DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	1	311
				(2)	CR 80 (ANTIOCH ROAD)-SOUTH CITY LIMITS CAVE CITY (F)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

CR 80 (ANTIOCH ROAD) - SOUTH CITY LIMITS CAVE CITY (F)

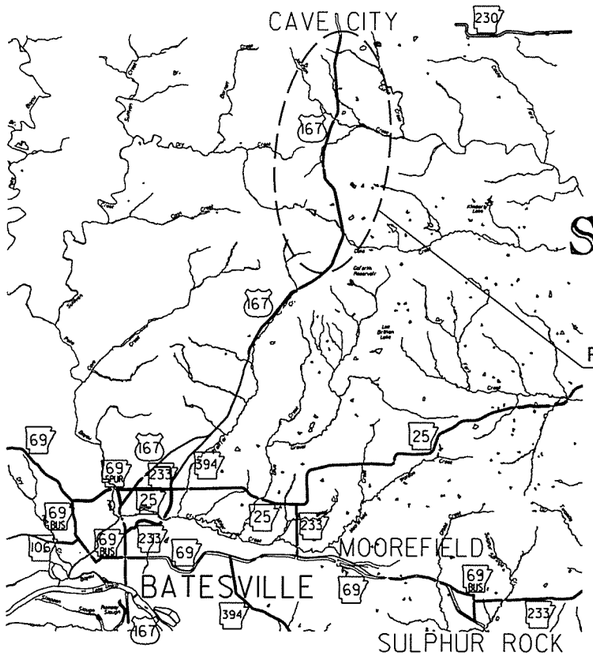
INDEPENDENCE COUNTY

ROUTE 167 SECTION 18

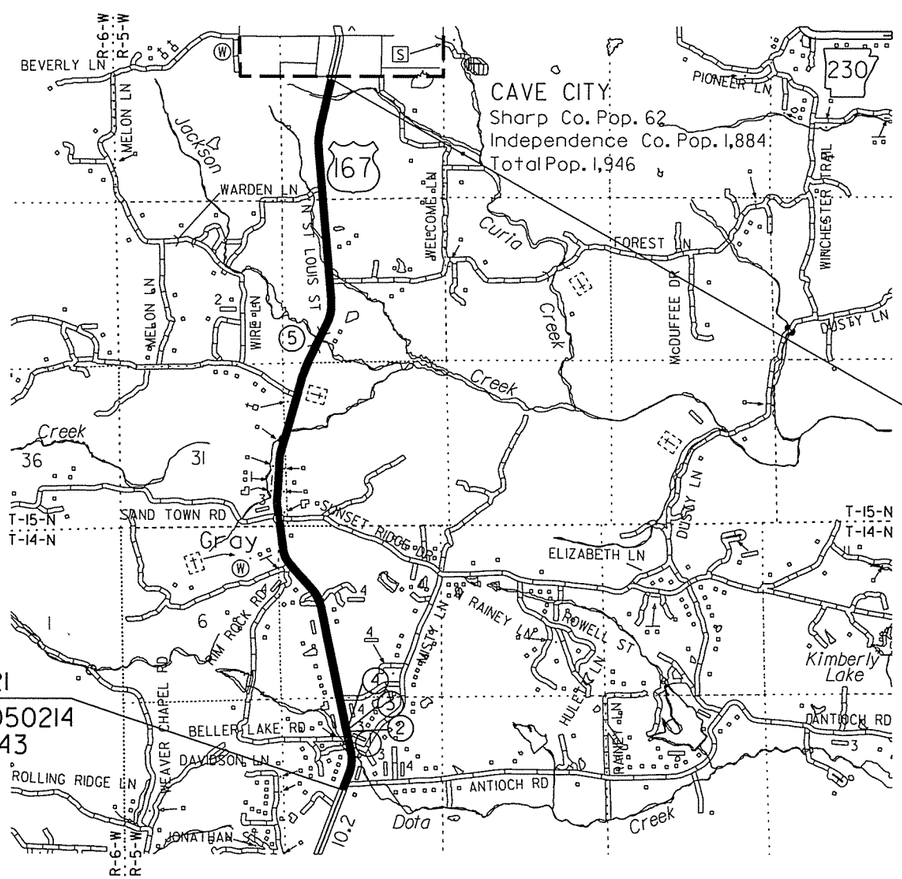
F.A.P. NHPP-0032(23)

JOB 050214

NOT TO SCALE



VICINITY MAP



STA. 621+41.21
BEGIN JOB 050214
LOG MILE 9.43

STA. 861+50.00
END JOB 050214
LOG MILE 13.86

STRUCTURES OVER 20'-0" SPAN

(1) C.L. MISTY LANE
STA. 1600+95 IN PLACE
DBL. 48" X 40' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND CONSTRUCT
TRP. 9' X 6' X 51' R.C. BOX CULVERT
ON 10° RT. FWD SKEW
050 = 740 C.F.S. D.A. = 416 ACRES

(2) STA. 638+70 CONSTRUCT
TRP. 9' X 6' X 46' R.C. BOX CULVERT
050 = 865 C.F.S. D.A. = 525 ACRES
CONSTRUCT APPROACH = 975 CU. YDS. COMP. EMB.

(3) STA. 641+18 IN PLACE
DBL. 48" X 44' C.M. PIPE CULVERT
AND 24" X 44' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
TRP. 9' X 6' X 31' R.C. BOX CULVERT
050 = 865 C.F.S. D.A. = 525 ACRES
CONSTRUCT APPROACH = 625 CU. YDS. COMP. EMB.

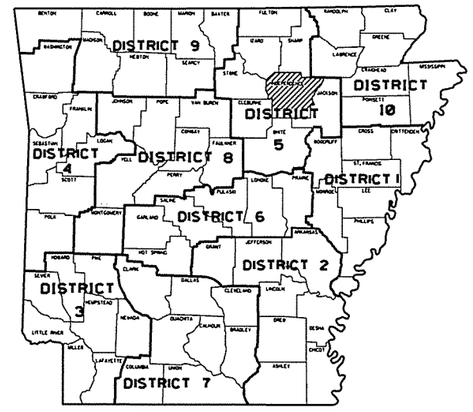
(4) STA. 643+05 CONSTRUCT
TRP. 9' X 6' X 46' R.C. BOX CULVERT
050 = 865 C.F.S. D.A. = 525 ACRES
CONSTRUCT APPROACH = 955 CU. YDS. COMP. EMB.

(5) STA. 775+21 IN PLACE
QUADRUPLE 10' X 8' X 45' R.C. BOX CULVERT
WITH 3:1 WINGS LT. AND RT.
RETAIN AND EXTEND 29' LT. AND 52' RT.
050 = 1930 C.F.S. D.A. = 1216 ACRES
SPAN = 44' - 1"

BEGINNING OF PROJECT	MID POINT OF PROJECT	END OF PROJECT
LATITUDE = N 35°52'15"	LATITUDE = N 35°54'39"	LATITUDE = N 35°56'03"
LONGITUDE = W 91°33'00"	LONGITUDE = W 91°33'04"	LONGITUDE = W 91°32'55"

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

GROSS LENGTH OF	PROJECT	24008.79	FEET OR	4.547	MILES
NET	" " ROADWAY	23964.71	"	4.539	"
NET	" " BRIDGES	44.08	"	0.008	"
NET	" " PROJECT	24008.79	"	4.547	"



ARKANSAS HIGHWAY DISTRICT 5

DESIGN TRAFFIC DATA

DESIGN YEAR	2035
2015 ADT	8,600
2035 ADT	11,000
2035 DHV	1,210
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	6%
DESIGN SPEED	60 MPH

N

APPROVED

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

9-2-15

DEPUTY DIRECTOR
AND CHIEF ENGINEER

9/2/2015

R050214.DGN

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

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2		INDEX OF SHEETS		
3		GOVERNING SPECIFICATIONS AND GENERAL NOTES		
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19 - 37		TEMPORARY EROSION CONTROL DETAILS		
38 - 58		MAINTENANCE OF TRAFFIC DETAILS		
59 - 60		PERMANENT PAVEMENT MARKING DETAILS		
61 - 68		QUANTITIES		
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128		TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	SE-2	10-18-96
129		DETAILS OF SPECIAL ITEMS	SI-1	9-12-13
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140		WIRE FENCE TYPE C AND D	WF-4	8-22-02
141		WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	WR-1	11-10-05
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152 - 311		CROSS SECTIONS		

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

6/9/2015

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(2) GOVERNING SPECS. AND GENERAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - TRAINING PROGRAM - JOB 050214
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
108-1_____	LIQUIDATED DAMAGES
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
620-1_____	MULCH COVER
JOB 050214__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 050214__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 050214__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 050214__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 050214__	COORDINATION OF WORK
JOB 050214__	CULVERT CLEAN OUT
JOB 050214__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 050214__	DISPOSAL OF ILLEGAL DUMP MATERIAL
JOB 050214__	EXTENSION FOR PIPE CULVERTS
JOB 050214__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 050214__	MAINTENANCE OF TRAFFIC
JOB 050214__	MANDATORY ELECTRONIC CONTRACT
JOB 050214__	NESTING SITES OF MIGRATORY BIRDS
JOB 050214__	OFF-SITE RESTRAINING CONDITIONS FOR BATS
JOB 050214__	PARTNERING REQUIREMENTS
JOB 050214__	PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS
JOB 050214__	PLASTIC PIPE
JOB 050214__	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 050214__	PROSECUTION AND PROGRESS
JOB 050214__	SHORING FOR CULVERTS
JOB 050214__	SITE USE (A + C METHOD)
JOB 050214__	SOIL STABILIZATION
JOB 050214__	SPECIAL CLEARING REQUIREMENTS
JOB 050214__	STORM WATER POLLUTION PREVENTION PLAN
JOB 050214__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 050214__	UTILITY ADJUSTMENTS
JOB 050214__	VALUE ENGINEERING
JOB 050214__	WARM MIX ASPHALT

GENERAL NOTES

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

9/2/2015

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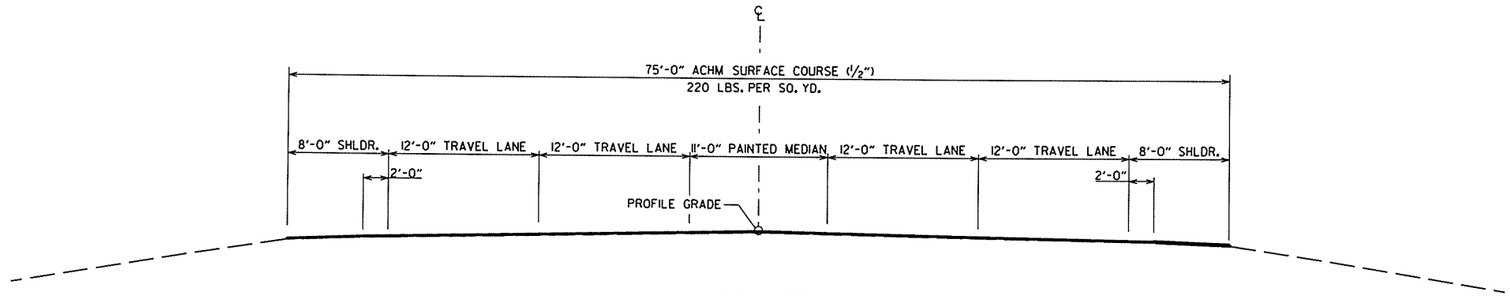
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



HWY. 167
TYPICAL SECTION OF IMPROVEMENT
OVERLAY SECTION

STA. 610+41.21 TO STA. 621+41.21

NOTES:

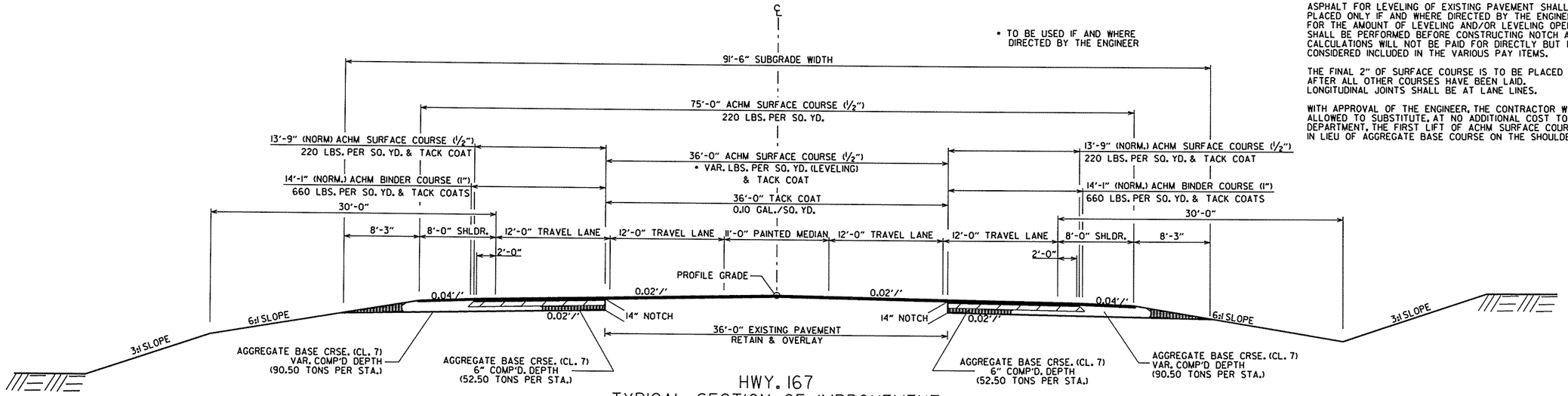
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

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

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

WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (½") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



HWY. 167
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN

STA. 621+41.21 TO STA. 629+49.90
STA. 634+79.75 TO STA. 734+82.00
STA. 740+21.83 TO STA. 753+82.56
STA. 760+50.00 TO STA. 778+23.33
STA. 791+25.50 TO STA. 807+24.50
STA. 820+32.00 TO STA. 832+90.00
STA. 836+71.50 TO STA. 838+09.00
STA. 847+96.50 TO STA. 861+50.00

8/8/2014

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TYPICAL SECTIONS OF IMPROVEMENT

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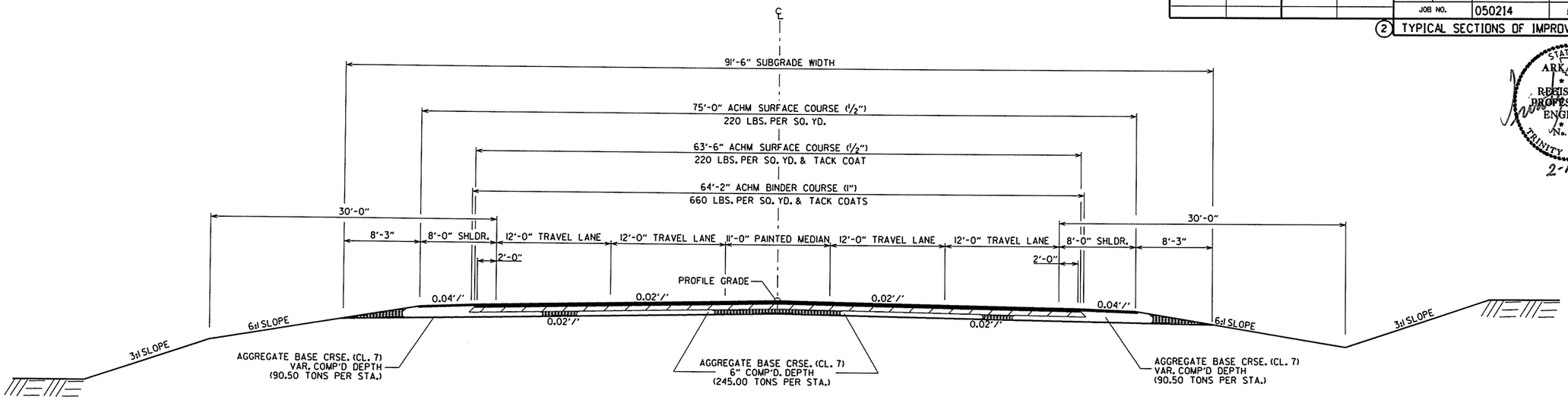
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



HWY. 167
TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH SECTION

STA. 629+49.90 TO STA. 634+79.75
STA. 734+82.00 TO STA. 740+21.83
STA. 753+82.56 TO STA. 760+50.00
STA. 778+23.33 TO STA. 791+25.50

STA. 807+24.50 TO STA. 820+32.00
STA. 832+90.00 TO STA. 836+71.50
STA. 838+09.00 TO STA. 847+96.50

NOTES:

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

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

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

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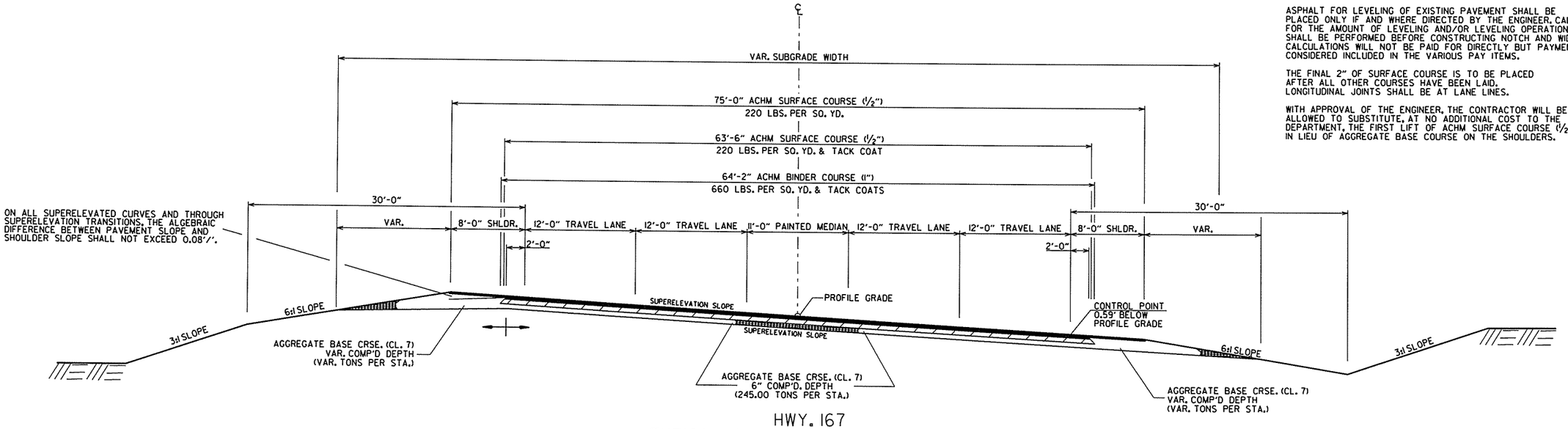

HWY. 167
TYPICAL SECTION OF IMPROVEMENT
SUPERELEVATION SECTION

8/8/2014

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TYPICAL SECTIONS OF IMPROVEMENT

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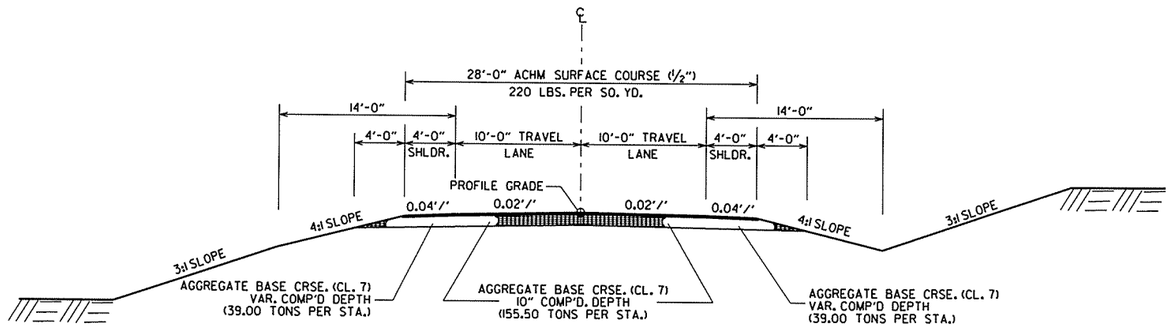
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



SIDE ROADS
TYPICAL SECTION OF IMPROVEMENT

8/8/2014

R050214.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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				6	ARK.			
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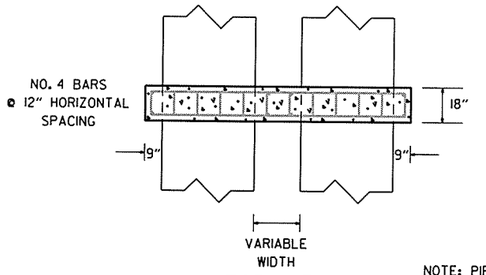
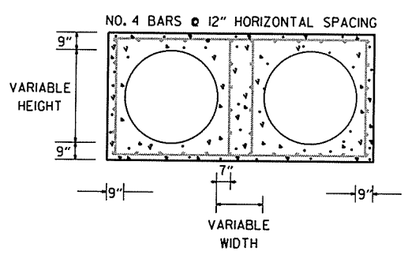
(2) SPECIAL DETAILS

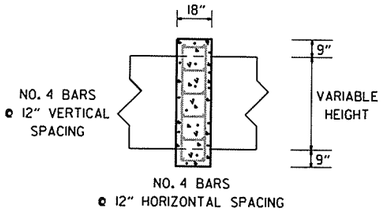


TOP VIEW

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

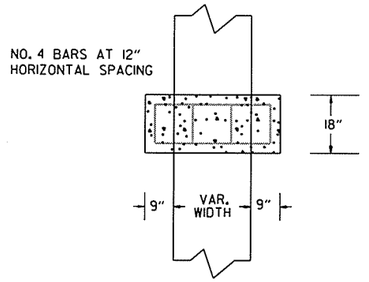


FRONT VIEW

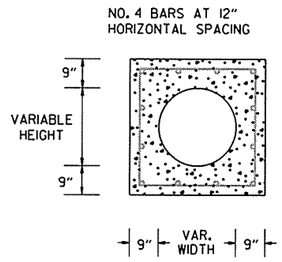


SIDE VIEW

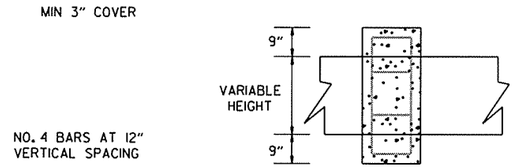
PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL



TOP VIEW

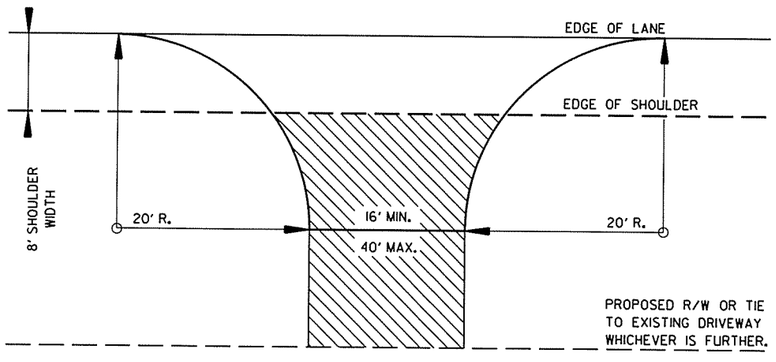


FRONT VIEW



SIDE VIEW

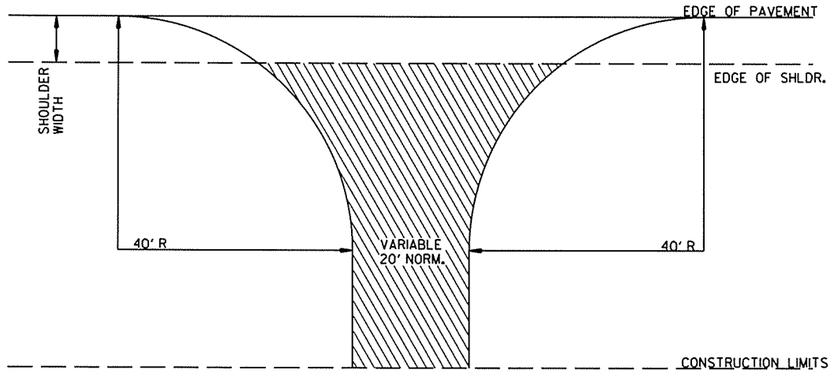
PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL



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.

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

DETAIL FOR DRIVEWAY TURNOUTS



ASPHALT CONCRETE HOT MIX SURFACE
COURSE (220 LBS. PER SQ. YD.)
AND AGGREATE BASE COURSE
(CLASS 7) 7" COMP.

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

DETAIL FOR COUNTY ROAD TURNOUTS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

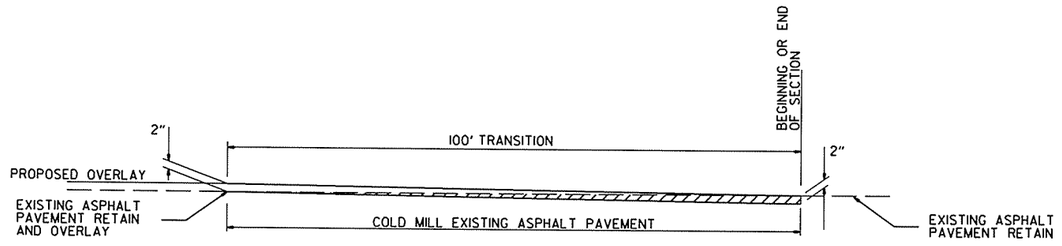
8/8/2014

R050214.DGN

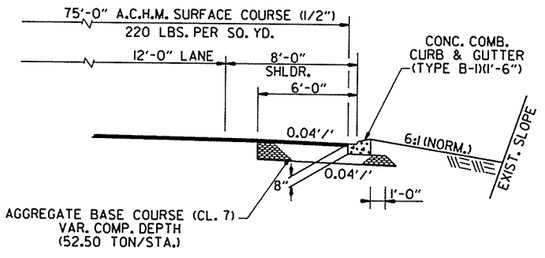
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	8	311

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

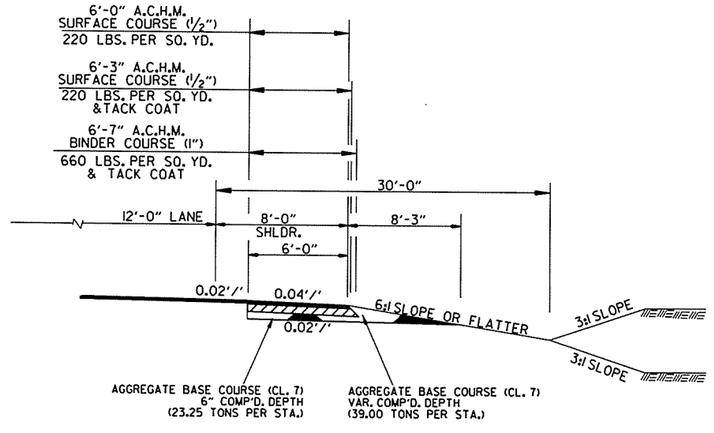


DETAIL FOR TRANSITIONS



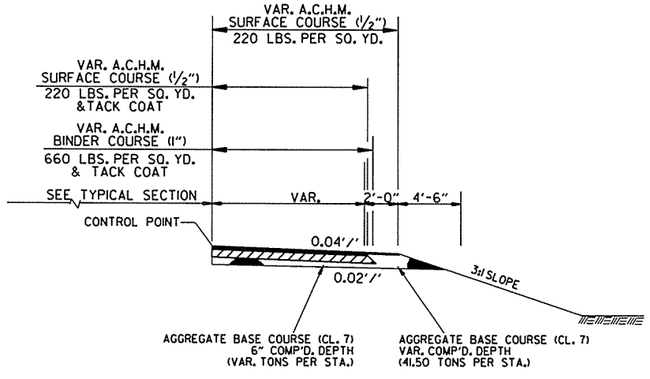
DETAIL FOR CONCRETE CURB AND GUTTER

STA. 860+17.71 TO STA. 861+49.20 RT.



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

STA. 627+22.32 TO STA. 638+79.75 LT.



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

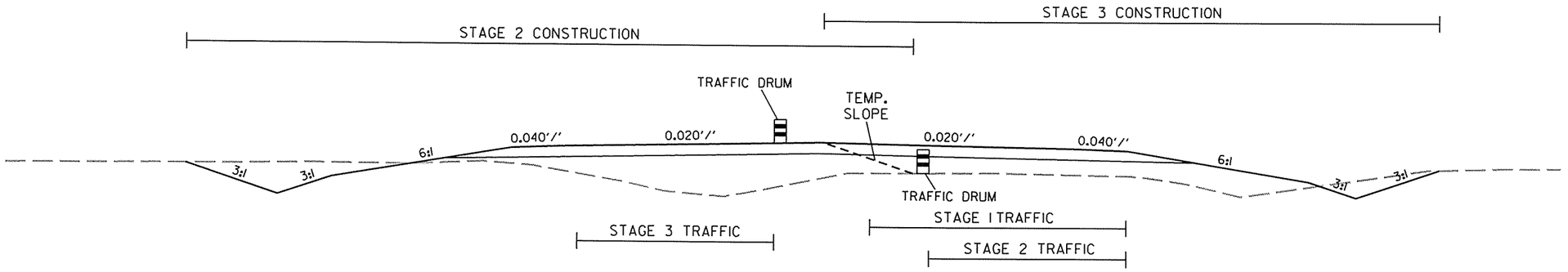
8/8/2014

R050214.DGN

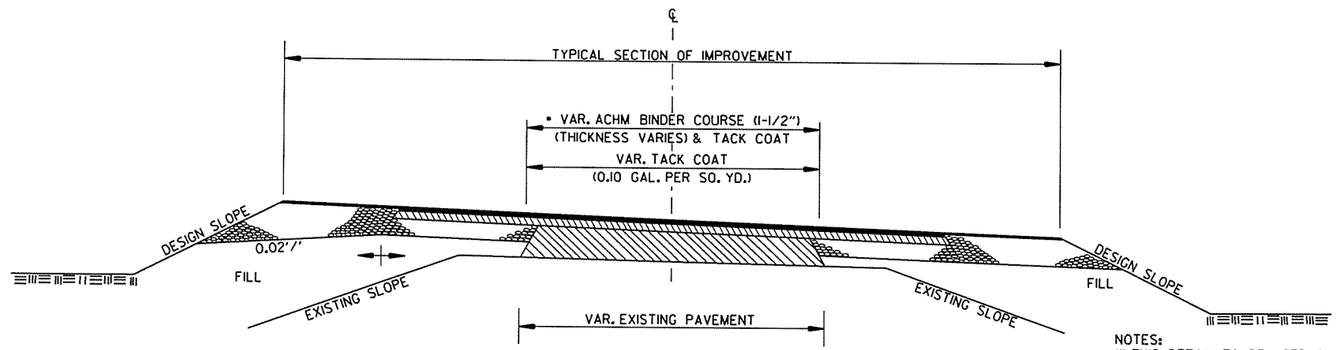
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	9	311

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



DETAIL FOR STAGE CONSTRUCTION



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

METHOD OF RAISING GRADE

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

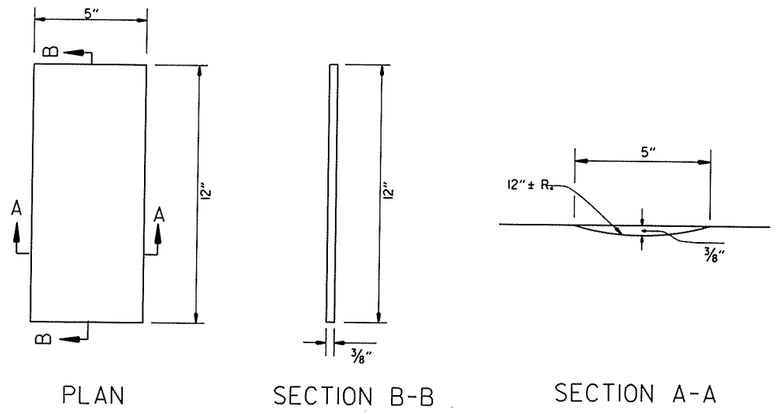
8/8/2014

R050214.DGN

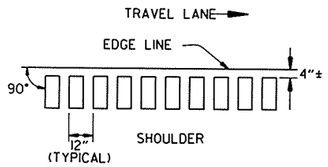
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	10	311

(2) SPECIAL DETAILS

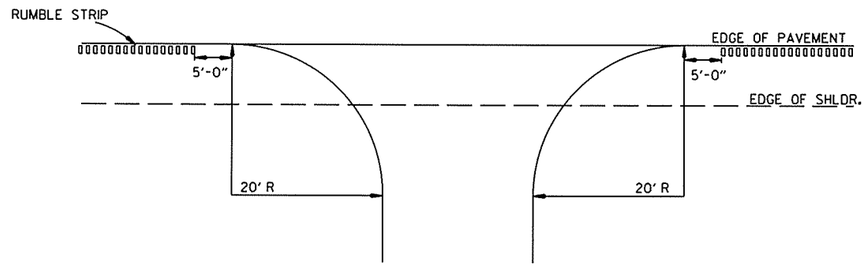
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



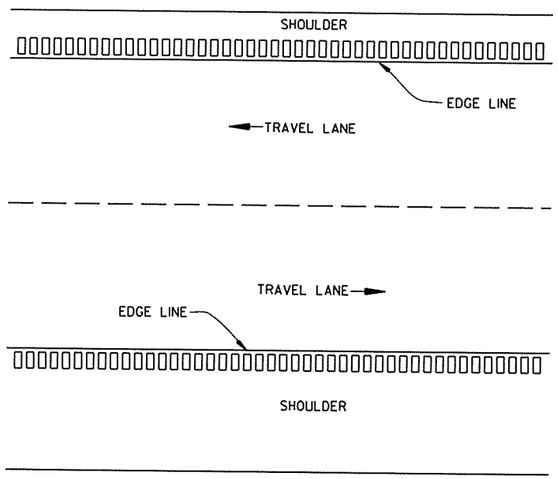
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER

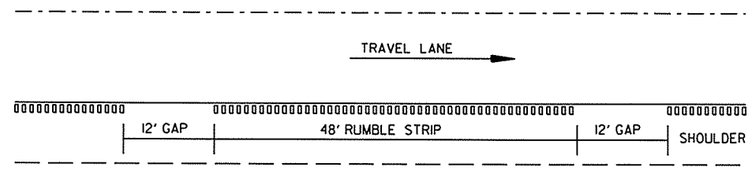


DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS



GENERAL NOTES

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



DETAIL FOR GAP PATTERN RUMBLE STRIP

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

8/8/2014

R050214.DGN

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	11	311

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT		WINGWALL ANGLE (DEGREE)		FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL		FOOTING DIMENSION PARALLEL WITH HDWL		LENGTH OF WINGWALLS		LENGTH OF FOOTING HEEL	
								AT HDWL	AT WING END	WING A	WING B		WING A	WING B	WING A	WING B	WING A	WING B	WING A	WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
29'-6"	6'-0"	0'-9"	0'-8"	10	3:1	28'-9 1/4"	2'-0"	6'-10"	2'-0"	20	40	3'-2"	3'-4 7/8"	3'-6 7/8"	0'-5"	0'-4 1/8"	15'-0"	18'-6"	18'-5 3/8"	21'-11 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
9.58	825

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS		F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS		F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	15	L	Min	3'-2"	-	-	-	L	-	-	-	-	L	-	4	18	4	Min	4	18	4	14'-8"
					Max	7'-11"														5'-0"				
				X	Min	0'-9"				X	-				X	-				Max				
					Max	1'-0"														9'-8"				
				Y	Min	2'-6"				Y	-				Y	-								
					Max	7'-0"																		
WING B	4	12	19	L	Min	3'-0"	-	-	-	L	-	-	-	-	L	-	4	18	4	Min	4	18	4	18'-2"
					Max	8'-1"														6'-3"				
				X	Min	0'-9"				X	-				X	-				Max				
					Max	1'-2"														11'-11"				
				Y	Min	2'-4"				Y	-				Y	-								
					Max	7'-0"																		

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	10	L	Min	4'-11"	4	8	19'-3"	4	18	10	Min	-	-	-	Min	4	2	15'-3"	4	2	16'-1"	6	12	6	L	3'-4"	375
					Max	9'-3"							2'-8"				-												
				X	Min	2'-4"							Max				Max												
					Max	2'-4"							2'-11"				-										X	1'-8"	
				Y	Min	2'-8"																							
					Max	7'-0"																							
WING B	4	18	13	L	Min	4'-7"	4	8	22'-9"	4	18	12	Min	-	-	-	Min	4	2	18'-8"	4	2	20'-1"	6	12	6	L	3'-4"	450
					Max	9'-3"							2'-8"				-												
				X	Min	2'-4"							Max				Max												
					Max	2'-4"							3'-1"				-										X	1'-8"	
				Y	Min	2'-4"																							
					Max	7'-0"																							

③ MID-SECTION BAR LAP TABLE

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

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

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

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9235 CHARLES R. ELLIS 7-21-14

TABULAR DATA BY: ACP DATE: 07/11/14
CHECKED BY: JYP DATE: 7/14/14

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

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

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D	BOTTOM SLAB REINFORCING STEEL d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D
SK	SL	D	S	H	LL	T	HW	B	C	W	OW	OH																
10	3:1	5	9	6	4'-7"	9.5	3	9.5	7	8	29'-6"	7'-7"	6	8	Max	6	5	4	Max	11	4	6	Max	8	4	7	Max	7
															29'-2"				29'-2"				29'-2"				29'-2"	
															Min				Min				Min				Min	
															8'-10"				8'-10"				8'-10"				8'-10"	
															29'-2"	3			29'-2"	6			29'-2"	4			29'-2"	4

SIDE WALL REINFORCING STEEL f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINFORCING STEEL f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL d2 SIZE	d2 SPACING	d2 NO. REQ'D	d2 LENGTH
4	5.5	21	7'-3"	4	12	22	7'-3"	4	11	65	Max	4	11	65	Max	4	12	6	LONG	4	12	12	LONG
											7'-0"				7'-0"				7'-0"				5'-3"
											Min				Min			6	SHORT			12	SHORT
											1'-10"				1'-10"				1'-11"				3'-7"

k1 SIZE	k1 LENGTH	k1 NO. REQ'D	k2 SIZE	k2 LENGTH	k2 NO. REQ'D	h SIZE	h LENGTH	h Y	h NO. REQ'D
4	29'-7"	6	4	29'-7"	6	4	1'-8"	0'-8"	31

CLASS "S" CONCRETE (Includes HDWL)	① REINFORCING STEEL (GR 60) (Includes HDWL)
CU. YDS.	LBS.
11.12	2019

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

INLET SLOPE SECTION(S)

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

HDWL THK.	ADDITIONAL REINF. FOR HDWL	"h" BARS			
HW	LBS.	SIZE	Y	LENGTH	NO. REQ'D

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)	② ADTL. REINF. PER LONG. LAP LOCATION	ADDITIONAL CONCRETE FOR HDWL	TOTAL ADTL. REINF. FOR HDWL
CU. YDS. PER LIN. FT.	LBS. PER LIN. FT.	LBS.	CU. YDS.	LBS.

② Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.

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

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

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS a		Bent b		c				BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS d		Bent b1		f				SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4"				INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4"				TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL			BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL			SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL			INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL		
	D	S	H	T	B	C	W	OW	OH	SL	SIZE	L	SIZE	L	SIZE	L	SPACING	NO. REQ'D	SIZE	L	SIZE	L	SIZE	L	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D
A	5	9	6	9.5	9.5	7	8	29'-6"	7'-7"	41.83	4	29'-2"	8	29'-7"	5	29'-2"	14	35	4	29'-2"	4	29'-7"	4	29'-2"	12	41	4	5.5	182	7'-3"	4	12	164	7'-3"	4	11	65	4	11	65	4	12	12	4	12	24

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)	③ ADTL. STEEL PER LONG. LAP LOCATION (S)
CU. YDS. PER LIN. FT.	LBS PER LIN. FT.	LBS.
2.29	321	194

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
TRIPLE BARREL BOX CULVERT
Sta. 1600+95
SPECIAL DETAILS

LRFD

Ver. 1.114 b050214_cl.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	12	311

① SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-21-14
CHARLES R. ELLIS

TABULAR DATA BY: ACP DATE: 07/11/14
CHECKED BY: JJP DATE: 7/14/14

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
29'-6"	6'-0"	0'-9"	0'-8"	10	3:1	28'-9 1/4"	2'-0"	6'-10"	2'-0"	20	40	3'-2"	3'-4 7/8"	3'-6 7/8"	0'-5"	0'-4 1/8"	15'-0"	18'-6"	18'-5 3/8"	21'-11 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
10.66	825

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1	F1	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	15	X	L	Min 3'-2"				L -				L -	4	18	4	Min	4	18	4	14'-8"	4	18	10	L	Min 4'-11"	4	8	19'-3"	4	18	10	Min	-	-	-	Min	4	2	15'-3"	4	2	16'-1"	6	12	6	L 3'-4"	375
						Max 7'-11"												5'-0"								Max 9'-3"								2'-8"				-									X 1'-8"	
					X	Min 0'-9"	-	-	-	X -	-	-	-	X -												L Min 2'-4"																						
						Max 1'-0"																				Max 2'-4"								Max				Max										
					Y	Min 2'-6"				Y -				Y -				9'-8"								Y Min 2'-8"								2'-11"				-										
						Max 7'-0"																				Max 7'-0"																						
WING B	4	12	19	X	L	Min 3'-0"				L -				L -	4	18	4	Min	4	18	4	18'-2"	4	18	13	L	Min 4'-7"	4	8	22'-9"	4	18	12	Min	-	-	-	Min	4	2	18'-8"	4	2	20'-1"	6	12	6	L 3'-4"	450
						Max 8'-1"												6'-3"								Max 9'-3"								2'-8"				-									X 1'-8"	
					X	Min 0'-9"	-	-	-	X -	-	-	-	X -												L Min 2'-4"																						
						Max 1'-2"												Max								Max 2'-4"								Max				Max										
					Y	Min 2'-4"				Y -				Y -				11'-11"								Y Min 2'-4"								3'-1"				-										
						Max 7'-0"																				Max 7'-0"																						

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

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

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

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HW	B	C	W	OW	OH
10	3:1	5	9	6	4'-7"	9.5	3	9.5	7	8	29'-6"	7'-7"

TOP SLAB REINFORCING STEEL a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D
6	8	Max 29'-2" / Min 8'-10"	6	5	4	Max 29'-2" / Min 8'-10"	11
		29'-2"	3			29'-2"	6

BOTTOM SLAB REINFORCING STEEL d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D
4	6	Max 29'-2" / Min 8'-10"	8	4	7	Max 29'-2" / Min 8'-10"	7
		29'-2"	4			29'-2"	4

SIDE WALL REINFORCING STEEL f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH
4	5.5	21	7'-3"

INTERIOR WALL REINFORCING STEEL f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH
4	12	22	7'-3"

TOP SLAB DISTRIBUTION REINFORCING STEEL g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY
4	11	65	Max 7'-0" / Min 1'-10"

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY
4	11	65	Max 7'-0" / Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH
4	12	6	LONG 7'-0"
		6	SHORT 1'-11"

INTERIOR WALL DISTRIBUTION REINFORCING STEEL d2 SIZE	d2 SPACING	d2 NO. REQ'D	d2 LENGTH
4	12	12	LONG 5'-3"
		12	SHORT 3'-7"

k1 SIZE	k1 LENGTH	k1 NO. REQ'D	k2 SIZE	k2 LENGTH	k2 NO. REQ'D
4	29'-7"	6	4	29'-7"	6

h SIZE	h LENGTH	h Y	h NO. REQ'D
4	1'-8"	0'-8"	31

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	①REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
11.12	2019

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)
D	S	H	T	B	C	W	OW	OH	SL	

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINFORCING STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D

INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL THK. HW	ADDITIONAL REINF. FOR HDWL LBS.	"h" BARS SIZE	Y	LENGTH	NO. REQ'D

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	②ADTL. REINF. PER LONG. LAP LOCATION LBS.	ADDITIONAL CONCRETE FOR HDWL CU. YDS.	TOTAL ADTL. REINF. FOR HDWL LBS.

② Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.

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

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 2

DETAILS OF R.C. BOX CULVERT

TRIPLE BARREL BOX CULVERT
Sta. 1600+95

SPECIAL DETAILS

LRFD

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	13	311

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
29'-4"	6'-0"	0'-9"	0'-8"	0	3:1	28'-4"	2'-0"	6'-10"	2'-0"	30	30	3'-2"	3'-4 7/8"	3'-4 7/8"	0'-3 1/4"	0'-3 1/4"	16'-6"	16'-6"	20'-1 3/8"	20'-1 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
9.42	814

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1	F1	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6	F6
WING A	4	12	17	X	L	Min	-	-	-	L	-	-	-	L	-	4	18	4	Min	4	18	4	16'-2"	4	18	11	L	Min	4'-10"
						Max												5'-6"									Max	9'-3"
					X	Min				X				X				Max								X	Min	2'-4"
						Max												10'-8"									Max	2'-4"
					Y	Min				Y				Y				Min								Y	Min	2'-7"
						Max												Max									Max	7'-0"
WING B	4	12	17	X	L	Min	-	-	-	L	-	-	-	L	-	4	18	4	Min	4	18	4	16'-2"	4	18	11	L	Min	4'-10"
						Max												5'-6"									Max	9'-3"
					X	Min				X				X				Max								X	Min	2'-4"
						Max												10'-8"									Max	2'-4"
					Y	Min				Y				Y				Min								Y	Min	2'-7"
						Max												Max									Max	7'-0"

WING	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L	3'-4"	407
							Max				-												
							Min				Max										X	1'-8"	
							Max				-												
WING B	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L	3'-4"	407
							Max				-												
							Min				Max										X	1'-8"	
							Max				-												

③ MID-SECTION

BAR LAP TABLE

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

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

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-21-14
CHARLES R. ELLIS

TABULAR DATA BY: ACP DATE: 07/11/14
CHECKED BY: JHP DATE: 7/14/14

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

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

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

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	TOP SLAB REINFORCING STEEL c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D	BOTTOM SLAB REINFORCING STEEL d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	BOTTOM SLAB REINFORCING STEEL f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D	SIDE WALL REINFORCING STEEL f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINFORCING STEEL f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL d2 SIZE	d2 SPACING	d2 NO. REQ'D	d2 LENGTH
SK	SL	D	S	H	LE	T	HW	B	C	W	OW	OH			Max				Max				Max																Max							LONG				LONG

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.		050214	14	311

① SPECIAL DETAILS

STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-21-14
CHARLES R. ELLIS

TABULAR DATA BY: ACP DATE: 07/11/14
CHECKED BY: JHP DATE: 7/14/14

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AP1	AP2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	OUTLET	OUTLET
29'-4"	6'-0"	0'-9"	0'-8"	0	3:1	28'-4"	2'-0"	6'-10"	2'-0"	30	30	3'-2"	3'-4 7/8"	3'-4 7/8"	0'-3 1/4"	0'-3 1/4"	16'-6"	16'-6"	20'-1 3/8"	20'-1 3/8"	CU.YD	LBS.
																					10.49	814

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS		F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS		F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	17	X	Min	3'-0"	-	-	-	X	-	-	-	-	X	-	4	18	4	Min	4	18	4	16'-2"	4	18	11	L	Min	4'-10"	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L	3'-4"	407
					Max	7'-11"														5'-6"									Max	9'-3"									2'-8"												
					Min	0'-9"				L	-				L	-				Min								X	Min	2'-4"									-									X	1'-8"	
					Max	1'-0"																							Max	2'-4"									Max										
				Y	Min	2'-4"				Y	-				Y	-				Max								Y	Min	2'-7"									-										
					Max	7'-0"																							Max	7'-0"																			
WING B	4	12	17	X	Min	3'-0"	-	-	-	X	-	-	-	-	X	-	4	18	4	Min	4	18	4	16'-2"	4	18	11	L	Min	4'-10"	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L	3'-4"	407
					Max	7'-11"														5'-6"									Max	9'-3"									2'-8"												
					Min	0'-9"				L	-				L	-				Min								X	Min	2'-4"									-									X	1'-8"	
					Max	1'-0"																							Max	2'-4"									Max										
				Y	Min	2'-4"				Y	-				Y	-				Max								Y	Min	2'-7"									-										
					Max	7'-0"																							Max	7'-0"																			

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

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

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

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HW	B	C	W	OW	OH

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

k1 SIZE	k1 LENGTH	k1 NO. REQ'D	k2 SIZE	k2 LENGTH	k2 NO. REQ'D	h SIZE	h LENGTH	h Y	h NO. REQ'D

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

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)
	D	S	H	T	B	C	W	OW	OH	SL
	2	9	6							

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS	a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS	d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4"	SIZE	SPACING	NO. REQ'D	LENGTH

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4"	SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINFORCING STEEL "g" LENGTH = SL	SIZE	SPACING	NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" LENGTH = SL	SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" LENGTH = SL	SIZE	SPACING	NO. REQ'D

INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" LENGTH = SL	SIZE	SPACING	NO. REQ'D

HDWL THK.	ADDITIONAL REINF. FOR HDWL	"h" BARS			
HW	LBS.	SIZE	Y	LENGTH	NO. REQ'D
3"	39	4	0'-10"	1'-10"	31

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)	② ADTL. REINF. PER LONG. LAP LOCATION	ADDITIONAL CONCRETE FOR HDWL	TOTAL ADTL. REINF. FOR HDWL
CU. YDS. PER LIN. FT.	LBS. PER LIN. FT.	LBS.	CU. YDS.	LBS.
			0.27	77

② Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.

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

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 2

DETAILS OF R.C. BOX CULVERT

TRIPLE BARREL BOX CULVERT
Sta. 641+18

SPECIAL DETAILS

LRFD

Ver. Jul4 b050214_c2.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	14A	311

① SPECIAL DETAILS

STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-4-15

TABULAR DATA BY: ACP DATE: 06/03/15
CHECKED BY: JYP DATE: 6/3/15

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron) INLET	REINFORCING STEEL (Includes apron and laps if required) INLET
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	CU.YD	LBS.
29'-4"	6'-0"	0'-9"	0'-8"	0	3:1	28'-4"	2'-0"	6'-10"	2'-0"	30	30	3'-2"	3'-4 7/8"	3'-4 7/8"	0'-3 1/4"	0'-3 1/4"	16'-6"	16'-6"	20'-1 3/8"	20'-1 3/8"	9.42	814

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY		F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY		F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS VARY	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	17	L	Min	3'-0"	-	-	-	-	-	-	L -	4	18	4	Min	4	18	4	16'-2"	4	18	11	L Min	4'-10"	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L	3'-4"	407
					Max	7'-11"											5'-6"								Max 9'-3"							2'-8"																
				X	Min	0'-9"							X -				Max								X Min	2'-4"						Max														X	1'-8"	
					Max	1'-0"											10'-8"								Max 2'-4"							-														
				Y	Min	2'-4"							Y -				Min								Y Min	2'-7"						Min																
					Max	7'-0"											10'-8"								Max 7'-0"							2'-11"																
WING B	4	12	17	L	Min	3'-0"	-	-	-	-	-	-	L -	4	18	4	Min	4	18	4	16'-2"	4	18	11	L Min	4'-10"	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L	3'-4"	407
					Max	7'-11"											5'-6"								Max 9'-3"							2'-8"																
				X	Min	0'-9"							X -				Max								X Min	2'-4"						Max														X	1'-8"	
					Max	1'-0"											10'-8"								Max 2'-4"							-														
				Y	Min	2'-4"							Y -				Min								Y Min	2'-7"						Min																
					Max	7'-0"											10'-8"								Max 7'-0"							2'-11"																

③ MID-SECTION BAR LAP TABLE

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

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

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

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

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

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	TOP SLAB REINFORCING STEEL c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D	BOTTOM SLAB REINFORCING STEEL d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	BOTTOM SLAB REINFORCING STEEL f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D	SIDE WALL REINFORCING STEEL f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINFORCING STEEL f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL d2 SIZE	d2 SPACING	d2 NO. REQ'D	d2 LENGTH
SK	SL	D	S	H	L	T	HW	B	C	W	OW	OH			LENGTHS VARY	NO. REQ'D			LENGTHS VARY	NO. REQ'D			LENGTHS VARY	NO. REQ'D			LENGTHS VARY	NO. REQ'D			NO. REQ'D	LENGTH			NO. REQ'D	LENGTH			NO. REQ'D	LENGTHS VARY			NO. REQ'D	LENGTHS VARY			NO. REQ'D	LENGTH			NO. REQ'D	LENGTH
															Max				Max				Max				Max														Max				Max							LONG				LONG
															Min				Min				Min				Min														Min				Min							SHORT				SHORT

k1 SIZE	k1 LENGTH	k1 NO. REQ'D	k2 SIZE	k2 LENGTH	k2 NO. REQ'D	h SIZE	h LENGTH	h Y	h NO. REQ'D

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

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

INLET SLOPE SECTION(S)

R.C. BOX SECTION D	DESIGN FILL DEPTH (FT.) S	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	LENGTH = OW - 4" + BENDS a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	SPACING	NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
	2	9	6																																																		

HDWL THK. HW	ADDITIONAL REINF. FOR HDWL LBS.	"h" BARS SIZE	Y	LENGTH	NO. REQ'D
3"	39	4	0'-10"	1'-10"	31

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	②ADTL. REINF. PER LONG. LAP LOCATION LBS.	ADDITIONAL CONCRETE FOR HDWL CU. YDS.	TOTAL ADTL. REINF. FOR HDWL LBS.
			0.27	77

② Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.

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

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

MID-SECTION

R.C. BOX SECTION D	DESIGN FILL DEPTH (FT.) S	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	SPACING	NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
A	2	9	6	11.5	11.5	6	8	29'-4"	7'-11"	46	4	29'-0"	8	29'-8"	8	29'-0"	17	32	4	29'-0"	4	29'-7"	4	29'-0"	18	30	4	6	184	7'-7"	4	12	184	7'-7"	4	9	77	4	9	77	4	12	12	4	12	24

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS PER LIN. FT.	③ADTL. STEEL PER LONG. LAP LOCATION (S) LBS.
2.60	331	222

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
TRIPLE BARREL BOX CULVERT
Sta. 638+70 and Sta. 643+05

SPECIAL DETAILS

Ver. 1.14 050214_cl.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	148	311

① SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
6-4-15

TABULAR DATA BY: ACP DATE: 06/03/15
CHECKED BY: JMP DATE: 6/3/15

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	OUTLET	OUTLET
29'-4"	6'-0"	0'-9"	0'-8"	0	3:1	28'-4"	2'-0"	6'-10"	2'-0"	30	30	3'-2"	3'-4 7/8"	3'-4 7/8"	0'-3 1/4"	0'-3 1/4"	16'-6"	16'-6"	20'-1 3/8"	20'-1 3/8"	CU.YD	LBS.
																					10.49	814

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	17	L Min	3'-0"	-	-	-	-	-	-	-	L -	4	18	4	Min	4	18	4	16'-2"	4	18	11	L Min	4'-10"	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L 3'-4"	407
					Max 7'-11"												5'-6"								Max 9'-3"							2'-8"														X 1'-8"	
				X Min	0'-9"								X -				Max								L Min	2'-4"										Max									
				Max	1'-0"												10'-8"								Max 2'-4"							2'-11"														
				Y Min	2'-4"								Y -												L Min	2'-7"										Min									
				Max	7'-0"																				Max 7'-0"							-														
WING B	4	12	17	L Min	3'-0"	-	-	-	-	-	-	-	L -	4	18	4	Min	4	18	4	16'-2"	4	18	11	L Min	4'-10"	4	8	20'-11"	4	18	11	Min	-	-	-	Min	4	2	16'-9"	4	2	17'-9"	6	12	6	L 3'-4"	407
					Max 7'-11"												5'-6"								Max 9'-3"							2'-8"														X 1'-8"	
				X Min	0'-9"								X -				Max								L Min	2'-4"										Max									
				Max	1'-0"												10'-8"								Max 2'-4"							2'-11"														
				Y Min	2'-4"								Y -												L Min	2'-7"										Min									
				Max	7'-0"																				Max 7'-0"							-														

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

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

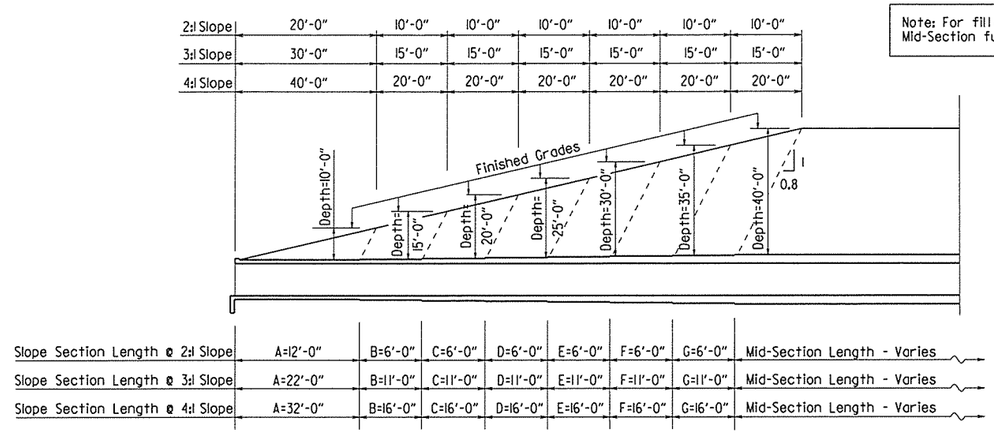
① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	TOP SLAB REINFORCING STEEL c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D	BOTTOM SLAB REINFORCING STEEL d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	BOTTOM SLAB REINFORCING STEEL f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D	SIDE WALL REINFORCING STEEL f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINFORCING STEEL f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL d2 SIZE	d2 SPACING	d2 NO. REQ'D	d2 LENGTH
SK	SL	D	S	H	LL	T	HW	B	C	W	OW	OH			Max				Max				Max																																		

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.		050214	15	311

① SPECIAL DETAILS

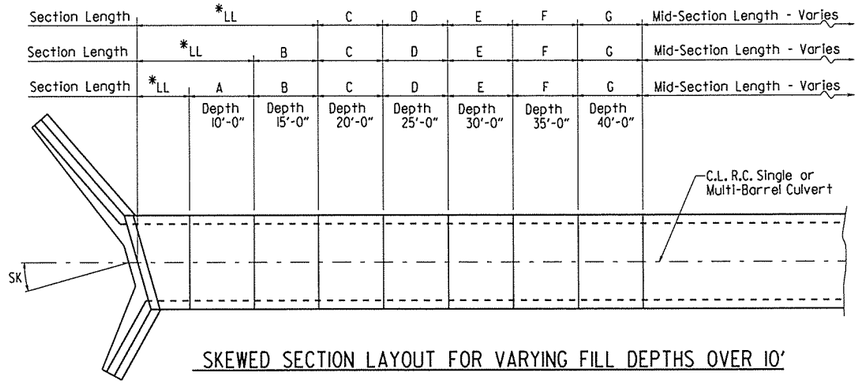


Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

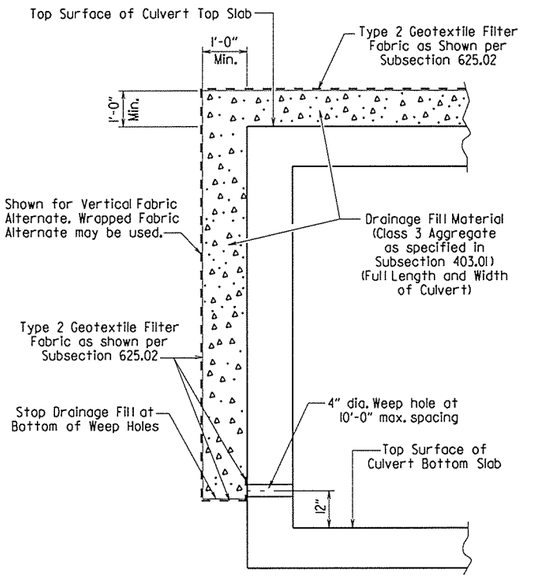
Lengths for Non-Skewed Boxes

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



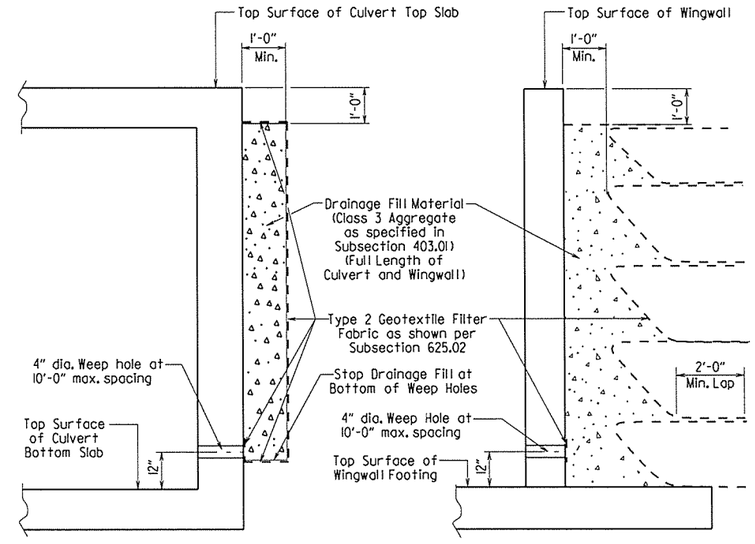
SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'

STATE OF ARKANSAS Charles R. Ellis REGISTERED PROFESSIONAL ENGINEER No. 9235 7-21-14 CHARLES R. ELLIS



CULVERT DRAINAGE DETAIL FOR ROCK FILL

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



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

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

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

WINGWALL & CULVERT DRAINAGE DETAIL

GENERAL NOTES:

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

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

LIVE LOADING: HL-93

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

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

Reinforcing Steel Tolerances: The tolerances for reinforcing steel shall meet those listed in 'Manual of Standard Practice' published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 1/2 inch.

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

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

Weep Holes in box culvert walls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

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

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

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

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

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

SHEET 1 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES &
LONGITUDINAL SECTION LENGTH SCHEDULE

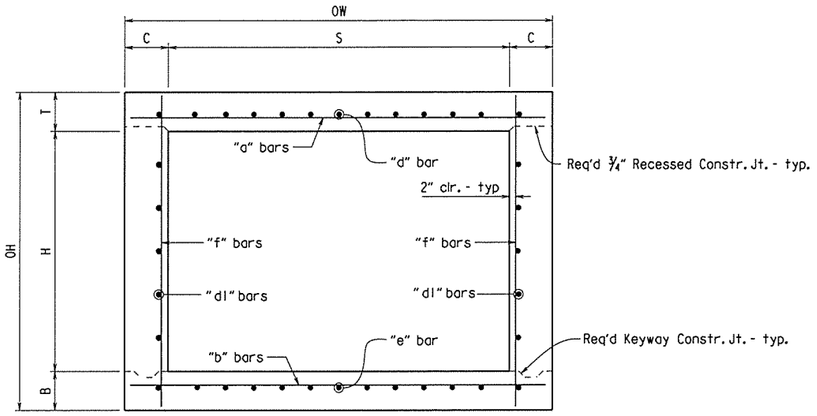
SPECIAL DETAILS

V 1.14 b050214_culvert.dgn

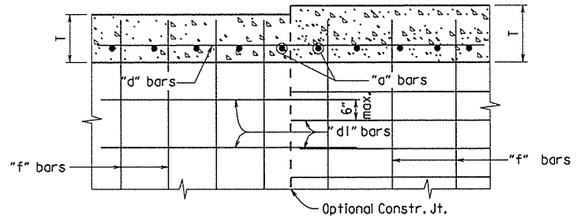
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	16	311

① SPECIAL DETAILS

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



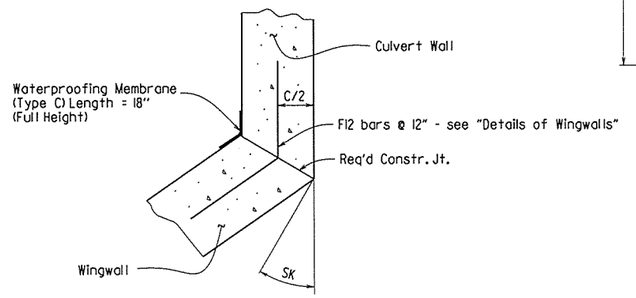
TYPICAL SECTION M-M



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

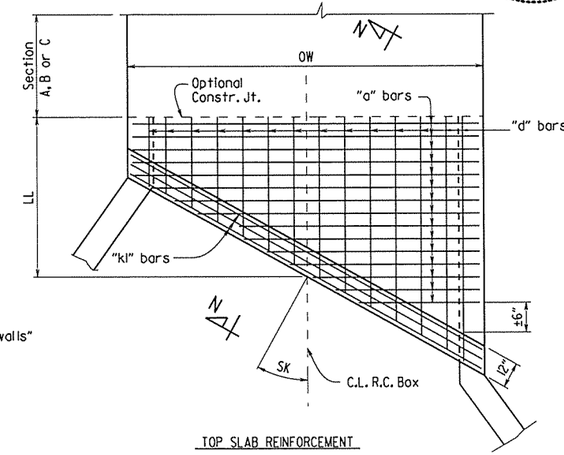
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

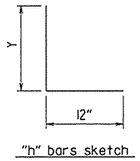


WINGWALL ATTACHMENT

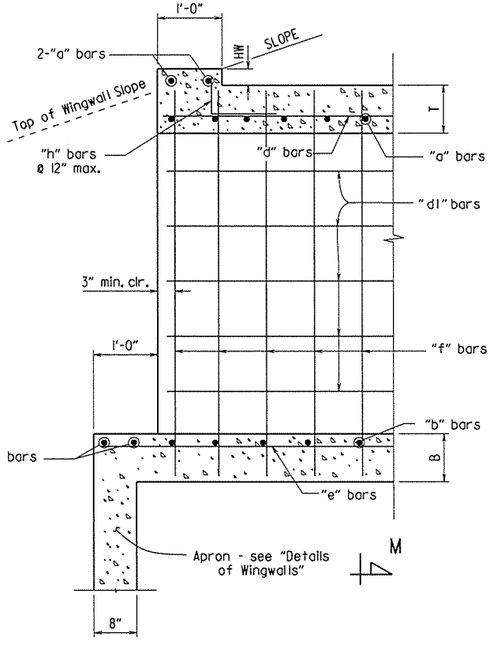
See "Details of Wingwalls" for additional information and wingwall details.



TOP SLAB REINFORCEMENT

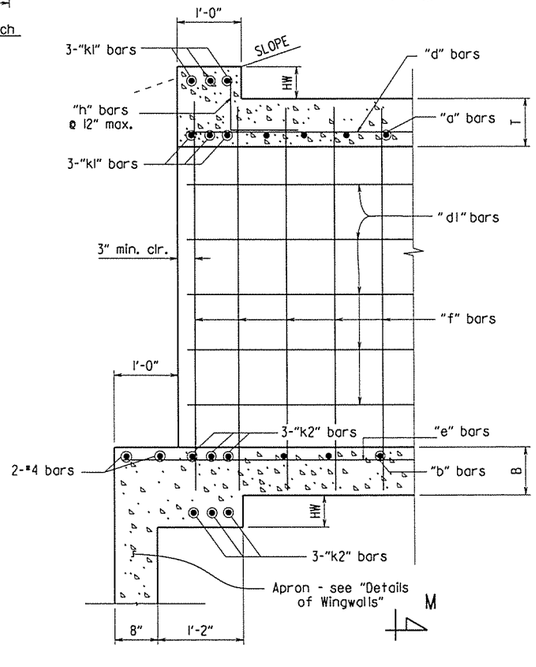


"h" bars sketch



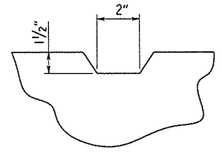
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



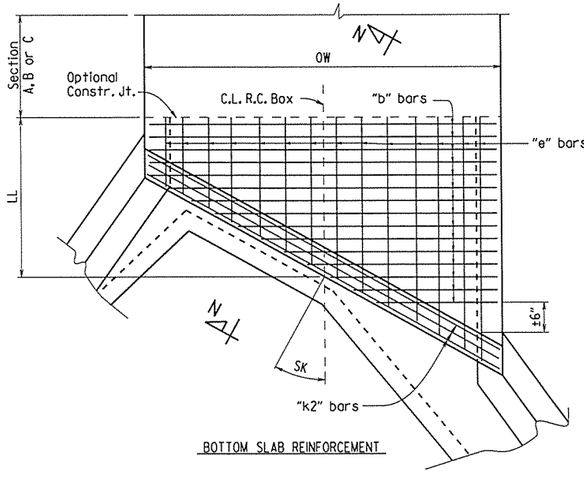
PART LONGITUDINAL SECTION N-N

(Skewed Ends)



TYPICAL KEYWAY DETAIL

(All Construction Joints)



BOTTOM SLAB REINFORCEMENT

SKEWED END SECTION DETAILS

SHEET 2 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF SINGLE BARREL R.C. BOX CULVERT

SPECIAL DETAILS

STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-21-11

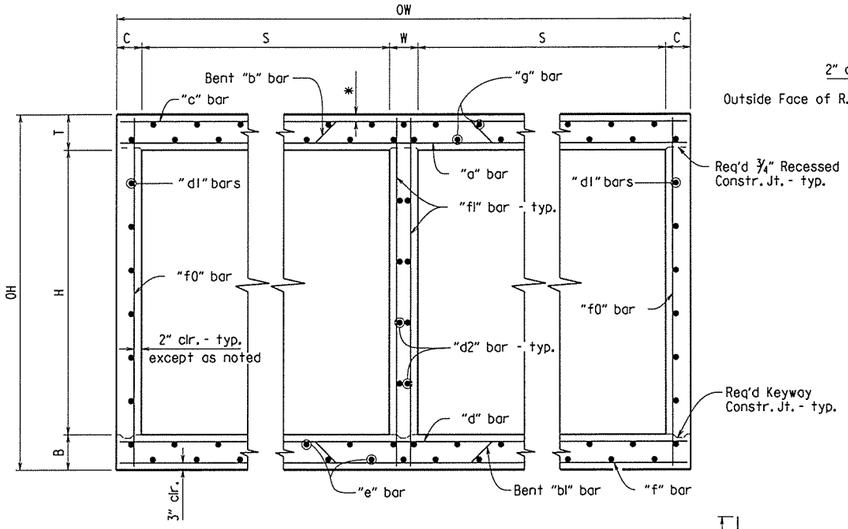
b050214_culvert.dgn

DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	17	311

(1) SPECIAL DETAILS

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

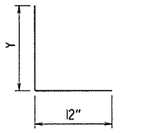
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



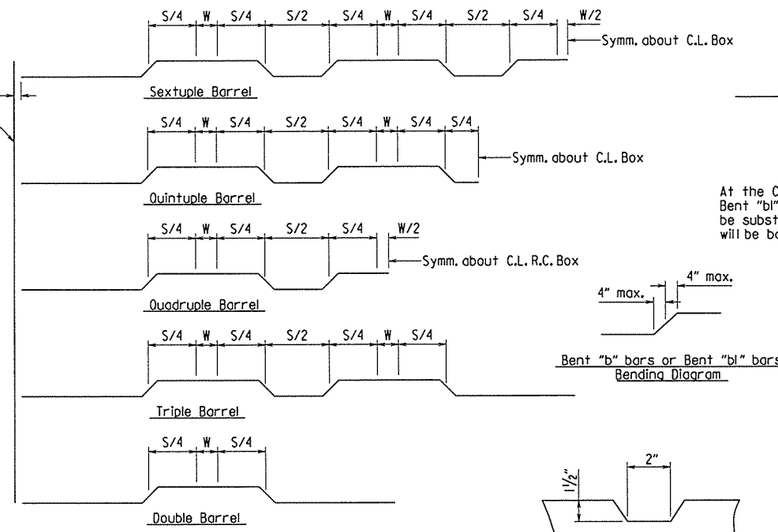
TYPICAL SECTION M-M

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

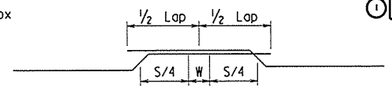
Bottom Slab
Straight "d" bars shall alternate with Bent "b1" bars in top.
Straight "f" bars shall alternate with Bent "b1" bars in bottom.



"h" bars sketch



Bent "b" bars or Bent "b1" bars sketch



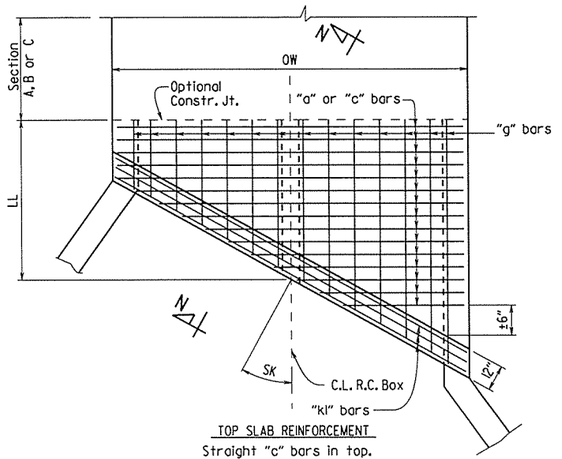
Lap Detail
For Bent "b" bars and Bent "b1" bars

At the Contractor's option in lieu of providing Bent "b" or Bent "b1" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "b1" bar.

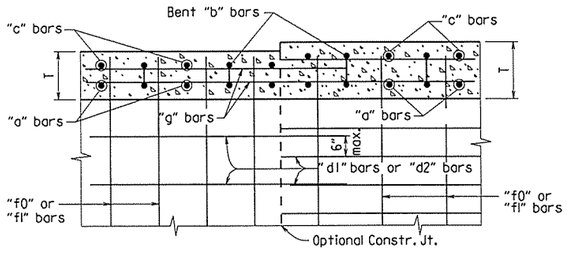
Bent "b" bars or Bent "b1" bars Bending Diagram

TYPICAL KEYWAY DETAIL

(All Construction Joints)



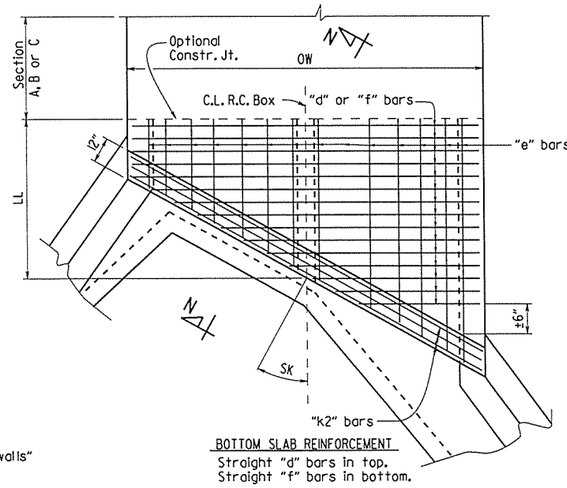
TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



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

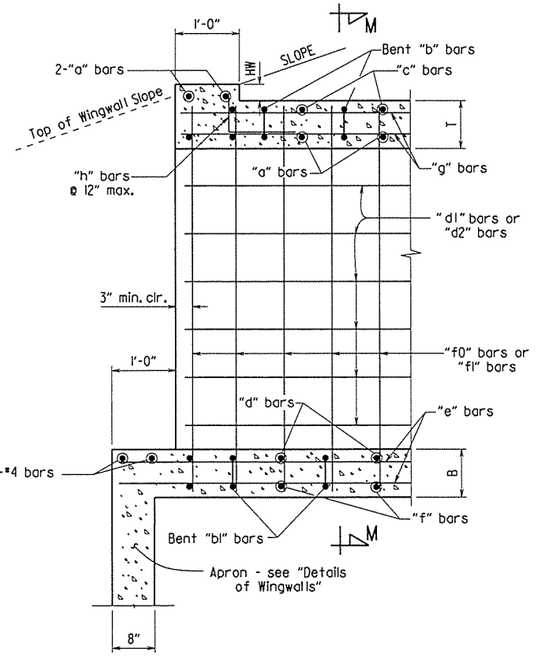
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



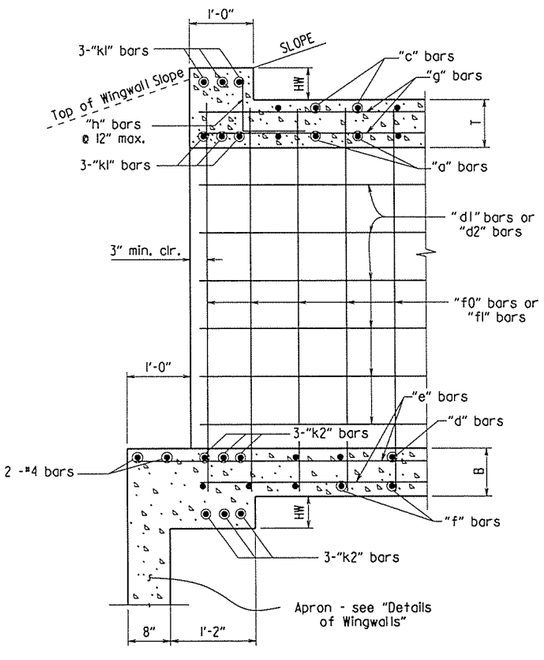
BOTTOM SLAB REINFORCEMENT
Straight "d" bars in top.
Straight "f" bars in bottom.

SKEWED END SECTION DETAILS



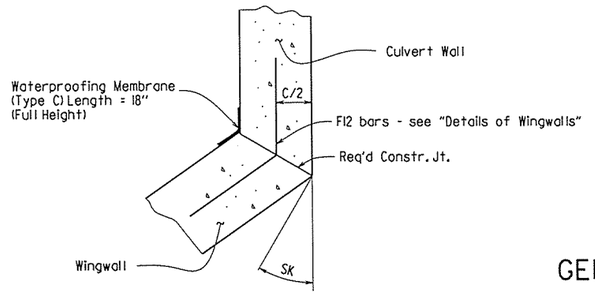
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



PART LONGITUDINAL SECTION N-N

(Skewed Ends)



WINGWALL ATTACHMENT

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

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

DETAILS OF MULTI-BARREL R.C. BOX CULVERT

SPECIAL DETAILS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-21-14
CHARLES R. ELLIS

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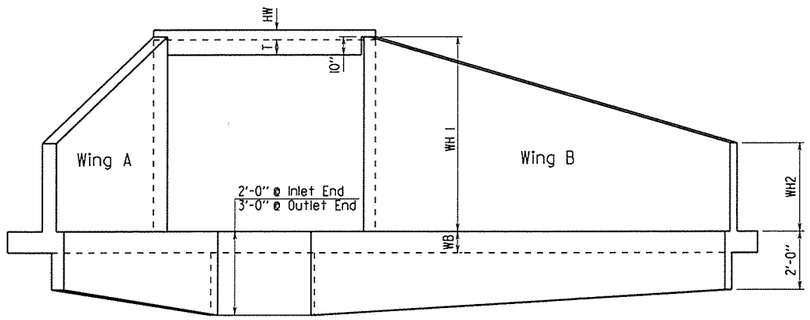
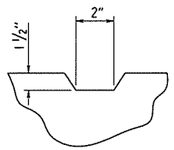
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	18	311

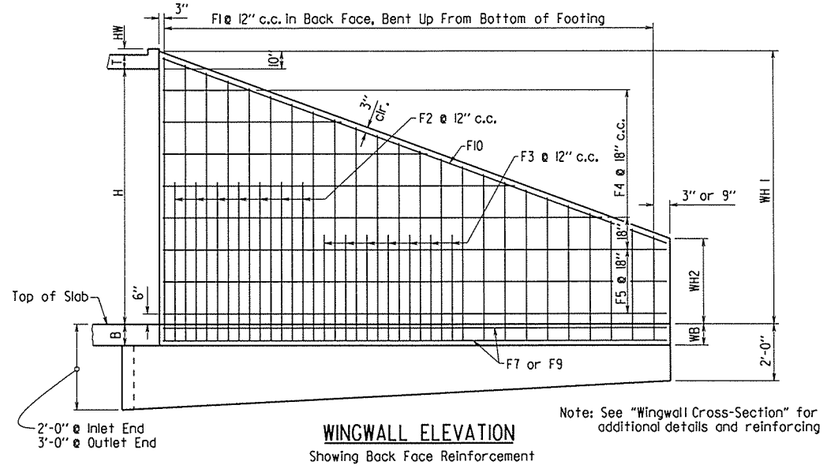
(1) SPECIAL DETAILS



END ELEVATION
Flared Wingwalls Shown



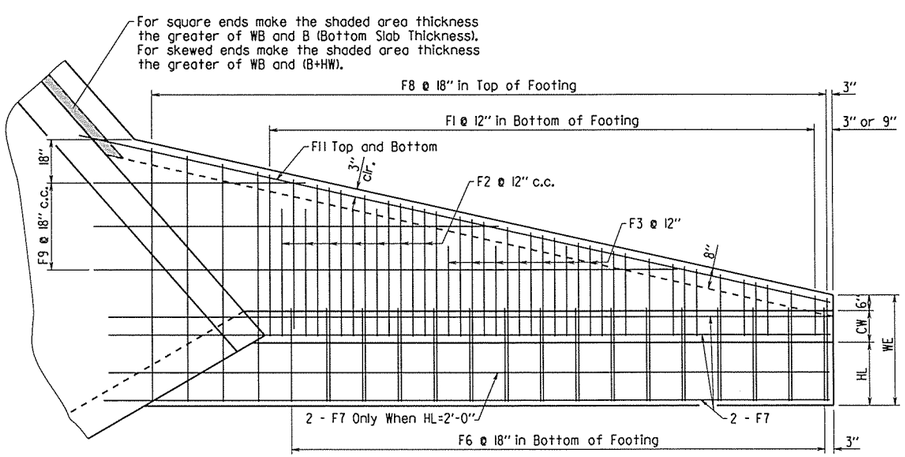
TYPICAL KEYWAY DETAIL
All Construction Joints



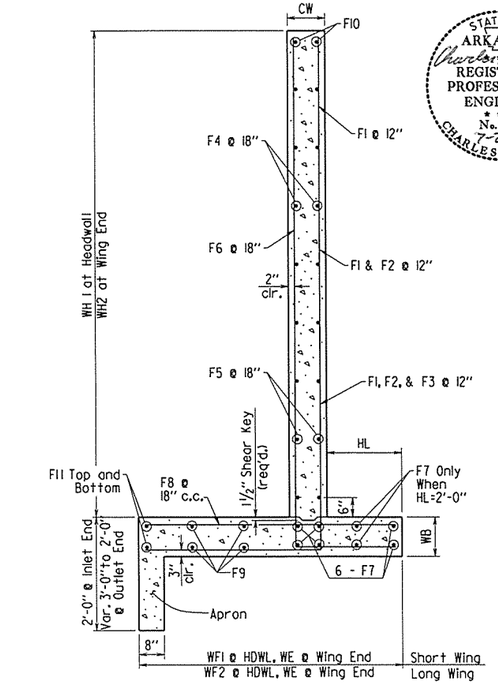
WINGWALL ELEVATION
Showing Back Face Reinforcement

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

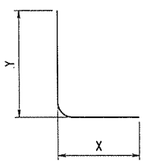
PART PLAN - FLARED WINGWALLS



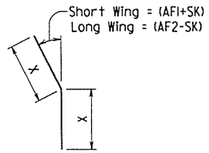
PLAN - FLARED WINGWALLS
Showing Footing Reinforcement



WINGWALL SECTION P-P

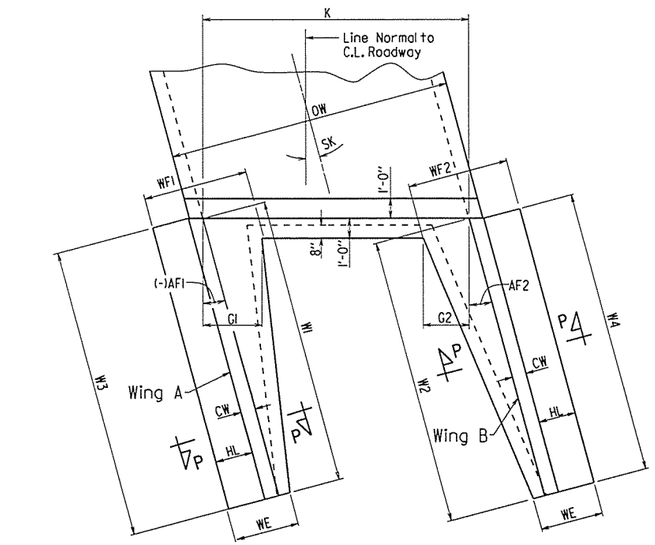


F1, F2, F3, & F6 BARS

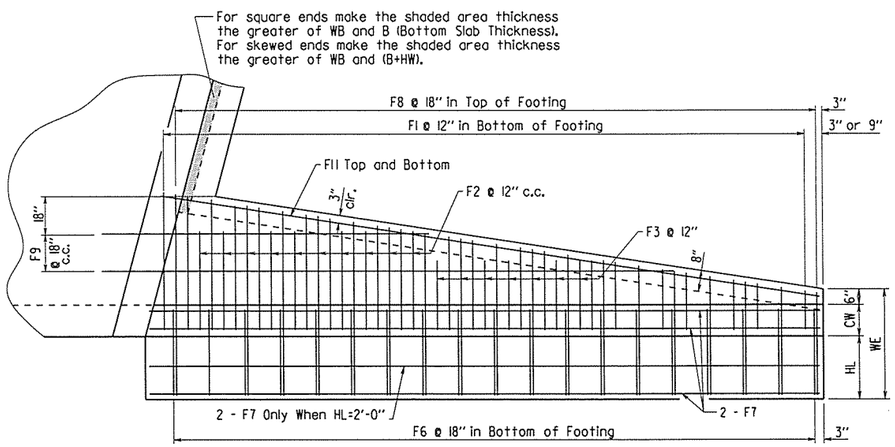


*F12 BAR

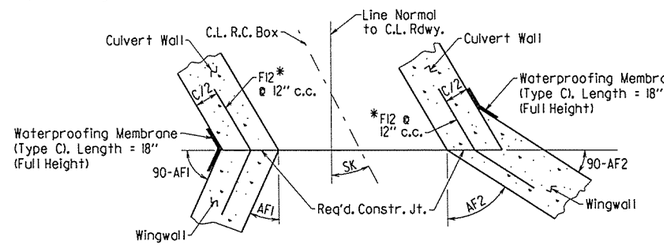
*F12 is a straight bar for parallel wingwalls



