

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	1	100
				(2) HWY 165 STR. & APPRS. (LONOKE CO.) (S)				

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 165

STR. & APPRS.

(LONOKE CO.) (S)

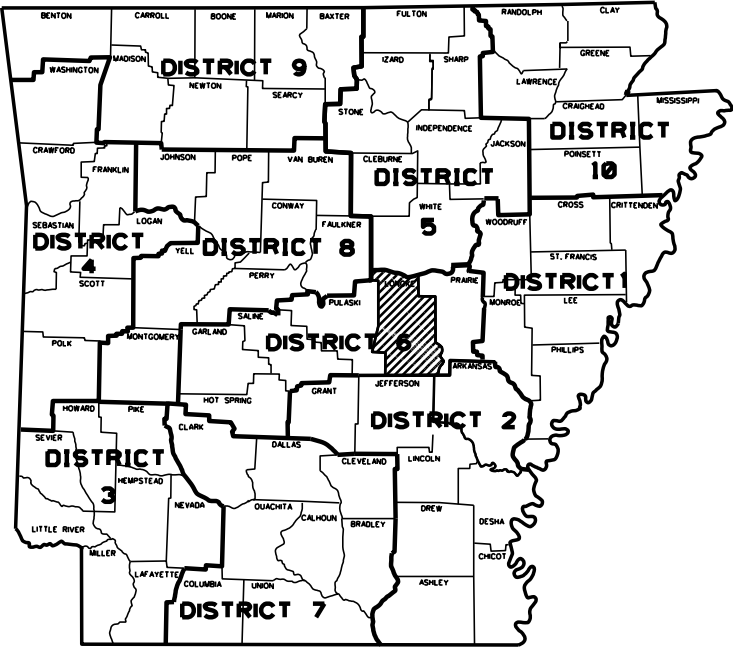
LONOKE COUNTY

ROUTE 165 SECTION 8

JOB 061473

NOT TO SCALE

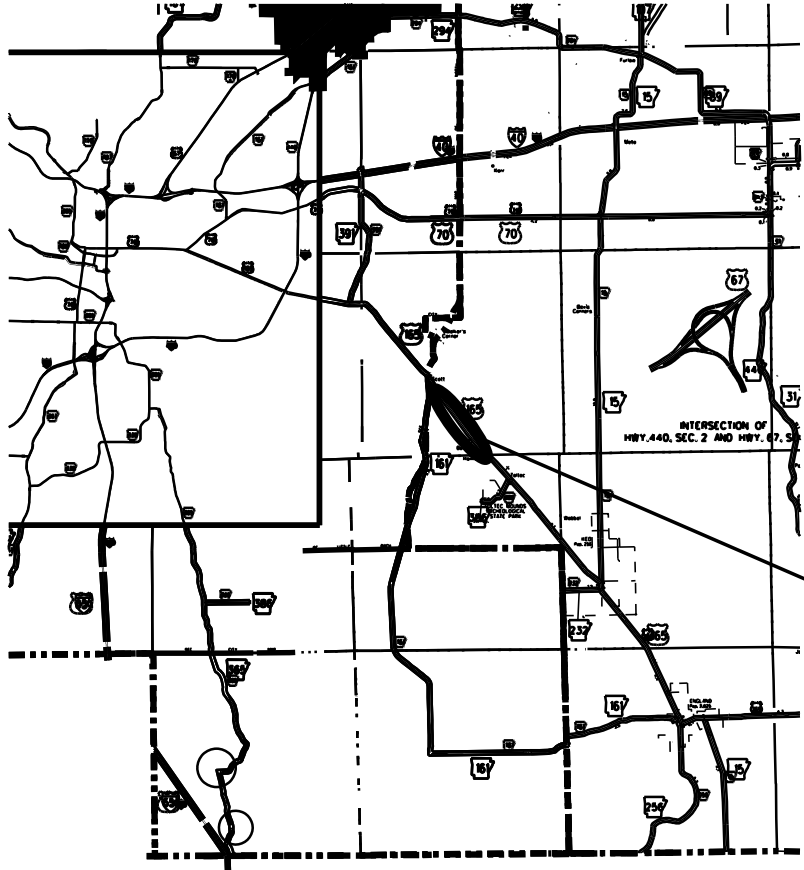
R10W



ARKANSAS HIGHWAY DIST. 6

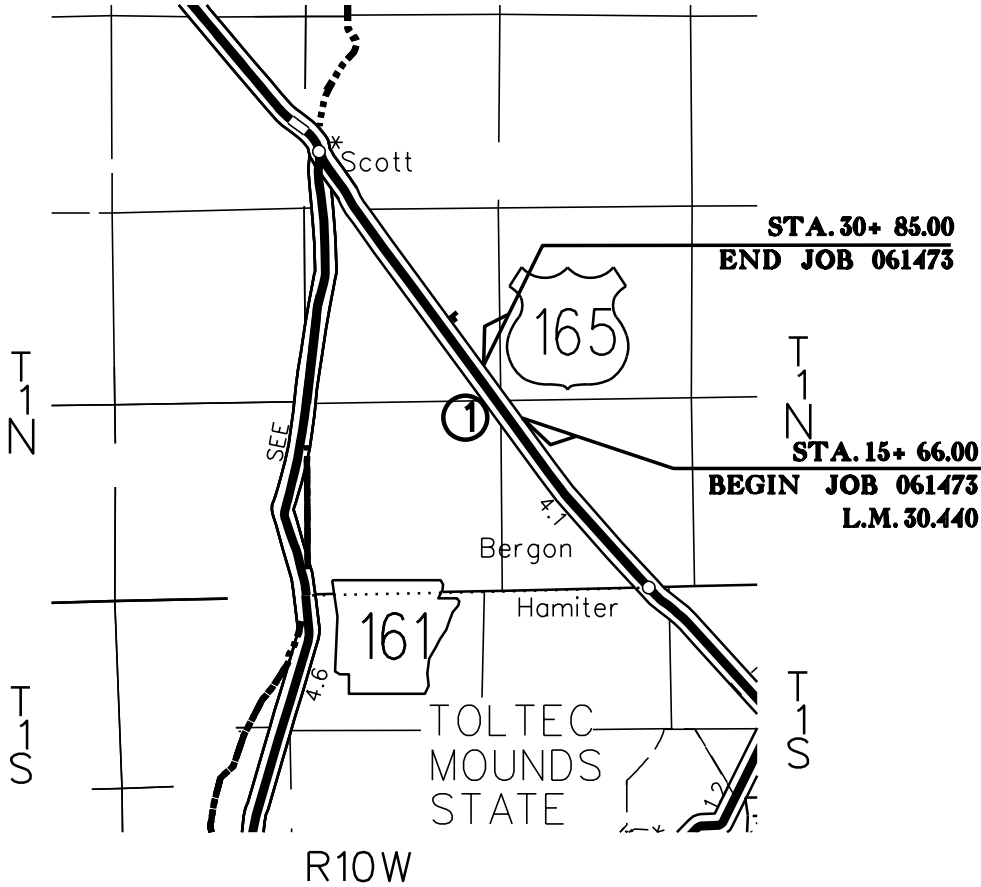
DESIGN TRAFFIC DATA

DESIGN YEAR	-----	2042
2022 ADT	-----	7600
2042 ADT	-----	8500
2042 DHV	-----	760
DIRECTIONAL DISTRIBUTION	-----	60%
TRUCKS	-----	10%
DESIGN SPEED	-----	60 MPH



PROJECT
LOCATION

LONOKE COUNTY



BRIDGE CONSTRUCTION DATA

- ① STA. 21+85.20 BRIDGE END
BRIDGE NO. 07387
134'-0" COMPOSITE W-BEAM UNIT
40' CLEAR ROADWAY
136'-2" BRIDGE LENGTH
STA. 23+21.37 BRIDGE END

HWY. 165 PROJECT COORDINATES

	BEGIN	MID-POINT	END
LATITUDE	N 34° 41' 03.46"	N 34° 41' 09.65"	N 34° 41' 15.84"
LONGITUDE	W 92° 05' 12.66"	W 92° 05' 17.82"	W 92° 05' 22.97"
STATION	15+66.00	23+25.50	30+85.00

JOB 061473

GROSS LENGTH OF PROJECT	1519.00	FT	OR	0.288	MILES
NET LENGTH OF ROADWAY	1382.83	FT	OR	0.262	MILES
NET LENGTH OF BRIDGE	136.17	FT	OR	0.026	MILES
NET LENGTH OF PROJECT	1519.00	FT	OR	0.288	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 4/10/22
CHIEF ENGR & CONST

BM165BRIDGE_0027/28/2022

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 - 9	SPECIAL DETAILS			
10 - 12	TEMPORARY EROSION CONTROL DETAILS			
13 - 16	MAINTENANCE OF TRAFFIC DETAILS			
17	PERMANENT PAVEMENT MARKING DETAILS			
18 - 20	QUANTITIES			
21	SCHEDULE OF BRIDGE QUANTITIES	07387	58602	
22	SUMMARY OF QUANTITIES AND REVISIONS			
23 - 24	SURVEY CONTROL DETAILS			
25	PLAN AND PROFILE SHEET - HWY 165			
26 - 27	PLAN AND PROFILE SHEETS - DETOUR			
28	PLAN AND PROFILE SHEET - CANAL 1000			
29	PLAN AND PROFILE SHEET - SIPHON			
30	LAYOUT OF BRIDGE HWY 165 OVER CANAL 1000 (SHEET 1 OF 3)	07387	58603	
31	LAYOUT OF BRIDGE HWY 165 OVER CANAL 1000 (SHEET 2 OF 3)	07387	58604	
32	LAYOUT OF BRIDGE HWY 165 OVER CANAL 1000 (SHEET 3 OF 3)	07387	58605	
33	DETAILS OF END BENTS (SHEET 1 OF 2)	07387	58606	
34	DETAILS OF END BENTS (SHEET 2 OF 2)	07387	58607	
35	DETAILS OF INTERMEDIATE BENTS (SHEET 1 OF 2)	07387	58608	
36	DETAILS OF INTERMEDIATE BENTS (SHEET 2 OF 2)	07387	58609	
37	ELASTOMERIC BEARINGS DETAILS	07387	58610	
38	DETAILS OF 134'-0" CONTINUOUS W-BEAM UNIT (SHEET 1 OF 6)	07387	58611	
39	DETAILS OF 134'-0" CONTINUOUS W-BEAM UNIT (SHEET 2 OF 6)	07387	58612	
40	DETAILS OF 134'-0" CONTINUOUS W-BEAM UNIT (SHEET 3 OF 6)	07387	58613	
41	DETAILS OF 134'-0" CONTINUOUS W-BEAM UNIT (SHEET 4 OF 6)	07387	58614	
42	DETAILS OF 134'-0" CONTINUOUS W-BEAM UNIT (SHEET 5 OF 6)	07387	58615	
43	DETAILS OF 134'-0" CONTINUOUS W-BEAM UNIT (SHEET 6 OF 6)	07387	58616	
44	DETAILS OF TYPE SPECIAL APPROACH GUTTERS	07387	58616A	
45 - 74	NOT USED			
75 - 100	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	3-24-20
STANDARD 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	5-19-22
GUARDRAIL DETAILS		GR-8	11-7-19
GUARDRAIL DETAILS		GR-9	11-7-19
GUARDRAIL DETAILS		GR-10	11-7-19
GUARDRAIL DETAILS		GR-11	11-7-19
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	2-27-20
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	5-20-21
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:			
1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.			
2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.			
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.			
4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.			
5. 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.			
6. 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.			
7. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENTENGINEER.			

DATE
REVISED

07/28/22

DATE
FILMED

DATE
REVISED

DATE
FILMED

FED.RD.
DIST.NO.

6

STATE

ARK.

FED.NO PROJ.NO.

SHEET
NO.

TOTAL
SHEETS

JOB NO.

061473

2

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

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
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 OF 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
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 ELASTOMETRIC BEARINGS
808-2	ELASTOMETRIC BEARINGS
JOB 061473	AIRPORT CLEARANCE REQUIREMENTS
JOB 061473	BIDDING REQUIREMENTS AND CONDITIONS
JOB 061473	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 061473	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 061473	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 061473	CLAY LINER
JOB 061473	COLD MILLING - COUNTY PROPERTY
JOB 061473	CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB 061473	COORDINATION OF WORK
JOB 061473	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 061473	ESTABLISHING CONTRACT TIME – WORKING DAY CONTRACT
JOB 061473	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 061473	LONGITUDINAL JOINT DENSITIES FOR ACHM SURFACE COURSES
JOB 061473	MANDATORY ELECTRONIC CONTRACT
JOB 061473	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 061473	PARTNERING REQUIREMENTS
JOB 061473	PIPE SIPHONS
JOB 061473	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 061473	PRICE ADJUSTMENT FOR FUEL
JOB 061473	SHORING FOR CULVERTS
JOB 061473	SOIL STABILIZATION
JOB 061473	STORM WATER POLLUTION PREVENTION PLAN
JOB 061473	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 061473	UNPAINTED WEATHERING STRUCTURAL STEEL
JOB 061473	UTILITY ADJUSTMENTS
JOB 061473	VALUE ENGINEERING
JOB 061473	WARM MIX ASPHALT

GENERAL NOTES CONT'D:

8. 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/](http://www.mvm.usace.army.mil/missions/projects/bayou-meto-basin-project/reports/)

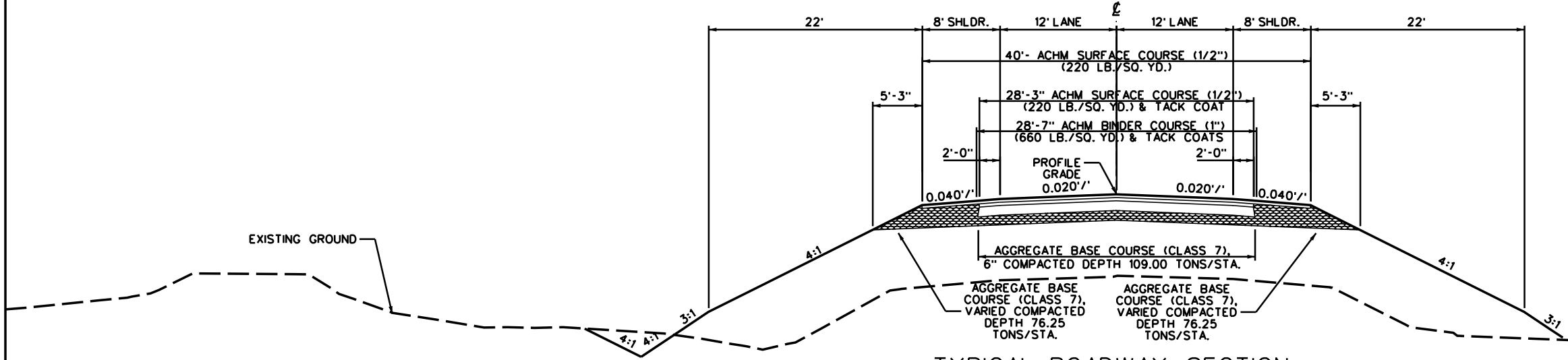
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.

10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

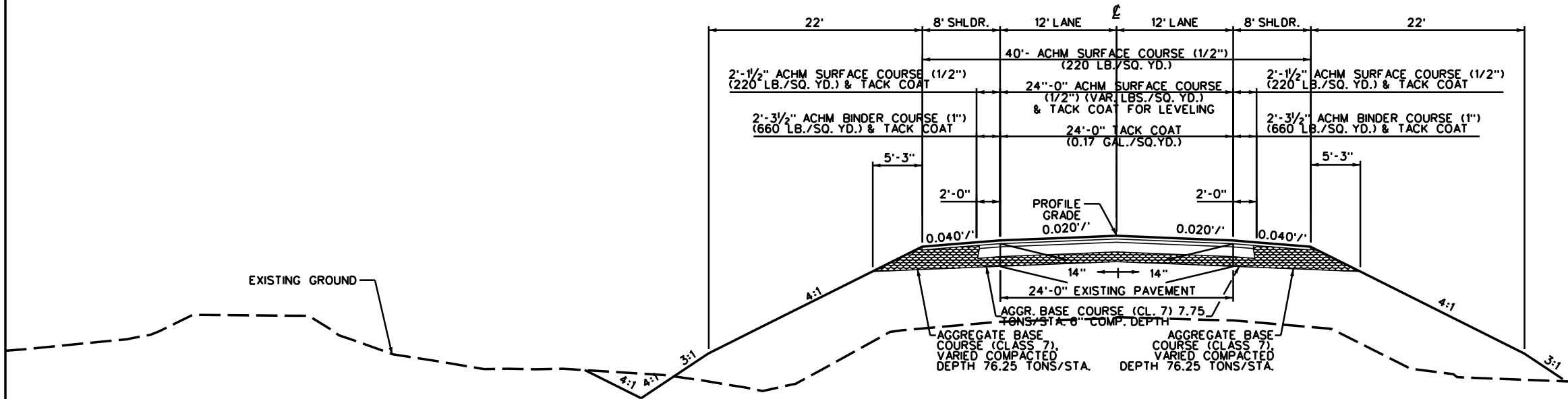
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	3	100

2 TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL ROADWAY SECTION
STA. 17+29.00 TO 21+85.20
STA. 23+21.37 TO 29+21.00

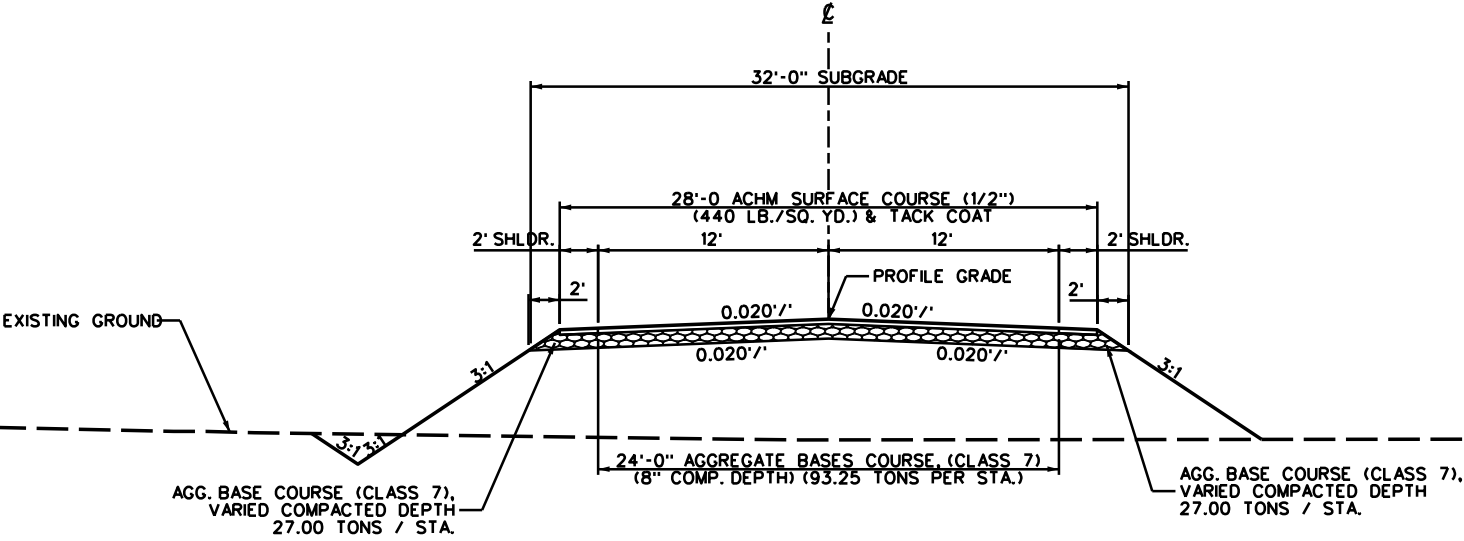


TYPICAL ROADWAY SECTION
STA. 15+66.00 TO 17+29.00
STA. 29+21.00 TO 30+85.00

•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.

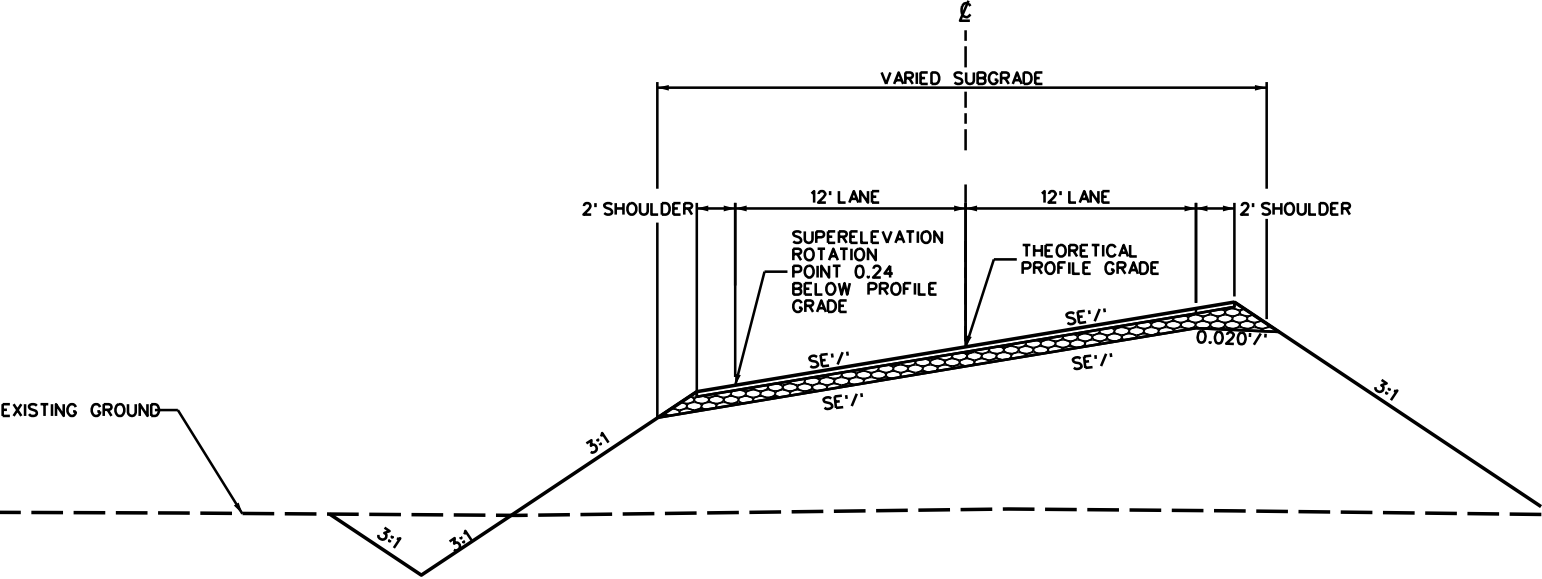
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 061473	4	100

2 TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL DETOUR SECTION - NORMAL CROWN
STA. 13+17.10 TO 17+90.42
STA. 27+23.06 TO 32+84.43

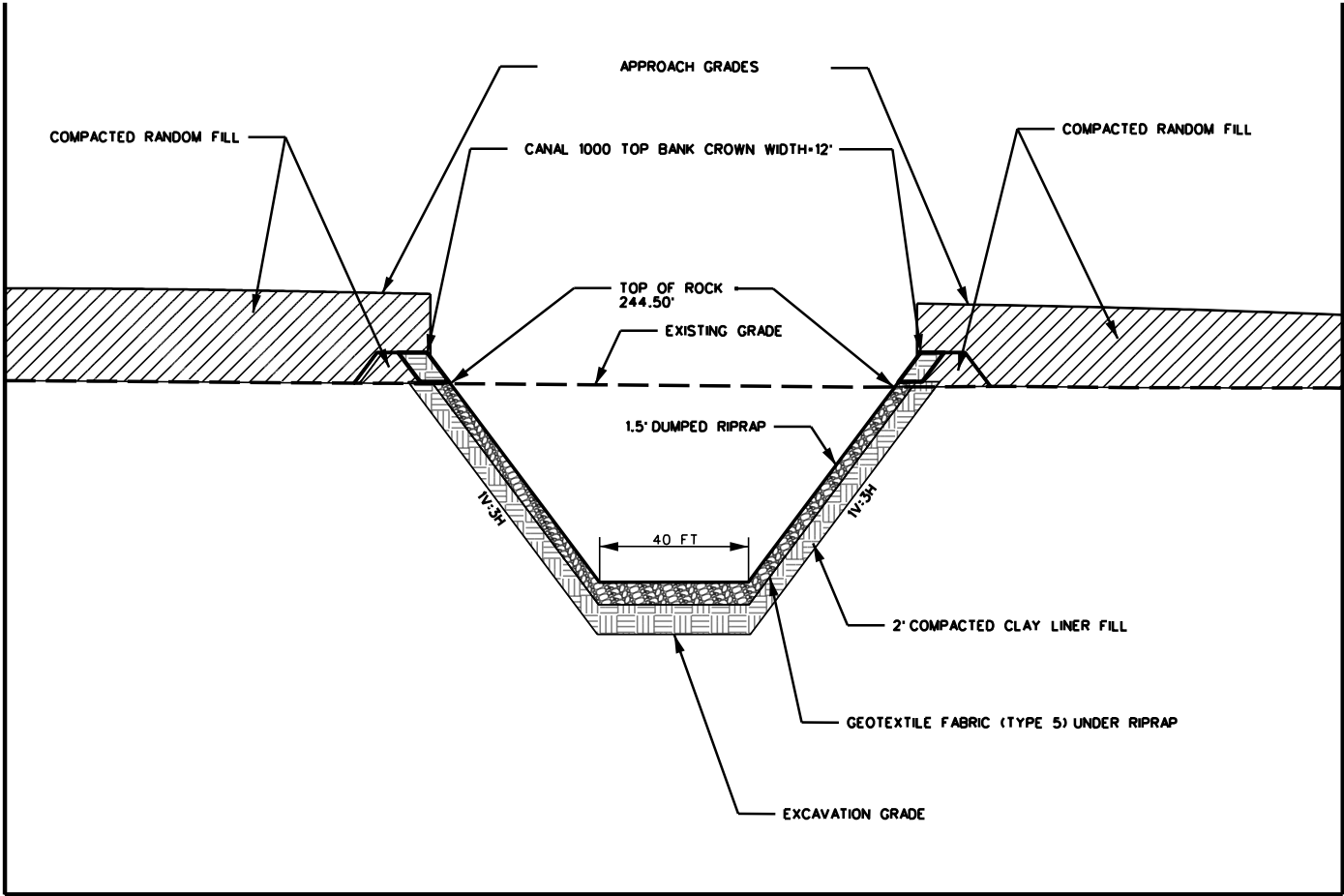
•NOTES:
REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
THE THICKNESS OF THE AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.



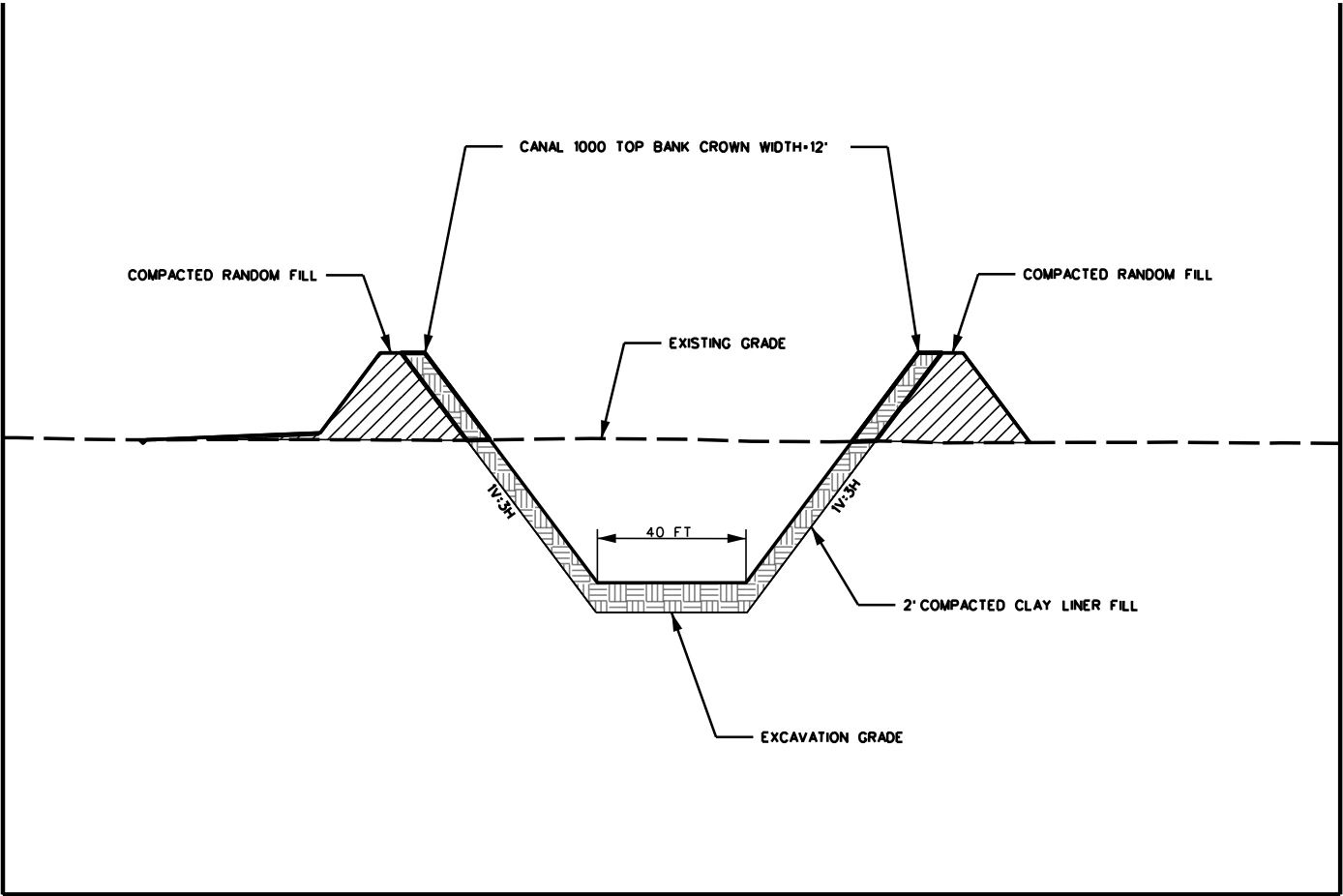
TYPICAL DETOUR SECTION - SUPERELEVATION
STA. 17+90.42 TO 27+23.06

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. 061473		5	100	

2 TYPICAL SECTIONS OF IMPROVEMENT

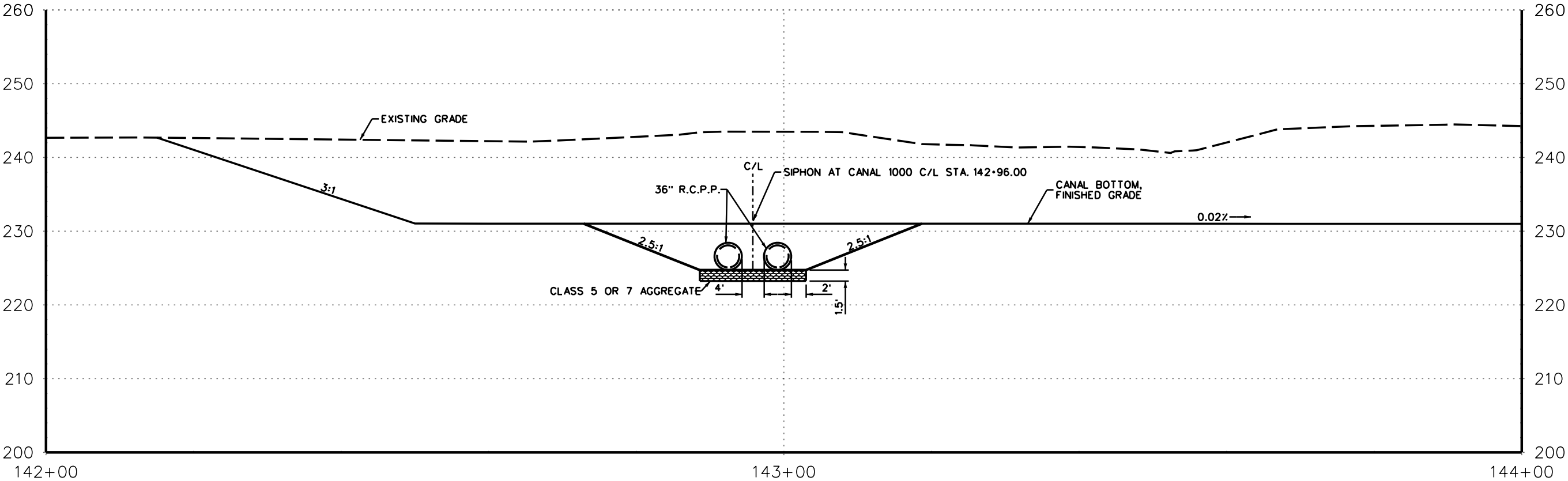


TYPICAL CANAL SECTION STA 143+38.00 TO 144+62.00
N.T.S.



TYPICAL CANAL SECTION STA 142+50.00 TO 143+38.00 & STA 144+62.00 TO
146+50.00
N.T.S.

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.		061473	6	100
				2 SPECIAL DETAILS				



SIPHON TYPICAL SECTION
N.T.S.

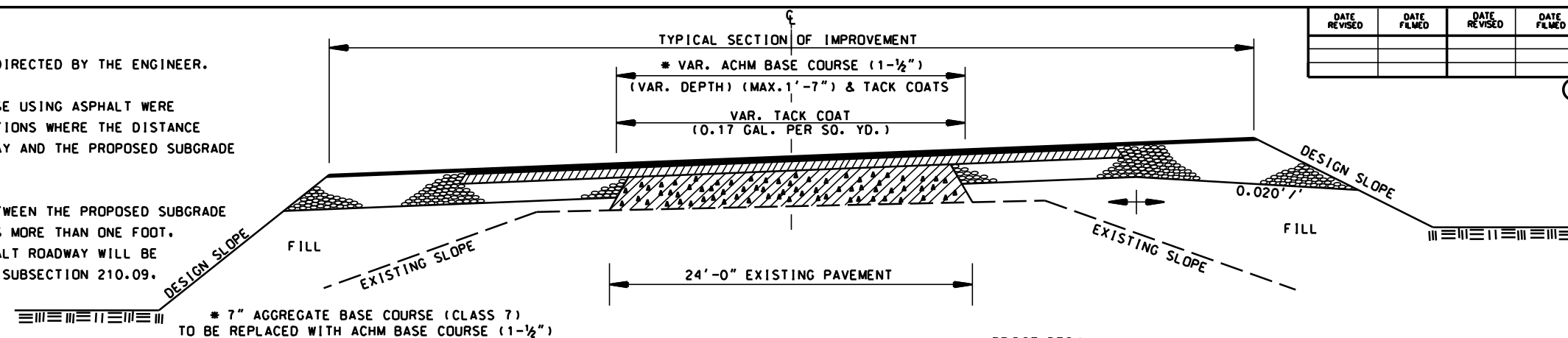
NOTE:
1. BEDDING: CLASS 5 OR 7 AGGREGATE SHOULD BE USED. 18" OF BEDDING BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED.
2. TYPE II INSTALLATION SHOULD BE USED FOR R.C.P.P. AS PRESCRIBED ON PCC-1 EXCEPT AS NOTED ABOVE.
3. ALL STOCKPILES MUST BE A MINIMUM OF 40' FROM TEMPORARY EXCAVATION SLOPES THAT ARE REQUIRED FOR INSTALLATION OF SIPHONS.

SPECIAL DETAILS

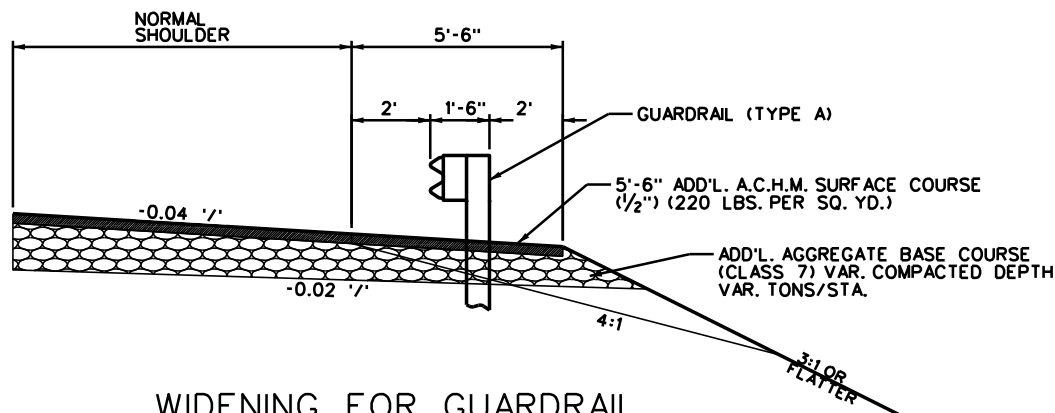
NOTES:

- (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.

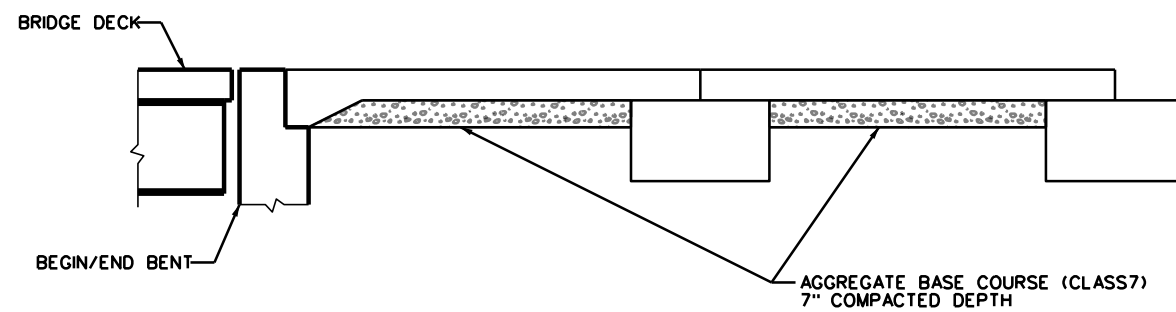
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473	7	100	
SPECIAL DETAILS								



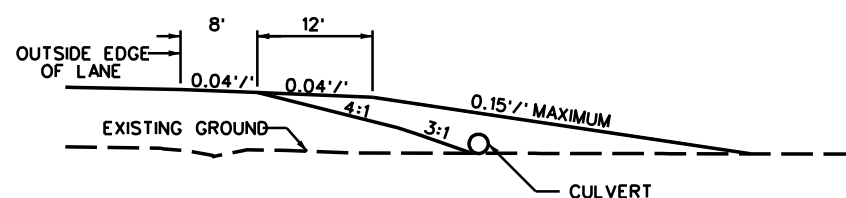
METHOD OF RAISING GRADE



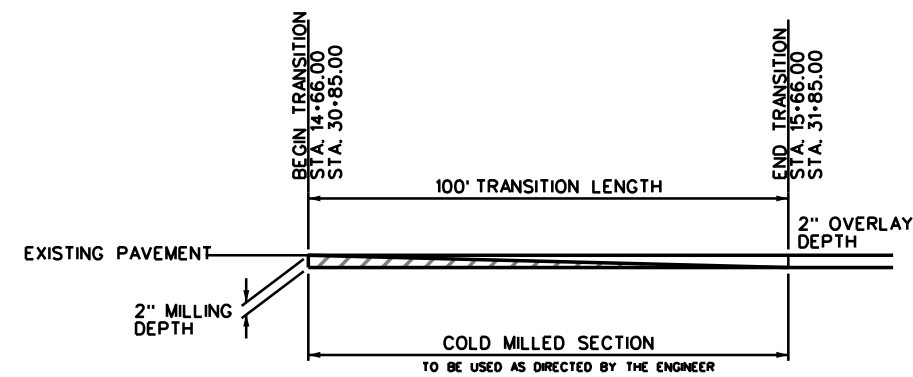
WIDENING FOR GUARDRAIL



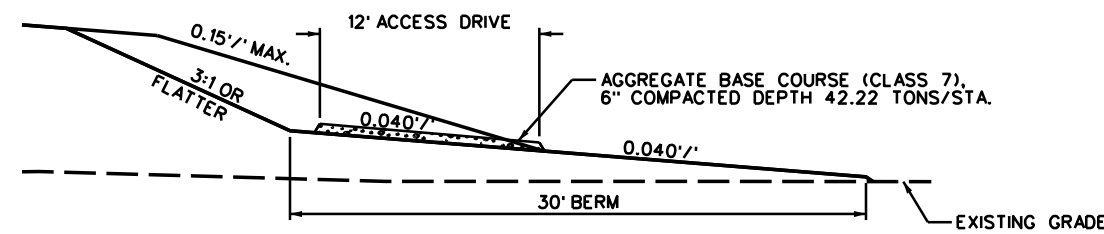
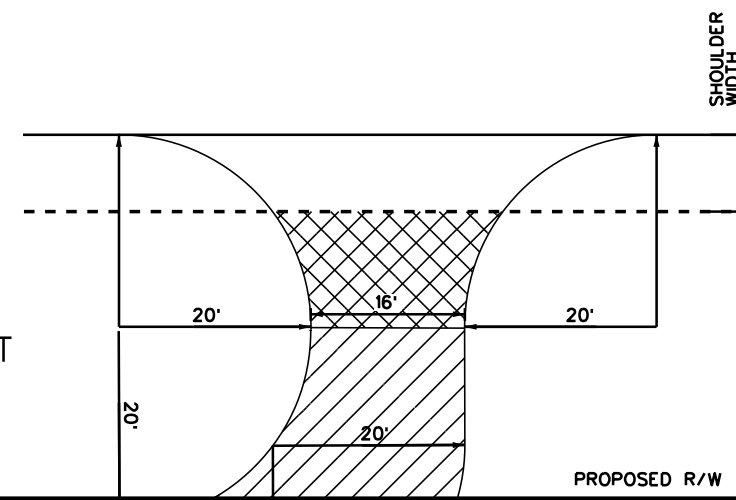
DETAIL FOR APPROACH SLAB BEDDING



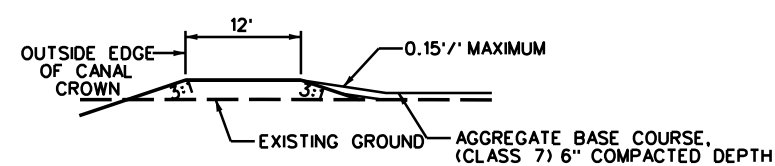
DETAIL FOR DRIVEWAY ACCESS



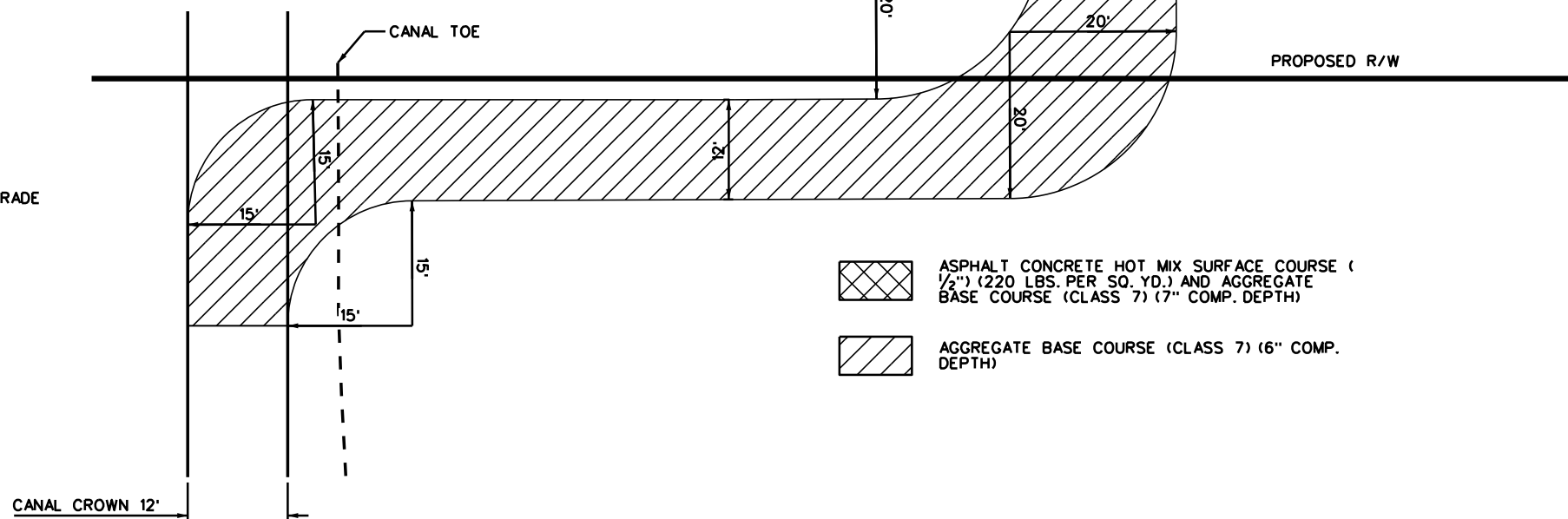
DETAIL FOR MILLED TRANSITION TO EXISTING PAVEMENT



DETAIL FOR CANAL TO HWY ACCESS



DETAIL FOR CANAL ACCESS

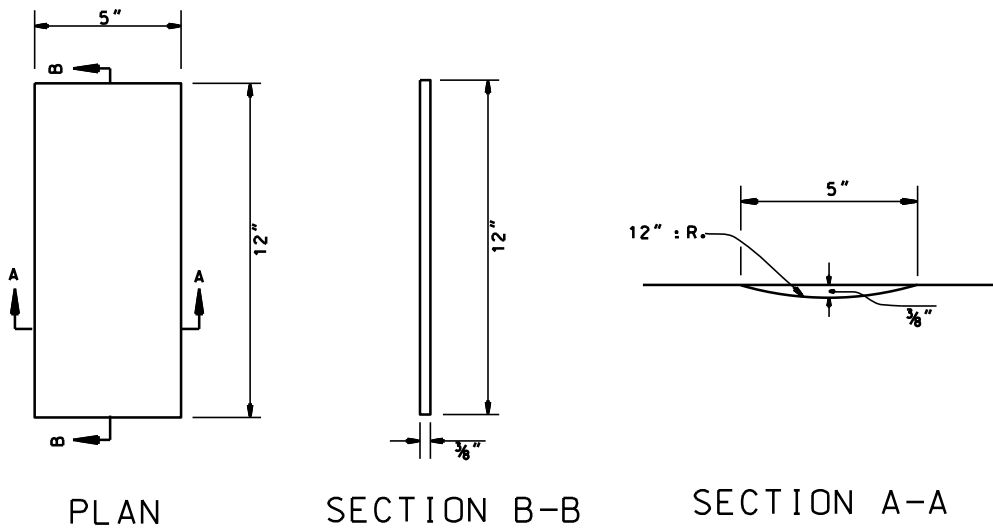


DETAIL FOR CANAL ACCESS TURNOUT

- 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) (6" COMP. DEPTH)

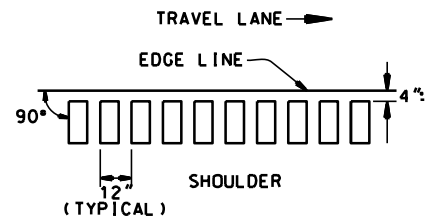
SPECIAL DETAILS

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.		061473	8	100
② SPECIAL DETAILS								

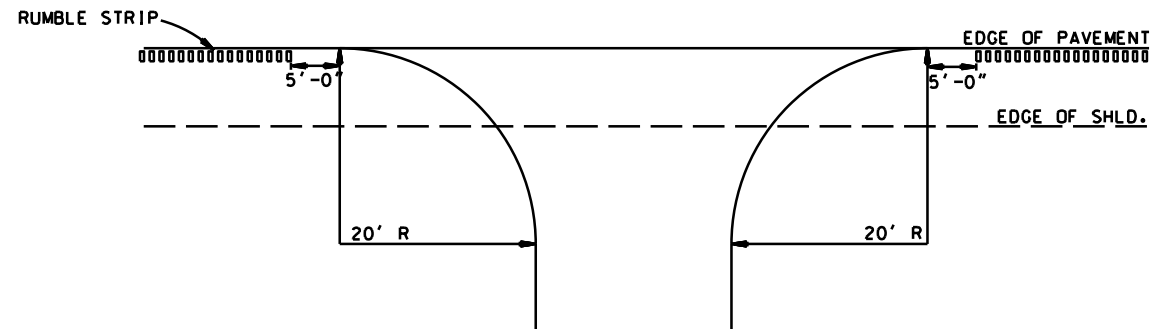


PLAN SECTION B-B SECTION A-A

DETAILS OF RUMBLE STRIPS



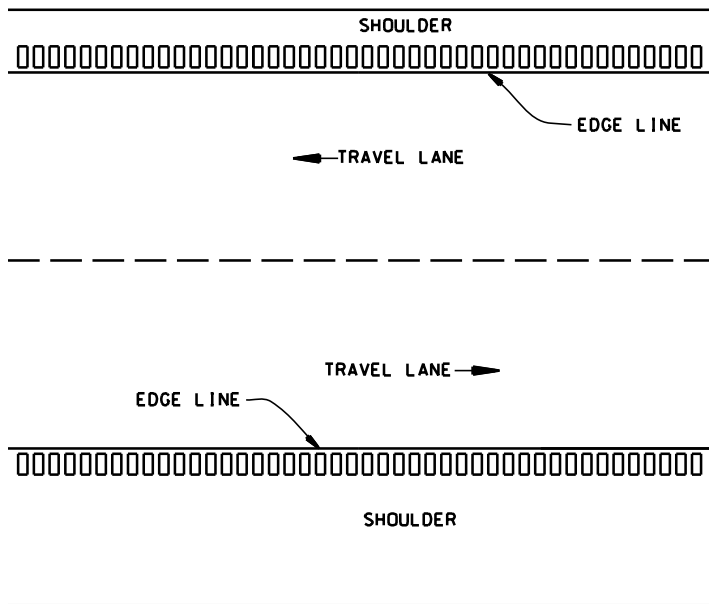
LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



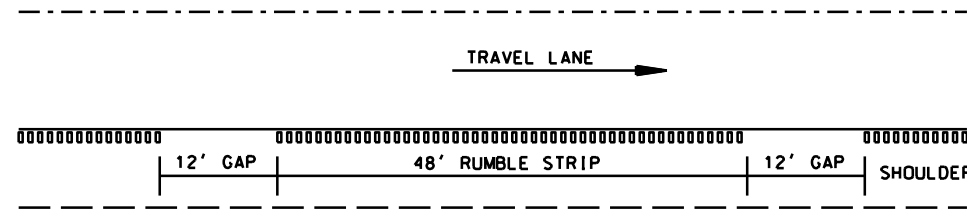
DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS

GENERAL NOTES

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



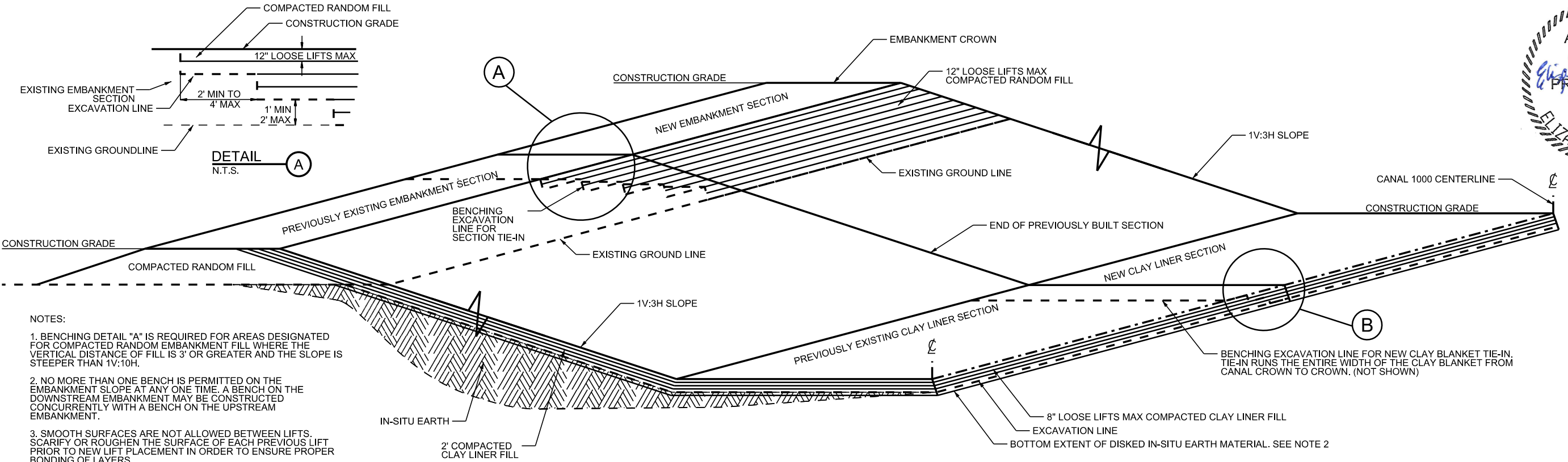
PLAN VIEW



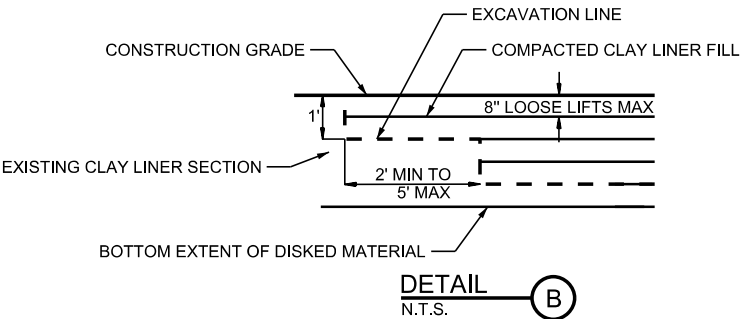
NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.

DETAIL FOR GAP PATTERN RUMBLE STRIP

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.		061473	9	100
2 SPECIAL DETAILS								



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

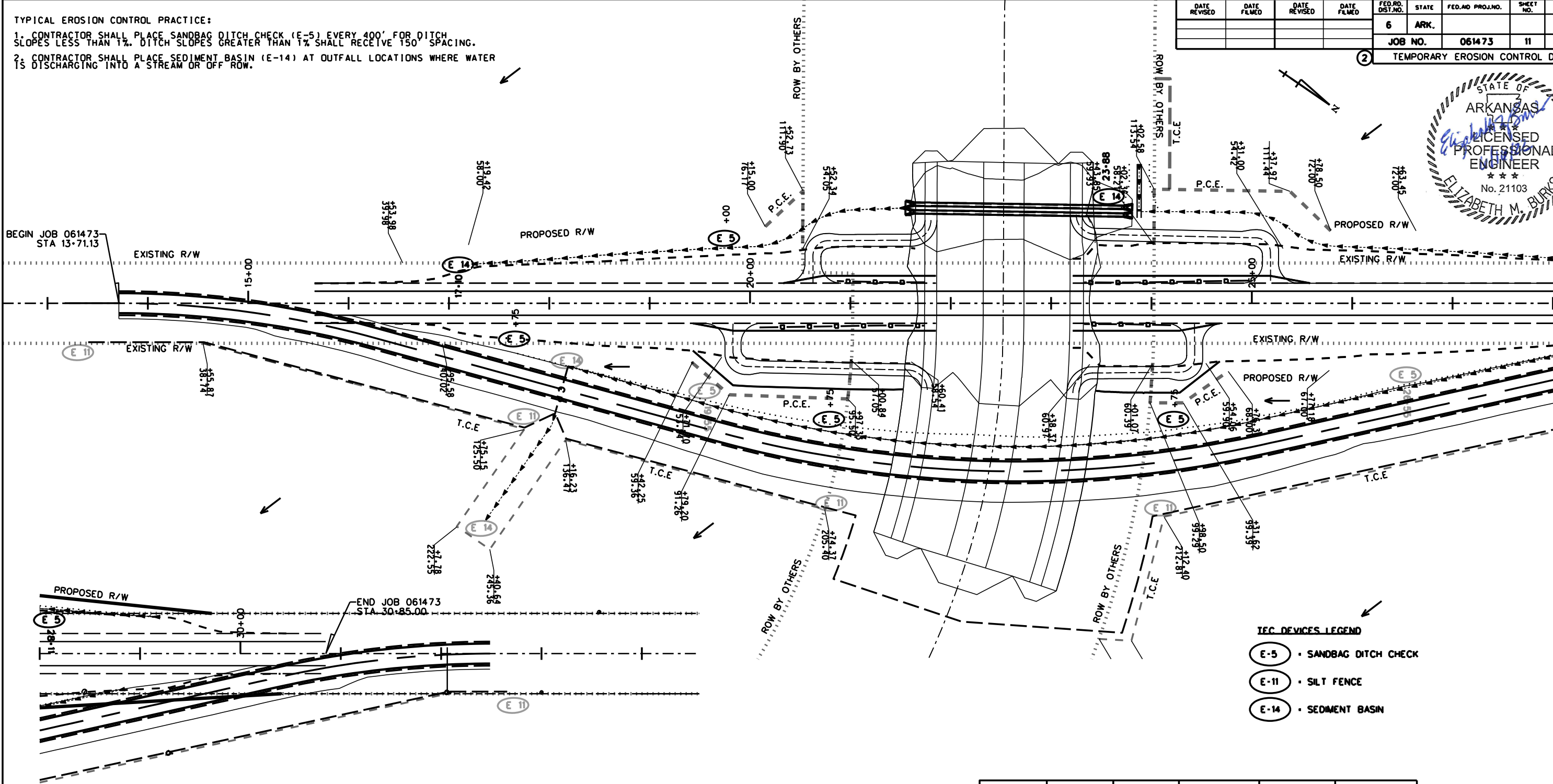


CANAL CROSS SECTION -
CLAY LINER DETAIL
NOT TO SCALE

SPECIAL DETAILS

TYPICAL EROSION CONTROL PRACTICE:
1. CONTRACTOR SHALL PLACE SANDBAG DITCH CHECK (E-5) EVERY 400' FOR DITCH SLOPES LESS THAN 1%. DITCH SLOPES GREATER THAN 1% SHALL RECEIVE 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. NO. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473	11	100	
2 TEMPORARY EROSION CONTROL DETAILS								



- TEC. DEVICES LEGEND
- E-5 • SANDBAG DITCH CHECK
 - E-11 • SILT FENCE
 - E-14 • SEDIMENT BASIN

REVISIONS

DATE OF REVISION	REVISION

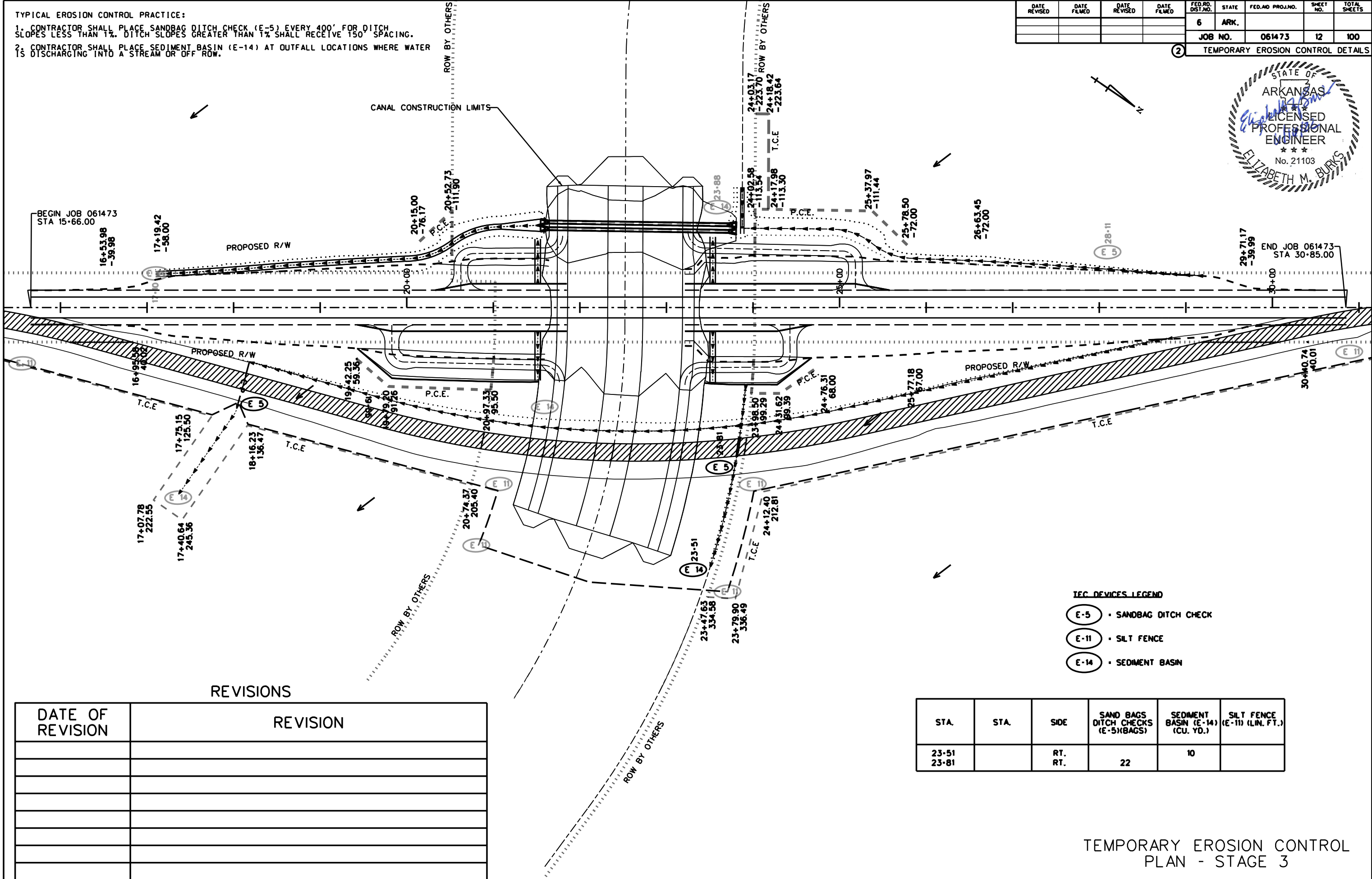
STA.	STA.	SIDE	SAND BAGS DITCH CHECKS (E-5)(BAGS)	SILT FENCE (E-11) (LIN. FT.)	SEDIMENT BASIN CHECKS (E-14) (CU. YD.)
17+10 23+88 28+11		LT. LT. LT.	22		10 10

TEMPORARY EROSION CONTROL
PLAN - STAGE 2

TYPICAL EROSION CONTROL PRACTICE:

1. CONTRACTOR SHALL PLACE SANDBAG DITCH CHECK (E-5) EVERY 400' FOR DITCH SLOPES LESS THAN 1%. DITCH SLOPES GREATER THAN 1% SHALL RECEIVE 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. NO. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473	12	100	
				2 TEMPORARY EROSION CONTROL DETAILS				



REVISIONS

DATE OF REVISION	REVISION

TEC DEVICES LEGEND

- E-5 - SANDBAG DITCH CHECK
- E-11 - SILT FENCE
- E-14 - SEDIMENT BASIN

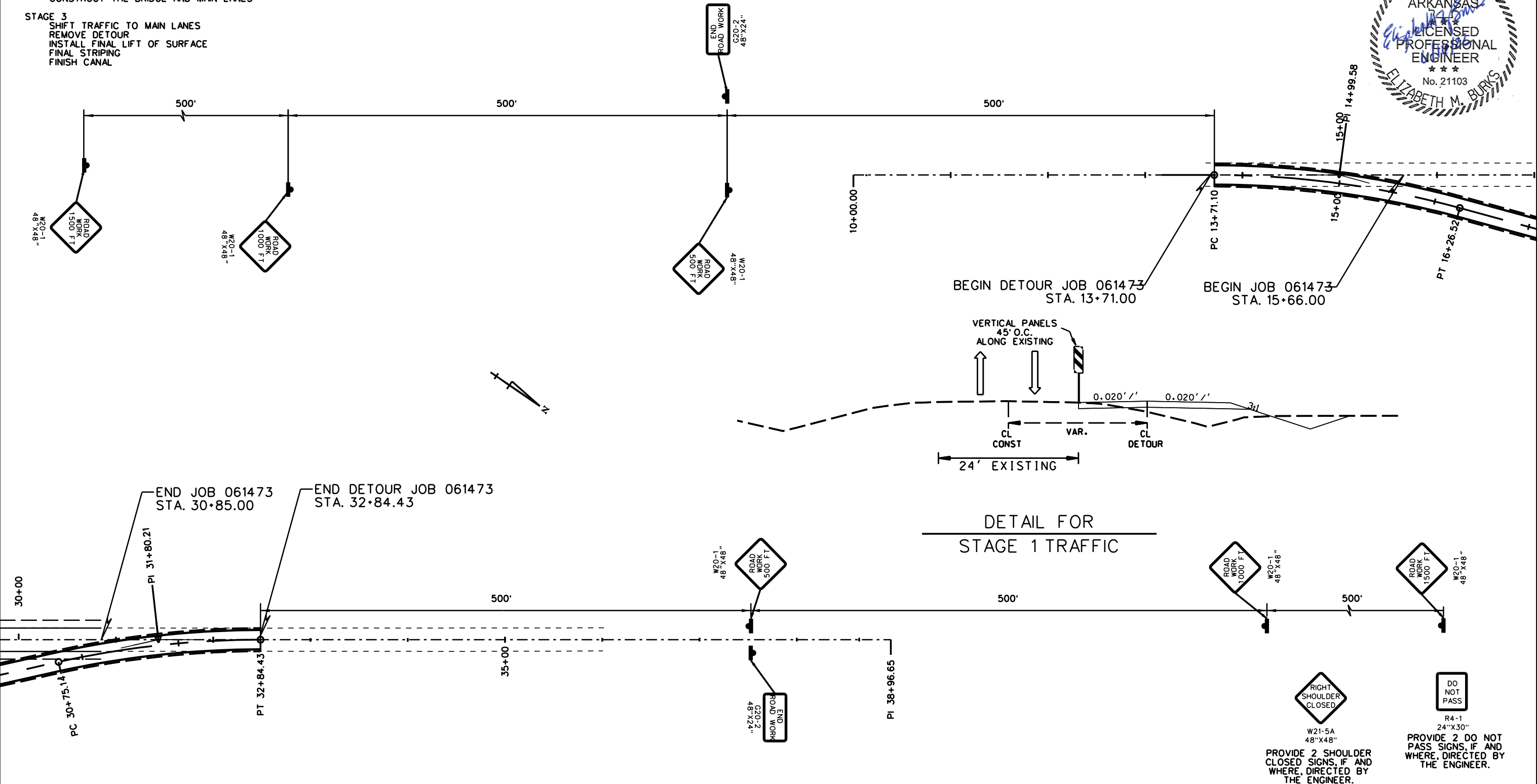
STA.	STA.	SIDE	SAND BAGS DITCH CHECKS (E-5)(BAGS)	SEDIMENT BASIN (E-14) (CU. YD.)	SILT FENCE (E-11) (LIN. FT.)
23+51 23+81		RT. RT.	22	10	

TEMPORARY EROSION CONTROL
PLAN - STAGE 3

SEQUENCE OF CONSTRUCTION

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

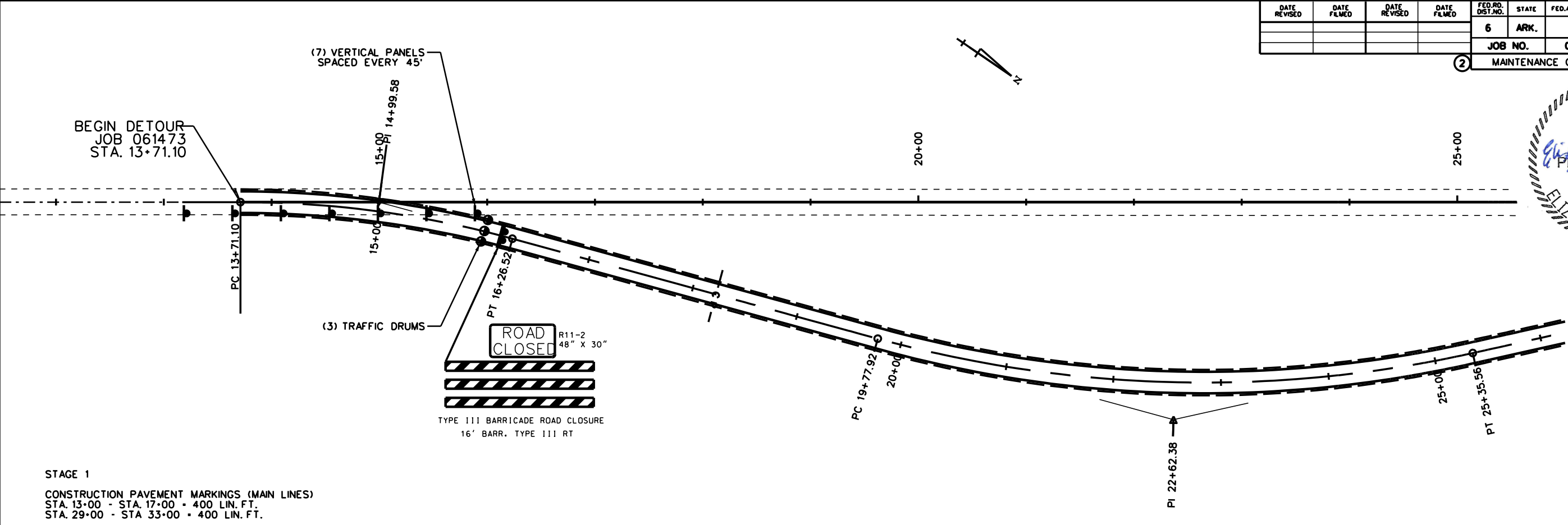
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	13	100
				② MAINTENANCE OF TRAFFIC DETAILS				



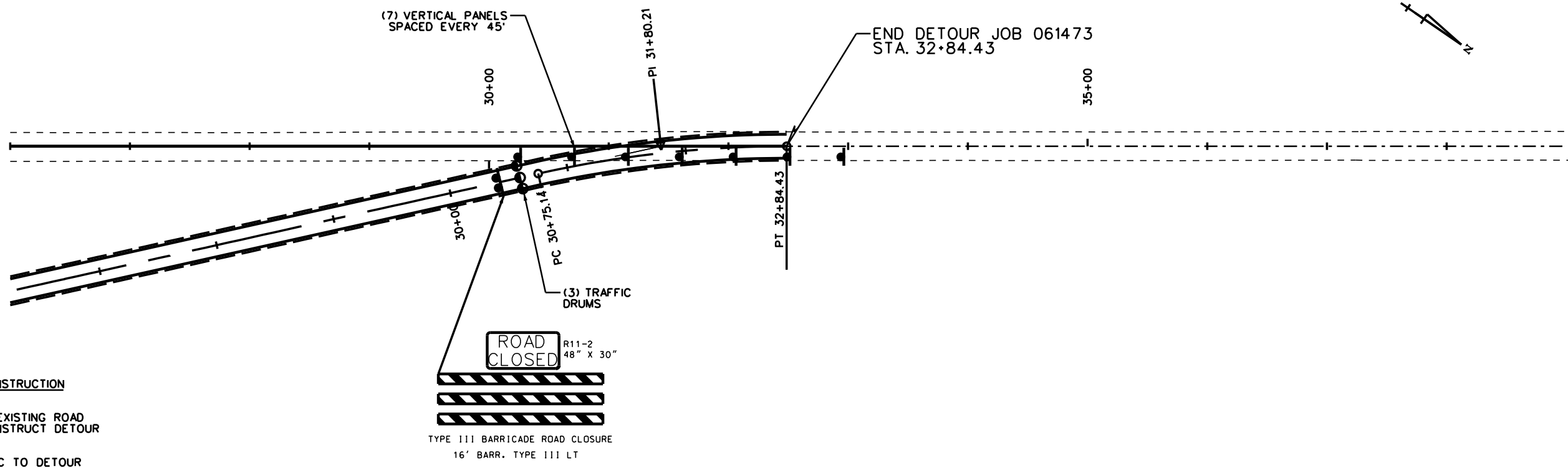
NOTE:
CONTRACTOR SHALL COORDINATE AND POST THE TEMPORARY SPEED
LIMIT AS DIRECTED BY THE ENGINEER.

