0.080	180		0.094	222																										
15° 00'	0.082	184		0.096	226																										
16° 00'	0.086	191		0.098	230																										
17° 00'	0.088	194		0.100	234																										
18° 00'	0.090	198																													
19° 00'	0.092	202																													
20° 00'	0.094	205																													
21° 00'	0.096	209																													
22° 00'	0.098	212																													
23° 00'	0.098	212																													
24° 00'	0.098	212																													
25° 00'	0.100	216																													

D MAX = 28° 30'

OR P.T.

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## 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.)

## GENERAL NOTES

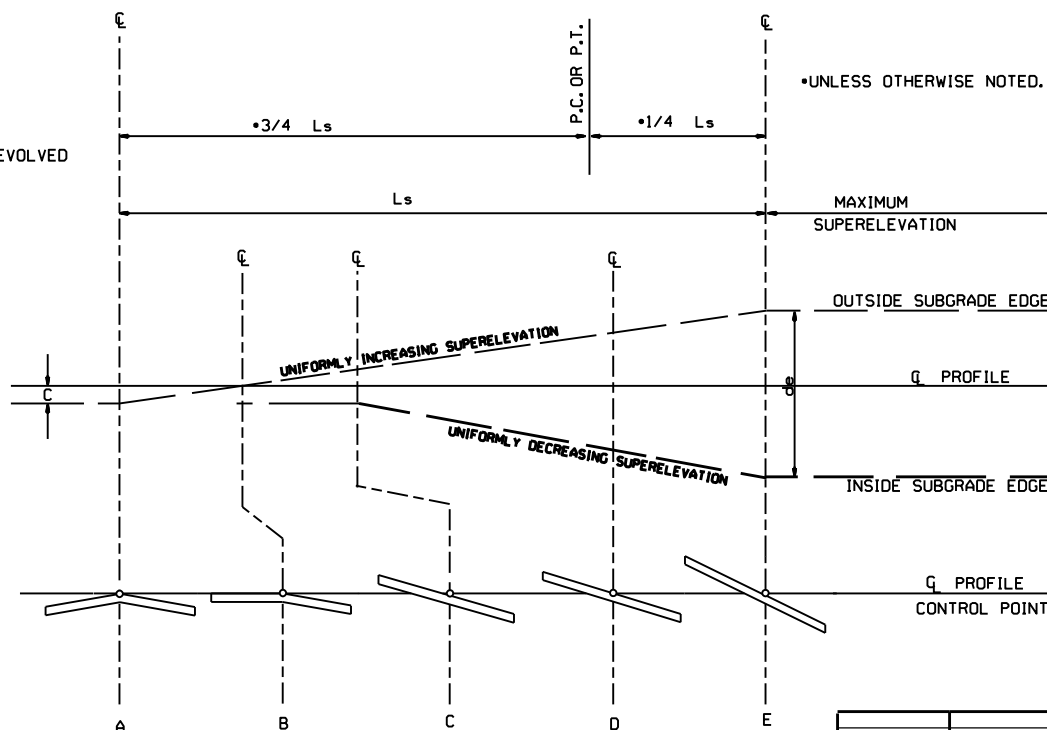
1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE	UNDIVIDED	-	-	-	-	+20%
4 LANE	UNDIVIDED	-	-	-	-	+50%
5 LANE	UNDIVIDED	-	-	-	-	+80%
6 LANE	UNDIVIDED	-	-	-	-	+100%

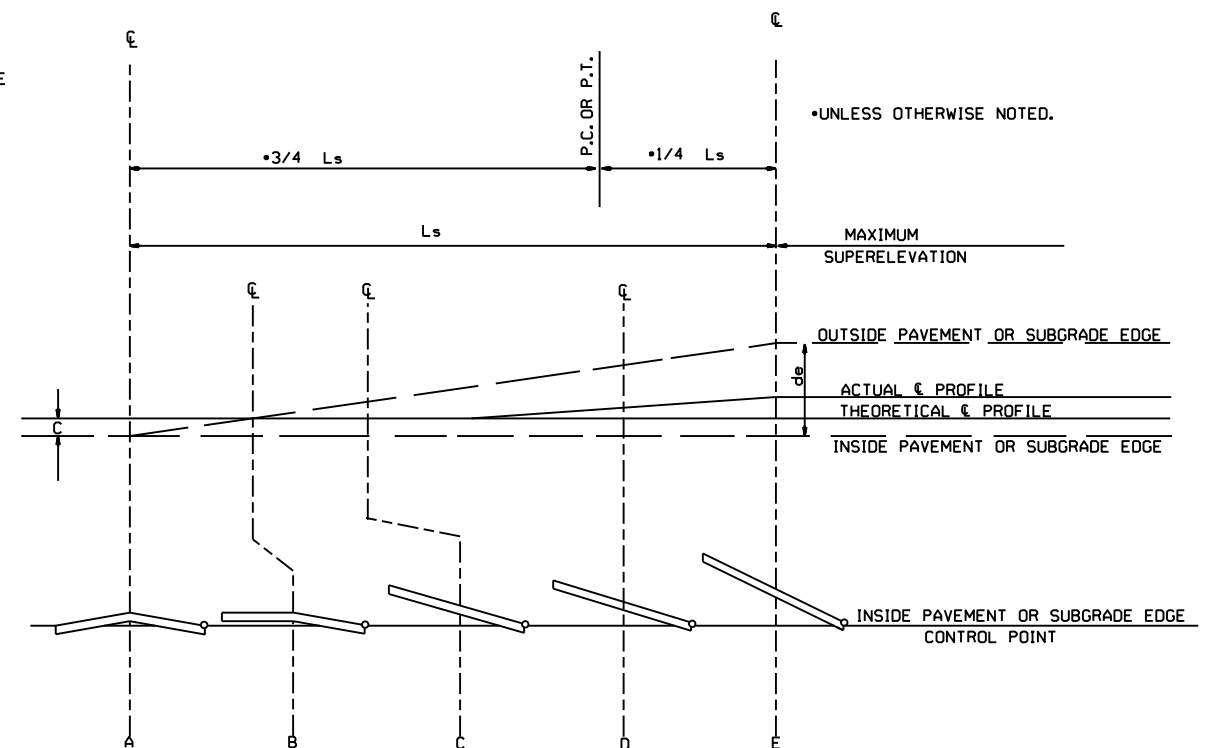
NOTE: MAINTAIN NORMAL CROWN ON INSIDE  
UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE  
COMPUTED ON STRAIGHT LINE METHOD  
USING APPLICABLE Ls.

$$\text{SUPERELEVATION FORMULA} = \frac{Lde}{Ls}$$



### STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



### STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE


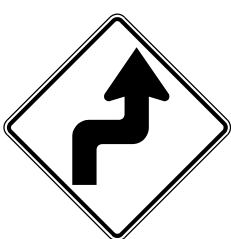
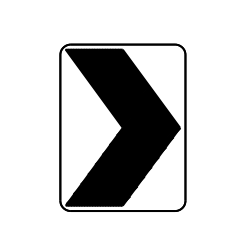
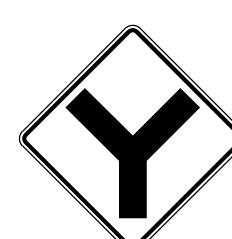


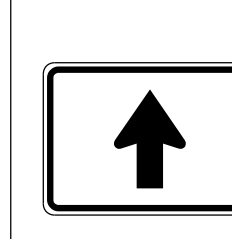
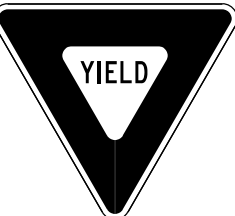

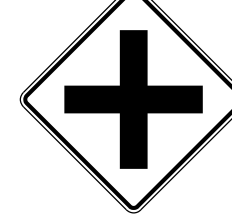



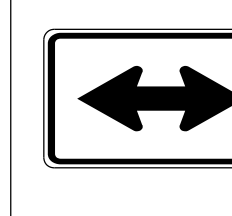
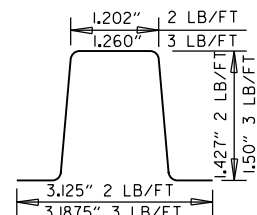
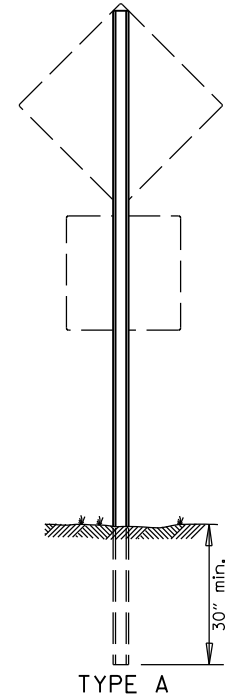


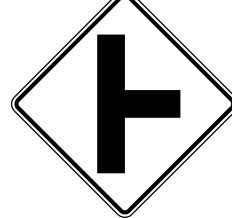





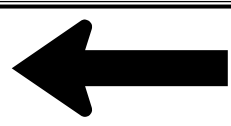
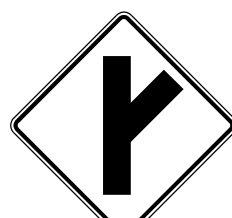

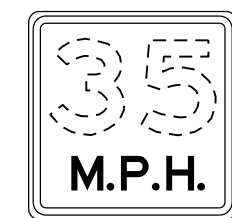


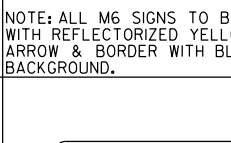

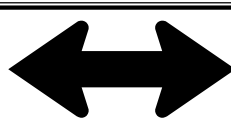
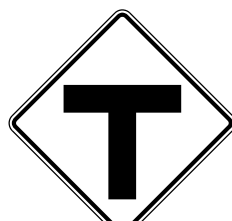

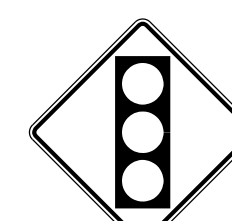


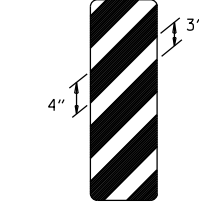
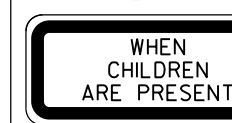
NOTE: MAINTAIN NORMAL CROWN ON  
INSIDE UNTIL SUPERELEVATION  
EXCEEDS 2C.