PART PLAN - PARALLEL WINGWALLS



PLAN - PARALLEL WINGWALLS
Showing Footing Reinforcement



CONSTRUCTION JOINTS
Flared Wingwalls Shown

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

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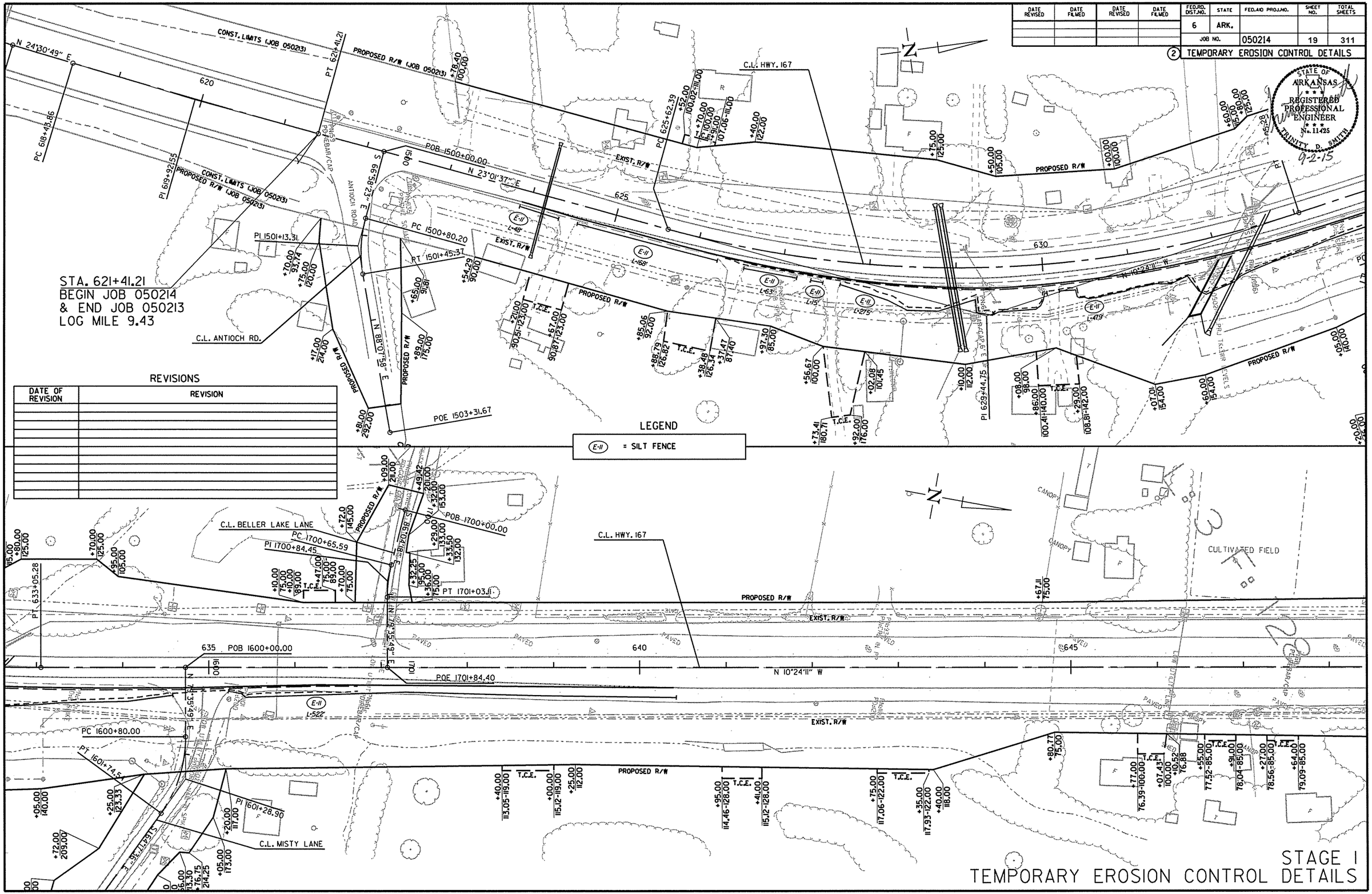
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	19	311

(2) TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-11) = SILT FENCE

STAGE I
TEMPORARY EROSION CONTROL DETAILS

8/8/2014

R050214.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.		050214	20	311

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-6) = ROCK DITCH CHECK

(E-11) = SILT FENCE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 621+41.21
BEGIN JOB 050214
& END JOB 050213
LOG MILE 9.43

8/8/2014

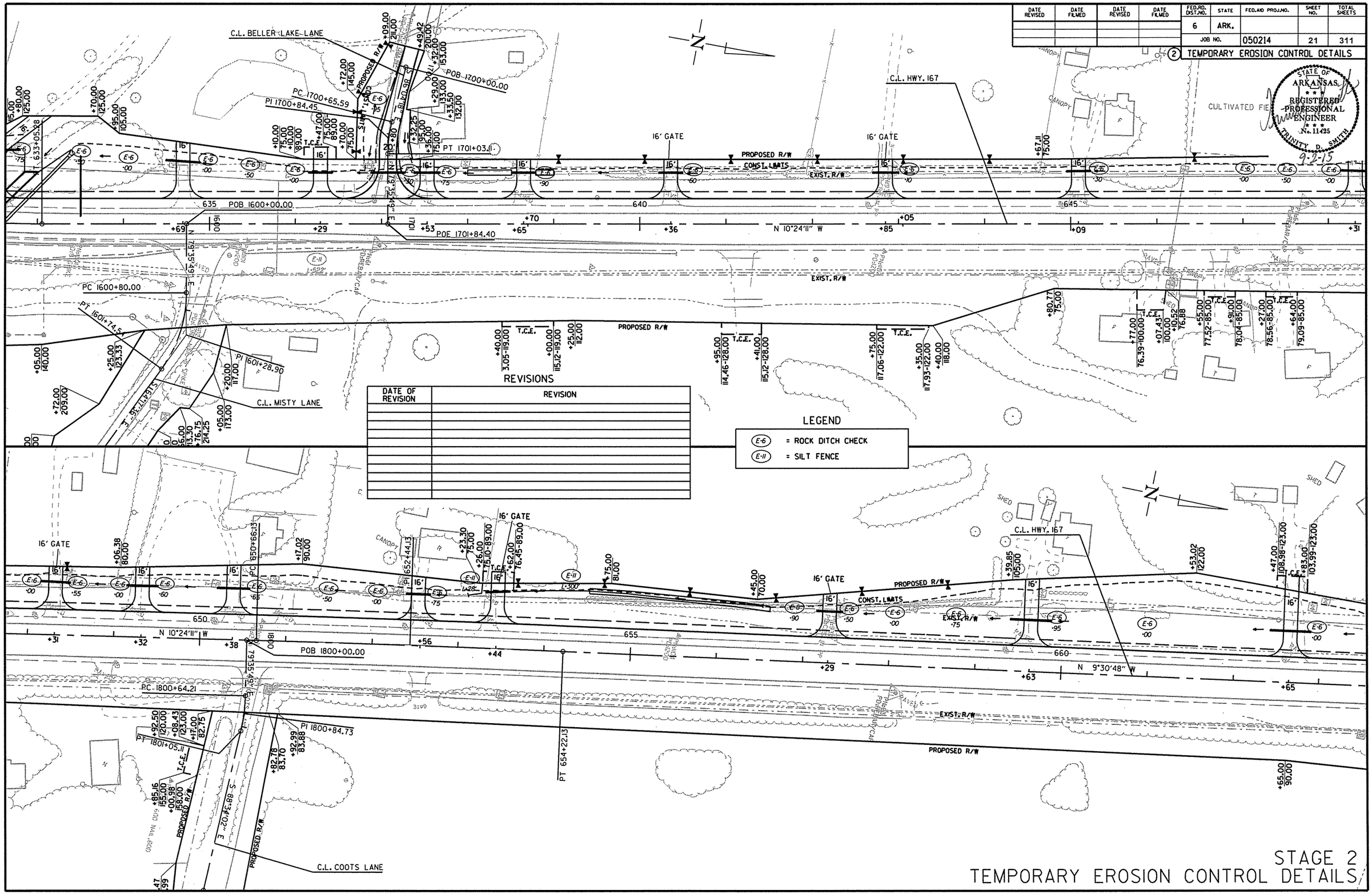
R050214.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	21	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15



REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

6/9/2015

R050214.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.		050214	22	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-15

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

6/9/2015

R050214.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	23	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. RIM ROCK ROAD
PROPOSED R/W
PC 1901+29.53
PI 1902+07.74
PI 2001+42.75
PI 701+24.63
C.L. HWY. 167
PROPOSED R/W
PT 1902+78.50
EXIST. R/W
POE 1903+43.60
PC 697+20.38
EXIST. R/W
N 40°52'21" W
16' GATE
PT 705+03.25
N 5°38'35" W
CONST. LIMITS
PROPOSED R/W
695
700
705

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

C.L. HWY. 167
C.L. SANDTOWN ROAD
PROPOSED R/W
PC 2201+88.58
PI 2201+90.86
PT 2201+93.14
EXIST. R/W
POB 2100+00.00
POE 2202+68.02
N 5°38'35" W
PC 2101+23.91
PT 2101+96.11
PI 2101+60.15
PC 716+73.76
PI 716+51.87
PT 724+28.96
CONST. LIMITS
PROPOSED R/W
N 5°00'47" E
710
715
720
C.L. SUNSET RIDGE ROAD

8/8/2014

R050214.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	24	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

8/8/2014

R050214.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.		050214	25	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. ARROWHEAD LANE
C.L. HWY. 167
PROPOSED R/W
EXIST. R/W
CONST. LIMITS
POE 2306+46.79
S 72°12'15" E
2305
N 17°47'45" E
N 28°01'20" E
PC 759+99.78
PI 765+12.46
PT 770+22.41
PC 780+30.89
16' GATE
DITCH BLOCK
RECREATION STATION
ARROWHEAD LANE
PROP. TV PED.
PROP. TEL PED.
PROP. ELEC. PED.
PROP. TEL PED.
PROP. TEL PED.
PROP. TEL

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.		050214	26	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

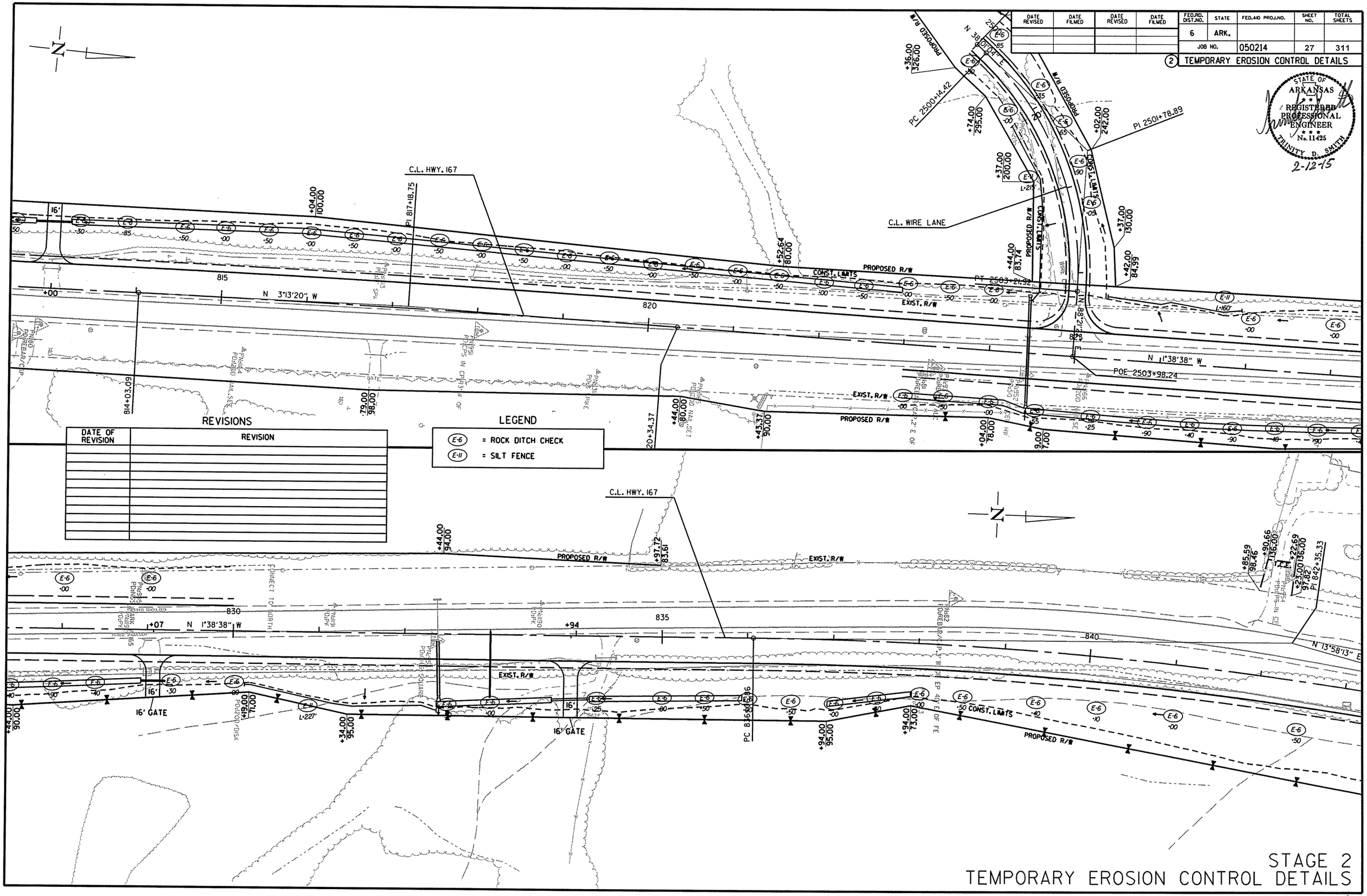
8/8/2014

R050214.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.		050214	27	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-6) = ROCK DITCH CHECK

(E-11) = SILT FENCE

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

8/8/2014

R050214.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.		050214	28	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STA. 861+50.00
END JOB 050214
LOG MILE 13.86

8/8/2014

R050214.DGN

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	29	311

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-6) = ROCK DITCH CHECK

(E-11) = SILT FENCE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 621+41.21
BEGIN JOB 050214
& END JOB 050213
LOG MILE 9.43

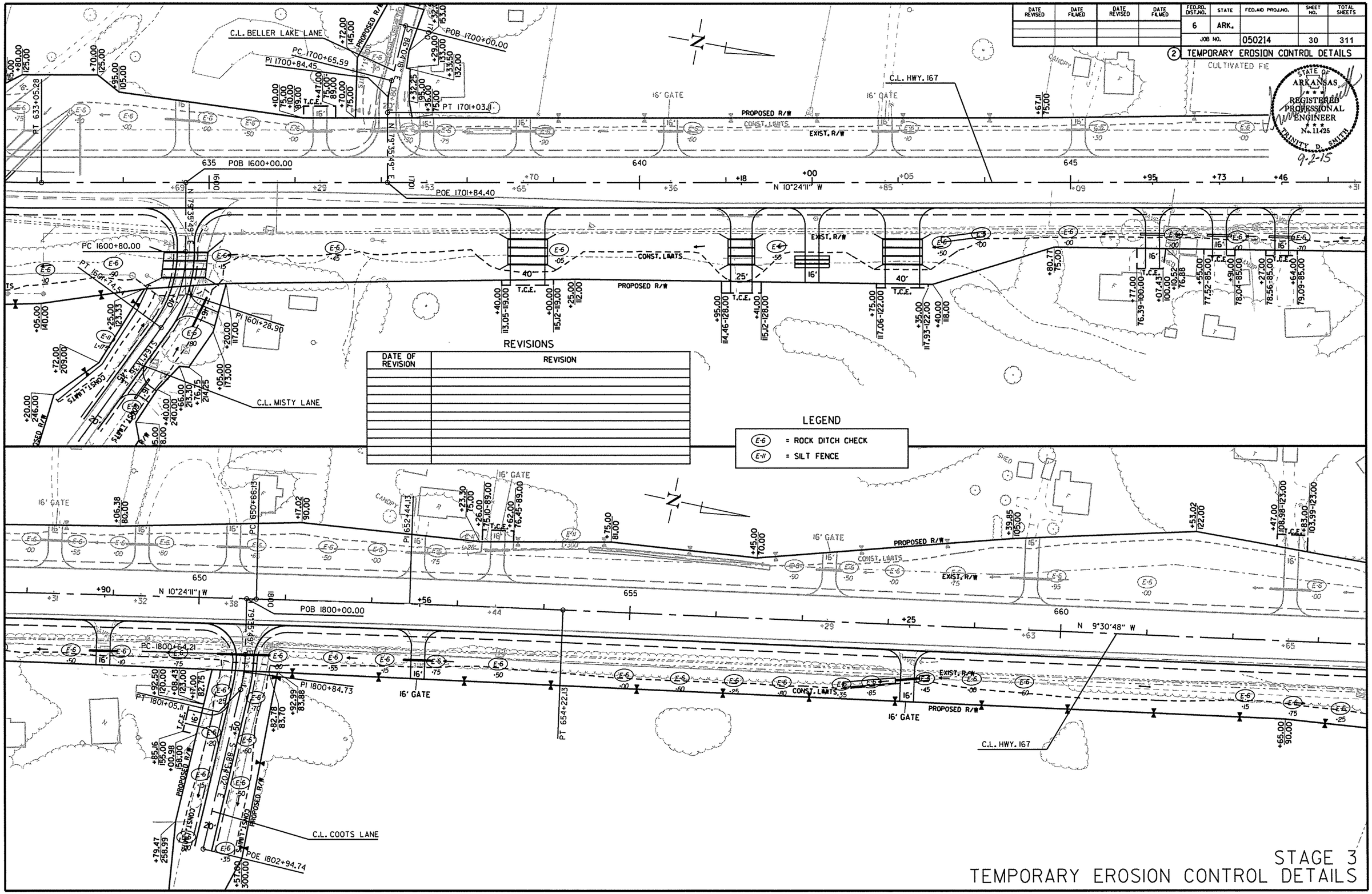
8/8/2014

R050214.DGN

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	30	311

(2) TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-6) = ROCK DITCH CHECK

(E-11) = SILT FENCE

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

6/9/2015

R050214.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.		050214	31	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-15

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

6/9/2015
R050214.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.		050214	32	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. FOX RUN LANE
C.L. RIM ROCK ROAD
C.L. HWY. 167
C.L. SANDTOWN ROAD
C.L. SUNSET RIDGE ROAD
PROPOSED R/W
CONST. LIMITS
EXIST. R/W
POB 1900+00.00
PC 2000+78.48
PT 2002+07.76
POE 2002+29.88
PC 1901+29.53
PI 1902+07.74
PT 1902+78.50
POE 1903+43.60
PI 2001+42.75
PI 1701+24.63
POB 2200+00.00
POB 2100+00.00
POE 2202+68.02
PC 2201+88.58
PT 2201+90.86
PC 2101+23.91
PT 2101+96.11
PI 2101+60.15
PC 716+73.76
PT 720+28.96
N 40°52'21" W
N 52°23'08" E
N 5°38'35" W
N 84°21'25" E
N 5°00'47" E

LEGEND

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

REVISIONS

DATE OF REVISION	REVISION

8/8/2014

R050214.DGN

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	33	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. HWY. 167

SHED

+87.76 78.21 | +02.60 75.00 | +00.00 85.00 | +89.00 87.56-124.00 T.C.E. | +31.00 88.12-124.00 | +34.00 89.52-143.00 T.C.E. | +83.00 90.18-143.00

E-11 L-88 | E-11 L-650 | +95.26 105.64 PT 731+18.77 | +95.14 105.13 | +50.04 10.00

16' | E-6 ·00 ·20 ·30 ·75 ·80 ·85 ·95 ·00 ·25 ·45 ·50 ·55 ·70 ·75 ·80 ·85 ·95 ·00 ·25 ·75 ·25 ·75 ·25 ·65

PAVED

725 | 730 | 735

+55 +17 +09 +11 +45 N 5°00'47" E +15 +12 +18 +60 +65

EXIST. R/W | CONST. LIMITS | PROPOSED R/W

N 17°47'45" E

PC 731+85.39

PT 736+50.22

+20.00 97.00 | +70.00 90.00 | +55.00 109.00 | +10.00 109.00 | +73.00 145.00 | +57.00 175.00 | +45.00 181.00 | +83.00 149.00 | +87.67 140.00 | +58.23 88.59

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

C.L. HWY. 167

+81.56 95.00 | +59.06 100.00 | +58.10 110.00 | +03.56 90.00 | +48.56 83.00

PROPOSED R/W | EXIST. R/W | CONST. LIMITS

740 (167) | 745 | 750

E +82 +09 | N 17°47'45" E | +82 +53

+58.23 88.59 | +98.56 80.00 | +58.56 101.00 | +43.56 120.00 | +43.56 120.00 | +38.56 96.00 | +42.22 80.00

16' GATE | 16' GATE | 16' GATE

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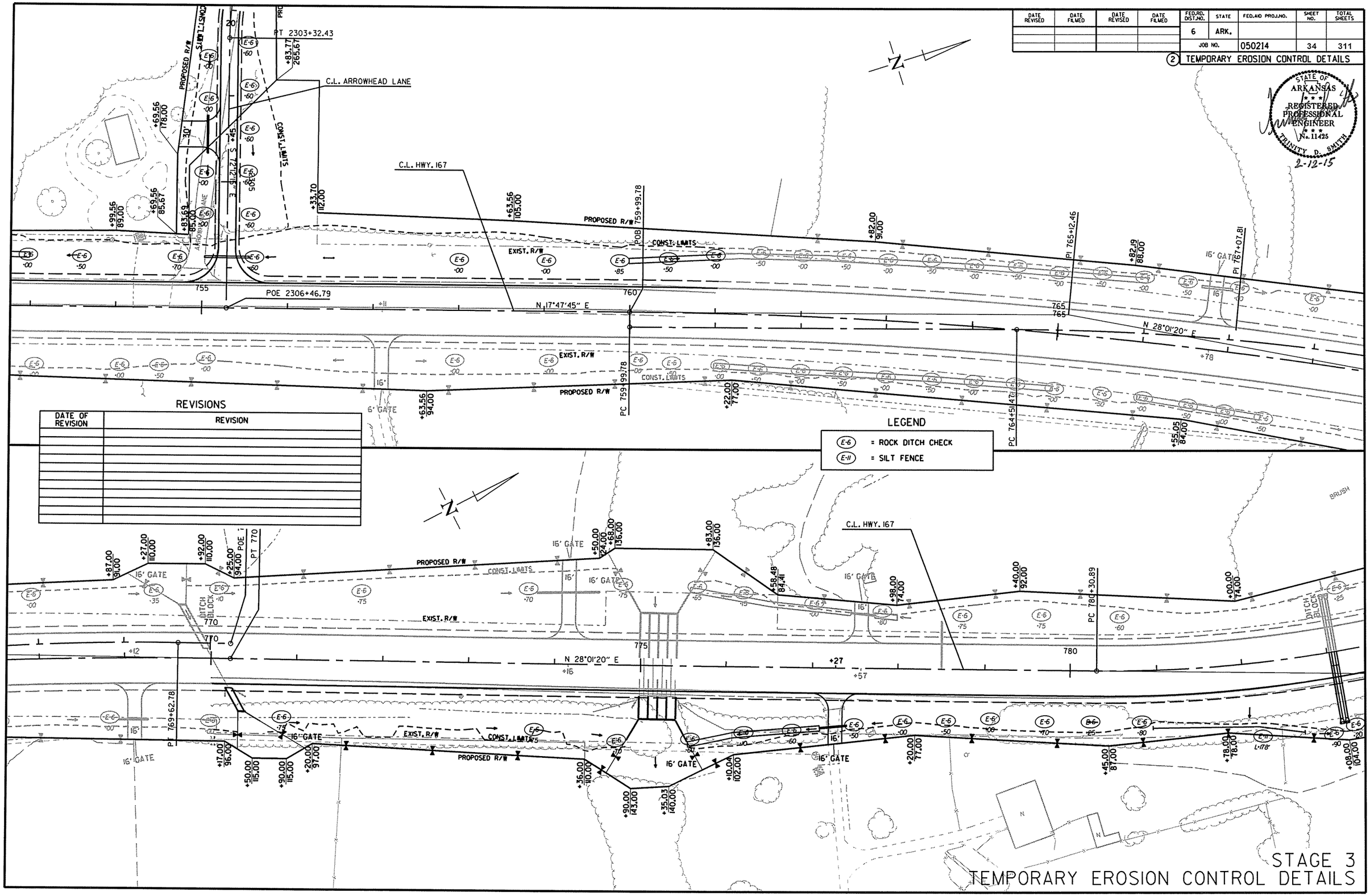
STAGE 3
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050214	34	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

8/8/2014

R050214.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.		050214	35	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

8/8/2014

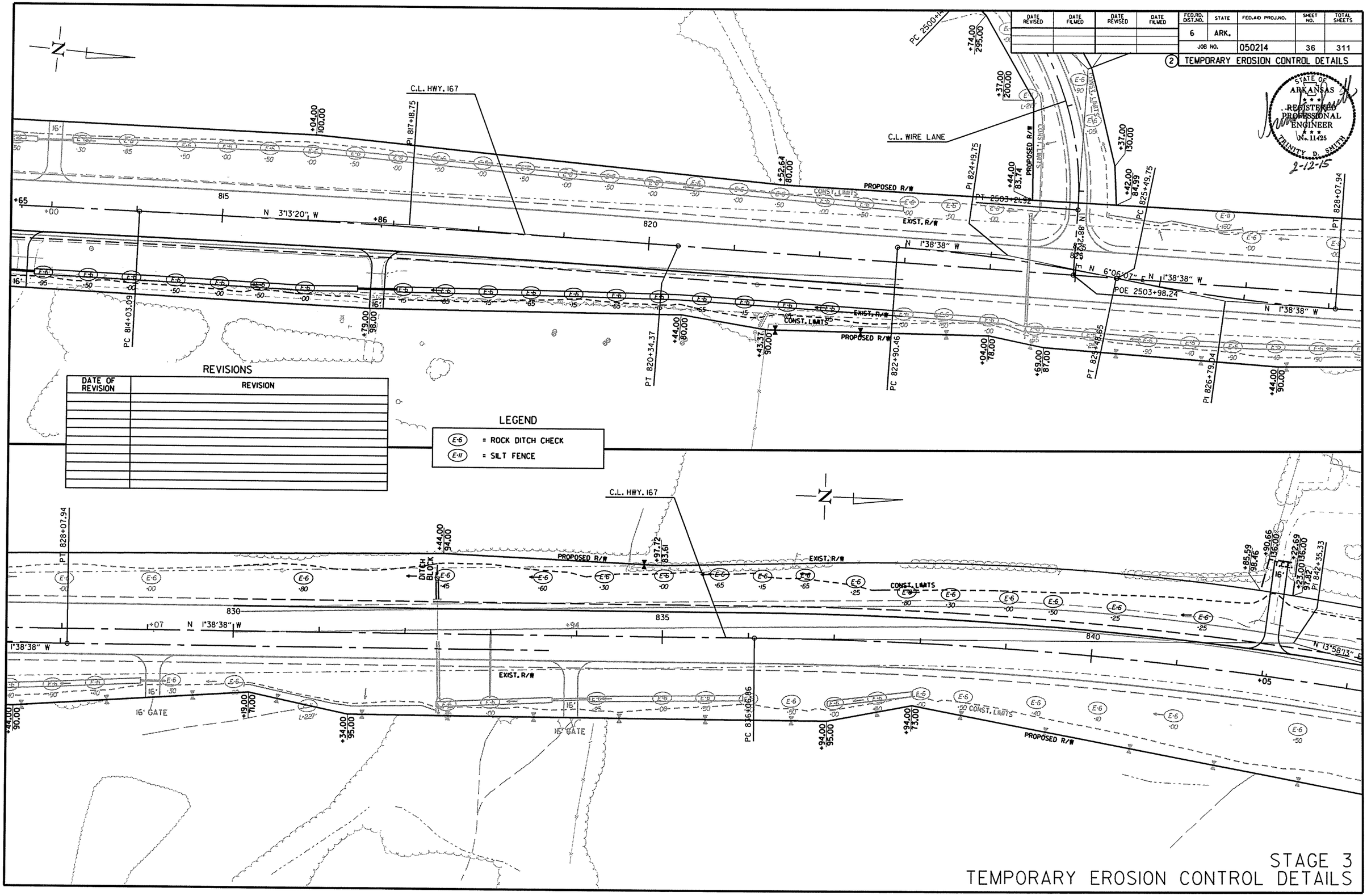
R050214.DGN

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	36	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

8/8/2014

R050214.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.		050214	37	311

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. HWY. 167

PROPOSED R/W
CONST. LIMITS
EXIST. R/W
RUINS
SHEDS
16' GATE
PT 848+56.00
PC 855+44.62
PT 856+96.18
PC 862+80.42
PT 864+16.56
PI 863+48.49
PC 868+79.03
PI 871+40.71
N 13°58'13" E
N 14°43'41" E
N 15°04'06" E
N 7°13'50" E
PAVED PARKING
PARKING
CONCRETE
SMALL SHOPS C
VACANT

REVISIONS

DATE OF REVISION	REVISION

LEGEND

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

STA. 861+50.00
END JOB 050214
LOG MILE 13.86

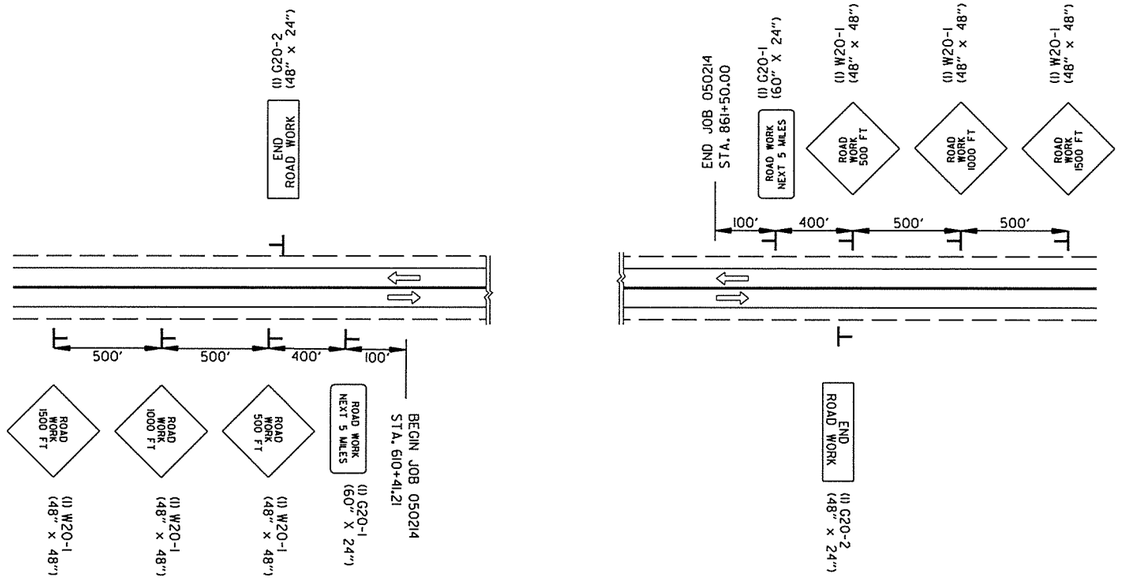
8/8/2014

R050214.DGN

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	38	311

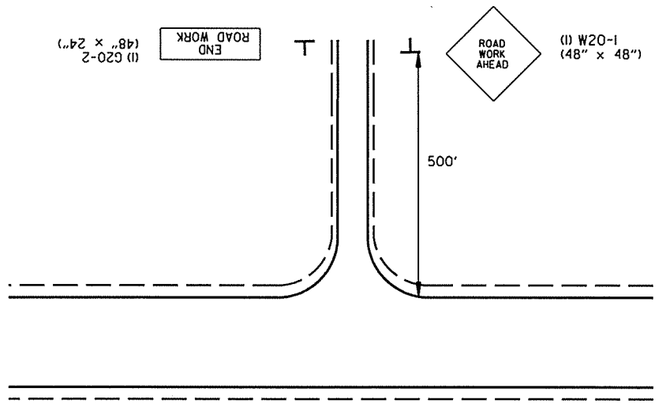
(2) MAINTENANCE OF TRAFFIC DETAILS



ADVANCE WARNING (ALL STAGES)

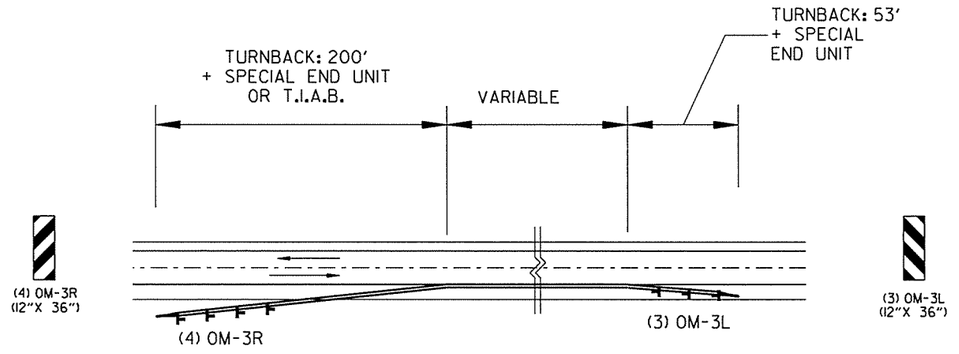
SHOULDER CLOSED — (5) RSP-1 (48" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	
DO NOT PASS — (2) R4-1 (24" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	
BUMP — (2) W8-1 (30" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	
(1) W1-4aL (48" X 48")	STAGE 2 STA. 665+05.04 R.M.L. STA. 683+55.04 L.M.L.	STAGE 3 STA. 619+21.57 R.M.L. STA. 634+21.78 L.M.L. STA. 754+99.78 R.M.L. STA. 775+23.55 L.M.L.
(1) W1-4aR (48" X 48")	STAGE 2 STA. 618+90.03 R.M.L. STA. 645+39.77 L.M.L.	STAGE 3 STA. 629+79.75 R.M.L. STA. 644+79.75 L.M.L. STA. 665+05.04 R.M.L. STA. 683+53.04 L.M.L. STA. 817+90.46 R.M.L. STA. 833+07.94 L.M.L.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



ADVANCE WARNING - SIDE ROADS (ALL STAGES)

STA. 622+20.00, ANTIOCH ROAD
STA. 634+73.20, MISTY LANE
STA. 637+07.20, BELLER LAKE LANE
STA. 650+55.00, COOTS LANE
STA. 697+95.00, RIM ROCK ROAD
STA. 697+95.00, FOX RUN LANE
STA. 713+80.00, SUNSET RIDGE ROAD
STA. 714+91.75, SANDTOWN ROAD
STA. 755+28.56, ARROWHEAD LANE
STA. 794+45.56, FOREST LANE
STA. 825+97.66, WIRE LANE
NOTE: ALL STATIONS BASED OFF HWY. 167.



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

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

DETAIL OF OBJECT MARKERS AT PRECAST CONCRETE BARRIER TURNBACKS

1/30/2015

R050214.DGN

ADVANCE WARNING
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.		050214	39	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



(1) ROAD CLOSED — (I) R11-2 (48" X 30")

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

(2) ROAD CLOSED 0.60 MILES AHEAD LOCAL TRAFFIC ONLY — (I) R11-3a (60" X 30")

8' BARR. TYP. III LT.

(3) MISTY LANE — (I) D3 (36"x12")

DETOUR AHEAD — (I) W20-2 (48" X 48")

(4) MISTY LANE — (I) D3 (36"x12")

DETOUR — (I) M4-8 (24" X 12")

(I) M6-1 (21" X 15")

(5) MISTY LANE — (I) D3 (36"x12")

DETOUR — (I) M4-8 (24" X 12")

(I) M6-1 (21" X 15")

MISTY LANE DETOUR
MAINTENANCE OF TRAFFIC DETAILS

10/29/2014

R050214.DGN

STAGE I CONSTRUCTION SEQUENCE

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

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

CONSTRUCT TEMPORARY WIDENING OF HWY. 167 AND CROSS DRAINS AS SHOWN; RT. OF C.L. FROM STA. 623+89.90 TO STA. 640+39.75.

STAGE I QUANTITIES

SIGNS = 489.5 SQ. FT.
TRAFFIC DRUMS = 31 EACH
VERTICAL PANELS = 31 EACH
FURNISHING AND INSTALLING P.C.C.B. = 246 LIN. FT.

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.		050214	40	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11435
TRINITY D. SMITH
2-12-15

STA. 621+41.21
BEGIN JOB 050214
& END JOB 050213
LOG MILE 9.43

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

VERTICAL PANELS SPACED 55' ON CENTER

FURNISH AND INSTALL 220' P.C.C.B. + (2) SPECIAL END UNITS

4" WHITE SKIP CONSTRUCTION PAVEMENT MARKING

8/8/2014

R050214.DGN

STAGE I
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.		050214	41	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STAGE 2 CONSTRUCTION SEQUENCE

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

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

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

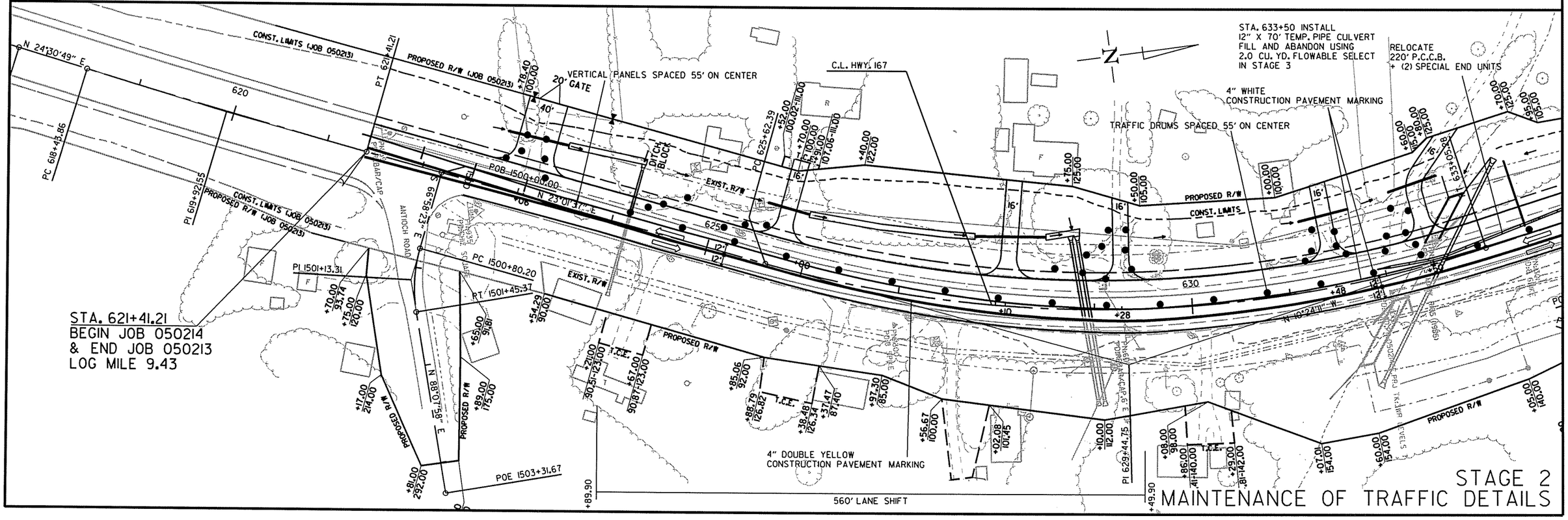
USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 55' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

CONSTRUCT PORTIONS OF HWY. 167 AND CROSS DRAINS AS SHOWN: LT. OF C.L. FROM STA. 621+41.21 TO STA. 670+05, RT. & LT. OF C.L. FROM STA. 670+05 TO STA. 678+55.04, RT. OF C.L. FROM STA. 678+55.04 TO STA. 761+00, LT. & RT. OF C.L. FROM STA. 761+00 TO STA. 770+00, LT. OF C.L. FOR STA. 770+00 TO STA. 823+00, LT. & RT. OF C.L. FROM STA. 823+00 TO STA. 830+00, AND RT. OF C.L. FROM STA. 830+00 TO STA. 861+50.00.

STAGE 2 QUANTITIES

SIGNS = 615.5 SQ. FT.
TRAFFIC DRUMS = 848 EACH
VERTICAL PANELS = 192 EACH
FURNISHING AND INSTALLING P.C.C.B. = 778 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 246 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS = 97547 LIN. FT.