ADVANCE WARNING SIGNS
MAINTENANCE OF TRAFFIC DETAILS

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.	061473	14	100	
				② MAINTENANCE OF TRAFFIC DETAILS				



STAGE 1
CONSTRUCTION PAVEMENT MARKINGS (MAIN LINES)
STA. 13+00 - STA. 17+00 = 400 LIN. FT.
STA. 29+00 - STA. 33+00 = 400 LIN. FT.



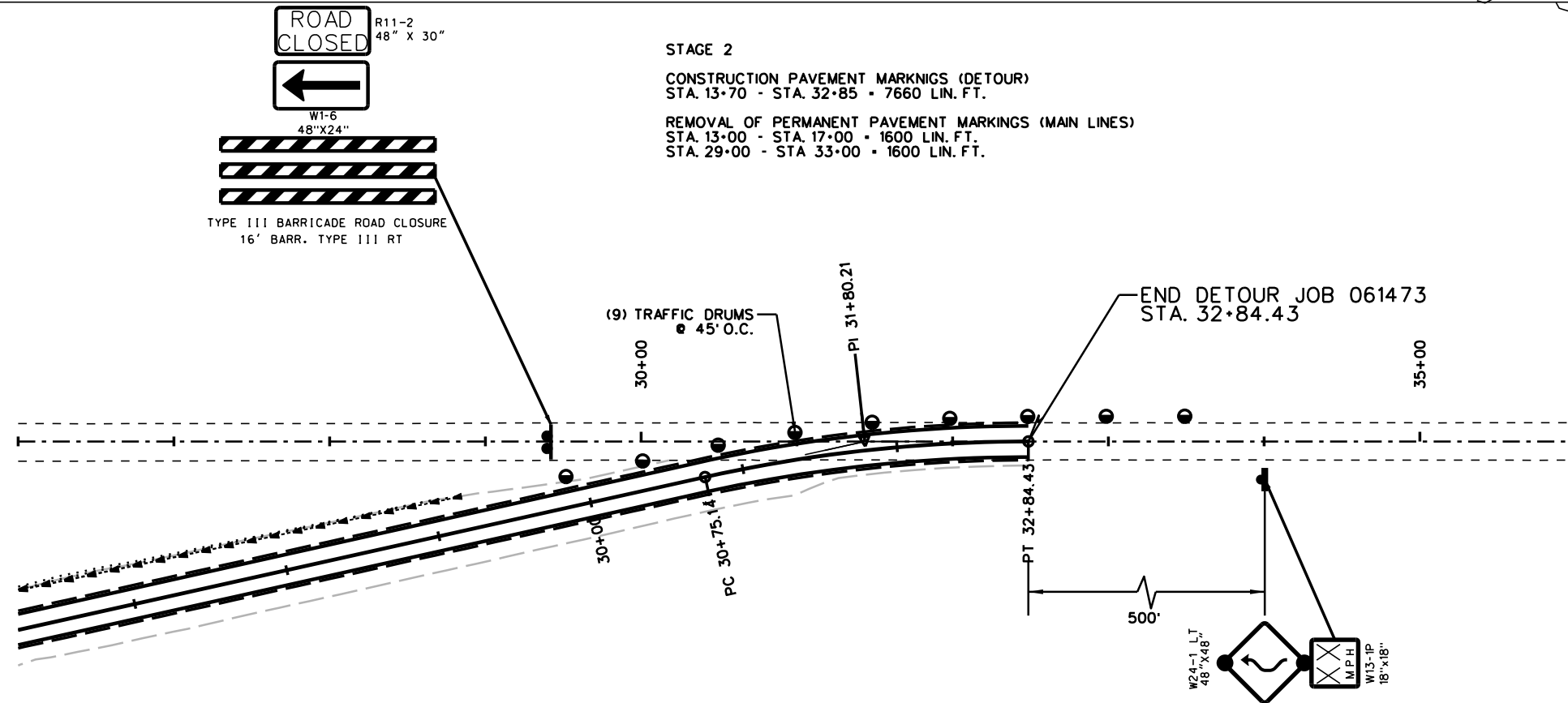
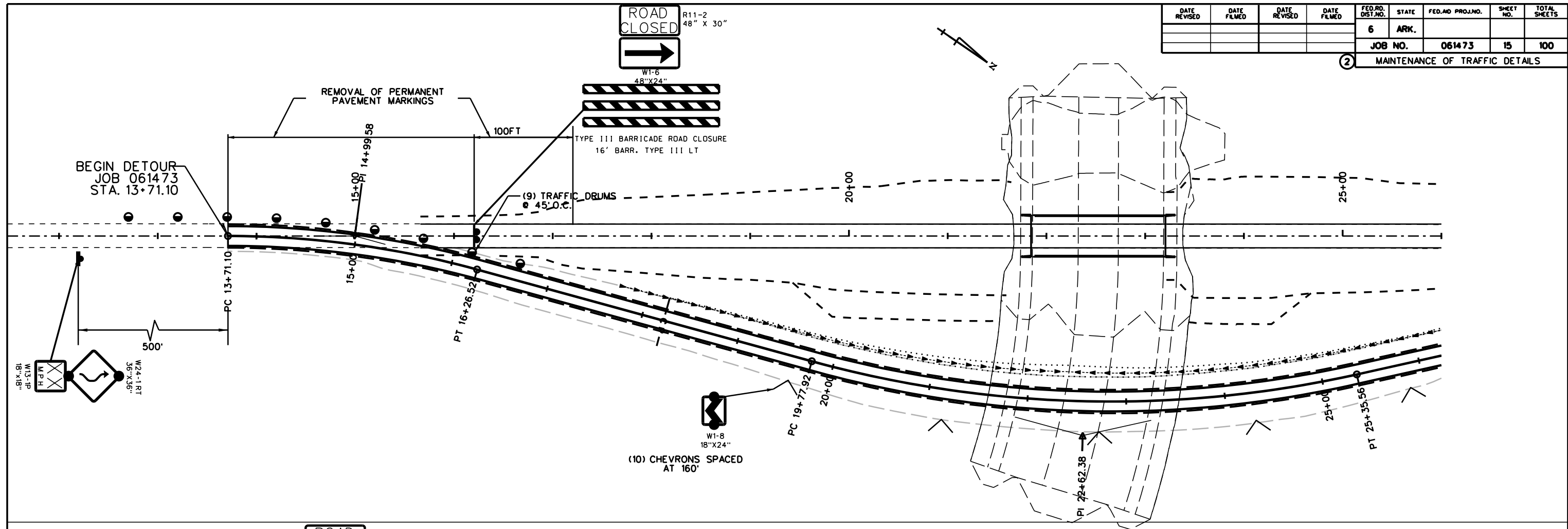
SEQUENCE OF CONSTRUCTION

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 1
MAINTENANCE OF TRAFFIC DETAILS



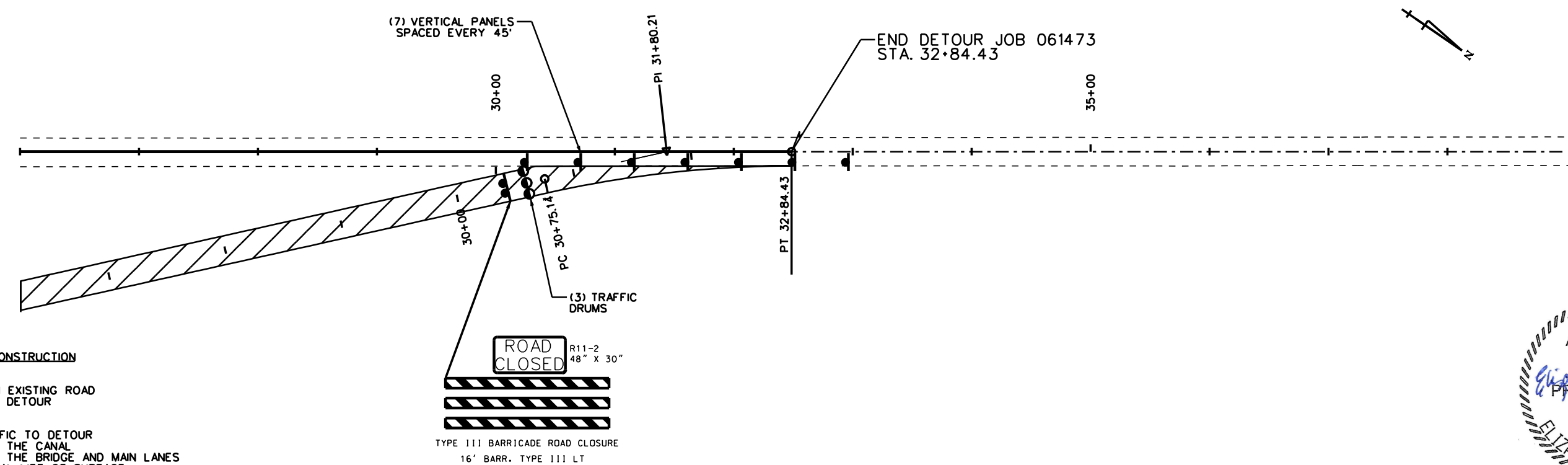
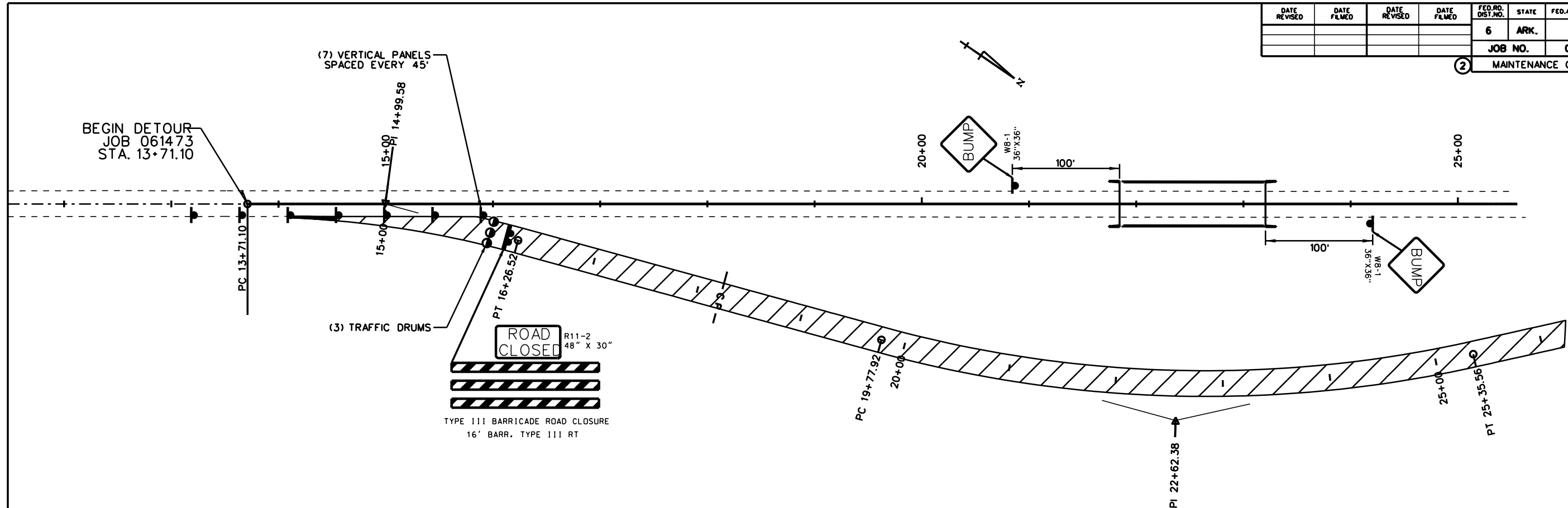
SEQUENCE OF CONSTRUCTION

- 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. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473	16	100	
				MAINTENANCE OF TRAFFIC DETAILS				



SEQUENCE OF CONSTRUCTION

- 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 3
MAINTENANCE OF TRAFFIC DETAILS**

6/15/2022
BM165BRIDGE_017.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	17	100

2 PERMANENT PAVEMENT MARKING DETAILS



BEGIN JOB 061473
STA 15+66.00

100' PAVEMENT
MARKING TRANSITION

DBL. YELLOW 6"

WHITE 6"

20+00

DBL. YELLOW 6"

25+00

100' VERTICAL
ASPH. TRANSITION

STA. 14+66.00

STA. 15+66.00

619.02'

PAVEMENT MARKERS TYPE II,
(YELLOW/YELLOW) 80' SPACING O.C.

136.5'

203'

STA. 21+85.03

STA. 23+21.53

STA. 25+24.53



DBL. YELLOW 6"

6" WHITE

100' PAVEMENT
MARKING TRANSITION

30+00

END JOB 061473
STA 30+85.00

560.78'

100' VERTICAL
ASPH. TRANSITION

STA. 30+85.00

STA. 31+85.00

THERMOPLASTIC PAVEMENT MARKINGS:
STA. 13+70 TO STA. 33+00
6" WHITE EDGE LINE = 3860 LIN. FT.
6" DBL YELLOW CENTERLINE = 3860 LIN. FT.

RAISED PAVEMENT MARKERS
STA. 13+70 TO STA. 33+00
TYPE II (YEL/YEL) 80' O.C. = 25 EACH

NOTE:

THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

SEQUENCE OF CONSTRUCTION

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

PERMANENT PAVEMENT MARKING DETAILS

6/30/2022
BM165BRIDGE_019

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.		061473	19	100
②				QUANTITIES				



DUMPED RIPRAP AND FILTER BLANKET				
STATION	STATION	LOCATION	DUMPED RIPRAP GROUTED	FILTER BLANKET
			CU. YDS.	SQ. YDS.
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	25	25
TOTALS:			25	25

*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.
21+52	LT. OF CENTER	59.81	6.33	42.07	26.58	0.33
21+52	RT. OF CENTER	64.81	6.33	45.58	28.80	0.36
23+53	LT. OF CENTER	61.95	6.33	43.57	27.53	0.35
23+53	RT. OF CENTER	67.67	6.33	47.59	30.08	0.38
TOTALS:				178.81	112.99	1.42

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	50
TOTAL:	50

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

STATION	STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)
				FEET	SQ. YD.	TON	TON
19+83.11	20+09.91	LT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	47.1
20+09.91	21+76.52	LT.	MAIN LANES - CANAL ACCESS DRIVE	12			72.5
20+62.73	20+88.93	RT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	45.7
20+88.93	21+80.24	RT.	MAIN LANES - CANAL ACCESS DRIVE	12			42.0
23+21.62	24+16.70	RT.	MAIN LANES - CANAL ACCESS DRIVE	12			43.7
24+16.70	24+42.86	RT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	50.8
23+24.93	24+89.74	LT.	MAIN LANES - CANAL ACCESS DRIVE	12			72.2
24+89.74	25+18.51	LT.	MAIN LANES - CANAL ACCESS DRIVE	16	24.7	2.7	50.8
TOTALS:					98.8	10.8	424.8

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....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.

GUARDRAIL					
STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.		EACH
20+78.45	21+72.20	LT. SIDE	75	1	1
20+03.45	21+72.20	RT. SIDE	150	1	1
23+34.37	25+03.12	LT. SIDE	150	1	1
23+34.37	24+28.12	RT. SIDE	75	1	1
TOTALS:			450	4	4

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
18+75	34	41	5.97	92	5	14.76	CL OF ROAD	1			ASPHALT PAVEMENT	
								1.5			AGGREGATE BASE	
								3.5	25	5	A-4 (4)	BR
								5	28	7	A-4 (6)	BR
25+00	34	41	11.07	92	5	19.00	CL OF ROAD	1.5			ASPHALT PAVEMENT	
								4	31	12	A-7-6 (2)	BR
								5.5			A-7-6 (2)	BR

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 (TYPE C)	APPROACH SLABS	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
21+48.70	21+85.20	APPROACH GUTTER ON LT.	14.90		1181	
23+21.37	23+57.87	APPROACH GUTTER ON LT.	14.90		1181	
21+48.70	21+85.20	APPROACH GUTTER ON RT.	14.90		1181	
23+21.37	23+57.87	APPROACH GUTTER ON RT.	14.90		1181	
21+48.70	21+85.20	APPROACH SLAB		49.15	5980	64.3
23+21.37	23+29.37	APPROACH SLAB		49.15	5980	64.3
TOTALS:			59.60	98.30	16684.00	128.60

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)		
ENTIRE	PROJECT	MAIN LANES	2.56	5.12	2.56	261.1	2.56	ACRE	ACRE	M.GAL.	BAG	CU. YDS.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	DETOUR	3.53	7.06	3.53	360.1	3.53									
ENTIRE	PROJECT	NORTH DITCH AND CANAL	1.29	2.58	1.29	131.6	1.29									
ENTIRE	PROJECT	STAGE 1						3.53	3.53	72.0	44		2171	300	300	380
ENTIRE	PROJECT	STAGE 2						2.56	2.56	52.2	22			200	200	200
ENTIRE	PROJECT	STAGE 3						1.29	1.29	26.3	44			200	200	200
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER						2.00	2.00	40.8	132	30		300	300	300
TOTALS:			7.38	14.76	7.38	752.8	7.38	9.38	9.38	191.3	242	30	2171	1000	1000	1080

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

QUANTITIES

BM165BRIDGE_0206/30/2022

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.		061473	20	100
				QUANTITIES				

2

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT	FLARED END SECTIONS FOR R.C. PIPE CULVERTS	TEMPORARY CULVERTS	SOLID SODDING	WATER	STD. DWG. NOS.
		(CLASS SPECIAL)					
		36" LIN. FT.	36" EACH	18" LIN. FT.	SQ. YD.	M. GAL	
21+54.83 TO 23+80.66	TWIN ROADSIDE SIPHONS UNDER CANAL 1000	430	4		40	0.50	FES-1, FES-2, PCC-1
18+22.30	UNDER DETOUR ROAD			50			PCM-1
TOTALS:		430	4	50	40	0.50	

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.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22
						TOTAL WID. FEET	SQ.YD.	GALLON	TOTAL WID. FEET	SQ.YD.	GALLON									
MAIN LANES																				
14+66.00	15+66.00	100' TRANSITION	100.00						40.00	444.44	75.55	75.55					40.00	444.44	220.00	48.89
15+66.00	17+26.00	NOTCH AND WIDEN	163.00	168.00	273.84	37.41	677.54	33.88				33.88	4.58	82.95	660.00	27.37	44.25	801.42	220.00	88.16
17+29.00	19+12.04	FULL DEPTH	183.04	261.50	478.65	85.42	1737.25	86.86				86.86	28.58	581.25	660.00	191.81	68.25	1388.05	220.00	152.69
19+12.04	19+45.04	FULL DEPTH RT. SHOULDER TAPER	33.00	281.50	92.90	85.42	313.21	15.66				15.66	28.58	104.79	660.00	34.58	71.00	260.33	220.00	28.64
19+45.04	20+37.04	FULL DEPTH RT. SHOULDER WIDENING	92.00	301.50	277.38	85.42	873.18	43.66				43.66	28.58	292.15	660.00	96.41	73.75	753.89	220.00	82.93
20+37.04	20+70.04	FULL DEPTH LT. SHOULDER TAPER	33.00	321.50	106.10	85.42	313.21	15.66				15.66	28.58	104.79	660.00	34.58	76.50	280.50	220.00	30.86
20+70.04	21+37.29	FULL DEPTH LT. AND RT. SHOULDER WIDENING	67.25	341.50	229.66	85.42	638.28	31.91				31.91	28.58	213.56	660.00	70.47	79.25	592.17	220.00	65.14
23+69.28	24+36.53	FULL DEPTH LT. AND RT. SHOULDER WIDENING	67.25	341.50	229.66	85.42	638.28	31.91				31.91	28.58	213.56	660.00	70.47	79.25	592.17	220.00	65.14
24+36.53	24+69.53	FULL DEPTH RT. SHOULDER TAPER	33.00	321.50	106.10	85.42	313.21	15.66				15.66	28.58	104.79	660.00	34.58	76.50	280.50	220.00	30.86
24+69.53	25+61.53	FULL DEPTH LT. SHOULDER WIDEING	92.00	301.50	277.38	85.42	873.18	43.66				43.66	28.58	292.15	660.00	96.41	73.75	753.89	220.00	82.93
25+61.53	25+94.53	FULL DEPTH LT. SHOUDLER TAPER	33.00	281.50	92.90	85.42	313.21	15.66				15.66	28.58	104.79	660.00	34.58	71.00	260.33	220.00	28.64
25+94.53	29+21.00	FULL DEPTH	326.47	261.50	853.72	85.42	3098.56	154.93				154.93	28.58	1036.72	660.00	342.12	68.25	2475.73	220.00	272.33
29+21.00	30+85.00	NOTCH AND WIDEN	164.00	262.50	430.50	37.41	681.69	34.08				34.08								
30+85.00	31+85.00	100' TRANSITION	100.00	263.50	263.50				40.00	444.44	75.55	75.55					40.00	444.44	220.00	48.89
13+71.10	16+00.00	DETOUR WIDENING	228.90	87.13	199.44	15.00	381.50	19.08				19.08					15.00	381.50	440.00	83.93
16+00.00	30+50.00	DETOUR FULL DEPTH	1450.00	147.25	2135.13	28.00	4511.11	225.56				225.56					28.00	4511.11	440.00	992.44
30+50.00	32+84.43	DETOUR WIDENING	234.43	87.13	204.26	15.00	390.72	19.54				19.54					15.00	390.72	440.00	85.96
15+66.00	17+26.00	GRADE RAISE	163.00						24.00	434.67	73.89	73.89						2824.76	220.00	310.72
29+21.00	30+85.00	GRADE RAISE	164.00						24.00	437.33	74.35	74.35						2833.85	220.00	311.72
ADDITIONAL FOR DETOUR SUPERELEVATION																				
17+90.42	27+23.06	ADDITIONAL AGGREGATE	932.64	VAR.	66.55															
TOTALS:					6317.67		15754.13	787.71		1760.88	299.34	1087.05		3131.50		1033.38		20269.80		2810.87

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	COMPACTED CLAY LINER FILL	* SOIL STABILIZATION
			CU. YD.			TON
ENTIRE	PROJECT	MAIN LANES	1495	15774		
ENTIRE	PROJECT	DETOUR CONSTRUCTION	38	7760		
ENTIRE	PROJECT	DETOUR REMOVAL	7760	37		
ENTIRE	PROJECT	CANAL EXCAVATION	12143	3050		
ENTIRE	PROJECT	CANAL CLAY LINER			4600	
ENTIRE	PROJECT	DRIVEWAYS		646		
		IF AND WHERE DIRECTED BY THE ENGINEER				100
TOTALS:			21436	27267	4600	100

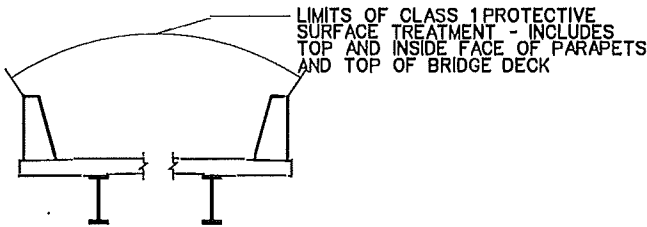
*QUANTITIES ARE ESTIMATED
SEE SECTION 104 03 OF THE STANDARD SPECIFICATIONS

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.	061473	21	100
					07387	QUANTITIES		58802

SCHEDULE OF BRIDGE QUANTITIES JOB 061473

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)	FILTER BLANKET	DUMPED RIPRAP
			UNIT	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.
07387	HIGHWAY 161 OVER CANAL 1000	BENT 1 (INCLUDES WING WALLS)		45.15		0.3	5366	677	360				1414.5				
		BENT 2		22.45			2269			375	76		2601.0				
		BENT 3		22.45			2269			375	76		2601.0				
		BENT 4 (INCLUDES WING WALLS)		45.15		0.3	5366	677	360				1414.5				
		134 CONT. COMP. W-BEAM UNIT			148.70	14.0		46336				116720		87	1	1816	921
		TOTALS FOR JOB 061473		135.20	148.70	14.6	15270	47690	720	750	152	116720	8031.0	87	1	1816	921

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 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_q1.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: NO SCALE
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58602

SURVEY CONTROL COORDINATES

Project Name: 06473
Date: 1/21/2016
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL,
PROJECTED TO GRID.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
8	2044924.3760	1274498.6560	242.39	CTL	JMA1000702=20+06
101	2045297.4970	1272527.6400	253.33	CTL	JMA1000701=0+00
108	2044483.5860	1278975.4610	240.46	CTL	JMA1000703=67+72
111	2046113.7440	1283038.3400	247.60	CTL	JMA100704=116+20
114	2049068.0660	1284435.6300	245.52	CTL	JMA1000705=156+92
116	2049248.6740	1288311.9390	240.23	CTL	JMA1000706=195+87
118	2051954.6060	1288387.6440	240.11	CTL	JMA1000707=222+94
180	2046226.8910	1286392.7070	239.70	CTL	REBAR AHTD AL CAP
181	2046801.8490	1285968.5930	241.06	CTL	REBAR AHTD AL CAP
182	2047452.0660	1285527.2640	242.24	CTL	REBAR AHTD AL CAP
183	2048104.5350	1285092.1610	243.90	CTL	REBAR AHTD AL CAP
199	2047488.1970	1285966.2390	241.20	CTL	COE MON 1400901

Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GRID.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 1.000027035 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GROUND DISTANCE = GRID DISTANCE / CAF
GRID COORDINATES ARE STORED UNDER FILE GROUNDCOORD161-165.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 880088-880088A
CONVERGENCE ANGLE: 00-03-16 LEFT AT LT: 34-40-59, ILC: 092-05-50.8
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
601	PT	141+14.72	1285606.7908	2046959.6687
602	PC	144+09.72	1285850.6627	2047125.6551
603	PT	149+14.78	1286327.7668	2047263.8527

POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
8050	POB	10+00.00	1286542.5328	2046081.7465
8051	POE	38+96.65	1284903.1980	2048469.8760

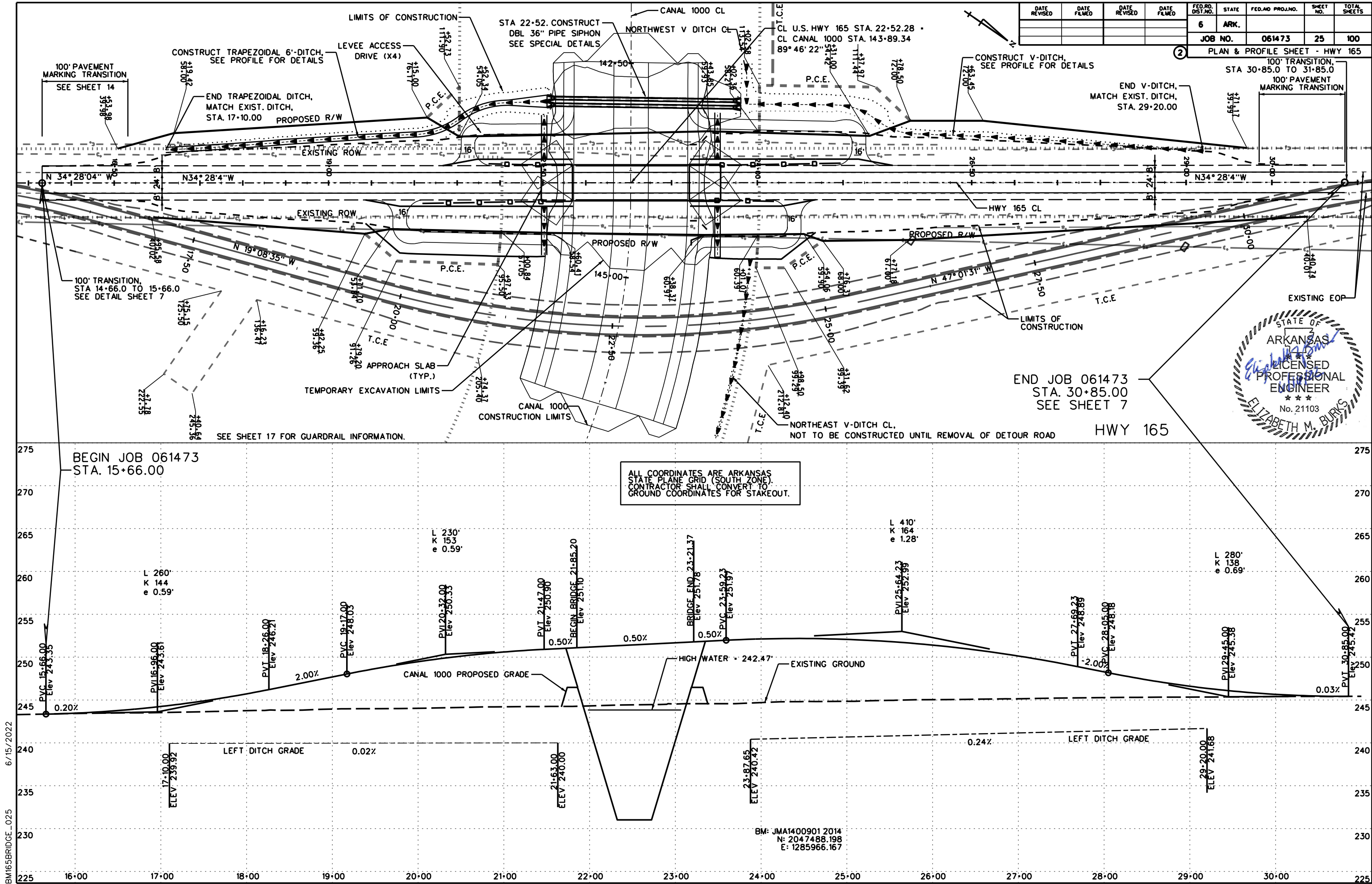
POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
606	POB	10+00.00	1286542.5328	2046081.7465
607	PC	13+71.10	1286332.5091	2046387.7022
608	PT	16+26.52	1286217.6719	2046614.9880
609	PC	19+77.92	1286102.4363	2046946.9609
610	PT	25+35.56	1285801.0315	2047409.5952
611	PC	30+75.14	1285406.2474	2047777.4135
612	PT	32+84.43	1285269.9139	2047935.6562
613	POE	39+32.41	1284903.1980	2048469.8760

POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
614	PT	49+81.70	1285527.0015	2047068.6551
615	POE	51+68.93	1285681.7844	2047174.0138

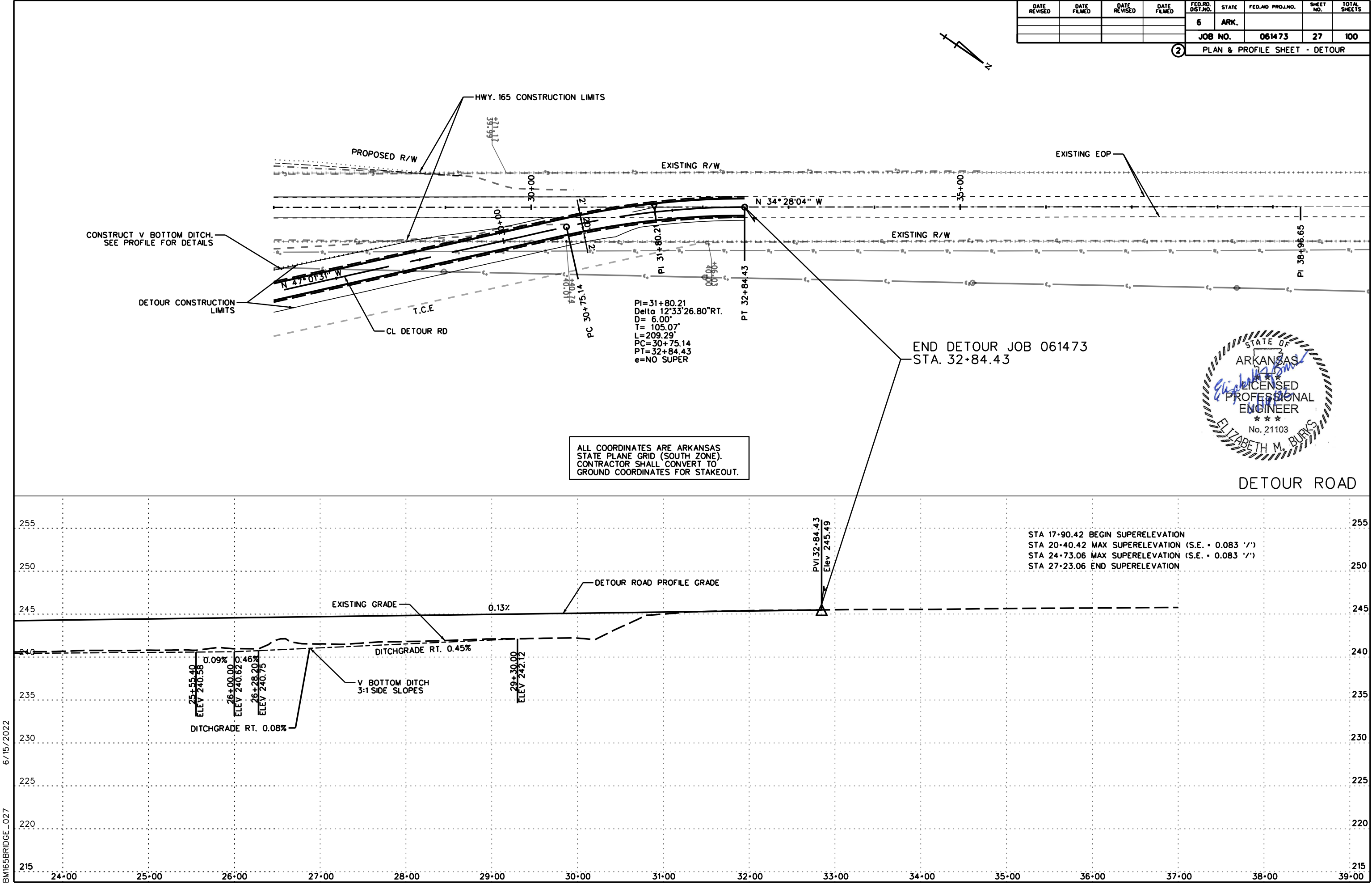
POINT NUMBER	POINT TYPE	STATION	EASTING	NORTHING
616	POB	0+00.00	1285828.2788	2047279.7171
617	PC	0+30.49	1285855.1574	2047294.1159
618	PT	5+29.73	1286335.7841	2047406.1633



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

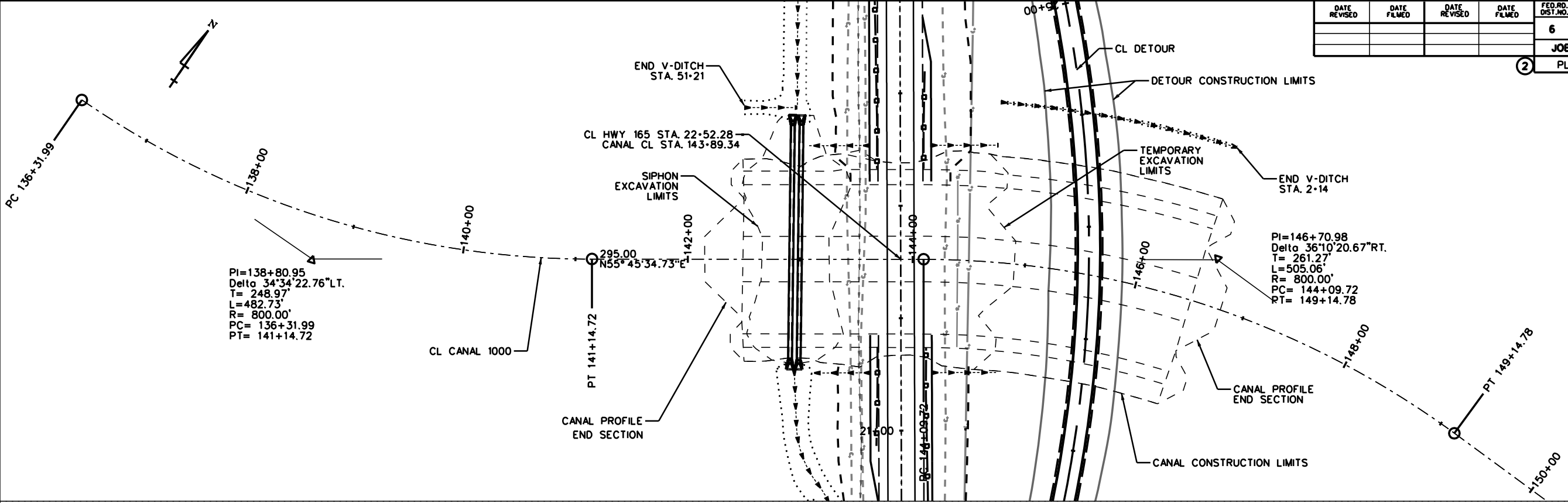


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. NO PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	27	100
				2 PLAN & PROFILE SHEET - DETOUR				

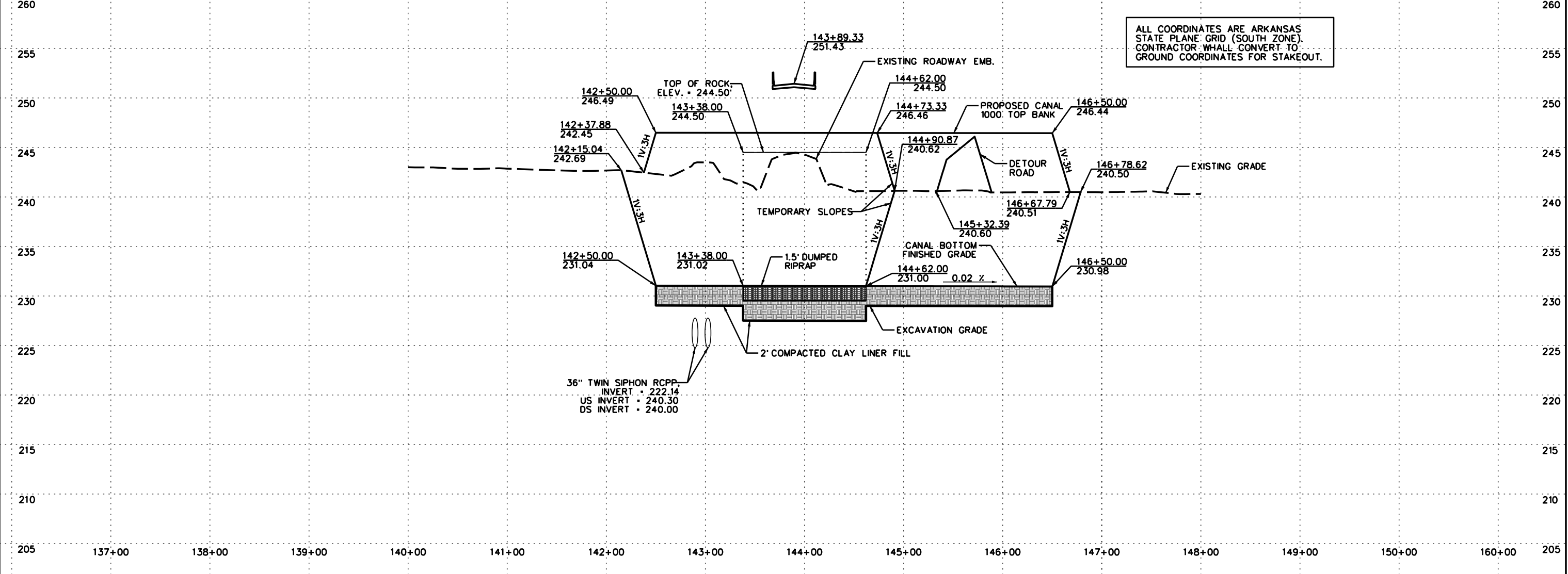


6/15/2022
BM165BRIDGE_027

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.	061473	28	100	
2 PLAN & PROFILE SHEET - CANAL 1000								



CANAL 1000



6/15/2022
BM165BRIDGE_028

NOTE:
1. BEDDING: CLASS 5 OR 7 AGGREGATE SHOULD BE USED. 12" OF BEDDING BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED.
2. TYPE II INSTALLATION SHOULD BE USED FOR R.C.P.P. AS PRESCRIBED ON PCC-1 EXCEPT AS NOTED ON THIS DRAWING.
3. ALL STOCKPILES MUST BE A MINIMUM OF 15' FROM TEMPORARY EXCAVATION SLOPES THAT ARE REQUIRED FOR INSTALLATION OF SIPHONS.

SIPHON EXCAVATION
FOOTPRINT
TWIN 36" RCPP - 215' LENGTH

CANAL 1000 CL

CANAL 1000 C/L
STATION 142+96

CONSTRUCT V-DITCH
SEE PROFILE FOR DETAILS

CONSTRUCT TRAPEZOIDAL 6'-DITCH,
SEE PROFILE FOR DETAILS

CL HWY 165 STA. 22+52.28
CANAL CL STA. 143+89.34

HWY 165 CL

PC144+10

SIPHON

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

RANDOM COMPACTED FILL

RANDOM
COMPACTED FILL

EXISTING GRADE

0.020% LEFT DITCH GRADE

0.32% LEFT DITCH GRADE

0.24%

21+54.82
240.00

22+72.65
231.03

22+32.65
231.03

5' MIN.

23+80.66
240.30

24+80.66
240.64

22+31.24
221.92

22+74.06
222.36

PROFILE

SCALE: 1"=50'

6/15/2022

BM165BRIDGE_029

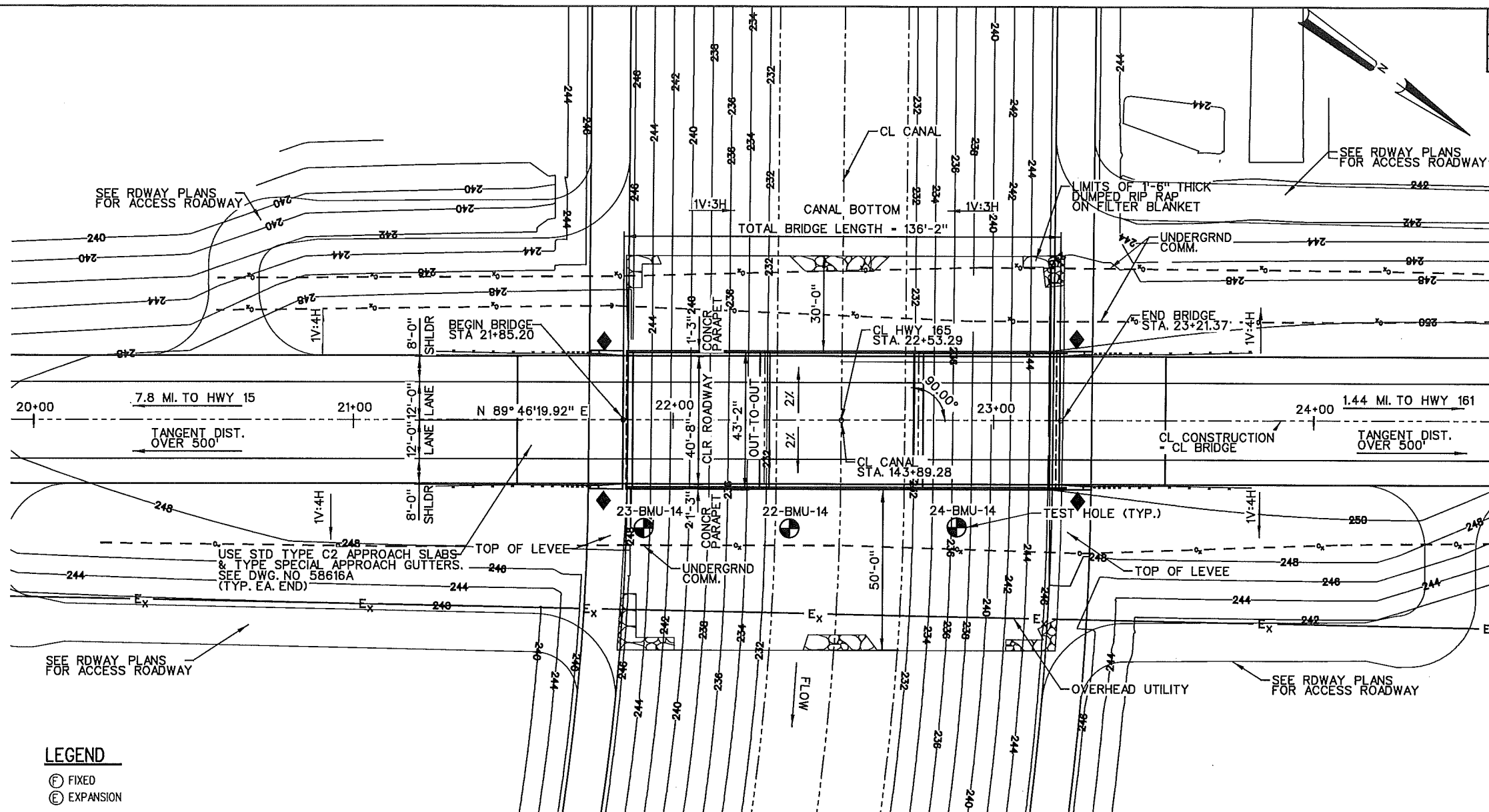
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473	29	100	
PLAN & PROFILE SHEET - SIPHON								

2



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	30	100
						07387	LAYOUT	58603

- NOTES
1. GENERAL NOTES: SEE DWG. NO. 58605 FOR BRIDGE STRUCTURAL NOTES.
 2. RIGHT-OF-WAY: SEE ROADWAY PLANS FOR RIGHT-OF-WAY DATA.
 3. CANAL EXCAVATION: SEE ROADWAY PLANS.
 4. BORING DATA: SEE DWG. NO. 58604.
 5. SEE ROADWAY DWGS. FOR UTILITY DISPOSITION PLAN. UTILITIES ARE TO BE RELOCATED BY OTHERS PRIOR TO CONSTRUCTION.
 6. SEE ROADWAY PLANS FOR C.I. DETOUR.



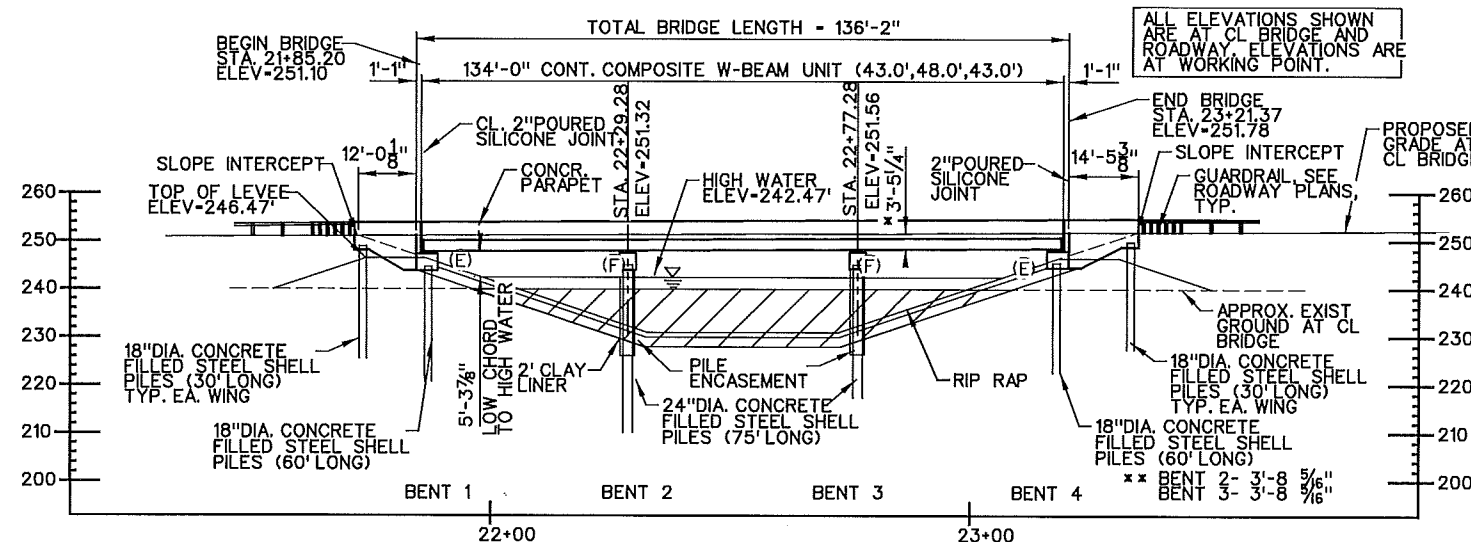
PLAN
SCALE: 1"=20'

LEGEND

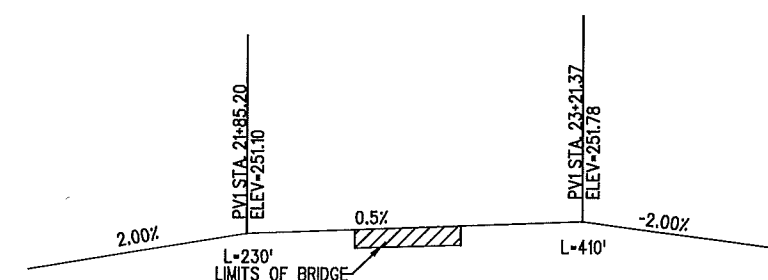
- (F) FIXED
- (E) EXPANSION
- ◆ GUARD RAIL CONNECTION TO PARAPET TRANSITION
- * CL DECK TO LOW STEEL
- ** CL DECK TO LOW SEAT
- /// EXCAVATION LIMITS, SEE ROADWAY FOR QUANTITIES
- TEST HOLE

HYDRAULIC DATA

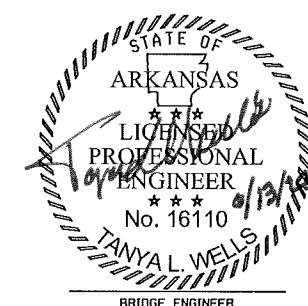
DRAINAGE AREA = 0.07 SQ. MI.
MAIN CANAL LENGTH FOR CANAL 1000 = 7.95 MI.
CANAL FREEBOARD = 5'-3 3/4"
HISTORIC HIGHWATER ELEVATION = N/A
MAXIMUM PUMPED DISCHARGE = 1750 CFS.
FREQUENCY DISCHARGE = N/A
HECRAS STATION = 144+00



ELEVATION
SCALE: 1"=20'

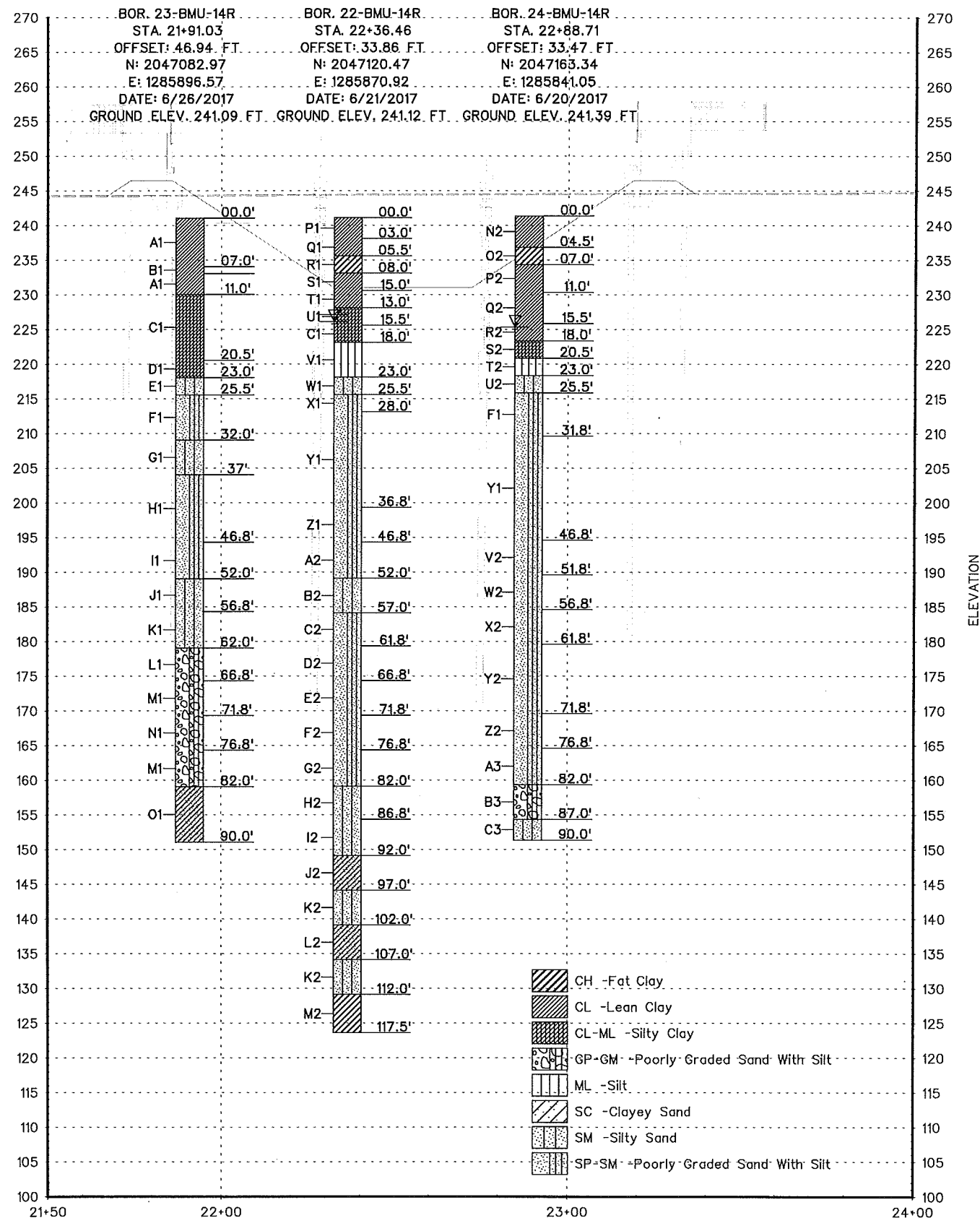


VERTICAL CURVE DATA
GRADE LINE AT CL BRIDGE



SHEET 1 OF 3
LAYOUT OF BRIDGE
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_11.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: 1"=20'
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58603

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473		31	100
					07387	LAYOUT	58804	



PROFILE - HWY 165 BORINGS

"N60" VALUES

23-BMU-14

16.0'-17.5', N-2
18.5'-20.0', N-0
21.0'-22.5', N-7
23.5'-25.0', N-46
26.0'-27.5', N-46
28.5'-30.0', N-40
33.5'-35.0', N-50
38.5'-40.0', N-60
43.5'-45.0', N-54
48.5'-50.0', N-35
53.5'-55.0', N-14
58.5'-60.0', N-75
63.5'-65.0', N-28
68.5'-70.0', N-53
73.5'-75.0', N-39
78.5'-80.0', N-81
83.5'-85.0', N-100+
88.5'-90.0', N-50

22-BMG-14

1.0'-2.5', N-16
3.5'-5.0', N-5
6.0'-7.5', N-8
8.5'-10.0', N-5
11.0'-12.5', N-11
13.5'-15.0', N-5
16.0'-17.5', N-0
18.5'-20.0', N-0
21.0'-22.5', N-2
23.5'-25.0', N-12
26.0'-27.5', N-54
28.5'-30.0', N-44
33.5'-35.0', N-37
38.5'-40.0', N-46
43.5'-45.0', N-46
48.5'-50.0', N-30
53.5'-55.0', N-29
58.5'-60.0', N-28
63.5'-65.0', N-44
68.5'-70.0', N-46
73.5'-75.0', N-30
78.5'-80.0', N-85
83.5'-85.0', N-89
88.5'-90.0', N-85
93.5'-95.0', N-60
98.5'-100.0', N-100+
103.5'-105.0', N-100+
108.5'-110.0', N-100+
113.5'-115.0', N-32
116.0'-117.5', N-47

24-BMU-14

16.0'-17.5', N-0
18.5'-20.0', N-5
21.0'-22.5', N-8
23.5'-25.0', N-18
26.0'-27.5', N-33
28.5'-30.0', N-35
33.5'-35.0', N-33
38.5'-40.0', N-49
43.5'-45.0', N-37
48.5'-50.0', N-26
53.5'-55.0', N-38
58.5'-60.0', N-25
63.5'-65.0', N-33
68.5'-70.0', N-44
73.5'-75.0', N-43
78.5'-80.0', N-22
83.5'-85.0', N-100+
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-Medium stiff, brown lean CLAY (CL), rootlets, traces of organic matter
B1-Stiff, brown lean CLAY (CL), rootlets, traces of organic matter
C1-Soft, brown, silty CLAY (CL-ML)
D1-Medium stiff, brown silty CLAY (CL-ML)
E1-Dense, brown silty SAND (SM)
F1-Dense, brown, fine, poorly graded SAND with silt (SP-SM), traces of gravel
G1-Dense, tan, fine, silty SAND (SM)
H1-Very Dense, tan, fine, poorly graded SAND with silt (SP-SM)
I1-Dense, tan, fine, poorly graded SAND with silt (SP-SM)
J1-Medium dense, gray, fine to coarse, silty SAND (SM) with gravel, clay strata or lenses
K1-Very dense, gray, fine to coarse, silty SAND (SM) with gravel, clay strata or lenses
L1-Medium dense, gray, fine, poorly graded GRAVEL with silt (GP-GM) and sand
M1-Very dense, gray, fine, poorly graded GRAVEL with silt (GP-GM) and sand
N1-Dense, gray, fine, poorly graded GRAVEL with silt (GP-GM) and sand
O1-Very dense, gray, clayey SAND (SC), traces of gravel
P1-Very stiff, brown, lean CLAY (CL), silt strata or lenses
Q1-Medium stiff, brown, lean CLAY (CL), silt strata or lenses
R1-Medium stiff, brown, fat CLAY (CL), oxidized, rootlets
S1-Medium stiff, brown, lean CLAY (CL), oxidized
T1-Stiff, brown, lean CLAY (CL), oxidized
U1-Medium stiff, brown, silty CLAY (CL-ML)
V1-Soft, brown, SILT (ML), clay strata or lenses
W1-Medium dense, brown, silty SAND (SM), clay strata or lenses
X1-Very dense, brown, fine, poorly graded SAND with silt (SP-SM), few gravel
Y1-Dense, brown, fine, poorly graded SAND with silt (SP-SM)
Z1-Dense, brown, fine, poorly graded SAND with silt (SP-SM), traces of gravel
A2-Medium Dense, brown, fine, poorly graded SAND with silt (SP-SM), traces of gravel
B2-Medium Dense, gray, fine to medium, silty SAND (SM), clay strata or lenses, few gravel
C2-Medium dense, gray, fine, poorly graded SAND with silt (SP-SM), few gravel
D2-Dense, gray, fine to medium, poorly graded SAND with silt (SP-SM), traces of gravel
E2-Dense, gray, fine, poorly graded SAND with silt (SP-SM) and gravel
F2-Medium dense, gray, fine to medium, poorly graded SAND with silt (SP-SM), few gravel
G2-Very dense, gray, fine, poorly graded SAND with silt (SP-SM)
H2-Very dense, light gray, fine, silty SAND (SM) with gravel
I2-Very dense, light gray, fine, silty SAND (SM)
J2-Very dense, light gray, clayey SAND (SC), clay strata or lenses
K2-Very dense, gray, silty SAND (SM)
L2-Very dense, gray, clayey SAND (SC), clay strata or lenses
M2-Hard, gray, fat CLAY (CH)
N2-Stiff, brown, lean CLAY (CL), rootlets, debris
O2-Stiff, brown, fat CLAY (CH), rootlets, oxidized
P2-Stiff, brown, lean CLAY (CL), oxidized
Q2-Medium stiff, brown, lean CLAY (CL), oxidized
R2-Very soft, brown, lean CLAY (CL), oxidized
S2-Medium stiff, brown, silty CLAY (CL-ML) with sand
T2-Medium stiff, brown, SILT (ML)
U2-Medium dense, brown, silty SAND (SM)
V2-Medium dense, brown, fine to medium, poorly graded SAND with silt (SP-SM), few gravel
W2-Dense, gray, fine to medium, poorly graded SAND with silt (SP-SM), few gravel
X2-Medium dense, gray, fine to coarse, poorly graded SAND with silt (SP-SM) and gravel
Y2-Dense, gray, fine to coarse, poorly graded SAND with silt (SP-SM) and gravel
Z2-Dense, gray, fine, poorly graded SAND with silt (SP-SM), few gravel
A3-Medium dense, gray, fine to medium, poorly graded SAND with silt (SP-SM) and gravel
B3-Very dense, gray, fine, poorly graded GRAVEL with silt (GP-GM) and sand, fine to coarse sand
C3-Very dense, gray, silty SAND (SM), traces of clay and organic matter



SHEET 2 OF 3
LAYOUT OF BRIDGE
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES

ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_b1.dgn
CHECKED BY: NEM DATE: FEB 2020 SCALE: NO SCALE
DESIGNED BY: RL DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58604

13-JUN-2022

b061473_n1

BRIDGE GENERAL NOTES

LAYOUT NOTES:

- BENCH MARK: SEE ROADWAY PLANS
- 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.
- DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATION 6TH EDITION (2012) WITH 2013 INTERIM SPECIFICATIONS.
- LIVE LOADING: HL-93
SEISMIC PERFORMANCE ZONE: 2
SITE CLASS: D; S (D1): 0.226g
- 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)
- BORING LOGS MAY BE OBTAINED FROM THE CONSTRUCTION CONTRACTS PROCUREMENT SECTION OF THE PROGRAM MANAGEMENT DIVISION.
- 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.
- BRIDGE DECK FINISH: CONCRETE BRIDGE DECK SHALL BE GIVEN A TINE FINISH IN ACCORDANCE WITH SUBSECTION 802.19 FOR CLASS 5 TINED BRIDGE ROADWAY SURFACE FINISH.
- 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.
- MAINTENANCE OF TRAFFIC: SEE ROADWAY PLANS.

DRAWING LIST:

DRAWING NAME	DRAWING NUMBER
SCHEDULE OF BRIDGE QUANTITIES	58602
LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 1 OF 3)	58603
LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 2 OF 3)	58604
LAYOUT OF BRIDGE OVER CANAL 1000 (SHEET 3 OF 3)	58605
DETAILS OF END BENTS (SHEET 1 OF 2)	58606
DETAILS OF END BENTS (SHEET 2 OF 2)	58607
DETAILS OF INTERMEDIATE BENTS (SHEET 1 OF 2)	58608
DETAILS OF INTERMEDIATE BENTS (SHEET 2 OF 2)	58609
DETAILS OF CONCRETE FILLED STEEL SHELL PILING	AHTD STD DWG 55021
ELASOTMERIC BEARING DETAILS	58610
134'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 1 OF 6)	58611
134'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 2 OF 6)	58612
134'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 3 OF 6)	58613
134'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 4 OF 6)	58614
134'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 5 OF 6)	58615
134'-0" CONTINUOUS COMPOSITE W-BEAM (SHEET 6 OF 6)	58616
APPROACH GUTTER - TYPE SPECIAL	58616A
APPROACH SLAB - TYPE C2	AHTD STD DWG 55040C2

SUBSTRUCTURE GENERAL NOTES:

- ALL CONCRETE SHALL BE CLASS "S" AND SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS TO BE CHAMFERED UNLESS OTHERWISE NOTED.
- ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M322 TYPE A, GRADE 60.
- NO PORTION OF THE BACKWALL SHALL BE CAST UNTIL THE BEAMS ARE IN PLACE. REFER TO "EXPANSION DEVICE INSTALLATION" NOTE.
- 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).
- ANCHOR BOLTS: IF ANCHOR BOLTS ARE DRILLED INTO CAP, TOP REINFORCING BARS SHALL BE PLACED TO AVOID DAMAGE.

PILING NOTES:

- PILING FOR END BENTS 1 AND 4 SHALL BE 18" DIAMETER CONCRETE FILLED STEEL SHELL PILES AND SHALL BE DRIVEN TO A MINIMUM ULTIMATE BEARING CAPACITY OF 180 TONS PER PILE AND TO A MINIMUM TIP ELEVATION OF 181 FEET. (MIN TIP DOES NOT APPLY TO WING PILES)
- 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 270 TONS PER PILE. THE PILE SHALL HAVE A MINIMUM TIP ELEVATION OF 170 FEET.
- 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).
- 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 - 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.
- ALL PILING SHALL BE DRIVEN WITH AN APPROVED AIR, STEAM, OR DIESEL HAMMER IN ACCORDANCE WITH SECTION 805.

PILING NOTES (cont'd):

- PILE ANCHORAGE TO BE PLACED TO MINIMIZE INTERFERENCE WITH ANCHOR BOLTS AND REINFORCING.
- THE CLAY LINER SHALL BE IN PLACE, WITHIN LIMITS OF THE BRIDGE OR AS REQUIRED BY THE ENGINEER, PRIOR TO DRIVING INTERIOR BENT PILES.
- SEE AHTD STANDARD DRAWING 55021 FOR ADDITIONAL NOTES.
- PILE ENCASEMENTS TO BE IN ACCORDANCE WITH THE CONCRETE AND REINFORCING STEEL ALTERNATE ON STANDARD DRAWING 55021.

SUPERSTRUCTURE GENERAL NOTES:

CONCRETE:

- ALL CONCRETE SHALL BE CLASS "S" AND SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS TO BE CHAMFERED UNLESS OTHERWISE NOTED.
- THE SUPERSTRUCTURE DETAILS SHOWN ARE FOR USE WHEN REMOVABLE DECK FORMING IS USED AND ARE THE BASIS FOR MEASUREMENT OF CLASS S(AE) CONCRETE. SEE STANDARD DRAWING NO 55005 FOR ALLOWABLE MODIFICATIONS AND FOR TOLERANCES WHEN PERMANENT STEEL BRIDGE DECK FORMS ARE USED.
- 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.
- REINFORCING TABLES: BAR SIZES ARE INDICATED BY THE FIRST NUMBER IN THE REINFORCING BAR MARK IDENTIFICATION.