11-07-19	REVISED SUPERELEVATION TABLE	
10-18-96	ADDED FORMULA	
01-09-87	ISSUED	534-1-9-8
DATE	REVISION	DATE FILMED

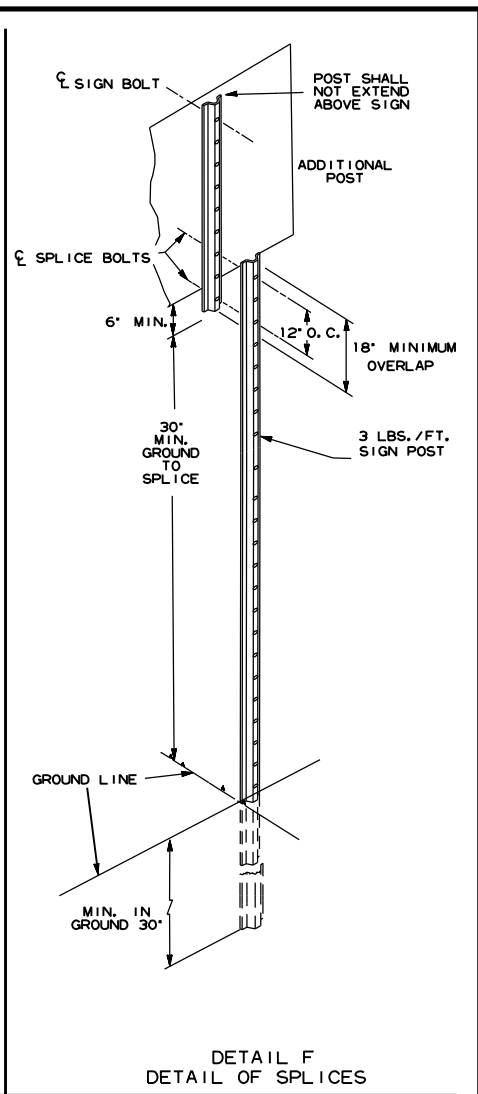
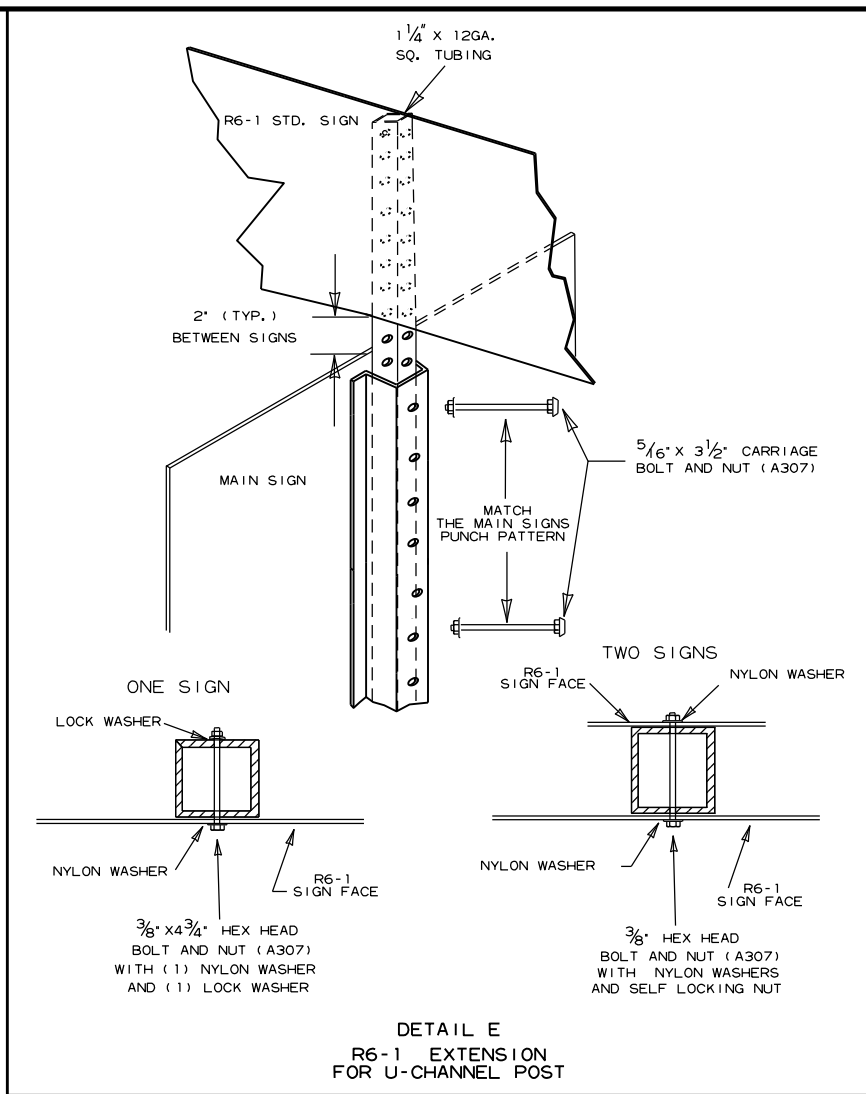
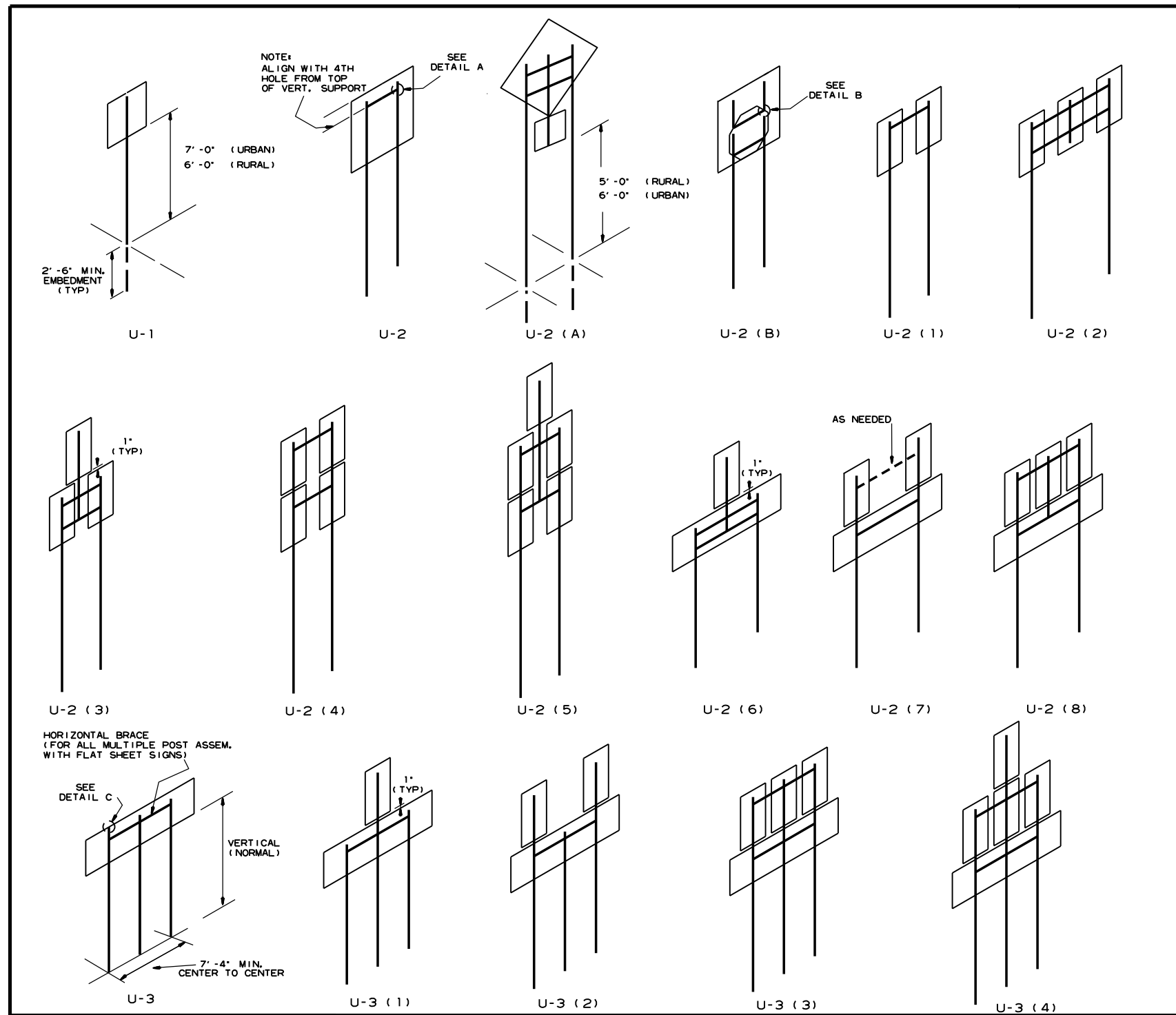
ARKANSAS STATE HIGHWAY COMMISSION

## TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

								
RI-1 30"x30"	WI-3 30"x30" (LT. OR RT.)	WI-8 18"x24"	W2-5 30"x30"	W3-1 36"x36"	W5-1 36"x36"	M6-3 21"x15"		
								<div>MINIMUM DIMENSIONS SHOWN</div> <div>SUPPORT SECTION</div>  <div>(U-CHANNEL) STANDARD SUPPORT ASSEMBLIES</div> 
RI-2 36"x36"x36"	WI-4 30"x30" (LT. OR RT.)	W2-1 30"x30"	SI-1 36"x36"	W3-2 36"x36"	County Route Marker MI-6 24"x24"	M6-4 21"x15"		
					NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND. 			NOTE: LENGTH OF SIGN POSTS SHALL BE DETERMINED SO AS TO PROVIDE FOR MINIMUM VERTICAL CLEARANCES AS CALLED FOR IN THE SPECIFICATIONS PLUS A MINIMUM VERTICAL PENETRATION OF 30" IN THE SOIL.
R2-1 24"x30"	WI-5 30"x30" (LT. OR RT.)	W2-2 30"x30"	W5-2 36"x36"	W8-3 36"x36"	RI-3P 18"x6"	M6-5 21"x15"		
								
WI-1 30"x30" (LT. OR RT.)	WI-6 48"x24"	W2-3 30"x30" (LT. OR RT.)	W5-3 36"x36"	WI3-1P 18"x18"	NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND. 	M6-6 21"x15"		
						 S4-3P 24"x8"	 OM-3 12"x36" (LT. OR RT.)	
WI-2 30"x30" (LT. OR RT.)	WI-7 48"x24"	W2-4 30"x30"	W10-1 36" DIAMETER	W3-3 36"x36"	M6-2 21"x15"	 S4-2P 24"x10"		
STANDARD HIGHWAY SIGNS								
								</





NOTES:

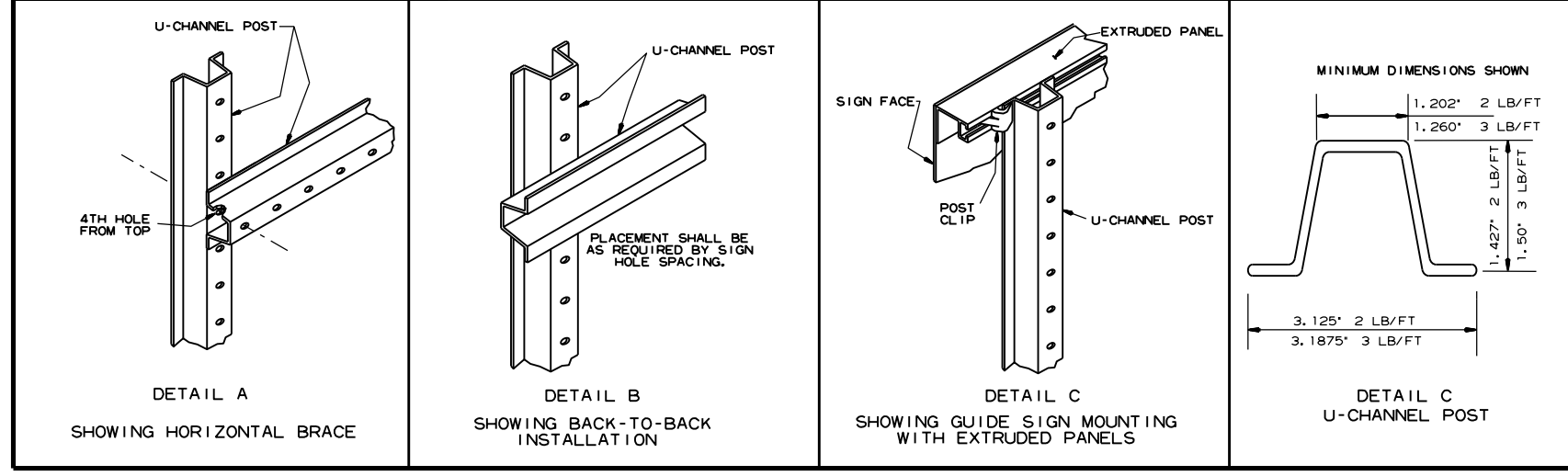
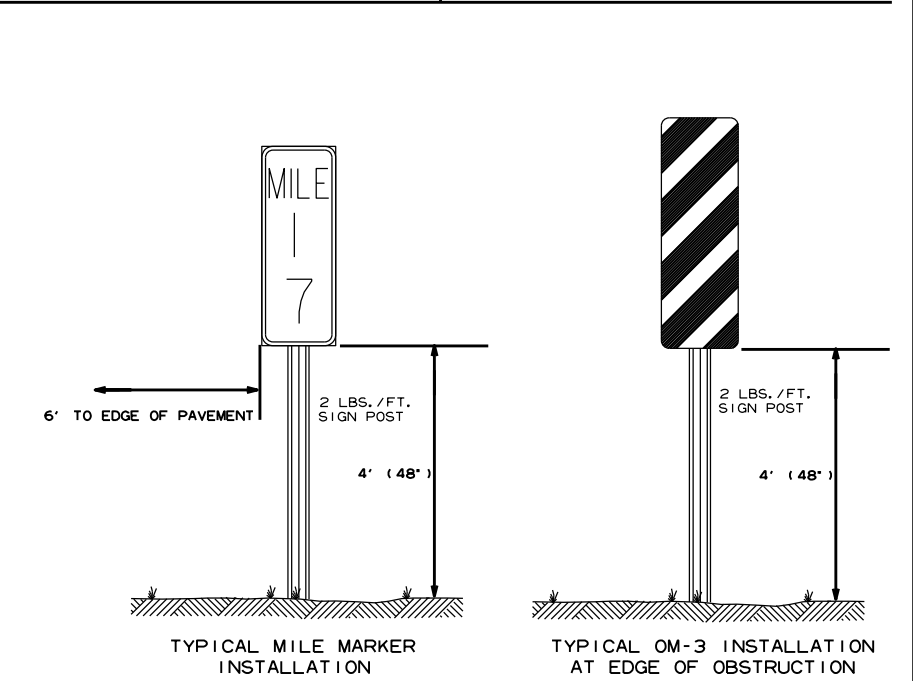
SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL ( F ).


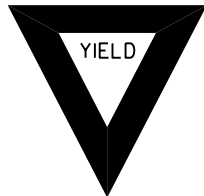

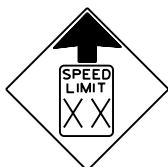

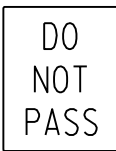



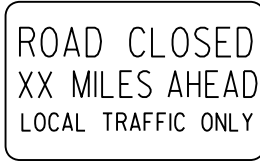


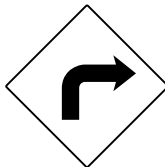




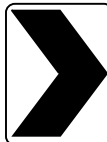
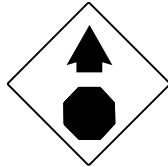
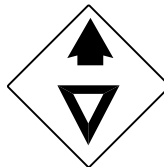
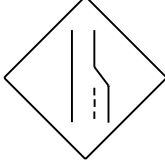



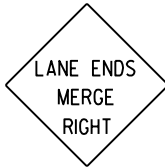


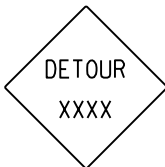










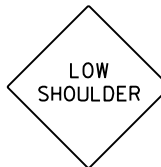

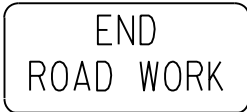
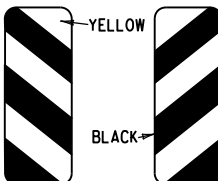


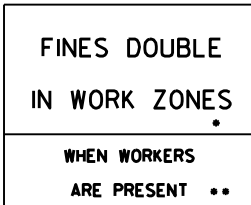
NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

THE POST FOR "TYPE U" SUPPORTS SHALL BE HOT DIP GALVANIZED.

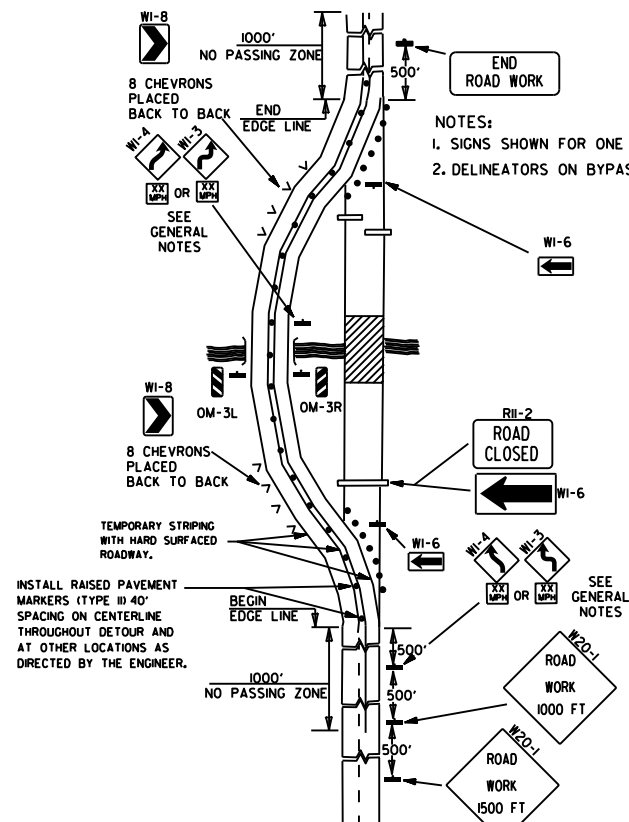


7-25-19	REVISED CARRIAGE BOLT WITH MATERIAL REQUIREMENT		ARKANSAS STATE HIGHWAY COMMISSION
2-27-14	REVISED NOTES.		
9-12-13	REVISED U-2(3), U-2(6), U-3(1), DETAIL D; ADDED DETAILS E & F; ADDED TYPICAL MARKERS		U-CHANNEL POST ASSEMBLIES
10-9-03	REMOVED ROUND POST & REVISED SPACING		
10-12-95	MOVED UPPER SPLICE		
6-8-95	REVISED SPLICE DETAIL	6-8-95	
2-2-95	REDRAWN	2-2-95	
DATE	REVISION	FILMED	STANDARD DRAWING SHS-2