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

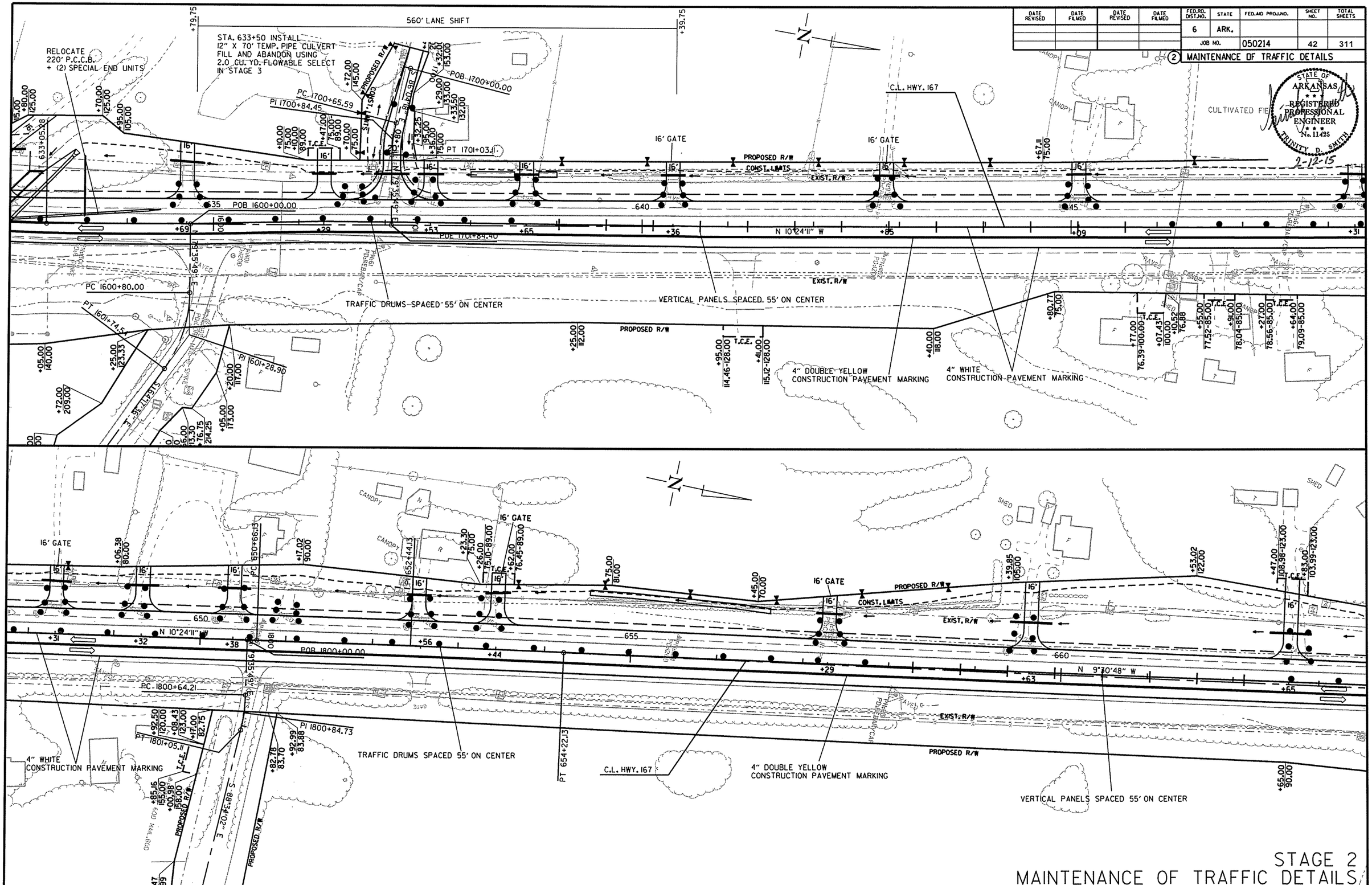


8/8/2014

R050214.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.		050214	42	311

(2) MAINTENANCE OF TRAFFIC DETAILS



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

2-12-15

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

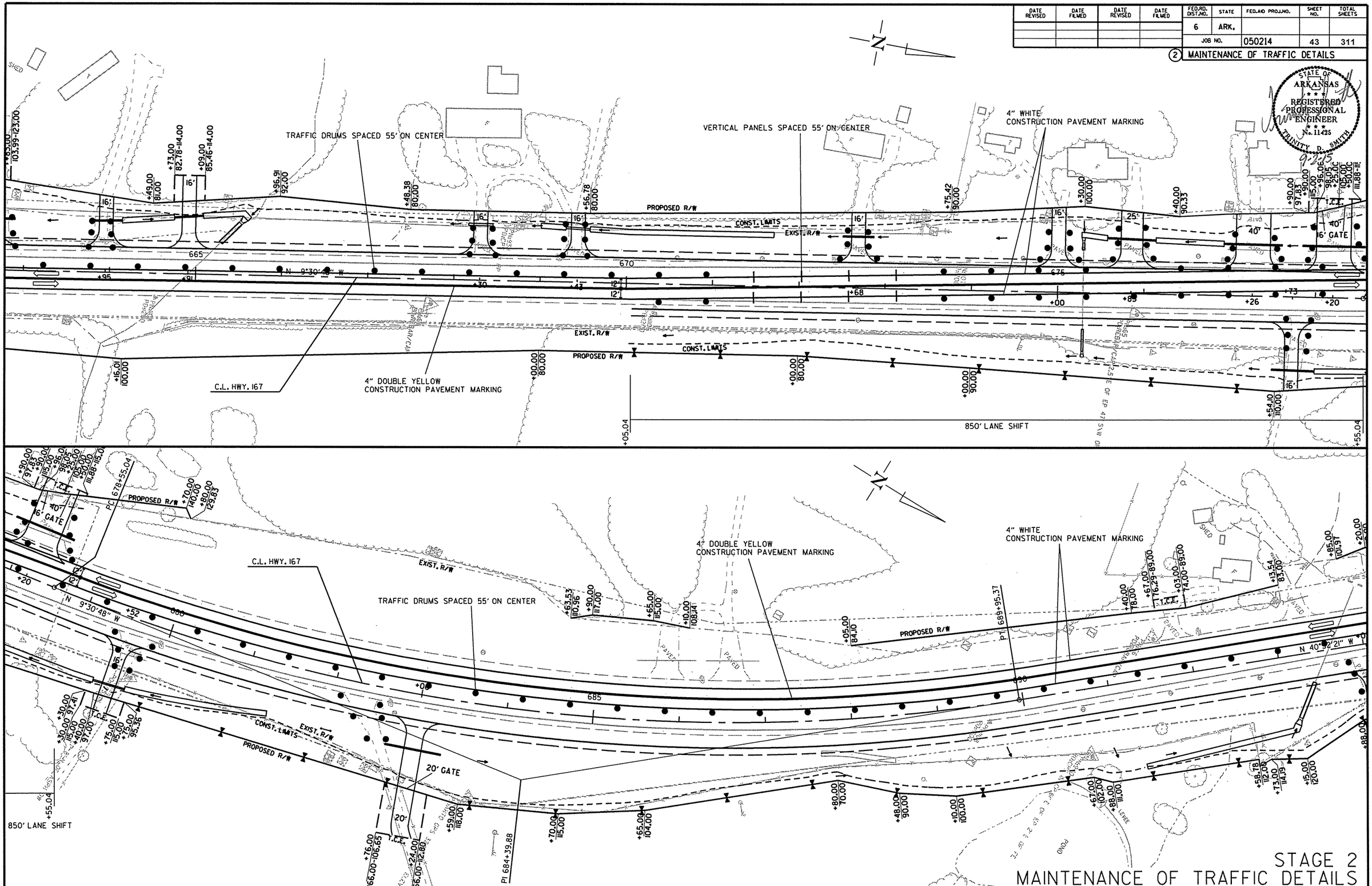
8/8/2014

R050214.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.		050214	43	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15



STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

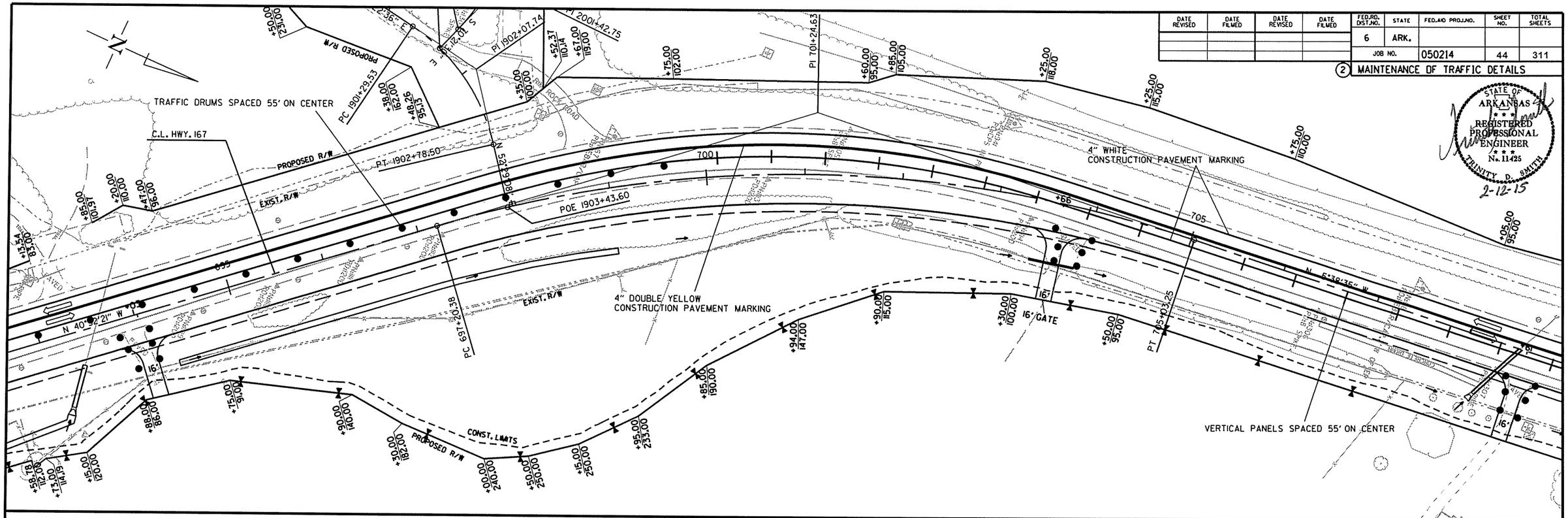
6/9/2015

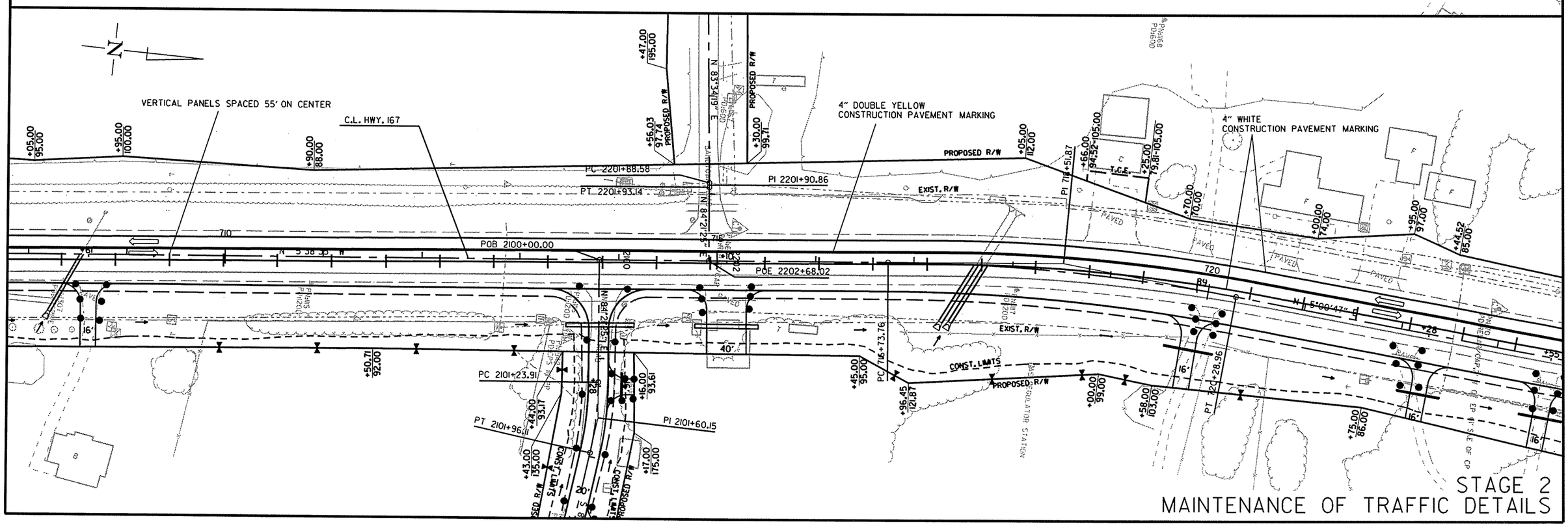
R050214.DGN

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.		050214	44	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15





STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

8/8/2014

R050214.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.		050214	45	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

VERTICAL PANELS SPACED 55' ON CENTER

TRAFFIC DRUMS SPACED 55' ON CENTER

C.L. HWY. 167

EXIST. R/W

PROPOSED R/W

4" WHITE CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

CONST. LIMITS

16' GATE

STA. 740+50 INSTALL 12" X 66' TEMP. PIPE CULVERT FILL AND ABANDON USING 1.9 CU. YD. FLOWABLE SELECT IN STAGE 3

FURNISH AND INSTALL 220' P.C.C.B. + (2) SPECIAL END UNITS

8/8/2014

R050214.DGN

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	46	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

C.L. HWY. 167

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

16' GATE

PC 759+99.78

PI 765+12.46

N 17°47'45" E

N 28°01'20" E

4" WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

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

PT 770+22.41

DITCH BLOCK

STA. 778+50 INSTALL
12" X 54' TEMP. PIPE CULVERT
FILL AND ABANDON USING
1.6 CU. YD. FLOWABLE SELECT
IN STAGE 3

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

PC 780+30.89

8/8/2014

R050214.DGN

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	47	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

TRAFFIC DRUMS SPACED 55' ON CENTER

DITCH BLOCK

C.L. HWY. 167

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

PI 788+64.07

N 28°01'20" E

N 3°13'20" W

PI 784+58.12

POB 2400+00.00

PC 2400+88.09

PT 2401+01.58

PI 2400+94.84

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

STA. 807+50 INSTALL
12" X 69' TEMP. PIPE CULVERT
FILL AND ABANDON USING
2.0 CU. YD. FLOWABLE SELECT
IN STAGE 3

TRAFFIC DRUMS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

8/8/2014

R050214.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.		050214	48	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

C.L. HWY. 167

16' GATE

STA. 833+00 INSTALL 12" X 77' TEMP. PIPE CULVERT FILL AND ABANDON USING 2.2 CU. YD. FLOWABLE SELECT IN STAGE 3

8/8/2014

R050214.DGN

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	49	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

4" WHITE CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

C.L. HWY. 167

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

TRAFFIC DRUMS SPACED 55' ON CENTER

16' GATE

VERTICAL PANELS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

VERTICAL PANELS SPACED 55' ON CENTER

STA. 861+50.00
END JOB 050214
LOG MILE 13.86

8/8/2014

R050214.DGN

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	50	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

STAGE 3 CONSTRUCTION SEQUENCE

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

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

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

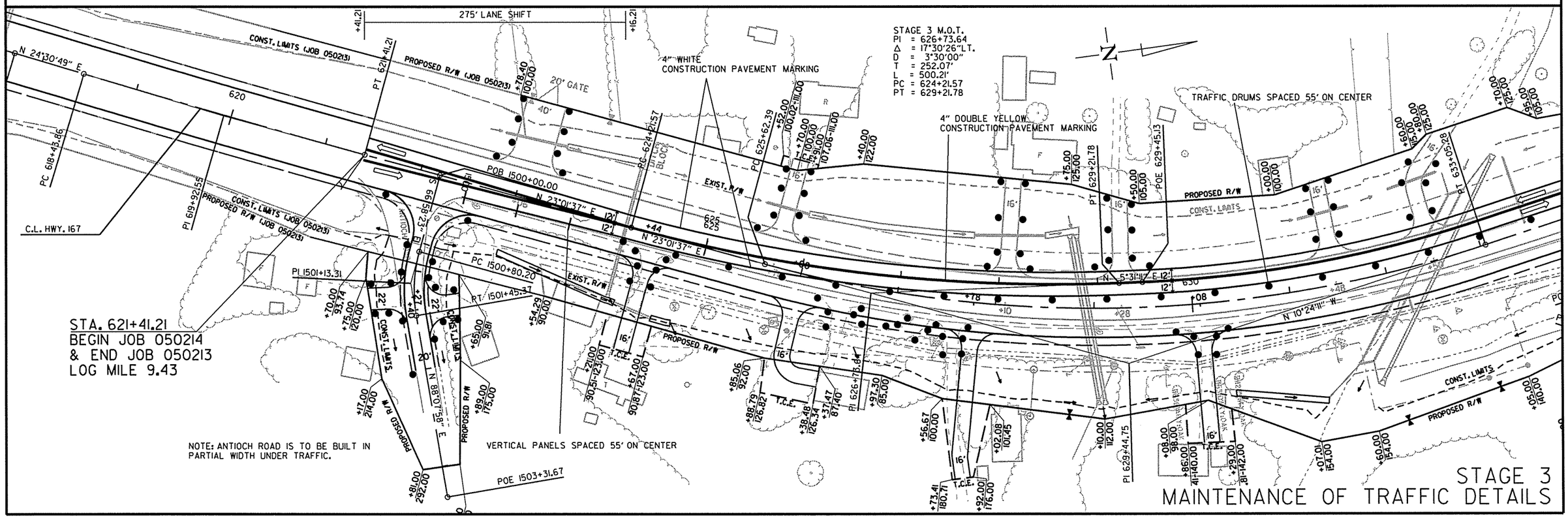
USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 55' ON CENTER TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

CONSTRUCT PORTIONS OF HWY. 167 AND CROSS DRAINS AS SHOWN: RT. OF C.L. FROM STA. 621+41.21 TO STA. 670+05, LT. OF C.L. FROM STA. 678+55.04 TO STA. 761+00, RT. OF C.L. FOR STA. 770+00 TO STA.823+00, AND LT. OF C.L. FROM STA. 830+00 TO STA. 861+50.00.

STAGE 3 QUANTITIES

SIGNS = 628.5 SQ. FT.
TRAFFIC DRUMS = 1209 EACH
VERTICAL PANELS = 192 EACH
CONSTRUCTION PAVEMENT MARKINGS = 97867 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 8409 LIN. FT.

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



R050214.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.		050214	51	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

STA. 633+50 IN PLACE
12" X 70' TEMP. PIPE CULVERT
FILL AND ABANDON USING
2.0 CU. YD. FLOWABLE SELECT

400' LANE SHIFT

PROPOSED R/W

POB 1700+00.00

PC 1700+65.59

PI 1700+84.45

PT 1701+03.11

VERTICAL PANELS SPACED 55' ON CENTER

4" DOUBLE YELLOW
CONSTRUCTION PAVEMENT MARKING

4" WHITE
CONSTRUCTION PAVEMENT MARKING

16' GATE

CONST. LIMITS

EXIST. R/W

POB 1600+00.00

POE 1701+84.40

N 10°24'11" W

PC 1600+80.00

PT 1601+74.51

PI 1601+28.90

TRAFFIC DRUMS SPACED 55' ON CENTER

C.L. HWY. 167

STA. 642+00 INSTALL
TRP. 48" X 40' TEMP. PIPE CULVERT
CONSTRUCT APPROACH ON RT. = 330 CU. YDS. COMP. EMB.
REMOVE UPON COMPLETION OF DRIVE @ STA. 641+18

TRAFFIC DRUMS SPACED 55' ON CENTER

4" DOUBLE YELLOW
CONSTRUCTION PAVEMENT MARKING

VERTICAL PANELS SPACED 55' ON CENTER

4" WHITE
CONSTRUCTION PAVEMENT MARKING

16' GATE

PROPOSED R/W

CONST. LIMITS

EXIST. R/W

POB 1800+00.00

PC 1800+64.21

PI 1800+84.73

PT 1801+05.11

PT 1654+22.13

C.L. HWY. 167

N 9°50'48" W

6/9/2015

R050214.DGN

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	52	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-9-15

4" WHITE CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

850' LANE SHIFT

16' GATE

20' GATE

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

C.L. HWY. 167

N 9°30'48" W

N 40°52'21" W

6/9/2015

R050214.DGN

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	53	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. HWY. 167
PROPOSED R/W
CONST. LIMITS
EXIST. R/W
PC 1901+29.53
PT 1902+78.50
PI 1902+07.74
PI 2001+42.75
POF 1903+43.60
PC 697+20.38
N 52°29'08" E
N 40°52'21" W +03
N 5°38'35" W
695
700
705
TRAFFIC DRUMS SPACED 55' ON CENTER
VERTICAL PANELS SPACED 55' ON CENTER
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
4" WHITE CONSTRUCTION PAVEMENT MARKING
16' GATE
PT 705+03.25
PI 701+24.63

4" WHITE CONSTRUCTION PAVEMENT MARKING
C.L. HWY. 167
PROPOSED R/W
CONST. LIMITS
EXIST. R/W
PC 2201+88.58
PT 2201+93.14
PI 2201+90.86
N 84°12'25" E
N 8°33'19" E
POB 2100+00.00
POE 2202+68.02
N 5°38'35" W
N 5°00'47" E
710
715
720
4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING
VERTICAL PANELS SPACED 55' ON CENTER
PC 2101+23.91
PT 2101+96.11
PI 2101+60.15
PC 716+73.76
PT 720+28.96
T.C.E.
PAVED

8/8/2014

R050214.DGN

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	54	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

VERTICAL PANELS SPACED 55' ON CENTER

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

4" WHITE CONSTRUCTION PAVEMENT MARKING

C.L. HWY. 167

EXIST. R/W

PROPOSED R/W

CONST. LIMITS

PC 731+85.39

PT 736+50.22

N 17°47'45" E

STA. 740+50 IN PLACE
12" X 66' TEMP. PIPE CULVERT
FILL AND ABANDON USING
1.9 CU. YD. FLOWABLE SELECT

16' GATE

8/8/2014

R050214.DGN

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		050214	55	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
TRINITY D. SMITH
No. 11425
2-12-15

STAGE 3 M.O.T.
PI = 767+07.81
Δ = 10°13'35"RT.
D = 2°00'00"
T = 256.34'
L = 511.31'
PC = 764+51.47
PT = 769+62.78

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

C.L. HWY. 167

POE 2306+46.79

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

16' GATE

STA. 778+50 IN PLACE
12" X 54' TEMP. PIPE CULVERT
FILL AND ABANDON USING
1.6 CU. YD. FLOWABLE SELECT

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

DITCH BLOCK

BRUSH

8/8/2014

R050214.DGN

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	56	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

TRAFFIC DRUMS SPACED 55' ON CENTER

DITCH BLOCK

BRUSH

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

C.L. HWY. 167

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

N 28°01'20" E

PI 784+58.12

PT 788+64.07

N 3°13'20" W

POB 2400+00.00

N 86°55'38" E

PC 2400+88.09

PT 2401+01.58

PI 2400+94.84

4" WHITE CONSTRUCTION PAVEMENT MARKING

STA. 807+50 IN PLACE
12" X 69' TEMP. PIPE CULVERT
FILL AND ABANDON USING
2.0 CU. YD. FLOWABLE SELECT

PARKING

CANOPY

VACANT

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

8/8/2014

R050214.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.		050214	57	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. HWY. 167

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

PC 814+03.09

PT 820+34.37

PC 822+90.46

PT 824+19.75

PT 2503+21.32

PC 825+49.75

PT 828+07.94

PC 2503+98.24

N 3°13'20" W

N 1°38'38" W

N 6°06'07" E

STAGE 3 M.O.T.
PI = 824+19.75
Δ = 7°44'45"RT.
D = 3°00'00"
T = 129.30'
L = 258.19'
PC = 822+90.46
PT = 825+48.65

STAGE 3 M.O.T.
PI = 826+79.04
Δ = 7°44'45"LT.
D = 3°00'00"
T = 129.30'
L = 258.19'
PC = 825+49.75
PT = 828+07.94

PT 828+07.94

C.L. HWY. 167

DITCH BLOCK

16' GATE

PC 836+06.86

PROPOSED R/W

EXIST. R/W

CONST. LIMITS

TRAFFIC DRUMS SPACED 55' ON CENTER

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

STA. 833+00 IN PLACE
12" X 77' TEMP. PIPE CULVERT
FILL AND ABANDON USING
2.2 CU. YD. FLOWABLE SELECT

4" WHITE CONSTRUCTION PAVEMENT MARKING

N 1°38'38" W

N 13°58'13" E

8/8/2014

R050214.DGN

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	58	311

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. HWY. 167

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

4" WHITE CONSTRUCTION PAVEMENT MARKING

TRAFFIC DRUMS SPACED 55' ON CENTER

VERTICAL PANELS SPACED 55' ON CENTER

715' LANE SHIFT

4" WHITE CONSTRUCTION PAVEMENT MARKING

4" DOUBLE YELLOW CONSTRUCTION PAVEMENT MARKING

STA. 861+50.00
END JOB 050214
LOG MILE 13.86

VERTICAL PANELS SPACED 55' ON CENTER

715' LANE SHIFT

8/8/2014

R050214.DGN

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

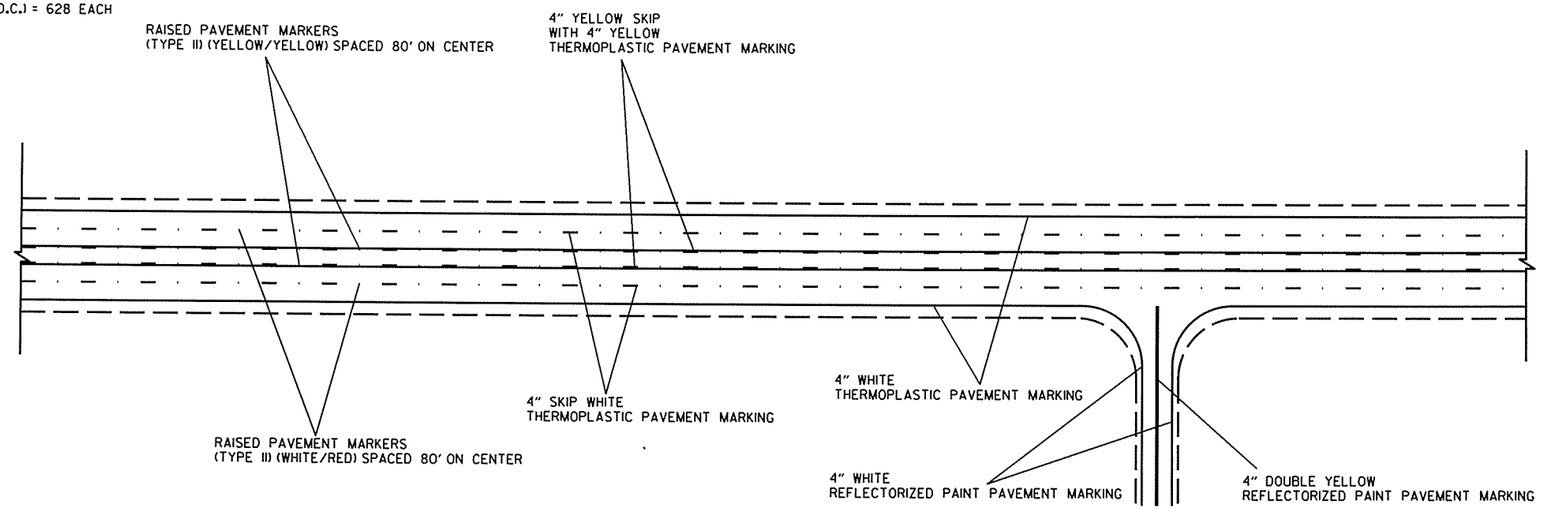
PERMANENT PAVEMENT MARKINGS

THERMOPLASTIC PAVEMENT MARKINGS WHITE (4") = 61596 LIN. FT.
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4") = 56560 LIN. FT.
THERMOPLASTIC PAVEMENT MARKINGS WHITE (8") = 76 LIN. FT.
THERMOPLASTIC PAVEMENT MARKINGS ARROWS = 2 EACH
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (4") = 5930 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKINGS YELLOW (4") = 5550 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) (80' O.C.) = 614 EACH
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) (80' O.C.) = 628 EACH

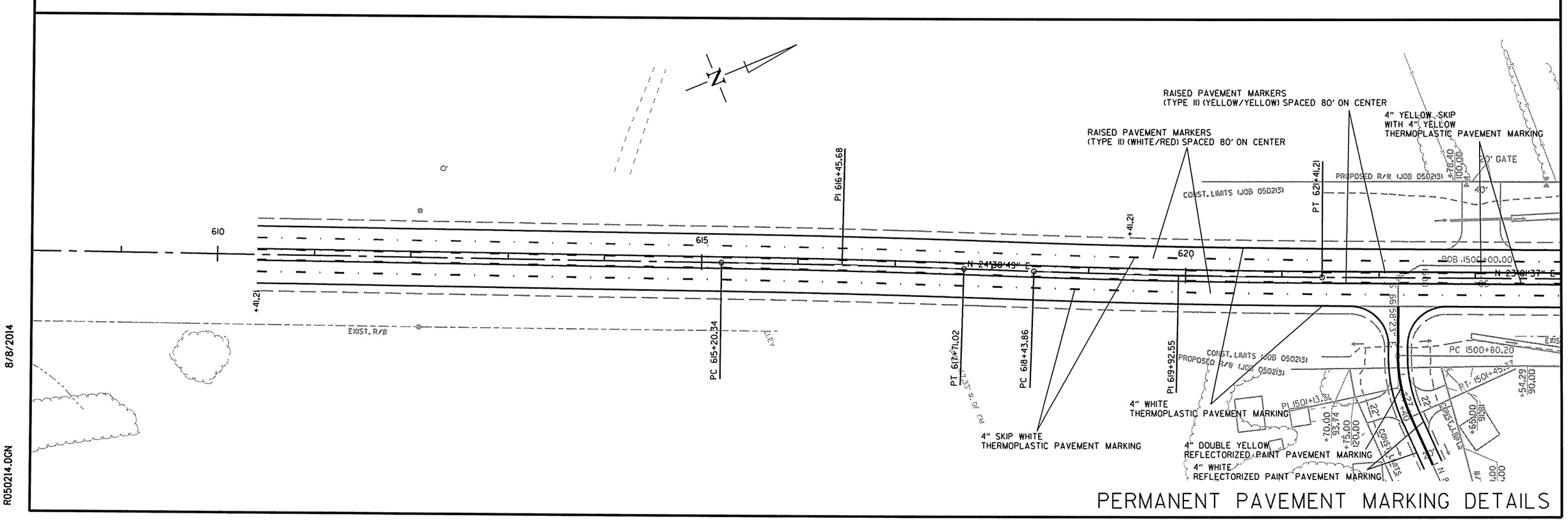
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	59	311

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



TYPICAL PERMANENT PAVEMENT MARKING LAYOUT



PERMANENT PAVEMENT MARKING DETAILS

8/8/2014
R050214.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.		050214	60	311

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

RAISED PAVEMENT MARKERS (TYPE II) (WHITE/RED) SPACED 80' ON CENTER

4" YELLOW SKIP WITH 4" YELLOW THERMOPLASTIC PAVEMENT MARKING

4" WHITE THERMOPLASTIC PAVEMENT MARKING

RAISED PAVEMENT MARKERS (TYPE II) (YELLOW/YELLOW) SPACED 80' ON CENTER

8" WHITE THERMOPLASTIC PAVEMENT MARKING

4" SKIP WHITE THERMOPLASTIC PAVEMENT MARKING

ARROW THERMOPLASTIC PAVEMENT MARKING

ARROW THERMOPLASTIC PAVEMENT MARKING

720' LANE TAPER

PERMANENT PAVEMENT MARKING DETAILS

8/8/2014

R050214.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.		050214	61	311

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER
											RIGHT	LEFT		
			LIN. FT. - EACH				NO.	SQ. FT.	EACH				LIN. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0						
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0						
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0						
W20-1	ROAD WORK AHEAD	48"x48"	11	11	11	11	11	176.0						
G20-2	END ROAD WORK	48"x24"	13	13	13	13	13	104.0						
G20-1	ROAD WORK NEXT 5 MILES	60"x24"	2	2	2	2	2	20.0						
W1-4AR	REVERSE CURVE RT.	48"x48"		2	6	6	6	96.0						
W1-4AL	REVERSE CURVE LT.	48"x48"		2	4	4	4	64.0						
R11-2	ROAD CLOSED	48"x30"			2	2	2	20.0						
R11-3a	ROAD CLOSED X.X MILES AHEAD/LOCAL TRAFFIC ONLY	60"x30"			1	1	1	12.5						
OM-3L	OBJECT MARKER	12"x36"	3	12		12	12	36.0						
OM-3R	OBJECT MARKER	12"x36"	4	16		16	16	48.0						
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0						
RSP-1	SHOULDER CLOSED	48"x30"	5	5	5	5	5	50.0						
W8-1	BUMP	30"x30"	2	2	2	2	2	12.5						
D3	MISTY LANE	36"X12"			6	6	6	18.0						
W20-2	DETOUR AHEAD	48"x48"			2	2	2	32.0						
M4-8	DETOUR	24"x12"			4	4	4	8.0						
M6-1	HORIZONTAL ARROW	21"x15"			4	4	4	8.8						
	VERTICAL PANELS		31	192	192	192			192					
	TRAFFIC DRUMS		31	848	1215	1215				1215				
	TYPE III BARRICADE-RT. (8')				2	2					16			
	TYPE III BARRICADE-LT. (8')				3	3						24		
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		246	778		1024							1024	
	RELOCATING PRECAST CONCRETE BARRIER			246		246								246
TOTALS:								**811.8**	**192**	**1215**	**16**	**24**	**1024**	**246**

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

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 2	STAGE 3	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKING				REFLECTORIZED PAINT PAVEMENT MARKING	
						TYPE II (WHITE/RED	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	8" WHITE	ARROWS	4" WHITE	4" YELLOW
	LIN. FT. - EACH			LIN. FT.	LIN. FT.	EACH		LIN. FT.			EACH	LIN. FT.	
CONSTRUCTION PAVEMENT MARKINGS	97547	97867		195414									
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		8409			8409								
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)			614			614							
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			628				628						
THERMOPLASTIC PAVEMENT MARKING WHITE (4")			61596					61596					
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")			56560						56560				
THERMOPLASTIC PAVEMENT MARKING WHITE (8")			76							76			
THERMOPLASTIC PAVEMENT MARKING ARROWS			2								2		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")			5930									5930	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")			5550										5550
TOTALS:				**195414**	**8409**	**614**	**628**	**61596**	**56560**	**76**	**2**	**5930**	**5550**

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

6/9/2015

R050214.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	62	311

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

REMOVAL AND DISPOSAL ITEMS

STATION	STATION	LOCATION	DESCRIPTION	CURB AND GUTTER	WALLS	SIGNS	SIGN FOUNDATIONS	CONCRETE SLABS	CONCRETE DITCH PAVING	LUMINAIRE POLE AND FOUNDATION	BUILDINGS	SEPTIC SYSTEM	WELL	TIRES	WASTE
				LIN. FT.	LIN. FT.	EACH	EACH	SQ. YD.	SQ. YD.	EACH	EACH	EACH	EACH	EACH	CU. YD.
628+00		LT.	CLOSE WELL										1		
628+45		RT.	BILLBOARD			1									
629+90		LT.	CLOSE WELL										1		
630+40		LT.	CONCRETE SLAB					157							
634+50		RT.	SIGN			1	1								
634+62		LT.	POST			1									
634+85		LT.	POST			1									
687+63	688+47	RT.	CONCRETE DITCH PAVING						56						
706+51	708+29	RT.	CONCRETE DITCH PAVING						108						
713+55		RT.	SIGN			1	2								
714+15		RT.	SHED								1				
714+60		LT.	SIGN			1	2								
714+80		RT.	SHED								1				
715+00		RT.	HOUSE								1	1			
717+73	717+88	LT.	CONCRETE DITCH PAVING						10						
720+10		LT.	POST			1	1								
721+15		LT.	SLAB					22							
725+34		LT.	LUMINAIRE							1					
725+52		LT.	LUMINAIRE							1					
730+00		RT.	ROCK RETAINING WALL		150										
730+52	731+22	RT.	ROCK RETAINING WALL		120										
730+95	731+60	RT.	ROCK RETAINING WALL		100										
753+90		LT.	SIGN			1	2								
795+60		RT.	SIGN			1	1								
802+45		RT.	SIGN			1	1								
805+40		RT.	BILLBOARD			1	1								
808+20		RT.	LUMINAIRE							1					
809+40		RT.	LUMINAIRE							1					
812+08		RT.	SIGN			2	3								
813+00		RT.	LUMINAIRE							1					
813+18		RT.	SIGN			1	1								
821+40		RT.	BRICK WALL		18										
849+15		RT.	RUINS OF OLD BARN								1				
854+70		RT.	RUINS OF OLD BARN								1				
860+51	861+50	RT.	CURB AND GUTTER	99											
861+57	861+76	LT.	CONCRETE DITCH PAVING						8						
* ENTIRE	PROJECT	TO BE USED IF AND WHERE												10	10
		DIRECTED BY THE ENGINEER													
TOTALS:				99	388	14	15	179	182	5	5	1	2	10	10

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	695.90	444.70	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	172942.60	93277.10	
ENTIRE	PROJECT	STAGE 3-MAIN LANES	47822.80	64196.80	
ENTIRE	PROJECT	APPROACHES	195.00	16180.00	
641+00		TEMPORARY APPROACH	330.00	330.00	
ENTIRE	PROJECT	ANTIOCH ROAD	543.99	1.71	
ENTIRE	PROJECT	MISTY LANE	610.14	436.65	
ENTIRE	PROJECT	BELLER LAKE LANE	54.90	12.59	
ENTIRE	PROJECT	COOTS LANE	184.42	238.12	
ENTIRE	PROJECT	RIM ROCK ROAD	347.53	1040.73	
ENTIRE	PROJECT	FOX RUN LANE	361.64	243.54	
ENTIRE	PROJECT	SUNSET RIDGE ROAD	213.39	41.59	
ENTIRE	PROJECT	SANDTOWN ROAD	159.49	549.74	
ENTIRE	PROJECT	ARROWHEAD LANE	4329.47	1.21	
ENTIRE	PROJECT	FOREST LANE	224.19	117.51	
ENTIRE	PROJECT	WIRE LANE	205.49	1625.52	
1600+95		CHANNEL CHANGE	150.26		
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			25
		DIRECTED BY THE ENGINEER			
TOTALS:			229371.21	178737.51	25

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
621+41.21	635+00.00	LT. AND RT. OF HWY. 167	14	14
635+00.00	637+00.00	RT. OF HWY. 167	2	2
637+00.00	643+00.00	LT. OF HWY. 167	6	6
644+00.00	647+00.00	LT. AND RT. OF HWY. 167	3	3
647+00.00	650+00.00	RT. OF HWY. 167	3	3
650+00.00	652+00.00	LT. AND RT. OF HWY. 167	2	2
652+00.00	654+00.00	RT. OF HWY. 167	2	2
654+00.00	659+00.00	LT. AND RT. OF HWY. 167	5	5
659+00.00	660+00.00	LT. OF HWY. 167	1	1
660+00.00	663+00.00	LT. AND RT. OF HWY. 167	3	3
663+00.00	668+00.00	RT. OF HWY. 167	5	5
669+00.00	675+00.00	RT. OF HWY. 167	6	6
675+00.00	676+00.00	LT. AND RT. OF HWY. 167	1	1
676+00.00	678+00.00	RT. OF HWY. 167	2	2
679+00.00	680+00.00	LT. OF HWY. 167	1	1
692+00.00	695+00.00	LT. OF HWY. 167	3	3
695+00.00	718+00.00	LT. AND RT. OF HWY. 167	23	23
722+00.00	762+00.00	RT. OF HWY. 167	40	40
762+00.00	793+00.00	LT. AND RT. OF HWY. 167	31	31
793+00.00	826+00.00	LT. OF HWY. 167	33	33
827+00.00	846+00.00	RT. OF HWY. 167	19	19
846+00.00	861+48.90	LT. AND RT. OF HWY. 167	16	16
TOTALS:			221	221

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE	GATES
			LIN. FT.	EACH
622+77.78	623+83.69	LT. OF HWY. 167	117	
627+00.00		LT. OF HWY. 167		2
628+40.85	629+19.25	RT. OF HWY. 167	179	
631+89.04	634+45.44	RT. OF HWY. 167	542	
638+78.79	642+76.00	LT. OF HWY. 167	442	
636+89.08		LT. OF HWY. 167	150	
642+84.00		LT. OF HWY. 167		1
642+92.32	644+66.52	LT. OF HWY. 167	199	
646+31.99	648+15.42	LT. OF HWY. 167	183	
647+06.01		RT. OF HWY. 167	19	
648+47.16	649+01.55	LT. OF HWY. 167	54	
650+79.98	677+56.80	RT. OF HWY. 167	3058	
652+48.00		LT. OF HWY. 167		1
653+29.96	659+20.68	LT. OF HWY. 167	633	2
658+20.00		RT. OF HWY. 167		1
667+60.00		RT. OF HWY. 167		1
673+74.92		LT. OF HWY. 167	4	
677+96.06	679+79.36	LT. OF HWY. 167	180	
679+66.52	682+74.25	RT. OF HWY. 167	361	
682+86.05	707+50.75	RT. OF HWY. 167	2753	
698+28.41		RT. OF FOX RUN LANE	191	
698+56.89		LT. OF FOX RUN LANE	169	
701+92.39	714+60.29	LT. OF HWY. 167	1290	
709+76.54	713+31.46	RT. OF HWY. 167	406	
715+24.40	717+27.73	LT. OF HWY. 167	245	
716+63.52	719+88.09	RT. OF HWY. 167	402	
720+08.61	720+75.84	RT. OF HWY. 167	151	
731+74.85	774+93.43	RT. OF HWY. 167	4513	1
750+34.00		LT. OF HWY. 167		1
755+47.43		LT. OF ARROWHEAD LANE	216	
761+60.74	766+71.25	LT. OF HWY. 167	523	
766+84.19	796+02.52	LT. OF HWY. 167	3196	
775+46.88	792+14.00	RT. OF HWY. 167	1729	2
794+18.06		RT. OF FOREST LANE	275	
800+78.00	801+69.12	RT. OF HWY. 167	101	
802+10.00	803+80.00	RT. OF HWY. 167	170	
811+22.71	811+37.74	RT. OF HWY. 167	38	
811+68.04	812+47.31	RT. OF HWY. 167	79	
813+04.62	820+79.66	RT. OF HWY. 167	871	2
821+45.87	862+23.67	RT. OF HWY. 167	4173	
834+60.90	834+97.72	LT. OF HWY. 167	42	
846+19.00	861+69.12	LT. OF HWY. 167	1673	
TOTAL:			29327	14

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	63	311

(2) QUANTITIES

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
622+96.40	624+24.40	HWY. 167 - RT. OF MAIN LANES	128.00	6	85.33	56.89	0.72
623+38.10	624+18.40	HWY. 167 - LT. OF MAIN LANES	80.30	6	53.53	35.69	0.45
624+64.00	624+84.40	HWY. 167 - RT. OF MAIN LANES	20.40	6	13.60	9.07	0.11
625+94.00	627+91.97	HWY. 167 - LT. OF MAIN LANES	197.97	6	131.98	87.99	1.11
628+48.28	628+83.86	HWY. 167 - LT. OF MAIN LANES	35.58	6	23.72	15.81	0.20
630+35.12	631+20.35	HWY. 167 - RT. OF MAIN LANES	85.23	6	56.82	37.88	0.48
638+00.00	638+51.00	HWY. 167 - LT. OF MAIN LANES	51.00	6	34.00	22.67	0.29
638+79.00	639+00.00	HWY. 167 - LT. OF MAIN LANES	21.00	6	14.00	9.33	0.12
643+50.00	644+00.00	HWY. 167 - RT. OF MAIN LANES	50.00	6	33.33	22.22	0.28
654+50.00	656+60.00	HWY. 167 - LT. OF MAIN LANES	210.00	6	140.00	93.33	1.18
657+50.03	658+11.02	HWY. 167 - RT. OF MAIN LANES	60.99	6	40.66	27.11	0.34
658+39.02	658+50.00	HWY. 167 - RT. OF MAIN LANES	10.98	6	7.32	4.88	0.06
664+14.06	664+74.00	HWY. 167 - LT. OF MAIN LANES	59.94	6	39.96	26.64	0.34
665+08.00	665+61.95	HWY. 167 - LT. OF MAIN LANES	53.95	6	35.97	23.98	0.30
667+00.00	667+43.90	HWY. 167 - RT. OF MAIN LANES	43.90	6	29.27	19.51	0.25
667+77.90	669+00.00	HWY. 167 - RT. OF MAIN LANES	122.10	6	81.40	54.27	0.68
669+00.00	669+29.01	HWY. 167 - LT. OF MAIN LANES	29.01	6	19.34	12.89	0.16
669+57.01	671+70.00	HWY. 167 - LT. OF MAIN LANES	212.99	6	141.99	94.66	1.19
675+27.06	675+56.87	HWY. 167 - LT. OF MAIN LANES	29.81	6	19.87	13.25	0.17
676+12.88	676+91.98	HWY. 167 - LT. OF MAIN LANES	79.10	6	52.73	35.16	0.44
678+00.00	679+33.63	HWY. 167 - RT. OF MAIN LANES	133.63	6	89.09	59.39	0.75
679+70.37	681+31.00	HWY. 167 - RT. OF MAIN LANES	160.63	6	107.09	71.39	0.90
691+29.82	693+14.45	HWY. 167 - RT. OF MAIN LANES	184.63	6	123.09	82.06	1.03
691+61.80	691+71.25	HWY. 167 - LT. OF MAIN LANES	9.45	6	6.30	4.20	0.05
691+99.25	693+08.34	HWY. 167 - LT. OF MAIN LANES	109.09	6	72.73	48.48	0.61
693+52.55	694+10.45	HWY. 167 - LT. OF MAIN LANES	57.90	6	38.60	25.73	0.32
694+31.00	699+00.00	HWY. 167 - RT. OF MAIN LANES	469.00	6	312.67	208.44	2.63
698+40.58	699+00.00	HWY. 167 - LT. OF MAIN LANES	59.42	6	39.61	26.41	0.33
702+00.00	703+00.00	HWY. 167 - LT. OF MAIN LANES	100.00	6	66.67	44.44	0.56
708+00.00	708+95.97	HWY. 167 - LT. OF MAIN LANES	95.97	6	63.98	42.65	0.54
718+03.84	718+70.00	HWY. 167 - LT. OF MAIN LANES	66.16	6	44.11	29.40	0.37
720+00.00	720+54.35	HWY. 167 - LT. OF MAIN LANES	54.35	6	36.23	24.16	0.30
720+88.34	721+32.34	HWY. 167 - LT. OF MAIN LANES	44.00	6	29.33	19.56	0.25
726+02.63	726+31.02	HWY. 167 - LT. OF MAIN LANES	28.39	6	18.93	12.62	0.16
726+58.95	727+00.00	HWY. 167 - LT. OF MAIN LANES	41.05	6	27.37	18.24	0.23
728+04.60	729+94.37	HWY. 167 - RT. OF MAIN LANES	189.77	6	126.51	84.34	1.06
736+92.83	738+61.57	HWY. 167 - LT. OF MAIN LANES	168.74	6	112.49	75.00	0.95
739+00.00	739+88.93	HWY. 167 - RT. OF MAIN LANES	88.93	6	59.29	39.52	0.50
740+26.93	741+00.00	HWY. 167 - RT. OF MAIN LANES	73.07	6	48.71	32.48	0.41
742+48.13	742+60.00	HWY. 167 - LT. OF MAIN LANES	11.87	6	7.91	5.28	0.07
743+38.85	743+52.16	HWY. 167 - RT. OF MAIN LANES	13.31	6	8.87	5.92	0.07
750+71.56	752+98.56	HWY. 167 - LT. OF MAIN LANES	227.00	6	151.33	100.89	1.27
759+98.56	765+98.56	HWY. 167 - LT. OF MAIN LANES	600.00	6	400.00	266.67	3.36
761+00.00	765+00.00	HWY. 167 - RT. OF MAIN LANES	400.00	6	266.67	177.78	2.24
766+00.00	767+47.65	HWY. 167 - RT. OF MAIN LANES	147.65	6	98.43	65.62	0.83
775+56.00	777+08.57	HWY. 167 - RT. OF MAIN LANES	152.57	6	101.71	67.81	0.85
775+57.46	777+44.46	HWY. 167 - LT. OF MAIN LANES	187.00	6	124.67	83.11	1.05
777+72.43	777+98.56	HWY. 167 - LT. OF MAIN LANES	26.13	6	17.42	11.61	0.15
799+96.56	800+94.00	HWY. 167 - LT. OF MAIN LANES	97.44	6	64.96	43.31	0.55
810+94.00	812+79.00	HWY. 167 - LT. OF MAIN LANES	185.00	6	123.33	82.22	1.04
811+70.00	812+46.00	HWY. 167 - RT. OF MAIN LANES	76.00	6	50.67	33.78	0.43
812+84.00	816+62.92	HWY. 167 - RT. OF MAIN LANES	378.92	6	252.61	168.41	2.12
813+21.00	822+94.00	HWY. 167 - LT. OF MAIN LANES	973.00	6	648.67	432.44	5.45
817+09.08	828+93.00	HWY. 167 - RT. OF MAIN LANES	1183.92	6	789.28	526.19	6.63
832+37.43	833+72.00	HWY. 167 - RT. OF MAIN LANES	134.57	6	89.71	59.81	0.75
834+16.00	835+94.00	HWY. 167 - RT. OF MAIN LANES	178.00	6	118.67	79.11	1.00
836+94.00	837+94.00	HWY. 167 - RT. OF MAIN LANES	100.00	6	66.67	44.44	0.56
845+73.67	846+44.00	HWY. 167 - LT. OF MAIN LANES	70.33	6	46.89	31.26	0.39
845+94.00	847+14.00	HWY. 167 - RT. OF MAIN LANES	120.00	6	80.00	53.33	0.67
848+94.00	851+86.00	HWY. 167 - LT. OF MAIN LANES	292.00	6	194.67	129.78	1.64
852+26.00	852+40.00	HWY. 167 - LT. OF MAIN LANES	14.00	6	9.33	6.22	0.08
852+94.00	853+97.00	HWY. 167 - RT. OF MAIN LANES	103.00	6	68.67	45.78	0.58
853+94.00	854+54.98	HWY. 167 - LT. OF MAIN LANES	60.98	6	40.65	27.10	0.34
854+33.00	855+33.24	HWY. 167 - RT. OF MAIN LANES	100.24	6	66.83	44.55	0.56
854+99.00	855+34.63	HWY. 167 - LT. OF MAIN LANES	35.63	6	23.75	15.84	0.20
862+21.12	862+32.52	HWY. 167 - LT. OF MAIN LANES	11.40	6	7.60	5.07	0.06
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			2000.00	1333.33	16.80
		DIRECTED BY THE ENGINEER					
TOTALS:					**8397.59**	**5598.40**	**70.56**