STRUCTURAL STEEL:

- 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(e) UNLESS OTHERWISE NOTED. STRUCTURAL STEEL COMPLETELY EMBEDDED IN CONCRETE MAY BE AASHTO M270, GR 36 OR GR 50 UNLESS OTHERWISE NOTED.
- DRAWINGS SHOW GENERAL FEATURES OF DESIGN ONLY. SHOP DRAWINGS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS, SUBMITTED AND APPROVED BEFORE FABRICATION IS BEGUN.
- REQUESTS FOR SUBSTITUTION OF STRUCTURAL STEEL SHAPES SHOWN WITH SHAPES OF GREATER SIZE MUST BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL. 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.
- 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).
- 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.
- 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).
- 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.
- 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.
- 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.
- 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	3/8"	
OVER 3/4"	5/16"	

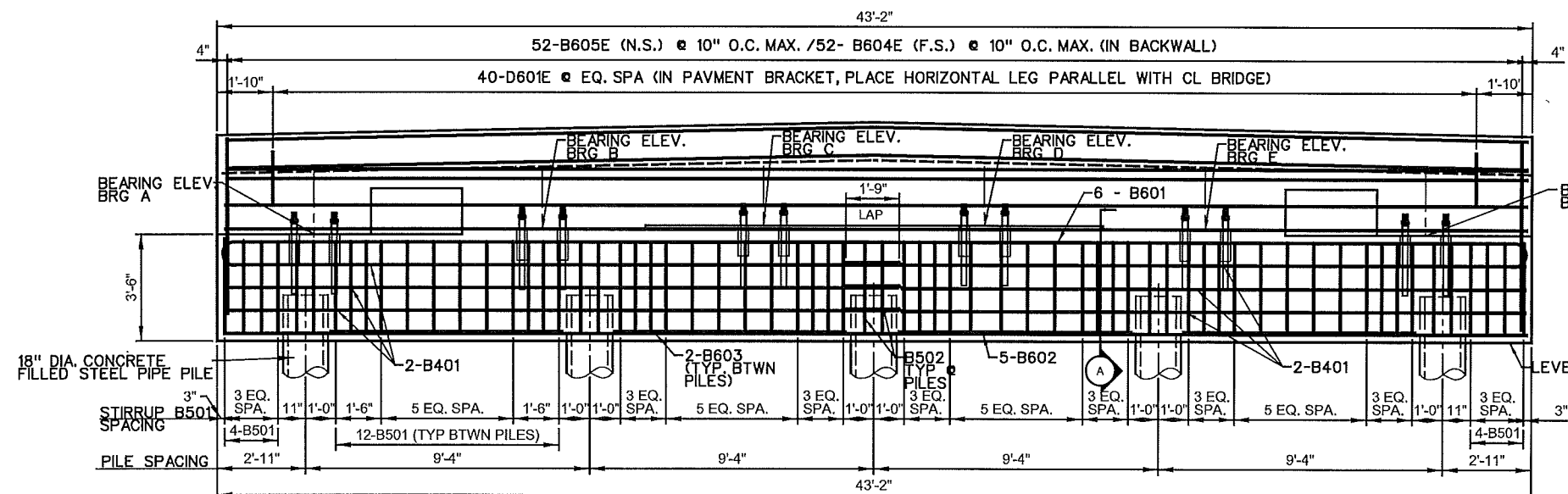
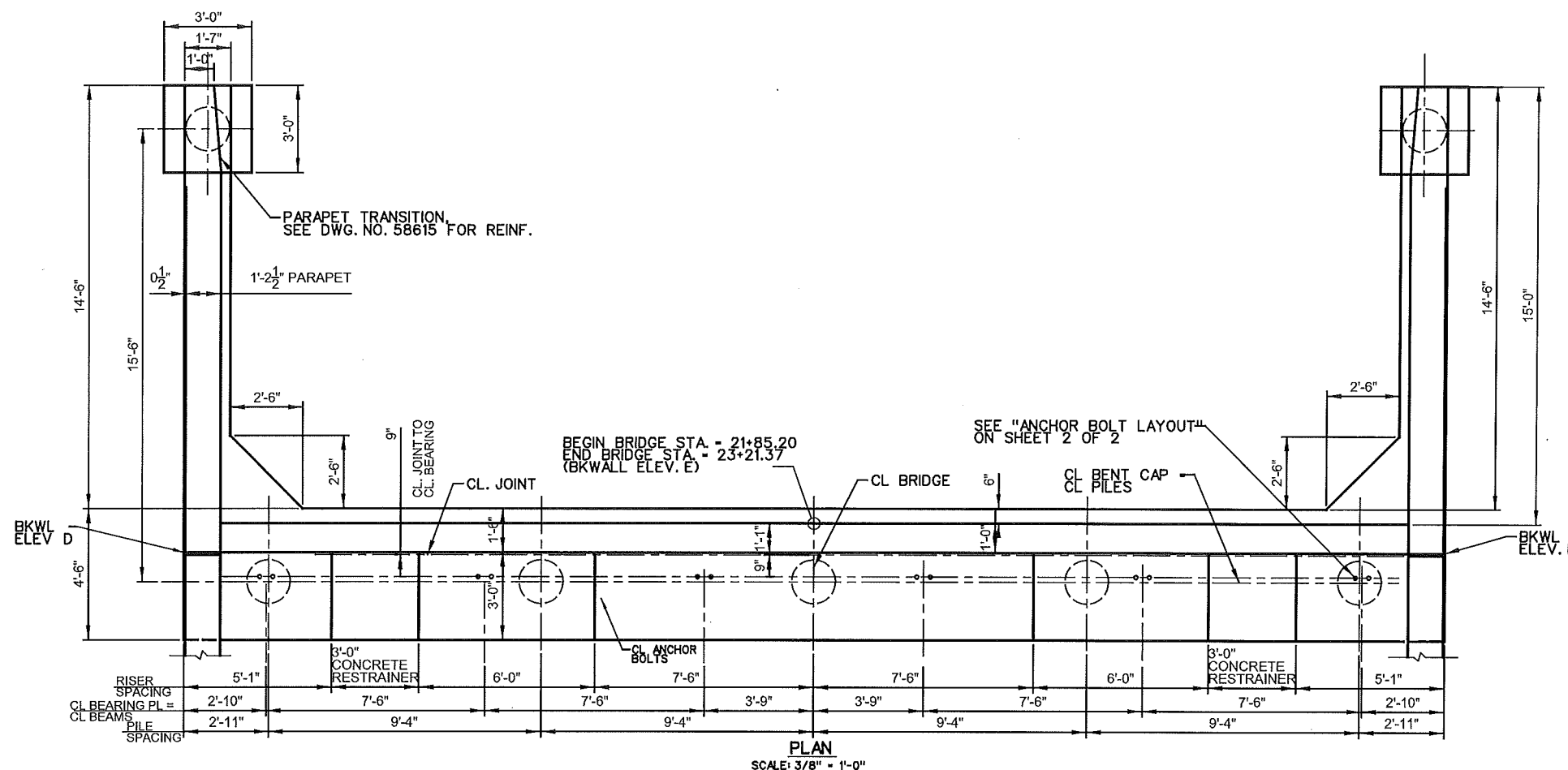


SHEET 3 OF 3
LAYOUT OF BRIDGE
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: TLW DATE: FEB 2020 FILENAME: b061473_n1.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: NO SCALE
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58605

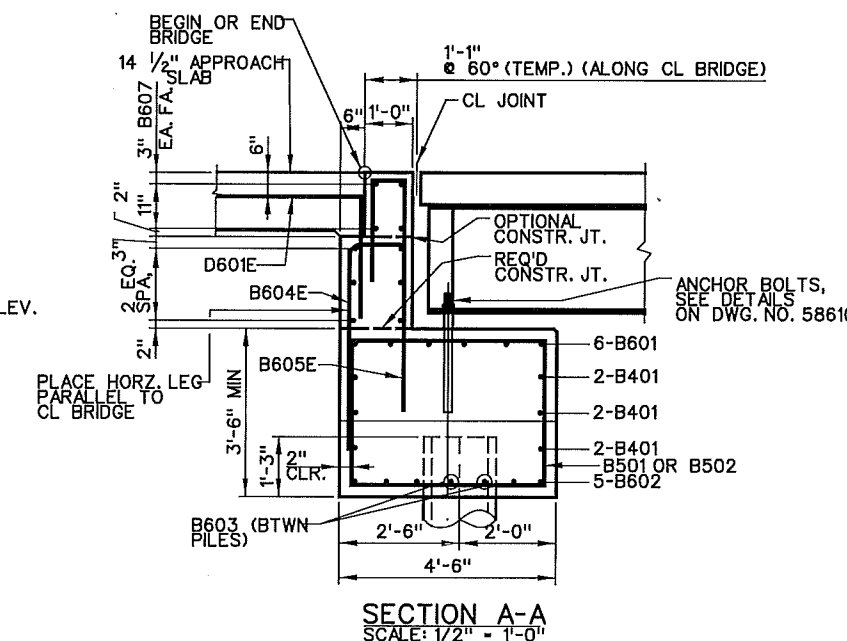
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	33	100
				07387	END BENT			58606

END BENT ELEVATIONS

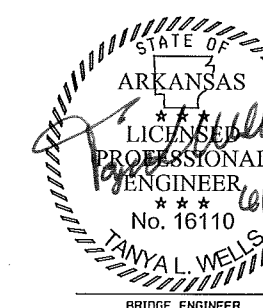
BEARING	END BENT	END BENT
BRG A	247.51	248.19
BRG B	247.66	248.34
BRG C	248.13	248.49
BKWL D	250.73	251.41
BKWL E	251.10	251.78
PILE CUT-OFF	245.19	245.87



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. 58605.
 - FOR DETAILS OF ELASTOMERIC BEARING PADS, SEE DWG. NO. 58610.
 - FOR "BAR LIST" & "BAR BENDING DIAGRAM", SEE DWG. NO. 58607.
 - FOR WINGWALL DETAILS, SEE DWG. NO. 58607.
 - FOR ELEV E, SEE DWG. NO. 58607.

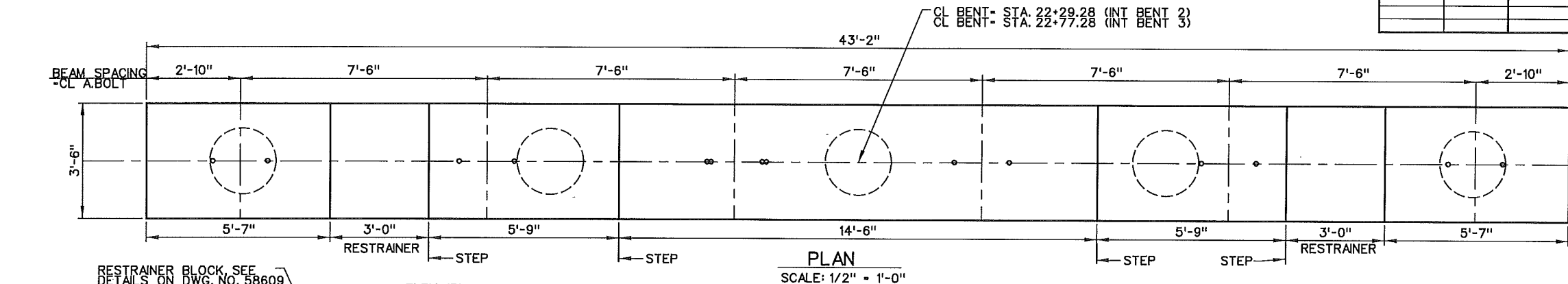


SHEET 1 OF 2
DETAILS OF END BENTS
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES

ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

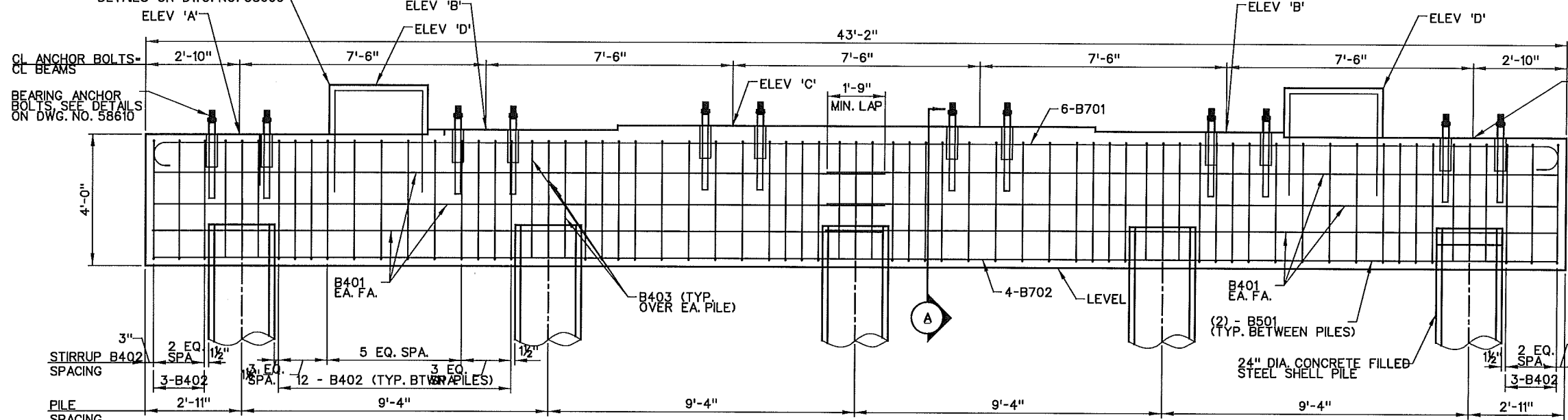
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_a11.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58606

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473		35	100
				07387	INT BENT		58608	



INT BENT ELEVATIONS

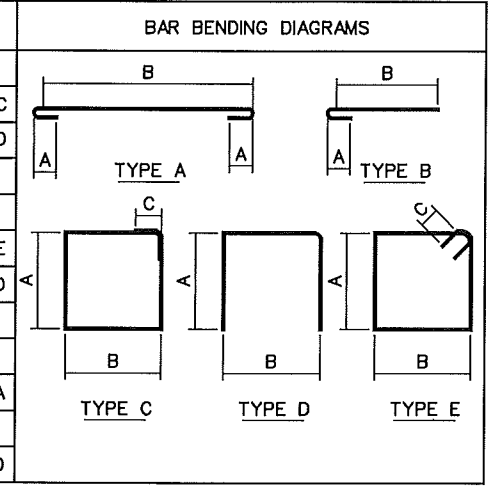
ELEV	INT BENT 2	INT BENT 3
A	247.63	247.87
B	247.78	248.02
C	247.93	248.17
D	249.13	249.37
PILE CUT-OFF	244.81	245.05



ELEVATION (LOOKING AHEAD ON STATIONING)
SCALE: 1/2" = 1'-0"

BAR LIST - PER INTERIOR BENT (2 REQ'D.)

MARK	NO. REQ'D.	LENGTH	A	B	C	P.D.	BAR BEND
B401	12	22'-4"					STR
B402	54	14'-0"	3'-8"	3'-2"		2"	TYPE C
B403	15	10'-4"	3'-8"	3'-2"		2"	TYPE D
B501	8	7'-0"					STR
* B502	6	12'-4"	2'-8"	3'-2"	6 1/4"	3 3/4"	TYPE E
* B601	12	9'-7"	3'-6"	2'-11"		4 1/2"	TYPE D
B701	6	44'-6"	7"	42'-10"		5 1/4"	TYPE A
B702	4	42'-10"					STR
* B703	14	9'-9"	3'-10"	2'-6"		5 1/4"	TYPE D



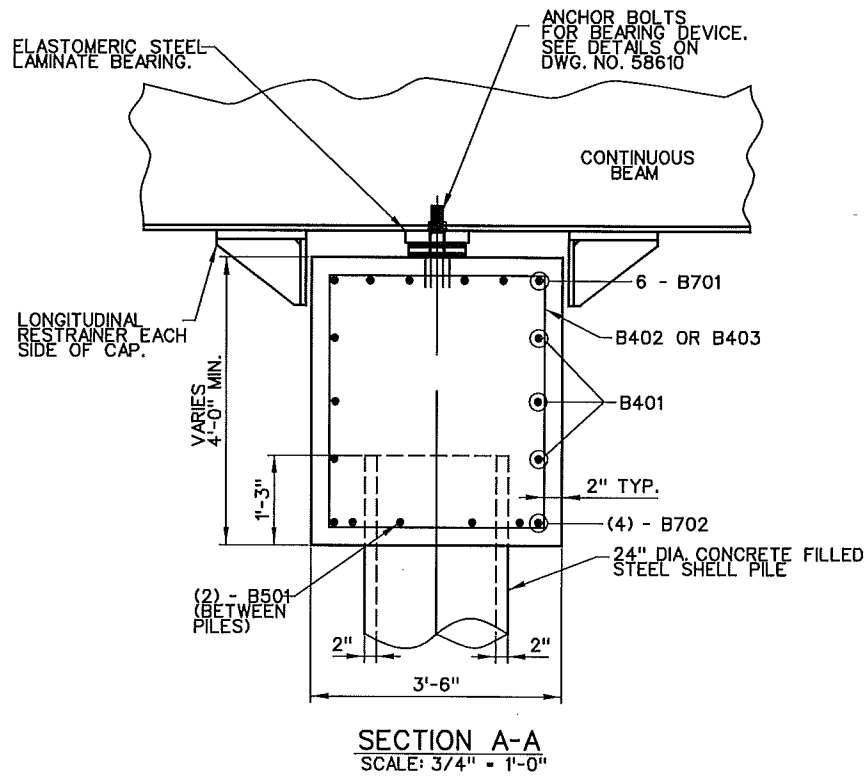
1. DIMENSIONS ARE OUT TO OUT OF BARS.
2. * DENOTES REINFORCING IN CONCRETE RESTRAINER. SEE DWG. NO. 58609

SHEET 1 OF 2
DETAILS OF INTERMEDIATE BENTS

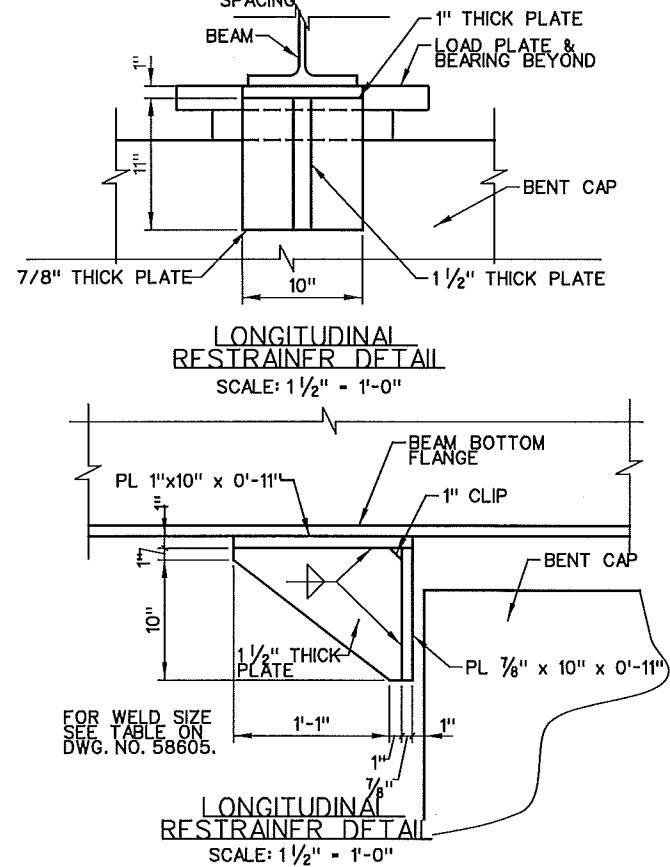
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.



DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_a21.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58608

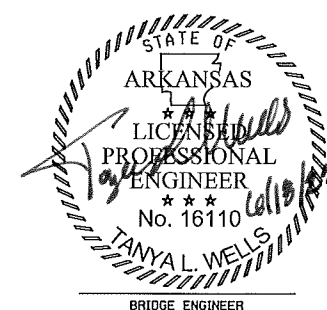
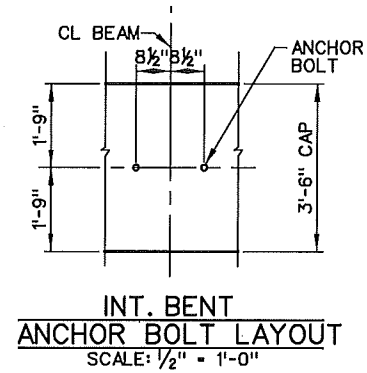
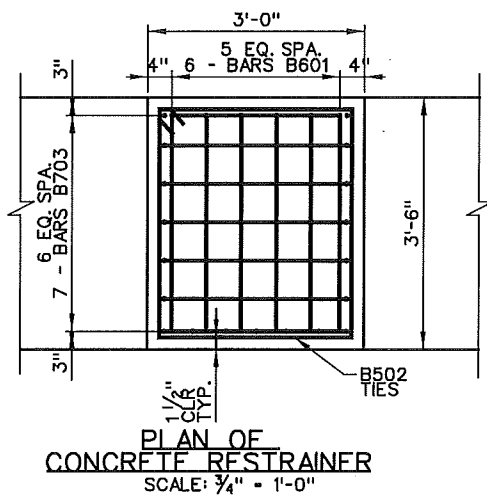
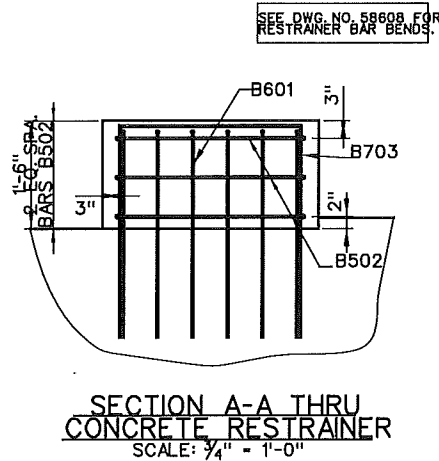


SECTION A-A
SCALE: 3/4" = 1'-0"



13-JUN-2022
b061473_a21

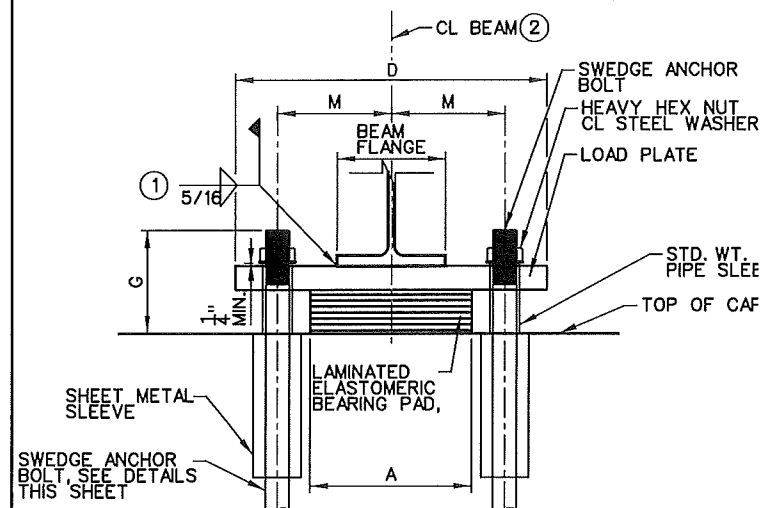
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	36	100
						07387	INT. BENT	58609



SHEET 2 OF 2
DETAILS OF INTERMEDIATE BENTS
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

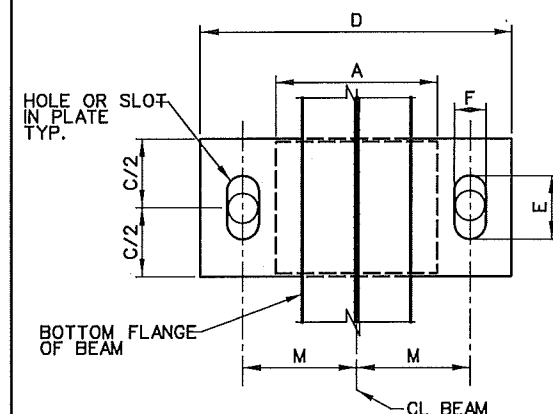
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473-a22.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58609

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473		37	100
				07387	ELAST. BEARINGS		58610	

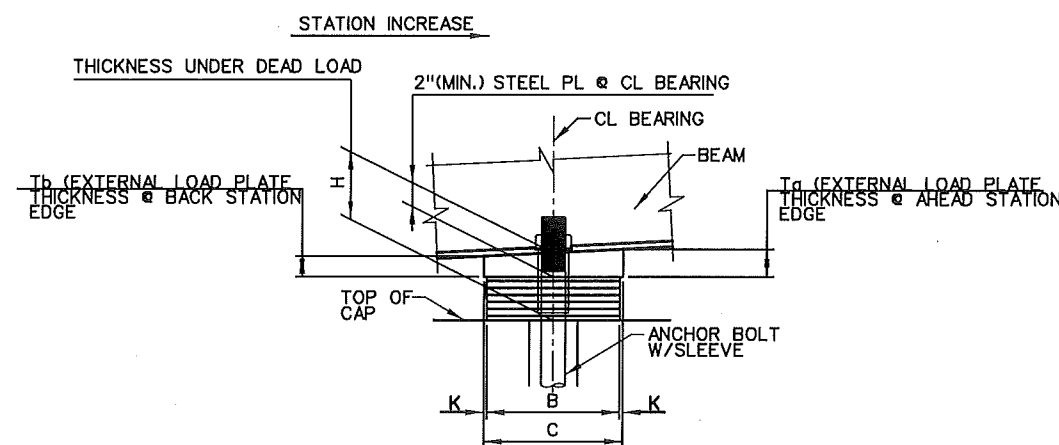


ELEVATION VIEW OF BEARING
NO SCALE

- 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.

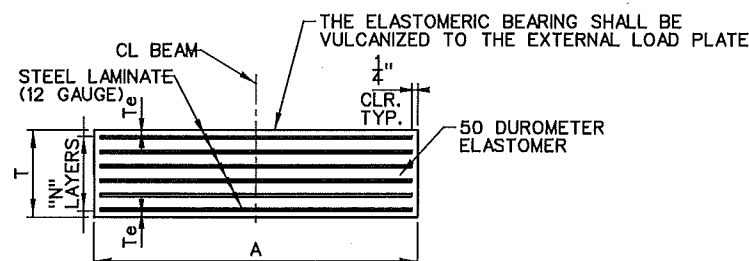


PLAN OF BEARING
NO SCALE



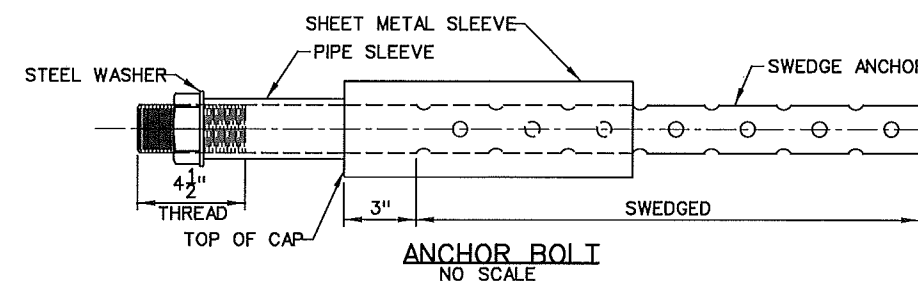
SIDE VIEW OF BEARING
NO SCALE

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.



ELASTOMERIC BEARING PAD
NO SCALE

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			
07387	1 & 4	ALL	EXP.	6	73	7 ⁵ / ₁₆ "	3 ¹³ / ₁₆ "	13"	10"	2	1/2"	1/4"	3 @ 12 Go.	1 ¹³ / ₁₆ "	11"	22"	3"	2 1/4"	1/2"	8 1/2"	2.03'	1.97"	1 1/2" X 24"	55	1 1/2" X 4 1/8"	3" X 9"	3"
	2 & 3	ALL	FIX	6	176	8"	5 1/32"	13"	11"	4	1/2"	1/4"	5 @ 12 Go.	3 1/32"	12"	22"	3"	3 3/8"	1/2"	8 1/2"	2.03'	1.97"	2" X 30"	55	2 1/2" X 4 3/4"	4" X 9"	3 3/4"

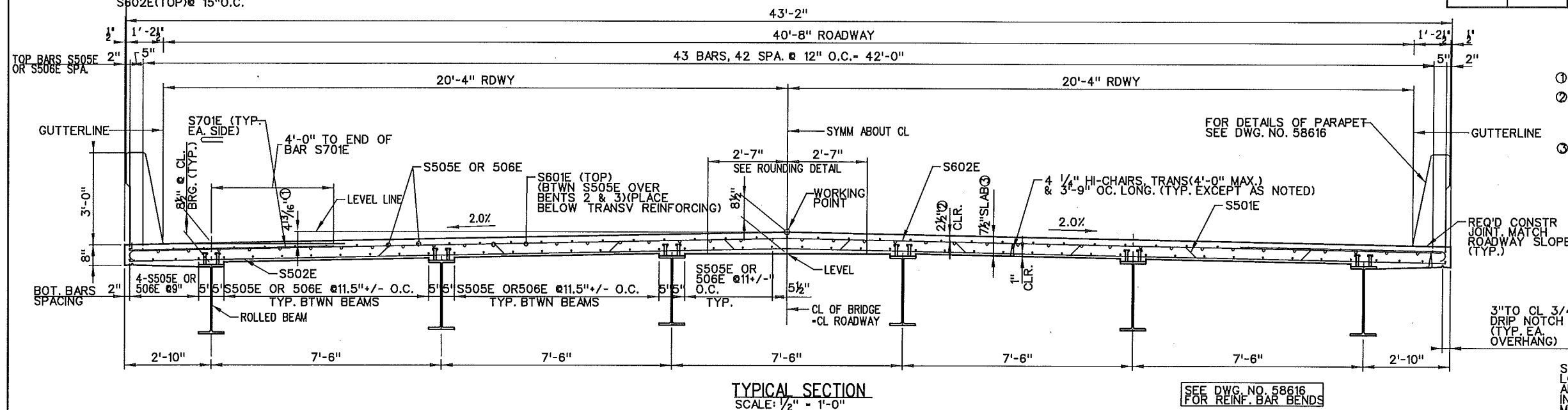


ELASTOMERIC BEARINGS DETAILS
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES

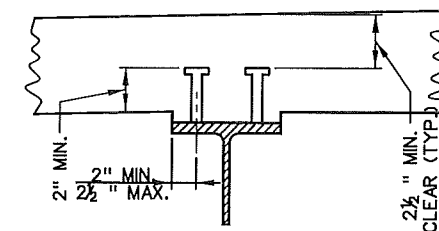
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_b22.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58610

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	38	100
			(2)	07387	CONT. UNIT			58611

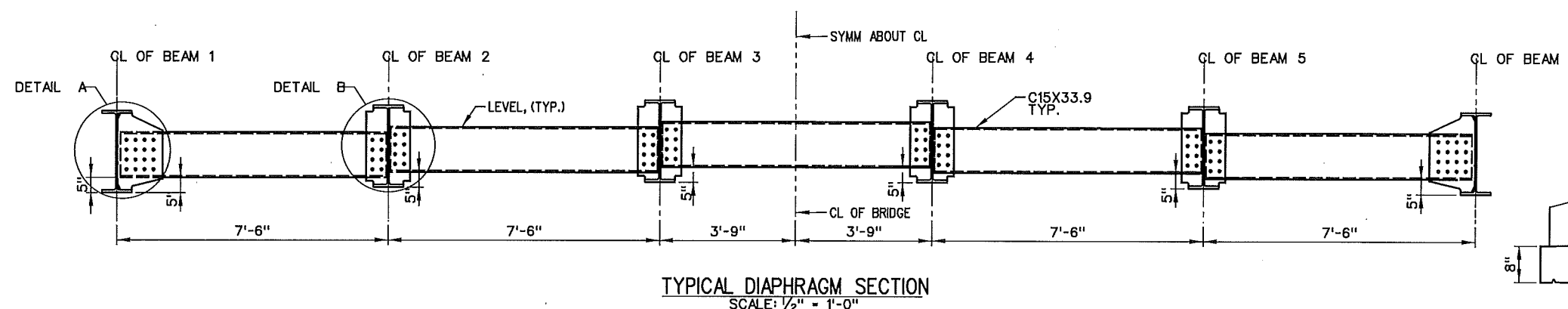


- ① WORKING POINT TO GUTTERLINE.
- ② TOLERANCE: MINUS $\frac{1}{4}$ " PLUS EQUAL TO THE AMOUNT OF SLAB THICKENING USED TO MEET SLAB THICKNESS TOLERANCE. "SEE ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".
- ③ SEE "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"

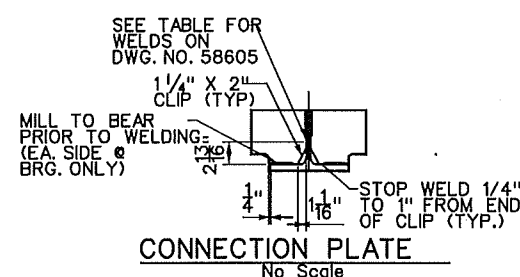


SHEAR STUD DETAIL

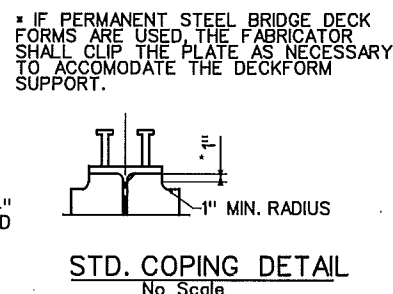
STUD SHEAR CONNECTORS SHOWN SHALL BE $\frac{3}{4}$ " X 4" LONG, GRANULAR FLUX FILLED, SOLID FLUXED OR EQUAL, AND AUTOMATICALLY END WELDED TO THE BEAM FLANGE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER. SEE TYPICAL BEAM ELEVATION ON DWG. NO. 58612 FOR SHEAR STUD SPACING.



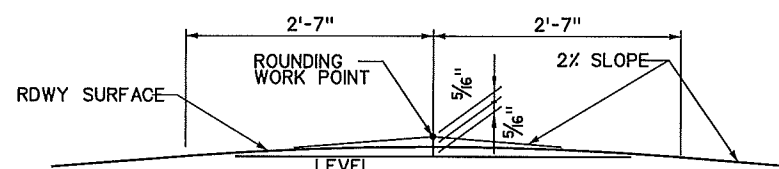
TYPICAL DIAPHRAGM SECTION
SCALE: 1/2" = 1'-0"



CONNECTION PLATE
No Scale

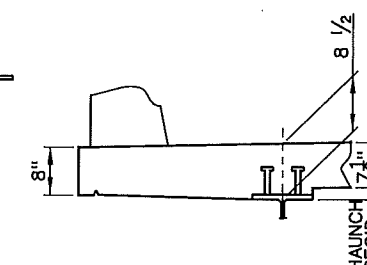


STD. COPING DETAIL
No Scale

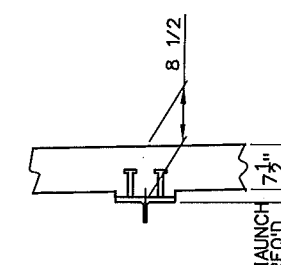


ROADWAY ROUNDING DETAIL

No Scale



EXTERIOR BEAM



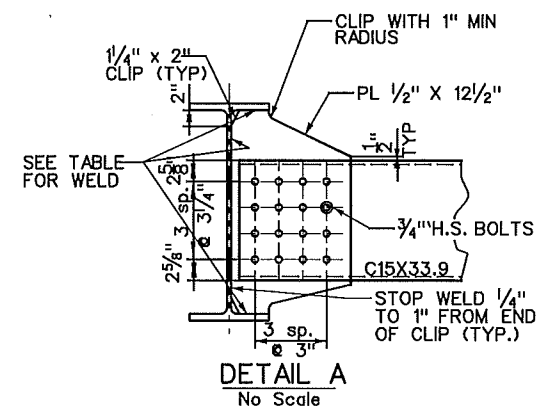
INTERIOR BEAM

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

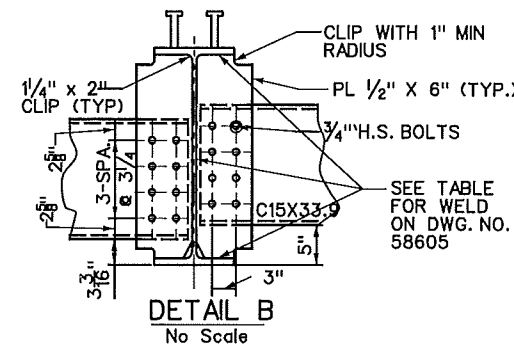
TOLERANCE WHEN REMOVABLE DECK FORMING IS USED IS $\frac{1}{2}$ " - $\frac{1}{4}$ ". HAUNCH FORMING IS REQUIRED AND SHALL BE ADJUSTED TO MAINTAIN SLAB THICKNESS TOLERANCE

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

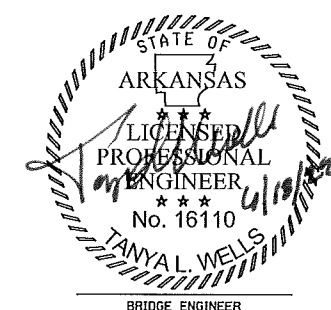
TOLERANCES SHOWN ARE APPLICABLE ONLY WHEN REMOVABLE DECK FORMING IS USED. SEE STD. DWG. 55005 FOR TOLERANCES WHEN PERMANENT STEEL DECK FORMS ARE USED. PAYMENT FOR CONCRETE SHALL BE MADE BASED ON REMOVABLE DECK FORMING.



DETAIL A
No Scale



DETAIL E
No Scale



SHEET 1 OF 6
DETAILS OF 134'-0" CONT
COMPOSITE W-BEAM UNIT
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES

ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

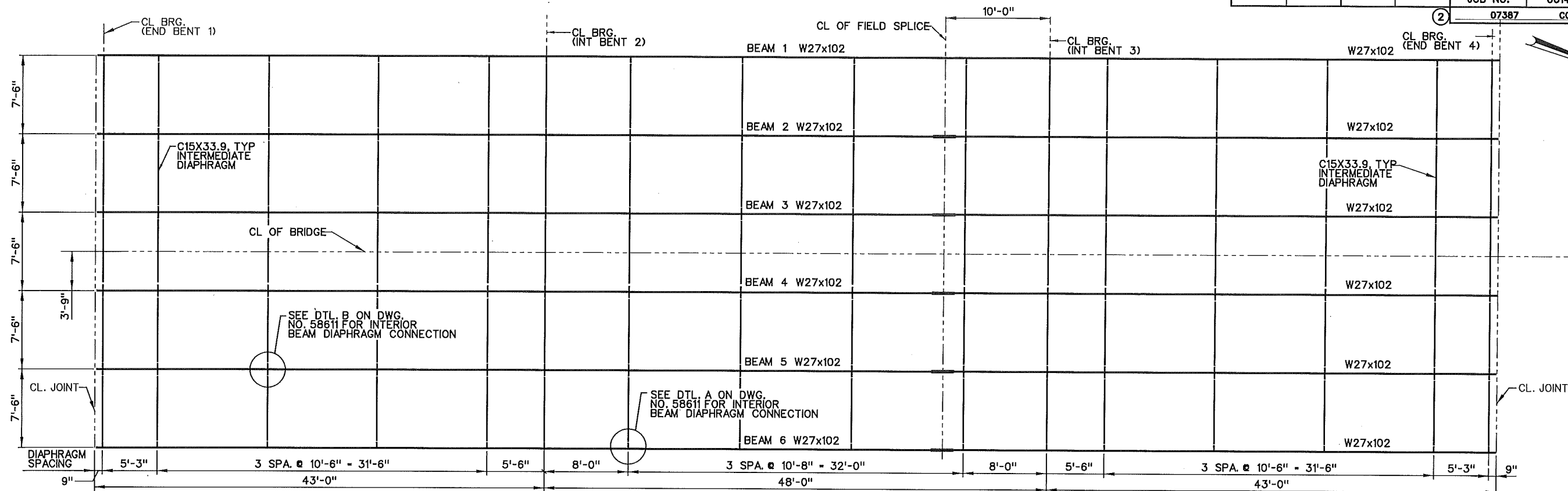
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_s11.dgn

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

DESIGNED BY: TLW DATE: FEB 2020

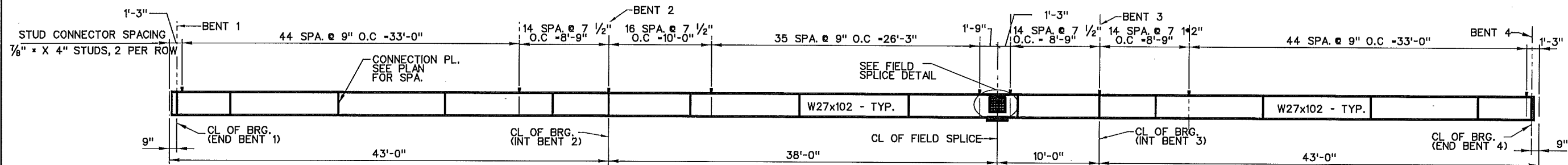
BRIDGE NO. 07387 DRAWING NO. 58611

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	39	100
				07387	CONT UNIT		58612	



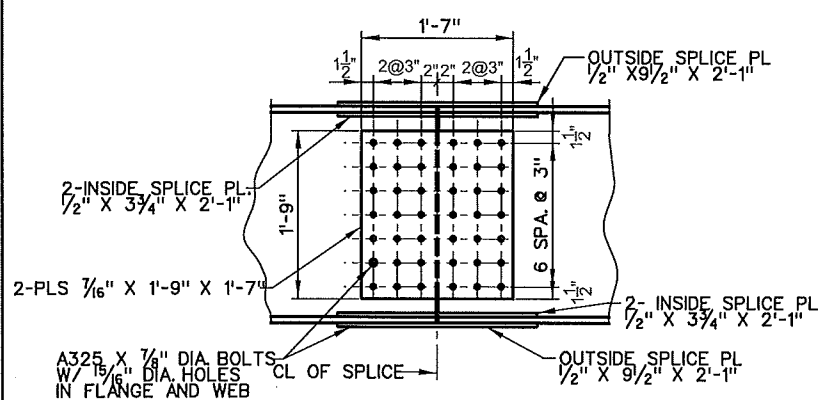
FRAMING PLAN

SCALE: 3/16" = 1'-0"



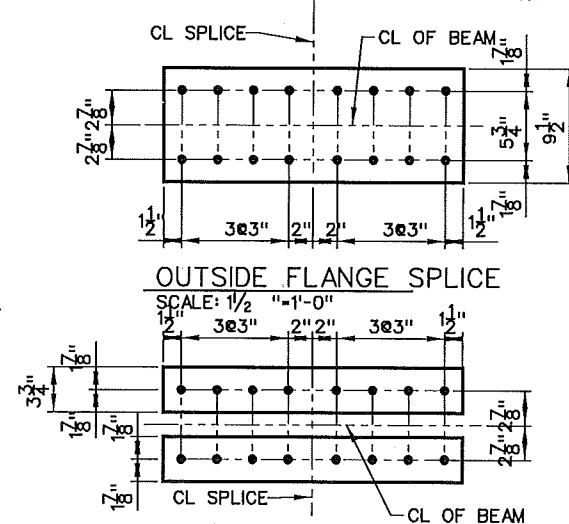
TYPICAL BEAM ELEVATION

SCALE: 3/16" = 1'-0"



WEB SPLICE

SCALE: 1" = 1'-0"



INSIDE FLANGE SPLICE

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

FIELD SPLICE DETAILS

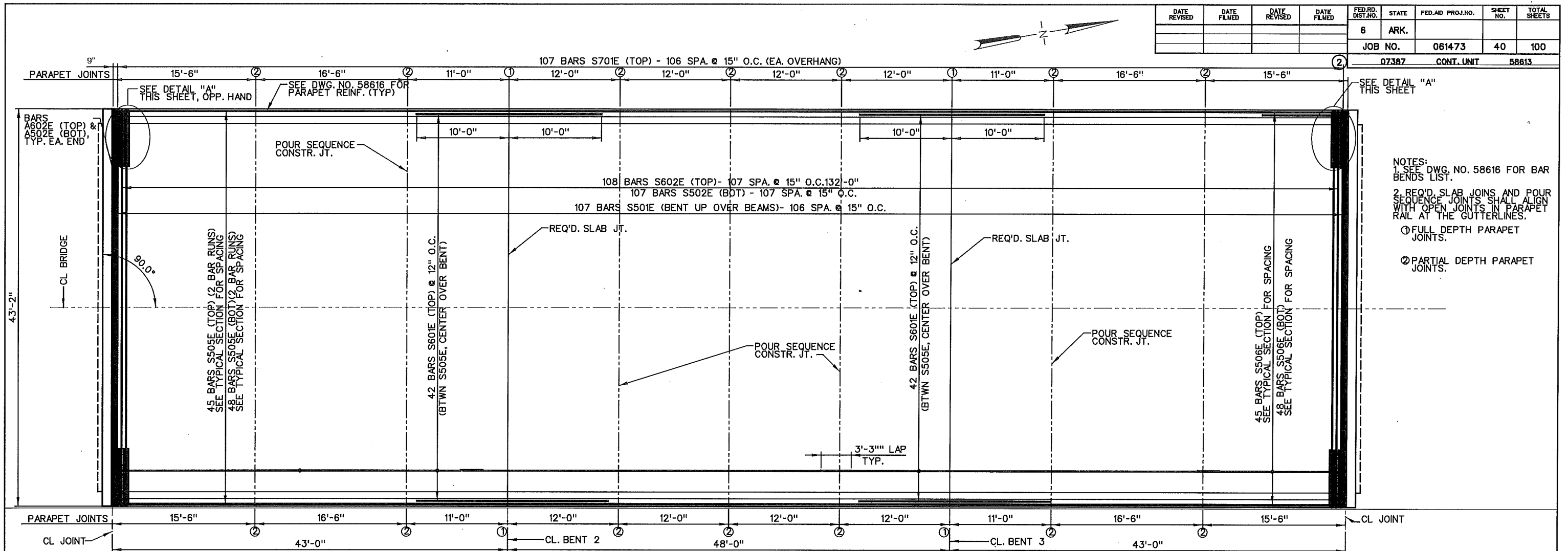


SHEET 2 OF 6
DETAILS OF 134'-0" CONT
COMPOSITE W-BEAM UNIT
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_s12.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58612

13-JUN-2022

b061473_s12



SLAB REINFORCING PLAN

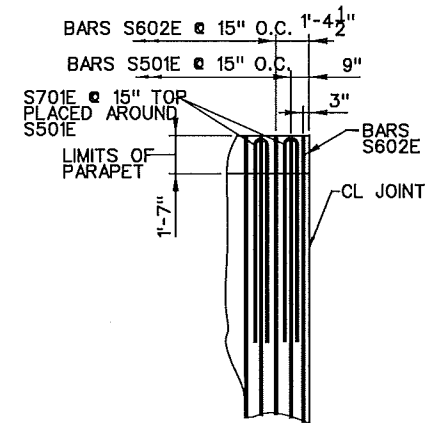
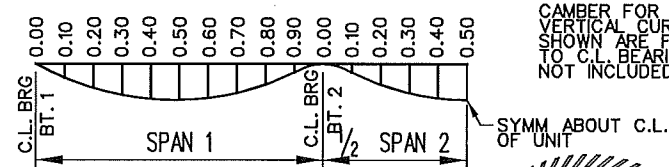
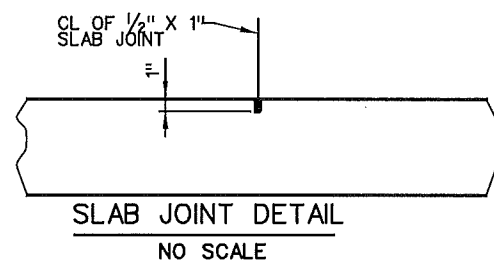
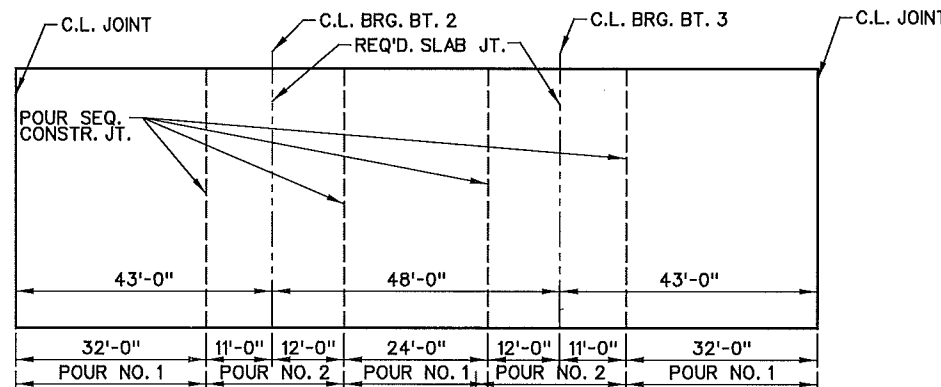
NO SCALE

SEE "CONCRETE CASTING SEQUENCE" FOR SLAB JOINT LOCATIONS.

USE TYPE 3 OR 4 JOINT SEALER. SEE SUBSECTIONS 501.2(h) AND 501.05(j). JOINT SEALER SHALL BE MEASURED AND PAID FOR AS CLASS (A/E). CONCRETE-BRIDGE SLAB JOINTS SHALL EXTEND TO THE OUTSIDE EDGE OF THE DECK SLAB. SLAB JOINT SHALL BE INSTALLED BEFORE THE PARAPET RAILING IS POURED. IF SLAB JOINTS ARE TO BE SAWS, THEY SHALL BE SAWS AS SOON AS THE CONCRETE HAS SUFFICIENTLY SET TO ALLOW SAWING OF THE JOINT WITHOUT DAMAGE TO THE SLAB. SLAB JOINTS SHALL BE PLACED AT ALL POURING SEQUENCE CONSTRUCTION JOINTS AND REQUIRED SLAB JOINT LOCATIONS.

SPAN	POINT OF DEFLECTION	STRUCTURAL STEEL		STRUCTURAL STEEL+SLAB		STRUCTURAL STEEL+SLAB+PARAPET	
		EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM
SPAN 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.1	0.016	0.019	0.121	0.140	0.135	0.152
	0.2	0.030	0.036	0.24	0.260	0.250	0.282
	0.3	0.040	0.048	0.296	0.344	0.331	0.375
	0.4	0.040	0.053	0.330	0.384	0.369	0.424
	0.5	0.043	0.052	0.324	0.377	0.362	0.408
	0.6	0.038	0.046	0.281	0.327	0.314	0.354
	0.7	0.028	0.034	0.210	0.245	0.235	0.265
	0.8	0.017	0.021	0.125	0.146	0.140	0.158
	0.9	0.006	0.008	0.047	0.055	0.052	0.052
SPAN 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.1	0.002	0.003	0.015	0.018	0.016	0.019
	0.2	0.010	0.011	0.070	0.079	0.077	0.086
	0.3	0.018	0.020	0.126	0.144	0.139	0.157
	0.4	0.024	0.026	0.167	0.191	0.185	0.209
	0.5	0.026	0.029	0.187	0.207	0.207	0.227
	0.6	0.024	0.026	0.167	0.191	0.185	0.209
	0.7	0.018	0.020	0.126	0.144	0.139	0.157
	0.8	0.010	0.011	0.070	0.079	0.077	0.086
	0.9	0.002	0.003	0.015	0.017	0.016	0.019

NOTE: SPAN 3 IS SYMMETRICAL TO SPAN 1 ABOUT THE BRIDGE CL.

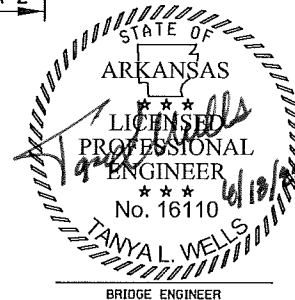
DETAIL "A"
TYPICAL SLAB EDGE REINFORCING
PLAN (TOP BARS)
NO SCALESLAB JOINT DETAIL
NO SCALE

CONCRETE CASTING SEQUENCE

POURS WITH THE SAME NUMBER MAY BE PLACED SIMULTANEOUSLY OR SEPARATELY. ALL POURS (1) MUST BE PLACED BEFORE POURS (2). 48 HOURS SHALL ELAPSE BETWEEN THE END OF A POUR AND THE START OF THE NEXT POUR. 72 HOURS SHALL ELAPSE FROM THE END OF A POUR AND THE START OF AN ADJACENT POUR. ANY RAILING POURS MADE BEFORE THE ENTIRE SLAB UNIT HAS BEEN PLACED MUST BE APPROVED BY THE ENGINEER. THE CONTRACTOR MUST OBTAIN APPROVAL FROM THE ENGINEER FOR ANY DEVIATION FROM THE POURING SEQUENCES SHOWN.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473		40	100
				07387	CONT. UNIT		58613	

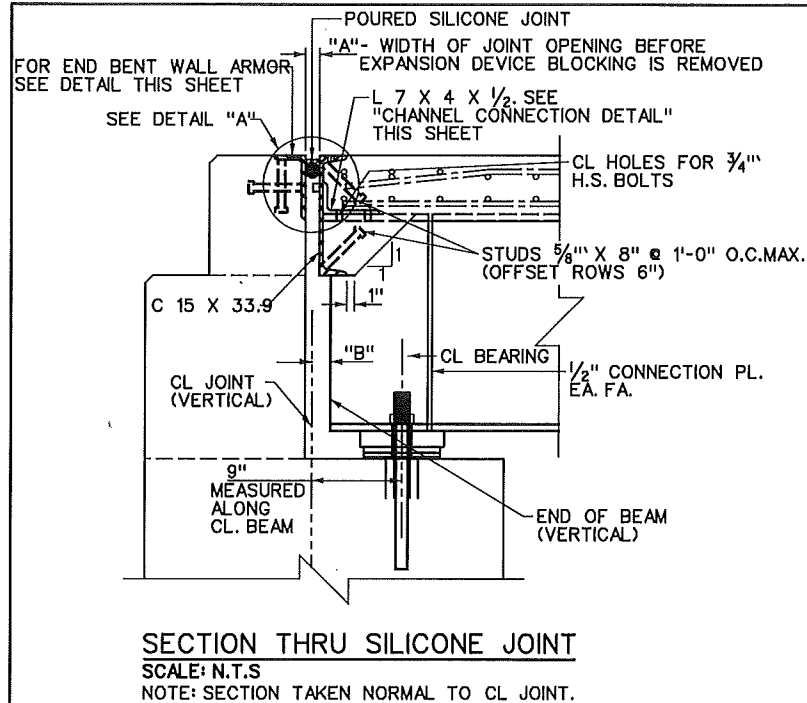
- NOTES:
- SEE DWG. NO. 58616 FOR BAR BENDS LIST.
 - REQ'D. SLAB JOINTS AND POUR SEQUENCE JOINTS SHALL ALIGN WITH OPEN JOINTS IN PARAPET RAIL AT THE GUTTERLINES.
 - FULL DEPTH PARAPET JOINTS.
 - PARTIAL DEPTH PARAPET JOINTS.



SHEET 3 OF 6
DETAILS OF 134'-0" CONT
COMPOSITE W-BEAM UNIT
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_s13.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58613

13-JUN-2022
b061473_s21



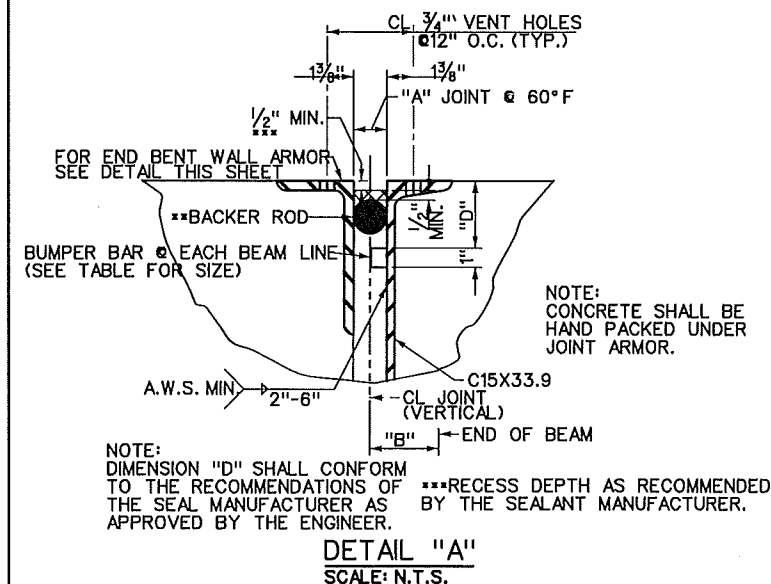
SILICONE JOINT DATA					
"A" WIDTH PERPENDICULAR TO JOINT AT 24 HOUR AVERAGE TEMPERATURE * OF:			"B" PERPENDICULAR TO JOINT AT 60°F	"D"	BUMPER BAR SIZE
40°F	60°F	80°F			
2 1/8"	2"	1 7/8"	2 1/2"	3 1/2"	1" X 1" X 12"

* 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'.

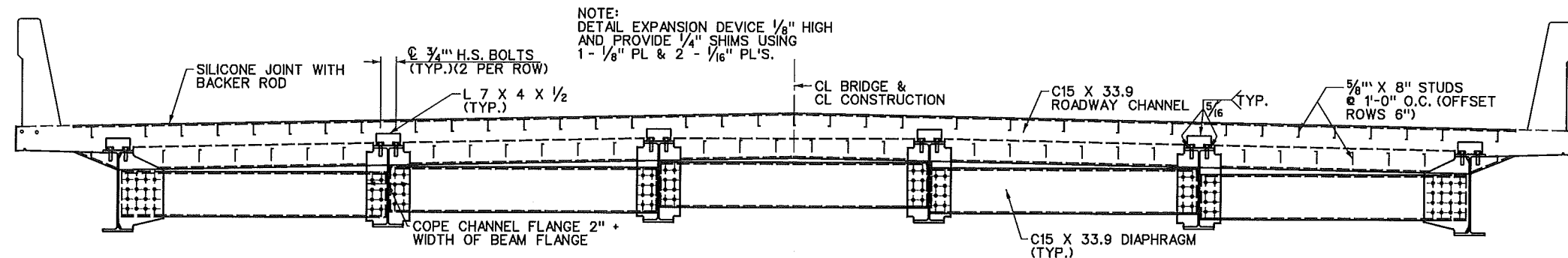


ONE OF TWO DIFFERENT BLOCKING SYSTEMS IS REQUIRED DEPENDING ON THE TYPE OF SPAN FINISHING MACHINE THAT IS USED.

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

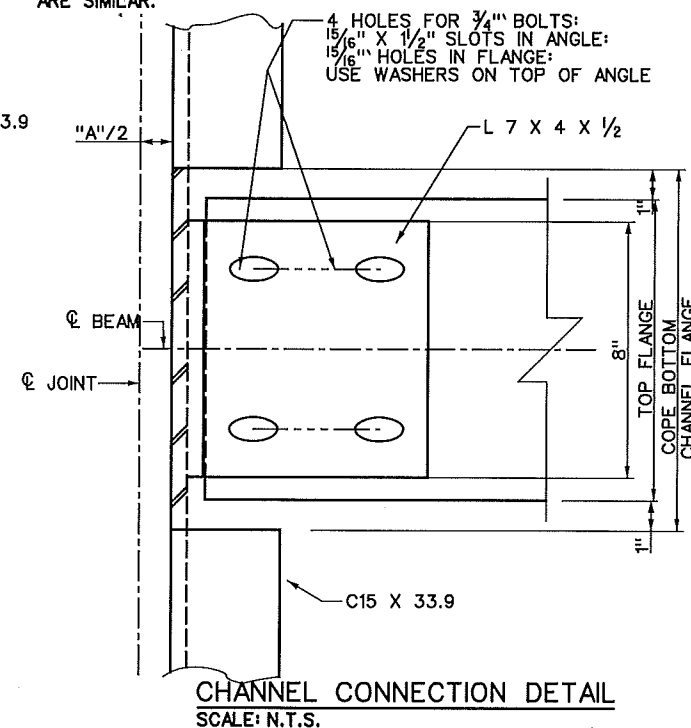
FOR LONGITUDINAL STRIKE-OFF: BOLT & SPACER ATTACHED TO CHANNELS AND ANGLE FOR BLOCKING.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE



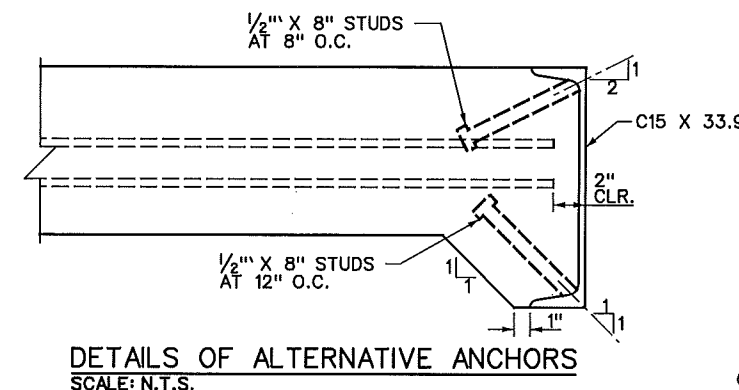
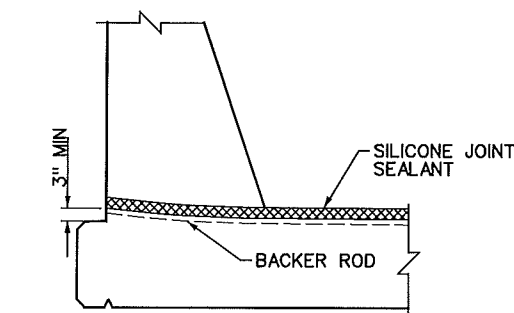
SECTION NEAR EXP. JOINT @ END BENT NO.1 (LOOKING AHEAD)

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

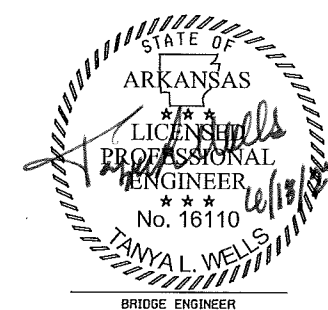
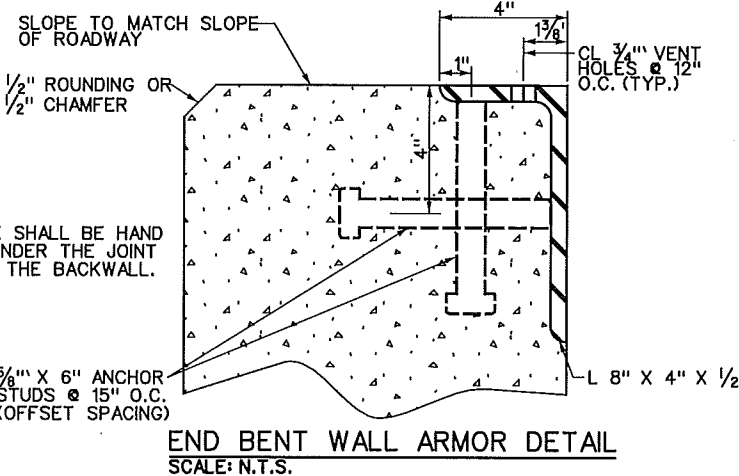


NOTES:
FOR GENERAL NOTES SEE DWG. NO. XXXX.

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



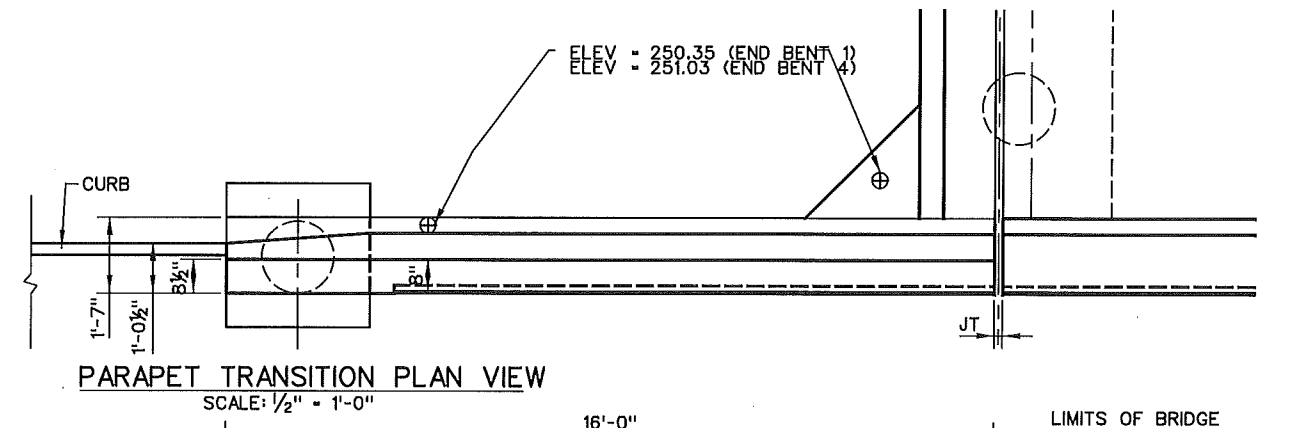
NOTE:
AS AN ALTERNATIVE TO 5/8" STUDS, 1/2" X 8" STUDS SPACED AS SHOWN MAY BE USED. USE WEIGHT OF 5/8" STUDS AS BASIS OF MEASUREMENT OF STRUCTURAL STEEL IN ANCHORS.