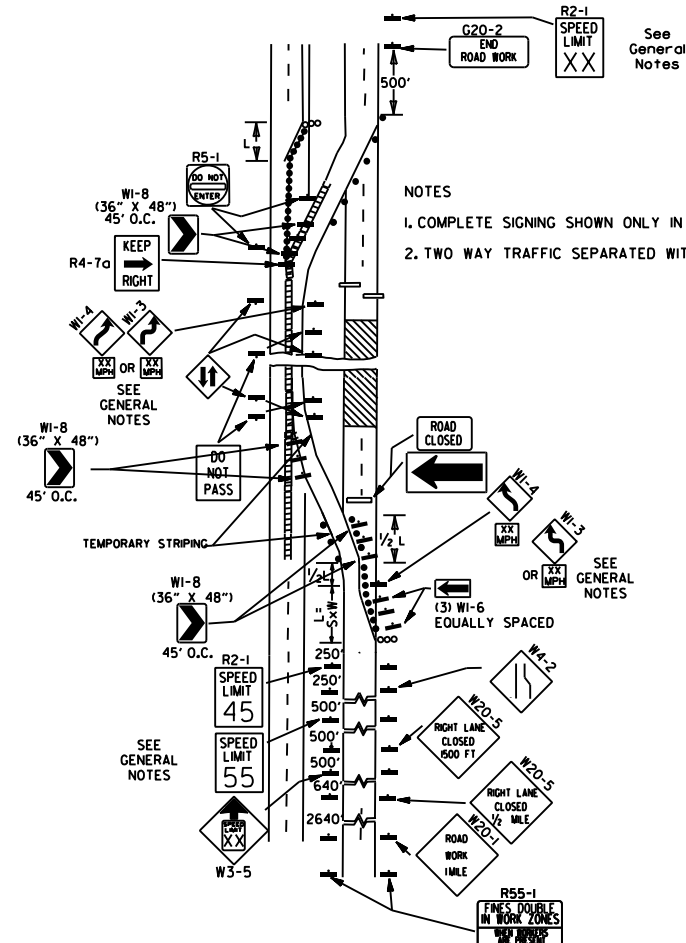
<div>RI-I</div> <div></div> <div>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</div>	<div>RI-2</div> <div></div> <div>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</div>	<div>R2-I</div> <div></div> <div>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</div>	<div>W3-5</div> <div></div> <div>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</div>	<div>W3-5a</div> <div></div> <div>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</div>	<div>R4-I</div> <div></div> <div>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</div>	<div>R4-2</div> <div></div> <div>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</div>	<div>ADVANCE DISTANCES (XXXX)</div> <div>500 FT 1/2 MILE 1000 FT 3/4 MILE 1500 FT 1 MILE AHEAD</div> <div>GENERAL NOTES: 1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION. 2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER. 3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED. 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE. 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3. 6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE. 7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS. 8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS. 9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT. 10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.  • NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 &amp; 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.</div>
<div>R5-I</div> <div></div> <div>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</div>	<div>R1I-2</div> <div></div> <div>48"x30"</div>	<div>R1I-3A</div> <div></div> <div>60"x30"</div>	<div>R1I-4</div> <div></div> <div>60"x30"</div>	<div>W2I-5a</div> <div></div> <div>STD. 36"x36" FWY. 48"x48"</div>	<div>W1-I</div> <div></div> <div>STD. 36"x36" FWY. 48"x48"</div>	<div>W1-2</div> <div></div> <div>STD. 36"x36" FWY. 48"x48"</div>	
<div>W1-3</div> <div></div> <div>STD. 48"x48"</div>	<div>W1-4</div> <div></div> <div>STD. 48"x48"</div>	<div>W1-6</div> <div></div> <div>STD. 48"x24" SPECIAL 60"x30"</div>	<div>W1-8</div> <div></div> <div>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</div>	<div>W3-I</div> <div></div> <div>STD. 36"x36" SPECIAL 48"x48"</div>	<div>W3-2</div> <div></div> <div>STD. 36"x36" SPECIAL 48"x48"</div>	<div>W4-2</div> <div></div> <div>STD. 36"x36" FWY. 48"x48"</div>	
<div>W5-I</div> <div></div> <div>STD. 36"x36" SPECIAL 48"x48"</div>	<div>W6-3</div> <div></div> <div>EXPWY. 36"x36" SPECIAL 48"x48"</div>	<div>W8-7</div> <div></div> <div>EXPWY. 36"x36" FWY. 48"x48"</div>	<div>W9-2</div> <div></div> <div>STD. 36"x36" FWY. 48"x48"</div>	<div>W13-I</div> <div></div> <div>STD. 24"x24"</div>	<div>W20-I</div> <div></div> <div>STD. 48"x48"</div>	<div>W20-2</div> <div></div> <div>STD. 48"x48"</div>	<div>W20-3</div> <div></div> <div>STD. 48"x48"</div>
<div>W20-4</div> <div></div> <div>STD. 48"x48"</div>	<div>W20-5</div> <div></div> <div>STD. 48"x48"</div>	<div>W20-7a</div> <div></div> <div>18" 500 FEET 24" W16-2</div> <div>STD. 36"x36" FWY. 48"x48"</div>	<div>W2I-2</div> <div></div> <div>STD. 30"x30" SPECIAL 36"x36"</div>	<div>W2I-5</div> <div></div> <div>STD. 30"x30" SPECIAL 36"x36"</div>	<div>W24-I</div> <div></div> <div>STD. 36"x36"</div>	<div>W1-4b</div> <div></div> <div>STD. 48"x48"</div>	<div>R56-I</div> <div></div> <div>STD. 18"x18"</div>
<div>W8-II</div> <div></div> <div>STD. 36"x36" FWY. 48"x48"</div>	<div>W8-9</div> <div></div> <div>STD. 36"x36" FWY. 48"x48"</div>	<div>G20-I</div> <div></div> <div>60"x24"</div>	<div>G20-2</div> <div></div> <div>48"x24"</div>	<div>OM-3L OM-3R</div> <div></div> <div>12"x36"</div>	<div>M4-9</div> <div></div> <div>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</div>	<div>M4-10</div> <div></div> <div>48"x18"</div>	<div>R55-I</div> <div></div> <div>36"x60" • USE 6" C LETTERS •• USE 4" D LETTERS</div>

11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W2I-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	
DATE	REVISION	FILMED

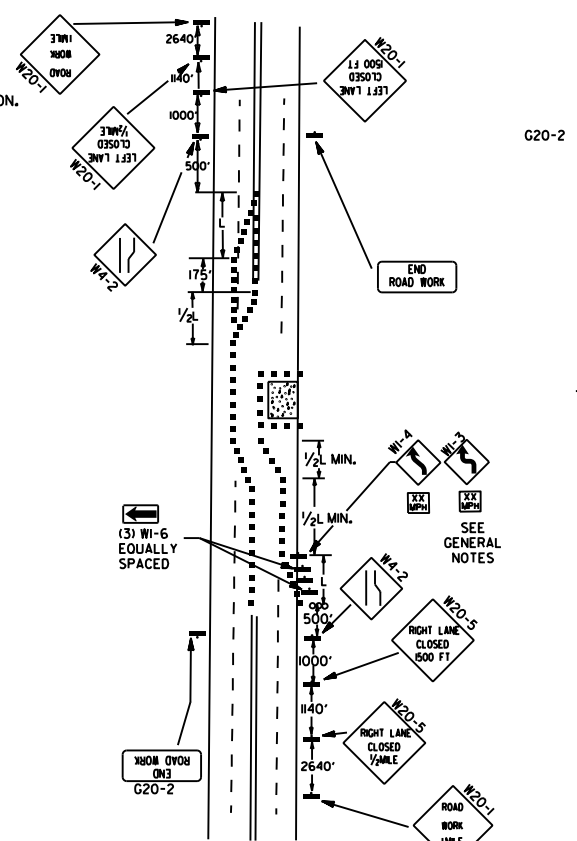
ARKANSAS STATE HIGHWAY COMMISSION  
STANDARD TRAFFIC CONTROLS  
FOR HIGHWAY CONSTRUCTION  
STANDARD DRAWING TC-1



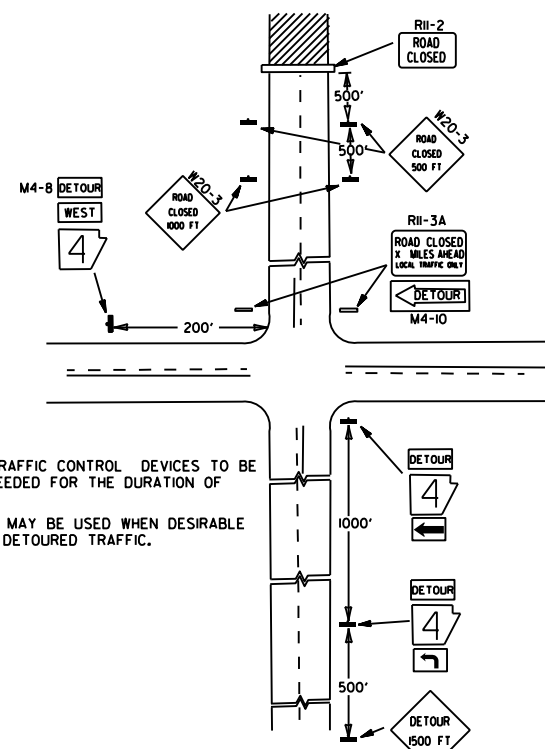
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