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

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

REMOVAL AND DISPOSAL OF CULVERTS (BOX 1 OF 2)

STATION	DESCRIPTION	PIPE CULVERTS EACH
623+06	18" X 44' C.M. LT. SIDE DRAIN	1
624+16	24" X 49' R.C. PIPE CULVERT	1
629+22	24" X 72' R.C. PIPE CULVERT	1
623+50	18" X 24' C.M. LT. SIDE DRAIN	1
634+69	18" X 24' C.M. LT. SIDE DRAIN	1
636+62	18" X 24' C.M. LT. SIDE DRAIN	1
637+07	18" X 28' C.M. LT. SIDE DRAIN	1
637+53	18" X 28' C.M. LT. SIDE DRAIN	1
638+65	18" X 28' C.M. LT. SIDE DRAIN	1
640+36	18" X 24' C.M. LT. SIDE DRAIN	1
641+18	24" X 44' C.M. RT. SIDE DRAIN	1
641+18	DBL. 48" X 44' C.M. RT. SIDE DRAIN	2
642+85	18" X 24' C.M. LT. SIDE DRAIN	1
645+09	18" X 28' C.M. LT. SIDE DRAIN	1
645+95	24" X 28' C.M. RT. SIDE DRAIN	1
646+73	24" X 24' C.M. RT. SIDE DRAIN	1
647+46	24" X 28' C.M. RT. SIDE DRAIN	1
648+31	18" X 28' C.M. LT. SIDE DRAIN	1
648+90	18" X 28' C.M. RT. SIDE DRAIN	1
649+32	18" X 28' C.M. LT. SIDE DRAIN	1
650+38	18" X 28' C.M. LT. SIDE DRAIN	1
650+55	18" X 48' C.M. RT. SIDE DRAIN	1
651+00	18" X 28' C.M. LT. SIDE DRAIN	1
652+52	18" X 28' C.M. LT. SIDE DRAIN	1
652+56	18" X 28' C.M. RT. SIDE DRAIN	1
657+29	18" X 28' C.M. LT. SIDE DRAIN	1
659+63	18" X 30' C.M. LT. SIDE DRAIN	1
662+65	18" X 28' C.M. LT. SIDE DRAIN	1
663+95	18" X 28' C.M. LT. SIDE DRAIN	1
667+61	18" X 28' C.M. RT. SIDE DRAIN	1
668+30	18" X 28' C.M. LT. SIDE DRAIN	1
669+43	18" X 28' C.M. LT. SIDE DRAIN	1
672+68	18" X 30' C.M. LT. SIDE DRAIN	1
675+85	18" X 38' C.M. LT. SIDE DRAIN	1
677+26	18" X 60' C.M. LT. SIDE DRAIN	1
677+73	18" X 28' C.M. RT. SIDE DRAIN	1
678+20	18" X 64' C.M. LT. SIDE DRAIN	1
679+52	18" X 44' C.M. RT. SIDE DRAIN	1
685+85	18" X 68' C.M. LT. SIDE DRAIN	1
686+59	18" X 62' C.M. LT. SIDE DRAIN	1
693+30	18" X 28' C.M. LT. SIDE DRAIN	1
698+77	24" X 48' C.M. LT. SIDE DRAIN	1
703+66	28" X 34' C.M. RT. SIDE DRAIN	1
708+54	24" X 97' R.C. PIPE CULVERT	1
713+80	48" X 52' C.M. RT. SIDE DRAIN	1
714+68	DBL. 48" X 50' LT. SIDE DRAIN	2
715+10	48" X 60' C.M. RT. SIDE DRAIN	1
717+69	DBL. 42" X 102' R.C. PIPE CULVERT	2
720+74	18" X 36' C.M. LT. SIDE DRAIN	1
SUBTOTAL (BOX 1 OF 2):		**52**

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

REMOVAL AND DISPOSAL OF CULVERTS (BOX 2 OF 2)

STATION	DESCRIPTION	PIPE CULVERTS EACH
721+67	18" X 67' C.M. LT. SIDE DRAIN	1
722+28	18" X 28' C.M. RT. SIDE DRAIN	1
723+55	18" X 28' C.M. RT. SIDE DRAIN	1
724+17	18" X 28' C.M. LT. SIDE DRAIN	1
725+09	18" X 28' C.M. RT. SIDE DRAIN	1
725+45	18" X 28' C.M. LT. SIDE DRAIN	1
726+11	24" X 28' C.M. RT. SIDE DRAIN	1
726+45	18" X 28' C.M. LT. SIDE DRAIN	1
728+10	48" X 78' R.C. PIPE CULVERT	1
729+12	18" X 33' C.M. LT. SIDE DRAIN	1
730+18	18" X 28' C.M. RT. SIDE DRAIN	1
738+82	18" X 33' C.M. LT. SIDE DRAIN	1
740+09	18" X 28' C.M. RT. SIDE DRAIN	1
750+53	24" X 24' C.M. LT. SIDE DRAIN	1
750+53	24" X 25' C.M. RT. SIDE DRAIN	1
755+29	24" X 37' C.M. LT. SIDE DRAIN	1
766+78	18" X 21' C.M. LT. SIDE DRAIN	1
769+12	18" X 25' C.M. RT. SIDE DRAIN	1
777+27	18" X 25' C.M. RT. SIDE DRAIN	1
777+57	18" X 25' C.M. LT. SIDE DRAIN	1
783+07	24" X 54' R.C. PIPE CULVERT	1
801+87	24" X 49' C.M. RT. SIDE DRAIN	1
804+80	24" X 60' C.M. RT. SIDE DRAIN	1
805+81	24" X 61' C.M. RT. SIDE DRIAN	1
806+49	18" X 25' C.M. LT. SIDE DRAIN	1
808+04	24" X 19' C.M. RT. SIDE DRAIN	1
809+64	18" X 34' C.M. RT. SIDE DRAIN	1
811+52	18" X 24' C.M. LT. SIDE DRAIN	1
812+65	18" X 38' C.M. RT. SIDE DRAIN	1
813+00	18" X 21' C.M. LT. SIDE DRAIN	1
816+86	18" X 23' C.M. RT. SIDE DRAIN	1
824+45	18" X 45' R.C. PIPE CULVERT	1
833+94	18" X 24' C.M. RT. SIDE DRAIN	1
843+61	18" X 21' C.M. LT. SIDE DRAIN	1
852+06	18" X 25' C.M. LT. SIDE DRAIN	1
854+15	18" X 25' C.M. RT. SIDE DRAIN	1
854+83	18" X 24' C.M. LT. SIDE DRAIN	1
861+79	24" X 60' C.M. LT. SIDE DRAIN	1
1600+95	DBL. 48" X 40' R.C. PIPE CULVERT	2
1601+40	18" X 22' C.M. LT. SIDE DRAIN	1
1602+45	15" X 24' C.M. LT. SIDE DRAIN	1
2001+57	12" X 24' C.M. PIPE CULVERT	1
2001+85	18" X 32' C.M. PIPE CULVERT	1
2101+28	12" X 24' C.M. LT. SIDE DRAIN	1
2102+74	12" X 21' C.M. LT. SIDE DRAIN	1
2200+72	8" X 20' C.M. LT. SIDE DRAIN	1
SUBTOTAL (BOX 1 OF 2):		**52**
SUBTOTAL (BOX 2 OF 2):		**47**
TOTAL:		**99**

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS EACH
632+33	WINGWALL OF R.C. BOX CULVERT	1
743+00	WINGWALL OF R.C. BOX CULVERT	1
770+14	WINGWALL OF R.C. BOX CULVERT	1
775+21	WINGWALL OF R.C. BOX CULVERT	1
TOTAL:		**4**

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

FLOWABLE SELECT MATERIAL

STATION	LOCATION	CU. YD.
633+50	12" X 70' TEMPORARY CULVERT	2.0
740+50	12" X 66' TEMPORARY CULVERT	1.9
778+50	12" X 54' TEMPORARY CULVERT	1.6
807+50	12" X 69' TEMPORARY CULVERT	2.0
833+00	12" X 77' TEMPORARY CULVERT	2.2
TOTAL:		**9.7**

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

5/26/2015

R050214.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	64	311

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 2-12-15

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE C)	WIRE FENCE (TYPE D)	WIRE FENCE (TYPE D-1)	* 4' CHAIN LINK FENCE	* 16'-0" GATES	* 20'-0" GATES
			LIN. FT.				EACH	EACH
622+77.81	623+83.46	LT. OF HWY. 167	66					2
628+40.85	628+97.62	RT. OF HWY. 167	57					
631+89.03	634+25.00	RT. OF HWY. 167	525					
636+70.00		LT. OF HWY. 167		146				
638+81.66	644+67.11	LT. OF HWY. 167	554				2	
646+32.78	649+06.38	LT. OF HWY. 167		258			1	
650+92.99	677+59.00	RT. OF HWY. 167	2942				3	
653+30.41	659+25.14	LT. OF HWY. 167	566				2	
677+96.06	679+80.00	LT. OF HWY. 167				154	2	
679+66.66	692+58.78	RT. OF HWY. 167			1331			1
692+73.00	707+40.20	RT. OF HWY. 167			1441		1	
701+92.39	714+56.03	LT. OF HWY. 167			1293			
709+75.60	713+44.00	RT. OF HWY. 167			656			
715+30.00	717+65.50	LT. OF HWY. 167			241			
716+63.52	719+74.00	RT. OF HWY. 167		299				
720+08.71	720+75.84	RT. OF HWY. 167		67				
731+74.85	743+52.16	RT. OF HWY. 167			1178		1	
744+05.02	770+32.23	RT. OF HWY. 167			2612		4	
761+61.53	769+44.47	LT. OF HWY. 167			788		2	
769+70.89	774+84.82	LT. OF HWY. 167			568		2	
770+58.66	774+83.37	RT. OF HWY. 167			461		1	
775+56.01	792+14.00	RT. OF HWY. 167			1725		2	
775+57.46	796+02.53	LT. OF HWY. 167			2027		1	
794+10.67		RT. OF HWY. 167			324			
821+43.37	826+25.42	RT. OF HWY. 167			4019		3	
834+59.72	834+97.72	LT. OF HWY. 167	38					
846+19.00	855+15.68	LT. OF HWY. 167	874				2	
855+15.68	857+73.87	LT. OF HWY. 167			245		1	
857+73.87	861+67.97	LT. OF HWY. 167	394					
TOTALS:			6016	770	18909	154	30	3

* DENOTES ALTERNATE BID ITEM.

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			12000	48
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			12000	48

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

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)	MAILBOX SUPPORTS (DOUBLE)
		EACH	
ENTIRE PROJECT	54	46	4
TOTALS:	54	46	4

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
624+16	HWY. 167	8.50	29	14.1
628+92	HWY. 167	15.67	24	21.5
632+33	HWY. 167	9.67	32	17.7
708+54	HWY. 167	9.67	42	23.2
717+69	HWY. 167	18.50	42	44.4
728+10	HWY. 167	10.83	37	22.9
783+07	HWY. 167	15.67	25	22.4
824+45	HWY. 167	8.50	24	11.6
TOTAL:				177.8

AVG. DEPTH = 18.5"

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 3
		SQ.YD.
860+27.92	HWY. 167 - RT. OF MAIN LANES	6.7
TOTAL:		6.7

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
860+17.71	861+50.00	HWY. 167 - RT. OF MAIN LANES	132
TOTAL:			132

CONCRETE WALKS

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS
			LIN. FT.	SQ.YD.
860+27.92	861+58.00	HWY. 167 - RT. OF MAIN LANES	130	87
TOTAL:				87

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL: SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TOPSOIL FURNISHED AND PLACED	TEMPORARY EROSION CONTROL: TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	CU. YD.	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1							2.37	2.37	48.3			1570			58
ENTIRE	PROJECT	STAGE 2							36.66	36.66	747.9		969	1565			58
ENTIRE	PROJECT	STAGE 3							32.98	32.98	672.8		756	2278			407
ENTIRE	PROJECT	END OF JOB	50.33	100.66	50.33	5133.7	50.33										252
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			12.58	25.16	12.58	1283.2	12.58	7000				3080	431	1353	1064	1064	1398
TOTALS:			62.91	125.82	62.91	6416.9	62.91	7000	72.01	72.01	1469.0	3080	2156	6766	1064	1064	2173

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 ARE ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

10/29/2014

R050214.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	65	311

(2) QUANTITIES

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
610+41.21	861+48.90	HWY. 167 - LT. SHOULDER	15852.69
610+41.21	861+48.90	HWY. 167 - RT. SHOULDER	16608.69
TOTAL:			32461.38

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

CULVERT CLEAN OUT

STATION	LOCATION	EACH
775+21	HWY. 167	1
TOTAL:		1

ACHM PATCHING OF EXISTING ROADWAY

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

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	114	228
DIRECTED BY THE ENGINEER		
TOTALS:	114	228

NOTE: QUANTITIES ARE ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC....25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC.....50 GAL./MILE

SELECTED PIPE BEDDING

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

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
610+41.21	611+41.21	MAIN LANES	75	833.33
861+50.00	862+50.00	MAIN LANES	42.25	469.44
TOTAL:				1302.77

NOTE: AVERAGE MILLING DEPTH 1".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III)							SIDE DRAIN				FLARED END SECTIONS FOR R.C. PIPE CULVERTS							TEMPORARY CULVERTS		SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		24"	30"	36"	42"	48"	54"	29"X18"	18"	24"	48"	54"	24"	30"	36"	42"	48"	54"	29"X18"	12"	48"									
		LIN. FT.											EACH							LIN. FT.		LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL	
624+16	CONSTRUCT 24" R.C. PIPE CULVERT	126											2														16	0.20	FES-1, FES-2, PCC-1
628+92	CONSTRUCT DBL. 30" R.C. PIPE CULVERT, 10° RT. FWD. SKEW		324											4													28	0.35	FES-1, FES-2, PCC-1
632+33	RETAIN AND EXTEND R.C. BOX CULVERT, 45° LT. FWD. SKEW																					10	8	125	199.89	22405	92	37	0.47	PBC-1, RCB-1, RCB-2, RCB-3, R-100X-X2, R-145X-1, W-X45, W-X453-1
632+33	CONSTRUCT 36" R.C. PIPE CULVERT, 45° LT. FWD. SKEW			244											2												34	0.43	FES-1, FES-2, PCC-1
633+50	INSTALL 12" TEMPORARY PIPE CULVERT																			70									
637+07	INSTALL 18" SIDE DRAIN								40																				PCC-1, PCM-1, PCP-1, PCP-2
642+00	INSTALL DBL. 60" TEMPORARY PIPE CULVERT																				120								
650+55	INSTALL 18" SIDE DRAIN								61																				PCC-1, PCM-1, PCP-1, PCP-2
664+91	RETAIN AND EXTEND 48" R.C. PIPE CULVERT, 45° LT. FWD. SKEW					74											2										58	0.73	FES-1, FES-2, PCC-1
675+29	RETAIN AND EXTEND 24" R.C. PIPE CULVERT	42											2														16	0.20	FES-1, FES-2, PCC-1
693+59	RETAIN AND EXTEND 48" R.C. PIPE CULVERT, 30° LT. FWD. SKEW					60											2										58	0.73	FES-1, FES-2, PCC-1
697+95	INSTALL 48" SIDE DRAIN										92																		PCC-1, PCM-1, PCP-1, PCP-2
708+54	CONSTRUCT 36" R.C. PIPE CULVERT, 30° LT. FWD. SKEW			138											2												34	0.43	FES-1, FES-2, PCC-1
713+80	INSTALL 48" SIDE DRAIN										69																		PCC-1, PCM-1, PCP-1, PCP-2
714+68	INSTALL DBL. 54" SIDE DRAIN											150																	PCC-1, PCM-1, PCP-1, PCP-2
717+69	CONSTRUCT 42" R.C. PIPE CULVERT, 30° LT. FWD. SKEW				308											4											50	0.63	FES-1, FES-2, PCC-1
728+10	CONSTRUCT 48" R.C. PIPE CULVERT					120											2										58	0.73	FES-1, FES-2, PCC-1
740+50	INSTALL 12" TEMPORARY PIPE CULVERT																			66									
743+00	RETAIN AND EXTEND R.C. BOX CULVERT, 45° RT. FWD. SKEW																					10	8	102	157.02	17370	81	37	0.47	PBC-1, RCB-1, RCB-2, RCB-3, R-145X-0, R-145X-1, W-X45, W-X453-1
755+29	INSTALL 24" SIDE DRAIN									52																			PCC-1, PCM-1, PCP-1, PCP-2
770+14	RETAIN AND EXTEND R.C. BOX CULVERT, 30° RT. FWD. SKEW																					6	4	86	55.39	6898	33	18	0.23	PBC-1, RCB-1, RCB-2, RCB-3, R-130X-0, W-X30, W-X303-1
778+50	INSTALL 12" TEMPORARY PIPE CULVERT																			54									
783+07	CONSTRUCT DBL. 29" X 18" R.C. ARCH PIPE CULVERT							280										4										18	0.23	FES-1, FES-2, PCC-1
799+73	RETAIN AND EXTEND DBL. 48" R.C. PIPE CULVERT, 30° LT. FWD. SKEW					194											4										62	0.78	FES-1, FES-2, PCC-1
807+50	INSTALL 12" TEMPORARY PIPE CULVERT																			69									
824+45	CONSTRUCT 24" R.C. PIPE CULVERT	120											2														16	0.20	FES-1, FES-2, PCC-1
832+38	RETAIN AND EXTEND 30" R.C. PIPE CULVERT		92											2													26	0.33	FES-1, FES-2, PCC-1
833+00	INSTALL 12" TEMPORARY PIPE CULVERT																			77									
855+30	RETAIN AND EXTEND 54" R.C. PIPE CULVERT						82											2										70	0.88	FES-1, FES-2, PCC-1
861+79	INSTALL 24" SIDE DRAIN									66																			PCC-1, PCM-1, PCP-1, PCP-2
2001+75	INSTALL DBL. 24" SIDE DRAIN									100																			PCC-1, PCM-1, PCP-1, PCP-2
SUBTOTALS:		288	416	382	308	448	82	280	101	218	161	150	6	6	4	4	10	2	4	336	120				412.30	46673	206	636	8.02	
	STRUCTURES OVER 20' - 0" SPAN																												
638+70	CONSTRUCT TRP. 9' X 6' X 46' R.C. BOX CULVERT																					9	6	46	140.05	17230	63	28	0.35	PBC-1, RCB-1, RCB-2, RCB-3, SPECIAL DETAILS
641+18	CONSTRUCT TRP. 9' X 6' X 31' R.C. BOX CULVERT																					9	6	31	101.05	12043	49	23	0.29	PBC-1, RCB-1, RCB-2, RCB-3, SPECIAL DETAILS
643+05	CONSTRUCT TRP. 9' X 6' X 46' R.C. BOX CULVERT																					9	6	46	140.05	17230	63	28	0.35	PBC-1, RCB-1, RCB-2, RCB-3, SPECIAL DETAILS
775+21	RETAIN AND EXTEND QUAD. 10' X 8' X 45' R.C. BOX CULVERT																					10	8	81	354.86	60552	151	45	0.57	PBC-1, RCB-1, RCB-2, RCB-3, R-400X-0, WX003-1
1600+95	CONSTRUCT TRP. 9' X 6' X 51' R.C. BOX CULVERT																					9	6	51	138.28	19311	68	23	0.29	PBC-1, RCB-1, RCB-2, RCB-3, SPECIAL DETAILS
SUBTOTALS:																									874.29	126366	394	147	1.85	
TOTALS:		288	416	382	308	448	82	280	101	218	161	150	6	6	4	4	10	2	4	336	120				1286.59	173039	600	783	9.87	

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.

9/2/2015

R050214.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	66	311

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 9-2-15

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS				STANDARD DRAWINGS
							18"	24"	30"	48"	
			FEET	SQ. YD.	TON	TON	LIN. FT.				
623+06	LT.	HWY. 167	40	281.1	30.9	114.8	64				PCC-1, PCM-1, PCP-1, PCP-2
624+44	RT.	HWY. 167	16	138.0	15.2	56.4		40			PCC-1, PCM-1, PCP-1, PCP-2
625+71	LT.	HWY. 167	16	116.6	12.8	47.6	44				PCC-1, PCM-1, PCP-1, PCP-2
626+00	RT.	HWY. 167	16	174.7	19.2	71.3					
627+78	RT.	HWY. 167	16	237.7	26.1	97.1					
628+10	LT.	HWY. 167	16	163.8	18.0	66.9	72				PCC-1, PCM-1, PCP-1, PCP-2
629+28	LT.	HWY. 167	16	133.7	14.7	54.6	60				PCC-1, PCM-1, PCP-1, PCP-2
630+08	RT.	HWY. 167	16	181.0	19.9	73.9					
631+48	LT.	HWY. 167	16	125.3	13.8	51.2	52				PCC-1, PCM-1, PCP-1, PCP-2
632+50	LT.	HWY. 167	16	197.5	21.7	80.6	52				PCC-1, PCM-1, PCP-1, PCP-2
634+69	LT.	HWY. 167	16	110.8	12.2	45.2	40				PCC-1, PCM-1, PCP-1, PCP-2
636+29	LT.	HWY. 167	16	92.2	10.1	37.6	28				PCC-1, PCM-1, PCP-1, PCP-2
637+53	LT.	HWY. 167	16	70.0	7.7	28.6	34				PCC-1, PCM-1, PCP-1, PCP-2
638+65	LT.	HWY. 167	16	70.0	7.7	28.6	28				PCC-1, PCM-1, PCP-1, PCP-2
638+70	RT.	HWY. 167	40	365.6	40.2	149.3					
640+36	LT.	HWY. 167	16	70.0	7.7	28.6	28				PCC-1, PCM-1, PCP-1, PCP-2
641+18	RT.	HWY. 167	25	226.9	25.0	92.7					
642+85	LT.	HWY. 167	16	70.0	7.7	28.6	30				PCC-1, PCM-1, PCP-1, PCP-2
643+05	RT.	HWY. 167	40	378.9	41.7	154.7					
645+09	LT.	HWY. 167	16	70.9	7.8	29.0	28				PCC-1, PCM-1, PCP-1, PCP-2
645+95	RT.	HWY. 167	16	96.7	10.6	39.5		28			PCC-1, PCM-1, PCP-1, PCP-2
646+73	RT.	HWY. 167	16	80.3	8.8	32.8		28			PCC-1, PCM-1, PCP-1, PCP-2
647+46	RT.	HWY. 167	16	77.7	8.5	31.7		30			PCC-1, PCM-1, PCP-1, PCP-2
648+31	LT.	HWY. 167	16	77.4	8.5	31.6	34				PCC-1, PCM-1, PCP-1, PCP-2
648+90	RT.	HWY. 167	16	80.6	8.9	32.9	32				PCC-1, PCM-1, PCP-1, PCP-2
649+32	LT.	HWY. 167	16	81.2	8.9	33.2	36				PCC-1, PCM-1, PCP-1, PCP-2
650+38	LT.	HWY. 167	16	90.3	9.9	36.9	38				PCC-1, PCM-1, PCP-1, PCP-2
652+52	LT.	HWY. 167	16	79.0	8.7	32.3	28				PCC-1, PCM-1, PCP-1, PCP-2
652+56	RT.	HWY. 167	16	90.4	9.9	36.9	34				PCC-1, PCM-1, PCP-1, PCP-2
653+44	LT.	HWY. 167	16	81.6	9.0	33.3	28				PCC-1, PCM-1, PCP-1, PCP-2
657+29	LT.	HWY. 167	16	78.9	8.7	32.2	30				PCC-1, PCM-1, PCP-1, PCP-2
658+25	RT.	HWY. 167	16	96.7	10.6	39.5	28				PCC-1, PCM-1, PCP-1, PCP-2
659+63	LT.	HWY. 167	16	126.7	13.9	51.7	48				PCC-1, PCM-1, PCP-1, PCP-2
662+65	LT.	HWY. 167	16	136.9	15.1	55.9	48				PCC-1, PCM-1, PCP-1, PCP-2
663+95	LT.	HWY. 167	16	94.0	10.3	38.4	38				PCC-1, PCM-1, PCP-1, PCP-2
664+91	LT.	HWY. 167	16	138.9	15.3	56.7	34				PCC-1, PCM-1, PCP-1, PCP-2
667+61	RT.	HWY. 167	16	89.1	9.8	36.4	34				PCC-1, PCM-1, PCP-1, PCP-2
668+30	LT.	HWY. 167	16	78.9	8.7	32.2			28		PCC-1, PCM-1, PCP-1, PCP-2
669+43	LT.	HWY. 167	16	78.9	8.7	32.2		28			PCC-1, PCM-1, PCP-1, PCP-2
672+68	LT.	HWY. 167	16	92.1	10.1	37.6	36				PCC-1, PCM-1, PCP-1, PCP-2
675+00	LT.	HWY. 167	16	111.0	12.2	45.3					
675+85	LT.	HWY. 167	25	163.5	18.0	66.8	56				PCC-1, PCM-1, PCP-1, PCP-2
677+26	LT.	HWY. 167	40	233.0	25.6	95.1	68				PCC-1, PCM-1, PCP-1, PCP-2
677+73	RT.	HWY. 167	16	127.4	14.0	52.0	50				PCC-1, PCM-1, PCP-1, PCP-2
678+20	LT.	HWY. 167	40	305.9	33.6	124.9	72				PCC-1, PCM-1, PCP-1, PCP-2
679+52	RT.	HWY. 167	16	94.7	10.4	38.7	38				PCC-1, PCM-1, PCP-1, PCP-2
683+00	RT.	HWY. 167	20	256.1	28.2	104.6	66				PCC-1, PCM-1, PCP-1, PCP-2
685+85	LT.	HWY. 167	25	160.3	17.6	65.5	56				PCC-1, PCM-1, PCP-1, PCP-2
686+59	LT.	HWY. 167	25	164.5	18.1	67.2	60				PCC-1, PCM-1, PCP-1, PCP-2
691+85	LT.	HWY. 167	16	76.1	8.4	31.1	28				PCC-1, PCM-1, PCP-1, PCP-2
693+30	LT.	HWY. 167	16	98.1	10.8	40.1	44				PCC-1, PCM-1, PCP-1, PCP-2
694+03	RT.	HWY. 167	16	51.4	5.7	21.0					
703+66	RT.	HWY. 167	16	112.9	12.4	46.1		46			PCC-1, PCM-1, PCP-1, PCP-2
708+61	RT.	HWY. 167	16	103.2	11.4	42.1					
715+10	RT.	HWY. 167	40	255.3	28.1	104.2				64	PCC-1, PCM-1, PCP-1, PCP-2
718+95	LT.	HWY. 167	40	261.6	28.8	106.8					
719+87	LT.	HWY. 167	16	65.7	7.2	26.8					
719+89	RT.	HWY. 167	16	116.5	12.8	47.6	48				PCC-1, PCM-1, PCP-1, PCP-2
720+71	LT.	HWY. 167	24	108.3	11.9	44.2	34				PCC-1, PCM-1, PCP-1, PCP-2
721+67	LT.	HWY. 167	40	257.1	28.3	105.0	70				PCC-1, PCM-1, PCP-1, PCP-2
722+28	RT.	HWY. 167	16	93.9	10.3	38.3	42				PCC-1, PCM-1, PCP-1, PCP-2
723+55	RT.	HWY. 167	16	96.7	10.6	39.5	44				PCC-1, PCM-1, PCP-1, PCP-2
724+17	LT.	HWY. 167	16	79.6	8.8	32.5	30				PCC-1, PCM-1, PCP-1, PCP-2
725+09	RT.	HWY. 167	16	104.3	11.5	42.6		42			PCC-1, PCM-1, PCP-1, PCP-2
725+45	LT.	HWY. 167	16	46.2	5.1	18.9	30				PCC-1, PCM-1, PCP-1, PCP-2
726+11	RT.	HWY. 167	16	99.6	11.0	40.7		40			PCC-1, PCM-1, PCP-1, PCP-2
726+45	LT.	HWY. 167	16	81.3	8.9	33.2	28				PCC-1, PCM-1, PCP-1, PCP-2
729+12	LT.	HWY. 167	16	138.0	15.2	56.4					
730+18	RT.	HWY. 167	16	133.8	14.7	54.6	48				PCC-1, PCM-1, PCP-1, PCP-2
730+60	LT.	HWY. 167	16	172.3	19.0	70.4					
738+82	LT.	HWY. 167	16	105.9	11.6	43.2	40				PCC-1, PCM-1, PCP-1, PCP-2
740+09	RT.	HWY. 167	16	90.3	9.9	36.9	38				PCC-1, PCM-1, PCP-1, PCP-2
750+53	LT.	HWY. 167	16	86.7	9.5	35.4		38			PCC-1, PCM-1, PCP-1, PCP-2
750+82	RT.	HWY. 167	16	85.4	9.4	34.9		28			PCC-1, PCM-1, PCP-1, PCP-2
757+11	RT.	HWY. 167	16	91.0	10.0	37.2					
766+78	LT.	HWY. 167	16	92.1	10.1	37.6		36			PCC-1, PCM-1, PCP-1, PCP-2
769+12	RT.	HWY. 167	16	104.8	11.5	42.8	38				PCC-1, PCM-1, PCP-1, PCP-2
774+16	LT.	HWY. 167	16	152.8	16.8	62.4	72				PCC-1, PCM-1, PCP-1, PCP-2
777+27	RT.	HWY. 167	16	89.3	9.8	36.5	36				PCC-1, PCM-1, PCP-1, PCP-2
777+57	LT.	HWY. 167	16	73.7	8.1	30.1	28				PCC-1, PCM-1, PCP-1, PCP-2
801+87	RT.	HWY. 167	34	185.0	20.4	75.5		52			PCC-1, PCM-1, PCP-1, PCP-2
804+80	RT.	HWY. 167	40	188.1	20.7	76.8		54			PCC-1, PCM-1, PCP-1, PCP-2
805+81	RT.	HWY. 167	40	189.1	20.8	77.2		52			PCC-1, PCM-1, PCP-1, PCP-2
806+49	LT.	HWY. 167	20	114.0	12.5	46.6	40				PCC-1, PCM-1, PCP-1, PCP-2
808+04	RT.	HWY. 167	40	219.9	24.2	89.8		58			PCC-1, PCM-1, PCP-1, PCP-2
809+64	RT.	HWY. 167	20	123.2	13.6	50.3	46				PCC-1, PCM-1, PCP-1, PCP-2
811+52	RT.	HWY. 167	16	103.0	11.3	42.1	36				PCC-1, PCM-1, PCP-1, PCP-2
812+65	RT.	HWY. 167	16	105.4	11.6	43.0	38				PCC-1, PCM-1, PCP-1, PCP-2
813+00	LT.	HWY. 167	16	113.9	12.5	46.5	42				PCC-1, PCM-1, PCP-1, PCP-2
816+86	RT.	HWY. 167	16	110.3	12.1	45.0	46				PCC-1, PCM-1, PCP-1, PCP-2
829+07	RT.	HWY. 167	16	71.3	7.8	29.1	28				PCC-1, PCM-1, PCP-1, PCP-2
833+94	RT.	HWY. 167	16	106.3	11.7	43.4		44			PCC-1, PCM-1, PCP-1, PCP-2
842+05	LT.	HWY. 167	16	162.4	17.9	66.3					
843+61	LT.	HWY. 167	16	144.5	15.9	59.0	48				PCC-1, PCM-1, PCP-1, PCP-2
852+06	LT.	HWY. 167	16	91.1	10.0	37.2		40			PCC-1, PCM-1, PCP-1, PCP-2
854+15	RT.	HWY. 167	16	96.5	10.6	39.4	36				PCC-1, PCM-1, PCP-1, PCP-2
854+77	LT.	HWY. 167	16	101.8	11.2	41.6		44			PCC-1, PCM-1, PCP-1, PCP-2
857+27	LT.	HWY. 167	16	93.4	10.3	38.1					
1501+27	RT.	ANTIOCH ROAD	22	83.9	9.2	34.3					
1501+40	LT.	ANTIOCH ROAD	22	50.8	5.6	20.7					
1601+40	LT.	MISTY LANE	16	67.0	7.4	27.4	38				PCC-1, PCM-1, PCP-1, PCP-2
1602+45	LT.	MISTY LANE	17	82.5	9.1	33.7		28			PCC-1, PCM-1, PCP-1, PCP-2
1801+50	RT.	COOTS LANE	16	79.6	8.8	32.5					
2101+28	LT.	SUNSET RIDGE ROAD	16	41.6	4.6	17.0	28				PCC-1, PCM-1, PCP-1, PCP-2
2102+74	LT.	SUNSET RIDGE ROAD	16	38.1	4.2	15.6	28				PCC-1, PCM-1, PCP-1, PCP-2
2200+72	LT.	SANDTOWN ROAD	16	43.5	4.8	17.8	28				PCC-1, PCM-1, PCP-1, PCP-2
2304+45	RT.	ARROWHEAD LANE	30	128.1	14.1	52.3	44				PCC-1, PCM-1, PCP-1, PCP-2
* ENTIRE PROJECT TEMPORARY DRIVES						1070.0					
TOTALS:				13195.6	1451.2	6458.6	2776	756	28	64	

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

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

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

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	67	311

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

BASE AND SURFACING (BOX 1 OF 2)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT (0.10 GAL. PER SQ. YD.)			TACK COAT (0.03 GAL. PER SQ. YD.)				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								TOTAL
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLON	TOTAL WID.	SQ.YD.	GALLON	TOTAL GALLONS	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																									
610+41.21	621+41.21	OVERLAY SECTION	1100.00																		75.00	9166.67	220.00	1008.33	1008.33
621+41.21	629+49.90	NOTCH AND WIDEN SECTION	808.69	VAR.	2597.19				VAR.	9970.05	299.10	299.10	VAR.	3343.34	660.00	1103.30	VAR.	3283.37	220.00	361.17	75.00	6739.08	220.00	741.30	1102.47
629+49.90	634+79.75	FULL DEPTH SECTION	529.85	426.00	2257.16				191.83	11293.46	338.80	338.80	64.17	3777.83	660.00	1246.68	63.50	3738.39	220.00	411.22	75.00	4415.42	220.00	485.70	896.92
634+79.75	734+82.00	NOTCH AND WIDEN SECTION	10002.25	VAR.	28364.28				VAR.	90594.43	2717.83	2717.83	VAR.	30405.95	660.00	10033.96	VAR.	29782.53	220.00	3276.08	75.00	83352.08	220.00	9168.73	12444.81
734+82.00	740+21.83	FULL DEPTH SECTION	539.83	426.00	2299.68				191.83	11506.18	345.19	345.19	64.17	3848.99	660.00	1270.17	63.50	3808.80	220.00	418.97	75.00	4498.58	220.00	494.84	913.81
740+21.83	753+82.56	NOTCH AND WIDEN SECTION	1360.73	VAR.	4513.90				VAR.	18005.55	540.17	540.17	VAR.	6035.24	660.00	1991.63	VAR.	5935.07	220.00	652.86	75.00	11339.42	220.00	1247.34	1900.20
753+82.56	760+50.00	FULL DEPTH SECTION	667.44	426.00	2843.29				191.83	14226.11	426.78	426.78	64.17	4758.85	660.00	1570.42	63.50	4709.16	220.00	518.01	75.00	5562.00	220.00	611.82	1129.83
760+50.00	778+23.33	NOTCH AND WIDEN SECTION	1773.33	VAR.	5870.55				VAR.	23365.30	700.96	700.96	VAR.	7832.22	660.00	2584.63	VAR.	7700.86	220.00	847.09	75.00	14777.75	220.00	1625.55	2472.64
778+23.33	791+25.50	FULL DEPTH SECTION	1302.17	426.00	5547.24				191.83	27755.03	832.65	832.65	64.17	9284.47	660.00	3063.88	63.50	9187.53	220.00	1010.63	75.00	10851.42	220.00	1193.66	2204.29
791+25.50	807+24.50	NOTCH AND WIDEN SECTION	1599.00	VAR.	5048.54				VAR.	18732.91	561.99	561.99	VAR.	6265.25	660.00	2067.53	VAR.	6202.41	220.00	682.27	75.00	13325.00	220.00	1465.75	2148.02
807+24.50	820+32.00	FULL DEPTH SECTION	1307.50	426.00	5569.95				191.83	27868.64	836.06	836.06	64.17	9322.48	660.00	3076.42	63.50	9225.14	220.00	1014.77	75.00	10895.83	220.00	1198.54	2213.31
820+32.00	832+90.00	NOTCH AND WIDEN SECTION	1258.00	VAR.	4185.12				VAR.	16751.51	502.55	502.55	VAR.	5614.89	660.00	1852.91	VAR.	5521.73	220.00	607.39	75.00	10483.33	220.00	1153.17	1760.56
832+90.00	836+71.50	FULL DEPTH SECTION	381.50	426.00	1625.19				191.83	8131.46	243.94	243.94	64.17	2720.10	660.00	897.63	63.50	2691.69	220.00	296.09	75.00	3179.17	220.00	349.71	645.80
836+71.50	838+09.00	NOTCH AND WIDEN SECTION	137.50	VAR.	505.90				VAR.	2224.57	66.74	66.74	VAR.	743.21	660.00	245.26	VAR.	738.15	220.00	81.20	75.00	1145.83	220.00	126.04	207.24
838+09.00	847+96.50	FULL DEPTH SECTION	987.50	426.00	4206.75				191.83	21048.01	631.44	631.44	64.17	7040.88	660.00	2323.49	63.50	6967.36	220.00	766.41	75.00	8229.17	220.00	905.21	1671.62
847+96.50	861+50.00	NOTCH AND WIDEN SECTION	1353.50	VAR.	4262.73				VAR.	15959.62	478.79	478.79	VAR.	5352.81	660.00	1766.43	VAR.	5254.00	220.00	577.94	75.00	11279.17	220.00	1240.71	1818.65
861+50.00	862+50.00	TRANSITION	100.00																						
ADDITIONAL FOR LEVELING AND GRADE RAISE																									
621+41.21	629+49.90	GRADE RAISE	808.69			24.00	2156.51	215.65	72.00	6469.52	194.09	409.74	24.00	2156.51	VAR.	995.72	24.00	2156.51	VAR.	474.43					474.43
634+79.75	734+82.00	GRADE RAISE	10002.25			VAR.	39812.61	3981.26	VAR.	119437.83	3583.13	7564.39	VAR.	39812.61	VAR.	7718.20	VAR.	39812.61	VAR.	8758.77					8758.77
740+21.83	753+82.56	LEVELING	1360.73			VAR.	3665.86	366.59	VAR.	3665.86	109.98	476.57					VAR.	3665.86	VAR.	895.95					895.95
760+50.00	778+23.33	GRADE RAISE	1773.33			VAR.	4800.96	480.10	VAR.	14402.88	432.09	912.19	VAR.	4800.96	VAR.	2428.39	VAR.	4800.96	VAR.	1056.21					1056.21
791+25.50	807+24.50	GRADE RAISE	1599.00			VAR.	4695.94	469.59	VAR.	14087.82	422.63	892.22	VAR.	4695.94	VAR.	1156.18	VAR.	4695.94	VAR.	1033.11					1033.11
820+32.00	832+90.00	GRADE RAISE	1258.00			VAR.	3354.16	335.42	VAR.	10062.48	301.87	637.29	VAR.	3354.16	VAR.	437.41	VAR.	3354.16	VAR.	737.92					737.92
836+71.50	838+09.00	GRADE RAISE	137.50			VAR.	197.38	19.74	VAR.	592.14	17.76	37.50	VAR.	197.38	VAR.	97.36	VAR.	197.38	VAR.	43.42					43.42
847+96.50	861+49.90	GRADE RAISE	1353.40			VAR.	3862.87	386.29	VAR.	11588.61	347.66	733.95	VAR.	3862.87	VAR.	679.52	VAR.	3862.87	VAR.	849.83					849.83
ADDITIONAL FOR SUPERELEVATION																									
622+00.27	627+67.27	SUPERELEVATION TRANSITION	567.00	75.63	428.82																				
627+67.27	631+63.53	MAXIMUM SUPERELEVATION	396.26	151.25	599.34																				
631+63.53	637+30.53	SUPERELEVATION TRANSITION	567.00	75.63	428.82																				
675+17.54	679+67.54	SUPERELEVATION TRANSITION	450.00	54.00	243.00																				
679+67.54	688+63.87	MAXIMUM SUPERELEVATION	896.33	108.00	968.04																				
688+63.87	693+13.87	SUPERELEVATION TRANSITION	450.00	54.00	243.00																				
693+14.13	698+81.13	SUPERELEVATION TRANSITION	567.00	75.63	428.82																				
698+81.13	703+61.50	MAXIMUM SUPERELEVATION	480.37	151.25	726.56																				
703+61.50	709+28.50	SUPERELEVATION TRANSITION	567.00	75.63	428.82																				
712+68.76	718+08.76	SUPERELEVATION TRANSITION	540.00	57.88	312.55																				
718+08.76	718+93.96	MAXIMUM SUPERELEVATION	85.20	115.75	98.62																				
718+93.96	724+33.96	SUPERELEVATION TRANSITION	540.00	57.88	312.55																				
727+80.39	733+20.39	SUPERELEVATION TRANSITION	540.00	54.00	291.60																				
733+20.39	735+15.22	MAXIMUM SUPERELEVATION	194.83	108.00	210.42																				
735+15.22	740+55.22	SUPERELEVATION TRANSITION	540.00	54.00	291.60																				
755+94.78	761+34.78	SUPERELEVATION TRANSITION	540.00	28.13	151.90																				
761+34.78	768+87.41	MAXIMUM SUPERELEVATION	752.63	56.25	423.35																				
768+87.41	774+27.41	SUPERELEVATION TRANSITION	540.00	28.13	151.90																				
775+58.39	781+88.39	SUPERELEVATION TRANSITION	630.00	69.38	437.09																				
781+88.39	787+06.57	MAXIMUM SUPERELEVATION	518.18	138.75	718.97																				
787+06.57	793+36.57	SUPERELEVATION TRANSITION	630.00	69.38	437.09																				
832+01.86	837+41.86	SUPERELEVATION TRANSITION	540.00	31.88	172.15																				
837+41.86	847+21.00	MAXIMUM SUPERELEVATION	979.14	63.75	624.20																				
847+21.00	852+61.00	SUPERELEVATION TRANSITION	540.00	31.88	172.15																				
SUBTOTALS (BOX 1 OF 2):					88998.83		62546.29	6254.64		497739.97	14932.20	21186.84		165226.94		48607.12		167292.48		25371.74		209239.92		23016.40	48388.14