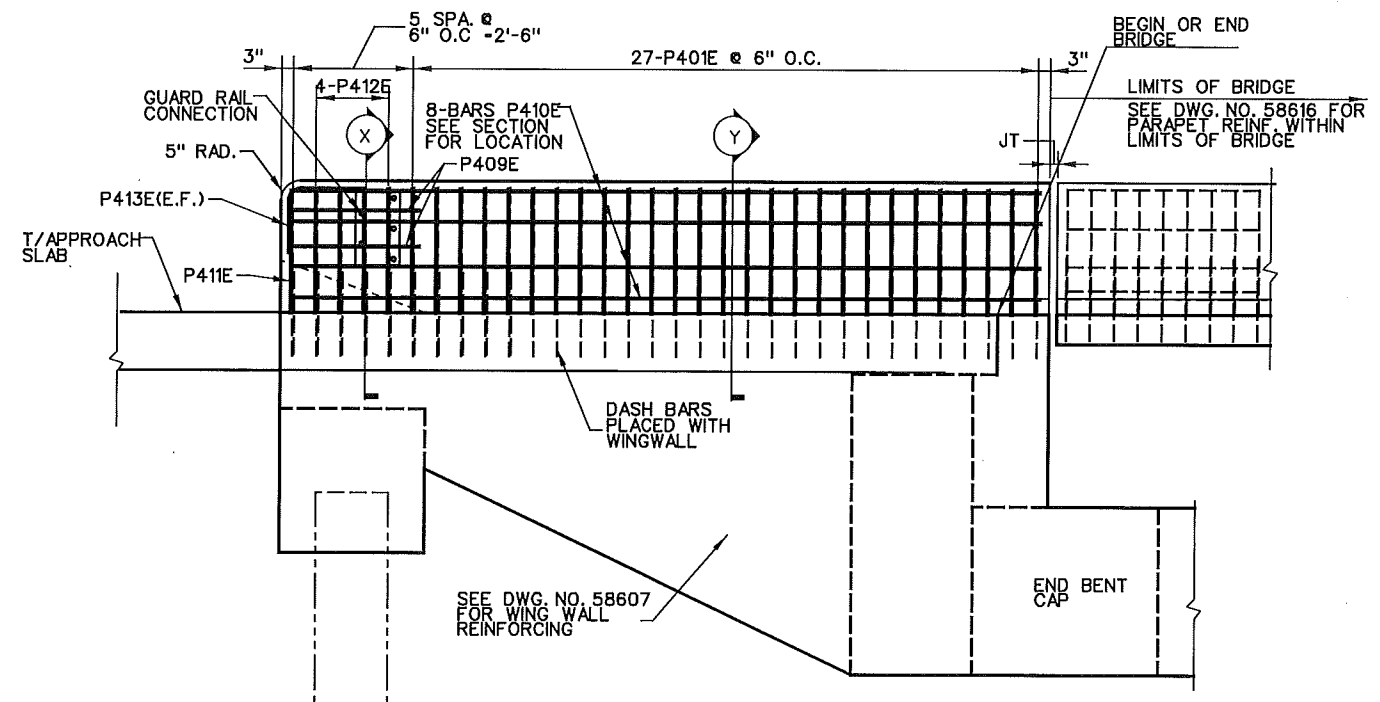
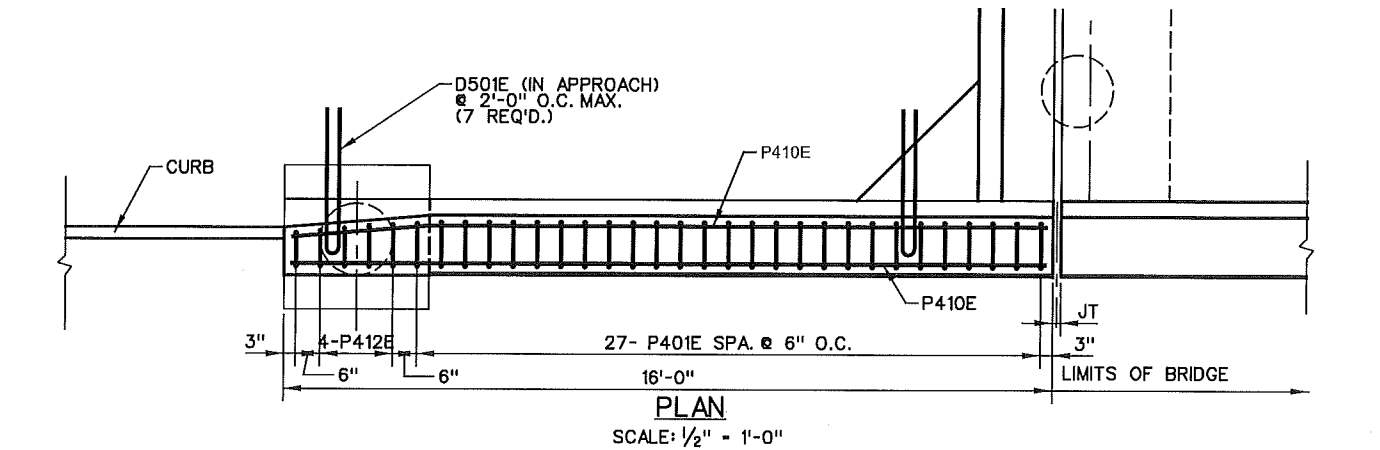
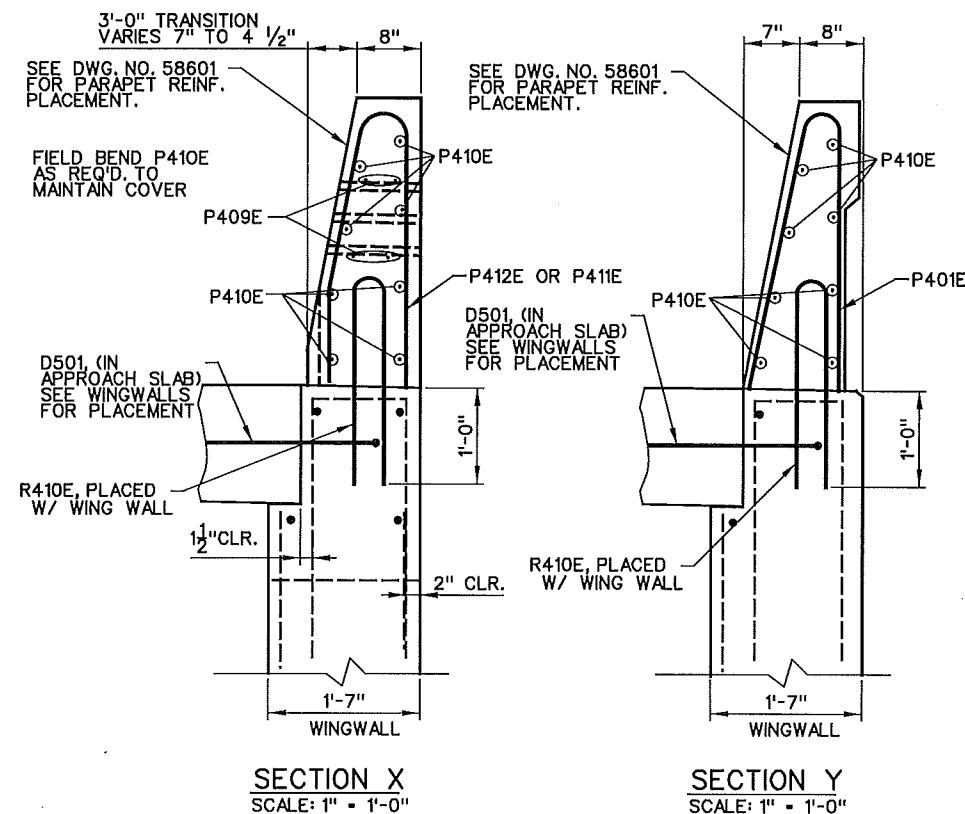
SHEET 4 OF 6
DETAILS OF 134'-0" CONT.
COMPOSITE W-BEAM UNIT
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_s21.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: T.L.W. DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58614

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473		42	100
				07387	CONT. UNIT		58615	



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

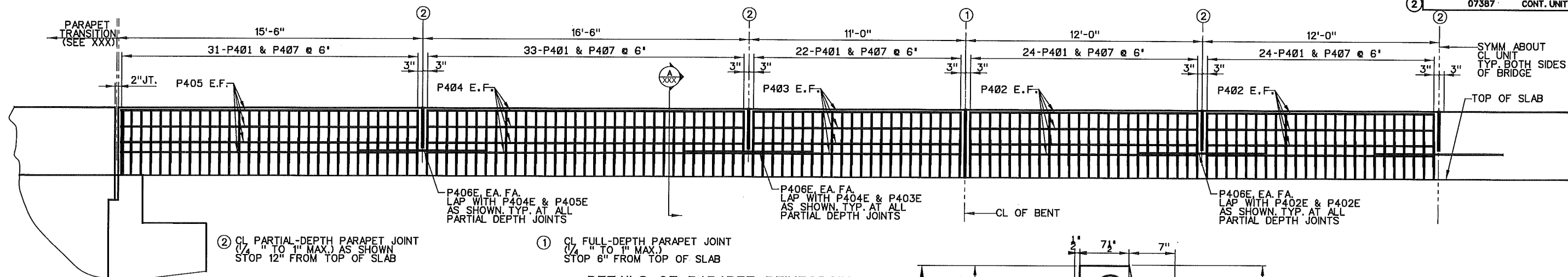


ELEVATION
SCALE: 1/2" = 1'-0"
PARAPET TRANSITION REINFORCING



SHEET 5 OF 6
DETAILS OF 134'-0" CONT.
COMPOSITE W-BEAM UNIT
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473 s22.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58615

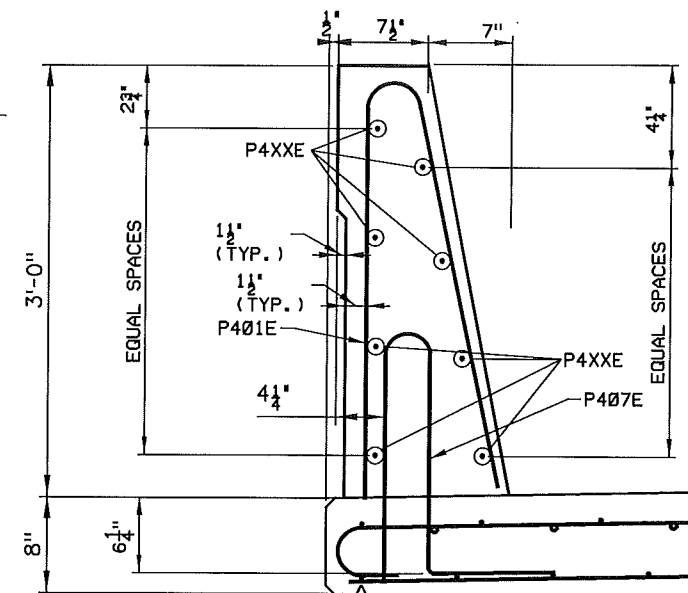
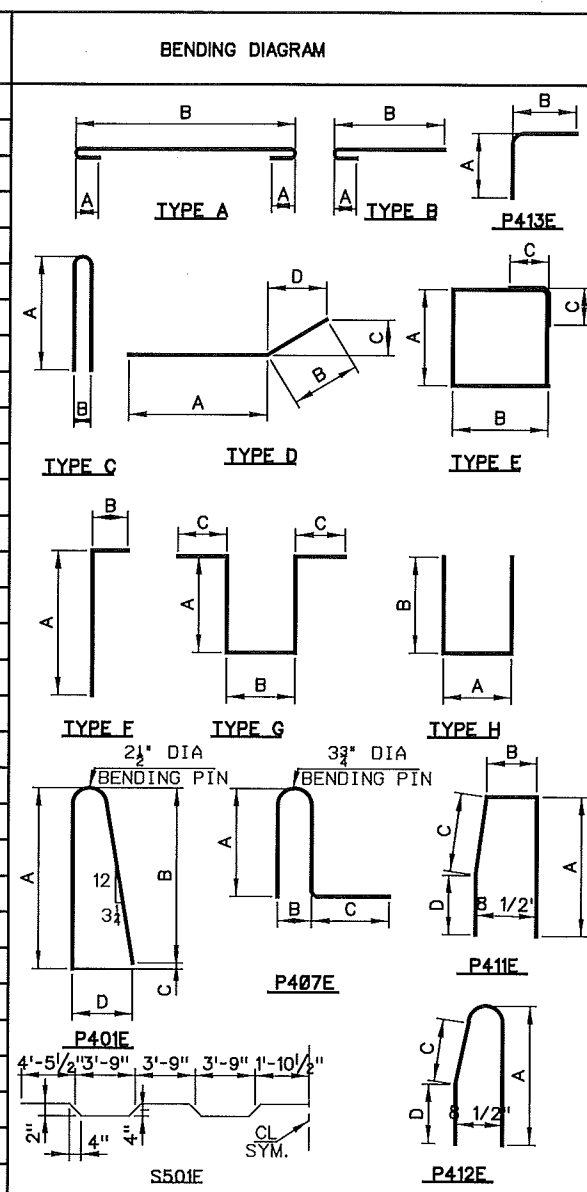
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061473		43	100
				07387	CONT. UNIT		58616	



DETAILS OF PARAPET REINFORCING
SCALE: NO SCALE

SLAB, DIAPHRAGMS & PARAPETS BAR LIST

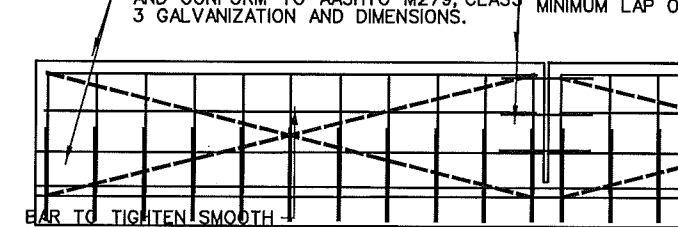
MARK	NO. REQ'D	LENGTH	A	B	C	D	P.D.	BAR BEND
S501E	109	44'-5"						S501E
S502E	108	42'-10"						STR.
S505E	186	60'-0"						STR.
S506E	93	20'-6"						STR.
S601E	84	20'-0"						STR.
S602E	108	44'-2"	6'-0"	42'-10"			4 1/2"	TYPE A
S701E	214	13'-7"	6'-8"	6 1/4"			6 1/2"	TYPE C
P401E	668	5'-11"	2'-10 3/4"	2'-10 1/4"	1/2"	9 3/4"		P401E
P402E	64	11'-8"						STR.
P403E	32	10'-8"						STR.
P404E	32	16'-2"						STR.
P405E	32	15'-2"						STR.
P406E	26	5'-6"						STR.
P409E	16	3'-8"						STR.
P407E	536	3'-6"	1'-4 1/2"	4 3/4"	8"		3 3/4"	P407E
P410E	32	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



SECTION A
SCALE: NO SCALE

WIRE SHALL BE SMOOTH 9 GAGE, AND CONFORM TO AASHTO M279, CLASS 3 GALVANIZATION AND DIMENSIONS.

THREE #4 FIBERGLASS REINFORCING BARS SHALL BE INSTALLED AS SHOWN ACROSS ALL PARAPET JOINTS WITH A 20" MINIMUM LAP ON EACH STEEL BAR.



WIRE SHALL BE SMOOTH 9 GAGE, AND CONFORM TO AASHTO M279, CLASS 3 GALVANIZATION AND DIMENSIONS.

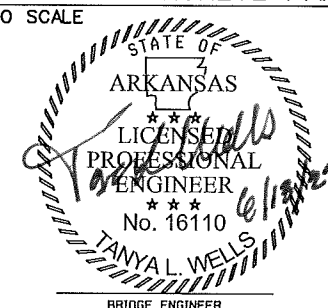
THREE #4 FIBERGLASS REINFORCING BARS SHALL BE INSTALLED AS SHOWN ACROSS ALL PARAPET JOINTS WITH A 20" MINIMUM LAP ON EACH STEEL BAR.

ALL SMOOTH WIRE BRACING SHALL BE PLACED ON THE INSIDE FACES OF THE REINFORCING

FOR ACTUAL PLACEMENT OF REINFORCING STEEL, SEE PARAPET DETAILS.

THE EXTRUDED PARAPET SHALL CONFORM TO THE HORIZONTAL AND VERTICAL LINES SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND SHALL PRESENT A SMOOTH, UNIFORM APPEARANCE AND TEXTURE. EXPOSED SURFACE MAY BE GIVEN A LIGHT BRUSH FINISH OR A CLASS 3, TEXTURED COATING FINISH, IN PLACE OF THE CLASS 2, RUBBED FINISH.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
SCALE: NO SCALE



SHEET 6 OF 6
DETAILS OF 134'-0" CONT
COMPOSITE W-BEAM UNIT
HIGHWAY 165 OVER CANAL 1000
LONOKE COUNTIES
ROUTE 165 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

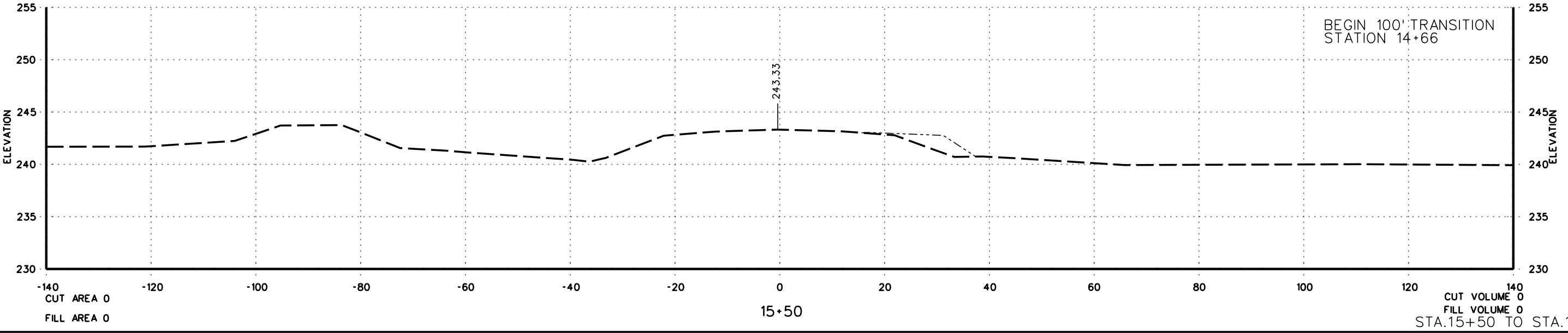
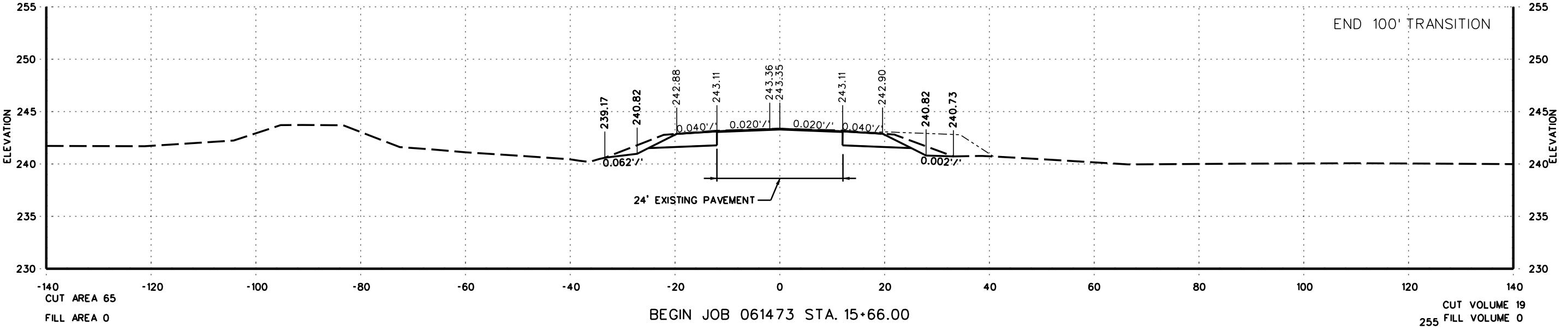
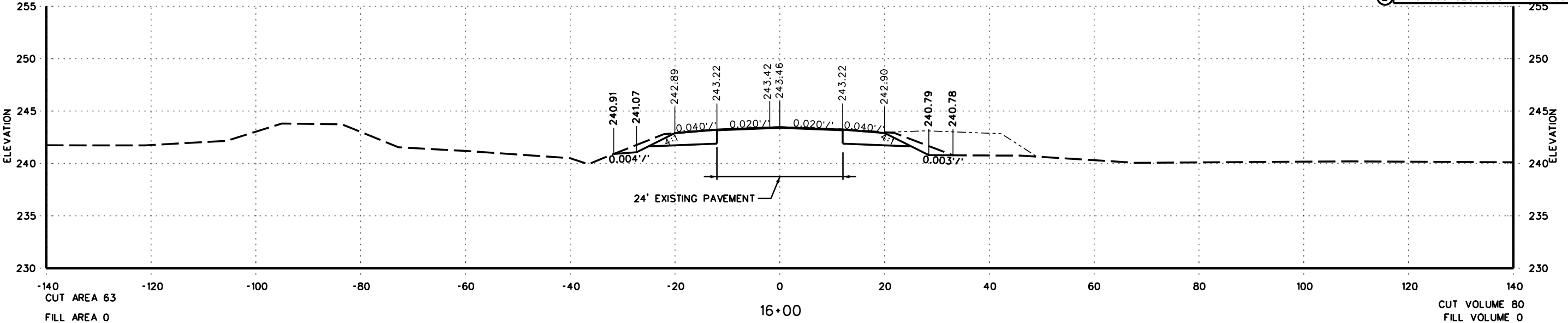
DRAWN BY: MJH DATE: FEB 2020 FILENAME: b061473_s23.dgn
CHECKED BY: DR DATE: FEB 2020 SCALE: AS SHOWN
DESIGNED BY: TLW DATE: FEB 2020
BRIDGE NO. 07387 DRAWING NO. 58616

1. DIMENSIONS ARE OUT TO OUT OF BARS.

6/15/2022
BM165BRIDGE_075

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. 061473		75	100	

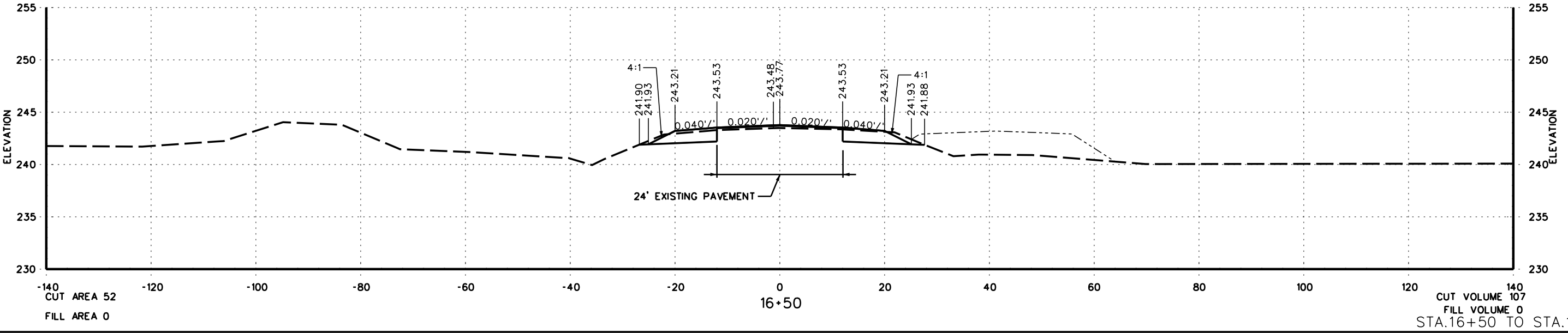
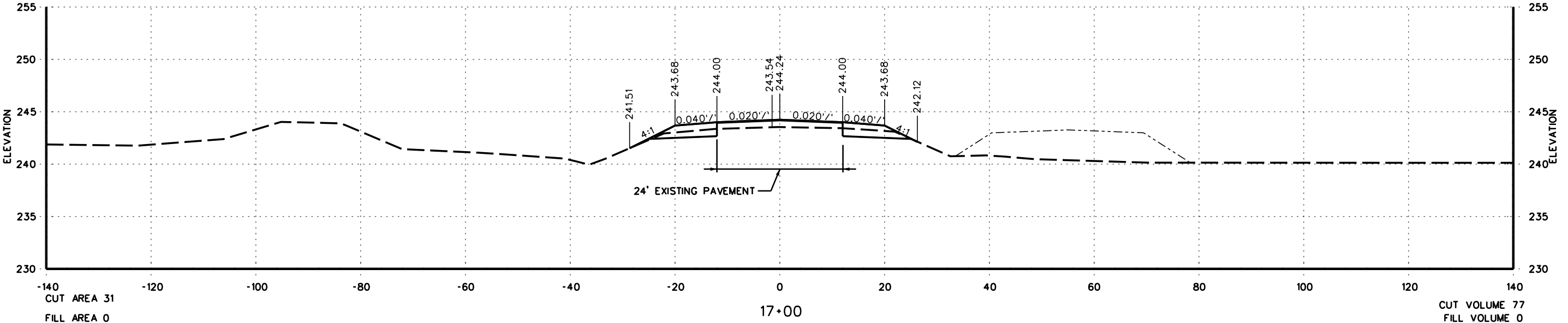
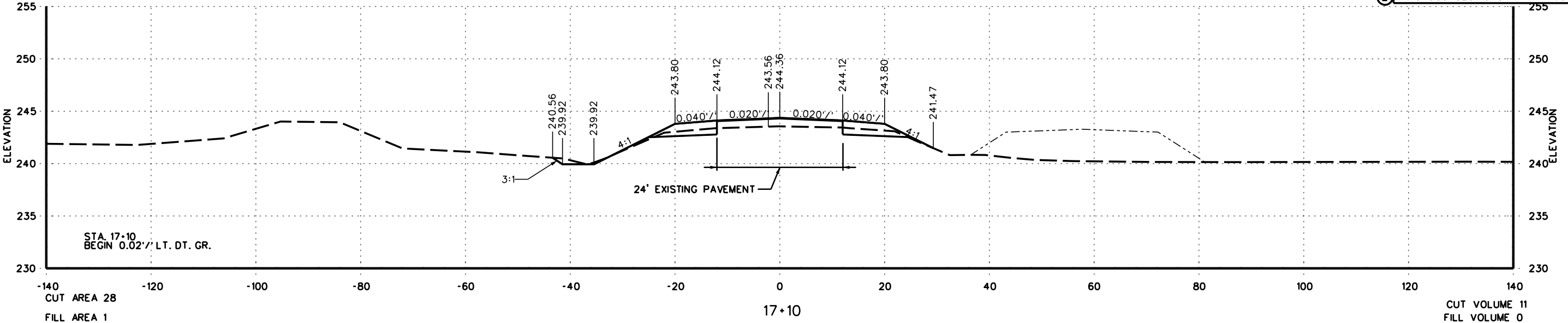
2 CROSS SECTIONS - HWY 165



BM165BRIDGE_076 6/16/2022

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.						061473	76	100

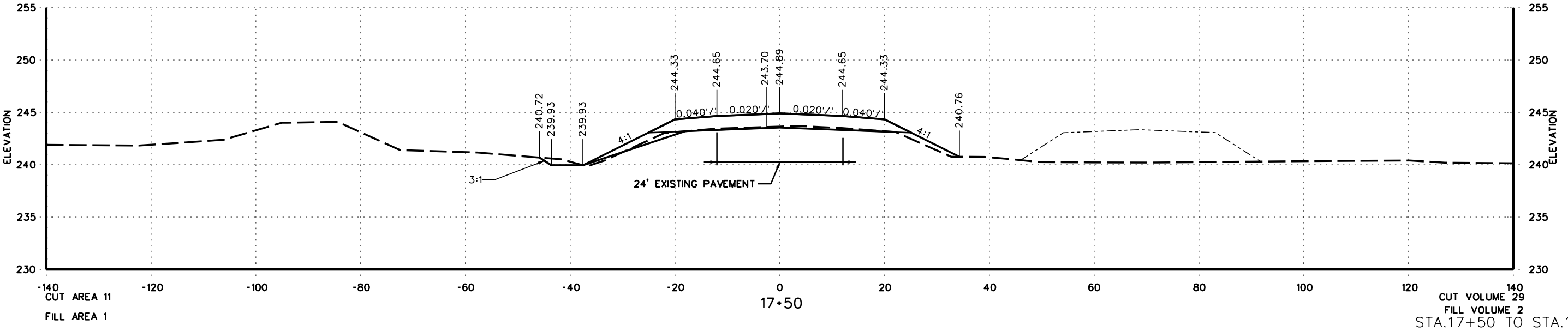
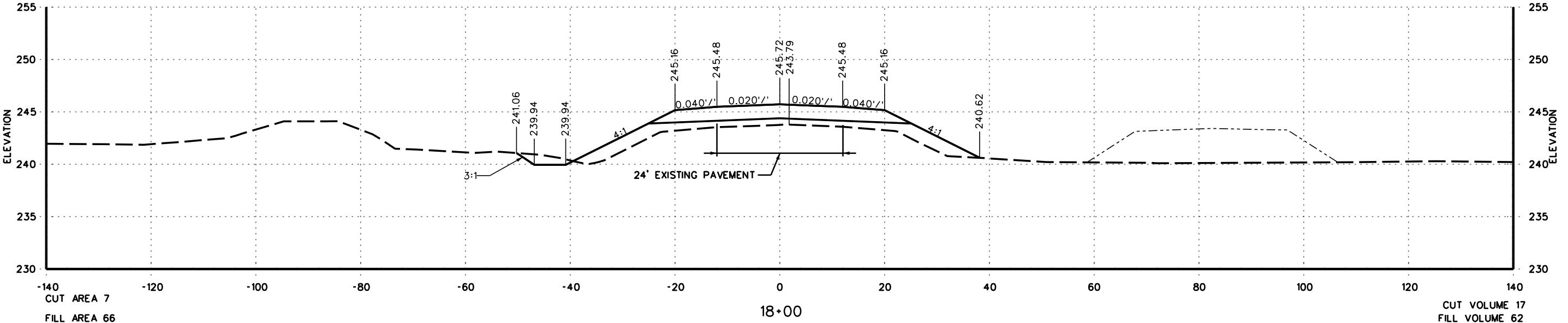
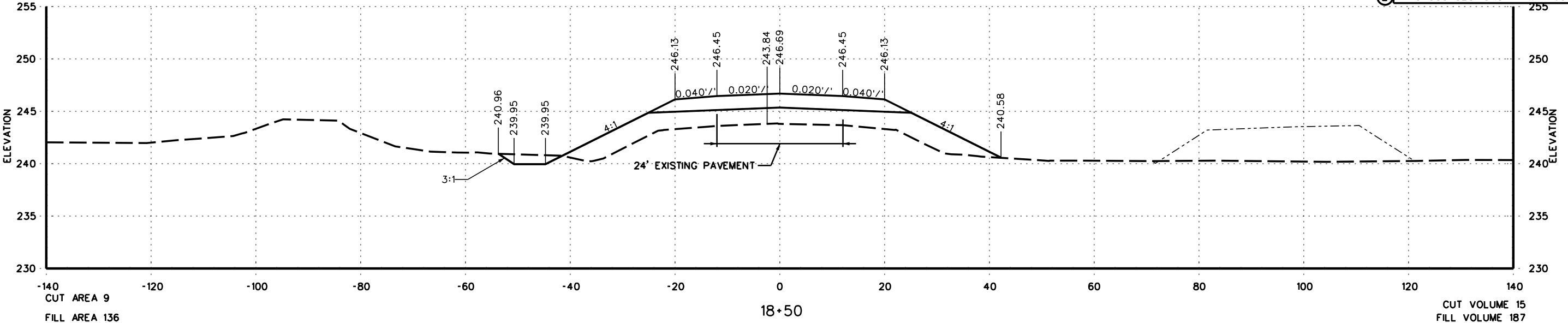
2 CROSS SECTIONS - HWY 165



6/16/2022
BM165BRIDGE_077

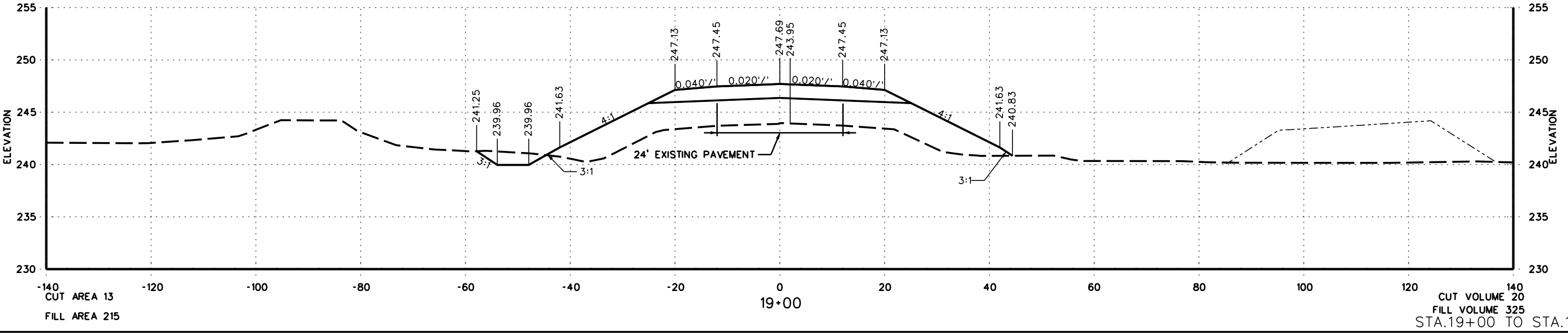
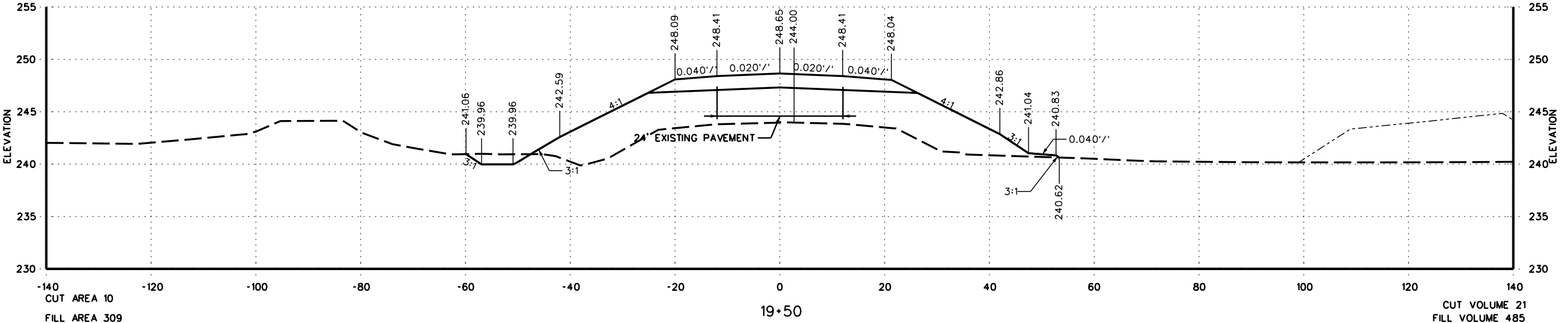
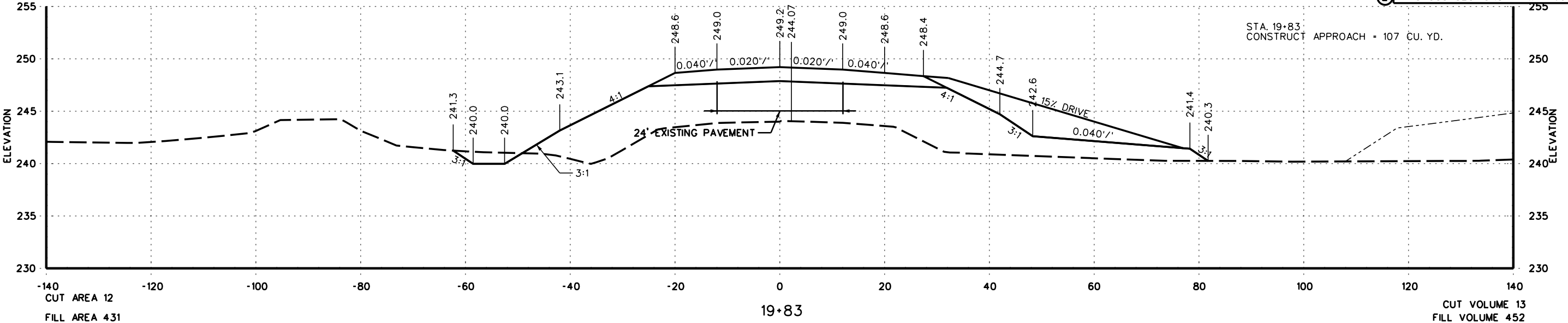
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO. 061473		77	100	

2 CROSS SECTIONS - HWY 165



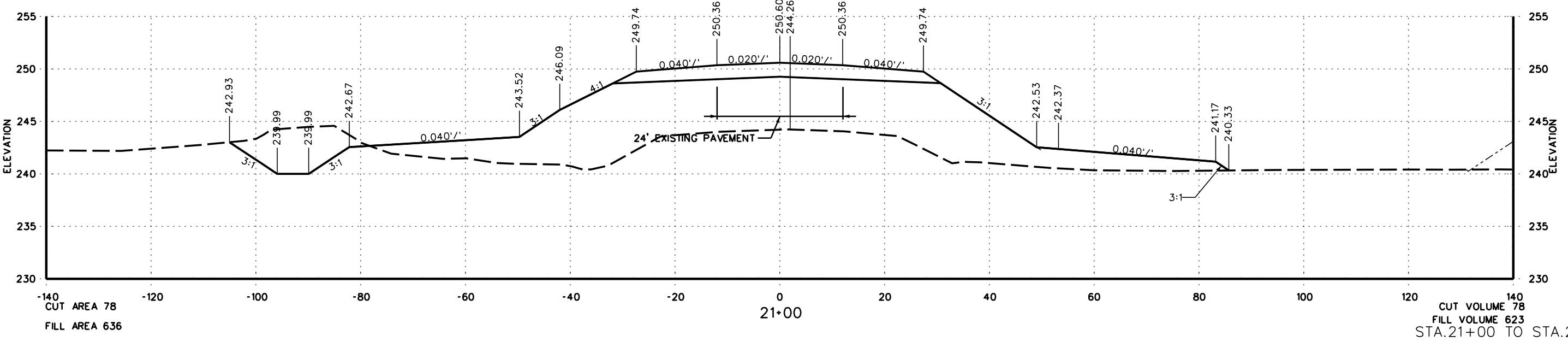
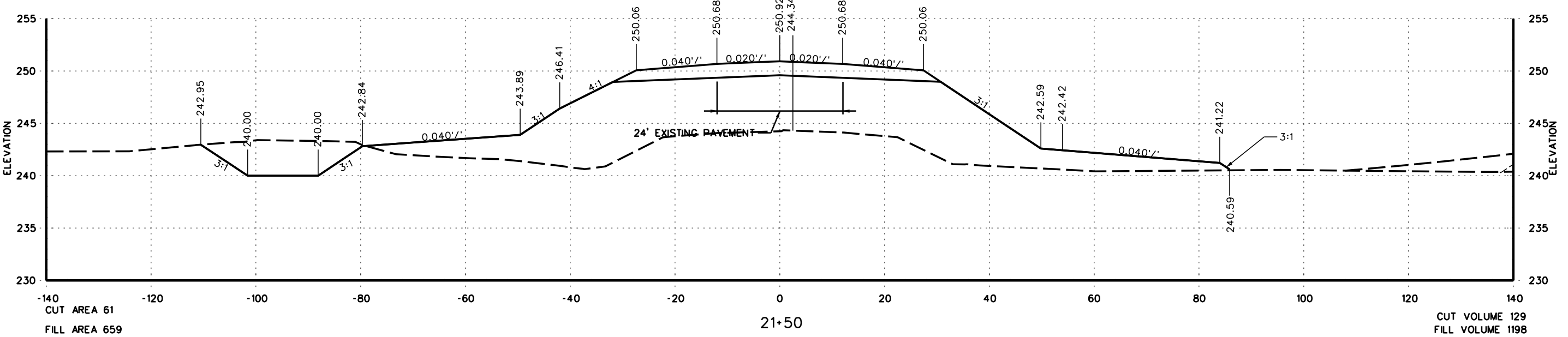
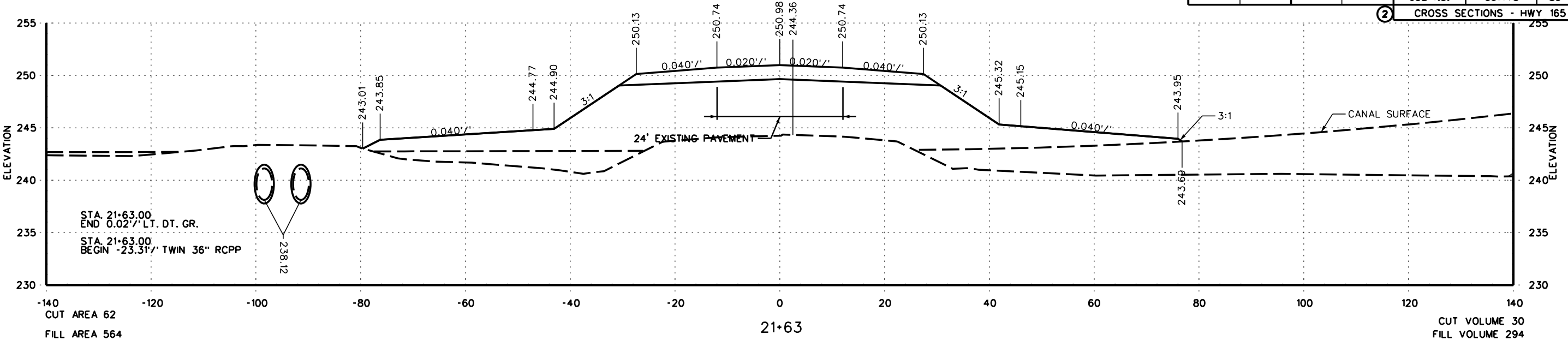
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO. 061473		78	100	

2 CROSS SECTIONS - HWY 165



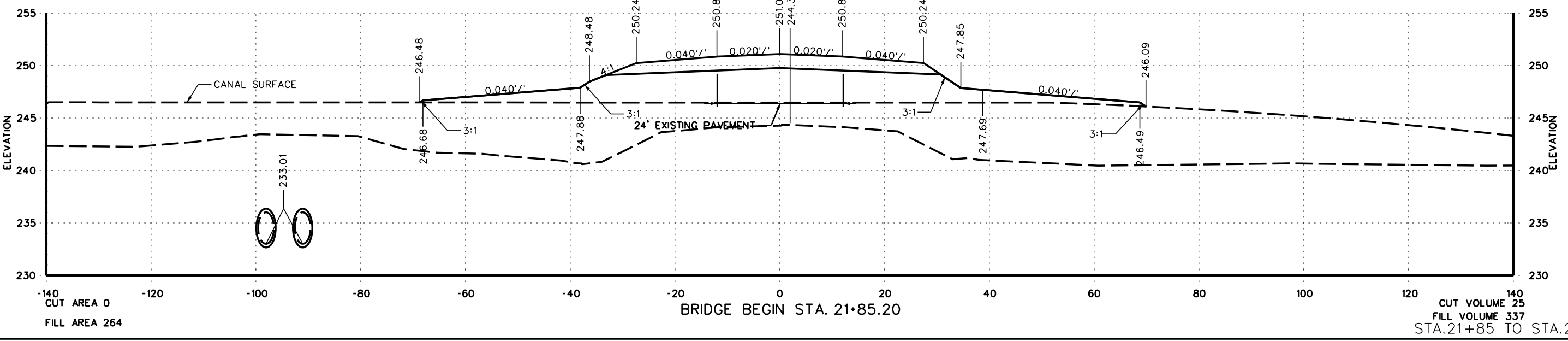
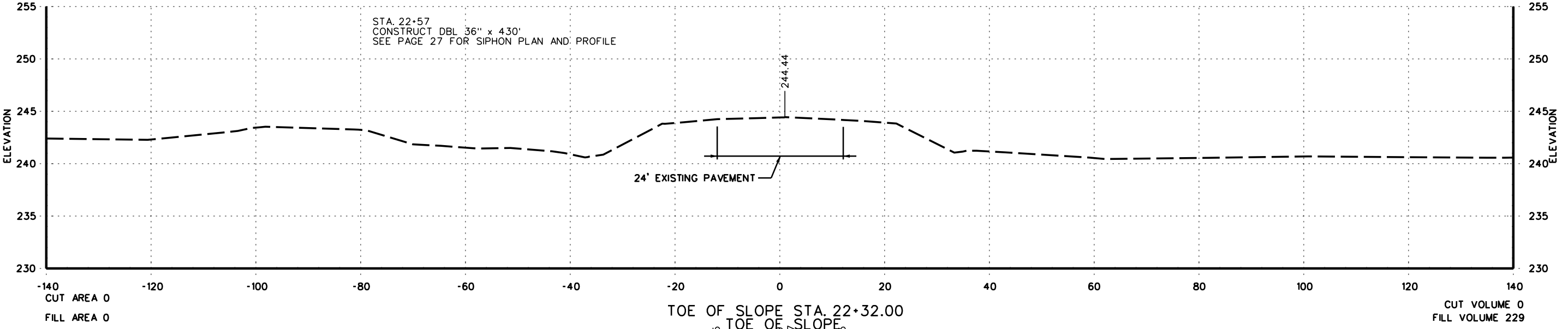
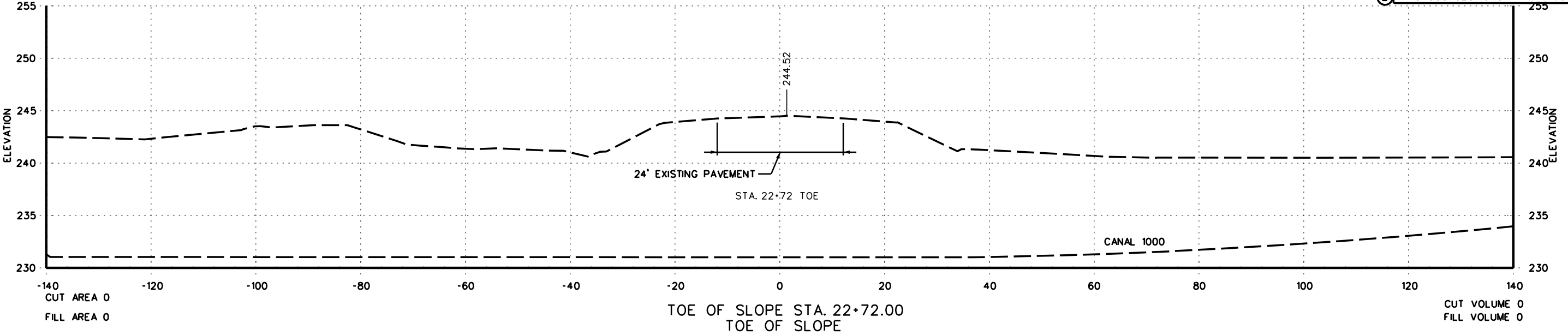
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO. 061473		80	100	

2 CROSS SECTIONS - HWY 165



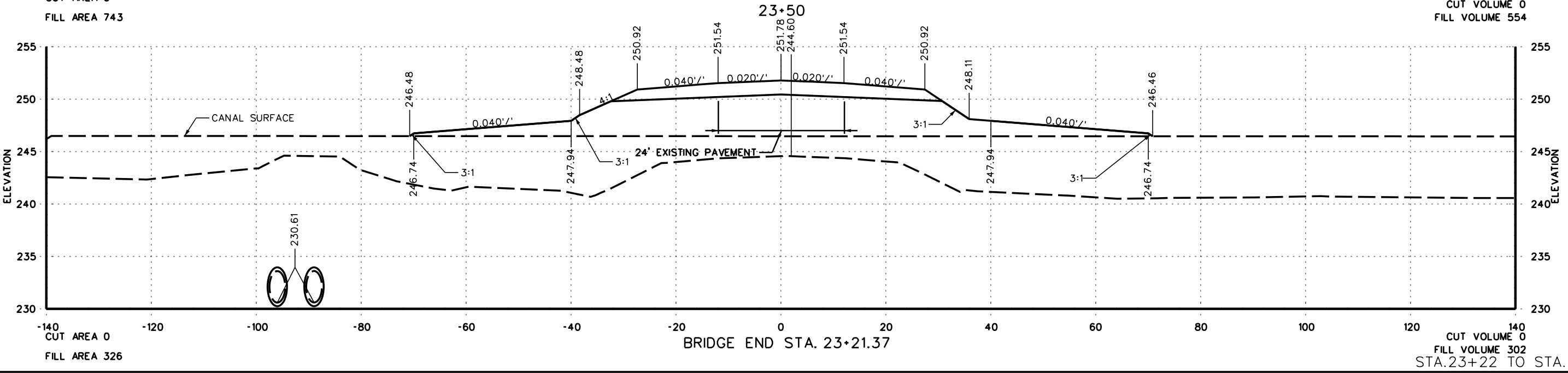
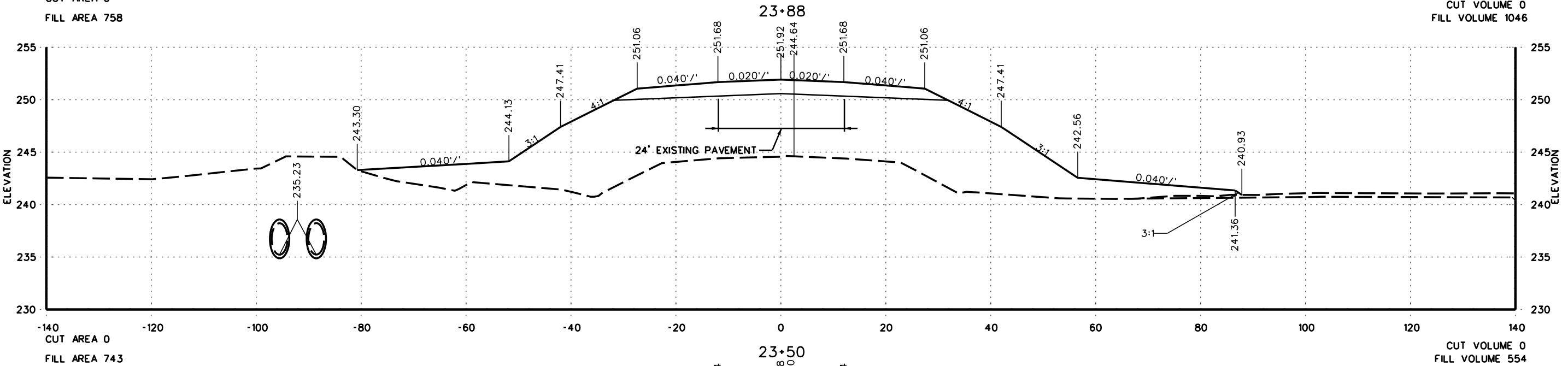
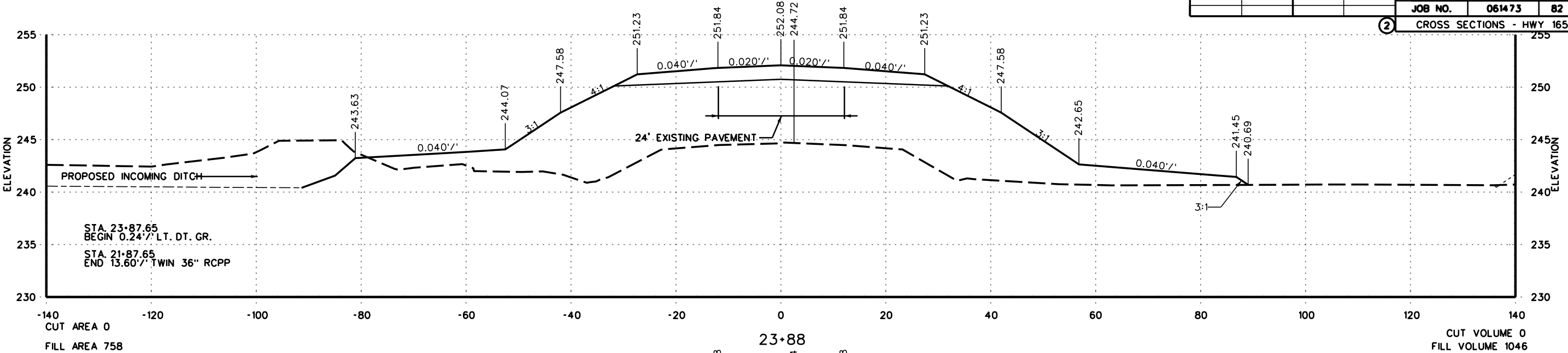
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	81	100

2 CROSS SECTIONS - HWY 165



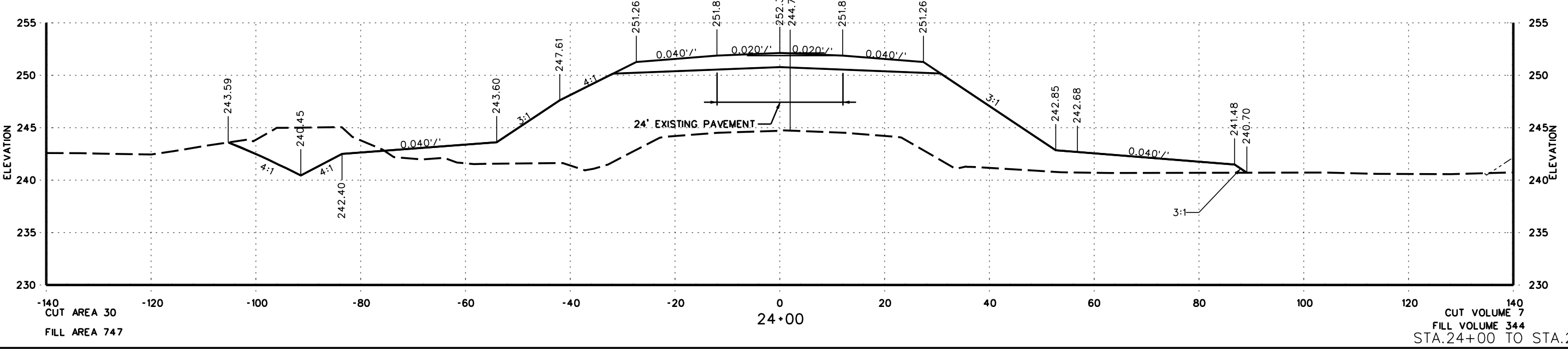
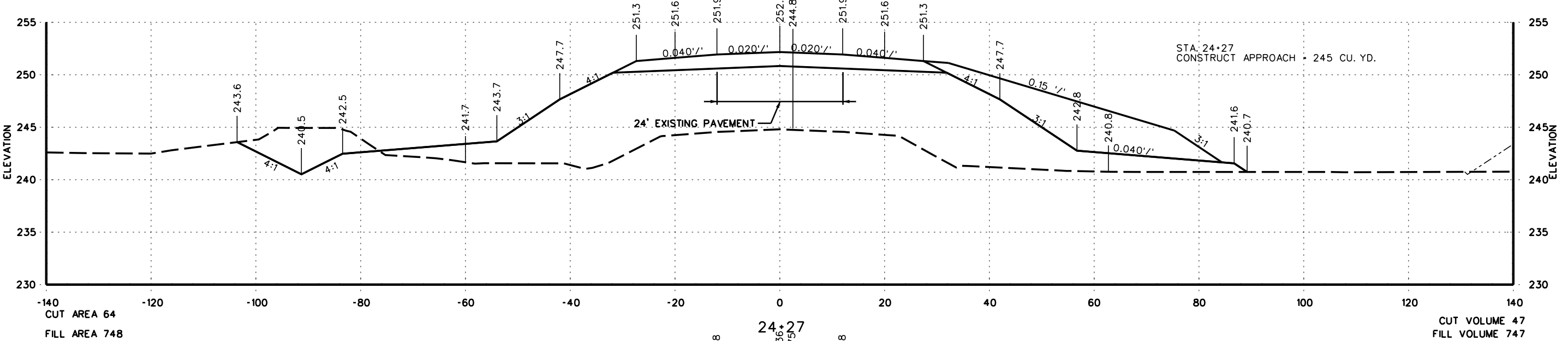
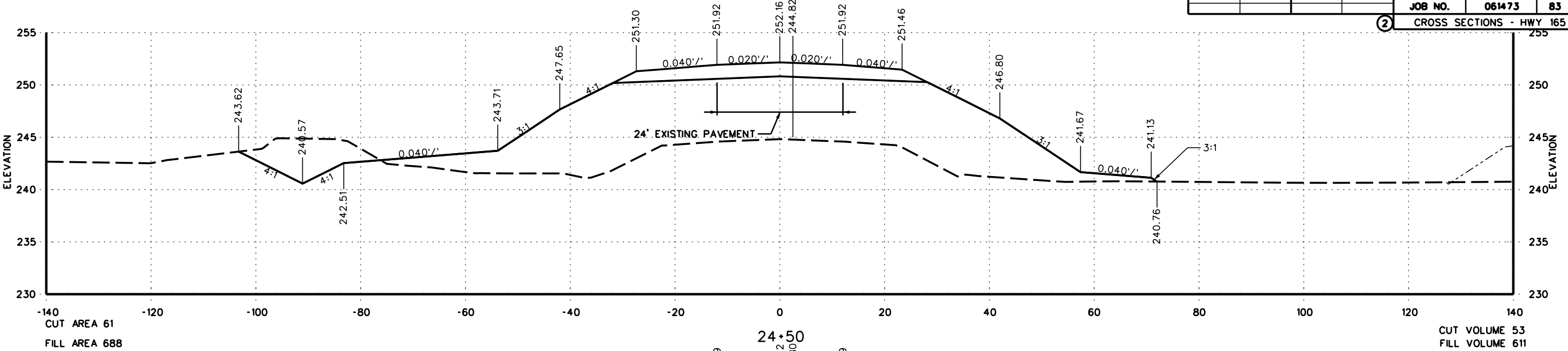
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO.						061473	82	100

2 CROSS SECTIONS - HWY 165



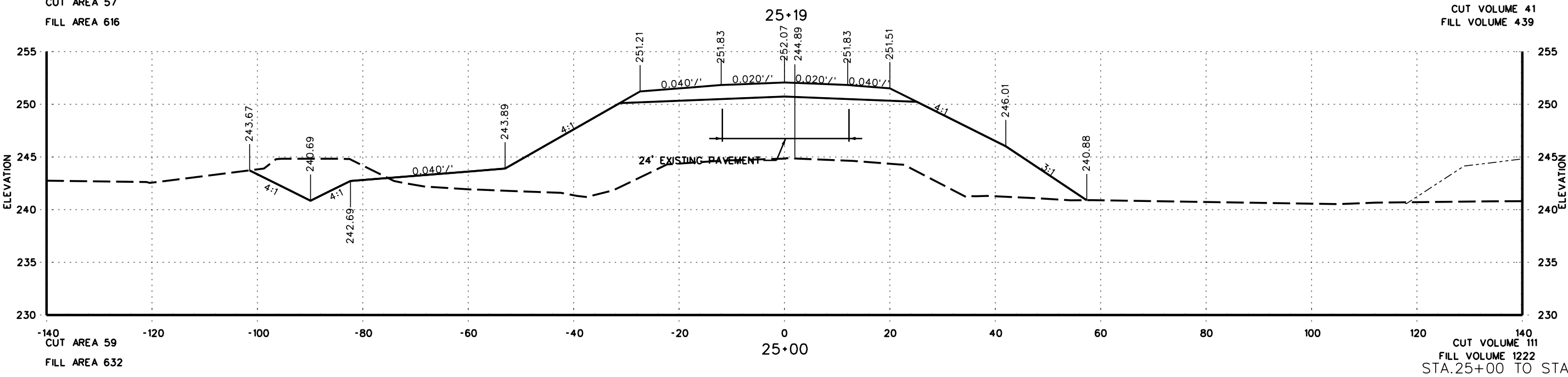
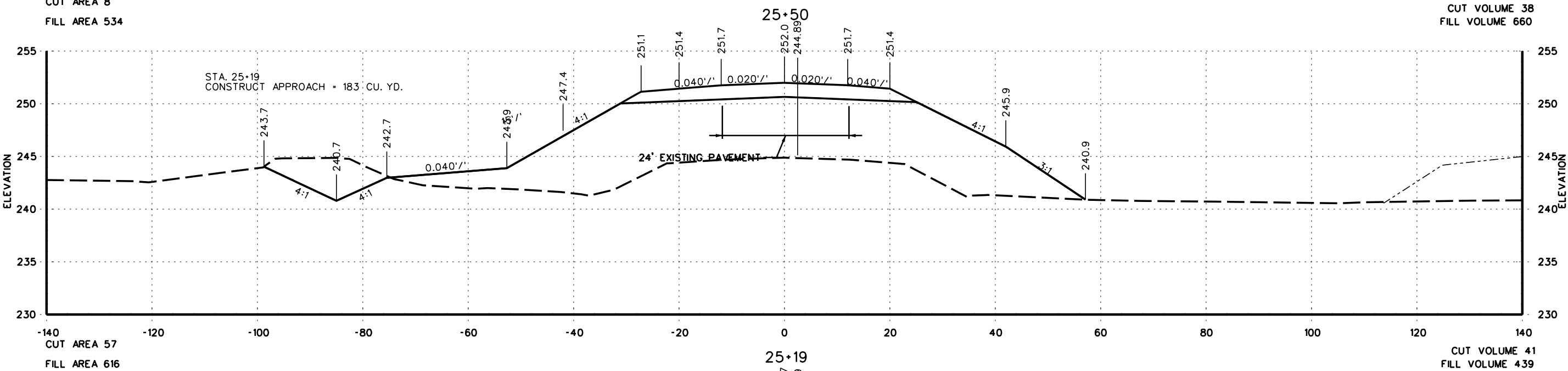
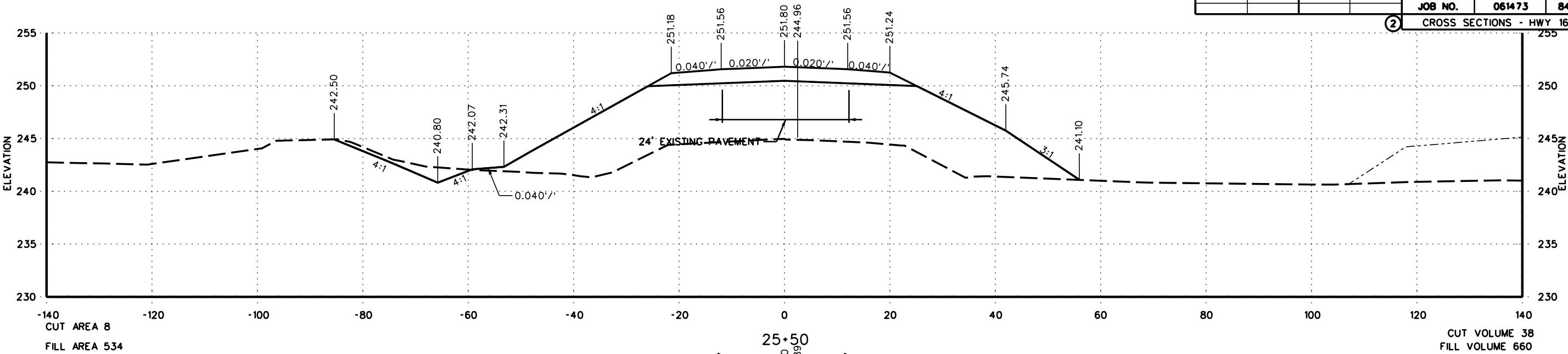
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	83	100

2 CROSS SECTIONS - HWY 165



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. 061473		84	100	

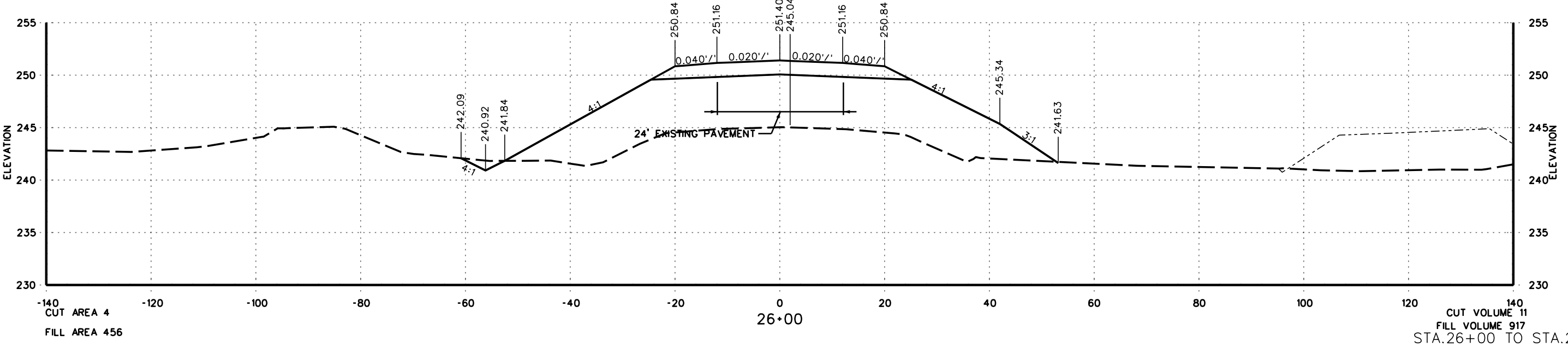
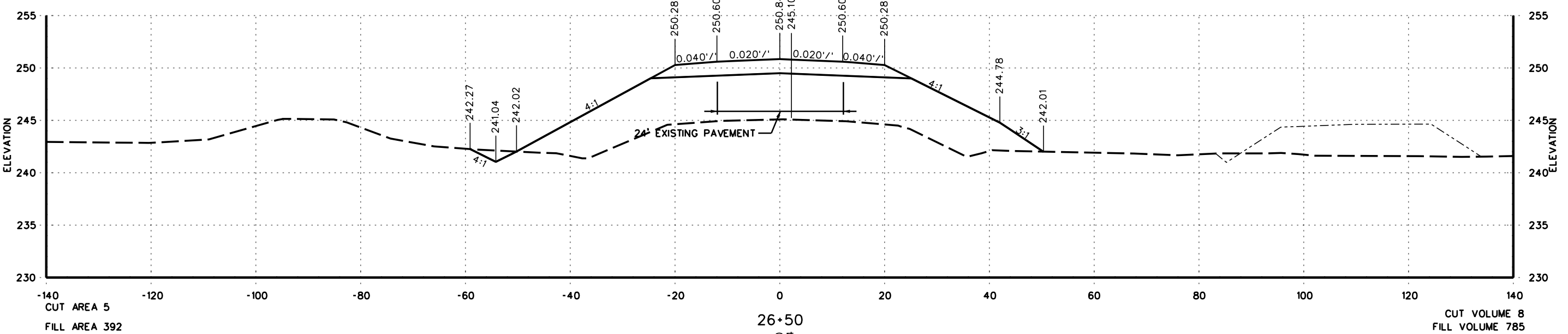
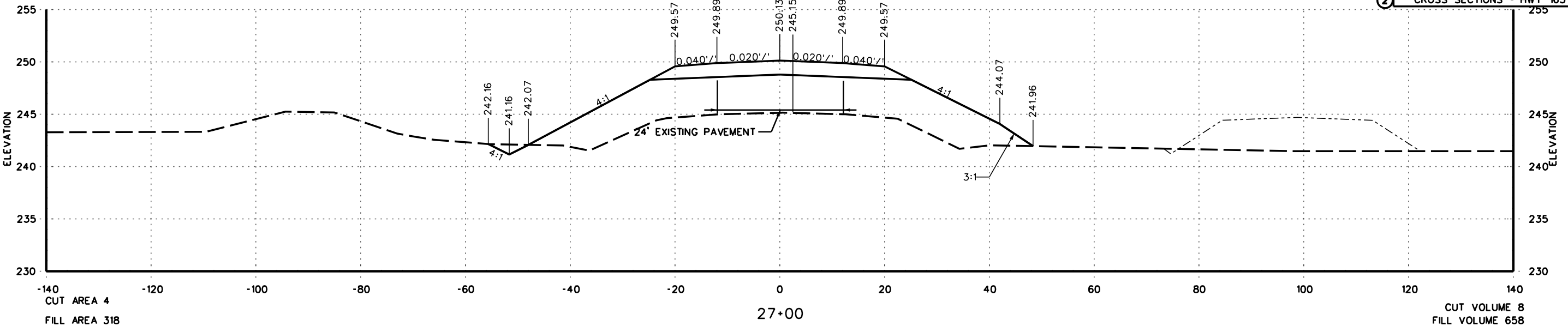
2 CROSS SECTIONS - HWY 165



6/16/2022
BM165BRIDGE_085

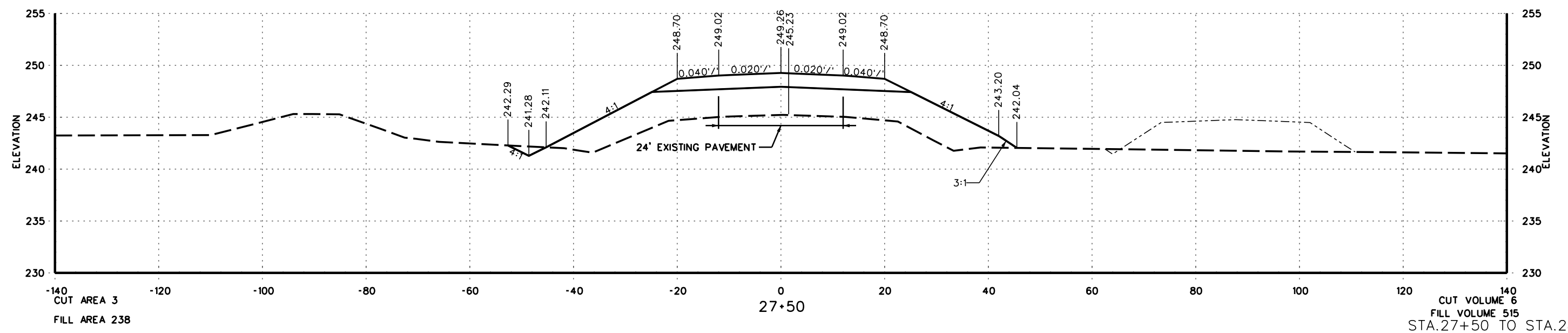
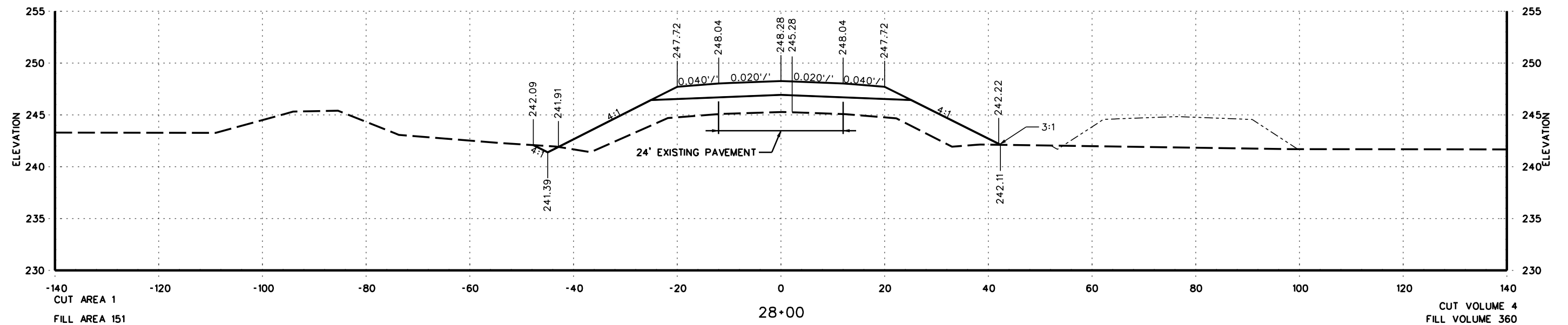
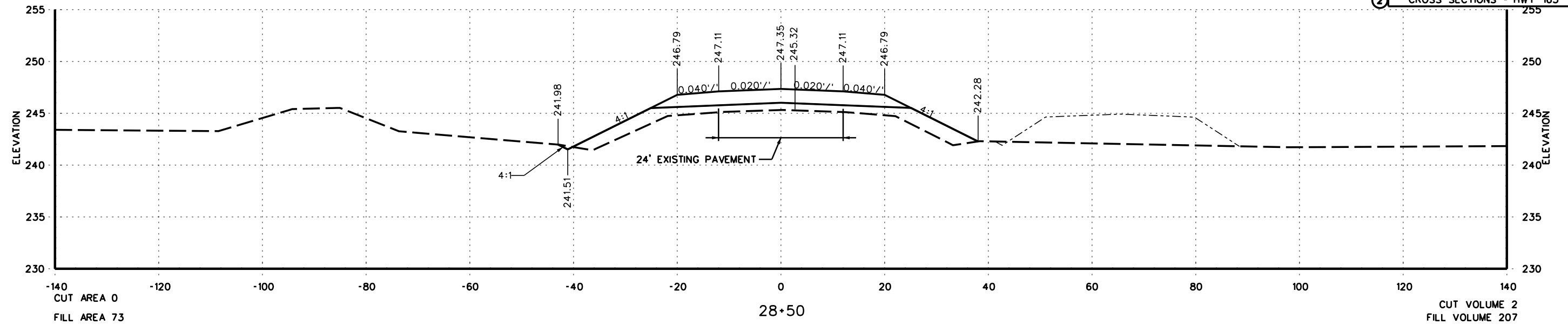
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO.						061473	85	100

2 CROSS SECTIONS - HWY 165



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RO. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	86	100

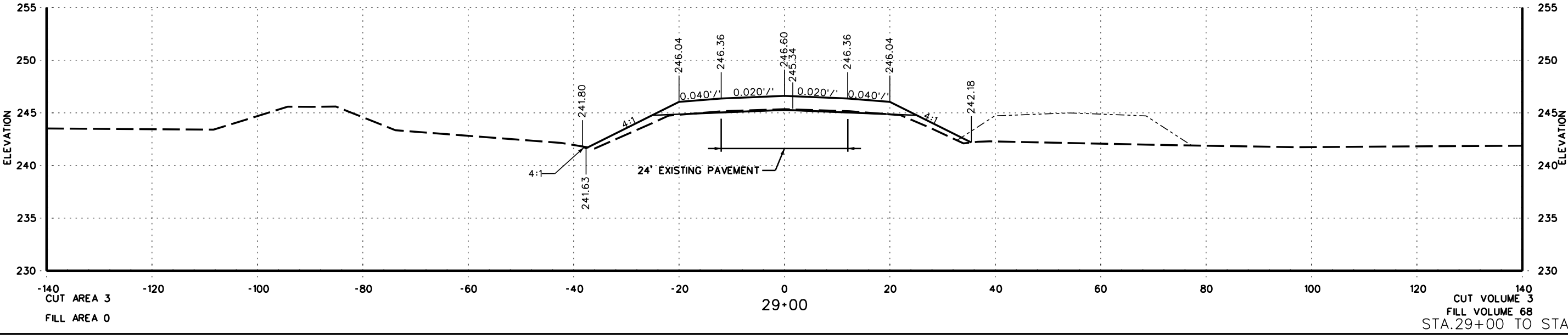
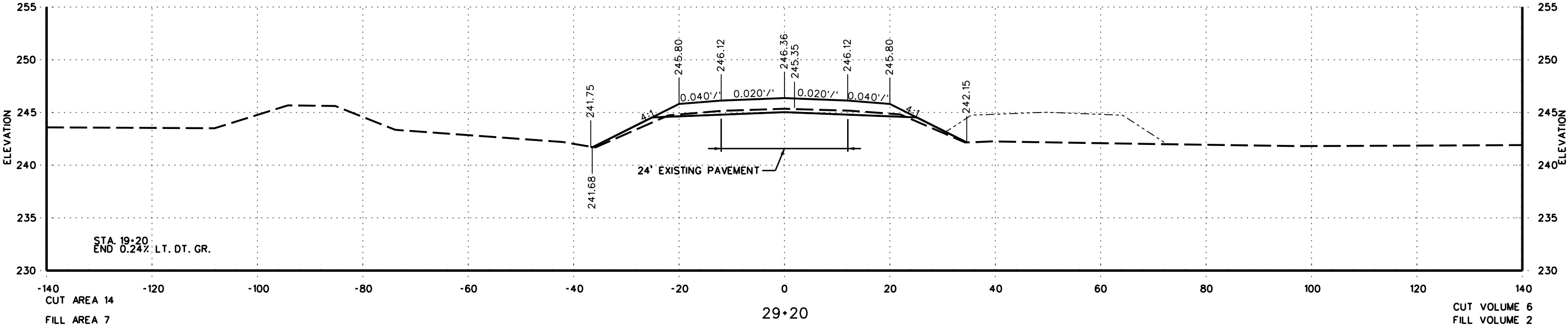
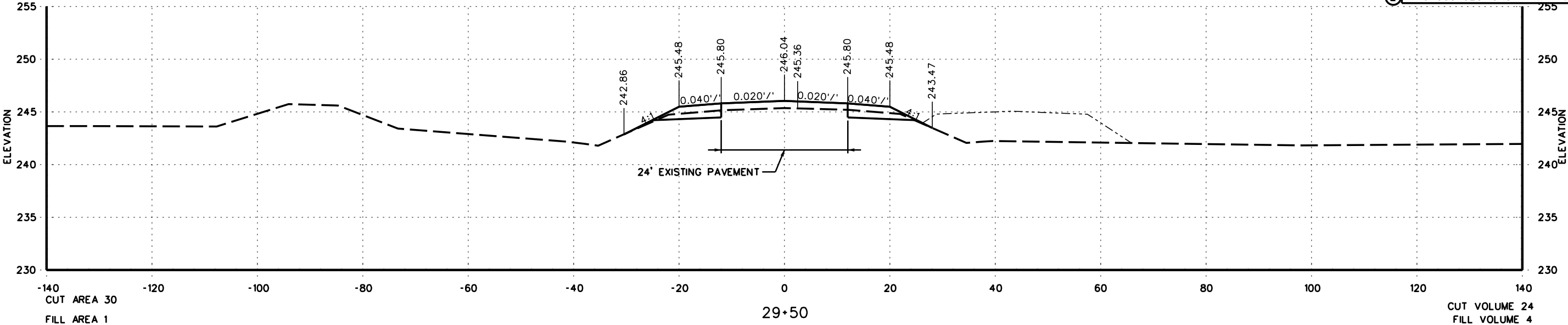
2 CROSS SECTIONS - HWY 165