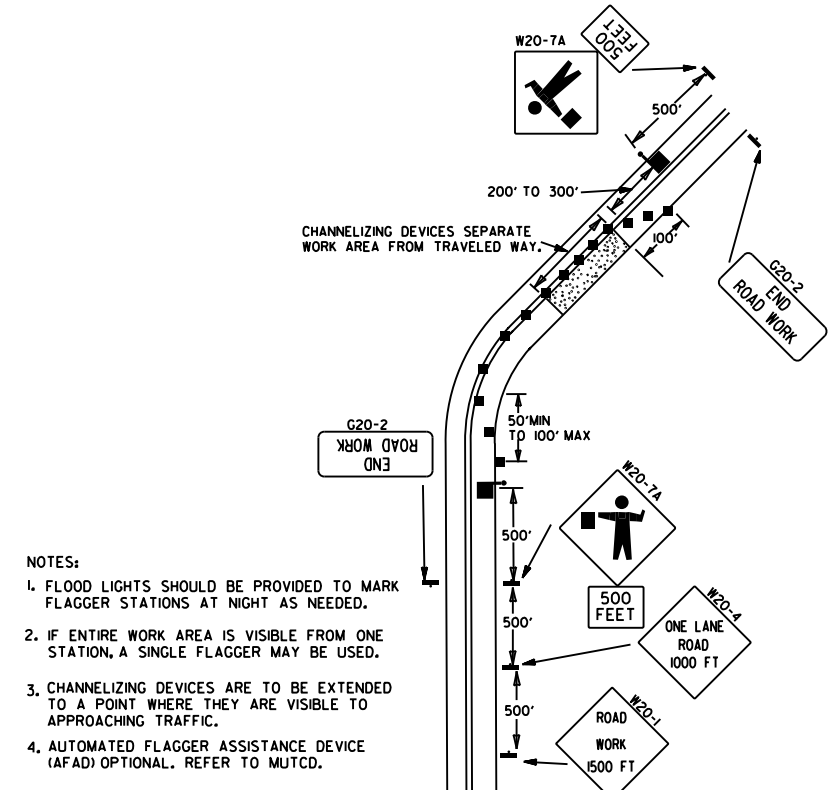
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



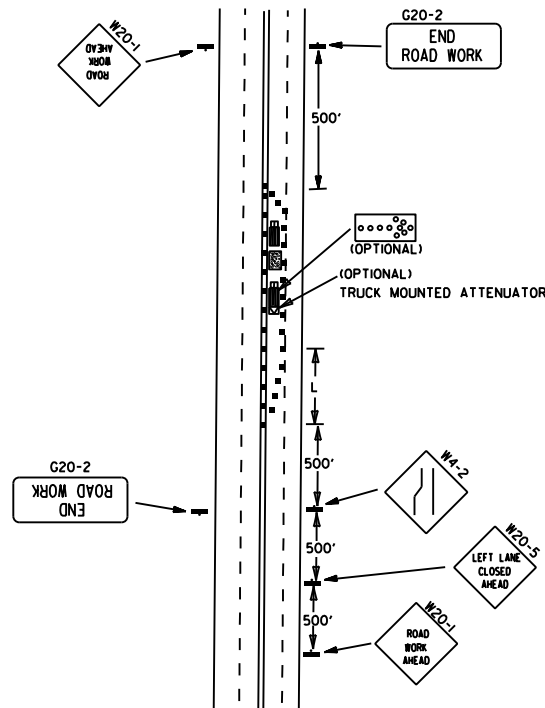
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



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

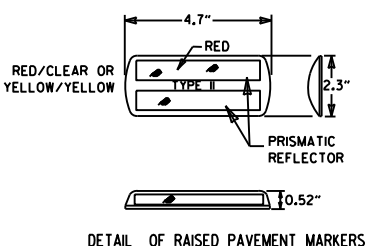


(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



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

- KEY:
- FLAGGER
  - POSITIVE BARRIER
  - ARROW PANEL (IF REQUIRED)
  - TYPE III BARRICADE
  - CHANNELIZING DEVICE
  - TRAFFIC DRUM
  - RAISED PAVEMENT MARKER



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:
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
  2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
  3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(65) SHALL BE OMITTED. ADDITIONAL R2-1(55)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
  4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
  5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
  6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
  7. 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. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
  8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.
  9. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

05-20-21	REVISED NOTE 7	
11-07-19	REVISED NOTE 1, ADDED NOTE 9	
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	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2

(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

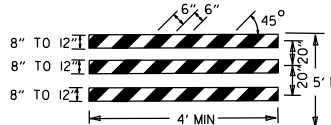
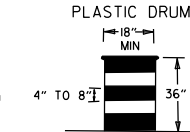
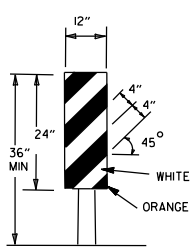
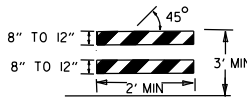
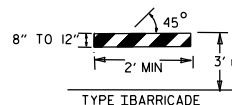
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

#### CHANNELIZING DEVICES



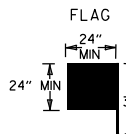
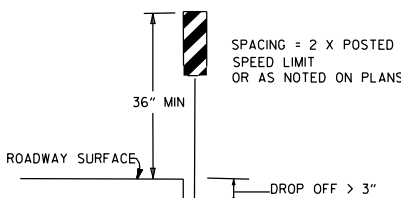
• WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

#### CONES



NOTE:  
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.

#### VERTICAL PANEL PLACEMENT



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

#### 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-(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(XX) 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-(65) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(XX) 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 (1/2 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 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. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
- ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

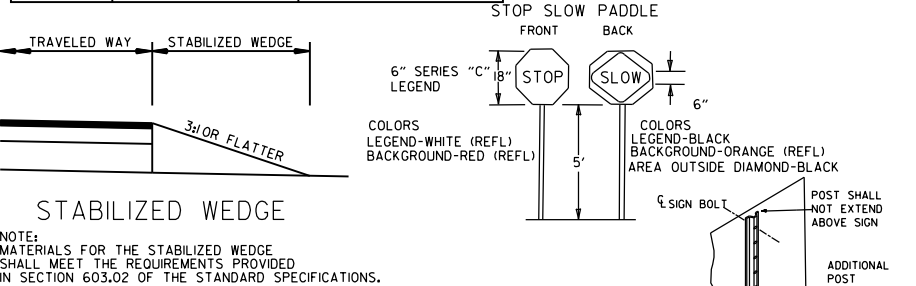
(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

#### TRAFFIC CONTROL DEVICES

VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
≤ 3"	CENTERLINE	STANDARD LANE CLOSURE <sup>(6)</sup>	STANDARD LANE CLOSURE <sup>(6)</sup>
> 3"	CENTERLINE	STANDARD LANE CLOSURE <sup>(6)</sup>	STANDARD LANE CLOSURE <sup>(6)</sup>
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS <sup>(1)</sup>	W8-9 AND TRAFFIC DRUMS <sup>(1)</sup>
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>
> 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS <sup>(3)</sup>
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER <sup>(4)</sup> & EDGE LINES	PRECAST CONCRETE BARRIER <sup>(4)</sup> & EDGE LINES

INTERSTATE		
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES

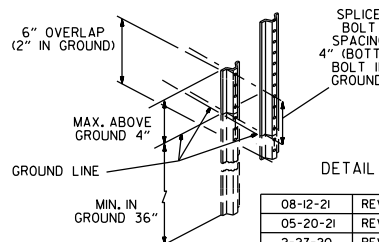
INTERSTATE AND NON-INTERSTATE		
FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS



#### STABILIZED WEDGE

NOTE:  
MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

NOTES:  
USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. 5HS-2)  
NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARriage BOLTS.  
SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



#### DETAIL OF SPLICES

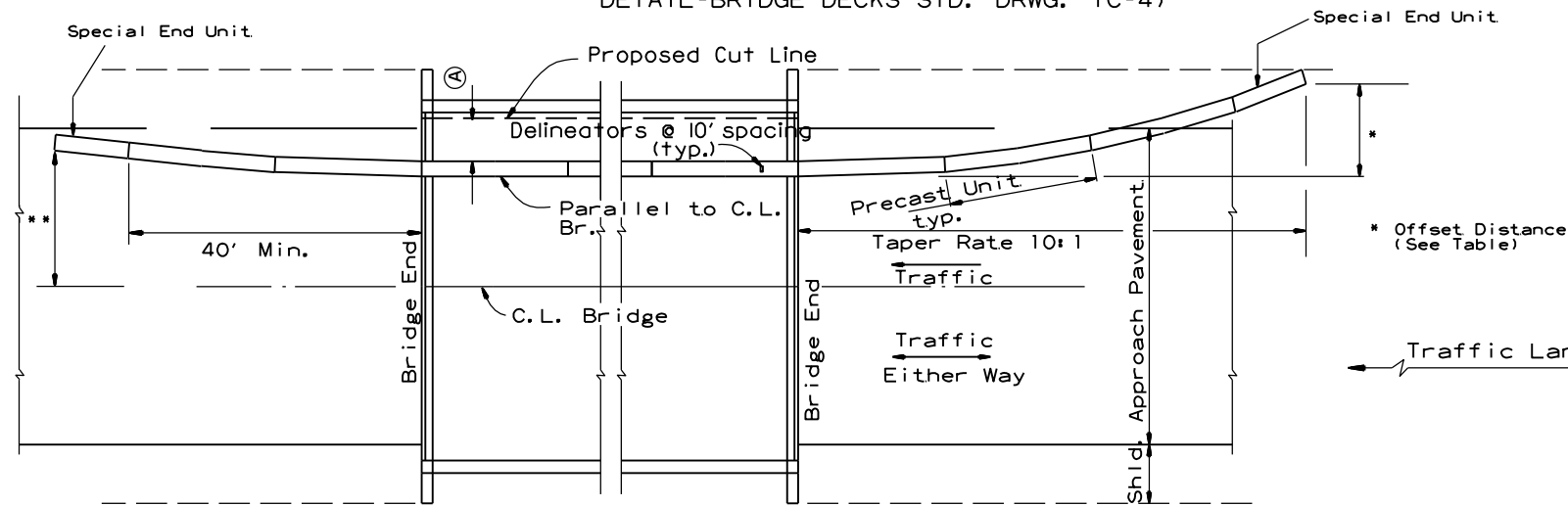
DATE	REVISION	FILED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE II	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-18 & 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