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

10/29/2014

R050214.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.		050214	68	311

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

BASE AND SURFACING (BOX 2 OF 2)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT (0.10 GAL. PER SQ. YD.)			TACK COAT (0.03 GAL. PER SQ. YD.)				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								TOTAL
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLON	TOTAL WID.	SQ.YD.	GALLON	TOTAL GALLONS	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
FULL DEPTH SHOULDER																									
627+59.80	637+80.20	LEFT SHOULDER	1020.40	62.25	635.20				12.00	1360.53	40.82	40.82	6.58	746.03	660.00	246.19	6.25	708.61	220.00	77.95	6.00	680.27	220.00	74.83	152.78
TEMPORARY WIDENING																									
623+89.00	626+33.59	RIGHT OF EXISTING HWY. 167	244.59	VAR.	158.58				4.83	131.26	3.94	3.94	2.58	70.12	660.00	23.14	2.25	61.15	220.00	6.73	6.00	163.06	220.00	17.94	24.67
626+33.59	629+49.90	RIGHT OF EXISTING HWY. 167	316.31	VAR.	229.68				16.83	591.50	17.75	17.75	8.58	301.55	660.00	99.51	8.25	289.95	220.00	31.89	10.00	351.46	220.00	38.66	70.55
629+49.90	634+79.75	RIGHT OF EXISTING HWY. 167	529.85	88.17	467.17				24.83	1461.80	43.85	43.85	12.58	740.61	660.00	244.40	12.25	721.18	220.00	79.33	14.00	824.21	220.00	90.66	169.99
634+79.75	636+72.79	RIGHT OF EXISTING HWY. 167	193.04	VAR.	140.17				16.83	360.98	10.83	10.83	8.58	184.03	660.00	60.73	8.25	176.95	220.00	19.46	10.00	214.49	220.00	23.59	43.05
636+72.79	640+39.75	RIGHT OF EXISTING HWY. 167	366.96	VAR.	237.91				4.83	196.94	5.91	5.91	2.58	105.20	660.00	34.72	2.25	91.74	220.00	10.09	6.00	244.64	220.00	26.91	37.00
ANTIOCH ROAD																									
1500+29.50	1502+00.00	ANTIOCH ROAD	170.50	VAR.	399.49																VAR.	565.99	220.00	62.26	62.26
1502+00.00	1503+00.00	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
MISTY LANE																									
1600+29.50	1603+13.42	MISTY LANE	283.92	VAR.	626.93																VAR.	918.84	220.00	101.07	101.07
1603+13.42	1604+13.42	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
BELLER LAKE LANE																									
1699+76.51	1700+76.51	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
1700+76.51	1701+54.90	BELLER LAKE LANE	78.39	VAR.	206.55																VAR.	271.53	220.00	29.87	29.87
COOTS LANE																									
1800+29.50	1802+93.85	COOTS LANE	264.35	VAR.	589.75																VAR.	858.23	220.00	94.41	94.41
1802+93.85	1803+93.85	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
RIM ROCK ROAD																									
1899+38.21	1900+38.21	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
1900+38.21	1903+14.11	RIM ROCK ROAD	275.90	VAR.	607.24																VAR.	896.68	220.00	98.63	98.63
FOX RUN LANE																									
1999+04.73	2000+04.73	TRANSTION	100.00																		24.00	266.67	220.00	29.33	29.33
2000+04.73	2002+19.88	FOX RUN LANE	215.15	VAR.	476.19																VAR.	700.58	220.00	77.06	77.06
SUNSET RIDGE ROAD																									
2100+29.50	2102+88.11	SUNSET RIDGE ROAD	258.61	VAR.	577.76																VAR.	928.32	220.00	102.12	102.12
2102+88.11	2103+88.11	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
SANDTOWN ROAD																									
2199+00.00	2200+00.00	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
2200+00.00	2202+38.52	SANDTOWN ROAD	238.52	VAR.	537.41																VAR.	777.60	220.00	85.54	85.54
ARROWHEAD LANE																									
2302+00.00	2303+00.00	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
2303+00.00	2306+17.29	ARROWHEAD LANE	317.29	VAR.	702.38																VAR.	1022.66	220.00	112.49	112.49
FOREST LANE																									
2400+29.50	2402+98.85	FOREST LANE	269.35	VAR.	601.09																VAR.	917.66	220.00	100.94	100.94
2402+98.85	2403+98.85	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
WIRE LANE																									
2499+00.00	2500+00.00	TRANSITION	100.00																		24.00	266.67	220.00	29.33	29.33
2500+00.00	2503+68.74	WIRE LANE	368.74	VAR.	800.92																VAR.	1180.44	220.00	129.85	129.85
SUBTOTALS (BOX 1 OF 2):						**88998.83**		**62546.29**	**6254.64**		**497739.97**	**14932.20**	**21186.84**		**165226.94**		**48607.12**		**167292.48**		**25371.74**		**209239.92**		**23016.40**	**48388.14**
SUBTOTALS (BOX 2 OF 2):						**7994.42**					**4103.01**	**123.10**	**123.10**		**2147.54**		**708.69**		**2049.58**		**225.45**		**14450.03**		**1589.46**	**1814.91**
TOTALS:						**96993.25**		**62546.29**	**6254.64**		**501842.98**	**15055.30**	**21309.94**		**167374.48**		**49315.81**		**169342.06**		**25597.19**		**223689.95**		**24605.86**	**50203.05**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

2/5/2015

R050214.DGN

QUANTITIES

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.		050214	69	311

(2) SUMMARY OF QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
SP & 201	CLEARING	221	STATION
201	GRUBBING	221	STATION
202	REMOVAL AND DISPOSAL OF CURB AND GUTTER	99	LIN. FT.
202	REMOVAL AND DISPOSAL OF FENCE	29327	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES	14	EACH
202	REMOVAL AND DISPOSAL OF WALLS	388	LIN. FT.
202	REMOVAL AND DISPOSAL OF SIGNS	14	EACH
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS	15	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	99	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE SLABS	179	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE DITCH PAVING	182	SQ. YD.
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION	5	EACH
202	REMOVAL AND DISPOSAL OF BUILDINGS	5	EACH
202	REMOVAL AND DISPOSAL OF SEPTIC SYSTEM	1	EACH
202	REMOVAL AND DISPOSAL OF WELL	2	EACH
206	FLOWABLE SELECT MATERIAL	10	CU. YD.
210	UNCLASSIFIED EXCAVATION	229371	CU. YD.
210	COMPACTED EMBANKMENT	178738	CU. YD.
SP & 210	SOIL STABILIZATION	25	TON
303	AGGREGATE BASE COURSE (CLASS 7)	103452	TON
401	TACK COAT	21538	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	47146	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	2170	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	48865	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	2789	TON
412	COLD MILLING ASPHALT PAVEMENT	1303	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	114	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY	125	TON
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SP & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	12" TEMPORARY CULVERT	336	LIN. FT.
603	48" TEMPORARY CULVERT	120	LIN. FT.
SS & 604	SIGNS	812	SQ. FT.
SS & 604	BARRICADES	40	LIN. FT.
SS & 604	TRAFFIC DRUMS	1215	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	1024	LIN. FT.
604	RELOCATING PRECAST CONCRETE BARRIER	246	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	195414	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	8409	LIN. FT.
SS & 604	VERTICAL PANELS	192	EACH
605	CONCRETE DITCH PAVING (TYPE B)	8398	SQ. YD.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	288	LIN. FT.
606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	416	LIN. FT.
606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	382	LIN. FT.
606	42" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	308	LIN. FT.
606	48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	448	LIN. FT.
606	54" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	82	LIN. FT.
606	29" X 18" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)	280	LIN. FT.
SP, SS, & 606	18" SIDE DRAIN	2877	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN	974	LIN. FT.
SP, SS, & 606	30" SIDE DRAIN	28	LIN. FT.
SP, SS, & 606	48" SIDE DRAIN	225	LIN. FT.
SS & 606	54" SIDE DRAIN	150	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	6	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	6	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
606	42" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
606	48" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	10	EACH
606	54" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
606	29" X 18" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS	4	EACH
606	SELECTED PIPE BEDDING	450	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS	48	EACH
611	4" PIPE UNDERDRAINS	12000	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)	177.8	CU. YD.
619	WIRE FENCE (TYPE C)	6016	LIN. FT.
619	WIRE FENCE (TYPE D)	770	LIN. FT.
619	WIRE FENCE (TYPE D-1)	18909	LIN. FT.

9/2/2015

R050214.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-6-15				6	ARK.			
10-7-15				JOB NO.		050214	70	311
				(2) SUMMARY OF QUANTITIES AND REVISIONS				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-8-15

SUMMARY OF QUANTITIES (BOX 2 OF 2)

	ITEM NUMBER	ITEM	QUANTITY	UNIT
*	619	4' STEEL CHAIN LINK FENCE (ALTERNATE NO. 1)	154	LIN. FT.
*	619	4' ALUMINUM CHAIN LINK FENCE (ALTERNATE NO. 2)	154	LIN. FT.
*	619	16' STEEL GATES (ALTERNATE NO. 1)	30	EACH
*	619	16' ALUMINUM GATES (ALTERNATE NO. 2)	30	EACH
*	619	20' STEEL GATES (ALTERNATE NO. 1)	3	EACH
*	619	20' ALUMINUM GATES (ALTERNATE NO. 2)	3	EACH
	620	LIME	126	TON
	620	SEEDING	62.91	ACRE
	SS & 620	MULCH COVER	134.92	ACRE
	620	WATER	7966.3	M.GAL.
	621	TEMPORARY SEEDING	72.01	ACRE
	621	SILT FENCE	6766	LIN. FT.
	621	SAND BAG DITCH CHECKS	3080	BAG
	621	SEDIMENT BASIN	1064	CU. YD.
	621	OBLITERATION OF SEDIMENT BASIN	1064	CU. YD.
	621	SEDIMENT REMOVAL AND DISPOSAL	2173	CU. YD.
	621	ROCK DITCH CHECKS	2156	CU. YD.
	623	SECOND SEEDING APPLICATION	62.91	ACRE
	624	SOLID SODDING	6381	SQ. YD.
	628	TOPSOIL FURNISHED AND PLACED	7000	CU. YD.
	633	CONCRETE WALKS	87	SQ. YD.
	634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	132	LIN. FT.
	635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
	637	MAILBOXES	54	EACH
	637	MAILBOX SUPPORTS (SINGLE)	46	EACH
	637	MAILBOX SUPPORTS (DOUBLE)	4	EACH
	641	WHEELCHAIR RAMPS (TYPE 3)	7	SQ. YD.
	642	RUMBLE STRIPS IN ASPHALT SHOULDERS	32461	LIN. FT.
	718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	5930	LIN. FT.
	718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	5550	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	61596	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	76	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	56560	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	2	EACH
	721	RAISED PAVEMENT MARKERS (TYPE II)	1242	EACH
	801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	206	CU. YD.
	802	CLASS S CONCRETE-ROADWAY	412.30	CU. YD.
	804	REINFORCING STEEL-ROADWAY (GRADE 60)	46673	POUND
	SP	CULVERT CLEAN OUT	1	EACH
	SP	REMOVAL AND DISPOSAL OF TIRES	10	EACH
	SP	DISPOSAL OF WASTE	10	CU. YD.
		STRUCTURES OVER 20' SPAN		
	801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	394	CU. YD.
	802	CLASS S CONCRETE-ROADWAY	874.29	CU. YD.
	804	REINFORCING STEEL-ROADWAY (GRADE 60)	126366	POUND

*DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
10/6/2015	REVISED "PRICE ADJUSTMENT FOR ASPHALT BINDER" SPECIAL PROVISION	70
10/7/2015	REVISED "SITE USE (A+C METHOD)" SPECIAL PROVISION	70

10/6/2015

R050214.DGN

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

Point Name	Northing	Easting	Elev	Feature	Description
30	538892.6226	1431015.8272	393.160	CTL	5/8" Rebar with 2" Aluminum Cap,20' EAST OF NORTH END 18' COMBINATION POLE
31	539268.5387	1431462.1593	405.535	CTL	5/8" Rebar with 2" Aluminum Cap
32	539938.9731	1431839.3987	383.711	CTL	5/8" Rebar with 2" Aluminum Cap
33	540594.5947	1432034.1390	399.936	CTL	5/8" Rebar with 2" Aluminum Cap
34	542039.4016	1432647.5267	393.167	CTL	5/8" Rebar with 2" Aluminum Cap
35	543101.1167	1433138.1717	430.692	CTL	5/8" Rebar with 2" Aluminum Cap,NORTHWEST. OF TELEPHONE BOX
36	543883.8752	1433350.3463	446.941	CTL	5/8" Rebar with 2" Aluminum Cap
37	544441.1254	1433564.3720	472.978	CTL	5/8" Rebar with 2" Aluminum Cap
38	545167.8727	1433700.8856	465.597	CTL	5/8" Rebar with 2" Aluminum Cap
39	545793.1020	1434057.4107	428.283	CTL	5/8" Rebar with 2" Aluminum Cap,GREEN LANE
40	546532.4504	1434324.5378	427.545	CTL	5/8" Rebar with 2" Aluminum Cap
41	547399.8526	1434409.8510	441.442	CTL	5/8" Rebar with 2" Aluminum Cap,GRAVEL DRIVEWAY
42	548089.8358	1434845.0158	446.925	CTL	5/8" Rebar with 2" Aluminum Cap,SOUTH OF ASPHALT DRIVEWAY
43	548900.9564	1435325.3991	447.399	CTL	5/8" Rebar with 2" Aluminum Cap
44	549633.8598	1435709.0278	461.999	CTL	5/8" Rebar with 2" Aluminum Cap,WEST 4' WEB & BARBWIRE FENCE
45	550198.3386	1436187.6017	471.296	CTL	5/8" Rebar with 2" Aluminum Cap
46	550741.0633	1436828.4989	486.217	CTL	5/8" Rebar with 2" Aluminum Cap,GRAVEL DRIVEWAY
47	551191.3541	1437252.1112	482.546	CTL	5/8" Rebar with 2" Aluminum Cap
48	551608.5842	1437637.0211	481.333	CTL	5/8" Rebar with 2" Aluminum Cap,NORTH GRAVEL DRIVEWAY TO 1-S-F
49	552846.9719	1438702.3542	505.888	CTL	5/8" Rebar with 2" Aluminum Cap,ACROSS FROM 1-S-F
50	554059.6306	1439744.4384	523.040	CTL	5/8" Rebar with 2" Aluminum Cap,EAST OF GREEN METAL GATE
51	554357.2526	1440454.3781	520.732	CTL	5/8" Rebar with 2" Aluminum Cap,GRAVEL DRIVEWAY,ACROSS FROM 1-;-METAL BUILDING
52	554786.6909	1441352.8387	536.639	CTL	5/8" Rebar with 2" Aluminum Cap
53	555140.9860	1442052.4110	559.715	CTL	5/8" Rebar with 2" Aluminum Cap
54	555504.4591	1442627.0356	567.756	CTL	5/8" Rebar with 2" Aluminum Cap,EDGE OF DRIVEWAY TO OLD TIRE SHOP
55	555817.5818	1443094.7257	588.476	CTL	5/8" Rebar with 2" Aluminum Cap,ACROSS HIGHWAY FROM POWER POLE
56	556430.8191	1443763.6167	601.614	CTL	5/8" Rebar with 2" Aluminum Cap,OF COUNTY ROAD WILDERNESS DRIVE
57	557040.0986	1444493.8668	623.664	CTL	5/8" Rebar with 2" Aluminum Cap
58	558631.1828	1445174.8818	625.034	CTL	5/8" Rebar with 2" Aluminum Cap,OF HW
59	559993.2692	1445748.8022	636.286	CTL	5/8" Rebar with 2" Aluminum Cap
60	560715.0201	1446047.7379	624.282	CTL	5/8" Rebar with 2" Aluminum Cap,6' EAST OF EDGE PAVEMENT
61	561473.7994	1445963.4835	619.877	CTL	5/8" Rebar with 2" Aluminum Cap
62	562525.3419	1445720.8390	629.057	CTL	5/8" Rebar with 2" Aluminum Cap
63	563553.3294	1445597.2086	655.511	CTL	5/8" Rebar with 2" Aluminum Cap
64	564503.8437	1445435.2629	663.848	CTL	5/8" Rebar with 2" Aluminum Cap
65	565310.4190	1445295.8624	688.916	CTL	5/8" Rebar with 2" Aluminum Cap,2.5' EAST OF EDGE PAVEMENT 47' SOUTH WEST OF UM (UNDERGROUND MARKER)
66	566679.7587	1444607.5648	667.037	CTL	5/8" Rebar with 2" Aluminum Cap
67	567259.8736	1444117.2189	641.635	CTL	5/8" Rebar with 2" Aluminum Cap
68	568072.9819	1443920.4595	617.854	CTL	5/8" Rebar with 2" Aluminum Cap,2' WEST OF EDGE PAVEMENT
69	568851.8136	1443836.8239	605.118	CTL	5/8" Rebar with 2" Aluminum Cap
70	569628.1049	1443837.7094	595.828	CTL	5/8" Rebar with 2" Aluminum Cap,2' WEST OF EDGE PAVEMENT 61' SOUTH EAST OF COMBINATION POLE
71	570534.0277	1443913.7228	598.282	CTL	5/8" Rebar with 2" Aluminum Cap,5.5' WEST OF EDGE PAVEMENT 46' NORTH EAST OF COMBINATION POLE
72	571391.5734	1444189.4248	575.675	CTL	5/8" Rebar with 2" Aluminum Cap,2' EAST OF EDGE PAVEMENT 43' WEST OF FENCE
73	572143.7915	1444430.0045	577.780	CTL	5/8" Rebar with 2" Aluminum Cap,2' EAST OF EDGE PAVEMENT 40' WEST OF FENCE
74	572925.6655	1444684.4026	593.700	CTL	5/8" Rebar with 2" Aluminum Cap
75	573693.7598	1444924.6261	567.586	CTL	5/8" Rebar with 2" Aluminum Cap,1' WEST OF EDGE PAVEMENT 41' EAST OF FENCE
76	574508.3467	1445348.2431	559.721	CTL	5/8" Rebar with 2" Aluminum Cap
77	575209.2014	1445755.3547	572.922	CTL	5/8" Rebar with 2" Aluminum Cap,40' WEST OF FENCE
78	576031.0924	1445837.1288	576.418	CTL	5/8" Rebar with 2" Aluminum Cap,2' EAST OF EDGE PAVEMENT 36' WEST OF FENCE
79	576582.6770	1445767.8250	578.787	CTL	5/8" Rebar with 2" Aluminum Cap,3' WEST OF EDGE PAVEMENT 41' EAST OF FENCE
80	578264.2324	1445718.7247	603.248	CTL	5/8" Rebar with 2" Aluminum Cap
81	579308.1555	1445659.1842	649.640	CTL	5/8" Rebar with 2" Aluminum Cap,2' EAST OF EDGE PAVEMENT 49' WEST OF FENCE
82	580809.7500	1445541.7919	692.570	CTL	5/8" Rebar with 2" Aluminum Cap,3' WEST OF EDGE PAVEMENT 40' EAST OF FENCE
83	581359.3361	1445587.1354	704.674	CTL	5/8" Rebar with 2" Aluminum Cap,9' WEST OF EDGE PAVEMENT 17' NORTH OF GRAVEL DRIVEWAY
84	582148.8011	1445787.6274	675.728	CTL	5/8" Rebar with 2" Aluminum Cap
85	583124.9905	1446093.6459	664.461	CTL	5/8" Rebar with 2" Aluminum Cap
86	583959.8812	1446254.3530	666.705	CTL	5/8" Rebar with 2" Aluminum Cap
87	584470.5793	1446398.5864	662.184	CTL	5/8" Rebar with 2" Aluminum Cap
88	585242.8602	1446186.9409	665.316	CTL	5/8" Rebar with 2" Aluminum Cap
89	585828.0194	1446136.7340	674.294	CTL	5/8" Rebar with 2" Aluminum Cap
90	586423.9361	1445939.2018	662.911	CTL	5/8" Rebar with 2" Aluminum Cap
91	574525.0797	1445354.5842	559.582	CTL	5/8" Rebar with 2" Aluminum Cap,SET SET
92	578239.3637	1445730.8438	601.680	CTL	5/8" Rebar with 2" Aluminum Cap,SET SET
93	579312.2068	1445658.6519	650.158	CTL	5/8" Rebar with 2" Aluminum Cap
100	536465.6292	1426470.6169	390.845	GPS	AHTD GPS 320024,GPS ELEVATION
101	542741.5165	1432914.8098	407.717	GPS	AHTD GPS 320030,GPS ELEVATION
102	541207.4162	1432385.0121	408.138	GPS	AHTD GPS 320030A,GPS ELEVATION
103	553516.4022	1439282.2646	520.461	GPS	AHTD GPS 320031,GPS ELEVATION
104	552185.3327	1438161.3803	490.595	GPS	AHTD GPS 320031A,GPS ELEVATION
105	557770.0167	1444880.2559	646.777	GPS	AHTD GPS 320018,GPS ELEVATION
106	559433.9076	1445489.5560	632.947	GPS	AHTD GP 320032,GPS ELEVATION
107	566103.7403	1445182.6675	722.355	GPS	AHTD GPS 320033,GPS ELEVATION
108	568396.0644	1445811.2631	725.200	GPS	AHTD GPS 320033A,GPS ELEVATION
109	577241.0974	1445806.4230	580.668	GPS	AHTD GPS 320019,GPS ELEVATION
110	585765.7325	1448194.5076	622.496	GPS	AHTD GPS 670008,GPS ELEVATION
111	585657.5620	1449808.4641	611.137	GPS	AHTD GPS 670008A,GPS ELEVATION
913	538640.9641	1430733.9855	373.693	TBM	BENCH MARK-913 CHISELED SQUARE TOP HEADWALL 19'
914	539944.4435	1431837.2994	383.883	TBM	BENCH MARK-914 CHISELED SQUARE TOP HEADWALL
915	542822.5414	1432968.9343	416.247	TBM	TEMPORARY BENCH MARK-915 CHISELED SQUARE TOP HEADWALL
916	543447.6252	1433211.1825	431.569	TBM	BENCH MARK-916 CHISELED SQUARE TOP HEADWALL
917	544954.2678	1433643.1648	470.189	TBM	BENCH MARK-917 CHISELED SQUARE TOP HEADWALL,SOUTH GRAVEL DRIVEWAY
918	546400.8447	1434316.0575	425.162	TBM	BENCH MARK-918 CHISELED SQUARE TOP HEADWALL EAST OF
919	547759.0516	1434655.6204	446.548	TBM	BENCH MARK-919 CHISELED SQUARE TOP HEADWALL EAST CENTERLINE
920	548489.4638	1435031.3767	445.651	TBM	BENCH MARK-920 CHISELED SQUARE TOP HEADWALL WEST OF HIGHWAY 167
921	550054.0913	1436034.7897	468.010	TBM	TEMPORARY BENCH MARK-921 CHISLELED SQUARE TOP HEADWALL 5'W.
922	550686.0211	1436779.4326	483.965	TBM	TEMPORARY BENCH MARK-922,HIGHWAY 167,16' SOUTH GRAVEL DRIVEWAY
923	551302.2786	1437290.7570	478.467	TBM	TEMPORARY BENCH MARK-923,HIGHWAY 167,EAST OF POWER POLE AND TELEPHONE BOX
924	551561.4228	1437588.1944	480.772	TBM	TEMPORARY BENCH MARK-924,HIGHWAY 167,30' SOUTH GRAVEL DRIVEWAY TO 1-S-F
925	552099.9064	1438010.2686	490.388	TBM	TEMPORARY BENCH MARK-925
926	552574.6593	1438480.9957	494.221	TBM	TEMPORARY BENCH MARK-926,HIGHWAY 167,60' NORTH DRIVEWAY TO 2-S-F
927	554099.3517	1439953.0817	514.905	TBM	TEMPORARY BENCH MARK-927,HIGHWAY 167
929	554714.8907	1441094.2444	531.269	TBM	TEMPORARY BENCH MARK-929
930	555064.9677	1441823.5004	551.201	TBM	TEMPORARY BENCH MARK-930,HIGHWAY 167
931	555341.3759	1442290.4568	558.979	TBM	TEMPORARY BENCH MARK-931,EDGE PAVEMENT HIGHWAY 167
932	556156.9868	1443431.2666	585.037	TBM	TEMPORARY BENCH MARK-932
933	558667.9010	1445238.8226	623.424	TBM	TEMPORARY BENCH MARK-933,HIGHWAY 167
934	559603.2077	1445634.3864	632.481	TBM	TEMPORARY BENCH MARK-934,HIGHWAY 167,33' WEST OF CM (UNDERGROUND MARKER)
935	560069.7621	1445838.4571	632.309	TBM	CHISELED SQUARE
936	562050.5169	1445768.5457	625.111	TBM	COTTON PICKER SPINDLE IN POWER POLE
937	563474.9461	1445517.9298	654.310	TBM	COTTON PICKER SPINDLE IN POWER POLE
938	564589.8731	1445326.0318	665.188	TBM	COTTON PICKER SPINDLE IN POWER POLE
939	565695.4262	1445269.9149	696.090	TBM	COTTON PICKER SPINDLE IN POWER POLE,47' EAST OF EDGE PAVEMENT 8' NORTH OF ASPHALT DRIVEWAY
940	566690.7744	1444759.4210	662.910	TBM	COTTON PICKER SPINDLE IN COMBINATION POLE,61' EAST OF EDGE PAVEMENT 2' EAST OF FENCE
941	567625.4988	1443927.3362	628.558	TBM	COTTON PICKER SPINDLE IN POWER POLE
942	568691.7496	1443962.9479	606.445	TBM	COTTON PICKER SPINDLE IN POWER POLE
943	569825.2980	1443950.5487	594.370	TBM	CHISELED SQUARE IN CORNER CONCRETE
944	571126.7623	1444020.1516	580.386	TBM	COTTON PICKER SPINDLE IN POWER POLE
945	571560.0098	1444195.3352	573.631	TBM	CHISLELED SQUARE CENETR HEADWALL,6' WEST OF EDGE PAVEMENT ZZ=573.6312
946	572708.7341	1444527.5115	595.137	TBM	COTTON PICKER SPINDLE IN POWER POLE
947	574121.7419	1445136.0919	559.220	TBM	CHISELED SQUARE IN HEADWALL,4' WEST OF EDGE PAVEMENT ZZ=559.2201
948	574583.8709	1445386.0253	558.853	TBM	CHISELED SQUARE IN HEADWALL
949	575814.2234	1445770.6073	574.326	TBM	COTTON PICKER SPINDLE IN POWER POLE
950	576941.2770	1445746.9027	577.432	TBM	SQUARE IN CENTER HIGHWAY
951	578776.7293	1445670.6567	623.527	TBM	COTTON PICKER SPINDLE IN COMBINATION POLE,43' WEST OF EDGE PAVEMENT POLE *239
952	579415.6408	1445655.6846	652.018	TBM	SQUARE IN CENTER HIGHWAY
953	580207.8279	1445615.7920	668.439	TBM	CHISELED SQUARE
954	581201.7788	1445500.2263	717.948	TBM	COTTON PICKER SPINDLE IN COMBINATION POLE
955	582474.0632	1445869.9006	665.449	TBM	CHISELED SQUARE
956	583562.7722	1446152.3587	665.391	TBM	SQUARE IN CENTER HIGHWAY
957	584700.5353	1446371.0704	655.818	TBM	SQUARE IN CENTER HIGHWAY
958	585830.2030	1446129.0523	675.632	TBM	LIGHT POLE,9' NORTH WEST OF FIRE HYDRANT
959	587021.1142	1445958.5338	653.537	TBM	SQUARE IN CATCH BASIN
960	585764.6638	1448105.4149	625.711	TBM	ALUMINUM DISK
985	585662.3542	1449834.0160	614.248	TBM	ALUMINUM DISK
985	537763.9562	1429983.4198	388.320	BM	NGS MARK J 165
986	541977.9084	1432624.0893	392.600	BM	NGS MARK K 165
987	545935.5228	1434141.7601	424.730	BM	NGS MARK L 165
988	549299.0510	1435562.7042	455.370	BM	NGS MARK M 165,GPS ELEV
989	553230.3772	1439056.6854	509.463	BM	NGS MARK N 165
990	554298.2751	1440339.3309	518.600	BM	NGS MARK P 165
991	556623.0071	1444055.3283	604.960	BM	NGS MARK Q 165
992	561037.6978	1445994.5865	618.730	BM	NGS MARK R165 (1955)
993	573334.5301	1444745.5821	582.180	BM	NGS DISK T165 (1955)
994	577585.6742	1445686.1582	587.000	BM	NGS U-165
995	579868.1608	1445555.7847	668.520	BM	NGS MARK V 165
996	589308.6194	1445901.4667	689.990	BM	NGS MARK EAST 41
1515	538753.0460	1431438.7749	376.163	CTL	5/8" Rebar with 2" Aluminum Cap
1516	538733.1777	1432260.4980	354.693	CTL	5/8" Rebar with 2" Aluminum Cap
1517	542926.3398	1432357.0602	411.530	CTL	5/8" Rebar with 2" Aluminum Cap
1518	542893.5697	1431787.4385	424.962	CTL	5/8" Rebar with 2" Aluminum Cap
1519	550505.3163	1435211.0987	511.613	CTL	5/8" Rebar with 2" Aluminum Cap
1520	550215.8784	1435732.0373	482.456	CTL	5/8" Rebar with 2" Aluminum Cap
1521	546069.4227	1434710.1465	416.798	CTL	5/8" Rebar with 2" Aluminum Cap
1522	546080.0363	1434349.4746	419.744	CTL	5/8" Rebar with 2" Aluminum Cap
1523	553150.8022	1439862.8219	527.377	CTL	5/8" Rebar with 2" Aluminum Cap,OF NE COR OF 1-S-F GPS ELEVATION
1524	553417.2784	1439511.0115	502.232	CTL	5/8" Rebar with 2" Aluminum Cap
1525	555382.9277	1440200.6935	529.996	CTL	5/8" Rebar with 2" Aluminum Cap
1526	554870.3405	1440296.1301	520.844	CTL	5/8" Rebar with 2" Aluminum Cap
1527	556871.5139	1443745.5602	607.977	CTL	5/8" Rebar with 2" Aluminum Cap
1528	557268.1360	1443751.5778	630.085	CTL	5/8" Rebar with 2" Aluminum Cap,68' S. OF TP GPS ELEVATION
1529	556989.9614	1445497.9903	713.298	CTL	5/8" Rebar with 2" Aluminum Cap
1530	557427.9661	1445245.7599	676.500	CTL	5/8" Rebar with 2" Aluminum Cap
1531	560038.9815	1446944.5431	609.220	CTL	5/8" Rebar with 2" Aluminum Cap
1532	559981.9821	1446142.2129	633.799	CTL	5/8" Rebar with 2" Aluminum Cap

Note - Rebar and Cap - Standard -" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999931885 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME 050213GI.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 320030 - 320030A, 320031 - 320031A, 320033 - 320033A, 670008 - 670008A, 320018 - 320019, 320024 - 320032
CONVERGENCE ANGLE: 0-15-44.76 RIGHT AT LT: 35-52-22.3 LG: 91-32-56.4
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. SMITH
No. 11495
2-12-15

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED

2 SURVEY CONTROL DETAILS

FED.ROAD DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		71	311

JOB NO. 050214

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.		050214	72	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

HWY. 167

POINT NO.	TYPE	STATION	NORTHING	EASTING
8051	PT	617+71.02	559629.1828	1445614.3789
8052	PC	618+43.86	559695.4617	1445644.6030
8054	PT	621+41.21	559967.5819	1445764.4538
8055	PC	625+62.39	560355.2015	1445929.2033
8057	PT	633+05.28	561083.1598	1446009.7231
8058	PC	650+66.13	562815.0628	1445691.7598
8060	PT	654+22.13	563165.6907	1445630.1983
8061	PC	678+55.04	565565.1443	1445228.0991
8063	PT	689+95.37	566584.1798	1444748.7336
8064	PC	697+20.38	567132.4048	1444274.3081
8066	PT	705+03.25	567840.3838	1443970.0228
8067	PC	716+73.76	569005.2165	1443854.9253
8069	PT	720+28.96	569359.9069	1443852.9754
8070	PC	731+85.39	570511.9098	1443954.0287
8072	PT	736+50.22	570966.6144	1444045.7503
8073	PC	759+99.78	573203.7535	1444763.8390
8075	PT	770+22.41	574144.4712	1445161.3879
8076	PC	780+30.89	575034.7228	1445635.1846
8078	PT	788+64.07	575838.4237	1445811.8893
8079	PC	814+03.09	578373.4273	1445669.1756
8081	PT	820+34.37	579004.1225	1445642.3768
8082	PC	836+06.86	580575.9633	1445597.2638
8084	PT	848+56.00	581814.0485	1445730.9577
8085	PC	855+44.62	582482.3001	1445897.2040
8087	PT	856+96.18	582629.1240	1445934.7633
8088	PC	862+80.42	583194.1677	1446083.2958
8090	PT	864+16.56	583325.7341	1446118.2987
8091	PC	868+79.03	583772.3064	1446238.5293

ANTIOCH ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8116	POB	1500+00.00	560040.0906	1445795.2721
8117	PC	1500+80.20	560008.7199	1445869.0805
8119	PT	1501+45.37	559996.8477	1445932.6424
8120	POE	1503+31.67	560002.9178	1446118.8421

MISTY LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8121	POB	1600+00.00	561248.3155	1445979.4019
8122	PC	1600+80.00	561262.7615	1446058.0873
8124	PT	1601+74.54	561250.3812	1446150.2379
8125	POE	1604+29.23	561139.9041	1446379.7242

BELLER LAKE LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8126	POB	1700+00.00	561466.1739	1445754.3995
8127	PC	1700+65.59	561461.6801	1445819.8376
8129	PT	1701+03.11	561463.7935	1445857.2003
8130	POE	1701+84.40	561478.4711	1445937.1472

COOTS LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8131	POB	1800+00.00	562804.1138	1445693.7699
8132	PC	1800+64.21	562815.7086	1445756.9251
8134	PT	1801+05.11	562818.9016	1445797.6292
8135	POE	1802+94.74	562814.1605	1445987.1931

RIM ROCK ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8136	POB	1900+00.00	566897.9948	1444079.6353
8137	PC	1901+29.53	567025.7909	1444100.7384
8139	PT	1902+78.50	567150.5856	1444175.5186
8140	POE	1903+43.60	567190.2303	1444227.1578

FOX RUN LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8141	POB	2000+00.00	567050.6899	1443886.5540
8142	PC	2000+78.48	567072.7451	1443961.8742
8144	PT	2002+02.76	567069.2032	1444084.0710
8145	POE	2002+29.88	567060.0869	1444109.6138

SUNSET RIDGE ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8146	POB	2100+00.00	568712.8837	1443883.8108
8147	PC	2101+23.91	568725.0683	1444007.1237
8149	PT	2101+96.11	568724.3537	1444079.1777
8150	POE	2103+53.94	568705.7231	1444235.8977

SANDTOWN ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8151	POB	2200+00.00	568795.1370	1443606.3744
8152	PC	2201+88.58	568816.2491	1443793.7660
8154	PT	2201+93.14	568816.7288	1443798.3025
8155	POE	2202+68.02	568824.0921	1443872.8223

ARROWHEAD LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8156	POB	2300+00.00	573030.2332	1444041.9051
8157	PC	2302+29.86	572896.9353	1444229.1734
8159	PT	2303+32.43	572851.1605	1444320.5056
8160	POE	2306+46.79	572755.0841	1444619.8227

FOREST LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8161	POB	2400+00.00	576418.9915	1445779.1891
8162	PC	2400+88.09	576423.7136	1445867.1553
8164	PT	2401+01.58	576424.1636	1445880.6322
8165	POE	2402+98.85	576426.7543	1446077.8857

WIRE LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8166	POB	2500+00.00	579319.3758	1445278.2235
8167	PC	2500+14.42	579330.7399	1445287.1078
8169	PT	2503+21.92	579465.0292	1445552.8039
8170	POE	2503+98.24	579467.2186	1445629.0856

STAGE 3 MOT

POINT NO.	TYPE	STATION	NORTHING	EASTING
8171	POB	624+16.21	560220.6702	1445872.0236
8172	PC	624+21.57	560225.6056	1445874.1213
8174	PT	629+21.78	560708.4879	1445996.9666
8175	POE	629+45.13	560731.7262	1445999.2123
8176	POB	759+99.78	573198.6192	1444780.5704
8177	PC	764+51.47	573628.6965	1444918.6189
8179	PT	769+62.78	574099.0554	1445117.3933
8180	POE	770+23.55	574152.6941	1445145.9401
8181	POB	820+34.37	579003.6210	1445624.8840
8182	PC	822+90.46	579259.6032	1445617.5371
8184	PT	825+48.65	579517.4085	1445627.5716
8185	PC	825+49.75	579518.4933	1445627.6875
8187	PT	828+07.94	579776.2986	1445637.7220
8188	POE	833+69.43	580337.5505	1445621.6136

2/2/2015

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	73	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

HWY. 167
PI = 616+45.68
Δ = 1°15'12"RT.
D = 0°30'00"
T = 125.34'
L = 250.67'
PC = 615+20.34
PT = 617+71.02
NO SUPER

C.L. HWY. 167

PT 617+71.02

PC 618+43.86

N 24°30'49" E
8051 72.85'
8052
N 24°30'49" E
148.68'
620
N 23°01'37" E
148.68'
8054

PT 621+41.21

STA. 1500+00.00 ON ANTIOCH =
STA. 622+20.00 ON HWY. 167
Δ 90°00'00"

PIN&P
POB REBAR/CAP

POB 1500+00.00

BEGIN 624+16.21

SURVEY BASELINE

HWY. 167
PI = 619+92.55
Δ = 1°29'12"LT.
D = 0°30'00"
T = 148.68'
L = 297.35'
PC = 618+43.86
PT = 621+41.21
NO SUPER

PI 619+92.55

S 66°58'23" E
80.20'
8056
S 66°58'23" E
33.11'

1500

N 23°01'37" E
421.18'
8171
8172

625
625

PC 625+62.39

C.L. STAGE 3 M.O.T.