6/16/2022

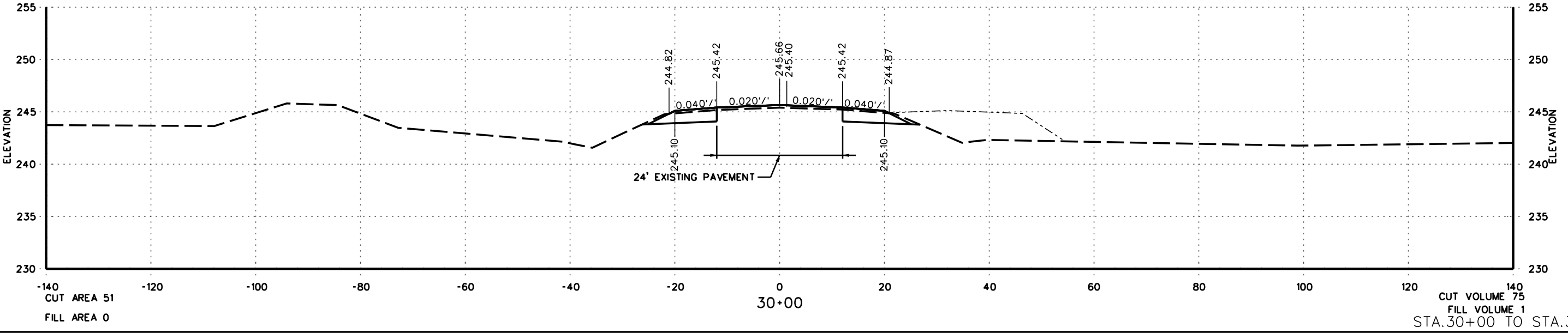
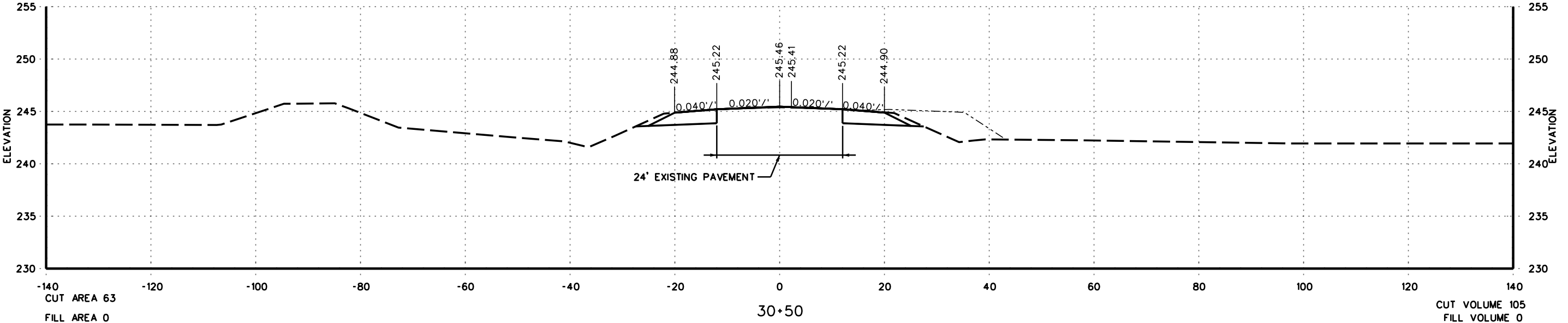
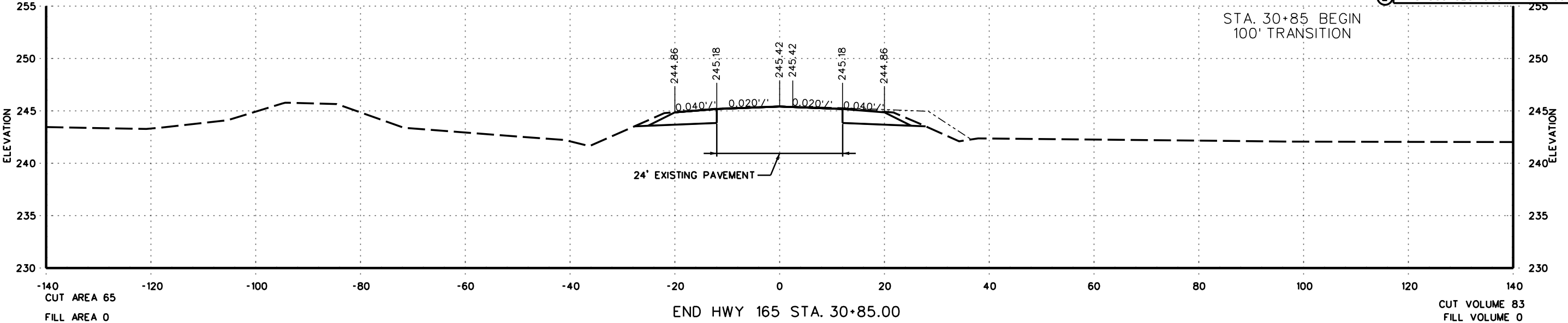
BM165BRIDGE_086

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.		061473	87	100
② CROSS SECTIONS - HWY 165								



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. 061473		88	100	

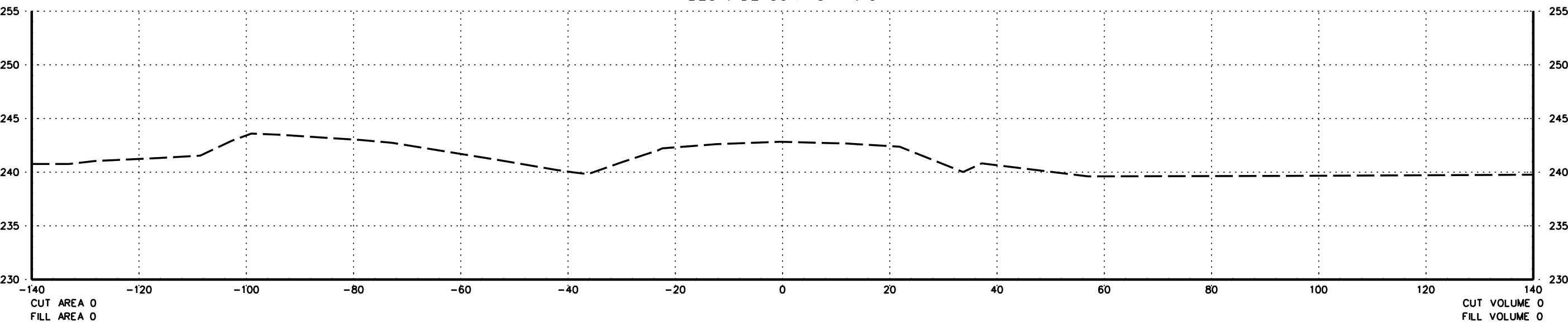
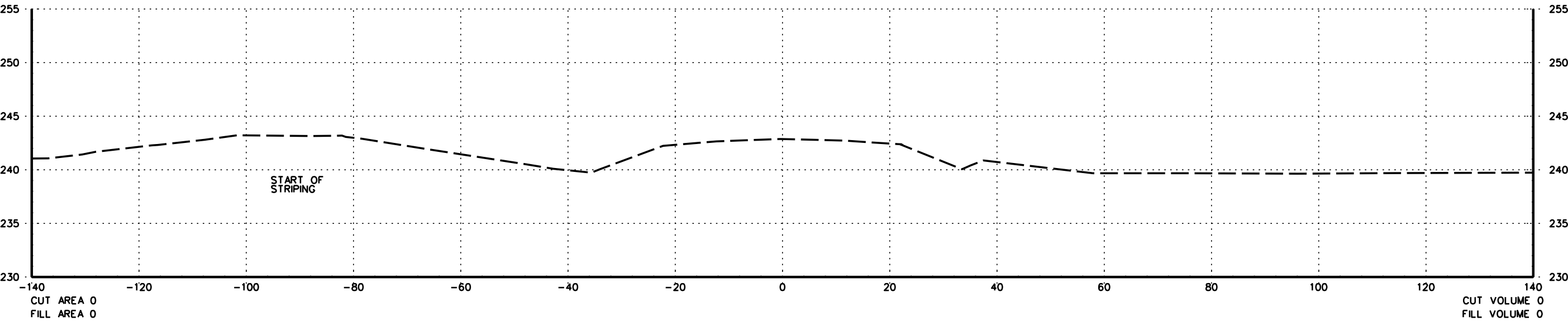
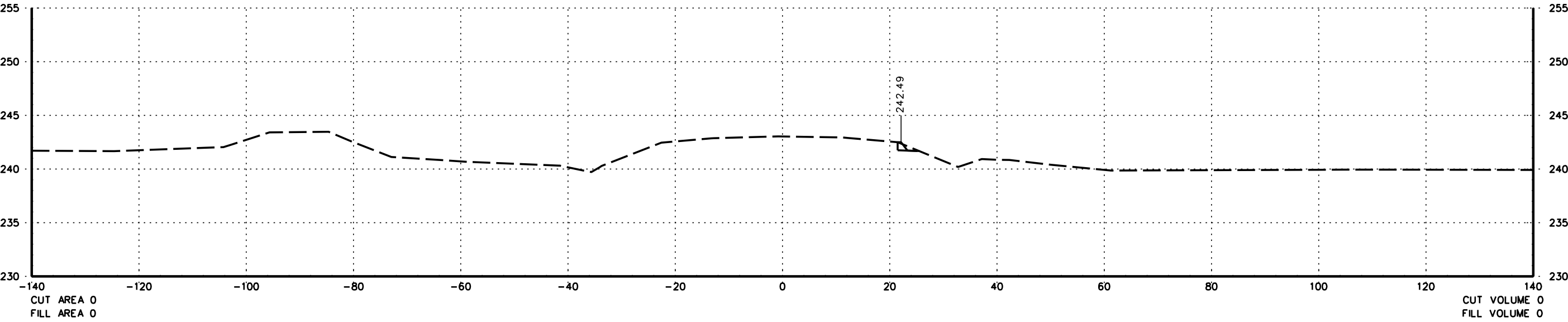
2 CROSS SECTIONS - HWY 165



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.		061473	89	100
② CROSS SECTIONS - HWY 165								



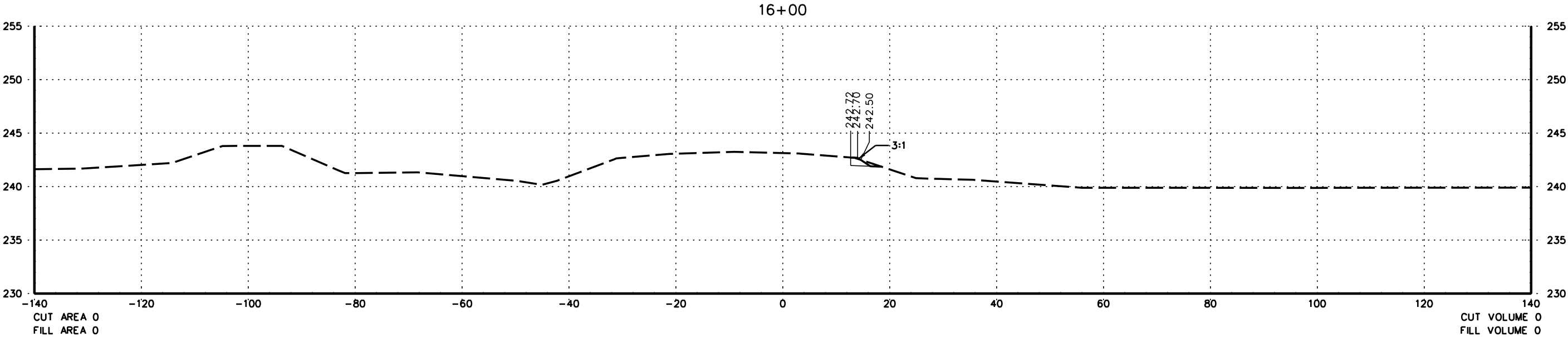
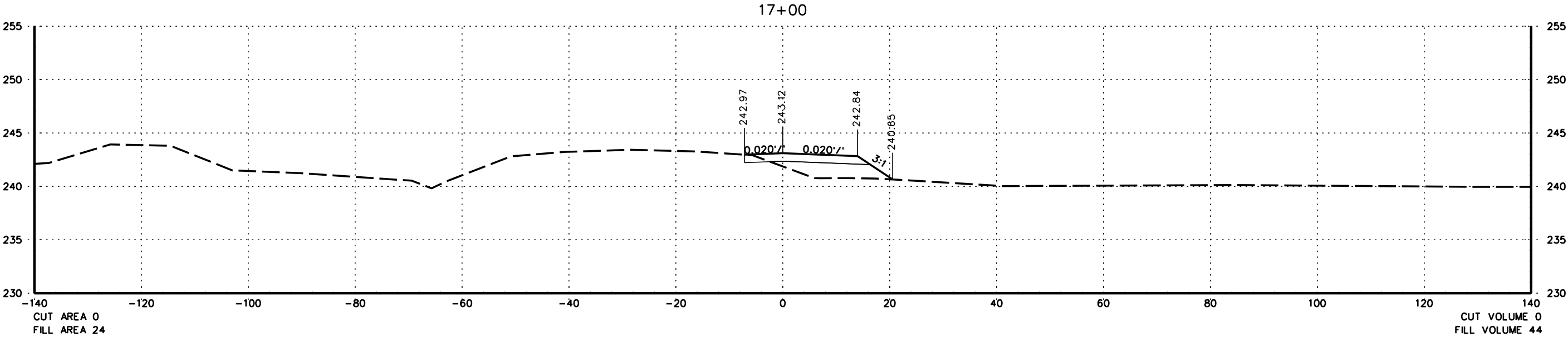
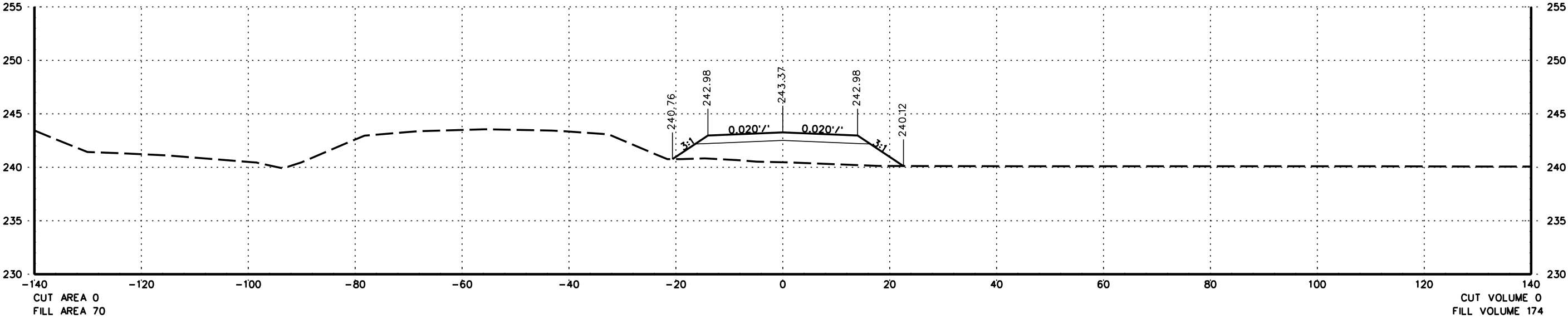
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	90	100
2 CROSS SECTIONS - DETOUR								



6/15/2022
BM165BRIDGE_091

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. 061473		91	100	

2 CROSS SECTIONS - DETOUR

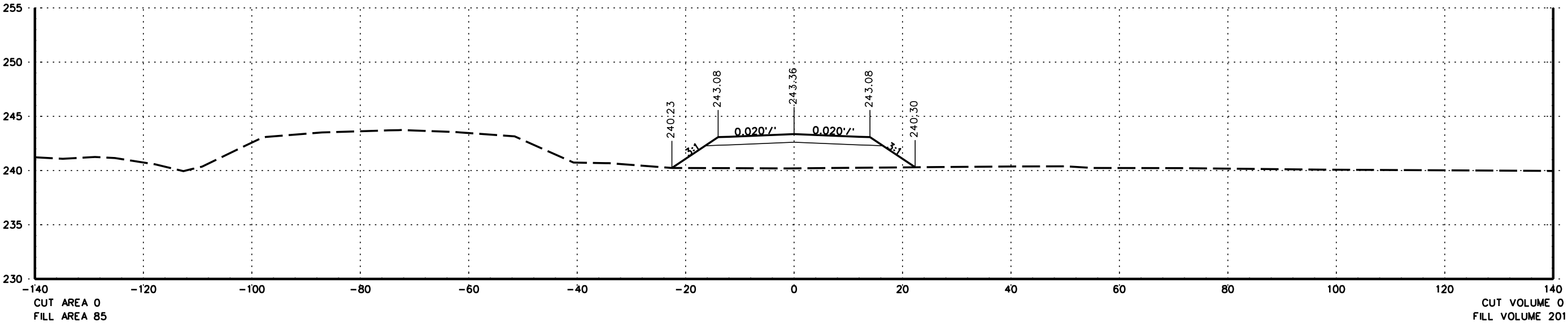
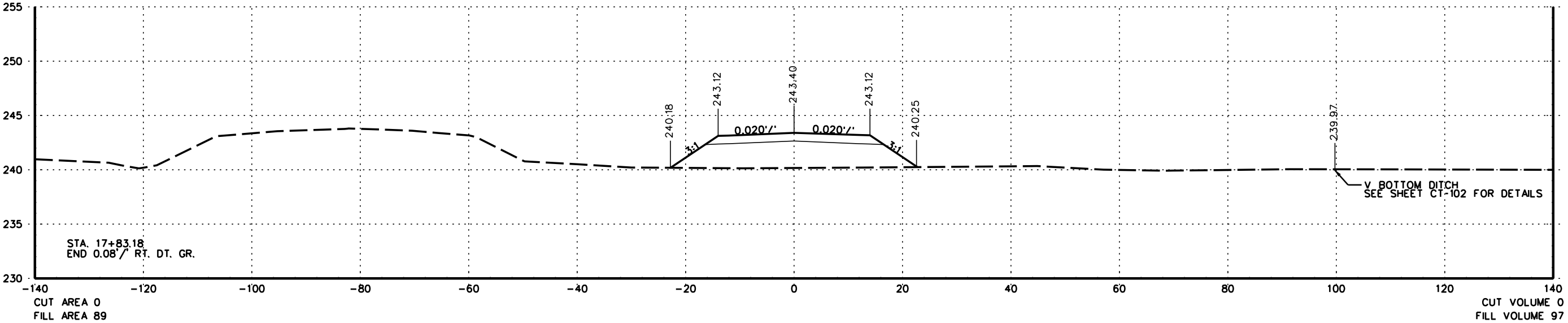
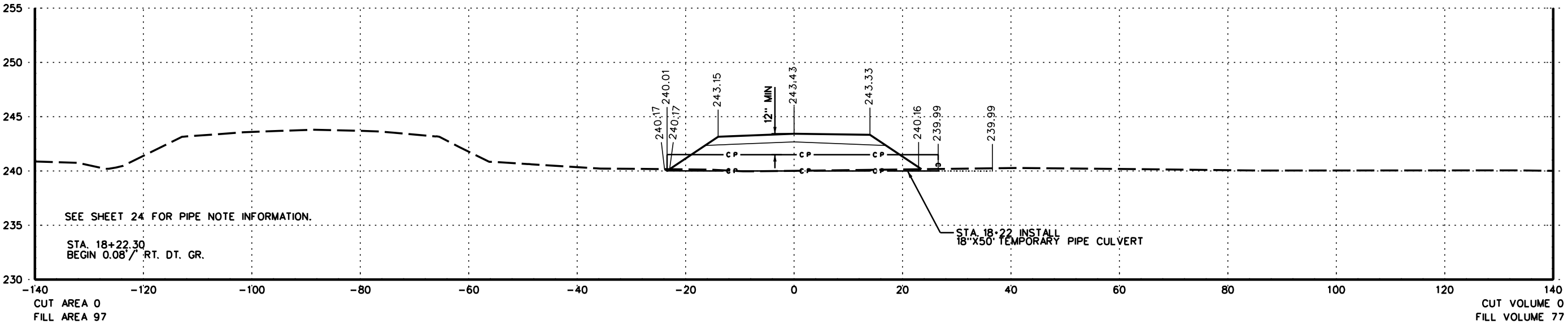


15+00

STA.15+00 TO STA.17+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.		061473	92	100

2 CROSS SECTIONS - DETOUR



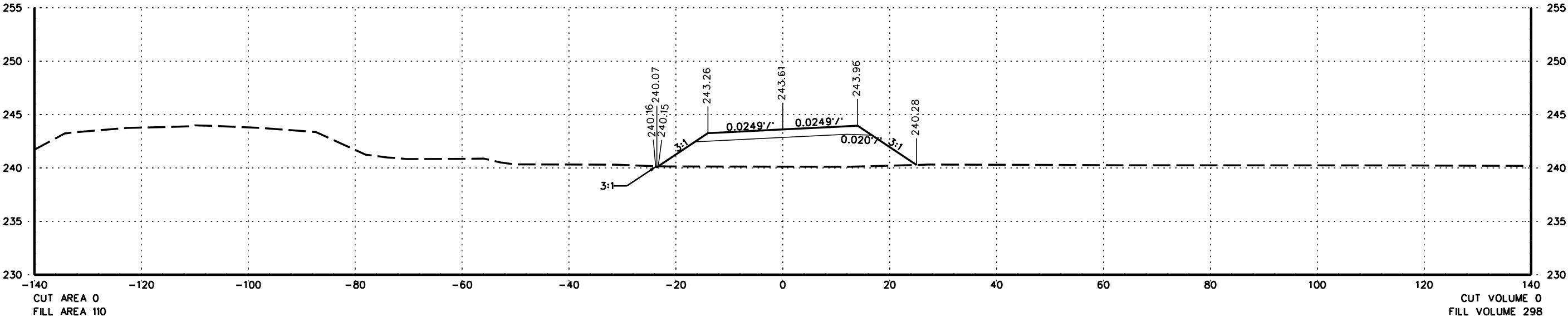
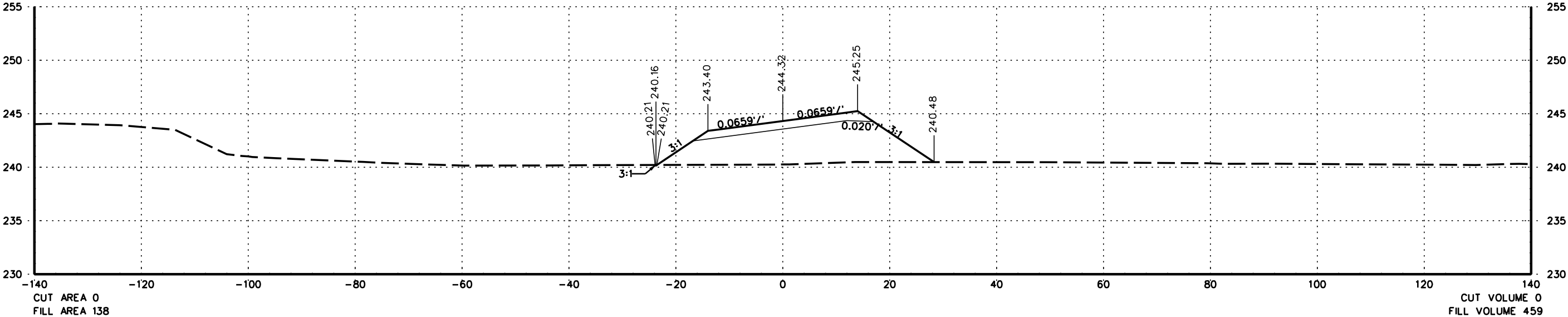
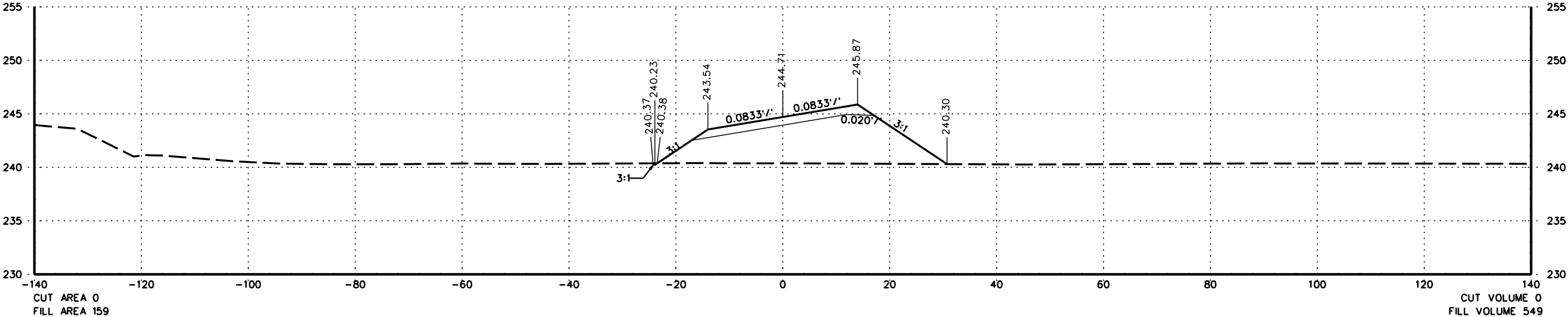
17+70

STA.17+70 TO STA.18+22

6/15/2022
BM165BRIDGE_093

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. 061473		93	100	

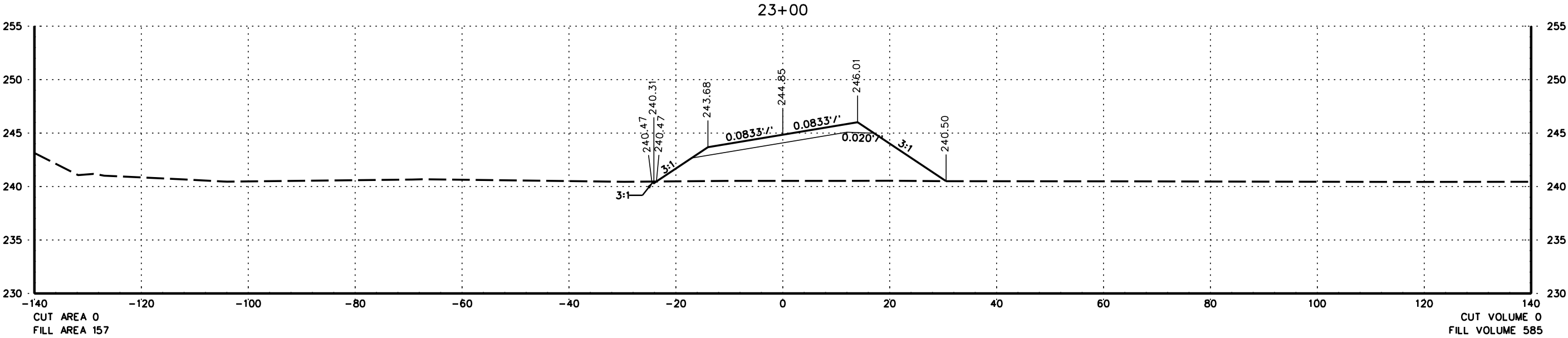
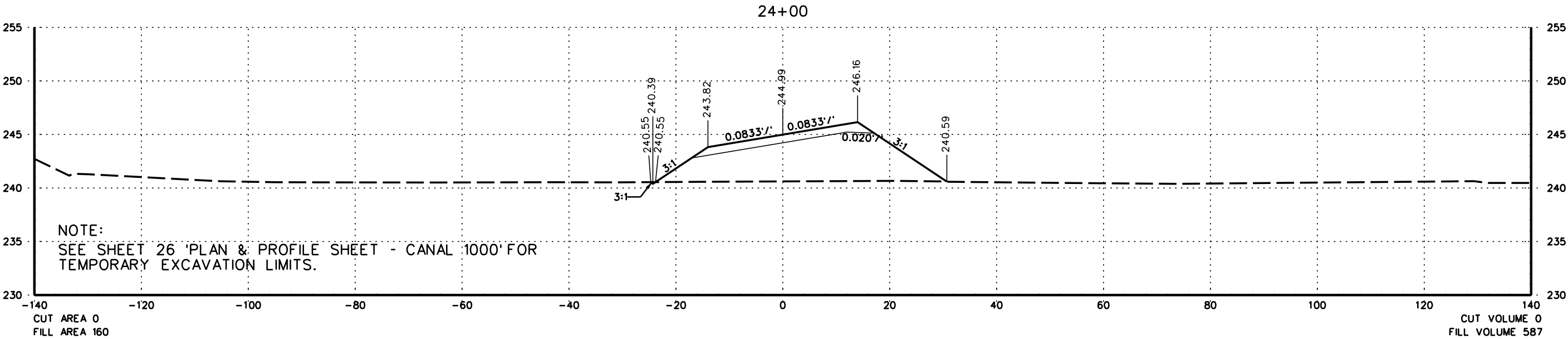
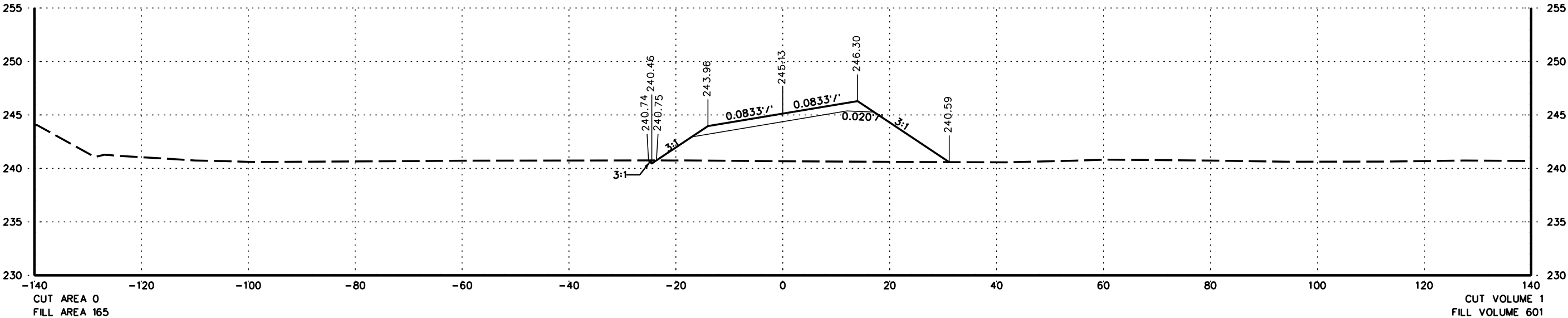
2 CROSS SECTIONS - DETOUR



STA.19+00 TO STA.21+00

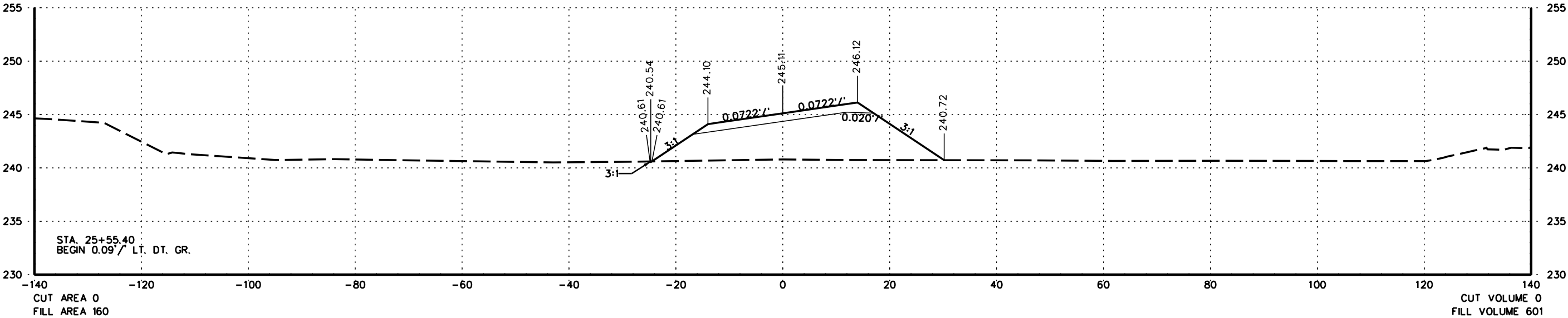
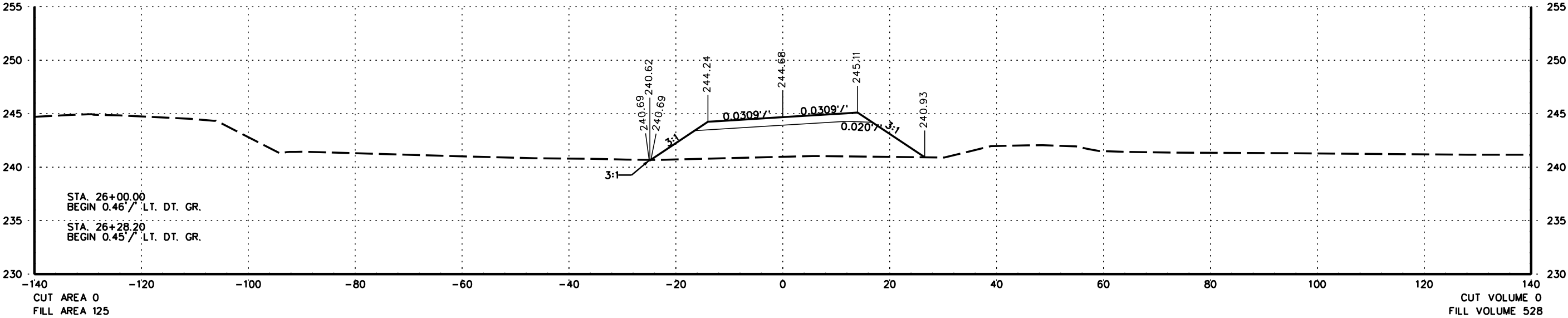
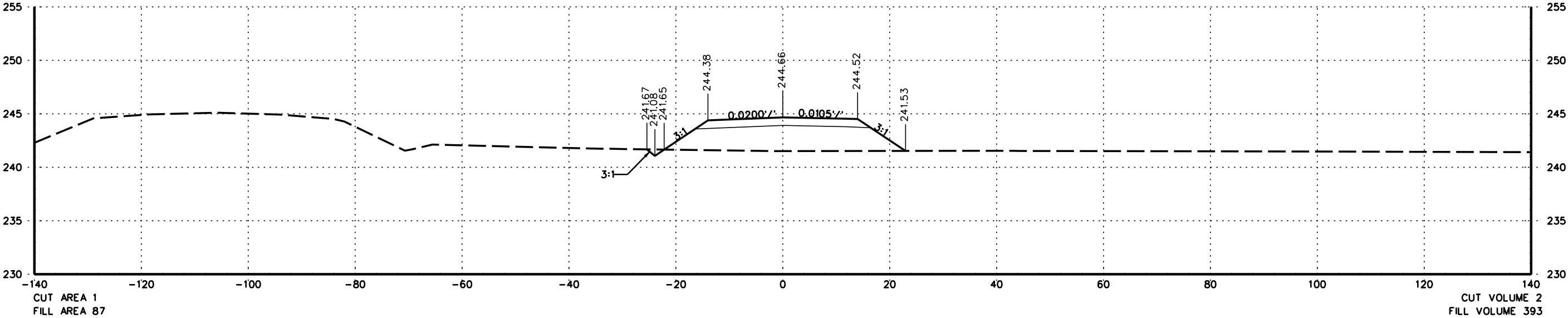
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO. 061473		94	100	

2 CROSS SECTIONS - DETOUR



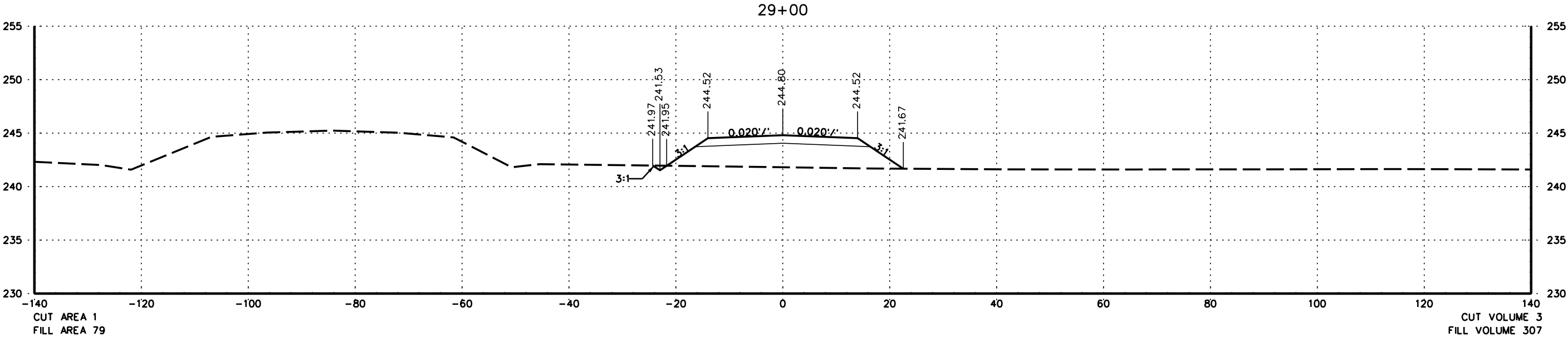
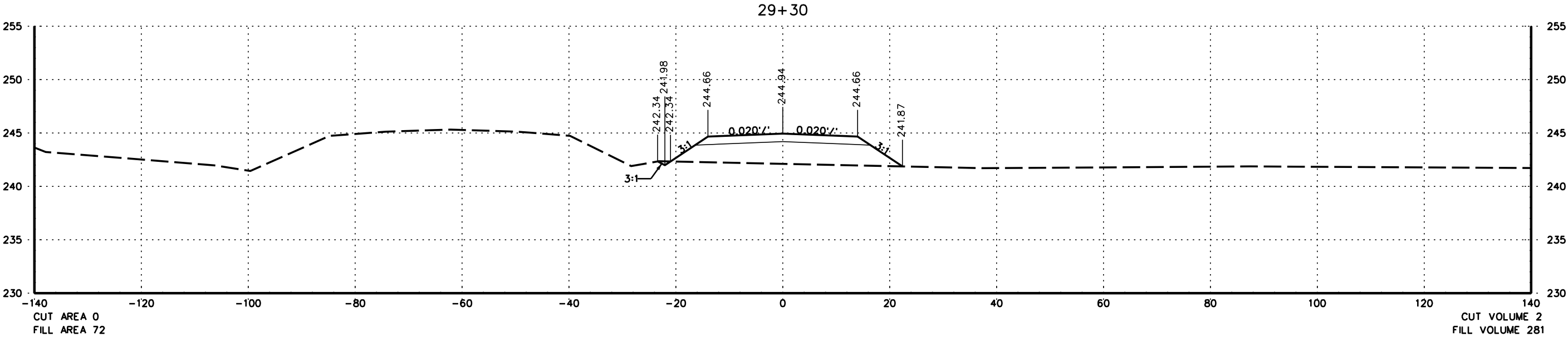
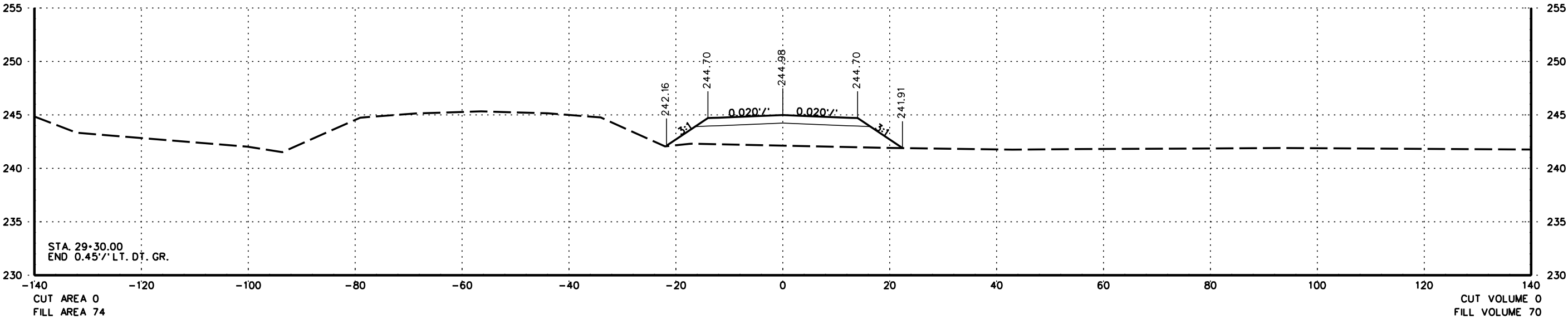
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	95	100

2 CROSS SECTIONS - DETOUR



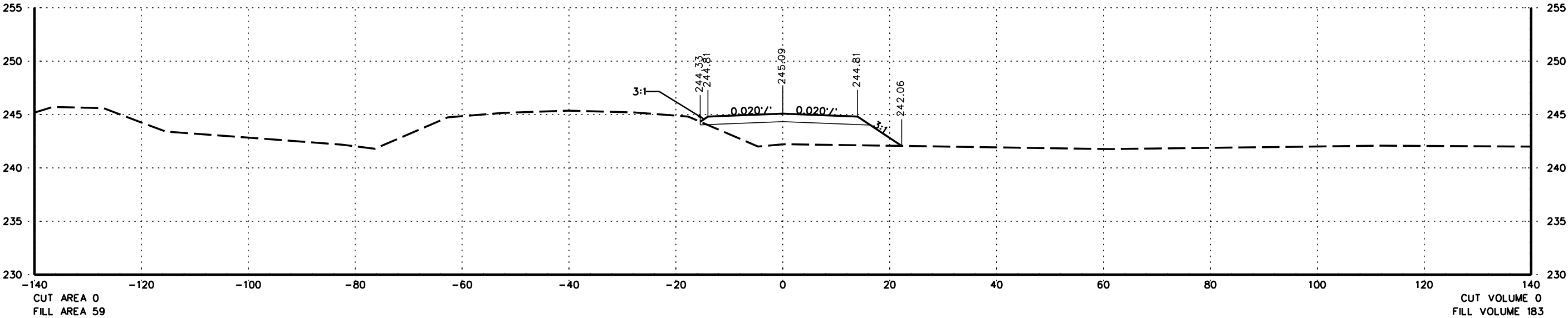
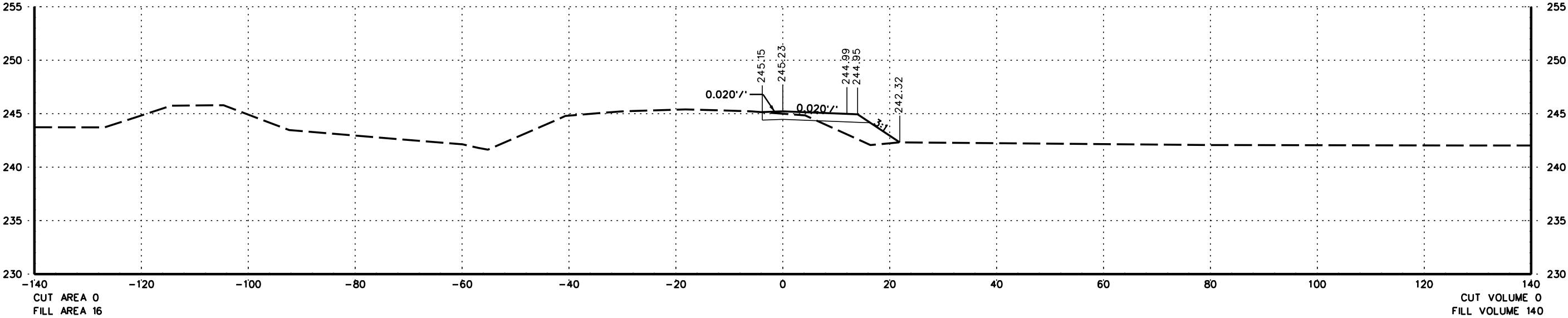
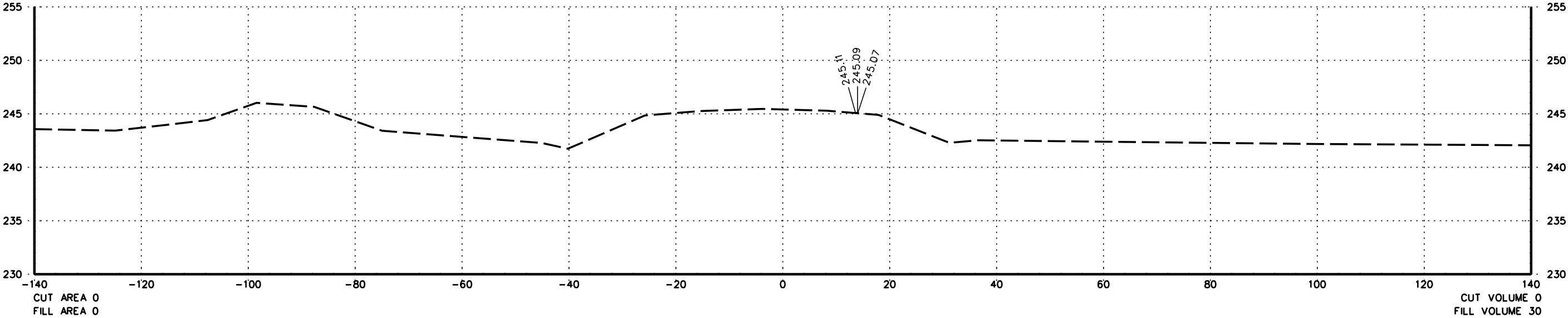
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	96	100

2 CROSS SECTIONS - DETOUR



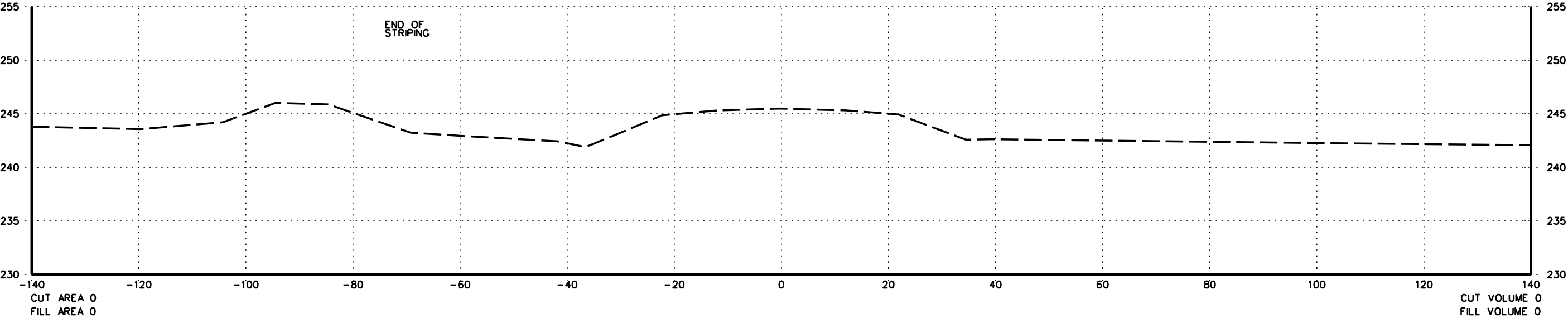
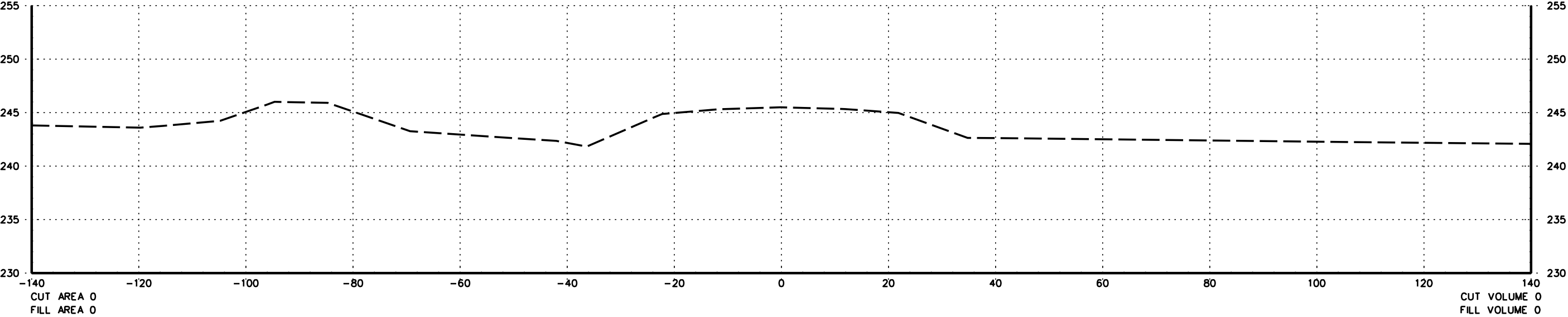
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO. 061473		97	100	

2 CROSS SECTIONS - DETOUR



STA.30+00 TO STA.32+00

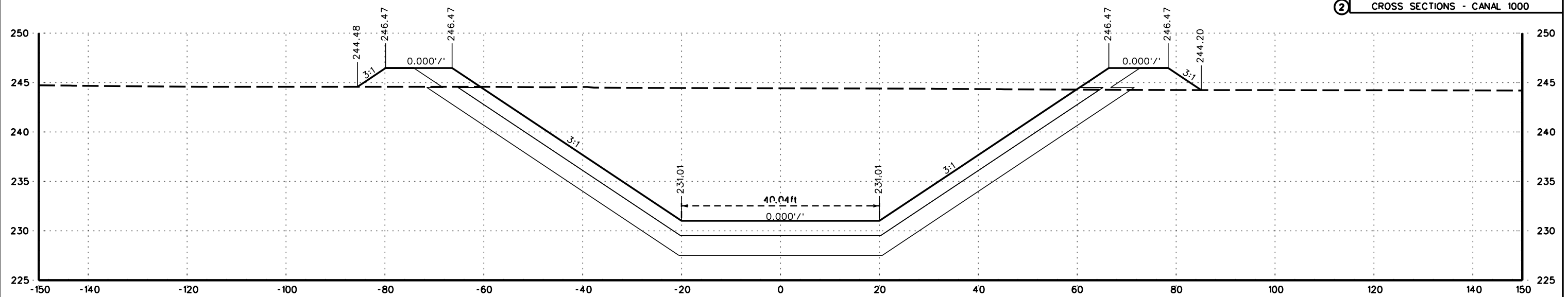
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	98	100
② CROSS SECTIONS - DETOUR								



END DETOUR 32+84.43

STA. 32+84 TO STA. 33+00

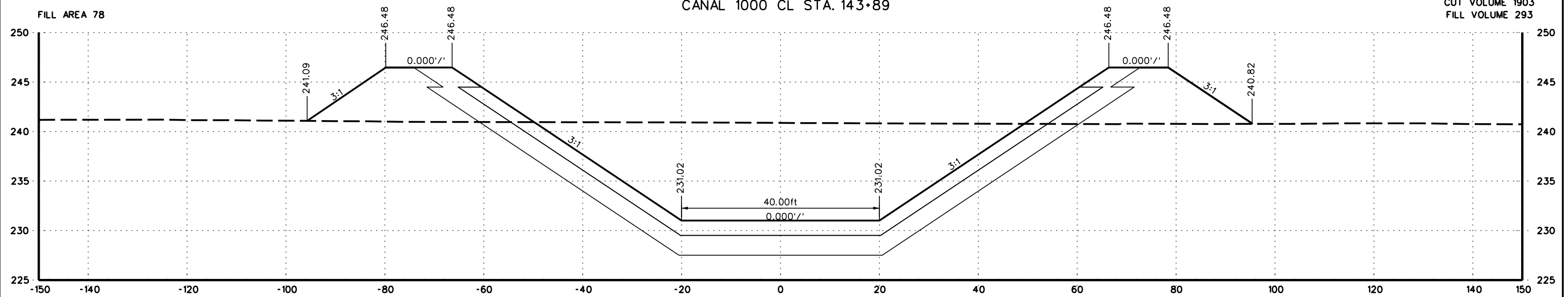
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. RD. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061473	99	100
				CROSS SECTIONS - CANAL 1000				



CUT AREA 1552
FILL AREA 78

CANAL 1000 CL STA. 143+89

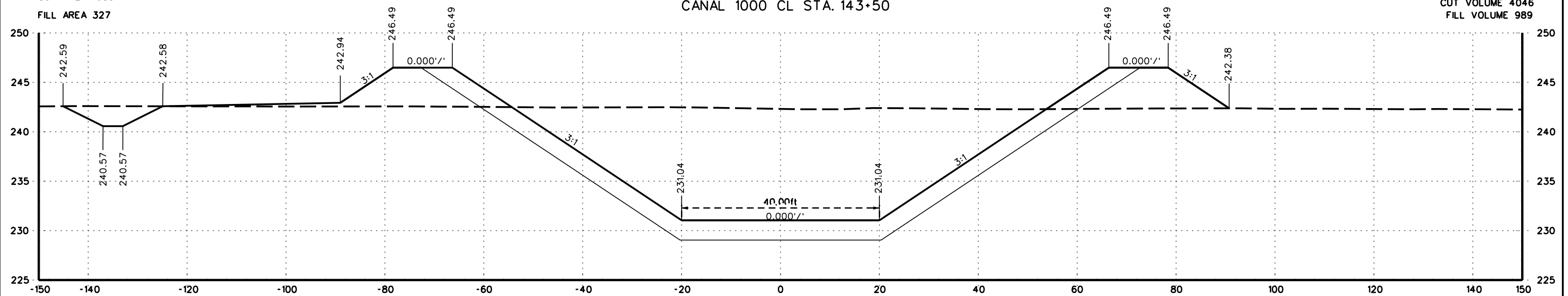
CUT VOLUME 1903
FILL VOLUME 293



CUT AREA 1083
FILL AREA 327

CANAL 1000 CL STA. 143+50

CUT VOLUME 4046
FILL VOLUME 989



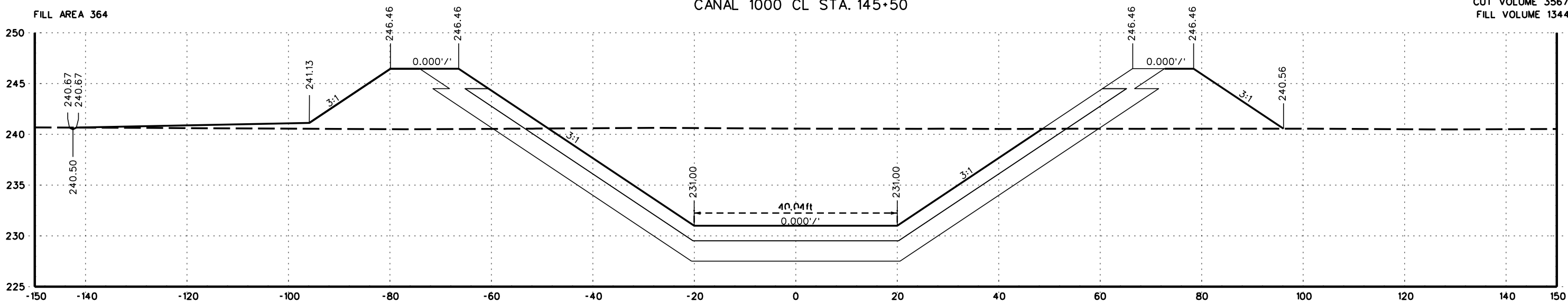
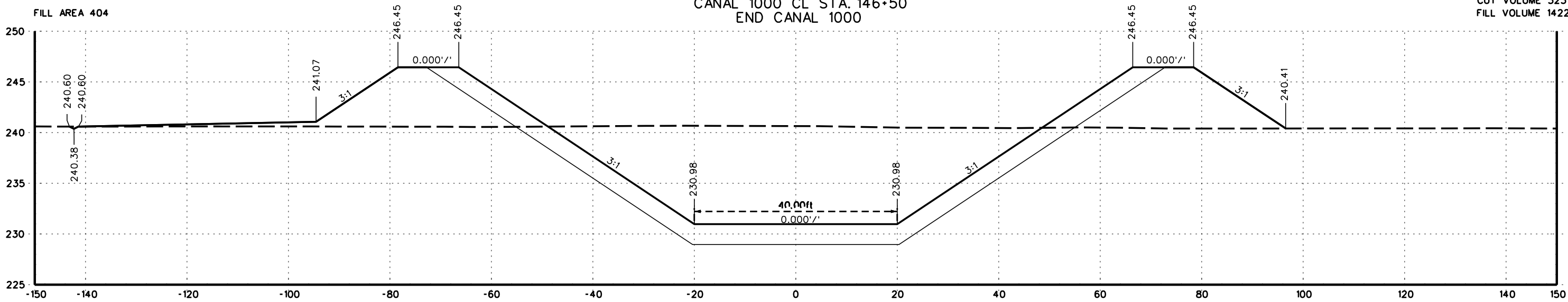
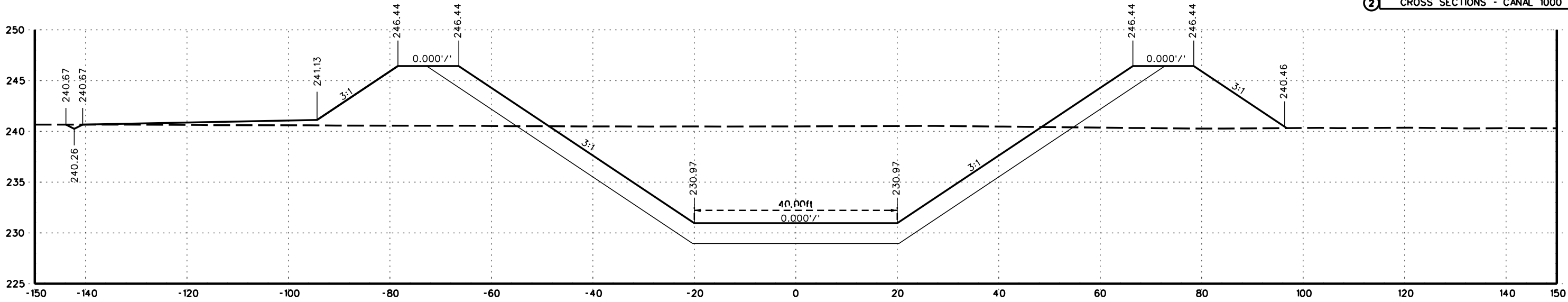
CUT AREA 1102
FILL AREA 207

CANAL 1000 CL STA. 142+50
BEGIN CANAL 1000

CANAL 1000 CUT VOLUME 0
STA.142+50 TO STA.143+89 FILL VOLUME 0

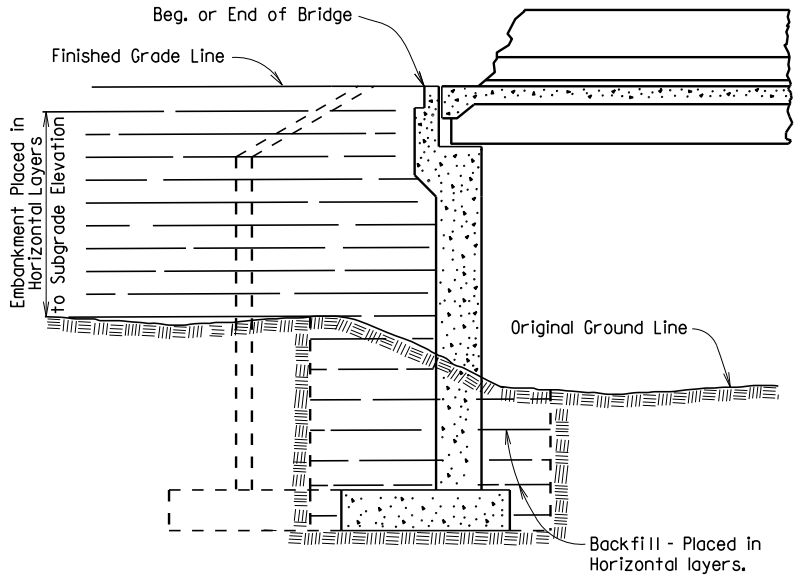
BM165BRIDGE_099	6/15/2022
-----------------	-----------

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.		061473	100	100
				2 CROSS SECTIONS - CANAL 1000				

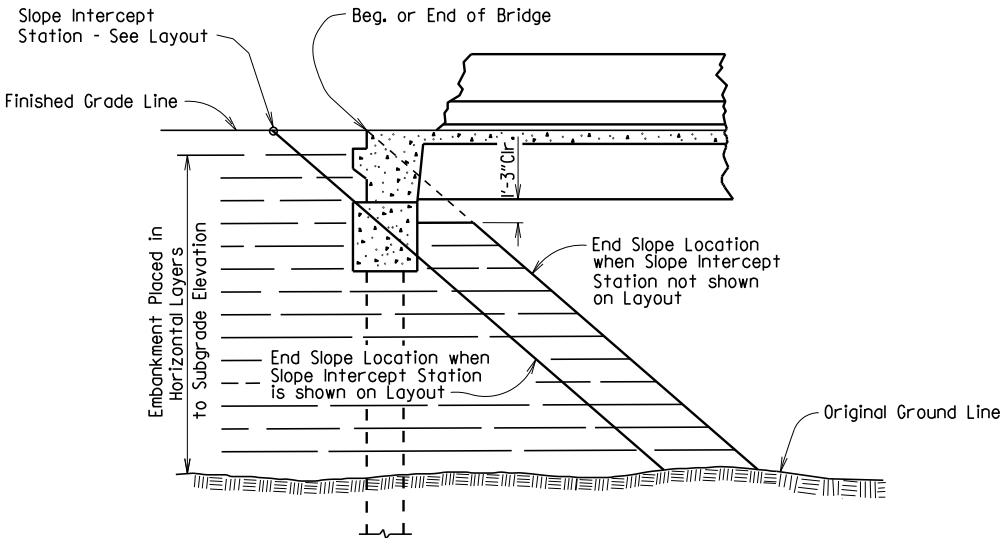


CANAL 1000
STA. 144+50 TO STA. 146+00

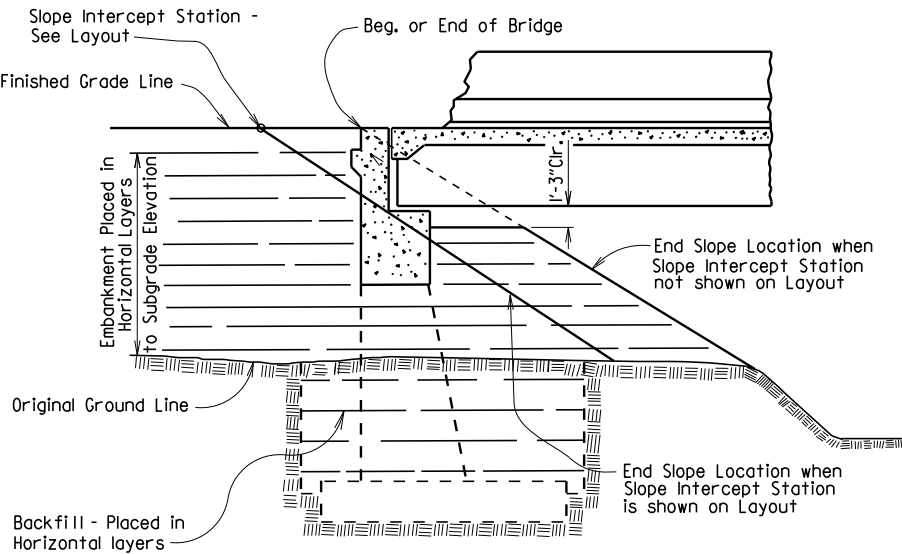
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1 EMBANKMENT & BACKFILL			55000	



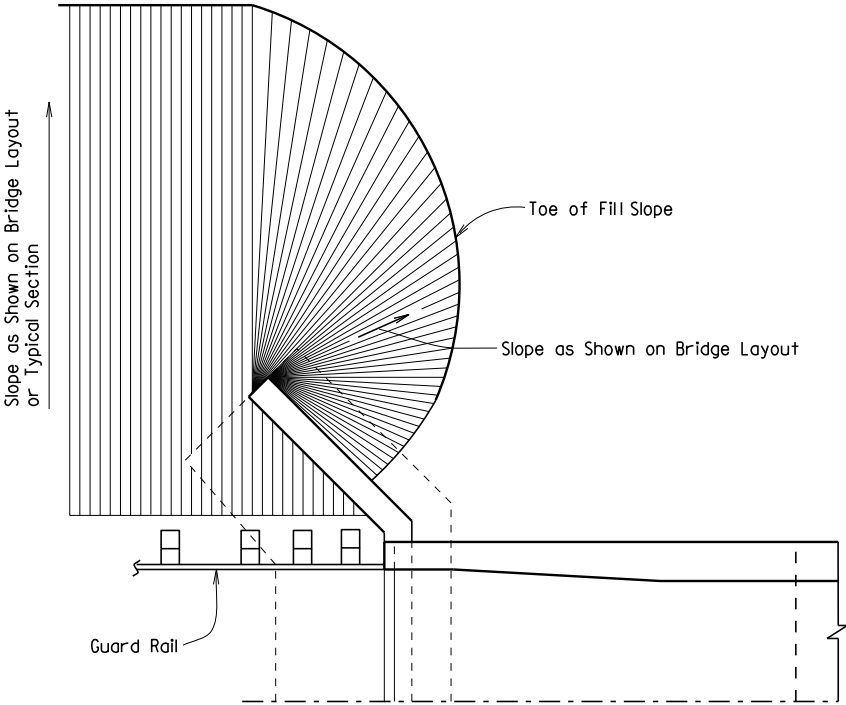
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT VERTICAL WALL ABUTMENTS



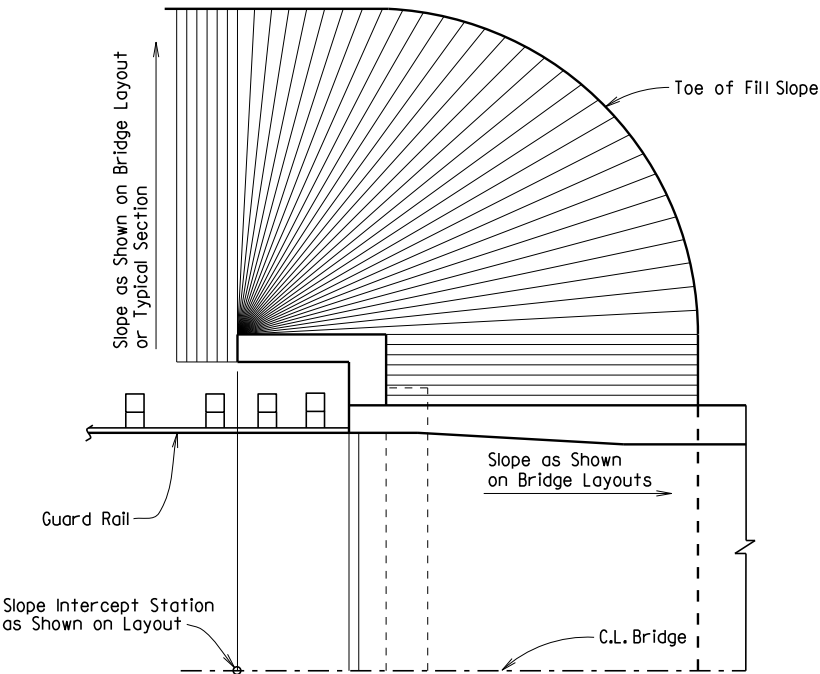
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH
PILE END BENTS