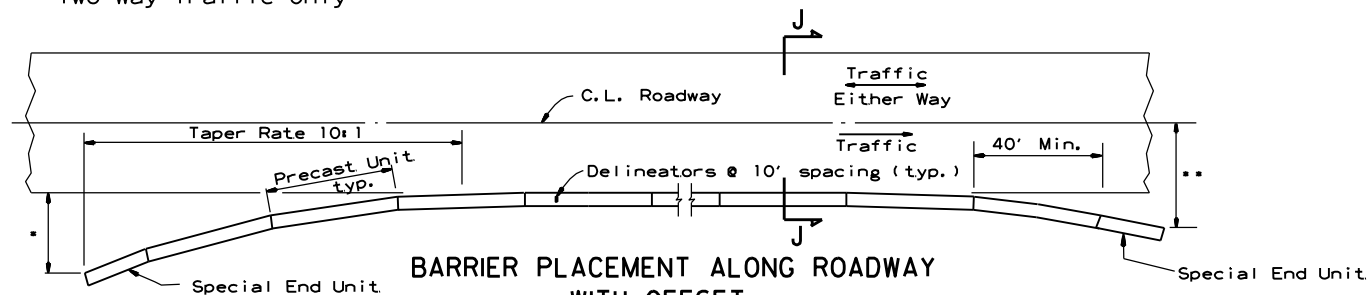
- (A) 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



**BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET**

No Scale

\*\* Offset Distance for Two Way Traffic Only



**BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET**

No Scale

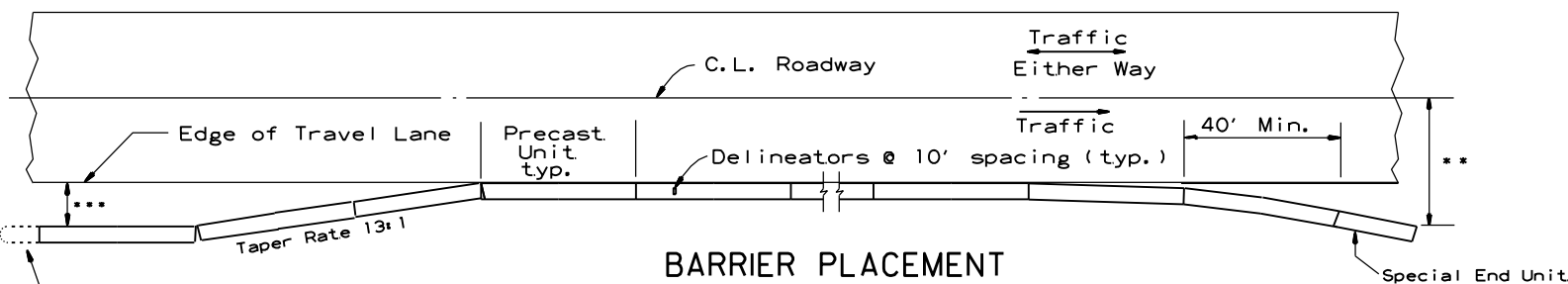
\* Offset Distance (See Table)

\*\* Offset Distance For Two Way Traffic Only

**Offset Distance Table**

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

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

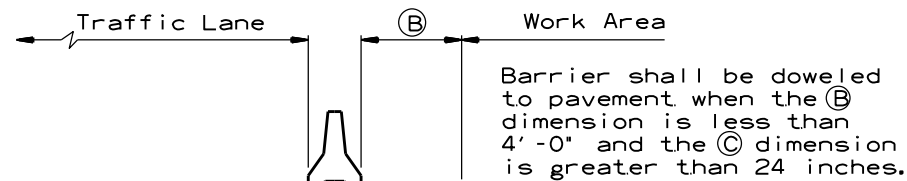


**BARRIER PLACEMENT WITH ATTENUATOR**

No Scale

\*\* Offset Distance For Two Way Traffic Only

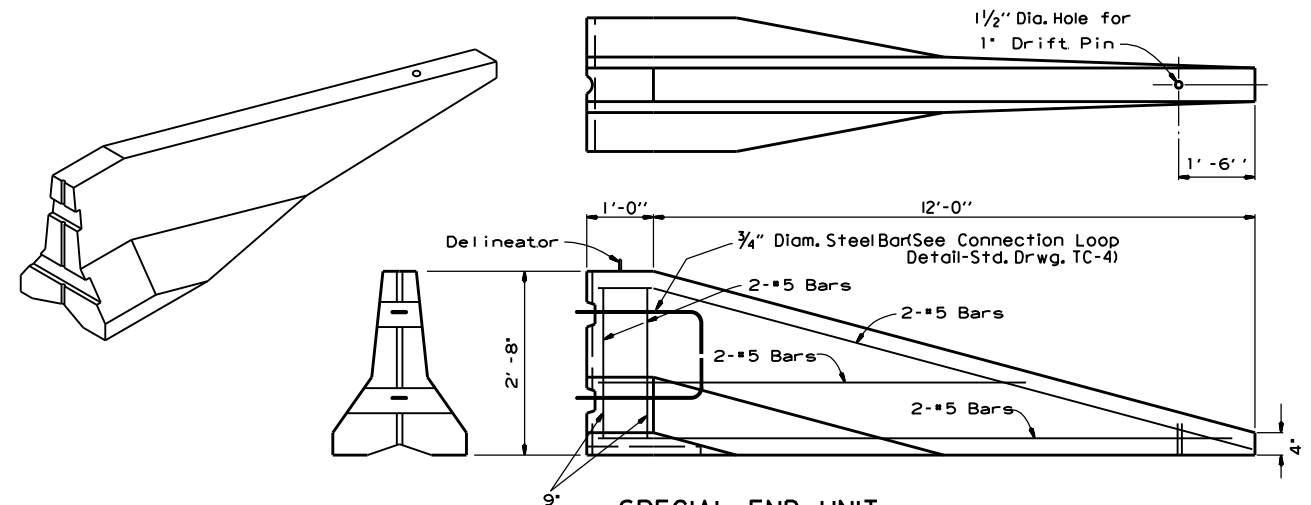
\*\*\*Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator



**SECTION J-J**

No Scale

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



**SPECIAL END UNIT**

No Scale

#### General Notes

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

ARIZONA STATE HIGHWAY COMMISSION		
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER		
DATE	REVISION	FILMED
11-07-19	REVISED NOTE	
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	
STANDARD DRAWING TC-5		