PC 1500+80.20

PT 1501+45.37

PI 1501+13.31

N 88°07'58" E
33.11'
8169

N 88°07'58" E
186.30'

8170

POE 1503+31.67

8020

C.L. ANTIOCH ROAD

STA. 621+41.21
BEGIN JOB 050214
& END JOB 050213
LOG MILE 9.43

ANTIOCH ROAD
PI = 1501+13.31
Δ = 24°53'39"LT.
R = 150'
T = 33.11'
L = 65.17'
PC = 1500+80.20
PT = 1501+45.37

PC 624+21.57

N 23°01'37" E
5.36'

PI 626+73.64

PIN&P
PDR #5 SPIKE

STAGE 3 M.O.T.
PI = 626+73.64
Δ = 17°30'26"LT.
D = 3°30'00"
T = 252.07'
L = 500.21'
PC = 624+21.57
PT = 629+21.78

SURVEY BASELINE N 22°29'54.31" E
781.21'

8055
N 23°01'37" E
252.07'

8174
8175
N 5°31'11" E
252.07'
N 5°31'11" E
23.35'

630

N 23°01'37" E
382.35'

PIN&P
PDR #60
REBAR/CAP, 6' E OF EP

PI 629+44.75

PT 629+21.78

POE 629+45.13

HWY. 167
PI = 629+44.75
Δ = 33°25'48"LT.
D = 4°30'00"
T = 382.35'
L = 742.89'
PC = 625+62.39
PT = 633+05.28
e = 0.096'/'
Ls = 567'

PI 633+05.28

N 10°24'11" W
1760.85'
8057

SURVEY BASELINE N 6°20'10.08" W
763.44'

N 10°24'11" W
382.35'

PIN&P
PDR #30
SPIKE

PIN&P
PDR #20 PROPOSED EE PAV'T X-SLOPE LEVELS T

PIN&P
PDR #5
SPIKE

PIN&P
PDR #5
SPIKE

2/2/2015

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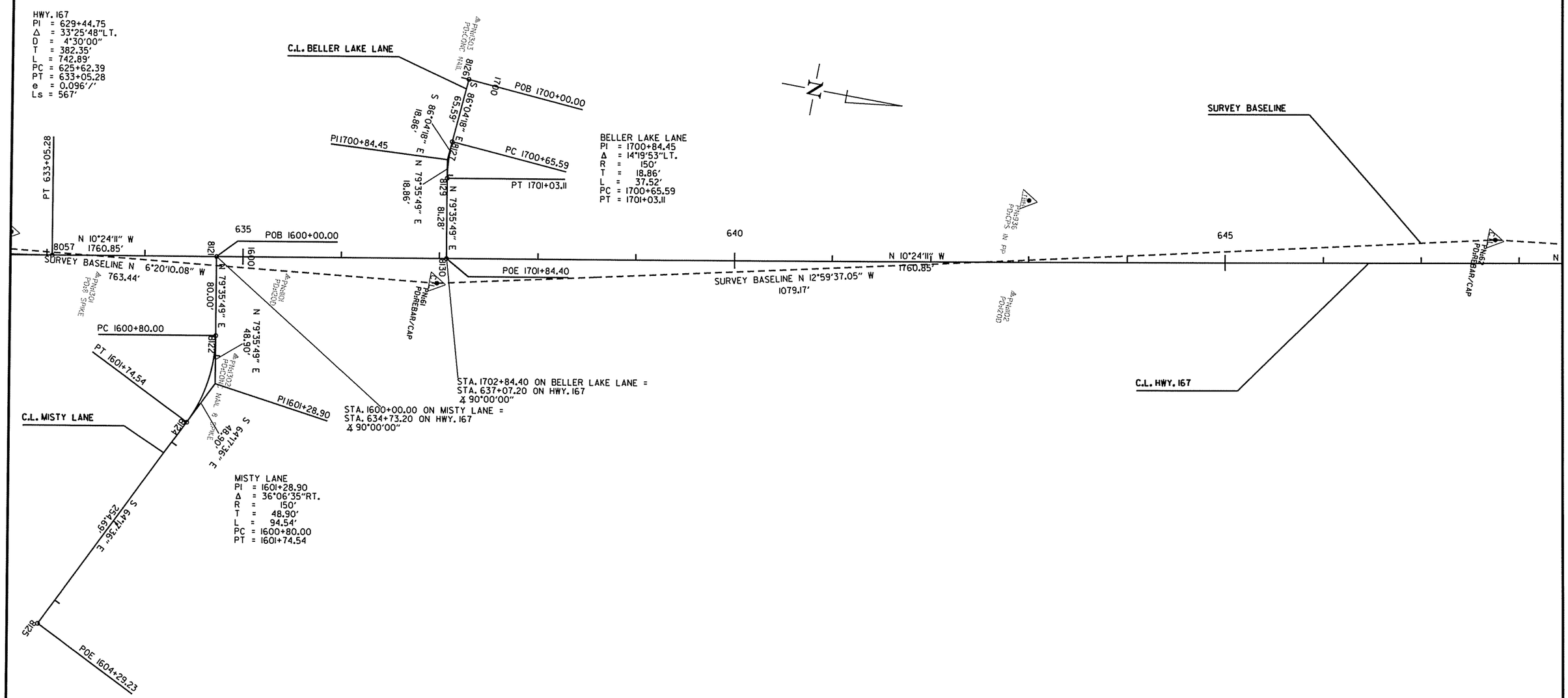
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	74	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



SURVEY CONTROL DETAILS

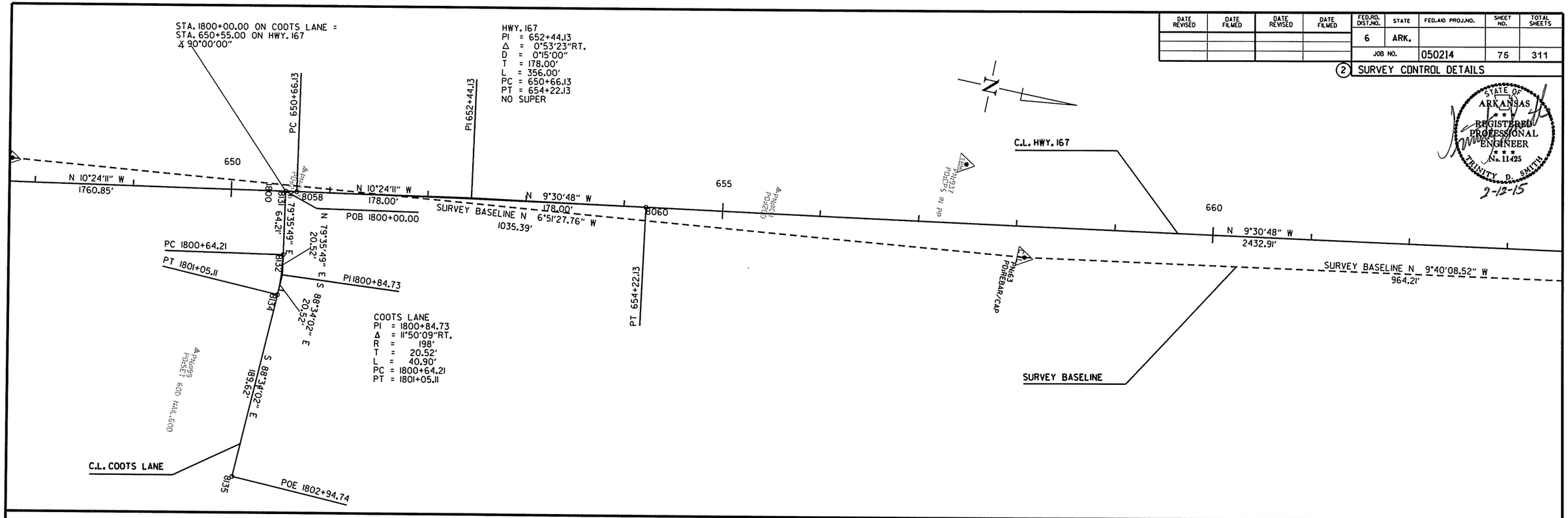
8/8/2014

R050214.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.		050214	75	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



SURVEY CONTROL DETAILS

8/8/2014

R050214.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.		050214	76	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

SURVEY BASELINE

PC 678+55.04

SURVEY BASELINE N 26°41'10.88" W
1532.59'

8061

680

C.L. HWY. 167

N 9°30'48" W
584.84'

685

PT 689+95.37

8063

690

SURVEY BASELINE N 40°12'22.98" W
759.59'

SURVEY BASELINE N 40°52'21" W
725.00'

N 40°52'21" W
584.84'

PI 684+39.88

HWY. 167
PI = 684+39.88
Δ = 31°21'33"LT.
D = 2°45'00"
T = 584.84'
L = 1140.33'
PC = 678+55.04
PT = 689+95.37
e = 0.072'/'
Ls = 450'

8/8/2014

R050214.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	77	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

FOX RUN LANE
PI = 2001+42.75
Δ = 35°57'46"RT.
R = 198'
T = 64.26'
L = 124.28'
PC = 2000+78.48
PT = 2002+02.76

RIM ROCK ROAD
PI = 1902+07.74
Δ = 43°06'32"RT.
R = 198'
T = 78.21'
L = 148.97'
PC = 1901+29.53
PT = 1902+78.50

HWY. 167
PI = 701+24.63
Δ = 35°13'46"RT.
D = 4°30'00"
T = 404.25'
L = 782.87'
PC = 697+20.38
PT = 705+03.25
e = 0.096'/'
Ls = 567'

C.L. FOX RUN LANE
C.L. RIM ROCK ROAD
C.L. HWY. 167
POB 2000+00.00
POB 1900+00.00
PC 2000+78.48
PT 2002+02.76
POE 2002+29.88
PI 2001+42.75
PI 1902+07.74
PC 1901+29.53
PT 1902+78.50
PI 701+24.63
POE 1903+43.60
PC 697+20.38
PT 705+03.25
STA. 1901+65.00 ON RIM ROCK ROAD = STA. 2002+29.88 ON FOX RUN LANE ∡ 90°00'00"
STA. 1903+43.60 ON RIM ROCK ROAD = STA. 697+95.00 ON HWY. 167 ∡ 90°00'00"
SURVEY BASELINE
SURVEY BASELINE N 40°12'22.98" W 759.59'
SURVEY BASELINE N 13°36'11.45" W 836.58'
SURVEY BASELINE N 6°07'45.39" W 783.31'
N 73°40'44" E 78.28'
N 73°40'44" E 64.26'
S 10°21'30" E 64.26'
S 10°21'30" E 21.12'
N 9°22'36" E 129.53'
N 9°22'36" E 78.21'
N 52°29'08" E 65.10'
N 40°52'21" W 404.25'
N 40°52'21" W 725.00'
N 5°38'35" W 404.25'
N 5°38'35" W 1170.51'
POBB Mag Nail w/Cap "RLS 1425" at E.P.
POBB Mag Nail w/Cap "RLS 1425" at W. of EP
Found Pipe
Found Rebar/Cap
Found Rebar
Found Pk Nail
Found Pk Nail Spike
Found Pk Nail Pipe Spike
Found Pk Nail Pipe Spike in Pipe
Found Pk Nail Pipe Spike in Pipe Flush
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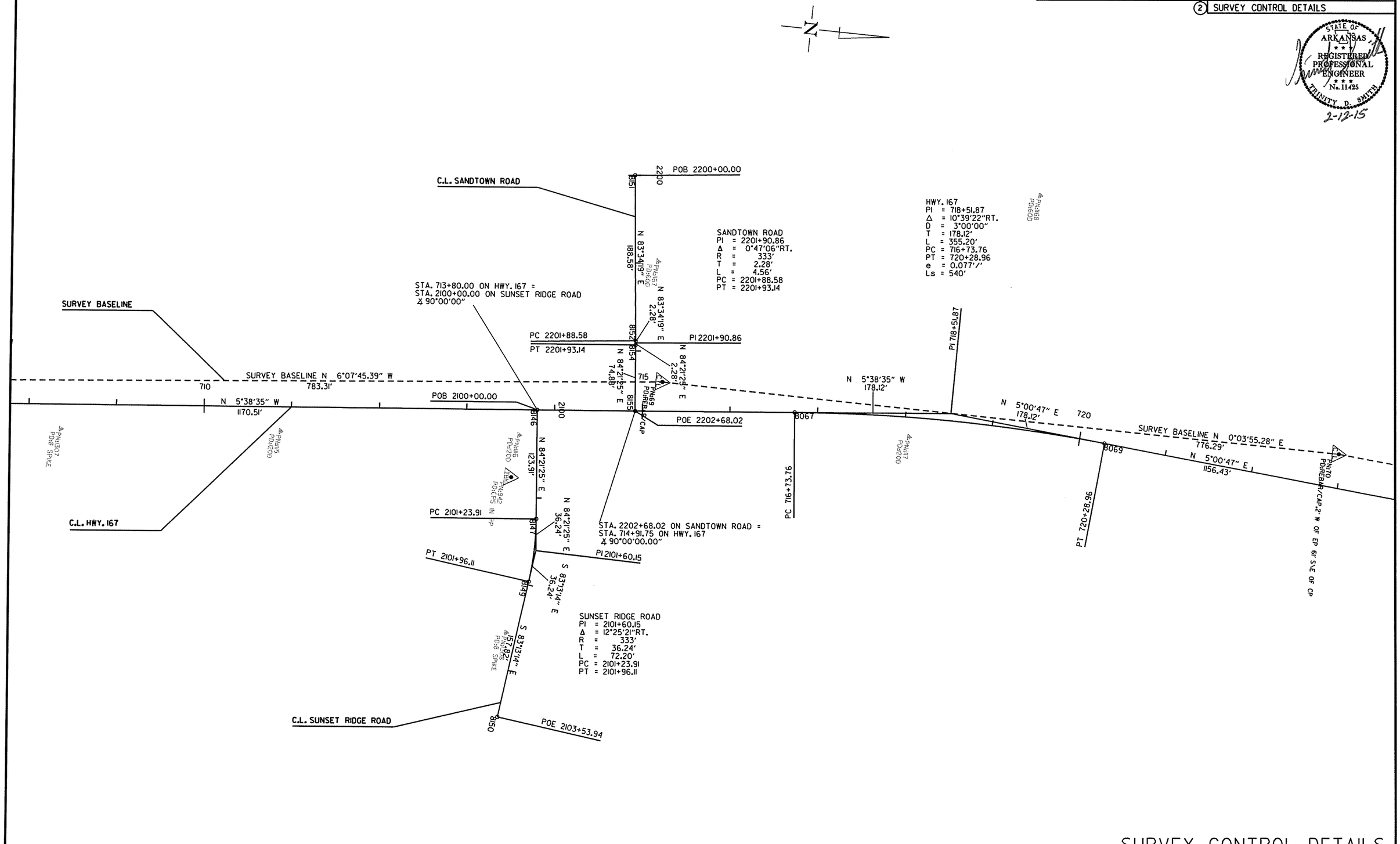
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	78	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



SURVEY CONTROL DETAILS

8/8/2014

R050214.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.		050214	79	311

(2) SURVEY CONTROL DETAILS

HWY. 167
PI = 734+18.77
Δ = 12°46'58"RT.
D = 2°45'00"
T = 233.38'
L = 464.83'
PC = 731+85.39
PT = 736+50.22
e = 0.072'/'
Ls = 540'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

SURVEY BASELINE

SURVEY BASELINE N 4°47'46.65" E
909.11'

725

730

735

740

745

750

N 5°00'47" E
1156.43'

N 5°00'47" E
233.38'

N 17°47'45" E
233.38'

N 17°47'45" E
2349.56'

SURVEY BASELINE N 17°49'21.58" E
900.78'

N 17°47'45" E
2349.56'

SURVEY BASELINE N 17°44'08.46" E
789.75'

SURVEY BASELINE N 18°01'23.94" E
822.22'

C.L. HWY. 167

PI 734+18.77

PC 731+85.39

PT 736+50.22

8070

8072

PNT70 PDREBAR/CAP.2' W OF EP 61' SVE OF CP

PNT71 PDREBAR/CAP.5.5' W OF EP 49' NVE OF CP

PNT72 PDREBAR/CAP.2' E OF EP 43' W OF FE

PNT73 PDREBAR/CAP.2' E OF EP 40' W OF FE

PNH813 PDSCH SQ IN CONC

PNH814 PDSCPS IN PP

PNH815 PDSCH 100' CNTR HW 6' W OF EP 72.5'S3.63'E

PNH816 PDSCH SQ IN CONC

PNH817 PDSCH SQ IN CONC

PNH818 PDSCH SQ IN CONC

PNH819 PDSCH SQ IN CONC

PNH820 PDSCH SQ IN CONC

PNH821 PDSCH SQ IN CONC

PNH822 PDSCH SQ IN CONC

PNH823 PDSCH SQ IN CONC

PNH824 PDSCH SQ IN CONC

PNH825 PDSCH SQ IN CONC

PNH826 PDSCH SQ IN CONC

PNH827 PDSCH SQ IN CONC

PNH828 PDSCH SQ IN CONC

PNH829 PDSCH SQ IN CONC

PNH830 PDSCH SQ IN CONC

PNH831 PDSCH SQ IN CONC

PNH832 PDSCH SQ IN CONC

PNH833 PDSCH SQ IN CONC

PNH834 PDSCH SQ IN PP

PNH835 PDSCH SQ IN PP

8/8/2014

R050214.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	80	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

C.L. ARROWHEAD LANE

POB 2300+00.00

2300

S 54°33'24" E 229.86'

8152

ARROWHEAD LANE
PI = 2302+81.56
Δ = 17°38'51"LT.
R = 333'
T = 51.69'
L = 102.57'
PC = 2302+29.86
PT = 2303+32.43

PC 2302+29.86

PI 2302+81.56

S 54°33'24" E 51.69'

S 72°21'15" E 51.69'

PT 2303+32.43

8159

PK NAIL SET PDOR SPIKE

S 72°21'15" E 314.36'

2305

HWY. 167
PI = 765+12.46
Δ = 10°13'35"RT.
D = 1°00'00"
T = 512.68'
L = 1022.63'
PC = 759+99.78
PT = 770+22.41
e = 0.030'/'
Ls = 540'

STAGE 3 M.O.T.
PI = 767+07.81
Δ = 10°13'35"RT.
D = 2°00'00"
T = 256.34'
L = 511.31'
PC = 764+51.47
PT = 769+62.78

C.L. HWY. 167

POB 759+99.78

PI 765+12.46

PI 767+07.81

PK NAIL SET PDOR SPIKE

755

POE 2306+46.79

N 17°47'45" E 2349.56'

760

8160

SURVEY BASELINE N 18°01'23.94" E 822.22'

PK NAIL SET PDOR SPIKE

PK NAIL SET PDOR SPIKE

PK NAIL SET PDOR SPIKE

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.		050214	81	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STAGE 3 M.O.T.
PI = 767+07.81
Δ = 10°13'35"RT.
D = 2°00'00"
T = 256.34'
L = 511.31'
PC = 764+51.47
PT = 769+62.78

C.L. STAGE 3 M.O.T.

SURVEY BASELINE

C.L. HWY. 167

HWY. 167
PI = 784+58.12
Δ = 31°14'40"LT.
D = 3°45'00"
T = 427.23'
L = 833.18'
PC = 780+30.89
PT = 788+64.07
e = 0.090'/'
Ls = 630'

N 28°01'20" E
256.34'

N 28°01'20" E
60.76'

POE 770+23.55

770

770

8180

8179

8075

N 28°01'20" E
512.68'

SURVEY BASELINE N 27°28'34.29" E
918.15'

775

N 28°01'20" E
1008.48'

780

PC 780+30.89

8076

N 28°01'20" E
427.23'

SURVEY BASELINE N 30°09'05.02" E
810.52'

PT 769+62.78

PT 770+22.41

HWY. 167
PI = 765+12.46
Δ = 10°13'35"RT.
D = 1°00'00"
T = 512.68'
L = 1022.63'
PC = 759+99.78
PT = 770+22.41
e = 0.030'/'
Ls = 540'

PNH47 PDH250 IN KH-4 H.H.

PNH48 PDH250 NAIL-SET

PNH49 PDH250 NAIL-SET

PNH50 PDH250 NAIL-SET

PNH51 PDH250 NAIL-SET

PNH52 PDH250 NAIL-SET

PNH53 PDH250 NAIL-SET

PN178 PDREBAR/CAP

PNH51 PDREBAR W/ALC.SET

PNH48 PDH250 IN INK

PN177 PDREBAR/CAP .40' W OF FE

785

SURVEY BASELINE N 5°40'55.01" E
825.95'

N 28°01'20" E
427.23'

N 3°13'20" W
427.23'

PT 788+64.07

790

N 3°13'20" W
2539.02'

8078

PI 784+58.12

PNH44 PDH250 NAIL-SET

PN178 PDREBAR/CAP.2' E OF EP 36' W OF FE

SURVEY BASELINE

C.L. HWY. 167

SURVEY BASELINE N 7°09'41.03" W
555.92'

STA. 2400+00.00 ON FOREST LANE =
STA. 794+45.56 ON HWY. 167
Δ 90°00'00"

795

8161

2400

POB 2400+00.00

PN179 PDREBAR/CAP.3' W OF EP 41' E OF FE

SURVEY BASELINE N 1°40'21.08" W
1682.27'

N 86°55'38" E
88.09'

N 86°55'38" E
6.74'

8162

PC 2400+88.09

PT 2401+01.58

PI 2400+94.84

8164

N 89°14'51" E
6.74'

N 89°14'51" E
197.27'

C.L. FOREST LANE

PNH360 PDH250 NAIL-SET & SPK

8165

POE 2402+98.85

FOREST LANE
PI = 2400+94.84
Δ = 2°19'13"RT.
R = 333'
T = 6.74'
L = 13.49'
PC = 2400+88.09
PT = 2401+01.58

8/8/2014

R050214.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	82	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

N

800 805 810

N 3°13'20" W
2539.02'

SURVEY BASELINE N 1°40'21.08" W
1682.27'

C.L. HWY. 167

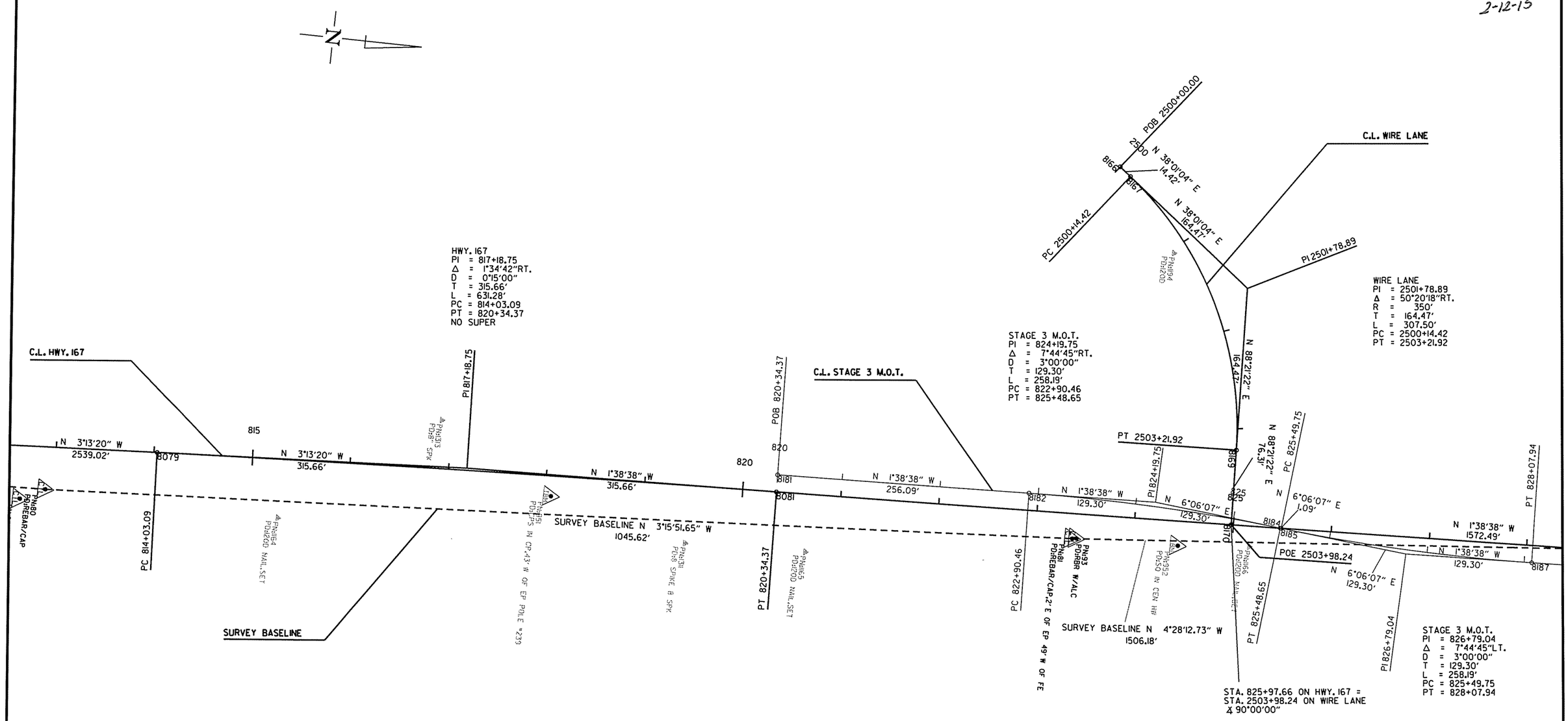
SURVEY BASELINE

PK NAIL SET
PK NAIL SET IN CEN HW
PK NAIL SET
PK NAIL SET
PK NAIL SET

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.		050214	83	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



SURVEY CONTROL DETAILS

8/8/2014

R050214.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.		050214	84	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STAGE 3 M.O.T.
PI = 826+79.04
Δ = 7°44'45"LT.
D = 3°00'00"
T = 129.30'
L = 258.19'
PC = 825+49.75
PT = 828+07.94

HWY. 167
PI = 842+35.33
Δ = 15°36'51"RT.
D = 1°15'00"
T = 628.47'
L = 1249.14'
PC = 836+06.86
PT = 848+56.00
e = 0.037'/'
Ls = 540'

SURVEY BASELINE

PT 828+07.94
N 1°38'38" W
1572.49'
8187
PK NAIL PD1,PK
PK NAIL PD1,PK
830
SURVEY BASELINE N 4°28'12.73" W
1506.18'
POE 833+69.43
PK NAIL PD1,PK
PK NAIL PD1,PK
N 1°38'38" W
561.48'
8188
PK NAIL PD1,PK
835
C.L. STAGE 3 M.O.T.
PK NAIL PD1,PK
C.L. HWY. 167
PC 836+06.86
8082
PK NAIL PD1,PK
PK NAIL PD1,PK
PK NAIL PD1,PK

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.		050214	85	311

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

HWY. 167
PI = 863+48.49
Δ = 0°20'25"RT.
D = 0°15'00"
T = 68.07'
L = 136.14'
PC = 862+80.42
PT = 864+16.56
NO SUPER

C.L. HWY. 167

PI 863+48.49

860

N 14°43'41" E
584.24'

SURVEY BASELINE N 17°24'19.10" E
1023.03'

PK NAIL & PDH FOUND

PK NAIL & PDH FOUND

PK NAIL & PDH FOUND

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
623+00	35	52	16.40	91	32	59.10	5' RT.	0-5	23	8	A-4 (0)	BROWN/GRAY
623+00	35	52	16.40	91	32	59.00	21' RT.	0-5	29	16	A-6 (7)	BROWN/GRAY
631+00	35	52	24.10	91	32	56.70	6' LT.	0-5	27	14	A-6 (6)	BROWN/GRAY
631+00	35	52	24.00	91	32	56.80	15' LT.	0-5	25	12	A-6 (4)	BROWN/GRAY
631+00	35	52	24.00	91	32	57.00	31' LT.	0-5	22	5	A-4 (0)	BROWN/GRAY
639+00	35	52	31.80	91	32	58.00	13' RT.	0-5	31	18	A-6 (3)	BROWN/GRAY
639+00	35	52	31.90	91	32	57.90	25' RT.	0-5	28	14	A-6 (4)	BROWN/GRAY
639+00	35	52	31.90	91	32	57.70	35' RT.	0-5	34	19	A-6 (7)	BROWN/GRAY
639+00	35	52	31.00	91	32	57.70	35' RT.	0-4Z	30	16	A-2-6 (1)	BROWN/GRAY
647+00	35	52	39.60	91	32	59.90	6' LT.	0-5	26	11	A-6 (2)	BROWN/GRAY
647+00	35	52	39.60	91	33	0.10	17' LT.	0-5	17	5	A-4 (0)	BROWN/GRAY
647+00	35	52	39.60	91	33	0.30	32' LT.	0-5				BROWN/GRAY
655+00	35	52	47.40	91	33	1.30	17' RT.	0-5	34	20	A-6 (9)	BROWN/GRAY
655+00	35	52	47.40	91	33	1.20	26' RT.	0-5	18	6	A-4 (0)	BROWN/GRAY
655+00	35	52	47.50	91	33	1.00	48' RT.	0-5	27	10	A-4 (5)	BROWN/GRAY
663+00	35	52	55.20	91	33	3.20	6' LT.	0-5	32	15	A-6 (6)	BROWN/GRAY
663+00	35	52	55.20	91	33	3.30	16' LT.	0-3.5Z	31	15	A-6 (6)	BROWN
663+00	35	52	55.20	91	33	3.50	30' LT.	0-5	32	12	A-6 (7)	BROWN/GRAY
671+00	35	53	2.90	91	33	4.50	18' RT.	0-5	39	20	A-6 (11)	BROWN/GRAY
671+00	35	53	2.90	91	33	4.40	28' RT.	0-5	36	18	A-6 (7)	BROWN/GRAY
671+00	35	53	3.00	91	33	4.20	43' RT.	0-4Z	31	12	A-6 (2)	BROWN/GRAY
679+00	35	53	10.80	91	33	6.60	17' LT.	0-5	32	14	A-6 (7)	BROWN/GRAY
679+00	35	53	10.70	91	33	6.70	27' LT.	0-4Z	30	15	A-6 (6)	BROWN/GRAY
679+00	35	53	10.70	91	33	6.80	40' LT.	0-5	32	10	A-4 (4)	BROWN/GRAY
687+00	35	53	18.40	91	33	10.00	17' RT.	0-5	39	24	A-6 (9)	BROWN/GRAY
687+00	35	53	18.40	91	33	9.90	27' RT.	0-5	29	13	A-6 (5)	BROWN/GRAY
687+00	35	53	18.50	91	33	9.70	48' RT.	0-2.7Z	31	13	A-6 (4)	GRAY
695+00	35	53	24.10	91	33	16.30	19' LT.	0-5	26	11	A-6 (2)	BROWN/GRAY
695+00	35	53	24.00	91	33	16.40	28' LT.	0-2.5Z				BROWN/GRAY
695+00	35	53	23.90	91	33	16.50	47' LT.	0-5	29	13	A-6 (6)	BROWN/GRAY
703+00	35	53	31.00	91	33	20.90	7' RT.	0-5	30	15	A-6 (6)	BROWN/GRAY
703+00	35	53	31.00	91	33	20.80	18' RT.	0-5	25	10	A-4 (4)	BROWN/GRAY
703+00	35	53	31.00	91	33	20.60	30' RT.	0-5	37	22	A-6 (8)	BROWN/GRAY
703+00	35	53	31.00	91	33	20.60	30' RT.	0-3.5Z	23	12	A-2-6 (0)	BROWN/GRAY
712+00	35	53	39.70	91	33	22.30	17' LT.	0-5	23	9	A-4 (1)	BROWN
712+00	35	53	39.70	91	33	22.40	27' LT.	0-5	19	7	A-4 (0)	BROWN
712+00	35	53	39.70	91	33	22.60	43' LT.	0-3.5Z				BROWN
719+00	35	53	46.60	91	33	22.70	6' RT.	0-4Z	55	35	A-7-6 (34)	BROWN/GRAY
719+00	35	53	46.60	91	33	22.60	17' RT.	0-4Z	24	11	A-6 (4)	BROWN/GRAY
719+00	35	53	46.60	91	53	22.40	31' RT.	0-0.8Z				BROWN/GRAY
728+00	35	53	55.80	91	33	22.10	18' LT.	0-5	19	16	A-6 (5)	BROWN/GRAY
728+00	35	53	55.80	91	33	22.20	27' LT.	0-5				BROWN/GRAY
728+00	35	53	55.80	91	33	22.60	54' LT.	0-2.5Z				BROWN
735+00	35	54	2.70	91	33	20.70	7' RT.	0-3.5Z	41	28	A-7-6 (13)	BROWN/GRAY
735+00	35	54	2.70	91	33	20.60	17' RT.	0-3.5Z	25	12	A-6 (4)	BROWN/GRAY
735+00	35	54	2.70	91	33	20.40	31' RT.	0-0.8Z				BROWN/GRAY
742+00	35	54	8.80	91	33	18.50	5' LT.	0-5				BROWN/GRAY
742+00	35	54	8.80	91	33	18.60	16' LT.	0-5	31	17	A-6 (8)	BROWN/GRAY
742+00	35	54	8.90	91	33	19.00	46' LT.	0-5	37	18	A-6 (8)	BROWN/GRAY
751+00	35	54	17.40	91	33	14.90	5' RT.	0-5	34	19	A-6 (11)	BROWN/GRAY
751+00	35	54	17.40	91	33	14.80	14' RT.	0-5	29	15	A-6 (7)	BROWN/GRAY
751+00	35	54	17.40	91	33	14.60	32' RT.	0-5	38	25	A-6 (19)	BROWN/GRAY
759+00	35	54	24.80	91	33	12.10	6' LT.	0-5	29	14	A-6 (6)	BROWN/GRAY
759+00	35	54	24.80	91	33	12.20	16' LT.	0-5				BROWN/GRAY
759+00	35	54	24.90	91	33	12.40	30' LT.	0-2.5Z	27	13	A-6 (4)	BROWN/GRAY
767+00	35	54	32.10	91	33	8.30	6' RT.	0-4.7Z	30	16	A-6 (6)	BROWN/GRAY
767+00	35	54	32.00	91	33	8.20	16' RT.	0-5	25	13	A-6 (4)	BROWN/GRAY
767+00	35	54	32.00	91	33	8.00	35' RT.	0-5	57	42	A-7-6 (40)	BROWN
767+00	35	54	32.00	91	33	8.00	35' RT.	0-5	60	38	A-7-6 (38)	BROWN
774+00	35	54	38.60	91	33	4.20	6' LT.	0-5	27	14	A-6 (2)	BROWN/GRAY
774+00	35	54	38.60	91	33	4.30	17' LT.	0-5	31	20	A-6 (6)	BROWN/GRAY
774+00	35	54	38.70	91	33	4.40	31' LT.	0-5	17	6	A-4 (0)	BROWN/GRAY
783+00	35	54	45.60	91	32	59.50	5' RT.	0-5	33	18	A-6 (8)	BROWN/GRAY
783+00	35	54	45.60	91	32	59.40	15' RT.	0-5	29	16	A-6 (5)	BROWN/GRAY
783+00	35	54	45.50	91	32	59.20	30' RT.	0-5	36	19	A-6 (11)	BROWN/GRAY
791+00	35	54	53.60	91	32	58.50	6' LT.	0-5	29	15	A-6 (8)	BROWN/GRAY
791+00	35	54	53.60	91	32	58.60	16' LT.	0-5	25	13	A-6 (5)	BROWN
791+00	35	54	53.60	91	32	58.80	30' LT.	0-5	37	19	A-6 (16)	BROWN/GRAY
799+00	35	55	1.20	91	32	58.70	11' RT.	0-5	21	9	A-4 (2)	BROWN/GRAY
799+00	35	55	1.20	91	32	58.50	30' RT.	0-5	27	12	A-6 (6)	BROWN/GRAY
807+00	35	55	9.80	91	32	59.50	11' LT.	0-5	17	7	A-4 (0)	BROWN/GRAY
807+00	35	55	9.70	91	32	59.80	31' LT.	0-5				BROWN/GRAY
807+00	35	55	9.70	91	32	59.80	31' LT.	0-5	47	32	A-7-6 (24)	BROWN
815+00	35	55	17.40	91	32	59.80	5' RT.	0-5	21	10	A-4 (2)	BROWN
815+00	35	55	17.40	91	32	59.70	15' RT.	0-5	27	17	A-6 (6)	BROWN
815+00	35	55	17.40	91	32	59.50	32' RT.	0-5	23	10	A-4 (3)	BROWN
823+00	35	55	25.50	91	33	0.50	6' LT.	0-1.5Z				BROWN/GRAY
823+00	35	55	25.50	91	33	0.60	16' LT.	0-4Z	ND	NP	A-2-4 (0)	BROWN/GRAY
823+00	35	55	25.50	91	33	0.70	27' LT.	0-1.5Z	ND	NP	A-2-4 (0)	BROWN/GRAY
831+00	35	55	33.60	91	33	0.80	6' RT.	0-5	14	3	A-4 (0)	BROWN/GRAY
831+00	35	55	33.60	91	33	0.70	16' RT.	0-5	15	5	A-4 (0)	RED/BROWN
831+00	35	55	33.70	91	33	0.40	36' RT.	0-3.5Z	15	3	A-4 (0)	BROWN/GRAY
839+00	35	55	41.50	91	33	1.40	5' LT.	0-5	35	24	A-6 (8)	RED/BROWN
839+00	35	55	41.50	91	33	1.50	16' LT.	0-5	24	14	A-6 (3)	BROWN
839+00	35	55	41.50	91	33	1.80	38' LT.	0-3.5Z	20	8	A-2-4 (0)	BROWN/GRAY
847+00	35	55	49.40	91	32	59.80	6' RT.	0-5	24	11	A-6 (1)	BROWN/GRAY
847+00	35	55	49.40	91	32	59.70	16' RT.	0-5	18	6	A-4 (0)	BROWN/GRAY
847+00	35	55	49.30	91	32	59.30	43' RT.	0-4Z	29	16	A-2-6 (0)	BROWN/GRAY
855+00	35	55	0.90	91	32	57.40	6' LT.	0-5	35	22	A-6 (10)	BROWN/GRAY
855+00	35	55	56.90	91	32	57.50	16' LT.	0-5	32	19	A-6 (9)	BROWN/GRAY
855+00	35	55	57.00	91	2	57.00	31' LT.	0-4Z	35	21	A-6 (14)	BROWN
855+00	35	55	57.00	91	32	57.00	31' LT.	0-4Z	33	18	A-6 (12)	BROWN/GRAY
863+00	35	55	4.60	91	32	54.70	6' RT.	0-5	20	8	A-4 (0)	BROWN/GRAY
863+00	35	55	4.50	91	32	54.40	41' RT.	0-3Z				BROWN/GRAY

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

Z- AUGER REFUSAL
NP - NON-PLASTIC
ND - NOT DETERMINABLE

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11435 TIMOTHY D. SMITH 2-27-15

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.ROL DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		86	311
				JOB NO.		050214		

(2) SOIL LOG

SOIL LOG

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	87	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

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

PROPOSED R/W
CONST. LIMITS
CONST. LIMITS
EXIST. R/W
N 23°15'37" E
N 24°30'49" E
605
610
615
617
167
PI 616+45.68
PC 615+20.34
PT 617+71.02
PC 618+43.86

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

HWY. 167

K=166.67
VC=450'
e=1.52'
P.V.I. 605+00.26
ELEV. 626.00
605+42.93
621.92 (LT.)
607+31.27
619.31 (LT.)
P.V.T. 607+25.26
ELEV. 626.45
607+47.94
619.31 (LT.)
607+31.92
618.63 (RT.)
607+48.59
618.63 (RT.)
608+42.92
622.11 (LT.)
P.V.C. 609+05.36
ELEV. 626.81
P.V.I. 610+05.36
ELEV. 627.01
K=173.91
VC=200'
e=0.29'
P.V.T. 611+05.36
ELEV. 628.36
P.V.C. 614+02.59
ELEV. 632.38
P.V.I. 615+02.59
ELEV. 633.73
K=383.33
VC=200'
e=-0.15'
P.V.I. 616+02.59
ELEV. 634.48
616+89.09
630.55 (LT.)
617+51.74
628.70 (LT.)
617+58.36
628.70 (LT.)
617+51.70
628.28 (RT.)
617+58.40
628.28 (RT.)
0.20%
1.35%
0.75%
LT. DITCH GRADE 0.00%
LT. DITCH GRADE -2.95%
RT. DITCH GRADE -0.00%
LT. DITCH GRADE 2.95%
LT. DITCH GRADE -2.95%
DITCH GRADE 0.00%
RT. DITCH GRADE 2.95%

660 650 640 630 620 610 600 590 580 570

603+00 604+00 605+00 606+00 607+00 608+00 609+00 610+00 611+00 612+00 613+00 614+00 615+00 616+00 617+00 618+00

R050214.DGN 2/2/2015

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.		050214	88	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 623+38.10 TO STA. 624+18.40 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 53.53 SQ. YD.

STA. 1500+00.00 ON ANTIOCH ROAD =
STA. 622+20.00 ON HWY. 167
Δ 90°00'00"

STA. 623+06 IN PLACE
18" X 44' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 64' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 170 CU. YDS. COMP. EMB.

STA. 625+71 INSTALL
18" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 145 CU. YDS. COMP. EMB.
= 10 CU. YDS. UNCL. EXC.

STA. 628+48.28 TO STA. 628+83.86 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 23.72 SQ. YD.

STA. 628+10 INSTALL
18" X 72' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 610 CU. YDS. COMP. EMB.

STA. 629+28 INSTALL
18" X 60' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 150 CU. YDS. COMP. EMB.

STA. 624+94.00 TO STA. 627+91.97 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 131.98 SQ. YD.

STA. 631+48 INSTALL
18" X 52' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 205 CU. YDS. COMP. EMB.

STA. 632+50 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 52' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 185 CU. YDS. COMP. EMB.

PI = 619+92.55
Δ = 1°29'12"LT.
D = 0°30'00"
T = 148.68'
L = 297.35'
PC = 618+43.86
PT = 621+41.21
NO SUPER

WIRE FENCE			(TYPE C)
STA.	STA.	SIDE	LIN.FT.
622+77.81	623+83.46	LT.	66
628+40.85	628+97.62	RT.	57
631+89.03	634+25.00	RT.	525

STA. 621+41.21
BEGIN JOB 050214
& END JOB 050213
LOG MILE 9.43

STA. 624+64.00 TO STA. 624+84.40 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 13.60 SQ. YD.

STA. 626+00 CONSTRUCT
APPROACH ON RT. = 330 CU. YDS. COMP. EMB.

STA. 624+44 INSTALL
24" X 40' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 195 CU. YDS. COMP. EMB.

PI = 629+44.75
Δ = 33°25'48"LT.
D = 4°30'00"
T = 382.35'
L = 742.89'
PC = 625+62.39
PT = 633+05.28
e = 0.096'/'
Ls = 567'

STA. 630+35.12 TO STA. 631+20.35 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 56.82 SQ. YD.

HWY. 167

SPECIAL FLOOD HAZARD AREA

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

STA. 622+96.40 TO STA. 624+24.40 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 85.33 SQ. YD.

STA. 624+16 IN PLACE
24" X 49' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND CONST.
24" X 126' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 6 C.F.S. D.A. = 3.4 ACRES
24" R.C. PIPE = 126 LIN. FT.
24" F.E.S. = 2 EACH

STA. 627+78 CONSTRUCT
APPROACH ON RT. = 710 CU. YDS. COMP. EMB.

STA. 629+22 IN PLACE
24" X 72' R.C. PIPE CULVERT
ON 30° RT. FWD. SKEW
WITH HEADWALLS LT. & RT.
REMOVE

STA. 630+08 CONSTRUCT
APPROACH ON RT. = 495 CU. YDS. COMP. EMB.

SPECIAL FLOOD HAZARD AREA
STA. 630+30 TO STA. 645+00

STA. 622+00.27 BEGIN SUPER (N.C.)
STA. 627+67.27 MAX SUPER (0.096'/')
STA. 631+63.53 MAX SUPER (0.096'/')
STA. 637+30.53 END SUPER (N.C.)

STA. 628+92 CONST.
DBL. 30" X 162' R.C. PIPE CULVERT
ON 10° RT. FWD. SKEW
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 64 C.F.S. D.A. = 40.8 ACRES
30" R.C. PIPE = 324 LIN. FT.
30" F.E.S. = 4 EACH

STA. 632+33 IN PLACE
10' X 8' X 68' R.C. BOX CULVERT
ON 45° LT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
RETAIN AND EXTEND 5' LT. & 74' RT.
AND CONST. 36" X 244' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. & RT.
050 = 740 C.F.S. D.A. = 416 ACRES
36" R.C. PIPE = 244 LIN. FT.
36" F.E.S. = 2 EACH

+16
F.L. INLET = 628.16
F.L. OUTLET = 627.43

+92
F.L. INLET = 614.29
F.L. OUTLET = 613.39

+33
F.L. INLET = 610.04
F.L. OUTLET = 607.81

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 613.00 FT. M.L.S.

2/2/2015

R050214.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.		050214	89	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-2-15

STA. 634+69 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 95 CU. YDS. COMP. EMB.

STA. 637+53 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS. COMP. EMB.

STA. 636+29 INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 75 CU. YDS. COMP. EMB.

SPECIAL FLOOD HAZARD AREA

STA. 636+62 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 638+65 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS. COMP. EMB.

STA. 638+00.00 TO STA. 638+51.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 34.00 SQ. YD.

STA. 638+79.00 TO STA. 639+00.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 14.00 SQ. YD.

STA. 642+85 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS. COMP. EMB.

STA. 640+36 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 35 CU. YDS. COMP. EMB.

STA. 637+07.20 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN

STA. 645+09 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 35 CU. YDS. COMP. EMB.

16' GATE

16' GATE

CANOPY

PROPOSED R/W
CONST. LIMITS
EXIST. R/W

POB 1700+00.00
PC 1700+65.59
PI 1700+84.45
PT 1701+03.11
POE 1701+84.40
N 10°24'11" W

PC 1600+80.00
PT 1601+74.54
PI 1601+28.90

POB 1600+00.00

STA. 1702+84.40 ON BELLER LAKE LANE =
STA. 637+07.20 ON HWY. 167
Δ 90°00'00"

STA. 1600+00.00 ON MISTY LANE =
STA. 634+73.20 ON HWY. 167
Δ 90°00'00"

STA. 638+70 CONSTRUCT
TRP. 9'(X 6') X 46' R.C. BOX CULVERT
050 = 865 C.F.S. D.A. = 525 ACRES
CONSTRUCT APPROACH = 975 CU. YDS. COMP. EMB.

PI = 629+44.75
Δ = 33°25'48"LT.
D = 4°30'00"
T = 382.35'
L = 742.89'
PC = 625+62.39
PT = 633+05.28
e = 0.096'/'
Ls = 567'

STA. 643+50.00 TO STA. 644+00.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 33.33 SQ. YD.

STA. 643+05 CONSTRUCT
TRP. 9' X 6' X 46' R.C. BOX CULVERT
050 = 865 C.F.S. D.A. = 525 ACRES
CONSTRUCT APPROACH = 955 CU. YDS. COMP. EMB.

SPECIAL FLOOD HAZARD AREA

STA. 645+95 IN PLACE
24" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 55 CU. YDS. COMP. EMB.

STA. 647+46 IN PLACE
24" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 50 CU. YDS. COMP. EMB.