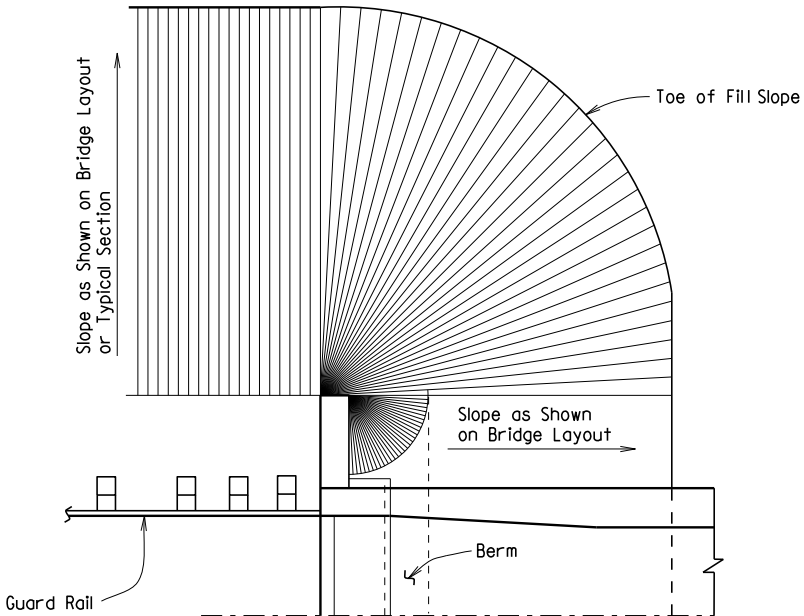
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT SPILL-THROUGH END BENTS



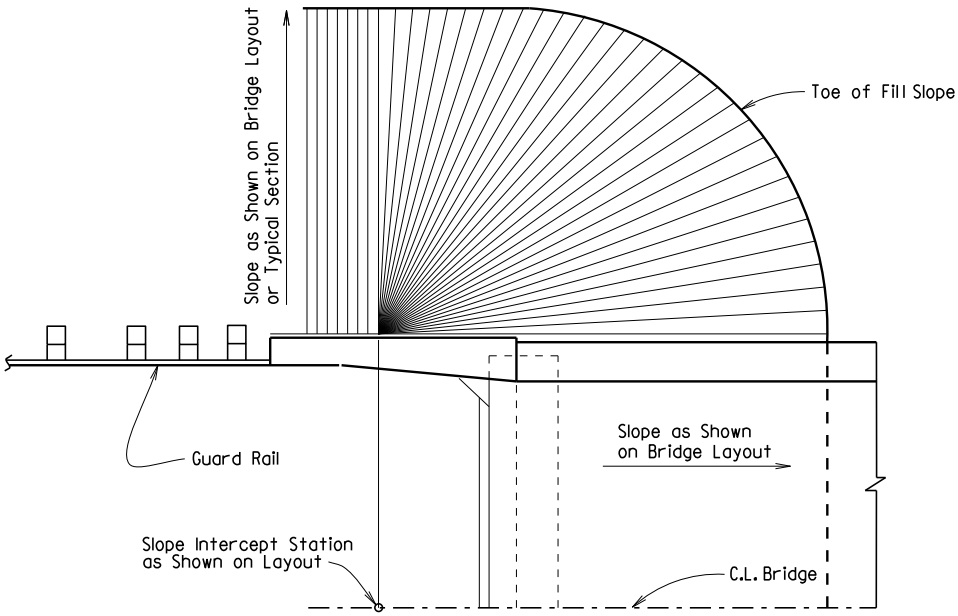
VERTICAL WALL ABUTMENTS



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

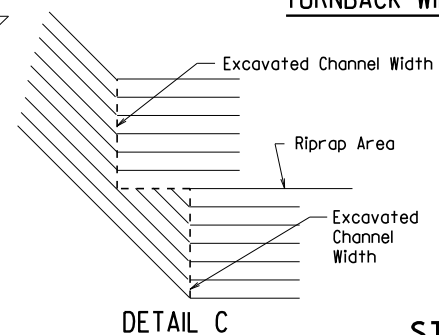
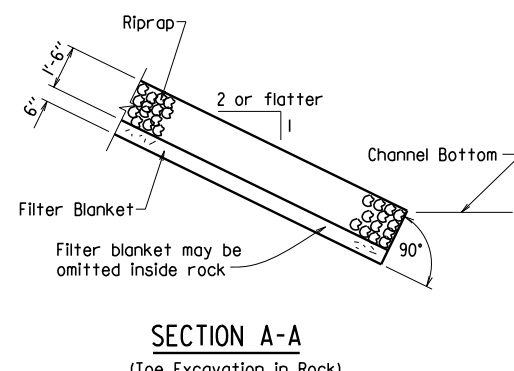
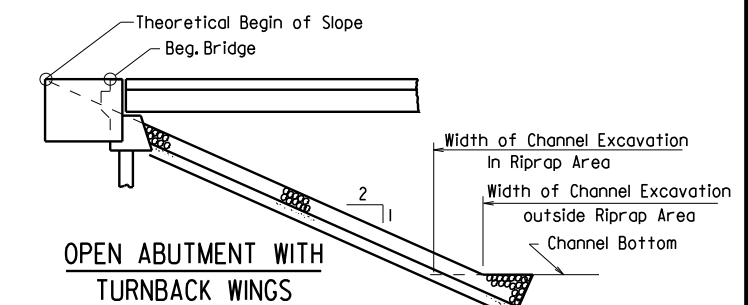
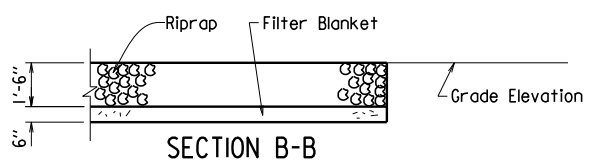
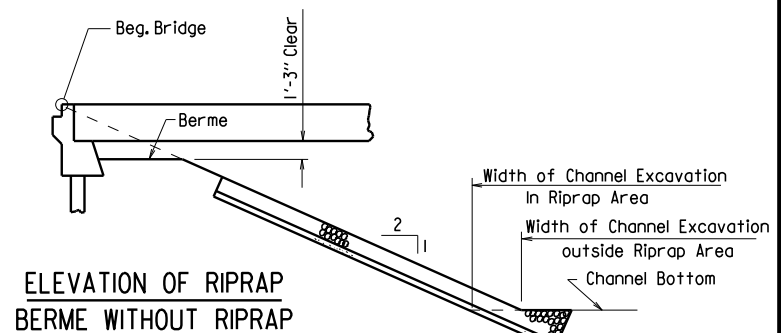
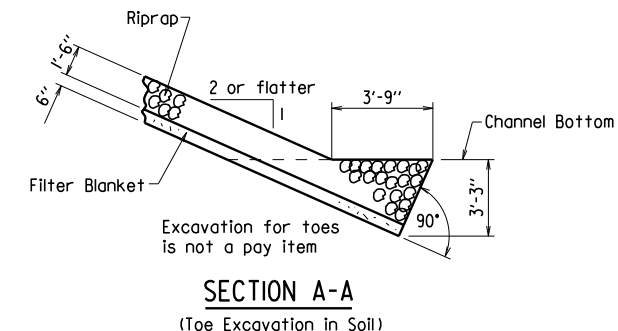
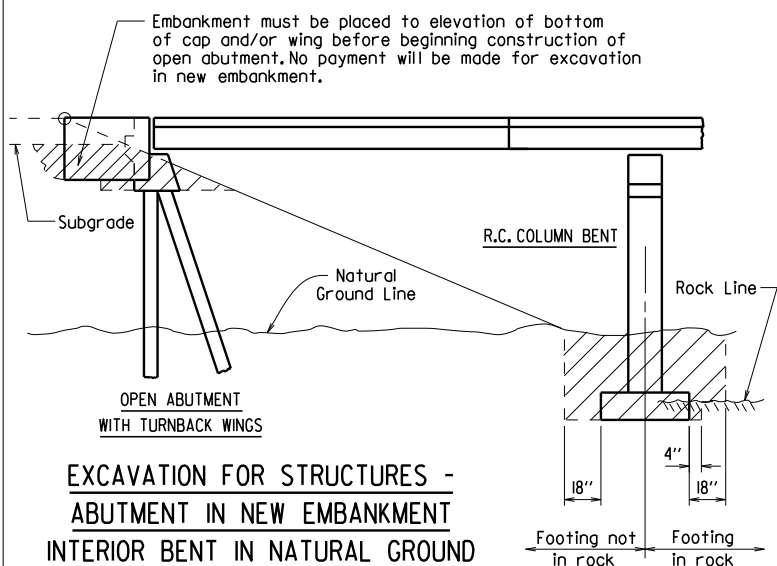
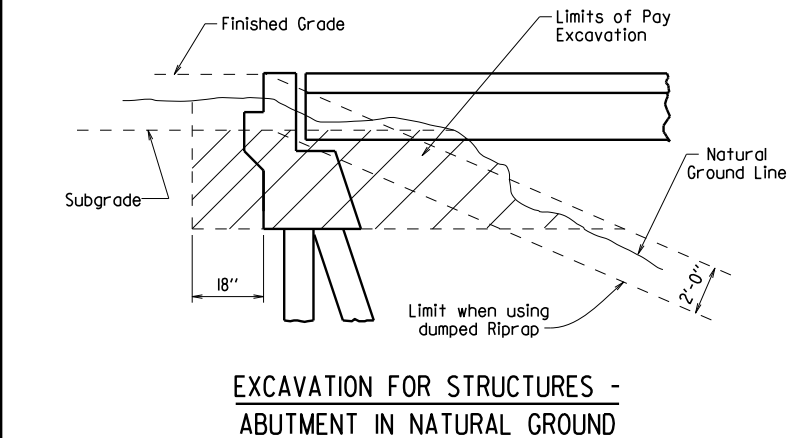
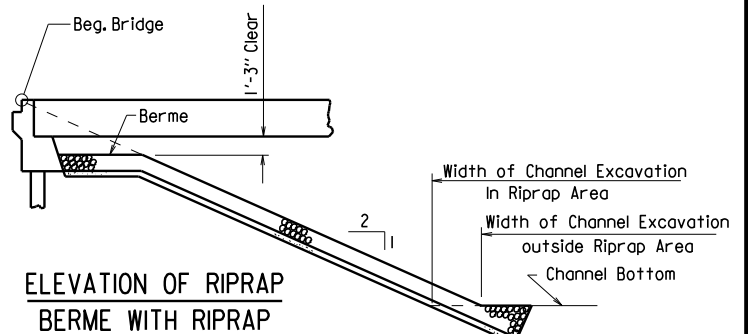
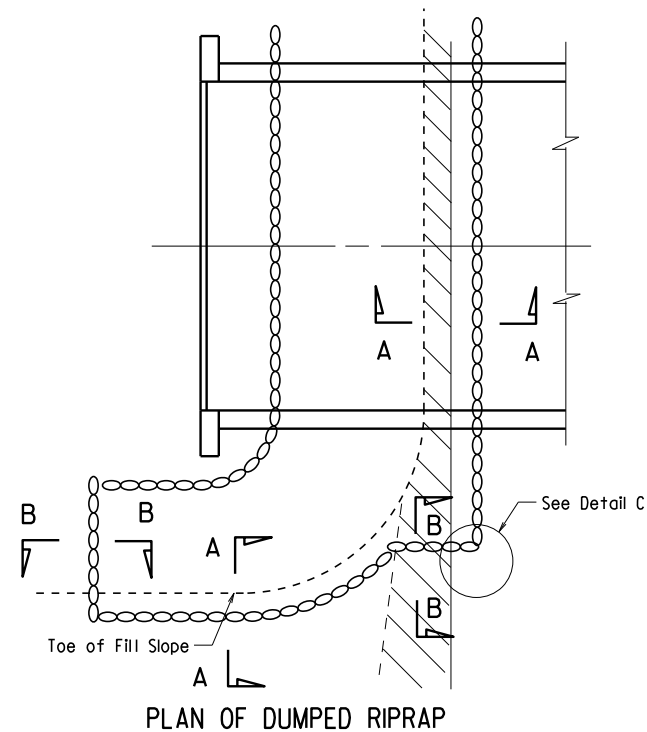
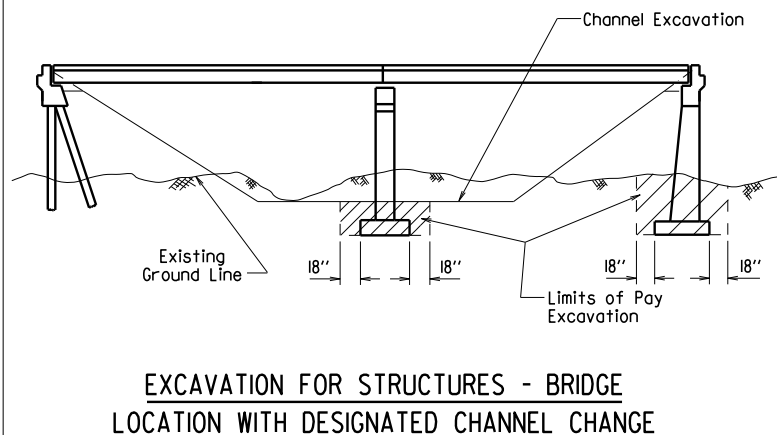
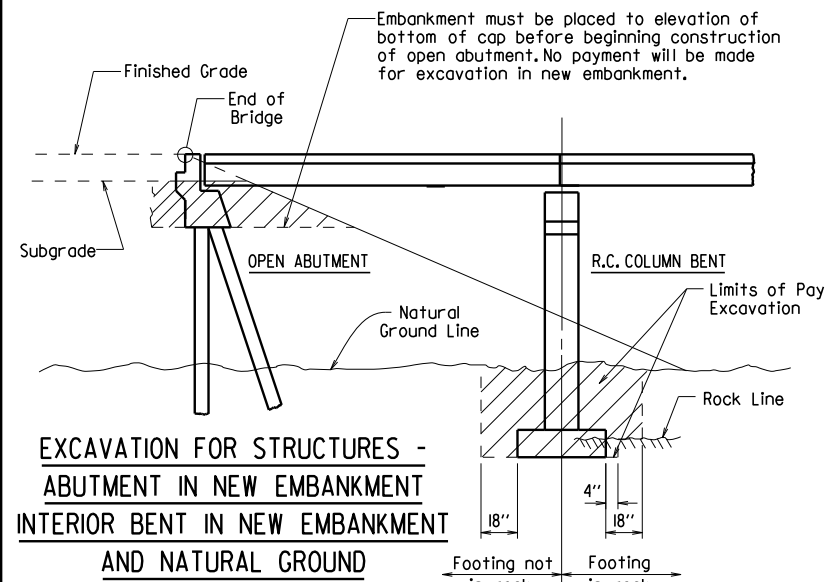
ARKANSAS STATE HIGHWAY COMMISSION

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.

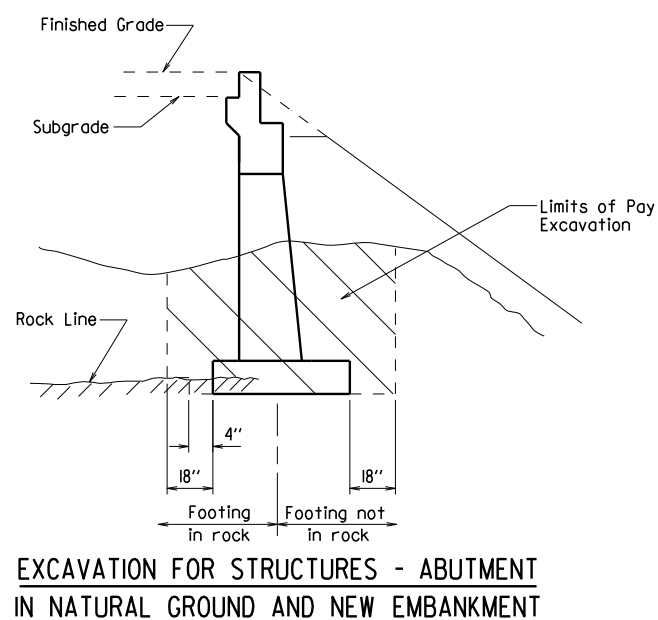
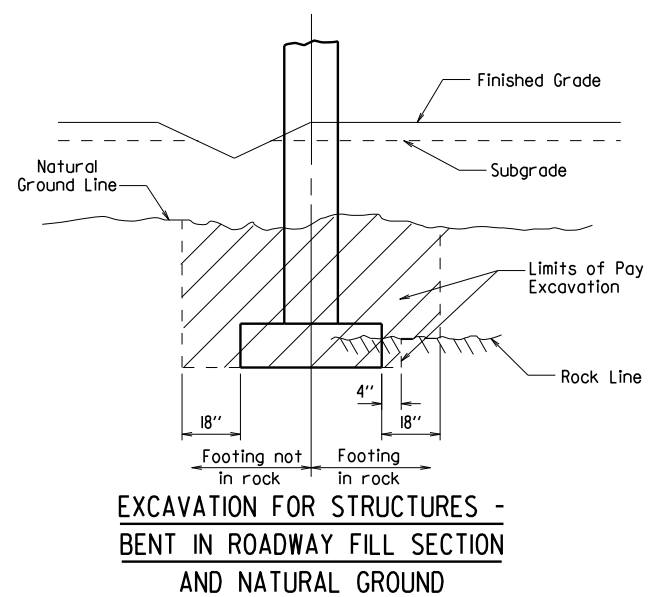
Note: Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.

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

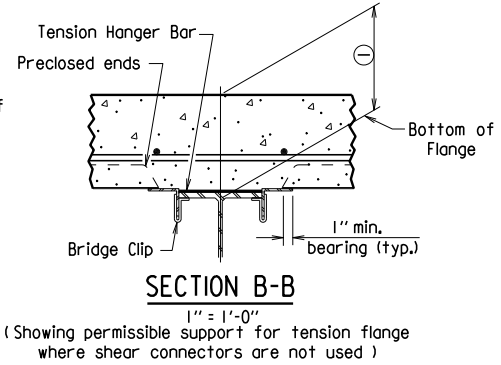
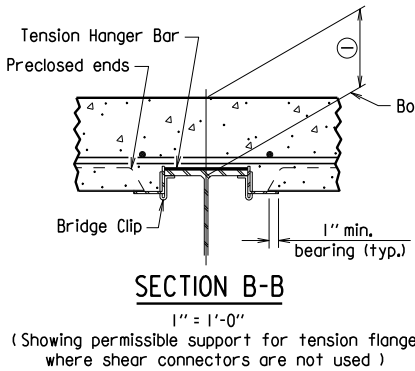
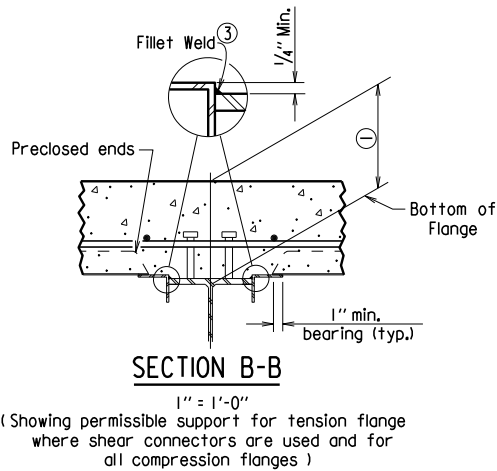
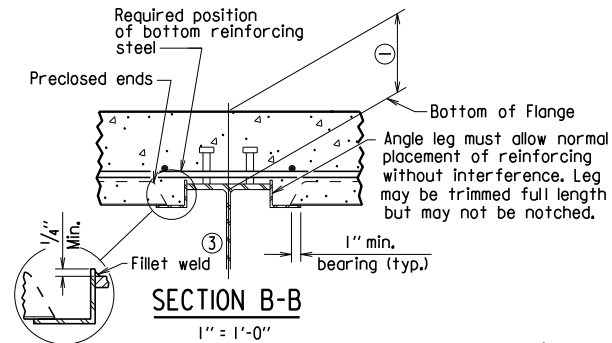
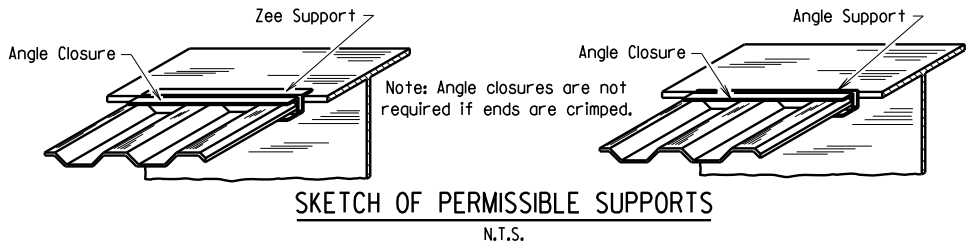
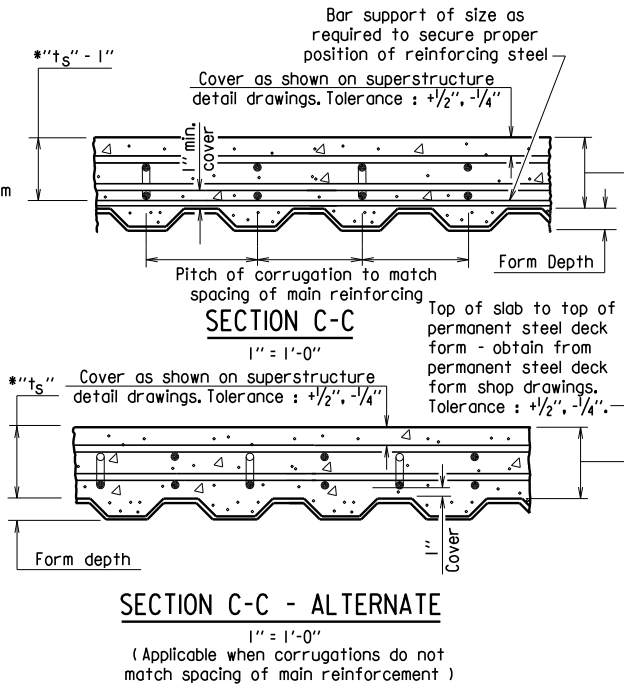
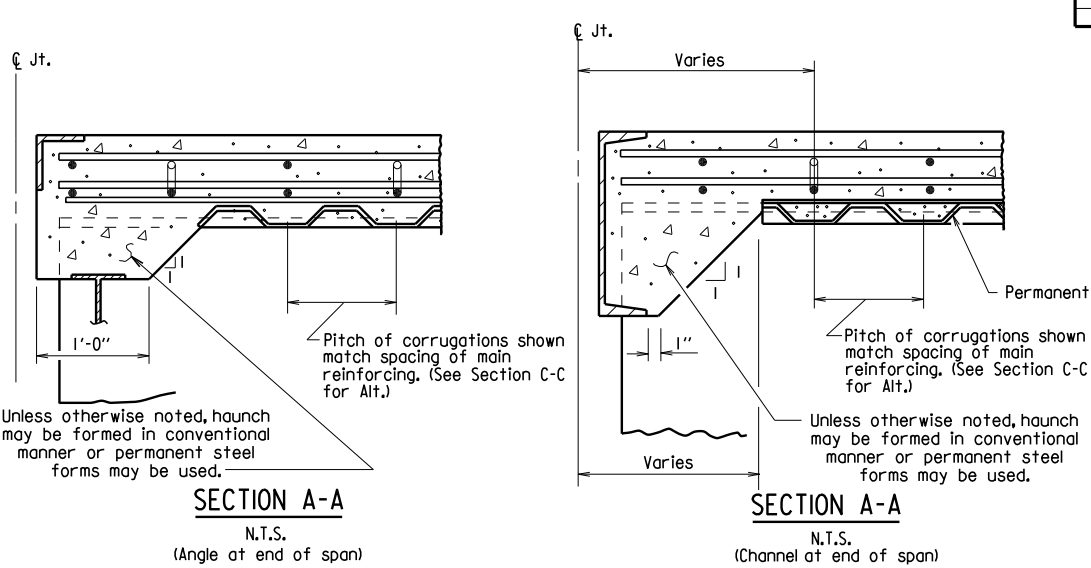
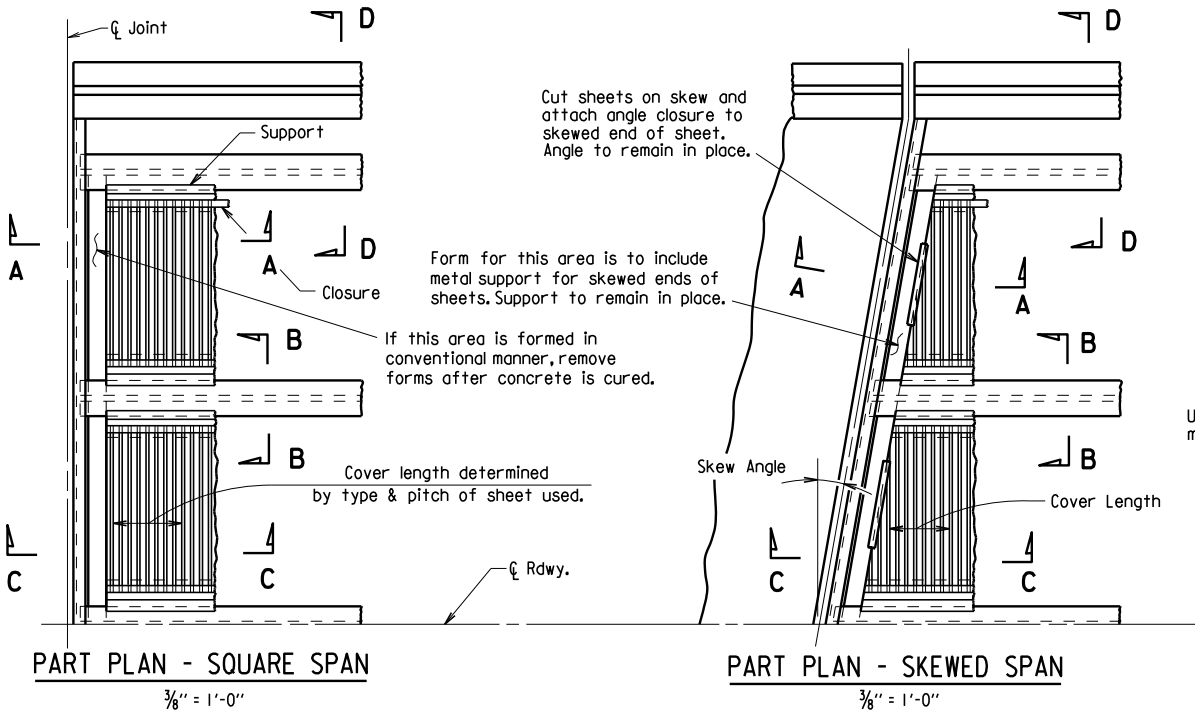
LITTLE ROCK, ARK.

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

DRAWING NO. 5500I



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			



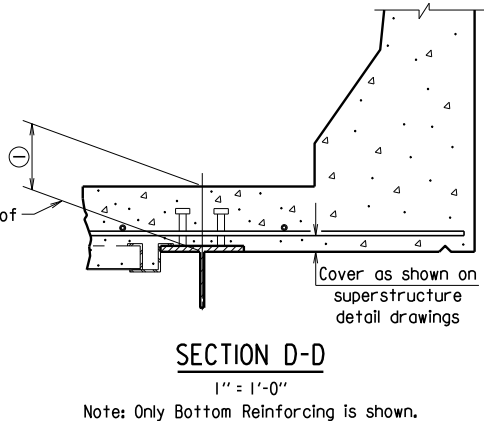
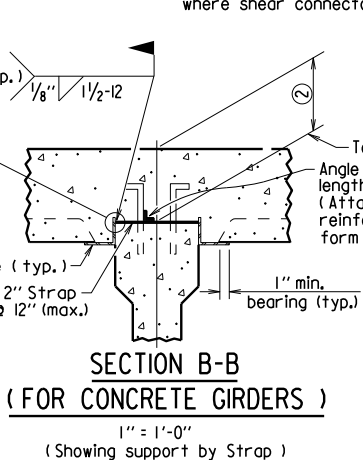
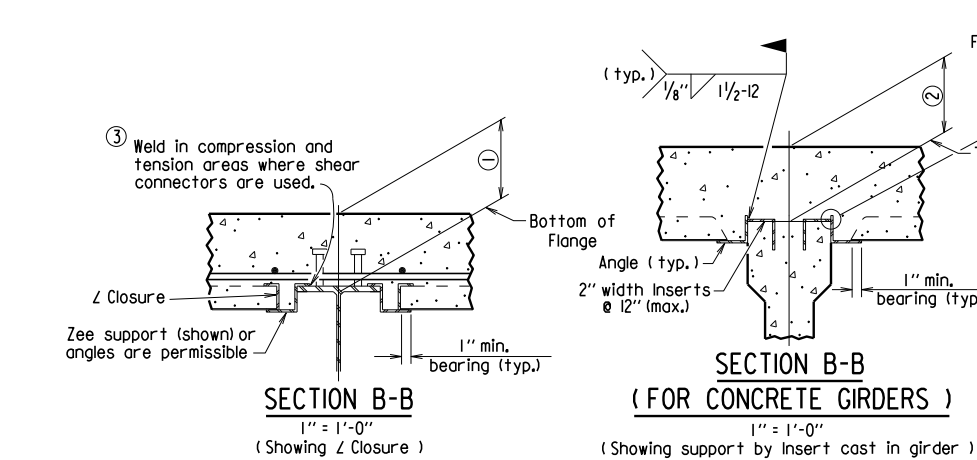
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

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)



*t_s = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or 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

△ Revised weld dimension by KWH, 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
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 $\frac{1}{8}$ " raised letters and numerals $\frac{3}{8}$ " 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 $\frac{1}{4}$ " thick and shall include four tapering cone lugs $\frac{3}{8}$ " to $\frac{5}{16}$ " x 2" long. The border and all lettering shall be raised $\frac{1}{8}$ " 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.

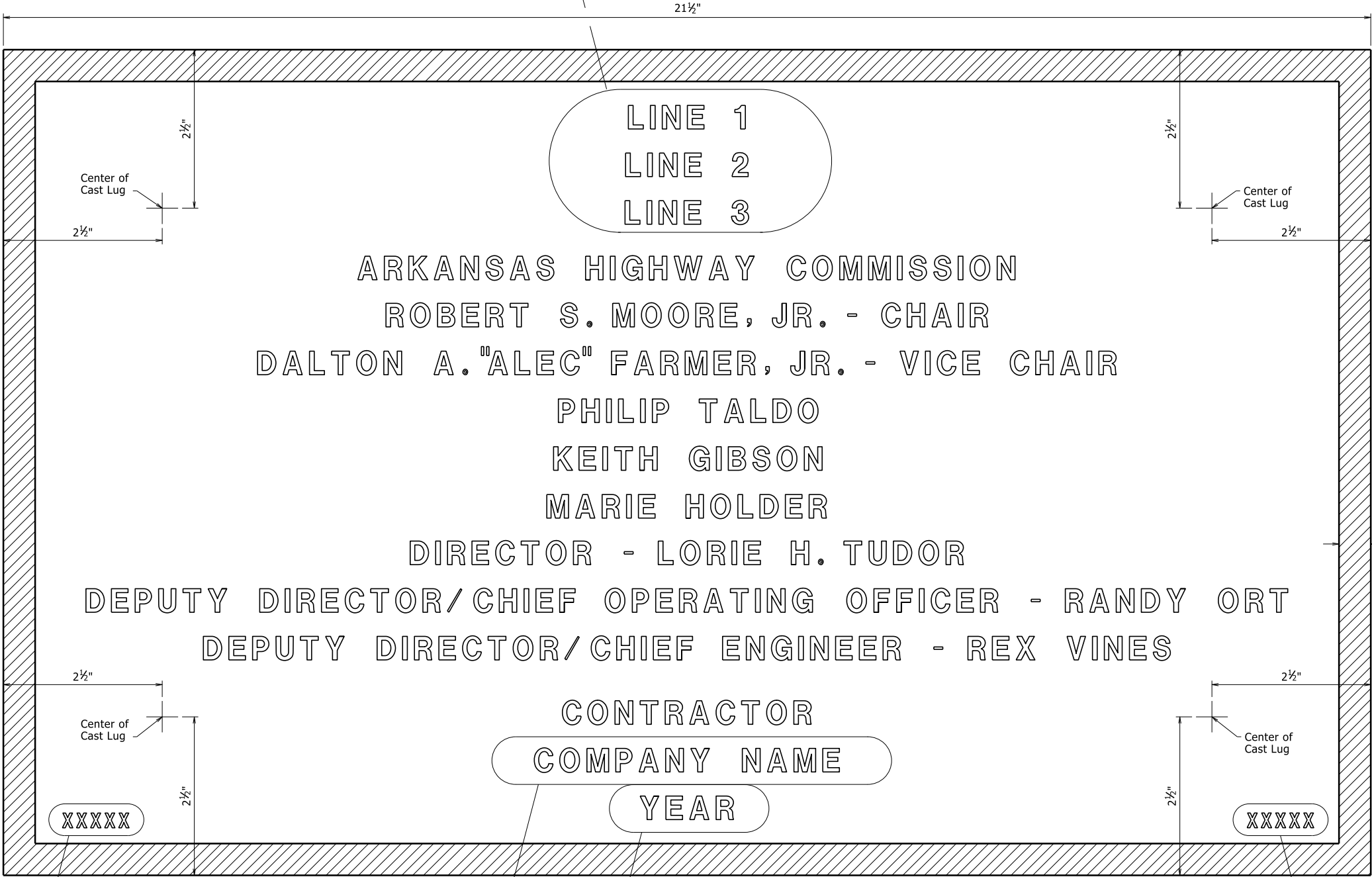
- 6 Revised Deputy Director/Chief Engineer
5-11-2021 CGP Checked By: CRE
- 5 Revised Director, Deputy Director/Chief Operating Officer, Chair, Vice Chair and added New Commissioner
3-24-2020 CGP Checked By: CRE
- 4 Revised Chair and Vice Chair Added New Commissioner
1-15-19 CGP Checked By: CRE
- 3 Added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

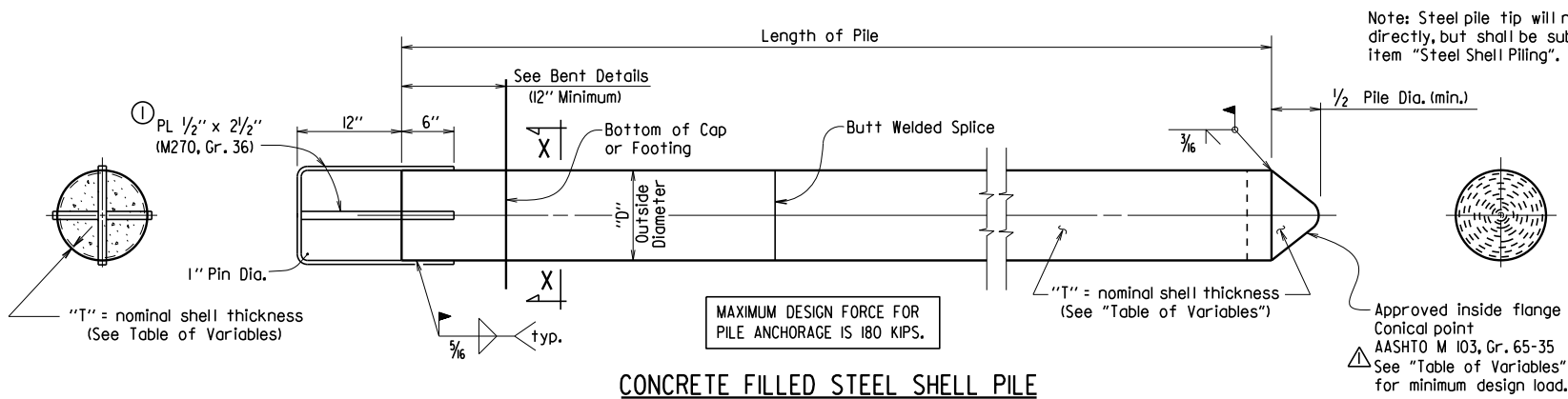


TYPICAL BRIDGE NAME PLATE

Place the design live loading here using $\frac{1}{8}$ " raised letters and numerals $\frac{1}{4}$ " high. Examples: HS20 HL-93

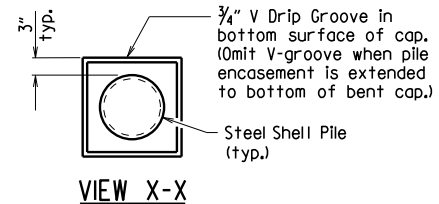
Place the name of the company awarded the construction contract here using $\frac{1}{8}$ " raised letters and numerals $\frac{3}{8}$ " high. Example: ABCD CONSTRUCTION, INC.

Place the Bridge number here using $\frac{1}{8}$ " raised letters and numerals $\frac{1}{4}$ " 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:

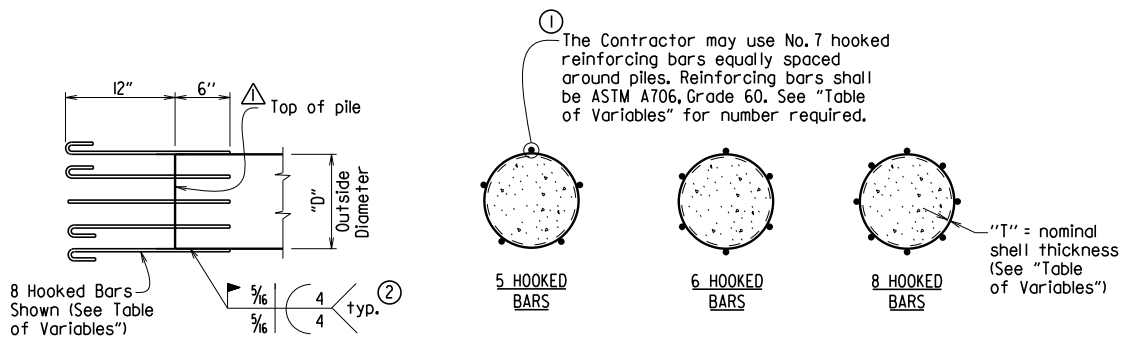
Steel shells shall conform ASTM A252, Grade 3 ($F_y = 45,000$ psi.)

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.

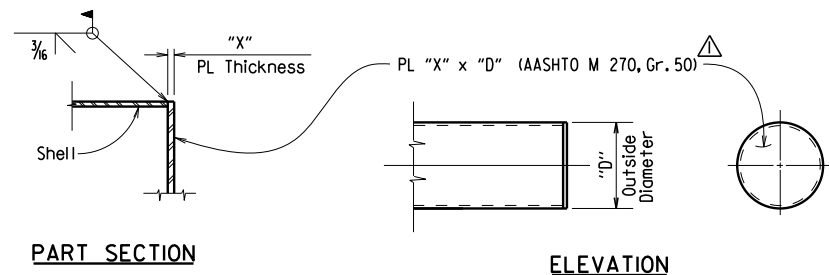
See Bridge Layout for size and estimated length of steel shell piles and for driving information.

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".



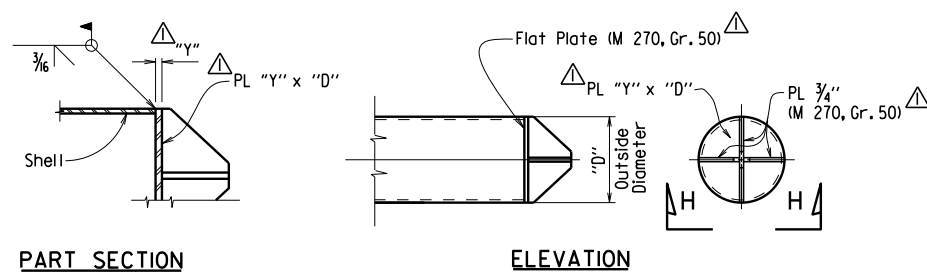
ALTERNATE PILE ANCHORAGE DETAIL

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



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.



ALTERNATE VANED TIP DETAIL

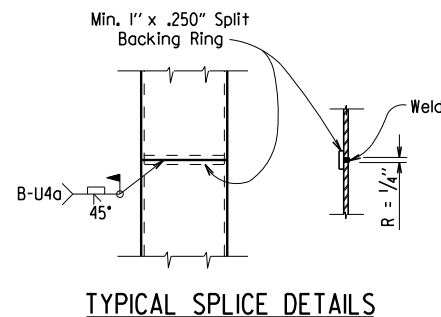
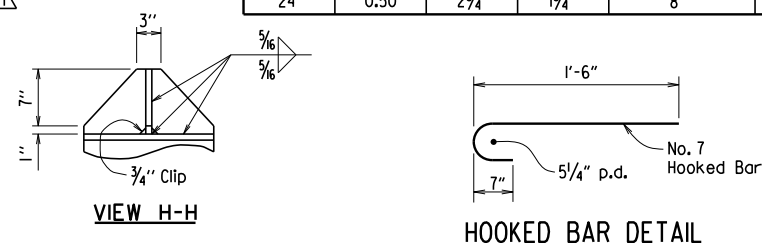


TABLE OF VARIABLES

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.				

GENERAL NOTES FOR PILE ENCASEMENTS:

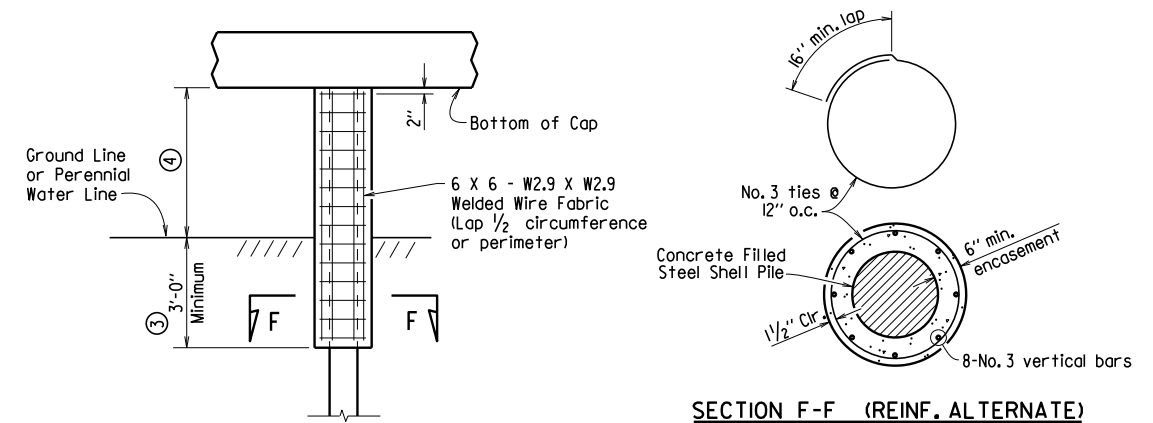
See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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".



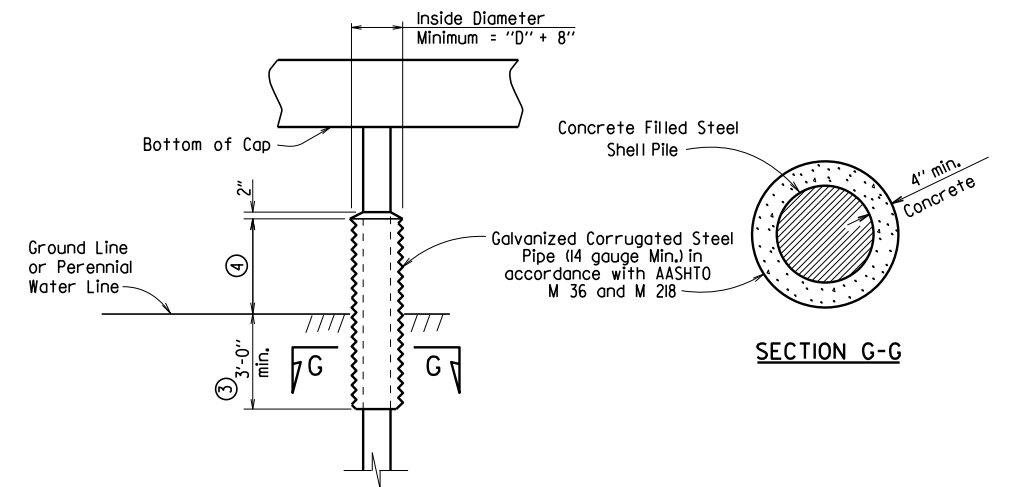
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(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.



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.



BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

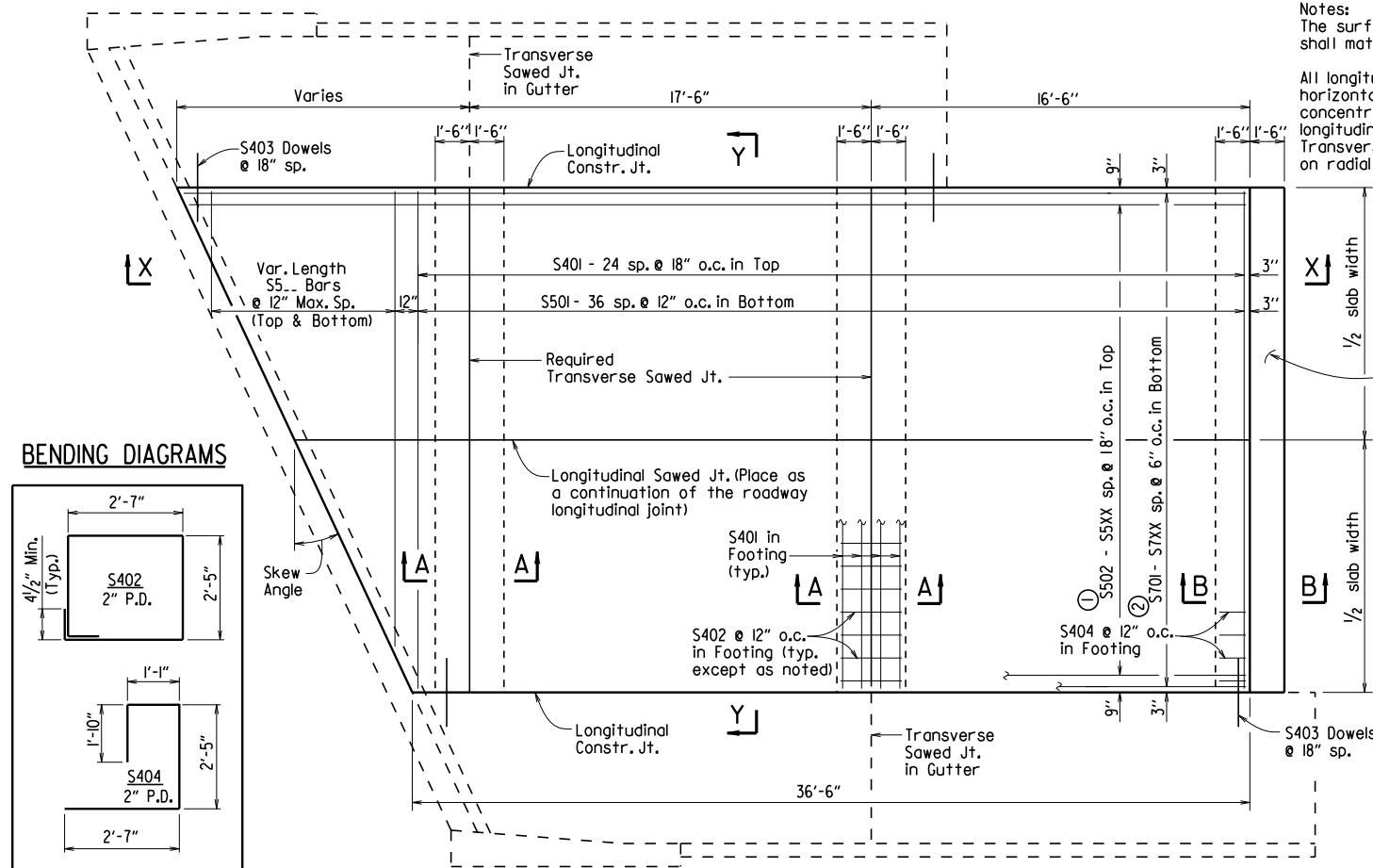
ARKANSAS STATE HIGHWAY COMMISSION

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: —

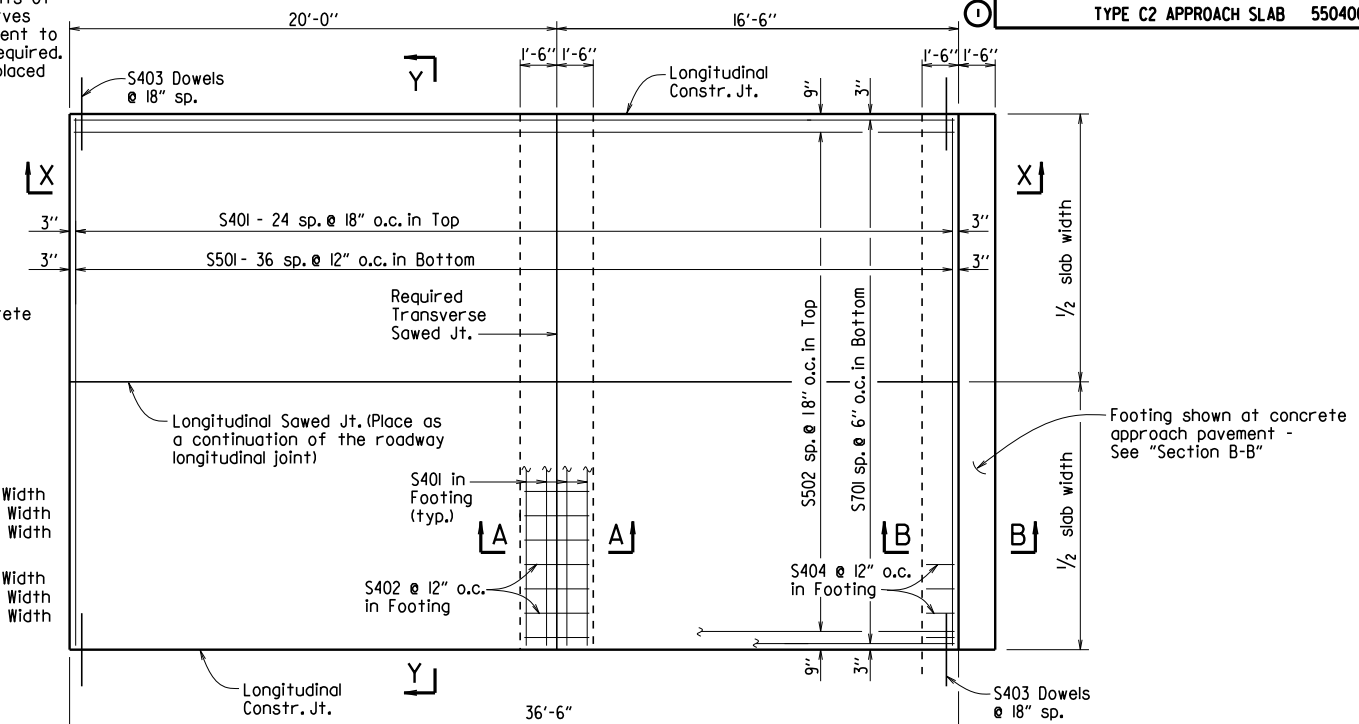
DRAWING NO. 55021

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.				
16'-6"				TYPE C2 APPROACH SLAB		55040C2		

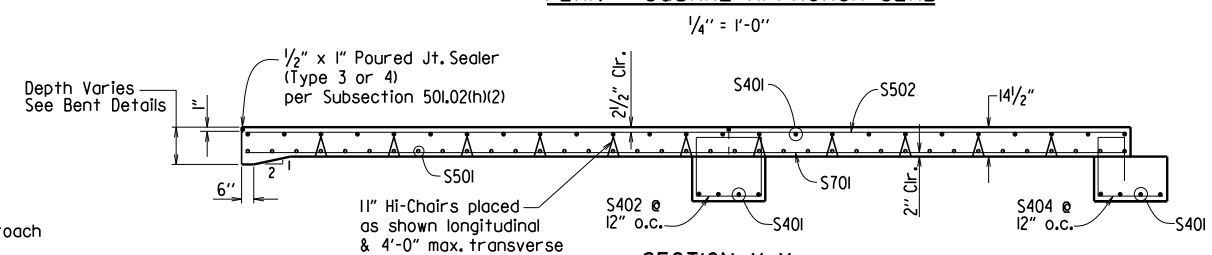


Notes:
The surface finish for Approach Slabs
shall match that used on the bridge deck.

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

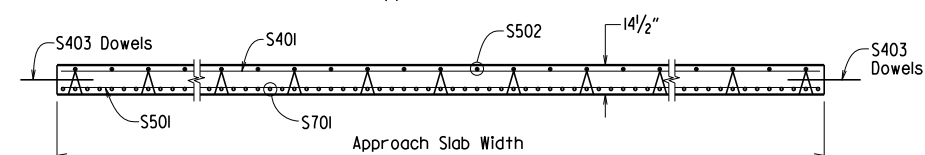


PLAN - SQUARE APPROACH SLAB



SECTION X-X

SQUARE APPROACH SLAB SHOWN

$$1/4'' = 1'-0''$$


SECTION Y-Y

N.T.S.

GENERAL NOTES

This drawing shall be used for Approach Slabs in Seismic Performance Zones 2, 3 & 4 and for the maximum skew angles shown below:

15'-0" Slab Width: Maximum Skew Angle = 50°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

All concrete shall be Class S (AE) with a minimum 28 day compressive strength $f'_c = 4,000$ psi 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 Slabs will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE C2 APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. **DATE:** 2/27/2014 **FILENAME:** b55040c2.dgn

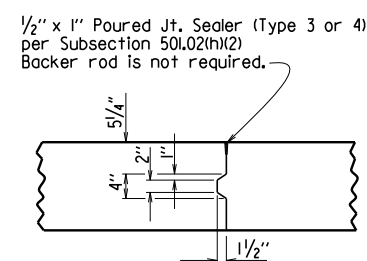
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN

DRAWING NO. 55040C2

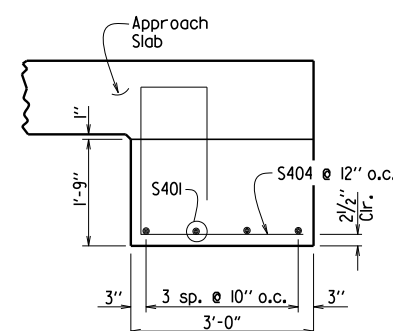
TABLE OF QUANTITIES FOR ONE
SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel	Concrete
	(Lbs.)	(Cu. Yds)
15'-0"	3765	30.75
24'-0"	5980	49.15
36'-0"	8925	73.75

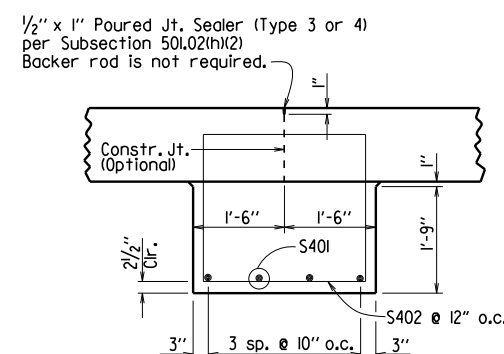


DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

$$\frac{3}{4}'' = 1'-0''$$


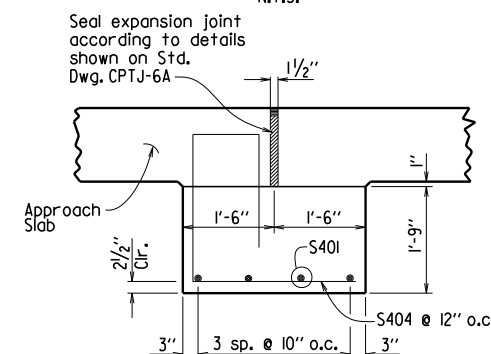
SECTION B-B

AT ASPHALT APPROACH PAVEMENT
N.T.S.



SECTION A-A

N.T.S.

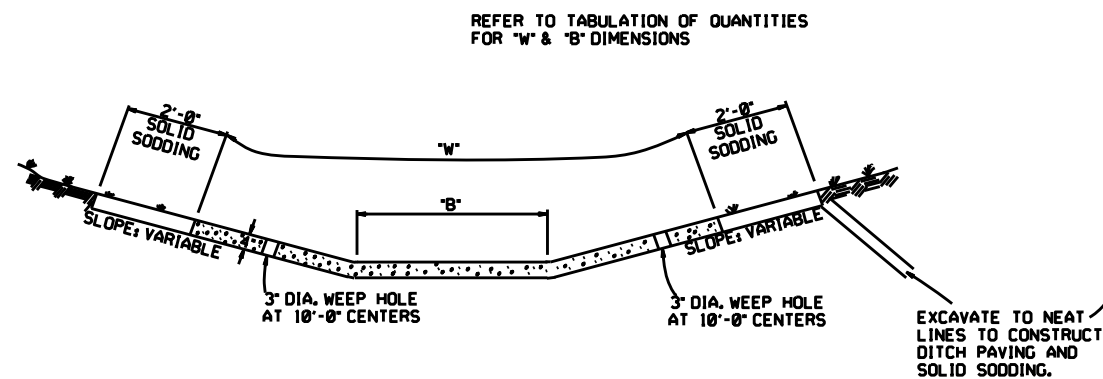


SECTION B-B

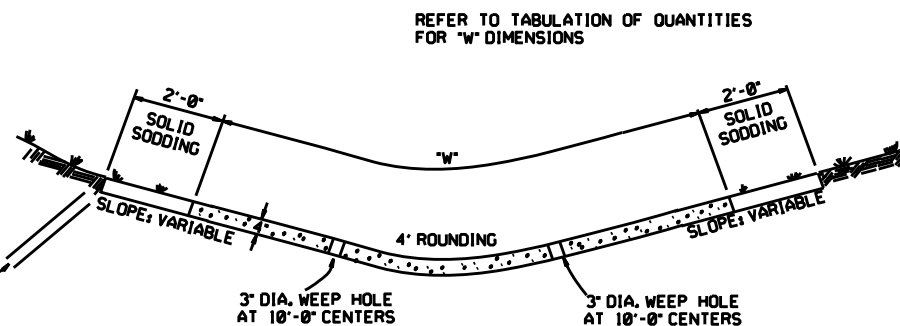
AT CONCRETE APPROACH PAVEMENT
N.T.S.

		Square		Skewed		
		Mark	No. Req'd.	Length	No. Req'd.	Length
15'-0" Slab Width	S401	33	14'-8"	37	14'-8"	
	S402	15	10'-4"	30	10'-4"	
	S403	50	3'-0"	*	3'-0"	
	S404	15	7'-8"	15	7'-8"	
	S501	37	14'-8"	37	14'-8"	
	S502	10	36'-2"	—	—	
	S502 - S511	—	—	1 Ea.	36.1' + 0.75' (tan skew angle) to 36.1' + 14.25' (tan skew angle)	
	S5...	—	—	2 Ea.	14.7' - 0.75'/(tan skew angle) to 2'-0" Min.	
	S701	30	36'-2"	—	—	
S701 - S730	—	—	1 Ea.	36.1' + 0.25' (tan skew angle) to 36.1' + 14.75' (tan skew angle)		
24'-0" Slab Width	S401	33	23'-8"	37	23'-8"	
	S402	24	10'-4"	48	10'-4"	
	S403	50	3'-0"	*	3'-0"	
	S404	24	7'-8"	24	7'-8"	
	S501	37	23'-8"	37	23'-8"	
	S502	16	36'-2"	—	—	
	S502 - S517	—	—	1 Ea.	36.1' + 0.75' (tan skew angle) to 36.1' + 23.25' (tan skew angle)	
	S5...	—	—	2 Ea.	23.7' - 0.75'/(tan skew angle) to 2'-0" Min.	
	S701	48	36'-2"	—	—	
S701 - S748	—	—	1 Ea.	36.1' + 0.25' (tan skew angle) to 36.1' + 23.75' (tan skew angle)		
36'-0" Slab Width	S401	33	35'-8"	37	35'-8"	
	S402	36	10'-4"	72	10'-4"	
	S403	50	3'-0"	*	3'-0"	
	S404	36	7'-8"	36	7'-8"	
	S501	37	35'-8"	37	35'-8"	
	S502	24	36'-2"	—	—	
	S502 - S525	—	—	1 Ea.	36.1' + 0.75' (tan skew angle) to 36.1' + 35.25' (tan skew angle)	
	S5...	—	—	2 Ea.	35.7' - 0.75'/(tan skew angle) to 2'-0" Min.	
	S701	72	36'-2"	—	—	
S701 - S772	—	—	1 Ea.	36.1' + 0.25' (tan skew angle) to 36.1' + 35.75' (tan skew angle)		

*Varies with skew angle

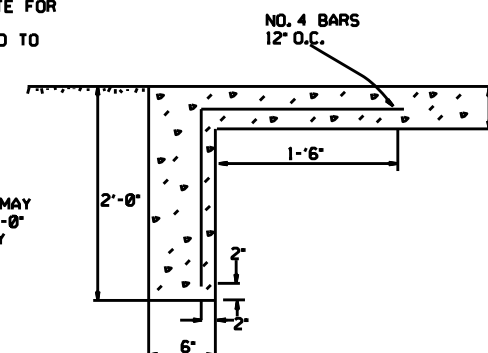


TYPE A

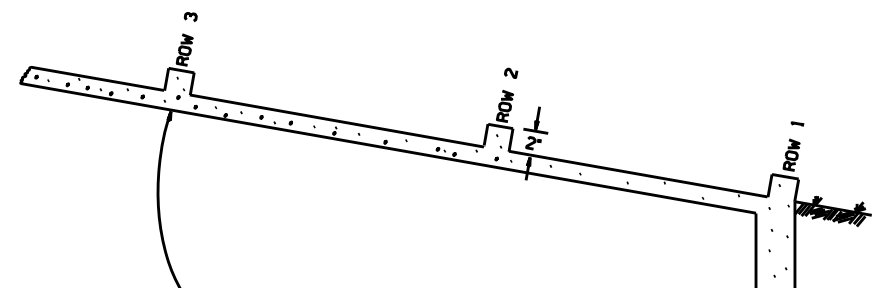


TYPE B

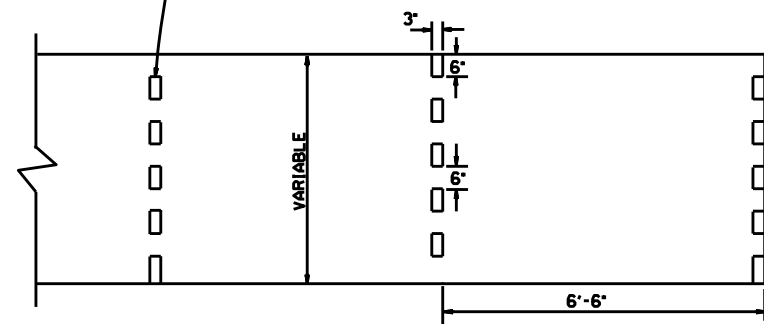
THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."



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.

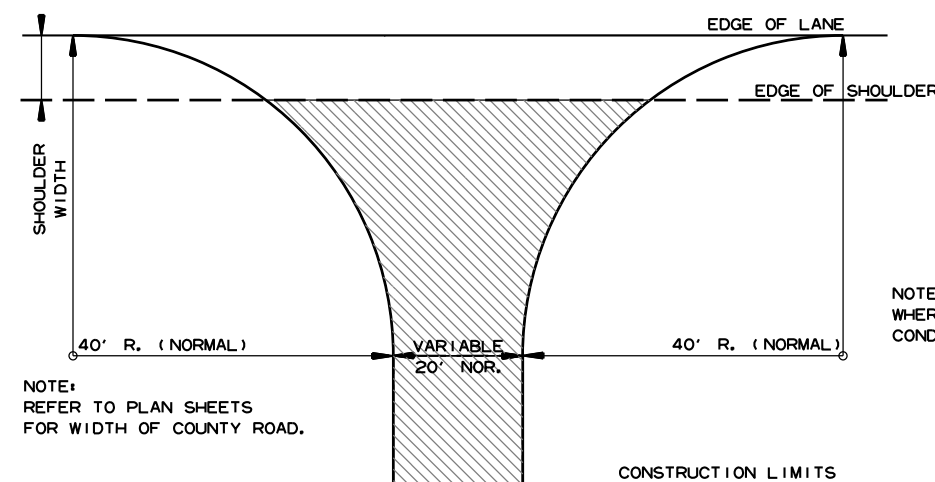
1' WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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
	DATE	REVISION
		DATE FILM'D

ARKANSAS STATE HIGHWAY COMMISSION

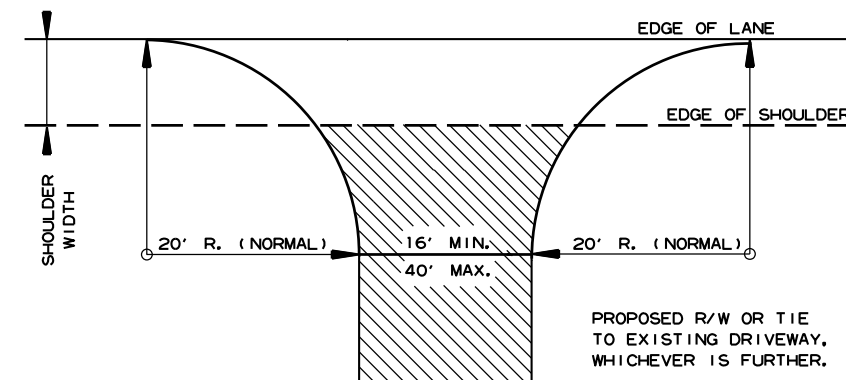
CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1



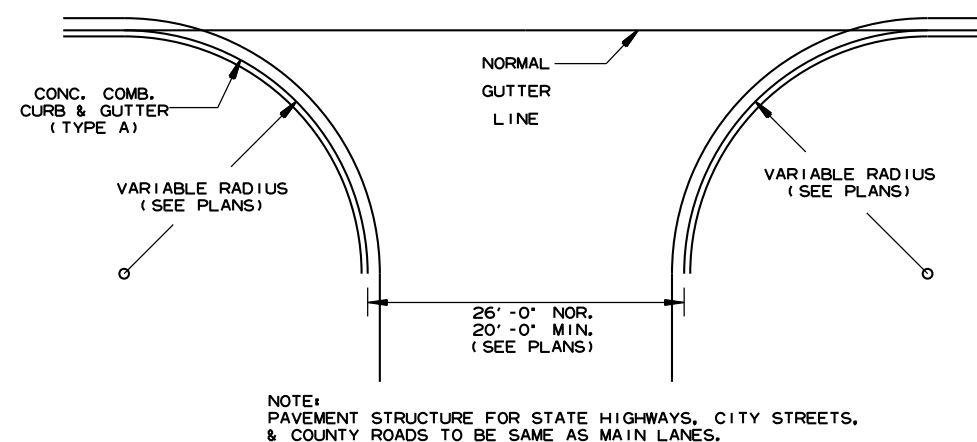
DETAIL FOR COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION

ACHM SURFACE COURSE (1/2")
(220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH, UNLESS OTHERWISE
SPECIFIED IN PLANS.

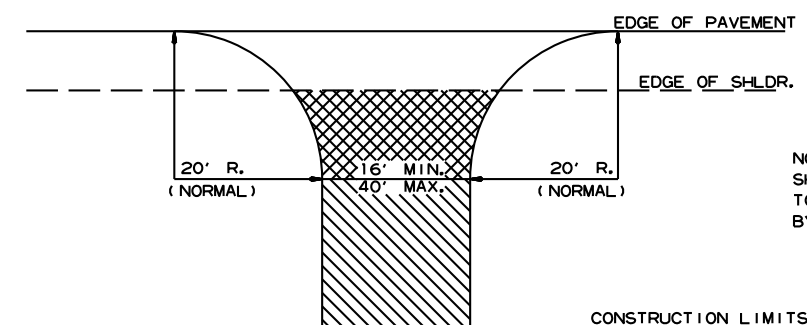


DETAIL FOR DRIVEWAY TURNOUTS
OPEN SHOULDER SECTION
(ARTERIALS)

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



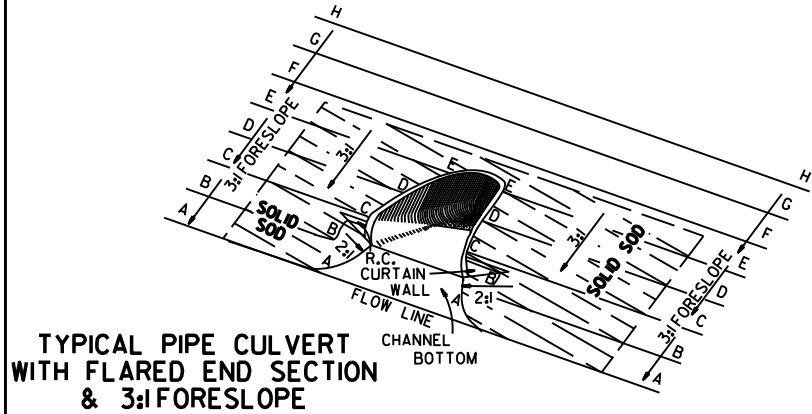
ASPHALT CONCRETE HOT MIX SURFACE
COURSE (220 LBS. PER SQ. YD.)
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT DRIVE EXIST OR
6" CONCRETE IF CONCRETE DRIVE EXIST.