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



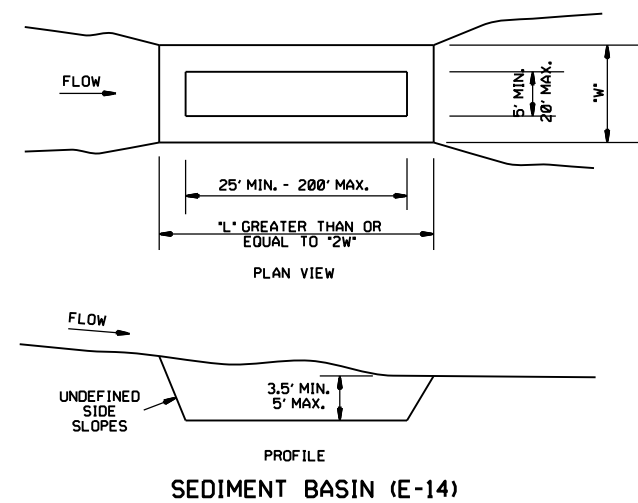
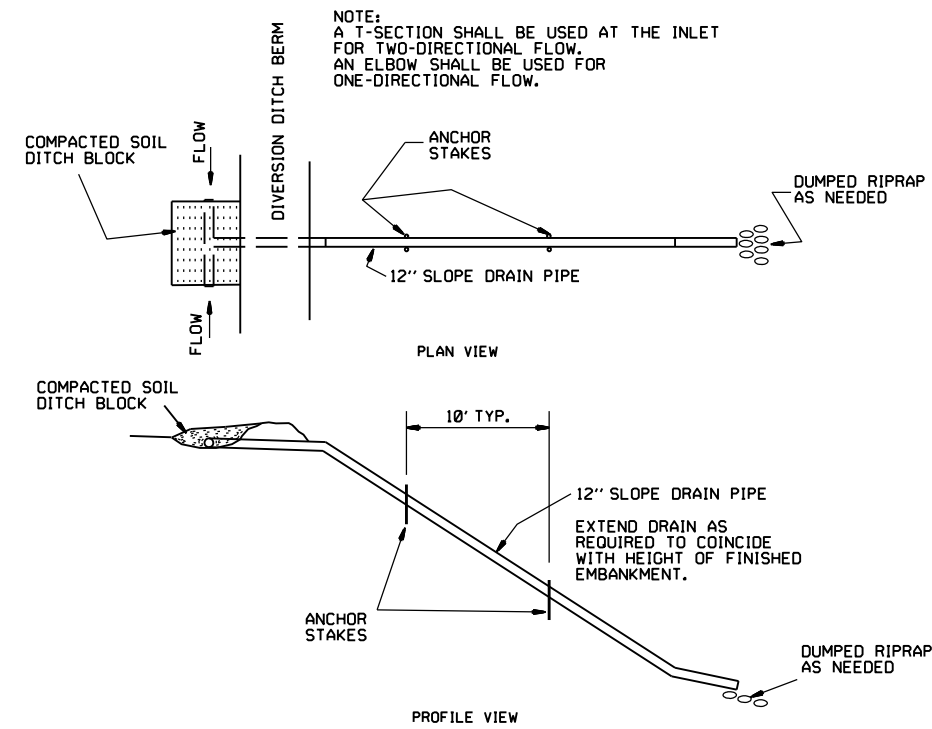
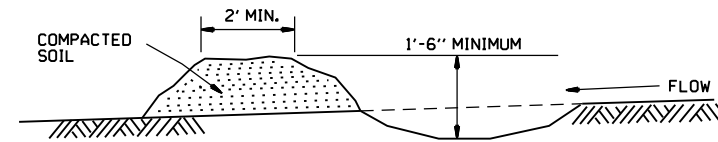
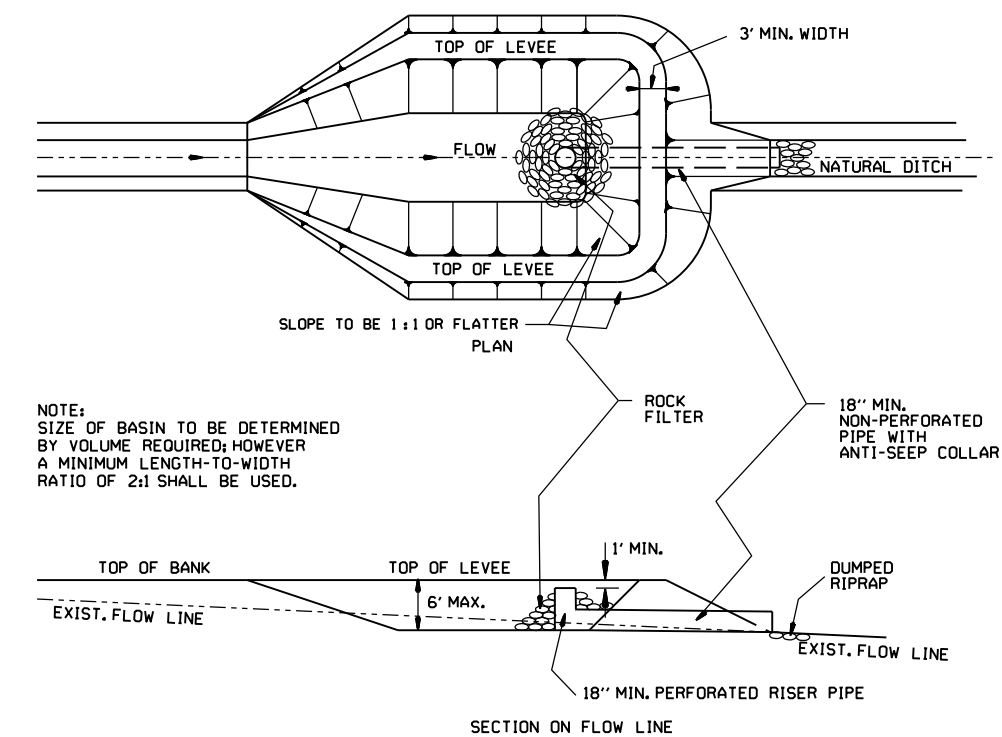
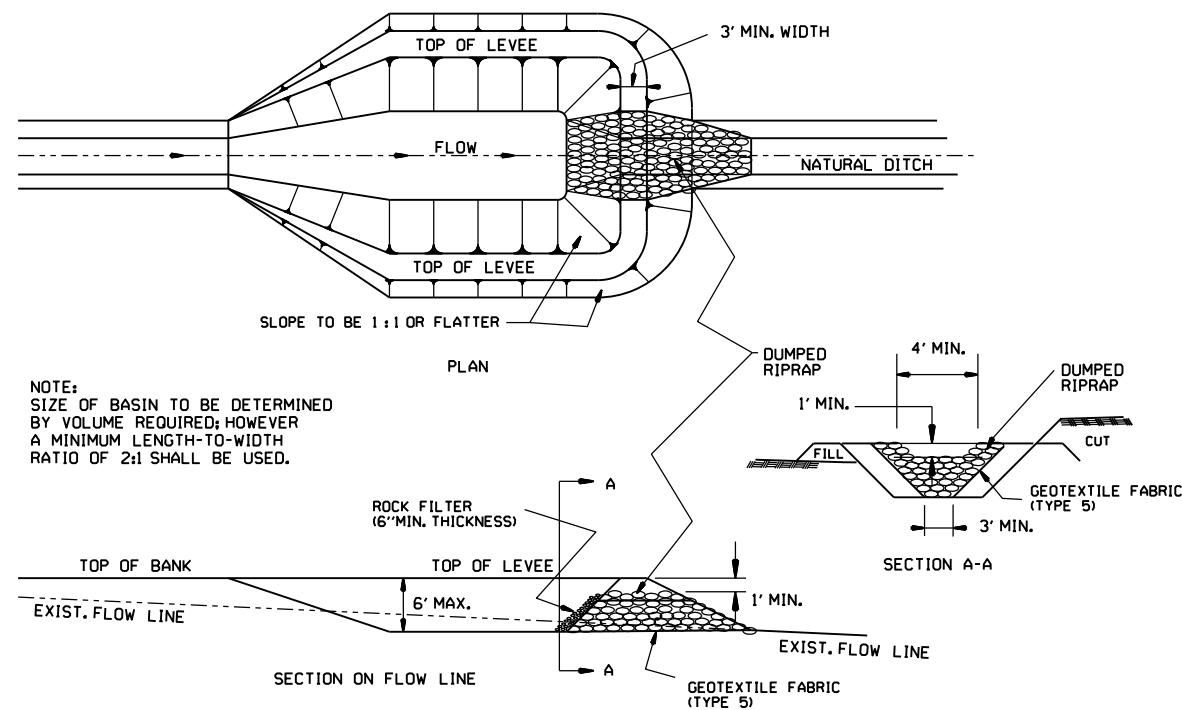
1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.
3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 125 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBSIDIARY TO "FILTER SOCK (18)".
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG, WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.
5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT, REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.



### COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

11-16-17	ADDED FILTER SOCK E-3 AND E-13		ARKANSAS STATE HIGHWAY COMMISSION  TEMPORARY EROSION CONTROL DEVICES  STANDARD DRAWING TEC-1
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK		
11-18-98	ADDED NOTES		
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
07-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95	
07-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC		
06-02-94	REVISED E-1, 4, 7 & 11 DELETED E-2 & 3	6-2-94	
04-01-93	REDRAWN		
10-01-92	REDRAWN		
08-02-76	ISSUED R.D.M.	298-7-28-76	
DATF	REVISION	FILMED	



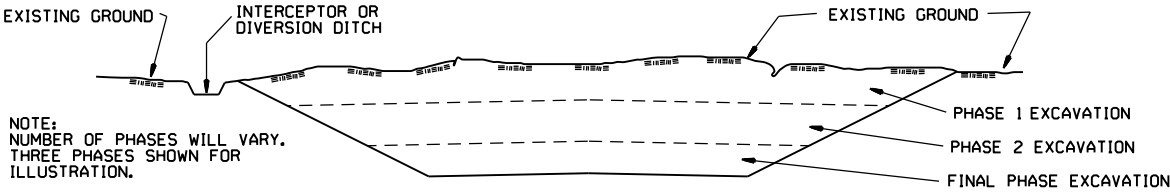


			ARKANSAS STATE HIGHWAY COMMISSION
			TEMPORARY EROSION CONTROL DEVICES
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13		STANDARD DRAWING TEC-2
4-1-93	ISSUED		
DATE	REVISION	FILMED	

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

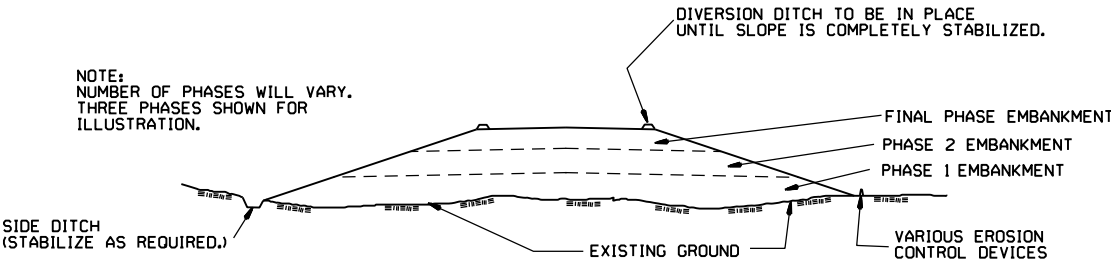


GENERAL NOTE

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

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

EMBANKMENT

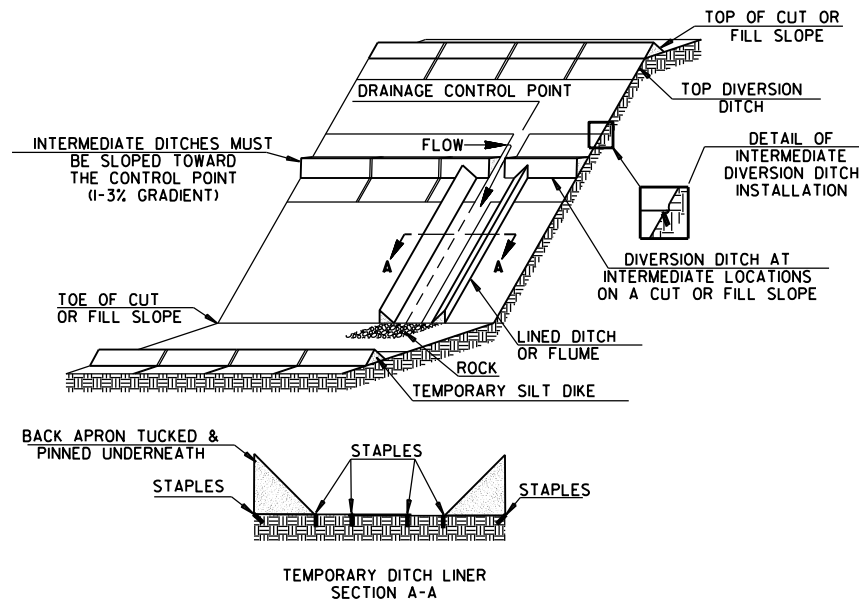


GENERAL NOTE

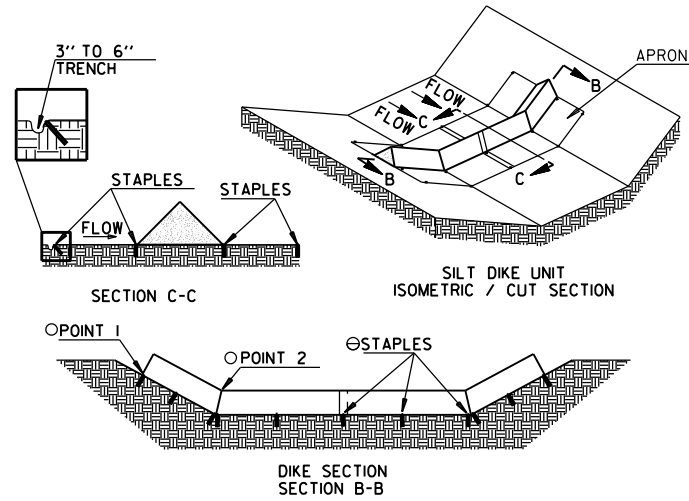
ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

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

			ARKANSAS STATE HIGHWAY COMMISSION
			TEMPORARY EROSION CONTROL DEVICES
11-03-94	CORRECTED SPELLING		STANDARD DRAWING TEC-3
6-2-94	Drawn & Issued	6-2-94	
DATE	REVISION	FILMED	

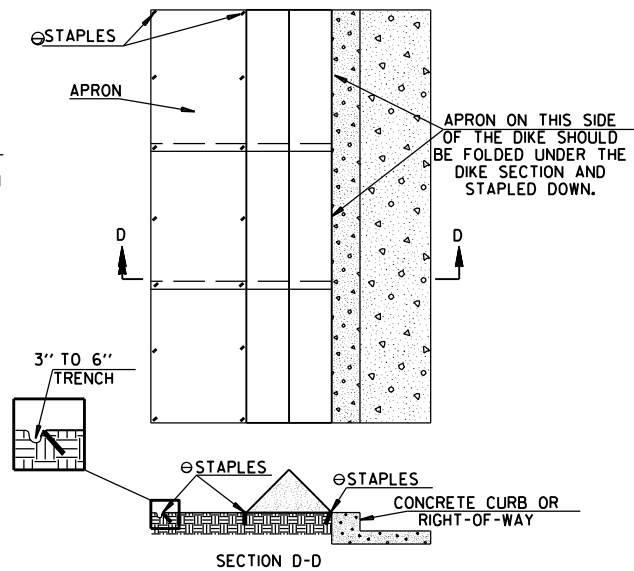


TRIANGULAR SILT DIKE INSTALLATION  
FOR  
DIVERSION DITCH AND/OR DITCH LINER

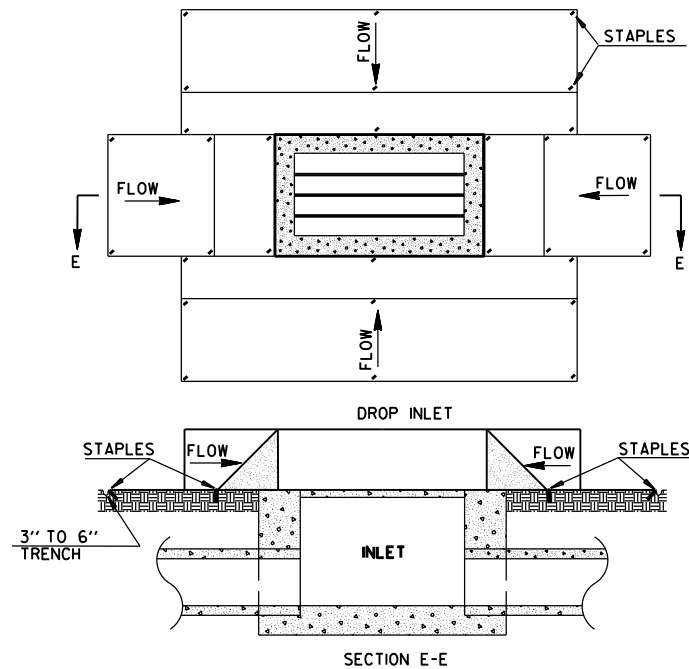


TRIANGULAR SILT DIKE INSTALLATION  
FOR  
ROADWAY DITCH OR DRAINAGE DITCH

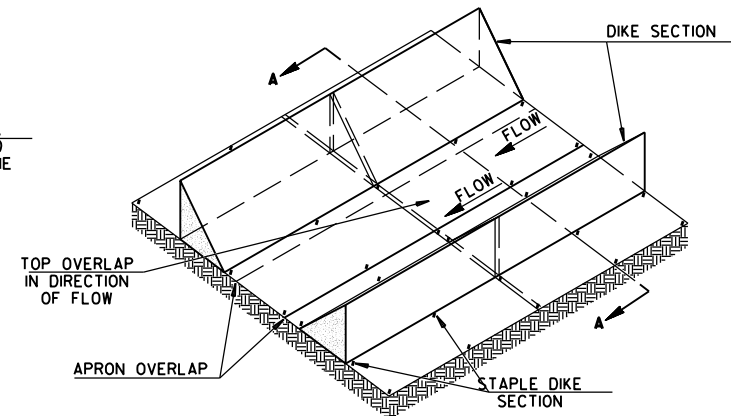
○ POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.  
⊖ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



TRIANGULAR SILT DIKE INSTALLATION  
FOR  
CONTINUOUS BARRIER



TRIANGULAR SILT DIKE INSTALLATION  
FOR  
DROP INLETS



TRIANGULAR SILT DIKE INSTALLATION  
FOR  
TEMPORARY DITCH LINER

#### GENERAL NOTES

1. THIS WORK SHALL CONSIST OF FURNISHING, INSTALLING, AND MAINTAINING THE TRIANGULAR SILT DIKE. THE DIKES SHALL BE USED AS A CONTINUOUS LINE BARRIER AT THE TOE OF SLOPE OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED AND LOCATED AS SOON AS CONSTRUCTION WILL ALLOW OR AS DIRECTED BY THE ENGINEER.
2. TRIANGULAR SILT DIKE SHALL BE TRIANGULAR SHAPED HAVING A HEIGHT OF AT LEAST 8" TO 10" IN THE CENTER WITH EQUAL SIDES AND A 16" TO 20" BASE. THE TRIANGULAR SHAPED INNER MATERIAL SHALL BE URETHANE FOAM. THE OUTER COVER SHALL BE A WOVEN GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL & ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE 24" TO 36". THIS FABRIC SHOULD BE MILDEW RESISTANT, ROT-PROOF AND RESISTANT TO HEAT AND ULTRAVIOLET RADIATION MEETING REQUIREMENTS FOR SEDIMENT CONTROL IN AASHTO M288. THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE STAPLES. THE STAPLES SHALL BE NO. 11 GAUGE WIRE AND BE AT LEAST 6" TO 8" LONG. STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.
3. THE CONTRACTOR SHALL INSPECT ALL DIKES AFTER EACH RAINFALL EVENT OF AT LEAST 0.5" OR GREATER. ANY DEFICIENCIES OR DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR. ACCUMULATED SILT OR DEBRIS SHALL BE REMOVED AND RELOCATED AS DIRECTED BY THE ENGINEER. IF THE DIKES ARE DAMAGED OR INADVERTENTLY MOVED DURING THE SILT REMOVAL PROCESS, THE CONTRACTOR SHALL IMMEDIATELY REPLACE AFTER DAMAGE OCCURS.

SYMBOL  
TO BE USED TO DENOTE  
DEVICE ON PLANS



NOTE: SILT DIKE SHOULD ONLY BE USED FOR  
DROP INLETS IN SUMP LOCATIONS.

ARKANSAS STATE HIGHWAY COMMISSION		
TEMPORARY EROSION CONTROL DEVICES		
7-26-12 12-15-11 DATE	REVISED GENERAL NOTE 2. ISSUED	REVISION
		FILMED
STANDARD DRAWING TEC-4		