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

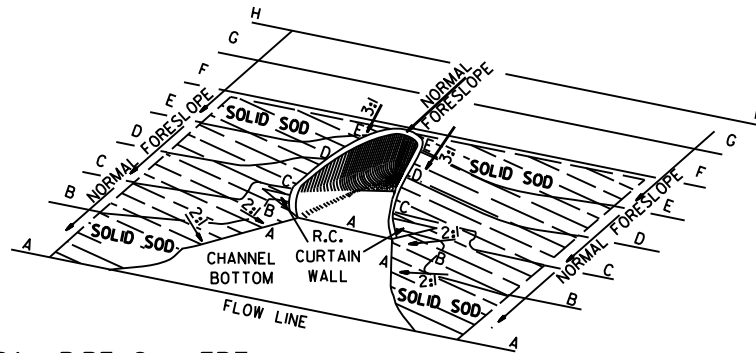
DETAIL FOR DRIVEWAY TURNOUTS
(COLLECTORS)

5-19-22		ISSUED
DATE REV	DATE FILMED	DESCRIPTION

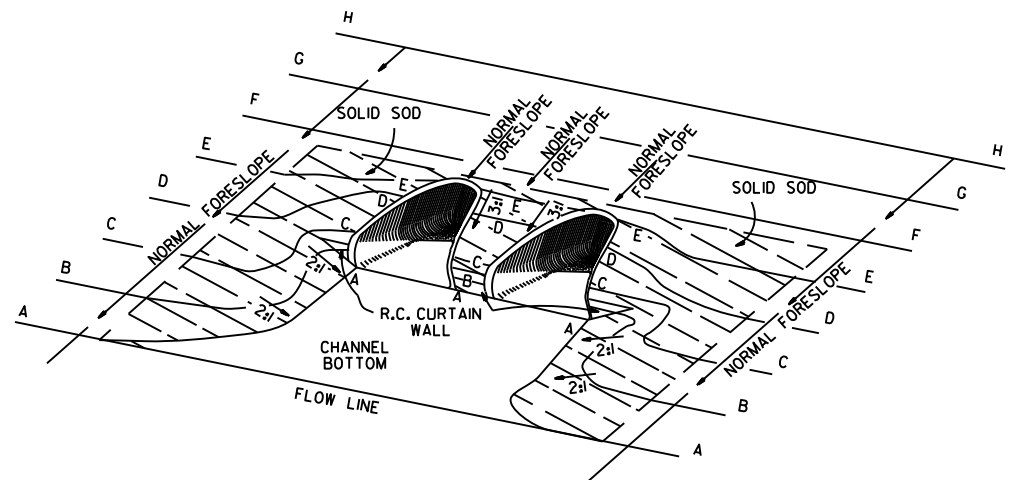
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & STREET
TURNOUTS
STANDARD DRAWING DR-2



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES

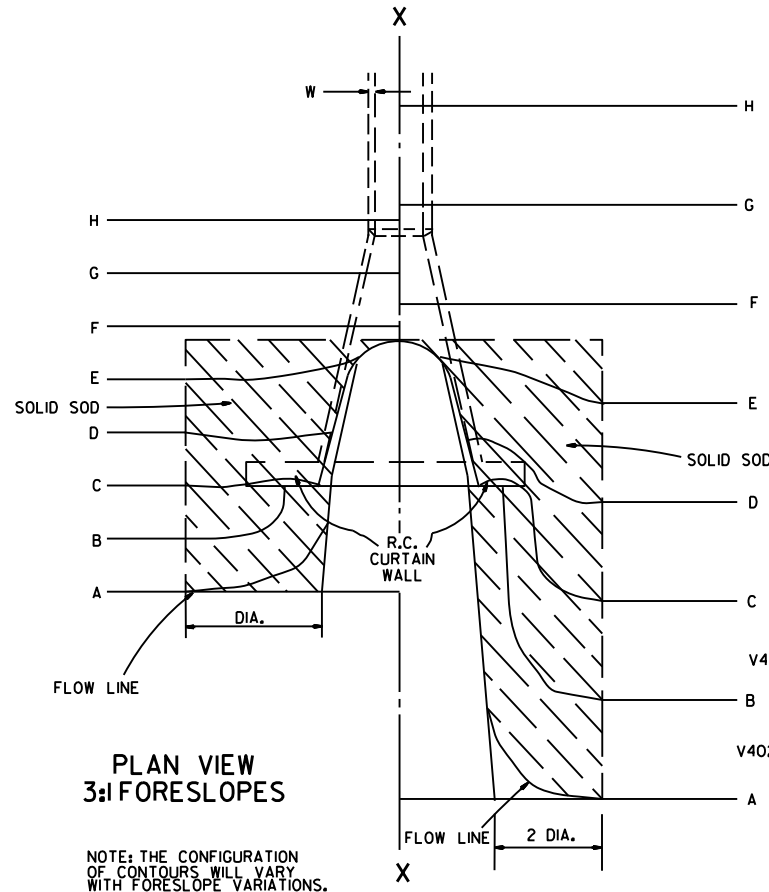


TYPICAL MULTIPLE PIPE CULVERT
WITH FLARED END SECTIONS
& FLATTENED ADJACENT SLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

PIPE DIA.	H ₁	L ₁	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

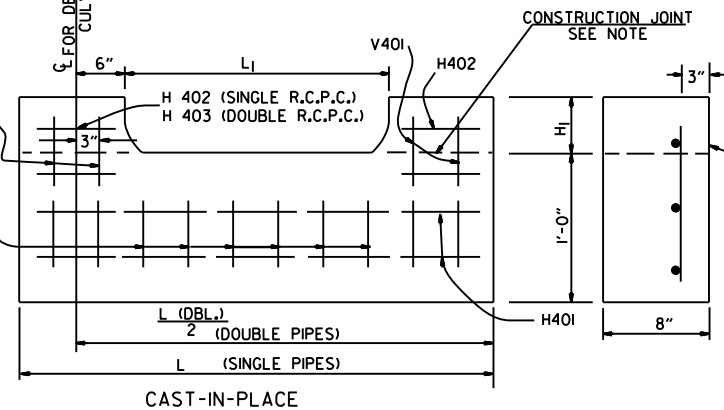
NOTE: QUANTITIES SHOWN ARE FOR ONE (1) CURTAIN WALL.



PLAN VIEW
3:1 FORESLOPES

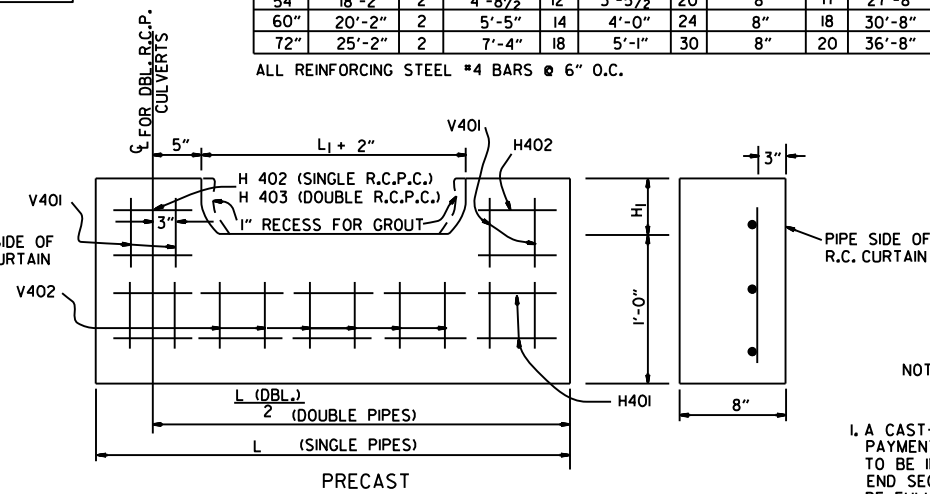
NOTE: THE CONFIGURATION
OF CONTOURS WILL VARY
WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



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.

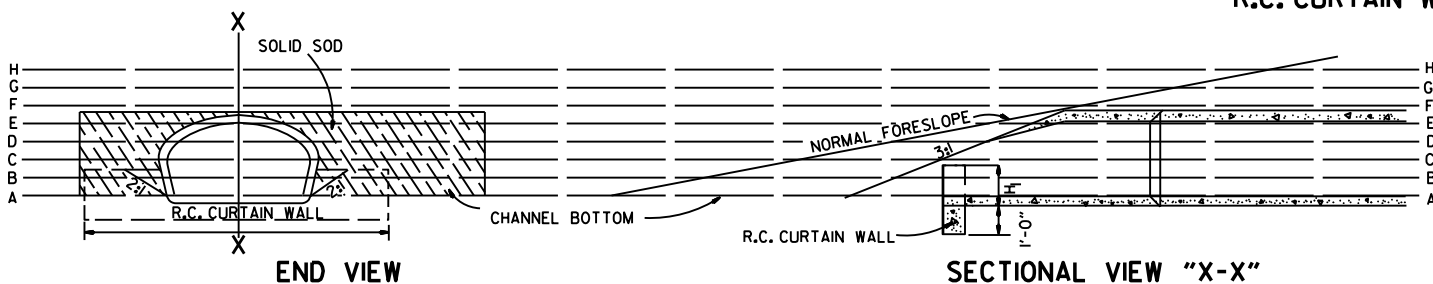
SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C.			DOUBLE R.C.P.C.		
	3:1	4:1	6:1	3:1	4:1	6:1
	SQ. YDS.			SQ. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 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.



END VIEW

SECTIONAL VIEW "X-X"

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

FLARED END SECTION

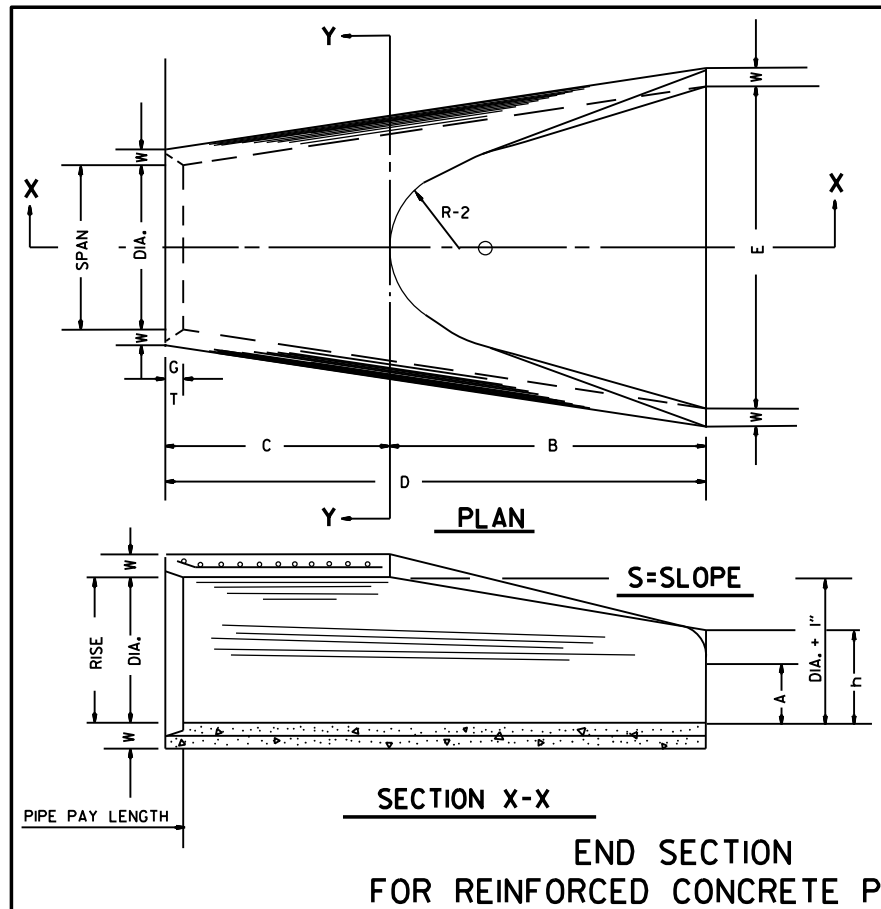
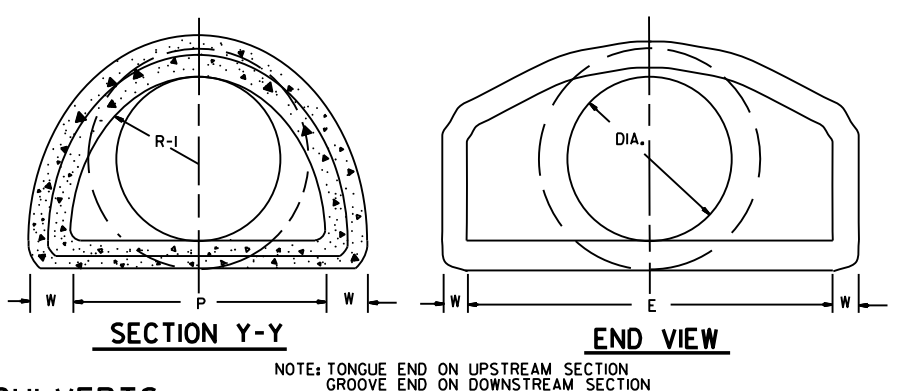


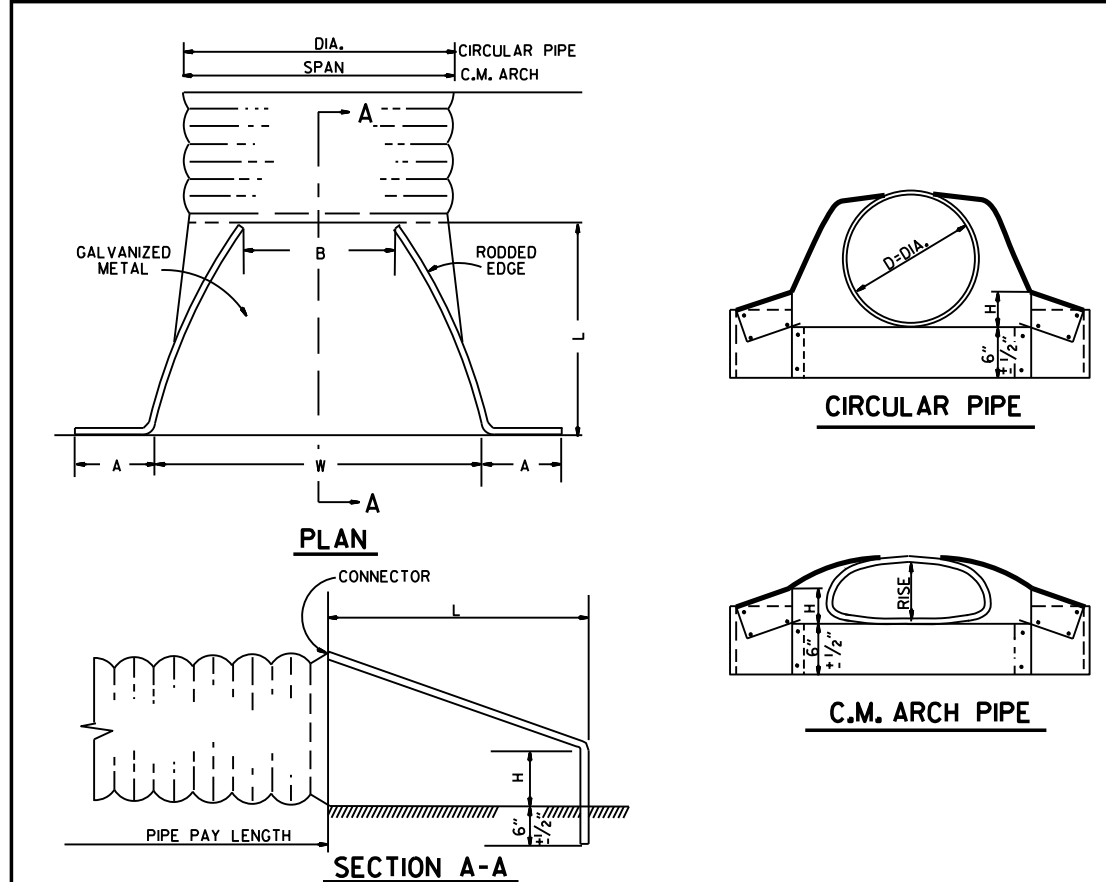
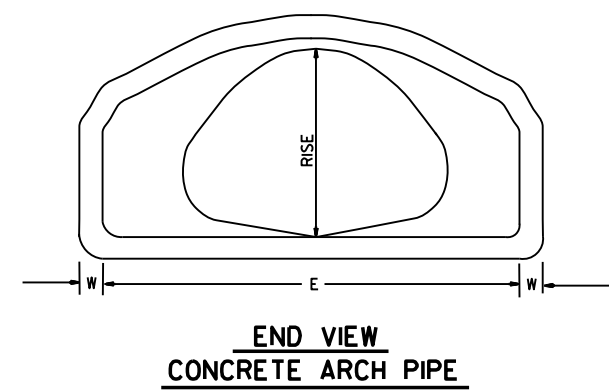
TABLE OF DIMENSIONS														
DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3:1	25"	33 3/8"	16 1/8"	14"	2 1/2"	1600	1'-1 1/2"
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 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 5/8"	24 5/8"	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 7/8"	27 7/8"	22"	3 3/4"	5380	2'-2 1/2"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	22"	3 1/2"	6550	2'-6"
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 1/8"	24"	4"	8750	2'-10 1/2"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	36 1/8"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 3/8"	38 3/8"	24"	5"	13250	4'-6"



NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

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 5/8"	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 5/8"	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 5/8"	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

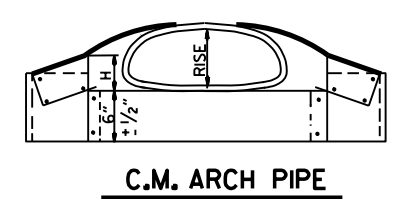
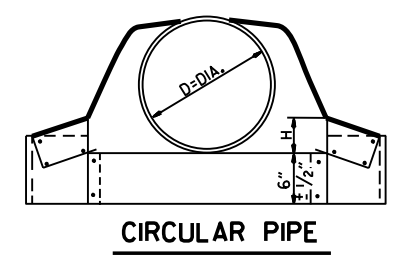
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



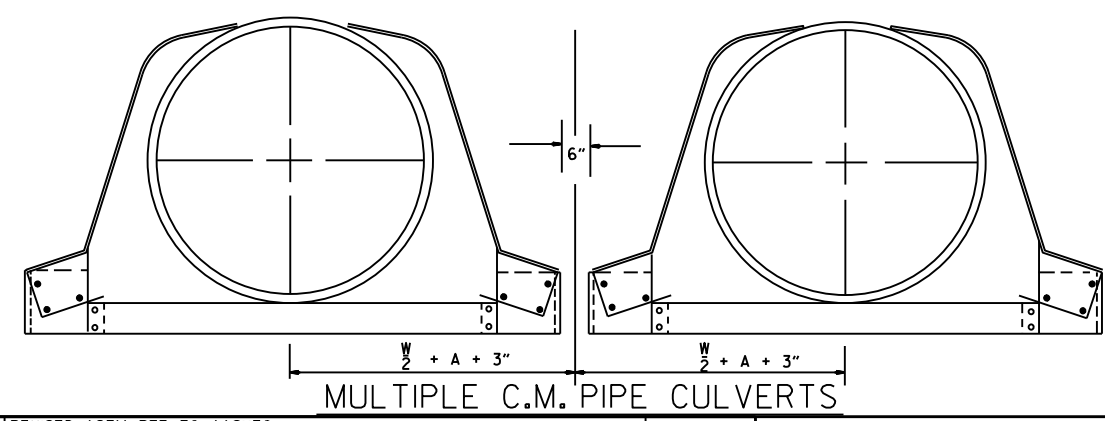
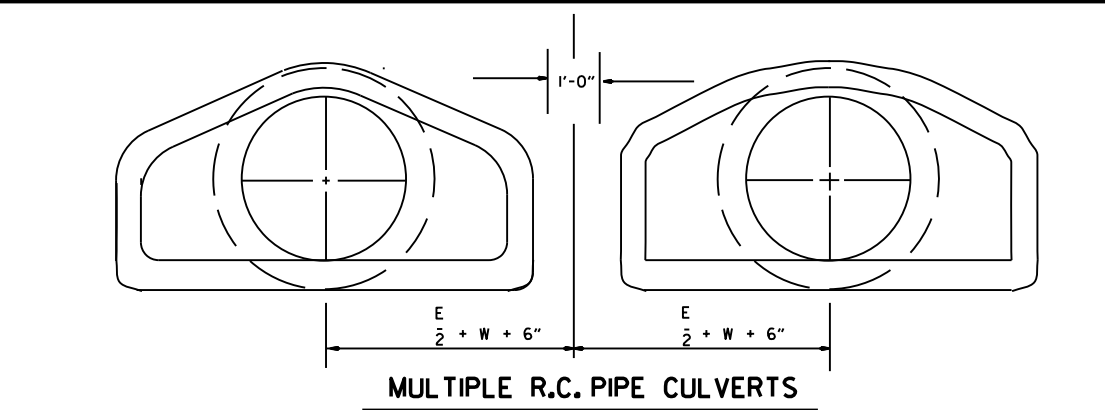
NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

CIRCULAR PIPE								
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1 1/2" ±	W 2" ±	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	

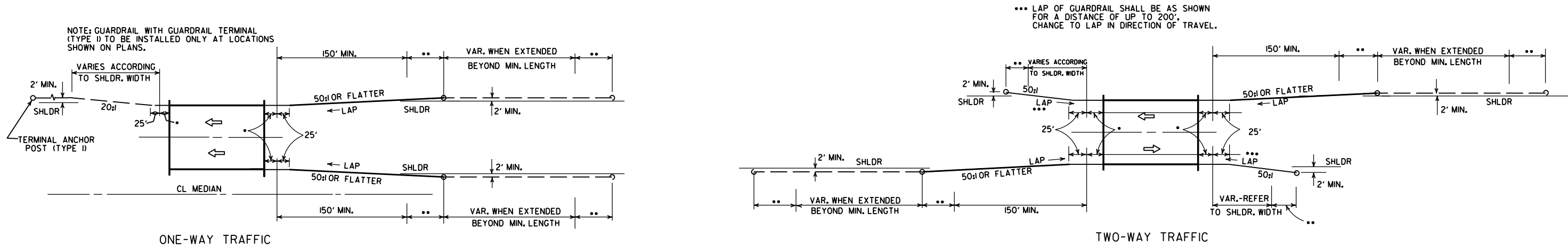


C.M. ARCH PIPE									
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1/2" ±	W 2" ±	S	GAUGE
INCHES									
15"	17	13	7	9	6	19	30	2 1/2:1	16
18"	21	15	7	10	6	23	36	2 1/2:1	16
21"	24	18	8	12	6	28	42	2 1/2:1	16
24"	28	20	9	14	6	32	48	2 1/2:1	16
30"	35	24	10	16	6	39	60	2 1/2:1	14
36"	42	29	12	18	8	46	75	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

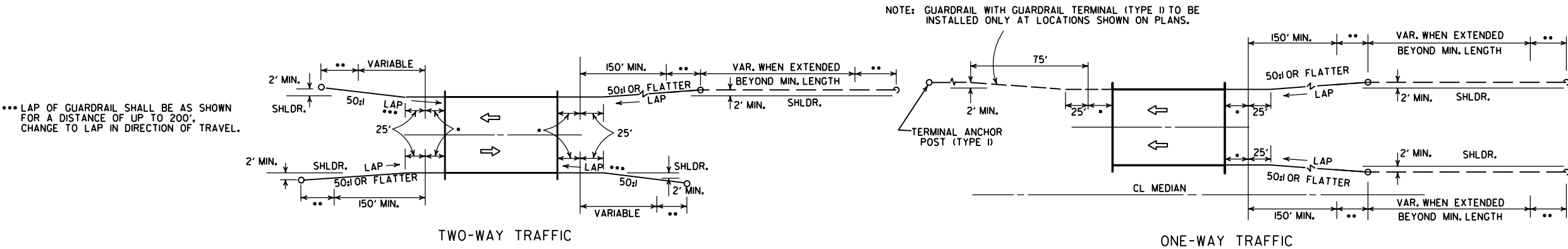


10-18-96	REVISED ASTM REF. TO AASHTO		ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80	
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78	
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75	
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.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

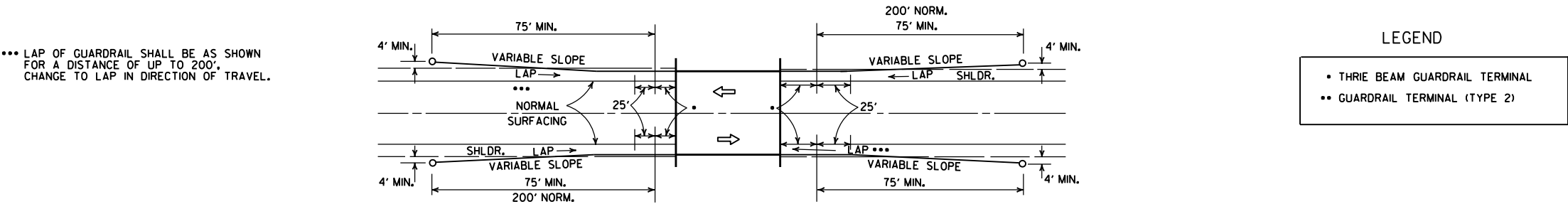
ARKANSAS STATE HIGHWAY COMMISSION	
GUARDRAIL DETAILS	
STANDARD DRAWING GR-6	



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

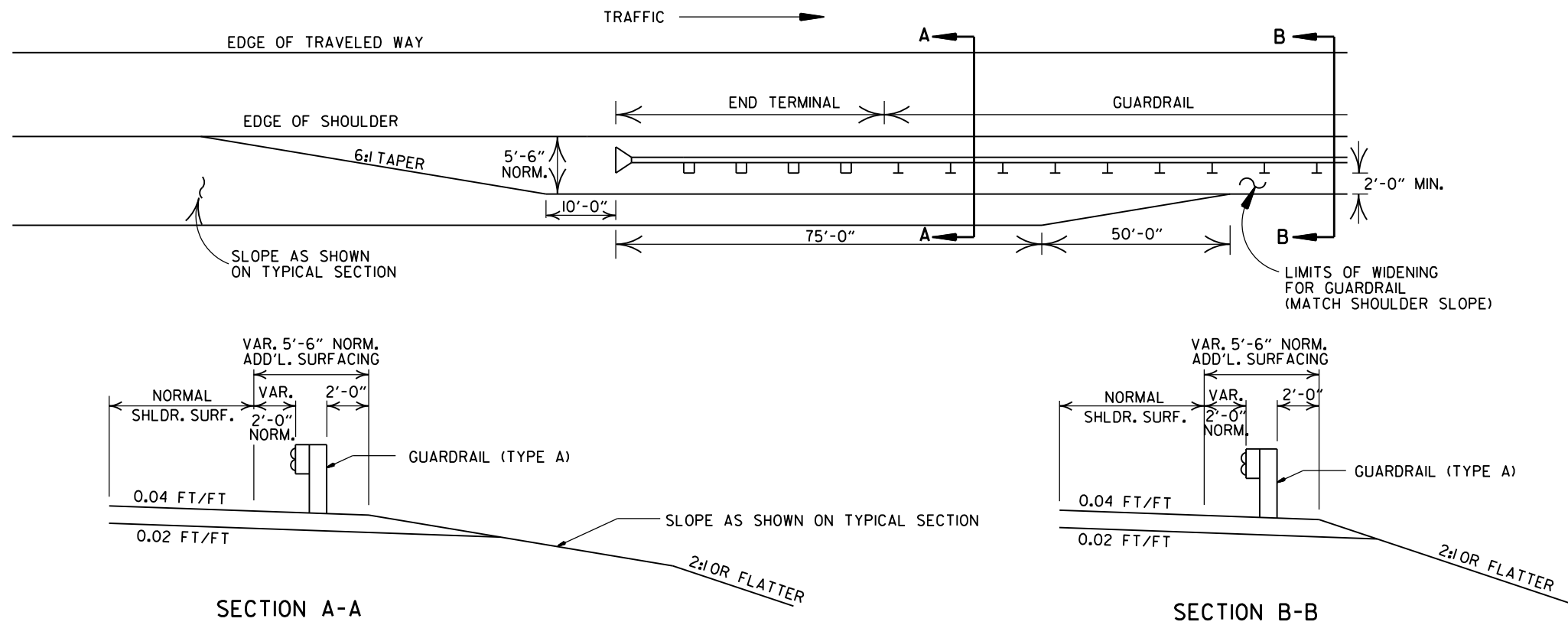


METHOD OF INSTALLATION OF GUARDRAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

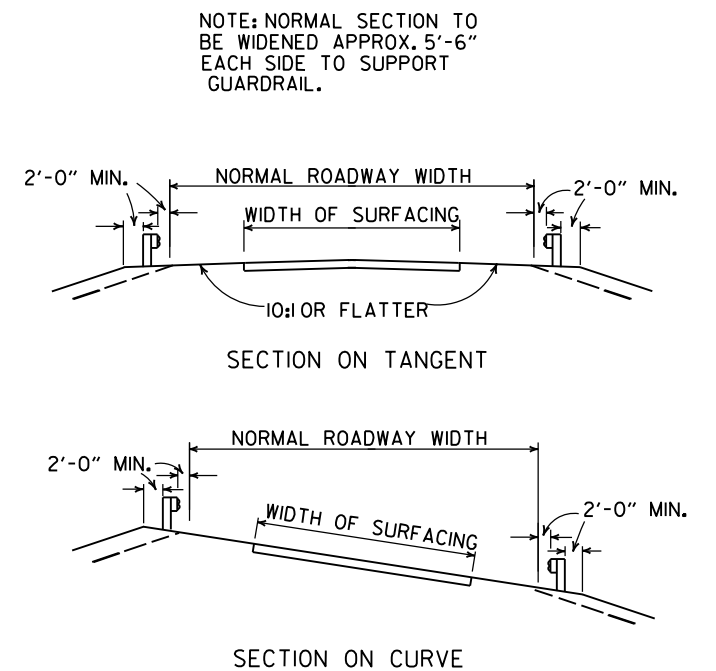


METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

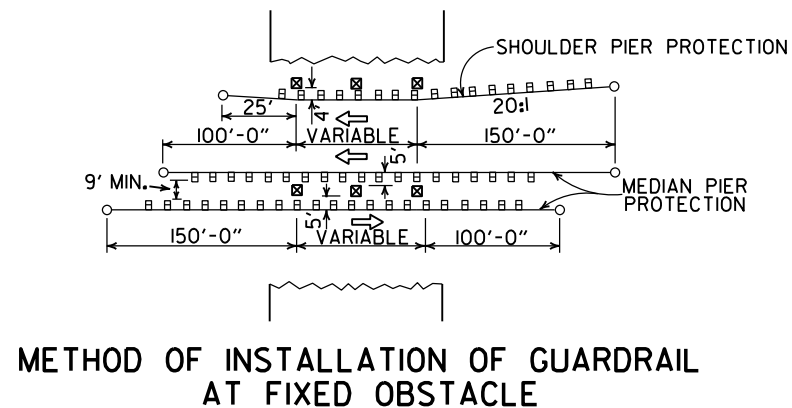
			ARKANSAS STATE HIGHWAY COMMISSION
11-07-19	RENUMBERED AND RENAMED		GUARDRAIL DETAILS
4-17-08	REVISED LAYOUTS		
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS		
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. 1)		
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00	STANDARD DRAWING 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



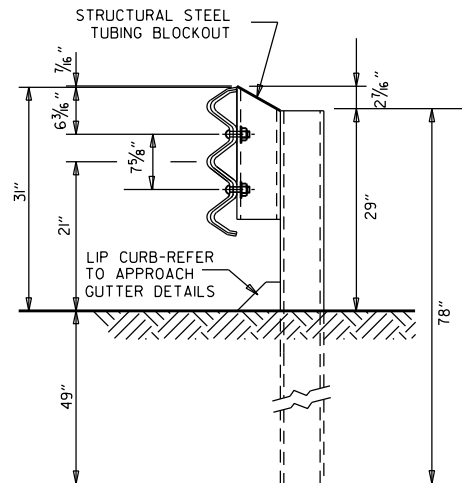
			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
			STANDARD DRAWING GR-9
11-07-19	RENUMBERED AND RENAMED		
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE	FILM



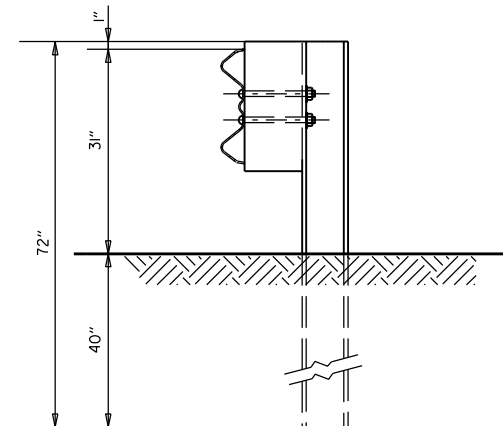
CONNECTOR PLATE

THRIE BEAM RAIL SPLICE AT POST

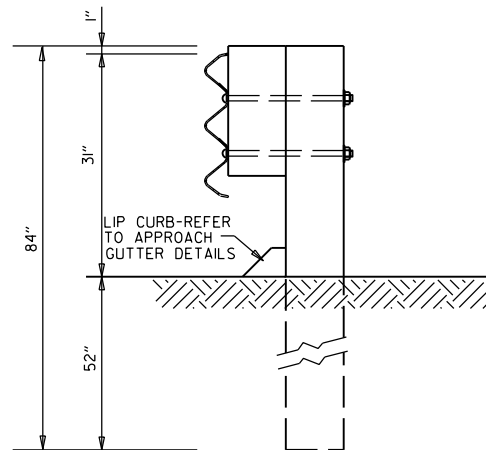
II-07-19	RENAMED AND REVISED REFERENCES	
II-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12	
07-14-10	RAISED HEIGHT OF W-BEAM 1"	
II-29-07	ADDED PLASTIC BLOCKOUTS	
II-10-05	ADDED NOTE FOR ATTACHING STEEL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



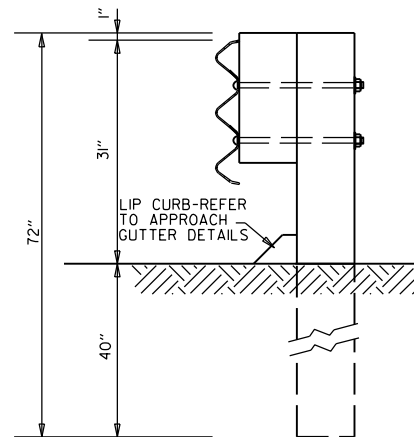
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



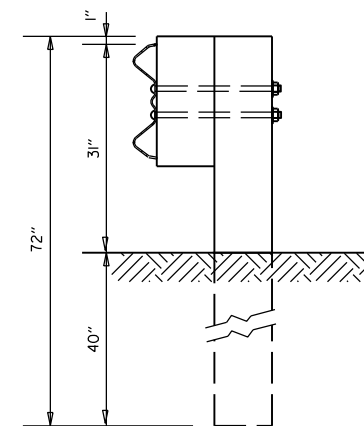
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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



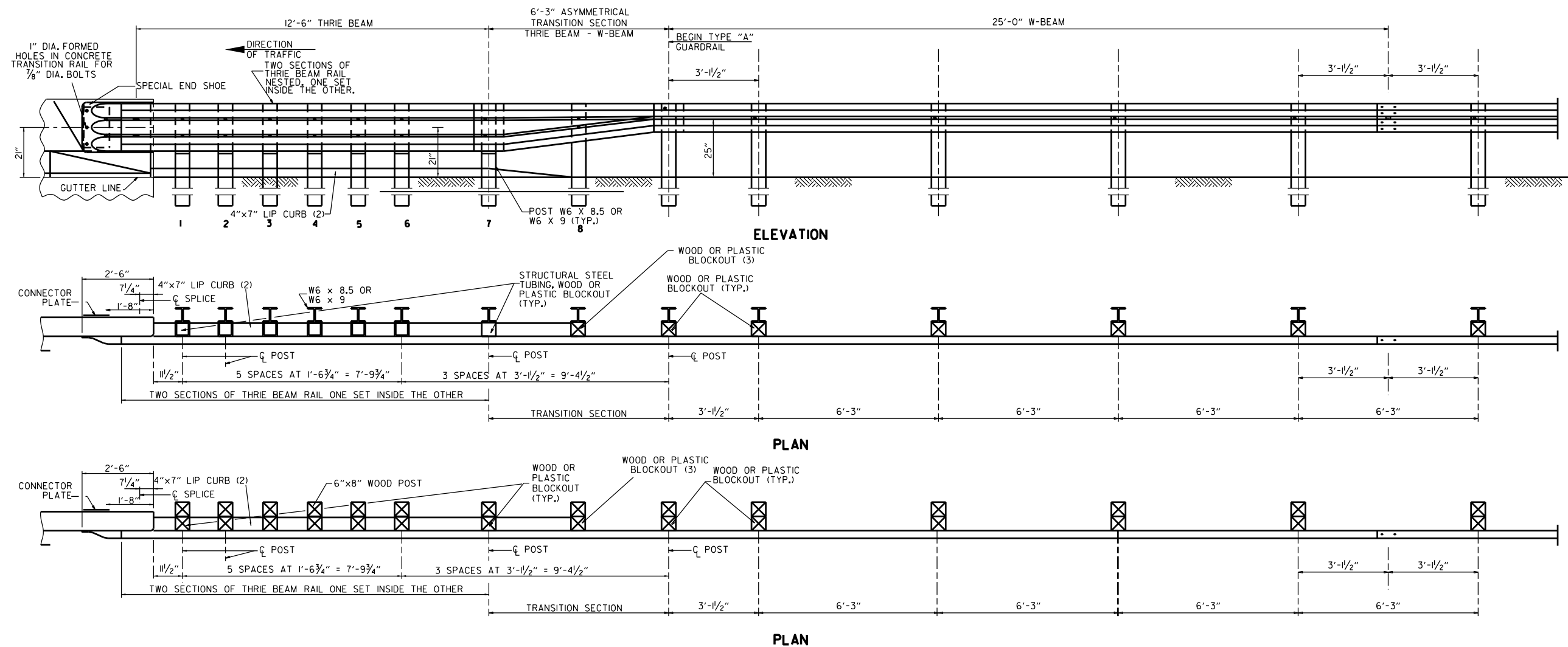
W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

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		
GUARDRAIL DETAILS		
STANDARD DRAWING GR-II		
11-07-19	RENAMED	
11-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-II	
07-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
08-22-02	REVISED LIP CURB NOTE	
03-30-00	DRAWN & ISSUED	
DATE	REVISION	FILMED



- (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.

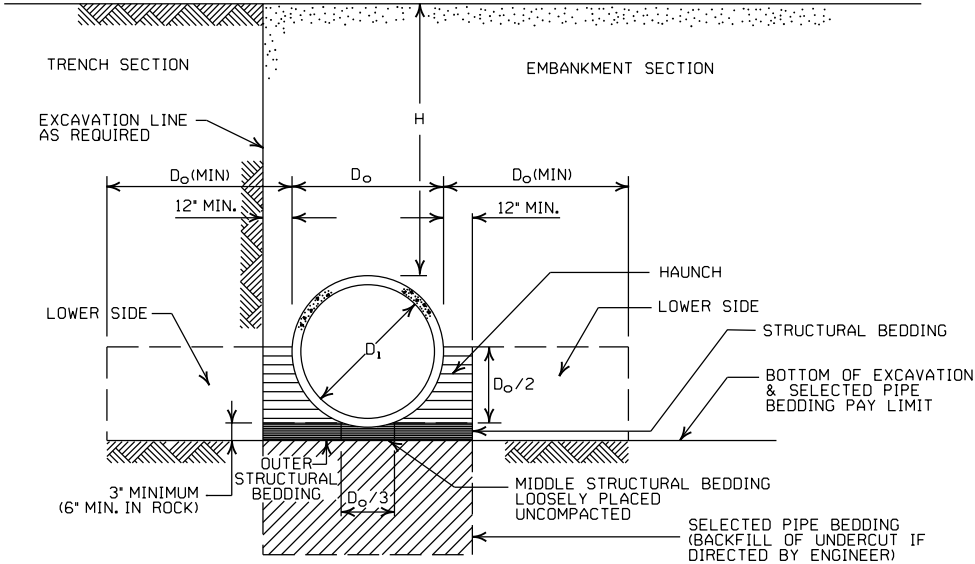
- LEGEND -

D_i = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
= UNDISTURBED SOIL

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3**	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

* SM-3 WILL NOT BE ALLOWED.

** MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS
OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 3/4 INCH BY 1/2 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	3 1/2	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 1/2" 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.

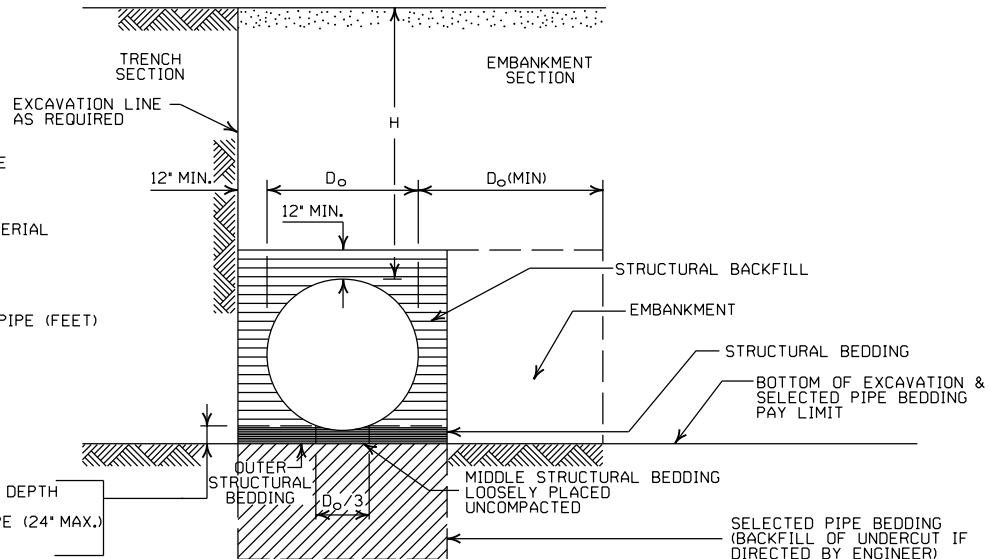
EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

- D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
===== = STRUCTURAL BACKFILL MATERIAL
||||||| = UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)

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.

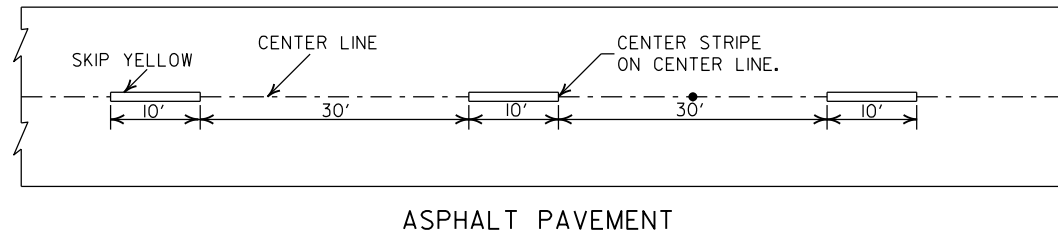
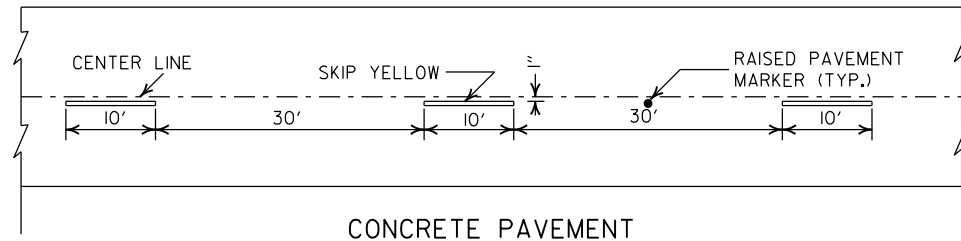
2-27-14	REVISED GENERAL NOTE 1	
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

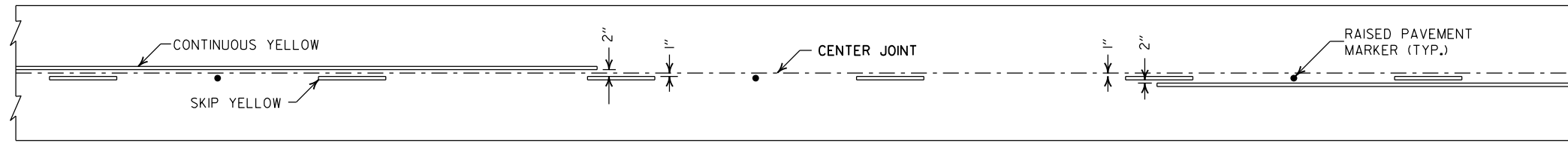
METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

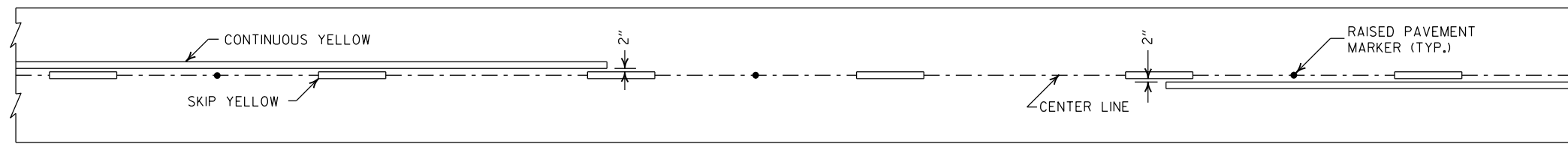




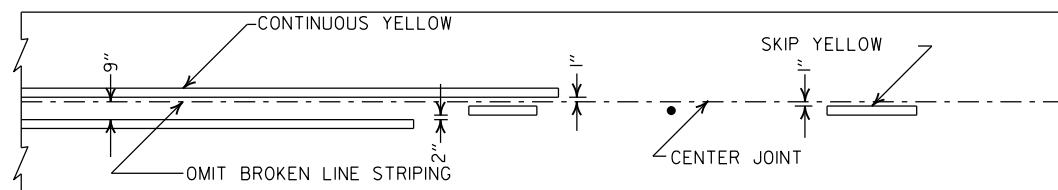
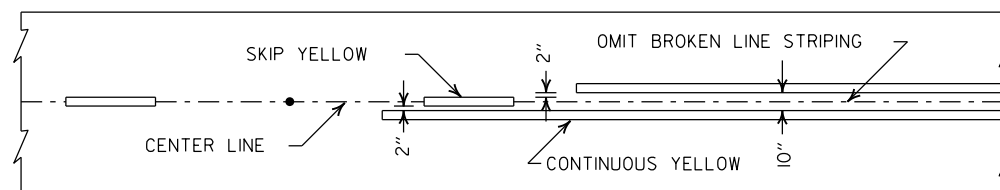
BROKEN LINE STRIPING



SOLID LINE STRIPING ON CONCRETE PAVEMENT



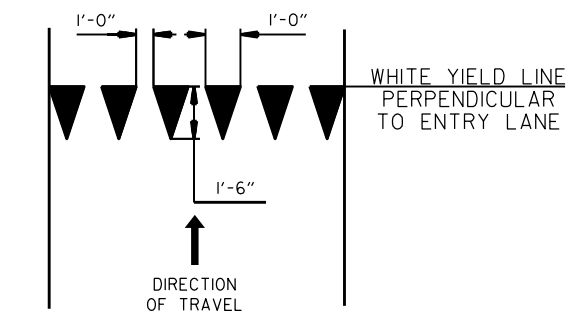
SOLID LINE STRIPING ON ASPHALT PAVEMENT



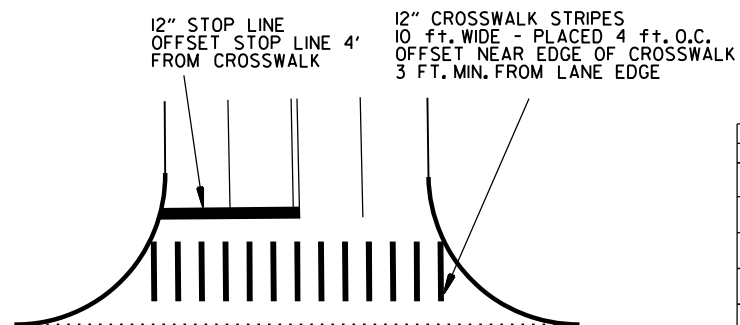
ASPHALT PAVEMENT

CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES



YIELD LINE DETAIL

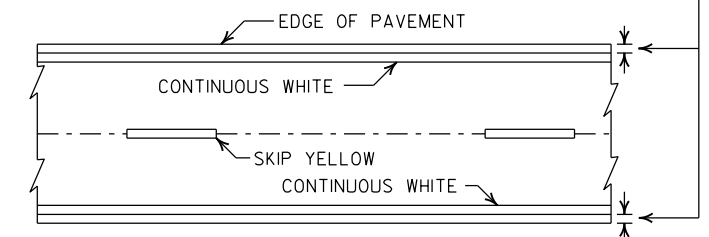


CROSSWALK AND STOP LINE DETAILS

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.

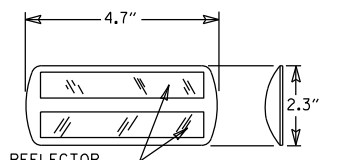
2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING

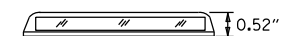
NOTE:
THE RED LENS OF THE
TYPE II R.P.M. SHALL
FACE THE INCORRECT
TRAFFIC MOVEMENT.

TYPE II
RED/CLEAR OR
YELLOW/YELLOW



PRISMATIC REFLECTOR

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

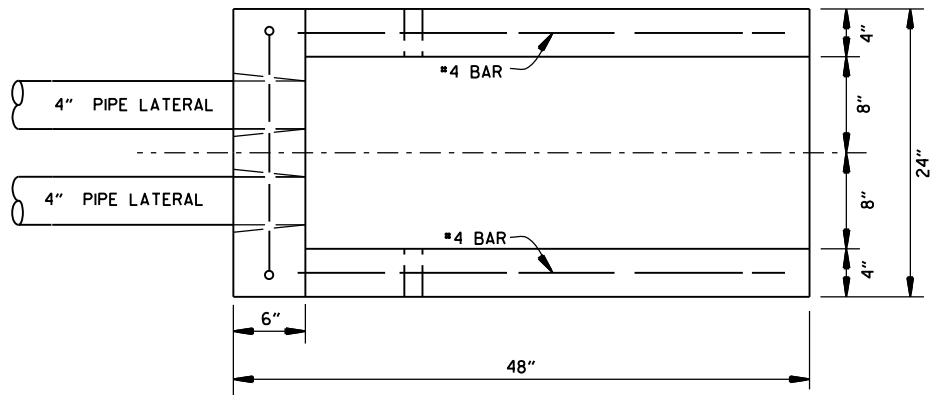
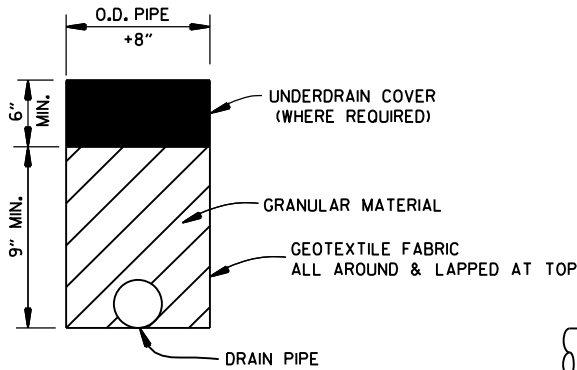
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & 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

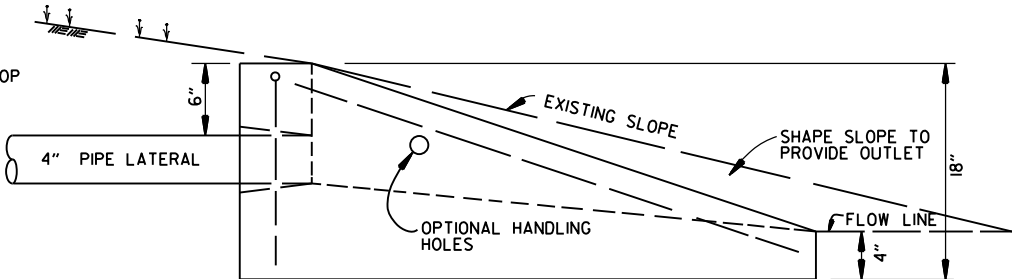
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

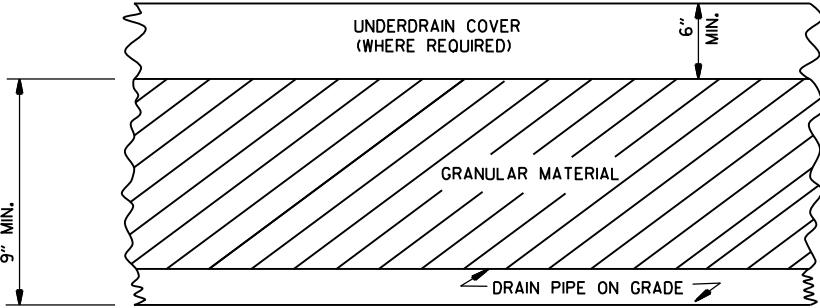
NOTE:
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



PLAN VIEW



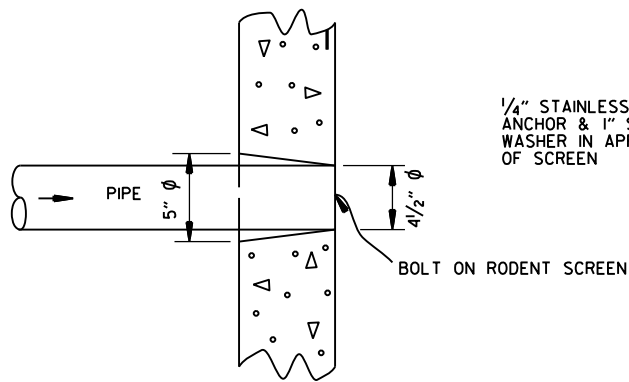
SIDE VIEW



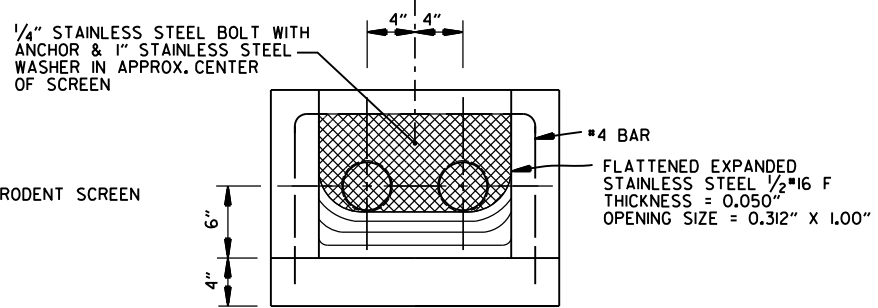
DETAILS OF PIPE UNDERDRAIN

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

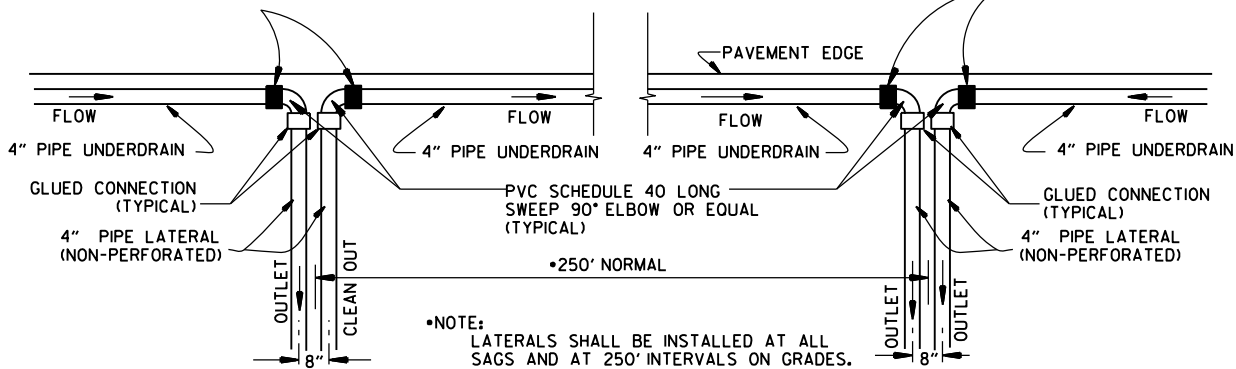


FRONT VIEW (DETAIL OF RODENT SCREEN)

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
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			NC			RC	96		RC	96		RC	96		RC	96	
0° 45'	NC			NC			NC			NC			RC	96		RC	96		0.024	106		0.026	110		0.030	120		0.030	120	
1° 00'	NC			NC			NC			RC	90		0.022	101		0.026	110		0.030	120		0.034	130		0.038	139		0.038	139	
1° 15'	NC			NC			RC	84		0.022	95		0.028	115		0.032	125		0.038	139		0.044	154		0.046	158		0.046	158	
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		0.056	182	
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		0.064	202	
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		0.070	216	
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		0.078	235	
2° 30'	0.022	75		0.028	94		0.034	113		0.042	140		0.050	168		0.058	187		0.068	211		0.076	230		0.086	254		0.086	254	
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		0.092	269	
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		0.098	283	
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		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		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		0.098	283		0.100	288		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		0.100	288		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		0.100	288		0.100	288	
4° 30'	0.036	100		0.046	129		0.056	160		0.068	198		0.078	235		0.090	264		0.098	283		0.100	288		0.100	288		0.100	288	
4° 45'	0.038	104		0.048	133		0.060	168		0.070	203		0.082	245		0.092	269		0.098	283		0.100	288		0.100	288		0.100	288	
5° 00'	0.040	108		0.050	137		0.062	172		0.072	207		0.084	250		0.094	274		0.098	283		0.100	288		0.100	288		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		0.100	288		0.100	288		0.100	288	
6° 00'	0.046	119		0.058	152		0.070	189		0.082	230		0.092	269		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288	
6° 30'	0.050	126		0.062	160		0.074	198		0.086	239		0.096	278		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288	
7° 00'	0.052	130		0.064	164		0.078	206		0.090	248		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
7° 30'	0.054	133		0.068	172		0.080	210		0.092	252		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
8° 30'	0.060	144		0.072	179		0.086	223		0.096	261		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
9° 00'	0.062	148		0.076	187		0.088	227		0.096	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
9° 30'	0.064	151		0.078	191		0.092	235		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
10° 00'	0.066	155		0.080	195		0.094	240		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
11° 00'	0.070	162		0.084	203		0.096	244		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
12° 00'	0.074	169		0.088	211		0.098	248		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
13° 00'	0.076	173		0.090	215		0.098	248		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
14° 00'	0.080	180		0.094	222		0.098	248		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
15° 00'	0.082	184		0.096	226		0.098	248		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
16° 00'	0.086	191		0.098	230		0.098	248		0.098	266		0.098	283		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
17° 00'	0.088	194		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
18° 00'	0.090	198		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
19° 00'	0.092	202		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
20° 00'	0.094	205		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
21° 00'	0.096	209		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
22° 00'	0.096	209		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
23° 00'	0.098	212		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
24° 00'	0.098	212		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
25° 00'	0.100	216		0.100	234		0.100	252		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	

ABBREVIATIONS

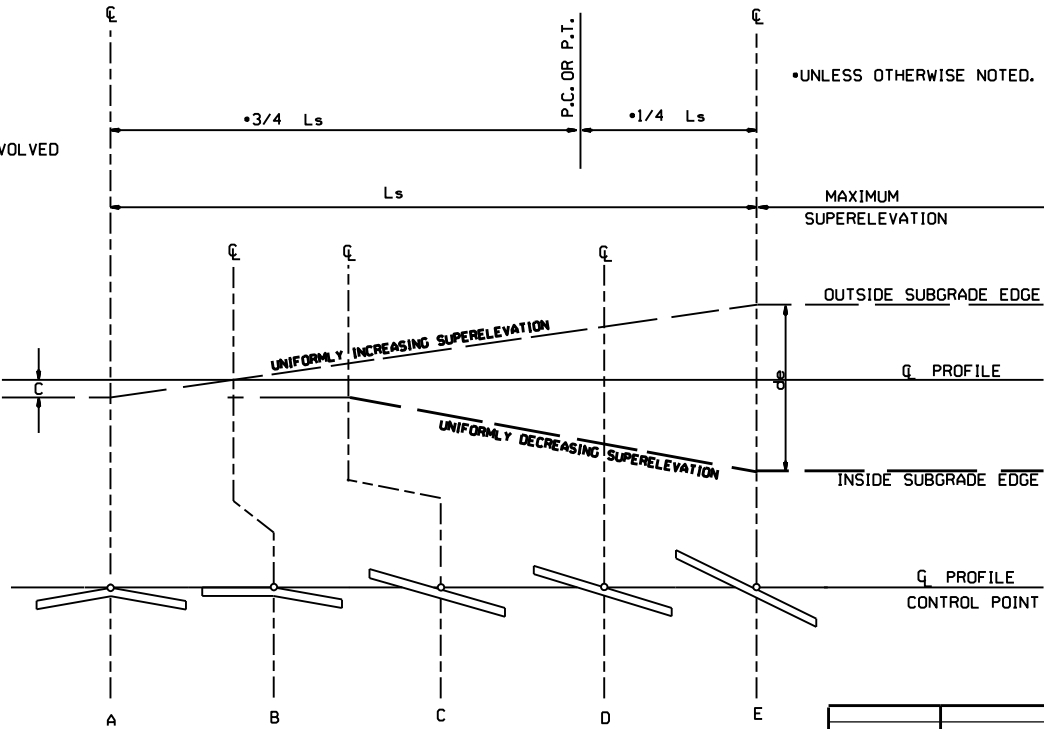
NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)

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

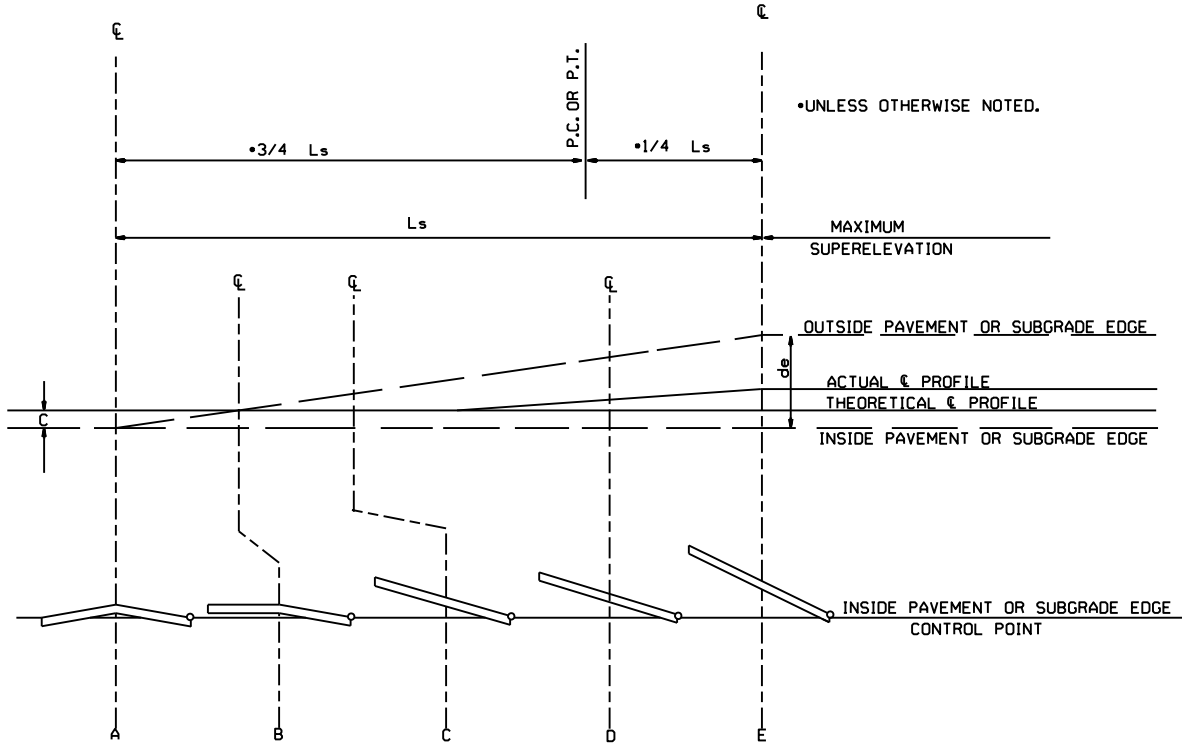
3 LANE UNDIVIDED - - - - +20%
4 LANE UNDIVIDED - - - - +50%
5 LANE UNDIVIDED - - - - +80%
6 LANE UNDIVIDED - - - - +100%

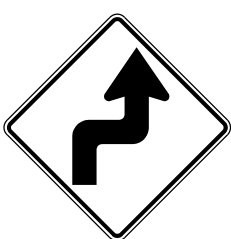
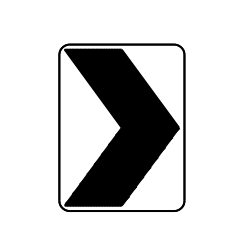
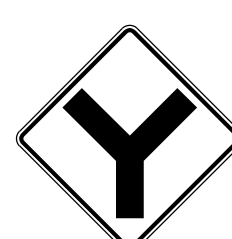
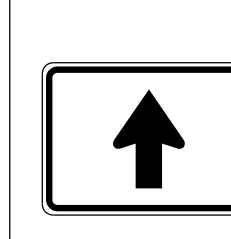
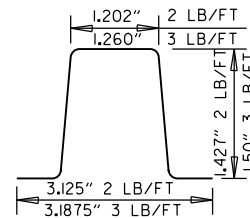
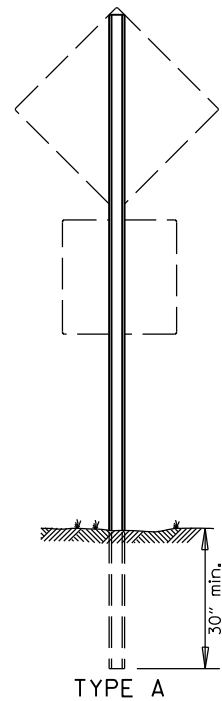
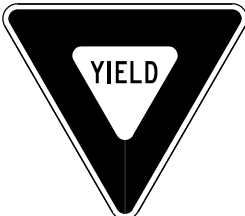
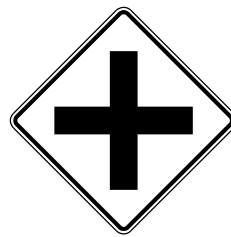
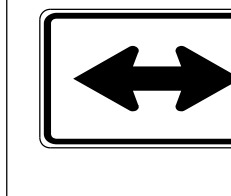
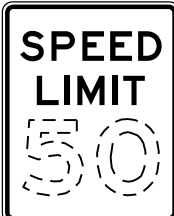
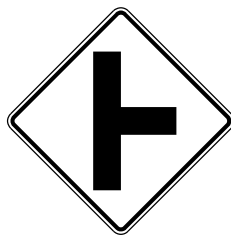
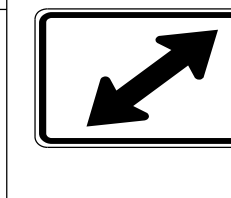
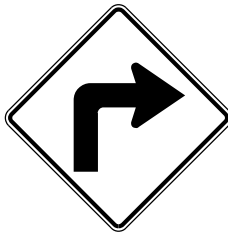
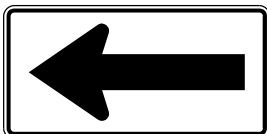
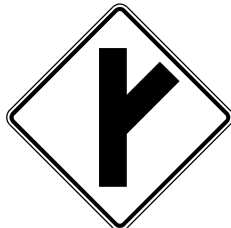
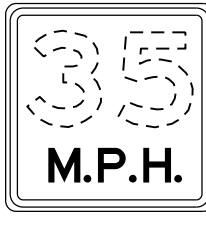
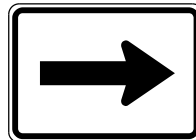
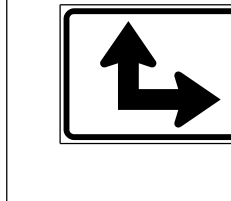
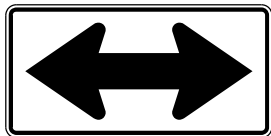
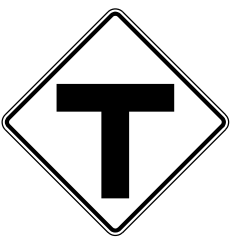
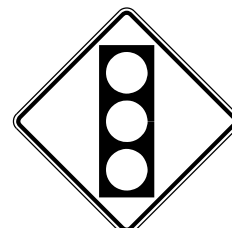
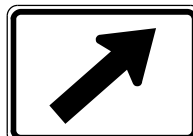
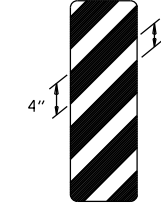
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.
RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

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

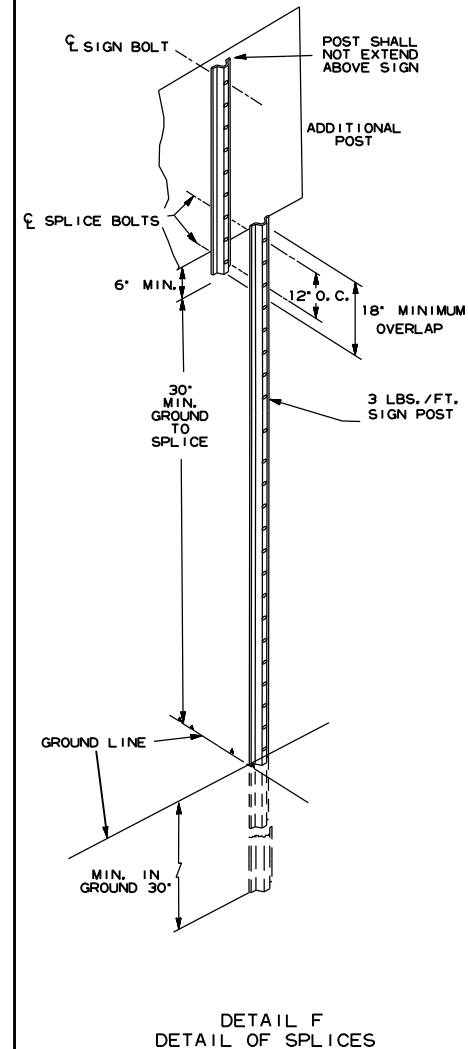
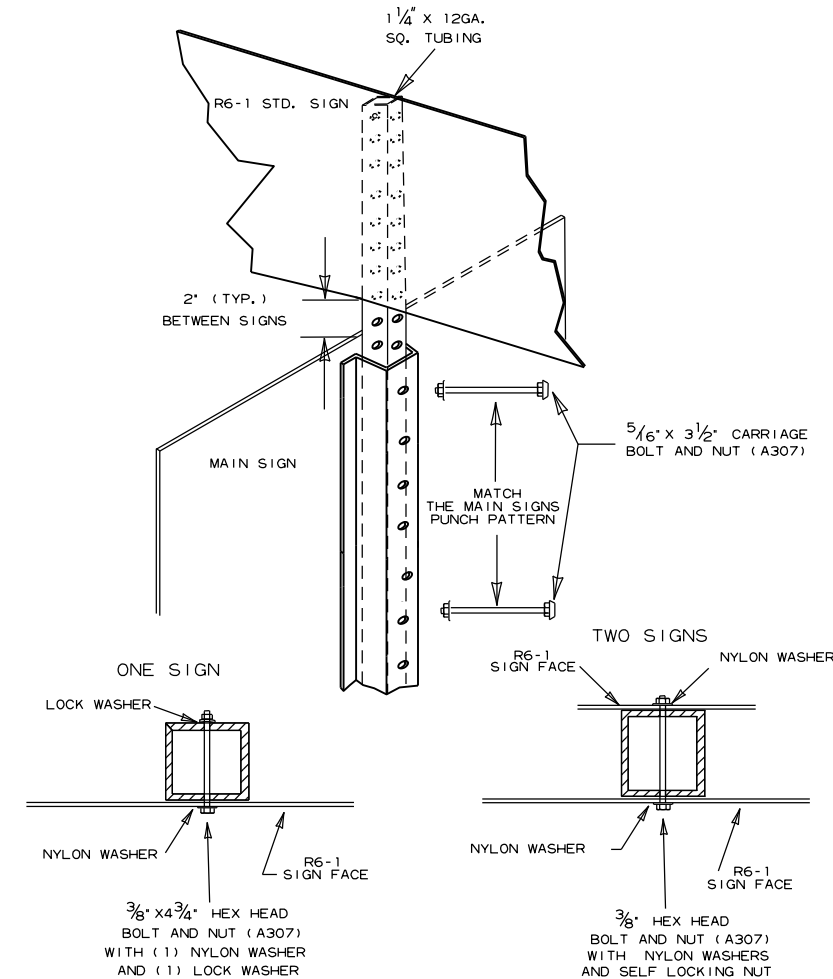
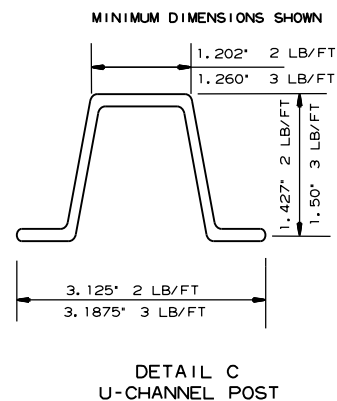
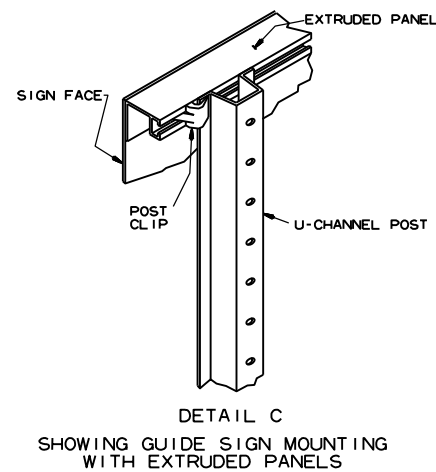
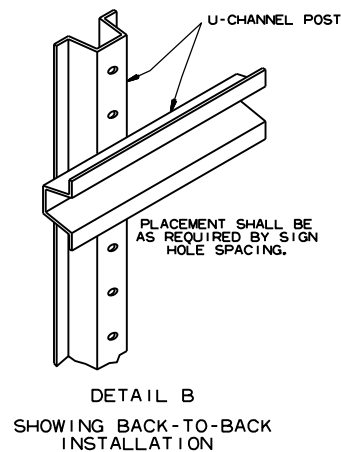
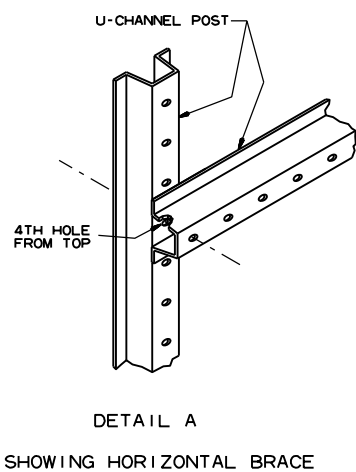
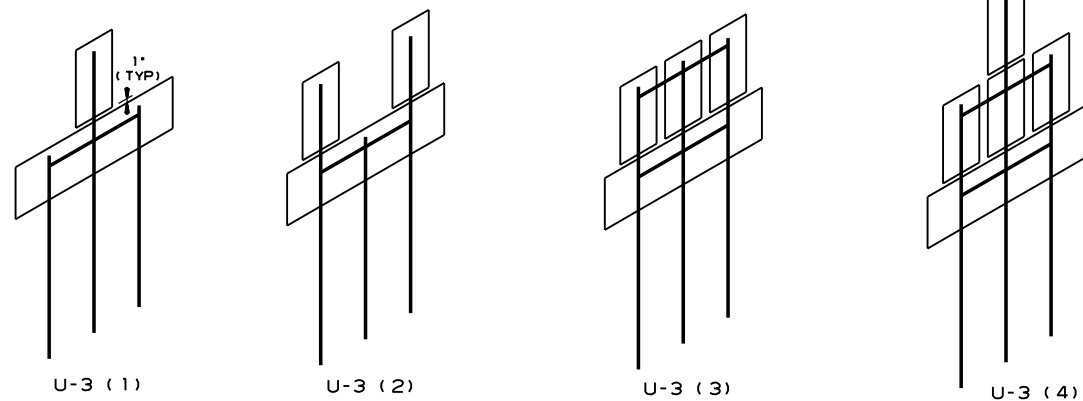
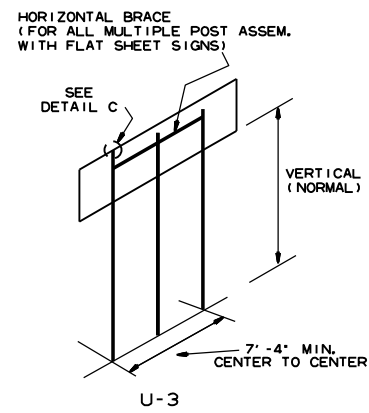
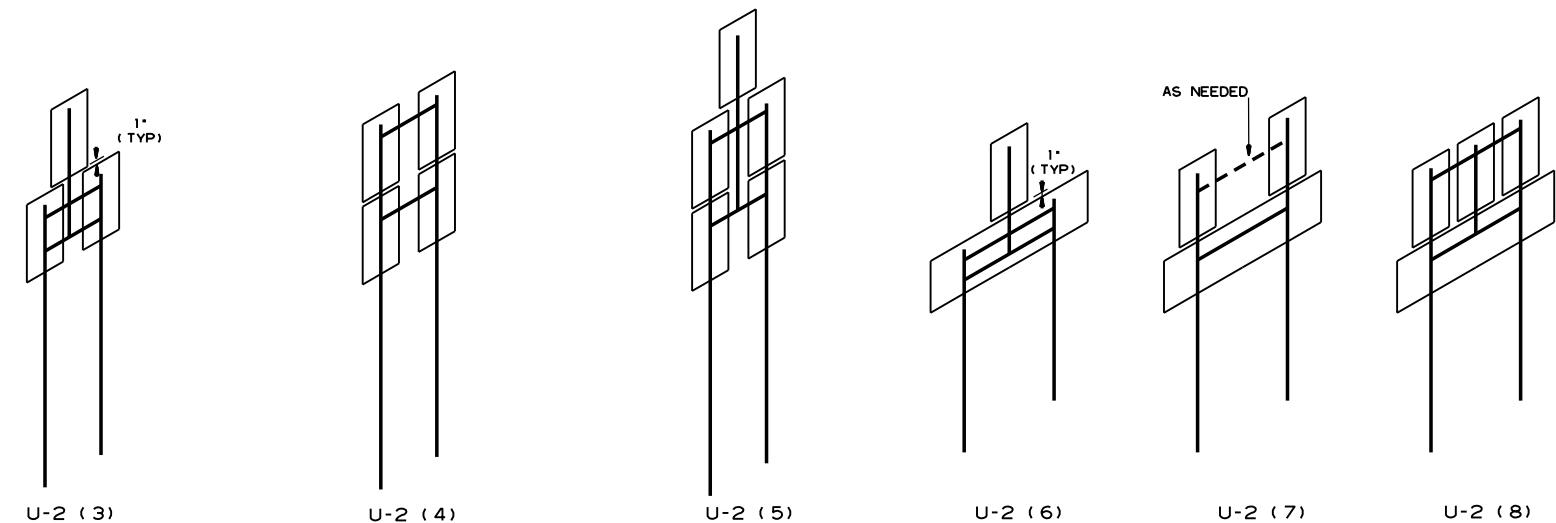
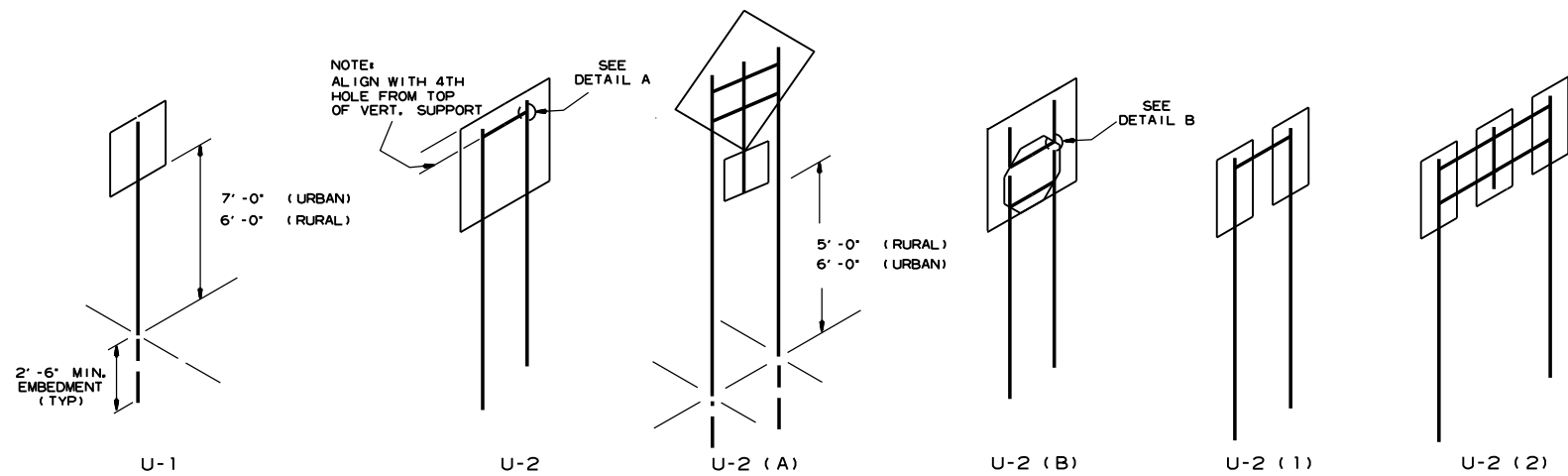


STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



								MINIMUM DIMENSIONS SHOWN SUPPORT SECTION  (U-CHANNEL) STANDARD SUPPORT ASSEMBLIES  TYPE A 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.
								
					NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND. 			
					NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND. 			
						 		
STANDARD HIGHWAY SIGNS								SUPPORT ASSEMBLIES ARKANSAS STATE HIGHWAY COMMISSION STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES STANDARD DRAWING SHS-1

9-12-13	DELETED JOB NO. BLOCK; REVISED RI-3 TO RI-3P	
4-17-08	REVISED SIGN DESIGNATION - W3-1 & W3-2	
4-10-03	REVISED W5-2, W8-3, OM-3; ADDED W1-8	
1-5-81	REDRAWN	960-1-15-81
9-15-78	ADDED W14-3	877-9-15-78
9-2-76	POST WT.	623-9-3-76
5-3-76	STEEL POST WT. FROM 2"-3"; ADDED S4-2 & S4-3	504-5-3-76
8-12-74	REV. HT. TYPE "C" ASSEMBLY	500-8-21-74
12-21-72	ADDED M6-2,3,4,5,6	500-12-21-72
12-1-72	ISSUED	562-12-1-72
DATE	REVISION	DATE FILMED



NOTES:

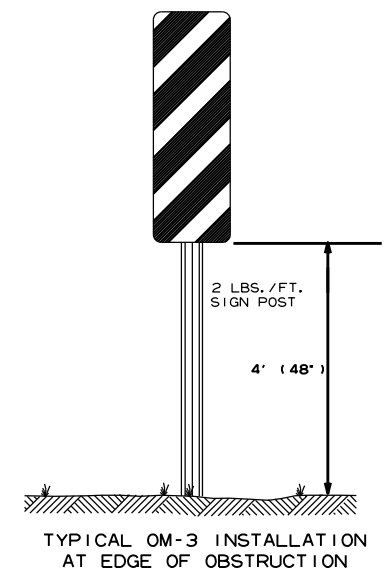
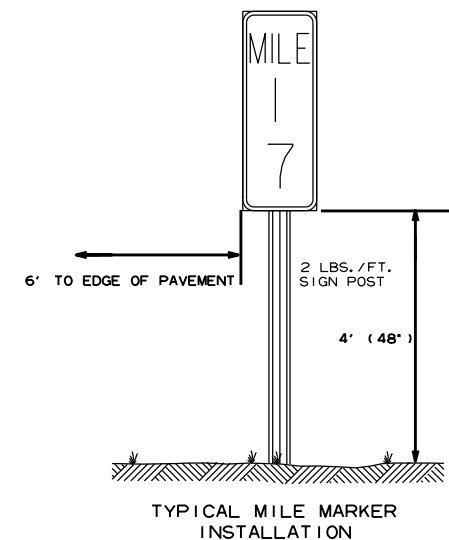
SIGNS AT LEAST 8' IN LENGTH MAY BE
INSTALLED ON THREE 3 LB. POST. IN
NO CASE SHALL THERE BE MORE THAN
TWO 3 LB. POSTS WITHIN A 7' PATH.

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

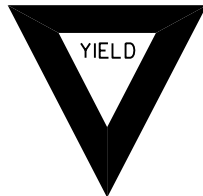
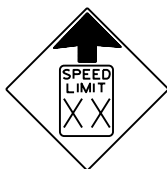
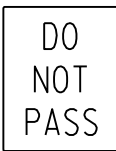
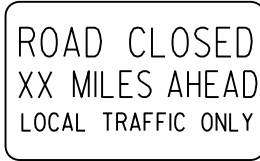
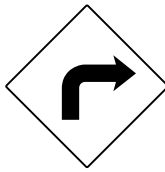
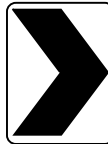
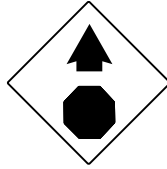
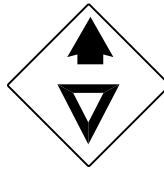
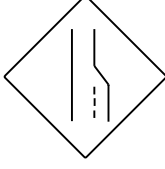
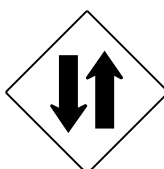
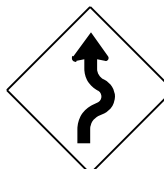
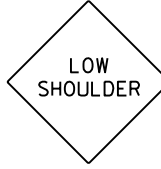
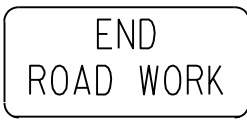
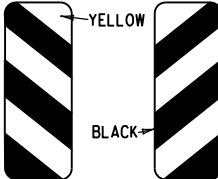
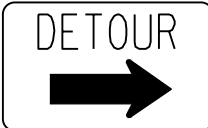
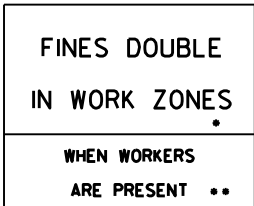
NORMAL INSTALLATIONS WILL REQUIRE
5/16" DIA. CARRIAGE BOLTS TO MOUNT
SIGNS TO POST AND TO ASSEMBLE THE
VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

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

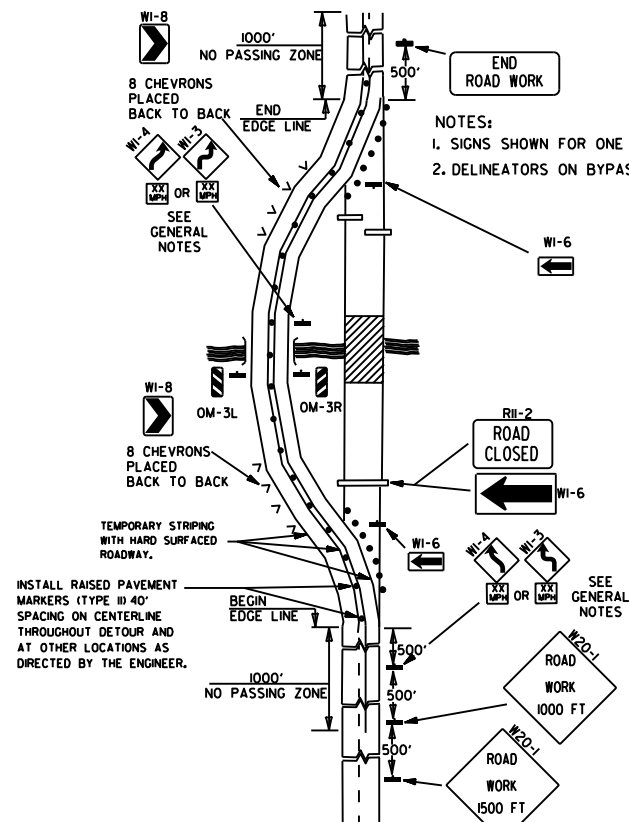


7-25-19	REVISED CARRIAGE BOLT WITH MATERIAL REQUIREMENT		ARKANSAS STATE HIGHWAY COMMISSION
2-27-14	REVISED NOTES.		
9-12-13	REVISED U-2(3), U-2(6), U-3(1), DETAIL D; ADDED DETAILS E & F; ADDED TYPICAL MARKERS		U-CHANNEL POST ASSEMBLIES
10-9-03	REMOVED ROUND POST & REVISED SPACING		
10-12-95	MOVED UPPER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

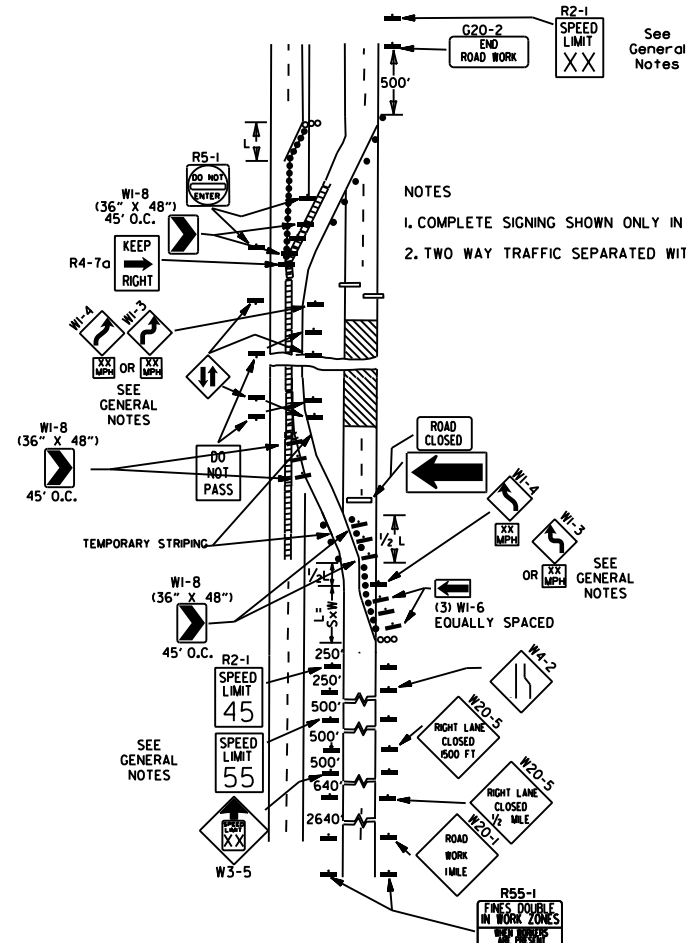
RI-I  STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"	RI-2  STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"	R2-I  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	W3-5  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	W3-5a  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	R4-I  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R4-2  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	ADVANCE DISTANCES (XXXX) 500 FT 1/2 MILE 1000 FT 3/4 MILE 1500 FT 1 MILE AHEAD GENERAL NOTES: 1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION. 2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER. 3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED. 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE. 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3. 6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE. 7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS. 8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS. 9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT. 10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN. • NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF 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.
R5-I  STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"	R1I-2  48"x30"	R1I-3A  60"x30"	R1I-4  60"x30"	W2I-5a  STD. 36"x36" FWY. 48"x48"	WI-I  STD. 36"x36" FWY. 48"x48"	WI-2  STD. 36"x36" FWY. 48"x48"	
WI-3  STD. 48"x48"	WI-4  STD. 48"x48"	WI-6  STD. 48"x24" SPECIAL 60"x30"	WI-8  STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"	W3-I  STD. 36"x36" SPECIAL 48"x48"	W3-2  STD. 36"x36" SPECIAL 48"x48"	W4-2  STD. 36"x36" FWY. 48"x48"	
W5-I  STD. 36"x36" SPECIAL 48"x48"	W6-3  EXPWY. 36"x36" SPECIAL 48"x48"	W8-7  EXPWY. 36"x36" FWY. 48"x48"	W9-2  STD. 36"x36" FWY. 48"x48"	WI3-I  STD. 24"x24"	W20-I  STD. 48"x48"	W20-2  STD. 48"x48"	W20-3  STD. 48"x48"
W20-4  STD. 48"x48"	W20-5  STD. 48"x48"	W20-7a  18" 500 FEET 24" W16-2 STD. 36"x36" FWY. 48"x48"	W2I-2  STD. 30"x30" SPECIAL 36"x36"	W2I-5  STD. 30"x30" SPECIAL 36"x36"	W24-I  STD. 36"x36"	WI-4b  STD. 48"x48"	R56-I  STD. 18"x18"
W8-II  STD. 36"x36" FWY. 48"x48"	W8-9  STD. 36"x36" FWY. 48"x48"	G20-I  60"x24"	G20-2  48"x24"	OM-3L OM-3R  12"x36"	M4-9  STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"	M4-10  48"x18"	R55-I  36"x60" • USE 6" C LETTERS •• USE 4" D LETTERS

II-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

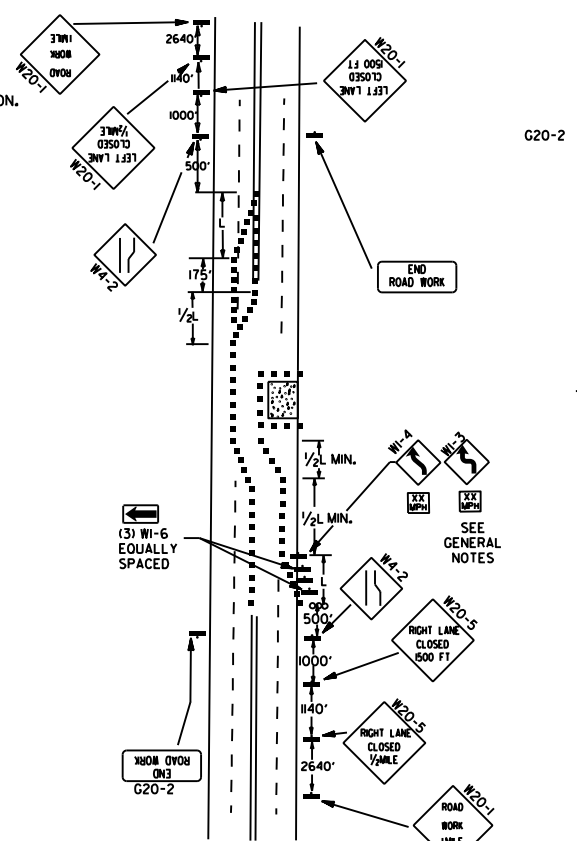
ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION
STANDARD DRAWING TC-1



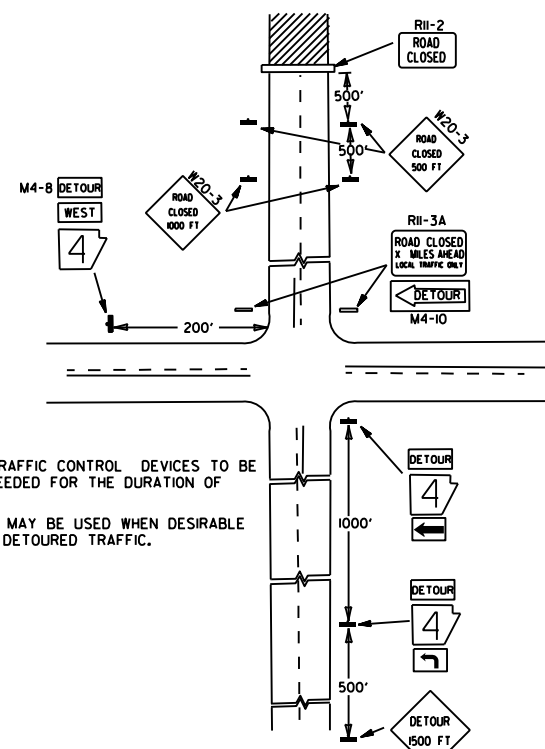
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



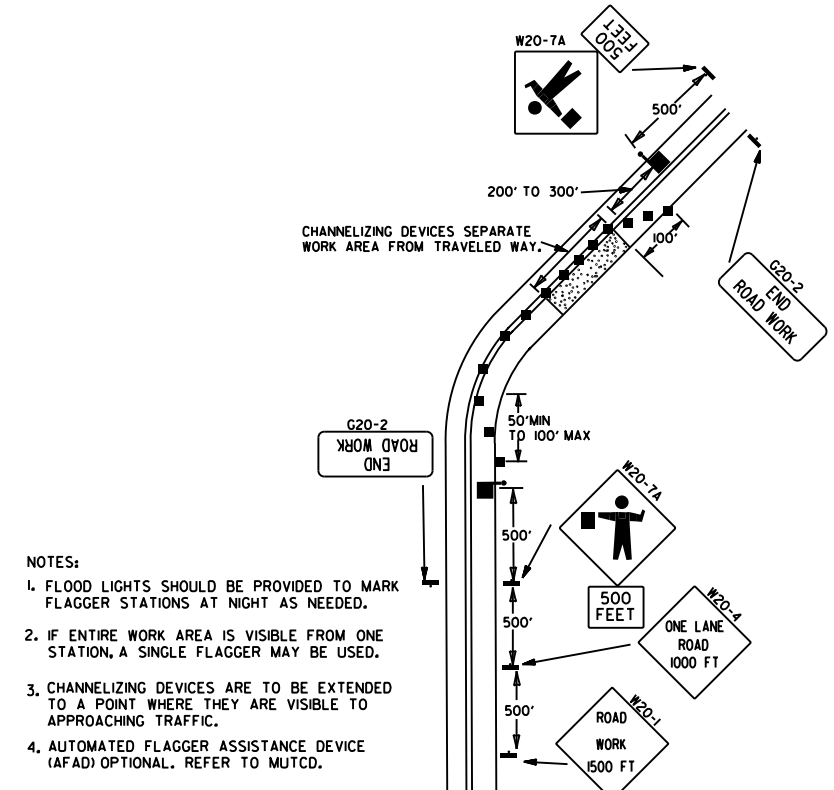
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



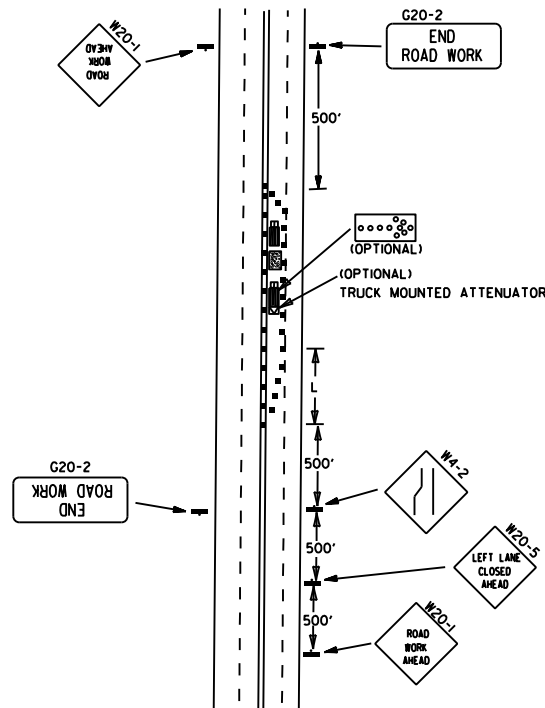
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



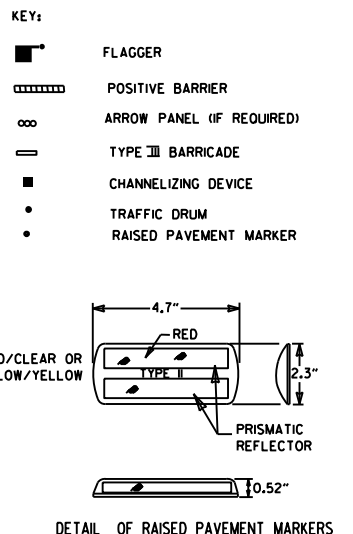
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



(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.



- 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 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
 3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(65) SHALL BE OMITTED. ADDITIONAL R2-1(55)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
 4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
 5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
 6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
 7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. 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

(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.

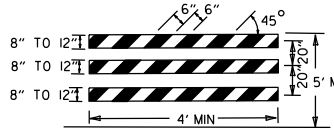
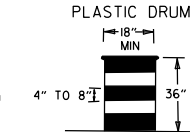
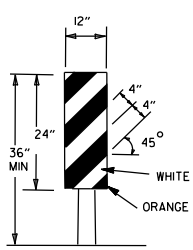
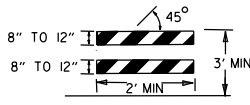
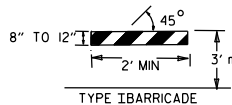
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

CHANNELIZING DEVICES



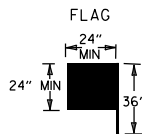
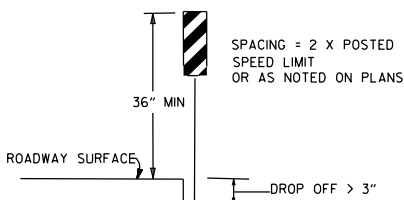
• WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

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 R2-145MPH 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 R2-155MPH 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).

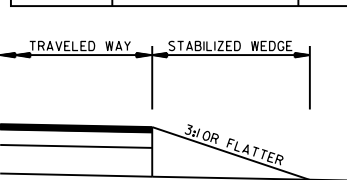
(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

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 ⁽⁶⁾	STANDARD LANE CLOSURE ⁽⁶⁾
> 3"	CENTERLINE	STANDARD LANE CLOSURE ⁽⁶⁾	STANDARD LANE CLOSURE ⁽⁶⁾
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS ⁽¹⁾	W8-9 AND TRAFFIC DRUMS ⁽¹⁾
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS ⁽³⁾
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER ⁽⁴⁾ & EDGE LINES	PRECAST CONCRETE BARRIER ⁽⁴⁾ & 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 ⁽²⁾
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 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

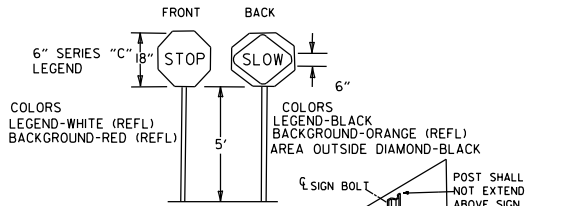


STABILIZED WEDGE

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

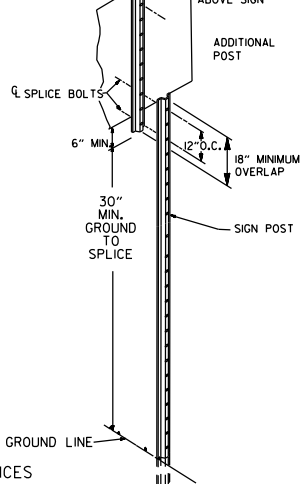
- GENERAL NOTES:
- WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
 - WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
 - PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
 - A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
 - W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.
 - TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

STOP SLOW PADDLE



COLORS
LEGEND-WHITE (REFL)
BACKGROUND-RED (REFL)

COLORS
LEGEND-BLACK
BACKGROUND-ORANGE (REFL)
AREA OUTSIDE DIAMOND-BLACK



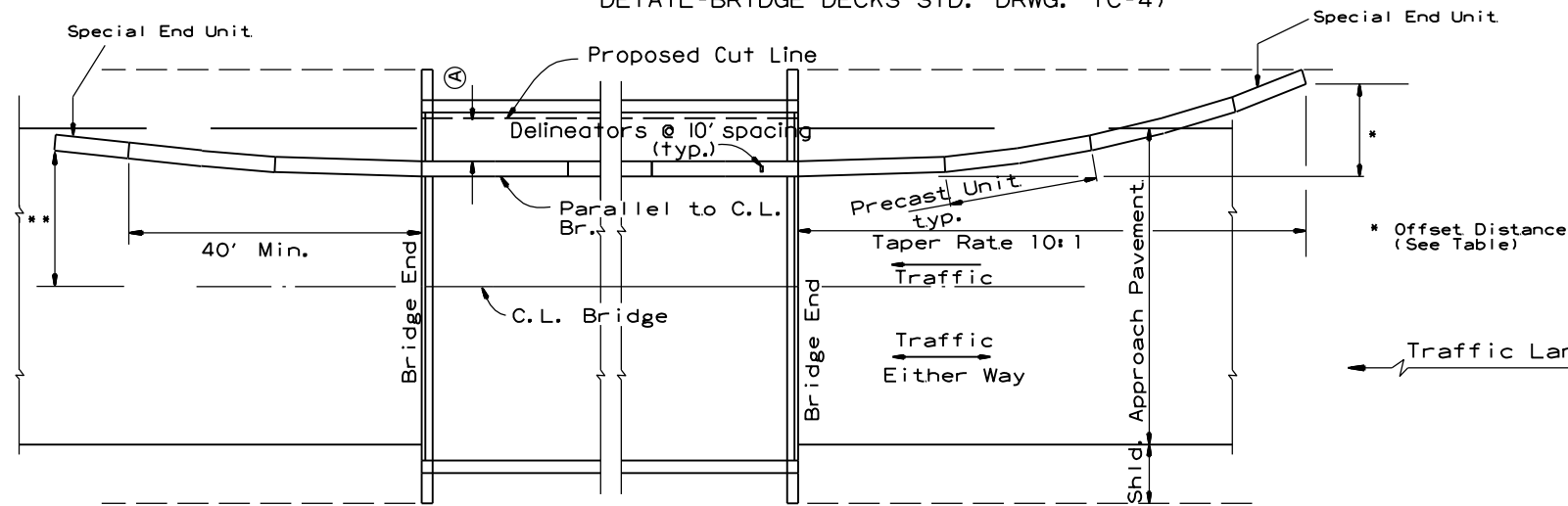
DETAIL OF SPLICES

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 11	
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

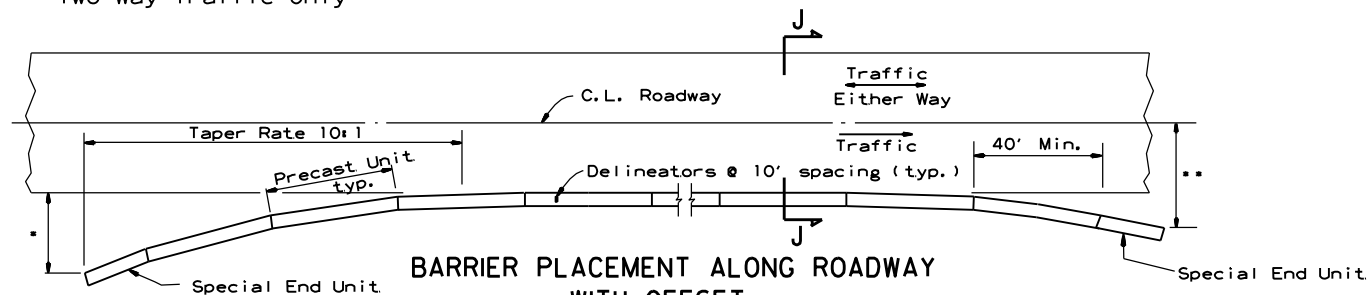
- (A) 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

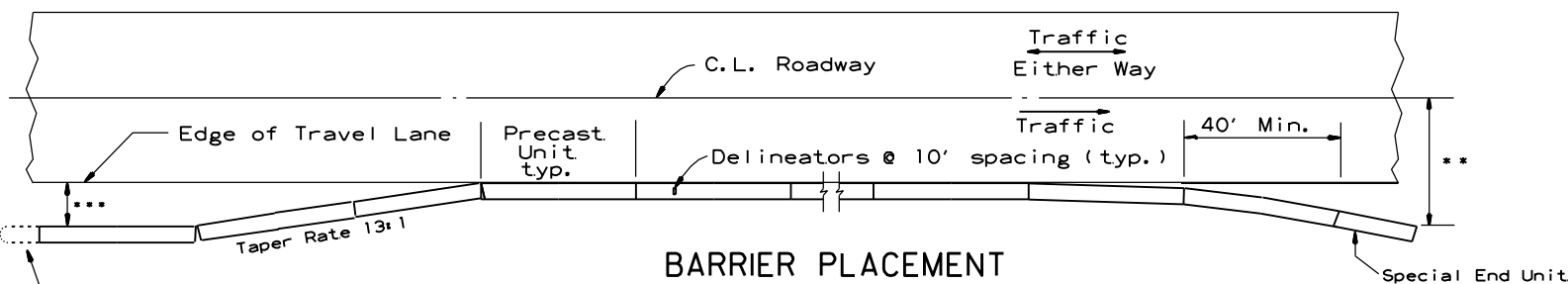
* Offset Distance (See Table)

** 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.

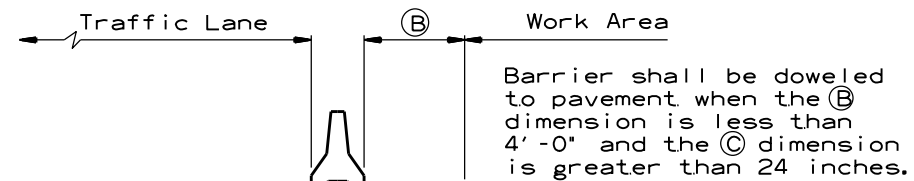


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

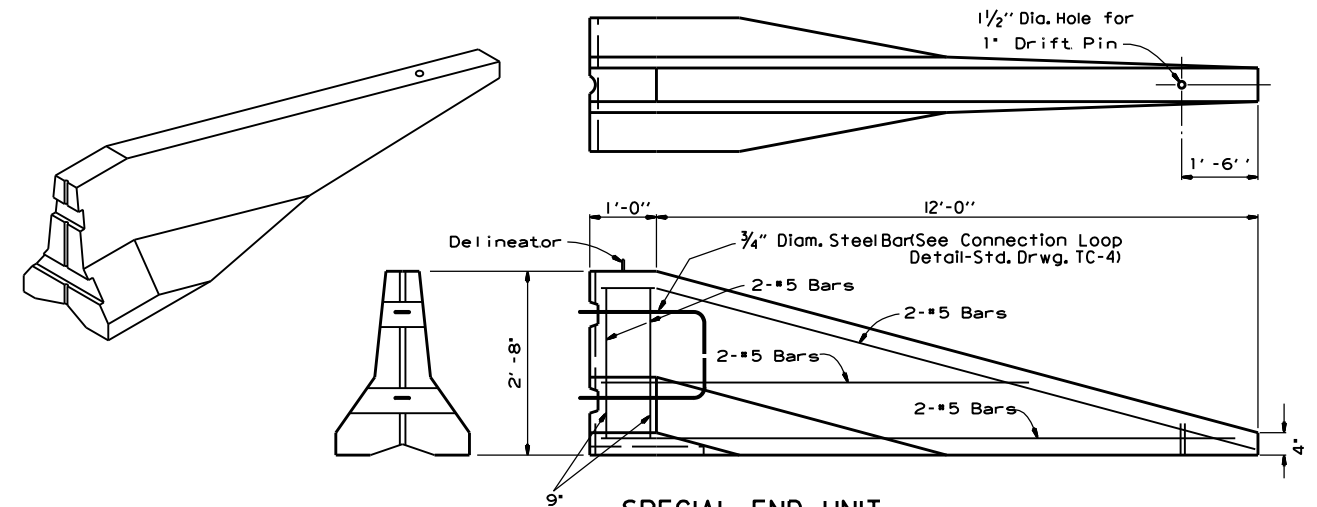
***Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator



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.



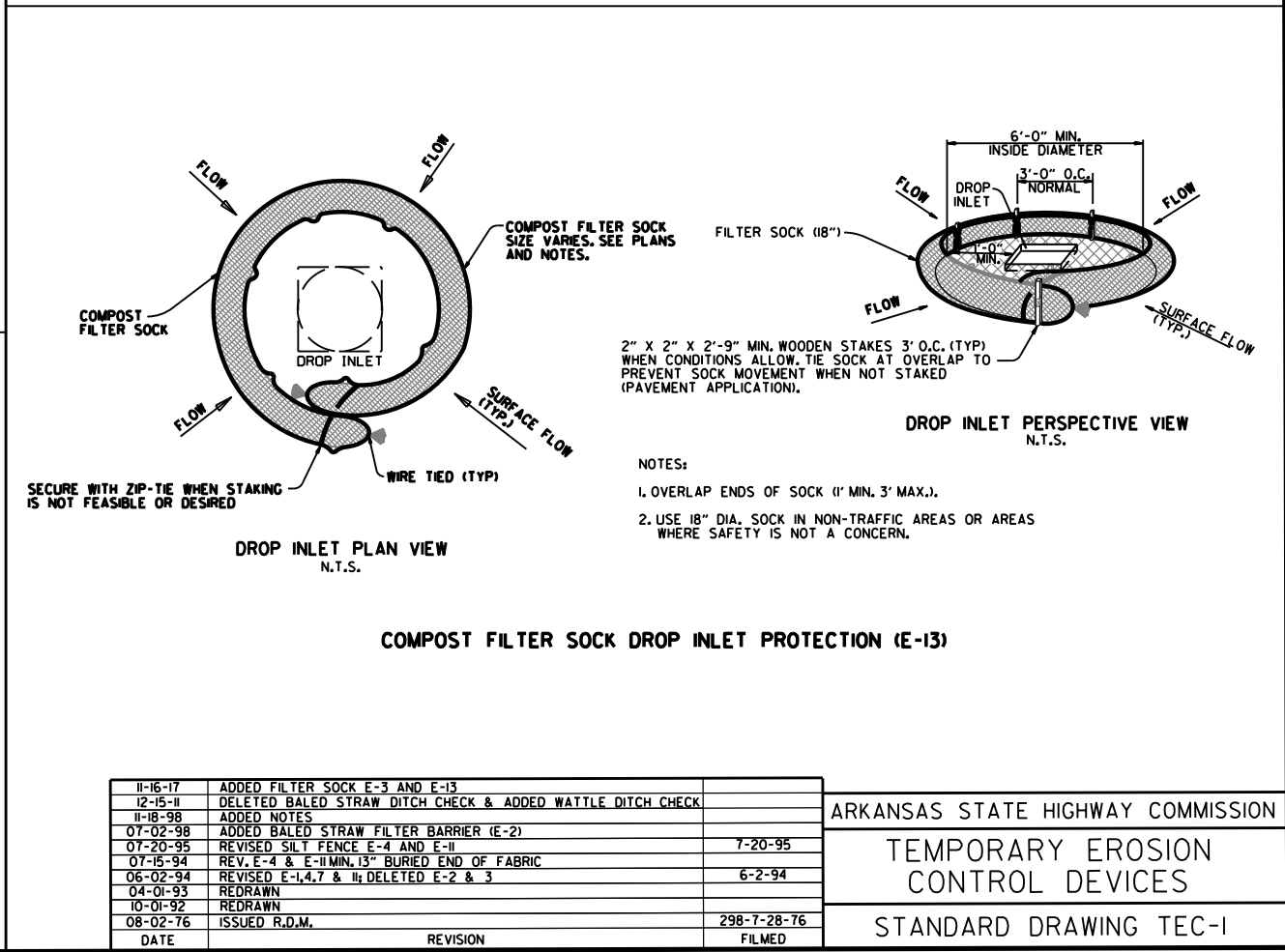
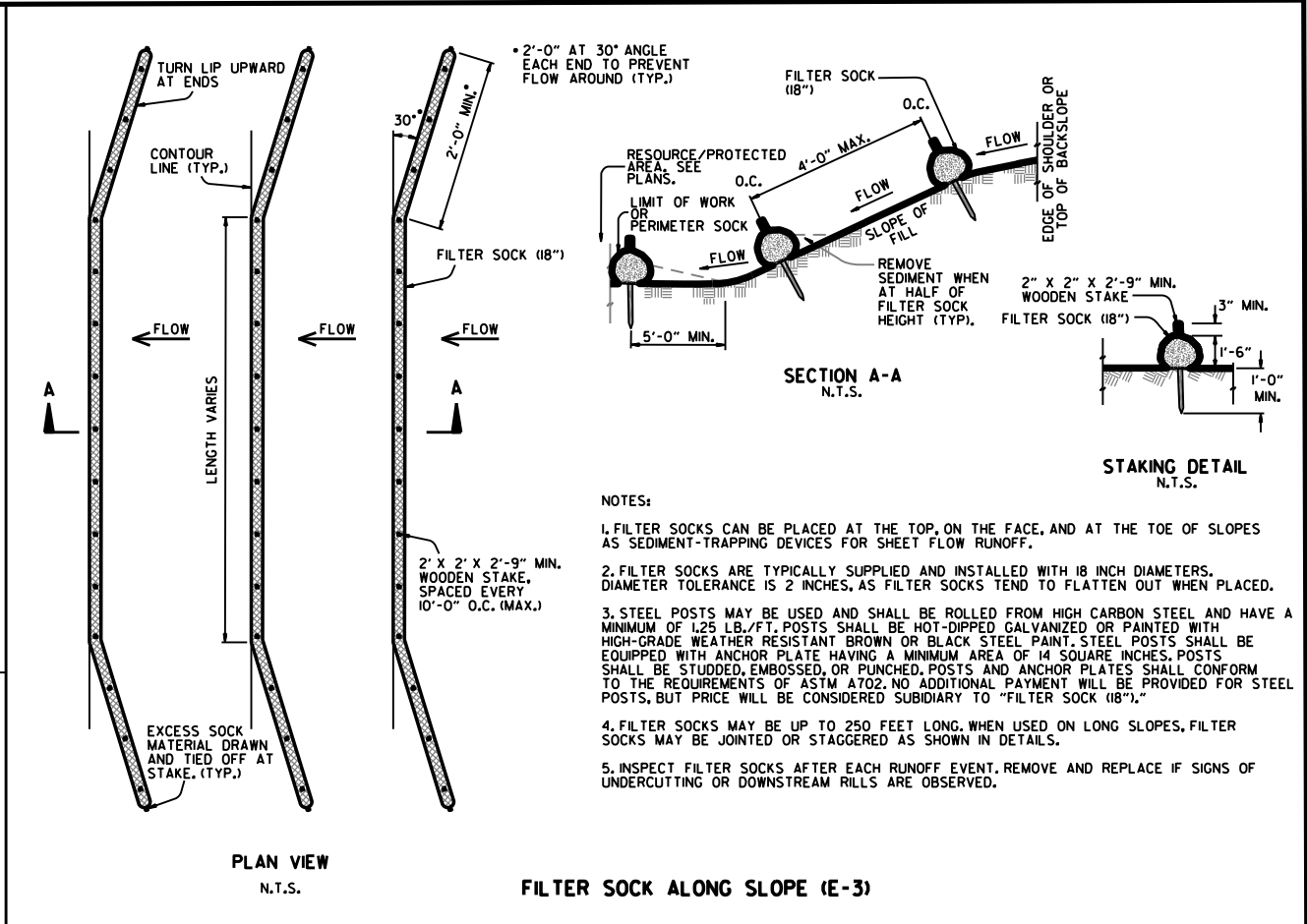
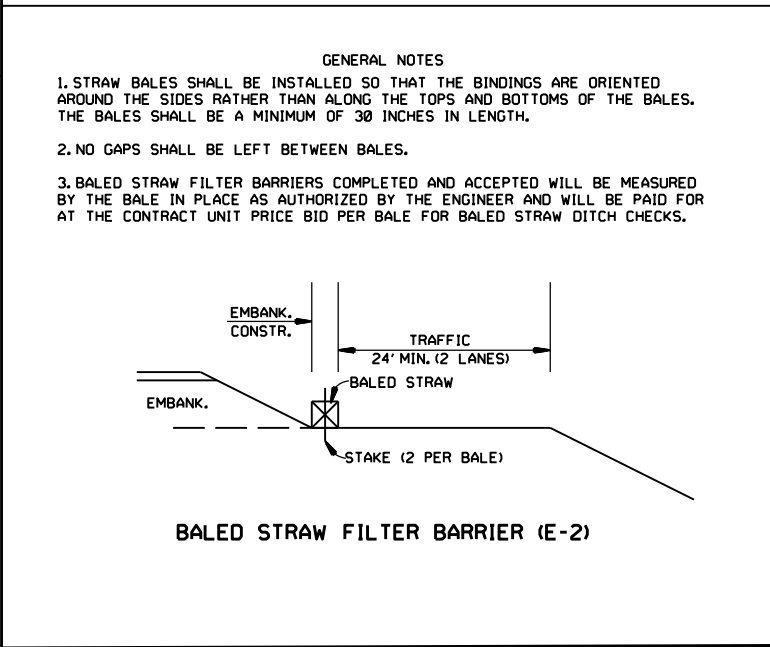
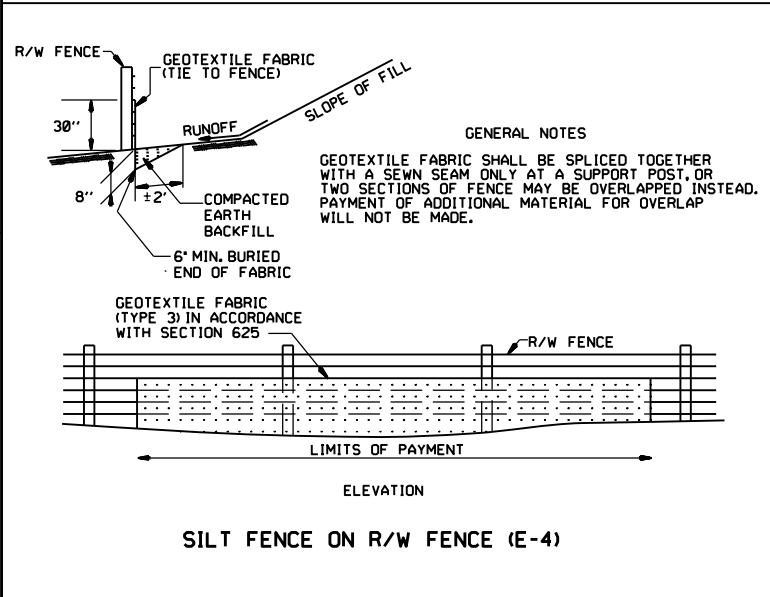
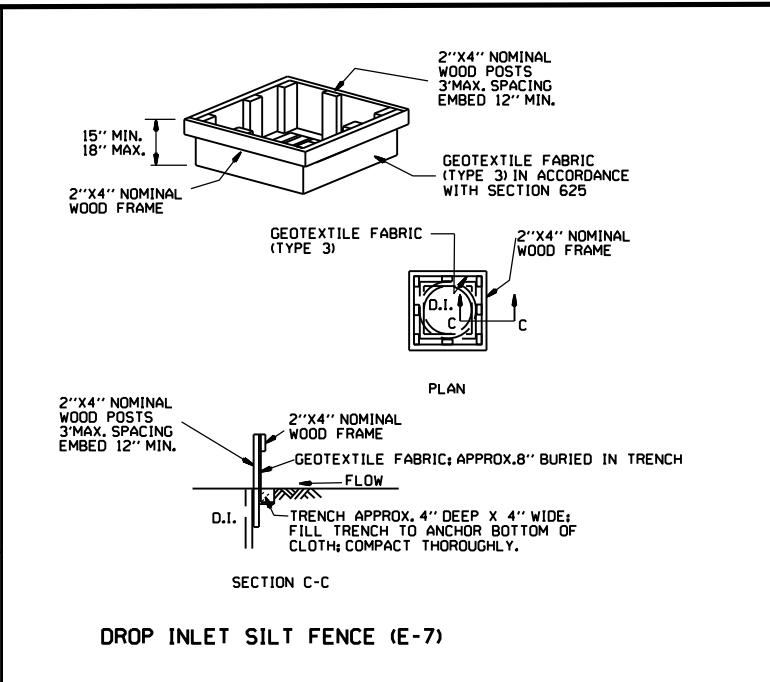
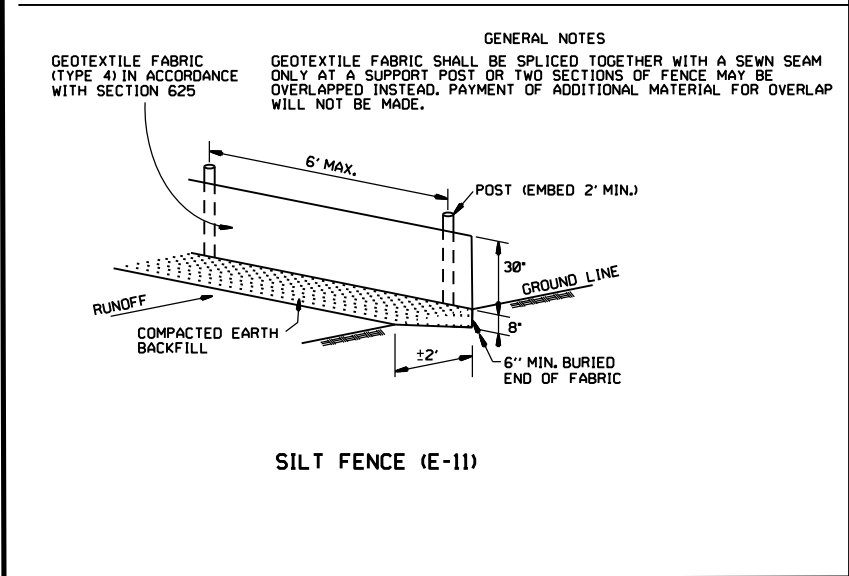
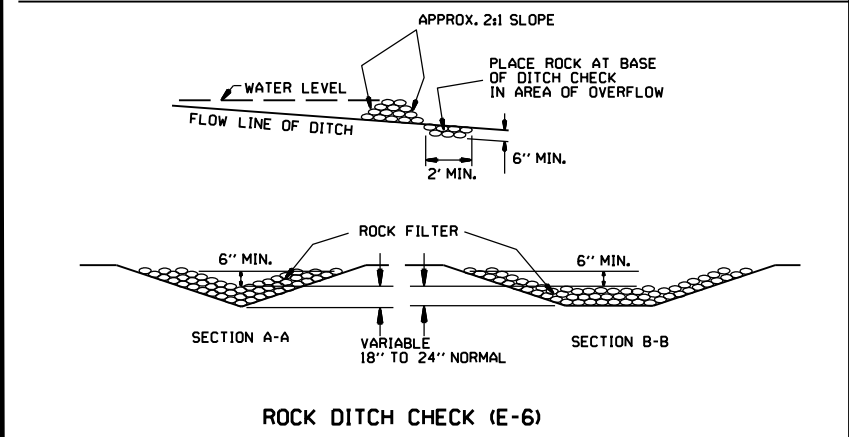
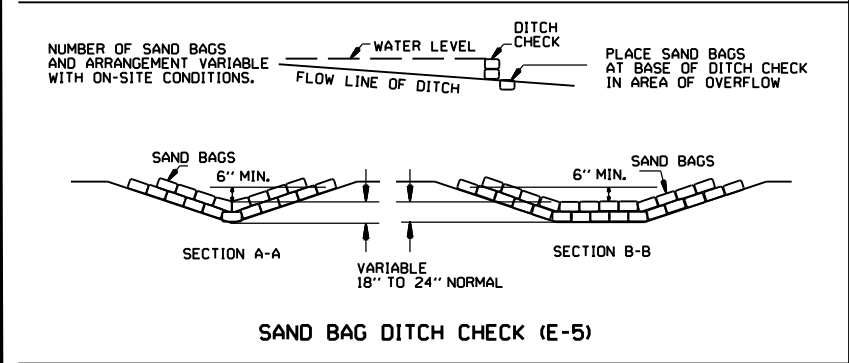
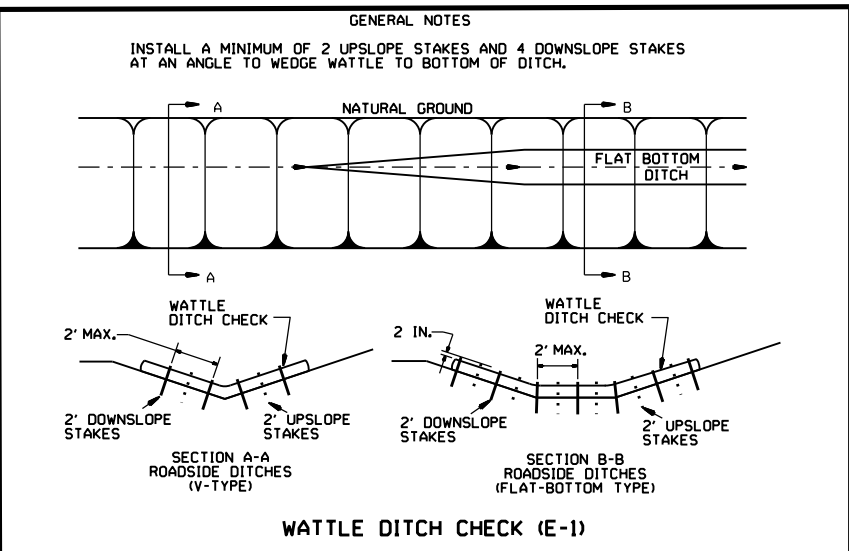
SPECIAL END UNIT

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."

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

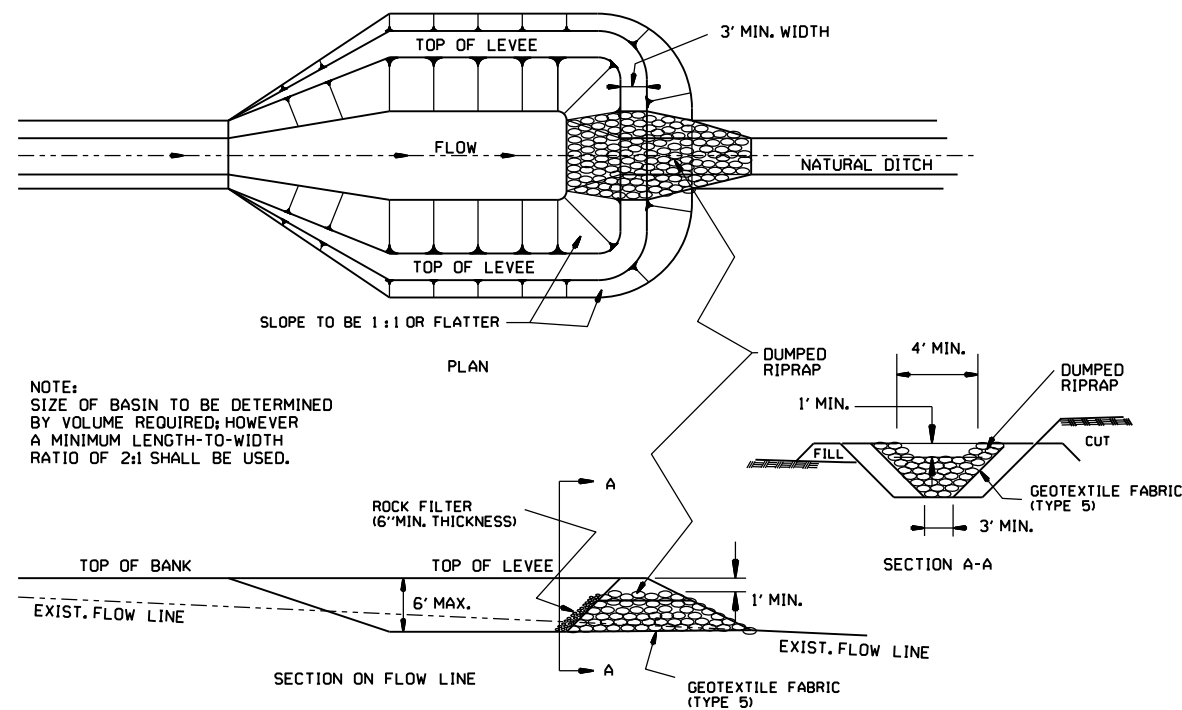


11-16-17	ADDED FILTER SOCK E-3 AND E-13	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
07-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
07-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
06-02-94	REVISED 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
DATE	REVISION	FILMED

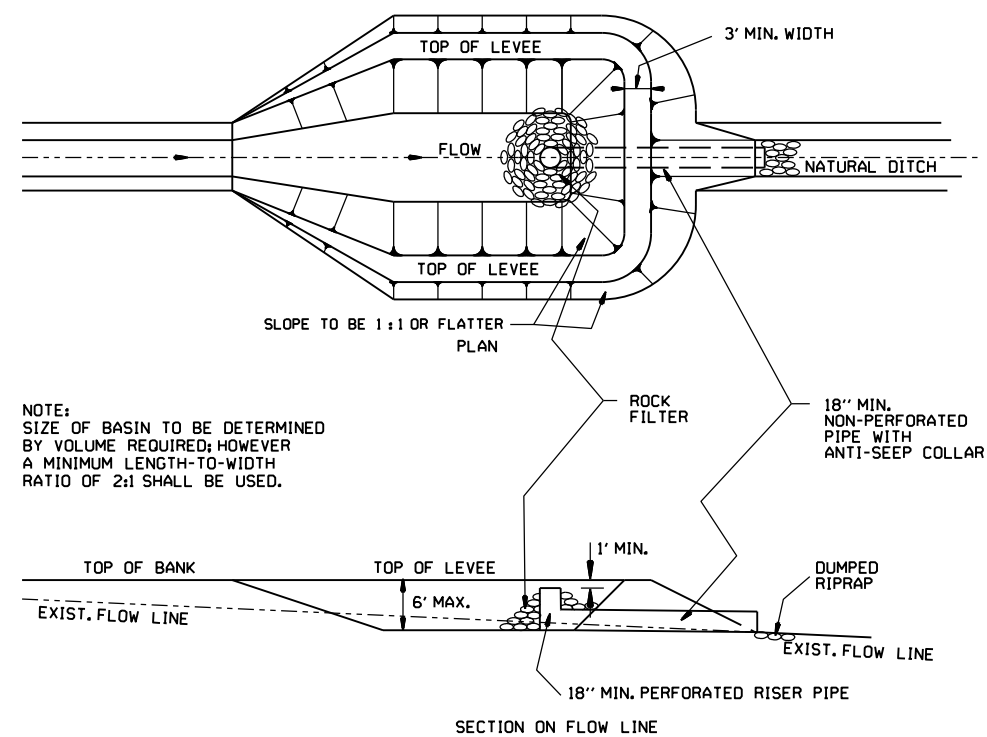
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

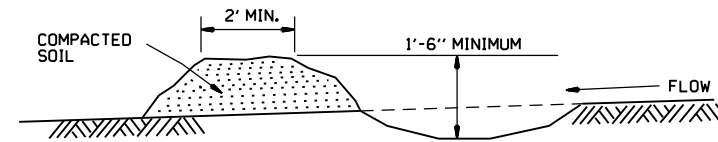
STANDARD DRAWING TEC-1



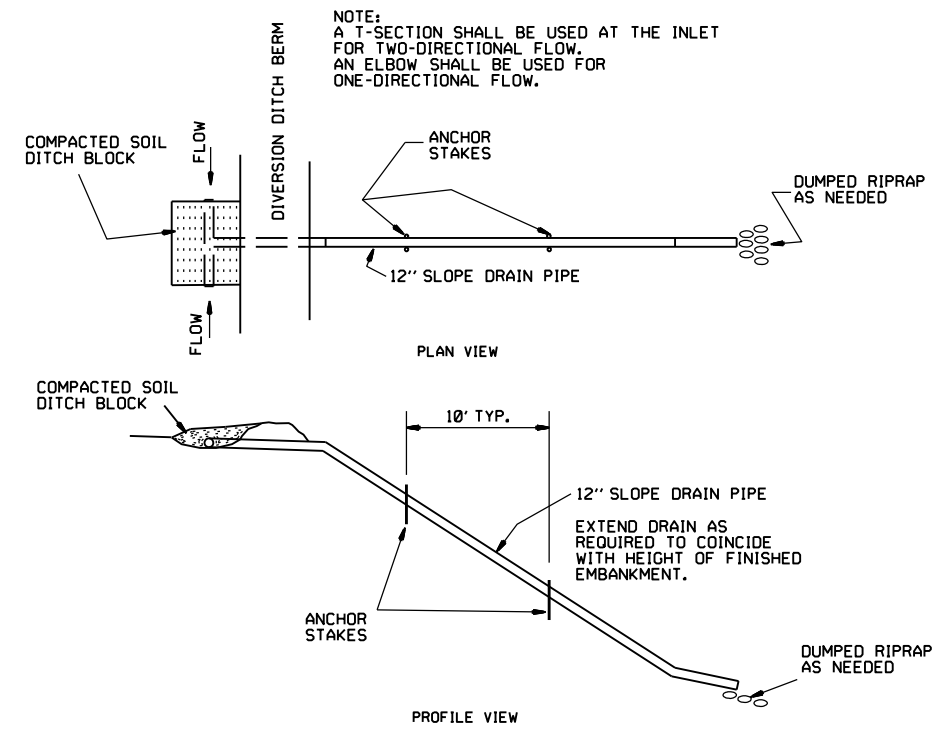
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



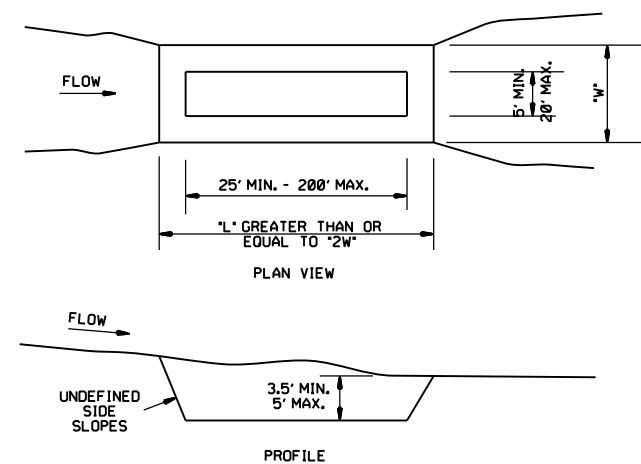
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



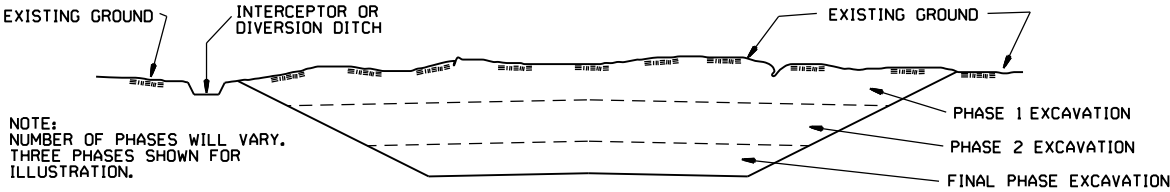
SEDIMENT BASIN (E-14)

			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

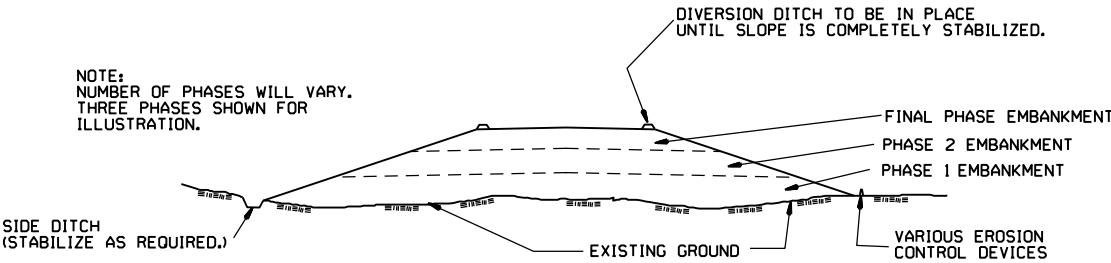


GENERAL NOTE

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

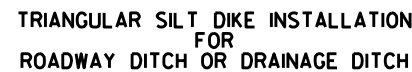


GENERAL NOTE

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	



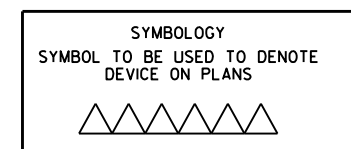
- POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.
- ⊖ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



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. 12 GAUGE WIRE AND BE AT LEAST 6" TO 8" LONG. STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.

THE CONTRACTOR SHALL INSPECT ALL DIKES AFTER EACH RAINFALL EVENT OF AT LEAST 0.5" OR GREATER, ANY DEFICIENCIES OR DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR. ACCUMULATED SILT OR DEBRIS SHALL BE REMOVED AND RELOCATED AS DIRECTED BY THE ENGINEER, IF THE DIKES ARE DAMAGED OR INADVERTENTLY MOVED DURING THE SILT REMOVAL PROCESS, THE CONTRACTOR SHALL IMMEDIATELY REPLACE AFTER DAMAGE OCCURS.

3. ACCEPTED TRIANGULAR SILT DIKE, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR TRIANGULAR SILT DIKE. PRICE BID WILL INCLUDE THE COST OF FURNISHING THE DIKES, INSTALLING, MAINTAINING AND REMOVAL WHEN DIRECTED BY THE ENGINEER.



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

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