HWY. 167

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

STA. 622+00.27 BEGIN SUPER (N.C.)
STA. 627+67.27 MAX SUPER (0.096'/')
STA. 631+63.53 MAX SUPER (0.096'/')
STA. 637+30.53 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 630+30 TO STA. 645+00

C.L. MISTY LANE
STA. 1600+95 IN PLACE
DBL. 48" X 40' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND CONSTRUCT
TRP. 9' X 6' X 5' R.C. BOX CULVERT
ON 10° RT. FWD SKEW
050 = 740 C.F.S. D.A. = 416 ACRES

STA. 641+18 IN PLACE
DBL. 60" X 44' C.M. PIPE CULVERT
AND 24" X 44' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
TRP. 9' X 6' X 31' R.C. BOX CULVERT
050 = 865 C.F.S. D.A. = 525 ACRES
CONSTRUCT APPROACH = 625 CU. YDS. COMP. EMB.

WIRE FENCE STA.	STA.	SIDE	(TYPE C) LIN.FT.	(TYPE D) LIN. FT.
631+89.03	634+25.00	RT.	525	
636+70.00		LT.		146
638+81.66	644+67.11	LT.	554	
646+32.78	649+06.38	LT.		258

STA. 646+73 IN PLACE
24" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 45 CU. YDS. COMP. EMB.

ELEV. 622.26
-0.05%
LT. DITCH GRADE 2.48%
RT. DITCH GRADE 1.90%
LT. DITCH GRADE 0.00%
633+38.82 610.04 (LT.)
635+00.00 614.10 (RT.)
636+00.00 616.51 (LT.)
P.V.C. 637+27.67 ELEV. 622.05
K=187.50 VC=150' e=0.15'
P.V.I. 638+02.67 ELEV. 622.01
P.V.T. 638+77.67 ELEV. 622.57
RT. DITCH GRADE 0.61%
0.75%
643+00.00 621.17 (LT.)
643+50.00 619.30 (RT.)
644+00.00 621.91 (RT.)
RT. DITCH GRADE 5.23%
GRADE 0.50%
P.V.C. 644+89.76 ELEV. 627.16
645+00.00 622.67 (RT.)
LT. DITCH RT. DITCH GRADE 0.80%
646+00.00 622.67 (LT.)
K=200.00 VC=350' e=0.77'
LT. DITCH GRADE 1.60%
P.V.I. 646+64.76 ELEV. 628.48
647+00.00 624.27 (LT.)
647+00.00 624.27 (RT.)
LT. DITCH GRADE 2.16%
RT. DITCH GRADE 1.30%
648+00.00 625.57 (RT.)
648+00.00 626.43 (LT.)

633+00 634+00 635+00 636+00 637+00 638+00 639+00 640+00 641+00 642+00 643+00 644+00 645+00 646+00 647+00 648+00

660 650 640 630 620 610 600 590 580 570

6/9/2015

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	90	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 648+31 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 60 CU. YDS. COMP. EMB.

STA. 649+32 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 65 CU. YDS. COMP. EMB.

STA. 650+38 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS. COMP. EMB.

STA. 651+00 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 652+52 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 35 CU. YDS. COMP. EMB.

STA. 653+44 INSTALL
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 45 CU. YDS. COMP. EMB.

WIRE FENCE (TYPE C)			
STA.	STA.	SIDE	LIN.FT.
650+92.99	677+59.00	RT.	2942
653+30.41	659+25.14	LT.	566

STA. 657+29 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 45 CU. YDS. COMP. EMB.

STA. 659+63 IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 190 CU. YDS. COMP. EMB.
= 5 CU. YDS. UNCL. EXC.

STA. 662+65 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 190 CU. YDS. COMP. EMB.
= 15 CU. YDS. UNCL. EXC.

STA. 1800+00.00 ON COOTS LANE =
STA. 650+55.00 ON HWY. 167
∠ 90°00'00"

STA. 654+50.00 TO STA. 656+60.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 140.00 SQ. YD.

16' GATE
PROPOSED R/W
CONST. LIMITS
EXIST. R/W
CANOPY
POB 1800+00.00
PC 1800+64.21
PI 1800+84.73
PT 1801+05.11
T.C.E.
650+66.13
652+44.13
654+22.13
N 10°24'11" W
N 9°30'48" W
650
655
660
1800

PI = 652+44.13
Δ = 0°53'23"RT.
D = 0°15'00"
T = 178.00'
L = 356.00'
PC = 650+66.13
PT = 654+22.13
NO SUPER

STA. 657+50.03 TO STA. 658+11.02 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 40.66 SQ. YD.

STA. 658+25 INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS. COMP. EMB.

STA. 658+39.02 TO STA. 658+50.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 7.32 SQ. YD.

HWY. 167

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

STA. 648+90 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 55 CU. YDS. COMP. EMB.

STA. 650+55.00 IN PLACE
18" X 48' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 61' PIPE CULVERT
RT. SIDE DRAIN

STA. 652+56 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 65 CU. YDS. COMP. EMB.

K=200.00
VC=350'
e=0.77

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

2.50%
LT. DITCH GRADE 3.35%
RT. DITCH GRADE 2.50%
LT. DITCH GRADE 0.30%
RT. DITCH GRADE 0.90%
LT. DITCH GRADE 1.03%
LT. DITCH GRADE 3.32%
LT. DITCH GRADE 4.35%
LT. DITCH GRADE 5.58%
RT. DITCH GRADE 2.25%
RT. DITCH GRADE 2.65%
RT. DITCH GRADE 6.55%
RT. DITCH GRADE -1.05%
RT. DITCH GRADE -2.71%
0.00%

P.V.T. 648+39.76 ELEV. 632.85
P.V.C. 657+85.59 ELEV. 656.50
P.V.I. 660+10.59 ELEV. 662.12
P.V.T. 662+35.59 ELEV. 662.12
ELEV. 662.12

648+00.00 626.43 (LT.)
649+00.00 629.78 (LT.)
652+50.00 638.57 (LT.)
653+30.00 638.82 (RT.)
653+75.00 638.95 (LT.)
654+50.00 639.72 (LT.)
654+80.00 640.17 (RT.)
655+00.00 641.37 (LT.)
656+00.00 642.87 (RT.)
656+20.00 646.59 (LT.)
656+60.00 648.82 (LT.)
657+50.00 646.84 (RT.)
658+50.55 653.43 (RT.)
661+00.00 657.03 (RT.)
662+00.00 655.98 (RT.)
648+00.00 625.57 (RT.)

680 670 660 650 640 630 620 610 600 590

648+00 649+00 650+00 651+00 652+00 653+00 654+00 655+00 656+00 657+00 658+00 659+00 660+00 661+00 662+00 663+00

2/2/2015
R050214.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.		050214	91	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
4-2-15

STA. 663+95 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS. COMP. EMB.

STA. 664+91 INSTALL
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 70 CU. YDS. COMP. EMB.

STA. 668+30 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 50 CU. YDS. COMP. EMB.

STA. 669+43 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS. COMP. EMB.

STA. 672+68 IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 70 CU. YDS. COMP. EMB.

STA. 664+14.06 TO STA. 664+74.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 39.96 SQ. YD.

STA. 668+08.00 TO STA. 665+61.95 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 35.97 SQ. YD.

STA. 669+00.00 TO STA. 669+29.01 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 19.34 SQ. YD.

STA. 669+57.01 TO STA. 671+70.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 141.99 SQ. YD.

WIRE FENCE			(TYPE C)	(4' CHAIN LINK)
STA.	STA.	SIDE	LIN.FT.	LIN. FT.
650+92.99	677+59.00	RT.	2942	
677+96.06	679+80.00	LT.		154

STA. 675+00 CONSTRUCT
APPROACH ON LT. = 190 CU. YDS. COMP. EMB.

STA. 675+85 IN PLACE
18" X 38' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 200 CU. YDS. COMP. EMB.

STA. 675+27.06 TO STA. 675+56.87 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 19.87 SQ. YD.

STA. 677+26 IN PLACE
18" X 60' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 68' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 225 CU. YDS. COMP. EMB.

STA. 676+12.88 TO STA. 676+91.98 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 52.73 SQ. YD.

STA. 664+91 IN PLACE
48" X 116' R.C. PIPE CULVERT
ON 45° LT. FWD. SKEW
WITH FES LT. AND RT.
REMOVE F.E.S. LT. & RT. AND EXTEND R.C. PIPE
32' LT. & 34' RT.
(CLASS III (TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
050 = 34 C.F.S. D.A. = 21.9 ACRES
48" R.C. PIPE = 74 LIN. FT.
48" F.E.S. = 2 EACH

STA. 667+00.00 TO STA. 667+43.90 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 29.27 SQ. YD.

STA. 667+61 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 70 CU. YDS. COMP. EMB.

STA. 667+77.90 TO STA. 669+00.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 81.40 SQ. YD.

STA. 678+00.00 TO STA. 679+33.63 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 89.09 SQ. YD.

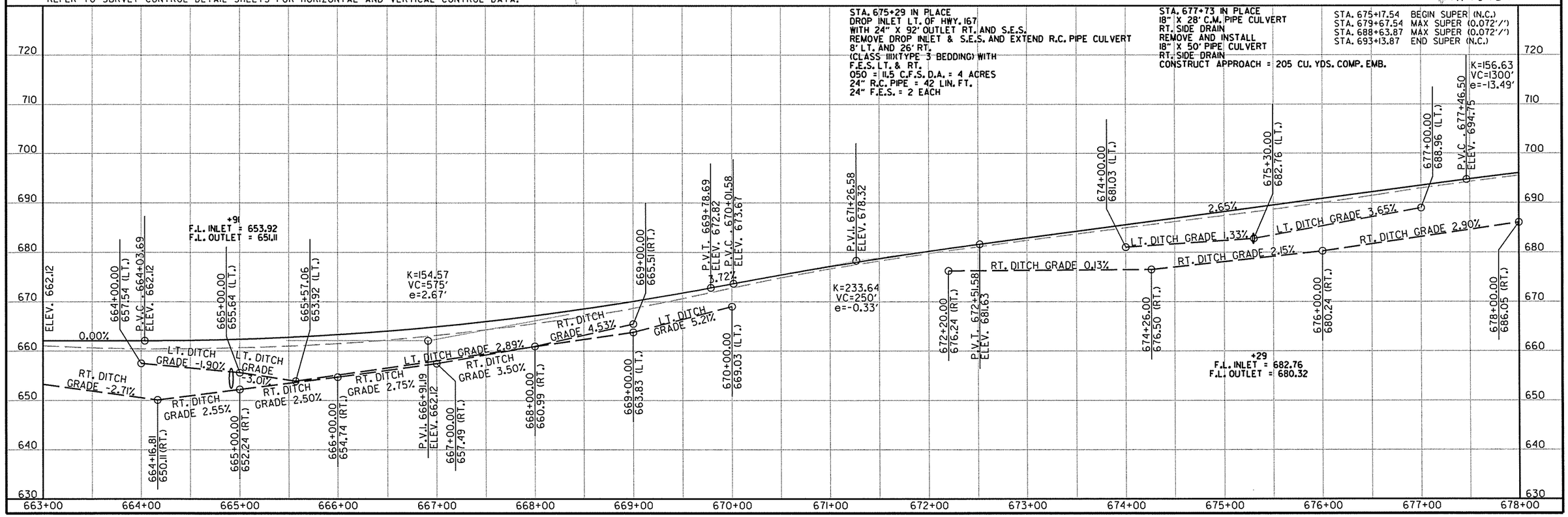
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

HWY. 167

STA. 675+29 IN PLACE
DROP INLET LT. OF HWY. 167
WITH 24" X 92' OUTLET RT. AND S.E.S.
REMOVE DROP INLET & S.E.S. AND EXTEND R.C. PIPE CULVERT
8' LT. AND 26' RT.
(CLASS III (TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
050 = 11.5 C.F.S. D.A. = 4 ACRES
24" R.C. PIPE = 42 LIN. FT.
24" F.E.S. = 2 EACH

STA. 677+73 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 50' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 205 CU. YDS. COMP. EMB.

STA. 675+17.54 BEGIN SUPER (N.C.)
STA. 679+67.54 MAX SUPER (0.072'/')
STA. 688+63.87 MAX SUPER (0.072'/')
STA. 693+13.87 END SUPER (N.C.)



5/26/2015

R050214.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.		050214	92	311

2 PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 678+20 IN PLACE
18" X 64' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 72' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 315 CU. YDS. COMP. EMB.
= 10 CU. YDS. UNCL. EXC.

STA. 685+85 IN PLACE
18" X 68' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 230 CU. YDS. COMP. EMB.

STA. 686+59 IN PLACE
18" X 62' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 60' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 275 CU. YDS. COMP. EMB.

PI = 684+39.88
Δ = 31°21'33"LT.
D = 2°45'00"
T = 584.84'
L = 1140.33'
PC = 678+55.04
PT = 689+95.37
e = 0.072'/'
Ls = 450'

WIRE FENCE			(TYPE D-1) (4' CHAIN LINK)
STA.	STA.	SIDE	LIN.FT.
677+96.06	679+80.00	LT.	154
679+66.66	692+58.78	LT.	1331
692+73.00	707+40.20	RT.	1441

STA. 691+85 INSTALL
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 15 CU. YDS. COMP. EMB.

STA. 691+61.80 TO STA. 691+71.25 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 6.30 SQ. YD.

STA. 691+99.25 TO STA. 693+08.34 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 72.73 SQ. YD.

STA. 679+70.37 TO STA. 681+31.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 107.09 SQ. YD.

STA. 683+00 INSTALL
18" X 66' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 485 CU. YDS. COMP. EMB.
= 110 CU. YDS. UNCL. EXC.

STA. 679+52 IN PLACE
18" X 44' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 100 CU. YDS. COMP. EMB.

STA. 691+29.82 TO STA. 693+14.45 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 123.09 SQ. YD.

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

HWY. 167

STA. 675+17.54 BEGIN SUPER (N.C.)
STA. 679+67.54 MAX SUPER (0.072'/')
STA. 688+63.87 MAX SUPER (0.072'/')
STA. 693+13.87 END SUPER (N.C.)

P.V.I. 683+96.50
ELEV.- 711.97

681+33.05
700.79 (RT.)

678+00.00
686.05 (RT.)

679+00.00
689.41 (RT.)

680+00.00
693.84 (RT.)

RT. DITCH GRADE 3.36%
RT. DITCH GRADE 4.43%
RT. DITCH GRADE 5.22%

K=156.63
VC=1300'
e=-13.49'

684+80.38
688.52 (LT.)

687+30.00
681.35 (LT.)

LT. DITCH GRADE -2.87%

P.V.T. 690+46.50
ELEV. 675.25

691+61.37
662.47 (LT.)

691+30.00
654.90 (RT.)

LT. DITCH GRADE -7.25%
RT. DITCH GRADE -4.16%

693+00.00
652.42 (LT.)
ELEV. 660.92

-5.65%

720 710 700 690 680 670 660 650 640 630

678+00 679+00 680+00 681+00 682+00 683+00 684+00 685+00 686+00 687+00 688+00 689+00 690+00 691+00 692+00 693+00

R050214.DGN 2/2/2015

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.		050214	93	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 693+52.55 TO STA. 694+10.45 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 38.60 SQ. YD.

STA. 693+30 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 135 CU. YDS. COMP. EMB.

STA. 693+59 IN PLACE
48" X 118' R.C. PIPE CULVERT
ON 30° LT. FWD. SKEW
WITH FES LT. AND RT.
REMOVE F.E.S. LT. & RT. AND EXTEND R.C. PIPE
8' LT. AND 44' RT.
(CLASS III (TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
050 = 62.7 C.F.S. D.A. = 27.5 ACRES
48" R.C. PIPE = 60 LIN. FT.
48" F.E.S. = 2 EACH

STA. 697+95.00 INSTALL
48" X 92' PIPE CULVERT
LT. SIDE DRAIN

STA. 698+77 IN PLACE
24" X 48' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 698+40.58 TO STA. 699+00.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 39.61 SQ. YD.

STA. 702+00.00 TO STA. 703+00.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 66.67 SQ. YD.

STA. 1903+43.60 ON RIM ROCK ROAD =
STA. 697+95.00 ON HWY. 167
Δ 90°00'00"

PI = 701+24.63
Δ = 35°13'46"RT.
D = 4°30'00"
T = 404.25'
L = 782.87'
PC = 697+20.38
PT = 705+03.25
e = 0.096'/'
Ls = 567'

WIRE FENCE			(TYPE D-1)
STA.	STA.	SIDE	LIN.FT.
692+73.00	707+40.20	RT.	1441
701+92.39	714+56.03	LT.	1293

STA. 703+66 IN PLACE
18" X 34' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 46' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 175 CU. YDS. COMP. EMB.

STA. 694+31.00 TO STA. 699+00.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 312.67 SQ. YD.

STA. 694+03 CONSTRUCT
APPROACH ON RT. = 30 CU. YDS. COMP. EMB.

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

HWY. 167

STA. 693+14.13 BEGIN SUPER (N.C.)
STA. 698+81.13 MAX SUPER (0.096'/')
STA. 703+61.50 MAX SUPER (0.096'/')
STA. 709+28.50 END SUPER (N.C.)

693+00 ELEV. 660.92
-5.65%
P.V.C. 693+31.81 ELEV. 659.13
693+00.00 652.42 (LT.)
694+00.00 650.88 (RT.)
RT. DITCH GRADE 3.96%
RT. DITCH GRADE -4.16%
LT. DITCH GRADE -7.98%
693+11.10 647.36 (RT.)
694+07.09 643.88 (LT.)
+59
F.L. INLET = 647.36
F.L. OUTLET = 643.88
K=163.27
VC=400'
e=1.23'
P.V.I. 695+31.81 ELEV. 647.83
LT. DITCH GRADE -2.46%
697+00.00 637.70 (RT.)
P.V.T. 697+31.81 ELEV. 641.43
-3.20%
P.V.C. 697+48.74 ELEV. 640.88
698+00.00 634.21 (LT.)
RT. DITCH GRADE -4.02%
LT. DITCH GRADE -4.20%
699+00.00 630.01 (LT.)
699+00.00 629.66 (RT.)
RT. DITCH GRADE -2.23%
LT. DITCH GRADE -1.80%
P.V.I. 700+36.24 ELEV. 631.68
701+00.00 625.19 (RT.)
K=396.55
VC=575'
e=1.04'
RT. DITCH GRADE -2.06%
LT. DITCH GRADE -4.25%
702+00.00 624.60 (LT.)
703+00.00 621.07 (RT.)
P.V.T. 703+23.74 ELEV. 626.65
703+00.00 620.35 (LT.)
RT. DITCH GRADE -1.27%
LT. DITCH GRADE -2.30%
705+00.00 615.75 (LT.)
705+55.00 617.84 (RT.)
-1.75%
RT. DITCH GRADE -1.75%
LT. DITCH GRADE -2.87%
707+00.00 612.85 (LT.)
LT. DITCH GRADE -0.65%
708+00.00 612.20 (LT.)
ELEV. 618.32

693+00 694+00 695+00 696+00 697+00 698+00 699+00 700+00 701+00 702+00 703+00 704+00 705+00 706+00 707+00 708+00

670 660 650 640 630 620 610 600 590 580

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	94	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
TRINITY D. SMITH
No. 11425
2-12-15

STA. 708+54 IN PLACE
24" X 97' R.C. PIPE CULVERT
ON 30° LT. FWD. SKEW
WITH SES LT. AND RT.
REMOVE AND CONST.
36" X 138' R.C. PIPE CULVERT
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 61.8 C.F.S D.A. = 28.6 ACRES
36" R.C. PIPE = 138 LIN. FT.
36" F.E.S. = 2 EACH

STA. 708+00.00 TO STA. 708+95.97 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 63.98 SQ. YD.

STA. 713+80.00 ON HWY. 167 =
STA. 2100+00.00 ON SUNSET RIDGE ROAD
Δ 90°00'00"

STA. 714+68.02 IN PLACE
DBL. 48" X 50' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
54" X 75' PIPE CULVERT
LT. SIDE DRAIN

STA. 718+95 CONSTRUCT
APPROACH ON LT. = 135 CU. YDS. COMP. EMB.

STA. 719+87 CONSTRUCT
APPROACH ON LT. = 25 CU. YDS. COMP. EMB.

STA. 720+71 IN PLACE
18" X 36' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 45 CU. YDS. COMP. EMB.

STA. 718+03.84 TO STA. 718+70.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 44.11 SQ. YD.

STA. 721+67 IN PLACE
18" X 56' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 70' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 240 CU. YDS. COMP. EMB.

STA. 720+00.00 TO STA. 720+54.35 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 36.23 SQ. YD.

STA. 720+88.34 TO STA. 721+32.34 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 29.33 SQ. YD.

STA. 708+61 CONSTRUCT
APPROACH ON RT. = 190 CU. YDS. COMP. EMB.

STA. 713+80.00 IN PLACE
48" X 52' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
48" X 69' PIPE CULVERT
RT. SIDE DRAIN

STA. 2202+68.02 ON SANDTOWN ROAD =
STA. 714+91.75 ON HWY. 167
Δ 90°00'00.00"

STA. 715+10 IN PLACE
48" X 60' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
48" X 64' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 255 CU. YDS. COMP. EMB. 42" F.E.S. = 4 EACH

STA. 717+69 IN PLACE
DBL. 42" X 102' R.C. PIPE CULVERT
ON 30° LT. FWD. SKEW
WITH FES LT. AND SES RT.
REMOVE AND CONST.
DBL. 42" X 154' R.C. PIPE CULVERT
(CLASS III(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 45.4 C.F.S. D.A. = 52.5 ACRES
42" R.C. PIPE = 308 LIN. FT.

PI = 718+51.87
Δ = 10°39'22"RT.
D = 3°00'00"
T = 178.12'
L = 355.20'
PC = 716+73.76
PT = 720+28.96
e = 0.077'/'
Ls = 540'

STA. 722+28 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 42' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 115 CU. YDS. COMP. EMB.

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

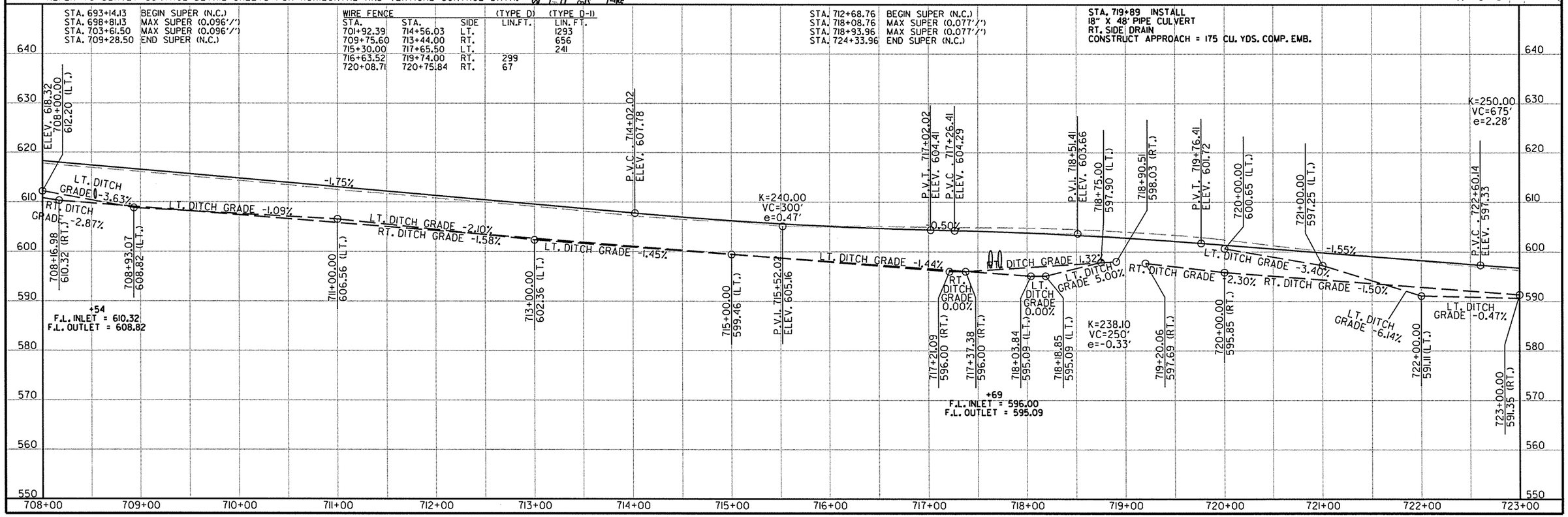
HWY. 167

STA. 693+14.13 BEGIN SUPER (N.C.)
STA. 698+81.13 MAX SUPER (0.096'/')
STA. 703+61.50 MAX SUPER (0.096'/')
STA. 709+28.50 END SUPER (N.C.)

STA. 712+68.76 BEGIN SUPER (N.C.)
STA. 718+08.76 MAX SUPER (0.077'/')
STA. 718+93.96 MAX SUPER (0.077'/')
STA. 724+33.96 END SUPER (N.C.)

WIRE FENCE STA.	STA.	SIDE	(TYPE D) LIN.FT.	(TYPE D-I) LIN. FT.
701+92.39	714+56.03	LT.		1293
709+75.60	713+44.00	RT.		656
715+30.00	717+65.50	LT.		241
716+63.52	719+74.00	RT.	299	
720+08.71	720+75.84	RT.	67	

STA. 719+89 INSTALL
18" X 48' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 175 CU. YDS. COMP. EMB.



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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	95	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 724+17 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS. COMP. EMB.

STA. 725+45 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS. COMP. EMB.

STA. 726+45 IN PLACE
18" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS. COMP. EMB.

STA. 726+02.63 TO STA. 726+31.02 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 18.93 SQ. YD.

STA. 726+58.95 TO STA. 727+00.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 27.37 SQ. YD.

STA. 729+12 IN PLACE
18" X 33' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH ON LT. = 95 CU. YDS. COMP. EMB.

STA. 730+60 CONSTRUCT
APPROACH ON LT. = 200 CU. YDS. COMP. EMB.

PI = 734+18.77
Δ = 12°46'58"RT.
D = 2°45'00"
T = 233.38'
L = 464.83'
PC = 731+85.39
PT = 736+50.22
e = 0.072'/'
Ls = 540'

STA. 736+92.83 TO STA. 738+61.57 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 112.49 SQ. YD.

STA. 723+55 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 130 CU. YDS. COMP. EMB.

STA. 725+09 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 42' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 115 CU. YDS. COMP. EMB.

STA. 726+11 IN PLACE
24" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 40' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 105 CU. YDS. COMP. EMB.

STA. 728+04.60 TO STA. 729+94.37 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 126.51 SQ. YD.

STA. 728+10 IN PLACE
48" X 78' R.C. PIPE CULVERT
WITH SES LT. AND RT.
REMOVE AND CONST.
48" X 120' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 57.5 C.F.S. D.A. = 35.5 ACRES
48" R.C. PIPE = 120 LIN. FT.
48" F.E.S. = 2 EACH

STA. 730+18 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 48' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 210 CU. YDS. COMP. EMB.
= 5 CU. YDS. UNCL. EXC.

WIRE FENCE			(TYPE D-1)
STA.	STA.	SIDE	LIN.FT.
731+74.85	743+52.16	RT.	1178

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

HWY. 167

STA. 712+68.76 BEGIN SUPER (N.C.)
STA. 718+08.76 MAX SUPER (0.077'/')
STA. 718+93.96 MAX SUPER (0.077'/')
STA. 724+33.96 END SUPER (N.C.)

STA. 727+80.39 BEGIN SUPER (N.C.)
STA. 733+20.39 MAX SUPER (0.072'/')
STA. 735+15.22 MAX SUPER (0.072'/')
STA. 740+55.22 END SUPER (N.C.)

723+00.00 591.35 (RT.)
724+00.00 590.18 (LT.)
724+00.00 590.10 (RT.)
725+00.00 589.30 (RT.)
725+43.67 590.00 (LT.)
726+02.56 589.83 (LT.)
P.V.I. 725+97.64 ELEV. 592.10
K=250.00 VC=675' e=2.28'
727+00.00 586.25 (LT.)
728+09.57 585.74 (LT.)
728+09.57 586.10 (RT.)
730+00.00 592.17 (RT.)
P.V.T. 729+35.14 ELEV. 595.98
P.V.C. 730+17.31 ELEV. 596.92
P.V.I. 733+92.31 ELEV. 601.23
K=153.06 VC=750' e=-4.59'
736+98.56 580.05 (LT.)
P.V.T. 737+67.31 ELEV. 587.17
737+98.56 578.45 (LT.)
P.V.C. 737+75.93 ELEV. 586.85
K=136.36 VC=525' e=2.53'

RT. DITCH GRADE -1.25%
LT. DITCH GRADE -0.47%
LT. DITCH GRADE -0.12%
RT. DITCH GRADE -0.80%
LT. DITCH GRADE -3.67%
RT. DITCH GRADE -1.03%
LT. DITCH GRADE -0.46%
RT. DITCH GRADE 3.19%
1.15%
LT. DITCH GRADE -1.60%
1.45%

+10
F.L. INLET = 586.10
F.L. OUTLET = 585.74

620 610 600 590 580 570 560 550 540 530

723+00 724+00 725+00 726+00 727+00 728+00 729+00 730+00 731+00 732+00 733+00 734+00 735+00 736+00 737+00 738+00

2/2/2015

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	050214		96	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 738+82 IN PLACE
18" X 33' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 120 CU. YDS. COMP. EMB.

SPECIAL FLOOD HAZARD AREA

STA. 742+48.13 TO STA. 742+60.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 7.91 SQ. YD.

WIRE FENCE (TYPE D-1)

STA.	STA.	SIDE	LIN.FT.
731+74.85	743+52.16	RT.	1178
744+05.02	770+32.23	RT.	2612

STA. 750+53 IN PLACE
24" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS. COMP. EMB.

STA. 750+71.56 TO STA. 752+98.56 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 151.33 SQ. YD.

SPECIAL FLOOD HAZARD AREA

+81.56 95.00 | +59.06 100.00 | +58.10 110.00 | +03.56 90.00 | +48.56 83.00

PROPOSED R/W | EXIST. R/W | CONST. LIMITS

16' | 8' 12' 12' 11' 12' 12' 8'

740 +09 | 745 | 750 +82 | +53 | +82

N 17°47'45" E

+58.23 88.59 | +98.56 80.00 | +58.56 101.00 | +43.56 120.00 | +43.56 120.00 | +38.56 96.00 | +42.22 80.00

16' GATE | 16' GATE | 16' GATE

STA. 739+00.00 TO STA. 739+88.93 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 59.29 SQ. YD.

STA. 740+09 IN PLACE
18" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS. COMP. EMB.

STA. 740+26.93 TO STA. 741+00.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 48.71 SQ. YD.

STA. 743+00 IN PLACE
10' X 8' X 69' R.C. BOX CULVERT
ON 45° RT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
RETAIN AND EXTEND 29' LT. & 73' RT.
050 = 650 C.F.S. D.A. = 461.8 ACRES

STA. 743+38.85 TO STA. 743+52.16 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 8.87 SQ. YD.

STA. 750+82 IN PLACE
24" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 50 CU. YDS. COMP. EMB.

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

HWY. 167

STA. 727+80.39 BEGIN SUPER (N.C.)
STA. 733+20.39 MAX SUPER (0.072'/')
STA. 735+15.22 MAX SUPER (0.072'/')
STA. 740+55.22 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 739+15 TO STA. 745+50

739+45.54 577.01 (RT.) | 739+98.56 574.28 (RT.) | 740+98.56 570.28 (RT.)

K=136.36
VC=525'
e=2.53'

742+22.00 566.43 (LT.) | 742+32.00 563.87 (LT.) | 742+48.13 563.8 (LT.) | 742+48.13 566.32 (LT.)

P.V.T. 743+00.93
ELEV. 577.27

743+41.20 565.53 (RT.) | 743+51.20 562.75 (RT.) | 743+68.29 562.75 (RT.) | 743+78.29 565.55 (RT.)

P.V.C. 746+32.11
ELEV. 577.60

K=154.60
VC=425'
e=1.46'

P.V.T. 750+57.11
ELEV. 583.86

P.V.C. 751+61.69
ELEV. 586.84

K=151.11
VC=1035'
e=-8.86'

752+98.56 585.06 (LT.)

738+98.56 574.95 (LT.) | 739+98.56 572.50 (LT.) | P.V.I. 740+38.43 ELEV. 577.00 | 746+98.56 570.48 (RT.) | 747+98.56 573.16 (LT.) | P.V.I. 748+44.61 ELEV. 577.81 | 748+98.56 574.51 (LT.) | 749+98.56 576.36 (LT.) | 750+81.50 577.18 (RT.) | 751+98.56 581.46 (LT.) | 752+98.56 583.47 (RT.)

RT. DITCH GRADE -5.15% | LT. DITCH GRADE -4.00% | LT. DITCH GRADE -3.50% | LT. DITCH GRADE -2.45% | RT. DITCH GRADE -2.63% | RT. DITCH GRADE -1.86% | 0.10% | LT. DITCH GRADE 1.27% | RT. DITCH GRADE 1.54% | LT. DITCH GRADE 1.35% | RT. DITCH GRADE 1.75% | LT. DITCH GRADE 1.85% | LT. DITCH GRADE 2.55% | 2.85% | RT. DITCH GRADE 2.90% | LT. DITCH GRADE 3.59%

LT. DITCH GRADE 24.49% | RT. DITCH GRADE 27.98% | RT. DITCH GRADE 0.00% | LT. DITCH GRADE 0.00%

+00
F.L. INLET = 563.87
F.L. OUTLET = 562.75

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAMBANK ELEVATION IS 568.00 FT. M.L.S.

610 600 590 580 570 560 550 540 530 520

738+00 739+00 740+00 741+00 742+00 743+00 744+00 745+00 746+00 747+00 748+00 749+00 750+00 751+00 752+00 753+00

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				6	ARK.			
				JOB NO.		050214	97	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 755+28.56 IN PLACE
24" X 37' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 52' PIPE CULVERT
LT. SIDE DRAIN

STA. 766+78 IN PLACE
18" X 21' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS. COMP. EMB.

STA. 759+98.56 TO STA. 765+98.56 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 400.00 SQ. YD.

STA. 761+00.00 TO STA. 765+00.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 266.67 SQ. YD.

PI = 765+12.46
Δ = 10°13'35" RT.
D = 1°00'00"
T = 512.68'
L = 1022.63'
PC = 759+99.78
PT = 770+22.41
e = 0.030'/'
Ls = 540'

STA. 766+00.00 TO STA. 767+47.65 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 98.43 SQ. YD.

STA. 755+28.56 ON HWY. 167 =
STA. 2306+46.79 ON ARROWHEAD LANE
Δ 90°00'00"

STA. 757+11 CONSTRUCT
APPROACH ON RT. = 125 CU. YDS. COMP. EMB.

WIRE FENCE (TYPE D-1)

STA.	STA.	SIDE	LIN.FT.
744+05.02	770+32.23	RT.	2612
761+61.53	769+44.47	LT.	788

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

HWY. 167

STA. 755+94.78 BEGIN SUPER (N.C.)
STA. 761+34.78 MAX SUPER (0.03'/')
STA. 768+87.41 MAX SUPER (0.03'/')
STA. 774+27.41 END SUPER (N.C.)

P.V.I. 756+79.19 ELEV. 601.59
K=151.11 VC=1035' e=-8.86'
P.V.T. 761+96.69 ELEV. 580.89
P.V.C. 763+61.51 ELEV. 574.30
K=160.71 VC=675' e=3.54'
P.V.I. 766+99.01 ELEV. 560.80

753+98.56 584.92 (RT.)
754+98.56 587.23 (RT.)
759+98.56 584.11 (LT.)
760+98.56 579.54 (RT.)
761+98.56 574.52 (RT.)
761+98.56 575.42 (LT.)
762+98.56 571.12 (LT.)
763+98.56 566.62 (RT.)
764+98.56 563.22 (RT.)
765+98.56 560.42 (RT.)
765+98.56 560.18 (LT.)
767+38.56 556.72 (LT.)
767+47.70 555.12 (RT.)

RT. DITCH GRADE 1.45%
RT. DITCH GRADE 2.31%
LT. DITCH GRADE -4.35%
RT. DITCH GRADE -5.02%
LT. DITCH GRADE -4.30%
RT. DITCH GRADE -3.95%
-4.00%
LT. DITCH GRADE -3.65%
RT. DITCH GRADE -3.40%
RT. DITCH GRADE -2.80%
LT. DITCH GRADE -2.47%
RT. DITCH GRADE -3.55%
LT. DITCH GRADE -1.30%
RT. DITCH GRADE -1.50%

620 610 600 590 580 570 560 550 540 530

753+00 754+00 755+00 756+00 757+00 758+00 759+00 760+00 761+00 762+00 763+00 764+00 765+00 766+00 767+00 768+00

2/2/2015

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				6	ARK.			
				JOB NO.		050214	98	311

(2) PLAN AND PROFILE SHEETS

STA. 770+14 IN PLACE
6' X 4' X 53' R.C. BOX CULVERT
ON 30° RT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
RETAIN AND EXTEND 29' LT. & 57' RT.
050 = 138 C.F.S. D.A. = 95.6 ACRES

STA. 774+16 INSTALL
18" X 72' C.M. PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 540 CU. YDS. COMP. EMB.

STA. 775+57.46 TO STA. 777+44.46 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 124.67 SQ. YD.

STA. 777+72.43 TO STA. 777+98.56 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 17.42 SQ. YD.

WIRE FENCE			(TYPE D-1)
STA.	STA.	SIDE	LIN.FT.
744+05.02	770+32.23	RT.	2612
761+61.53	769+44.47	LT.	788
769+70.89	774+84.82	LT.	568
770+58.66	774+83.37	RT.	461
775+56.01	792+14.00	RT.	1725
775+57.46	796+02.53	LT.	2027

STA. 777+57 IN PLACE
18" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 40 CU. YDS. COMP. EMB.

PI = 784+58.12
Δ = 31°14'40"LT.
D = 3°45'00"
T = 427.23'
L = 833.18'
PC = 780+30.89
PT = 788+64.07
e = 0.090'/'
Ls = 630'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

SPECIAL FLOOD HAZARD AREA

PI = 765+12.46
Δ = 10°13'35"RT.
D = 1°00'00"
T = 512.68'
L = 1022.63'
PC = 759+99.78
PT = 770+22.41
e = 0.030'/'
Ls = 540'

STA. 769+12 IN PLACE
18" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 95 CU. YDS. COMP. EMB.

STA. 775+21 IN PLACE
QUADRUPLE 10' X 8' X 45' R.C. BOX CULVERT
WITH 3:1 WINGS LT. AND RT.
RETAIN AND EXTEND 29' LT. AND 52' RT.
050 = 1930 C.F.S. D.A. = 1216 ACRES

STA. 775+56.00 TO STA. 777+08.57 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 101.71 SQ. YD.

STA. 777+27 IN PLACE
18" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS. COMP. EMB.

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

HWY. 167

STA. 755+94.78 BEGIN SUPER (N.C.)
STA. 761+34.78 MAX SUPER (0.03'/')
STA. 768+87.41 MAX SUPER (0.03'/')
STA. 774+27.41 END SUPER (N.C.)

SPECIAL FLOOD HAZARD AREA
STA. 768+40 TO STA. 776+85

STA. 775+58.39 BEGIN SUPER (N.C.)
STA. 781+88.39 MAX SUPER (0.09'/')
STA. 787+06.57 MAX SUPER (0.09'/')
STA. 793+36.57 END SUPER (N.C.)

768+98.56 554.64 (LT.)
K=160.71 VC=675' e=3.54'
769+44.47 553.73 (LT.)
769+70.56 553.73 (LT.)
P.V.T. 770+36.51 ELEV. 561.47
LT. DITCH GRADE -1.30%
LT. DITCH GRADE -1.99%
LT. DITCH GRADE 0.00%
RT. DITCH GRADE -1.50%
768+51.82 553.56 (RT.)
RT. DITCH GRADE -0.55%
770+32.22 552.57 (RT.)
RT. DITCH GRADE 0.00%
770+58.66 552.57 (RT.)
+14
F.L. INLET = 553.73
F.L. OUTLET = 552.57
0.20%
RT. DITCH GRADE -0.18%
LT. DITCH GRADE -0.87%
773+99.04 551.96 (RT.)
P.V.C. 774+93.38 ELEV. 562.39
RT. DITCH GRADE -2.94%
LT. DITCH GRADE 3.81%
RT. DITCH GRADE 4.59%
775+19.89 548.41 (RT.)
775+20.93 548.96 (LT.)
+21
F.L. INLET = 548.96
F.L. OUTLET = 548.41
K=161.29 VC=250' e=0.48'
P.V.T. 777+43.38 ELEV. 564.82
RT. DITCH GRADE 5.95%
LT. DITCH GRADE 4.65%
775+98.56 551.91 (LT.)
P.V.I. 776+18.38 ELEV. 562.64
776+52.61 554.50 (RT.)
777+98.56 561.22 (LT.)
778+18.56 564.37 (RT.)
1.75%
P.V.C. 781+42.61 ELEV. 571.81
LT. DITCH GRADE 0.02%
781+38.23 566.81 (LT.)
K=208.33 VC=250' e=-0.38'
P.V.I. 782+67.61 ELEV. 574.00

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

NOTE: FOR ALL THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAMBANK ELEVATION IS 553.00 FT. M.L.S.

600 590 580 570 560 550 540 530 520 510

768+00 769+00 770+00 771+00 772+00 773+00 774+00 775+00 776+00 777+00 778+00 779+00 780+00 781+00 782+00 783+00

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				6	ARK.			
				JOB NO.		050214	99	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

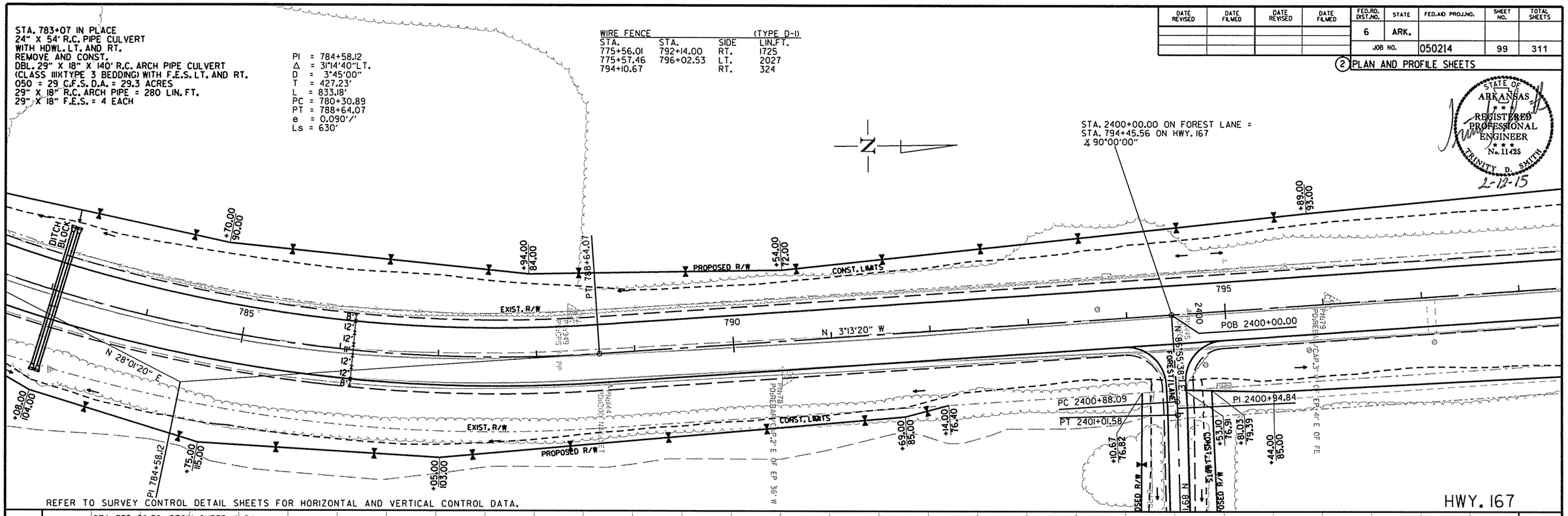
STA. 783+07 IN PLACE
24" X 54' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
REMOVE AND CONST.
DBL. 29" X 18" X 140' R.C. ARCH PIPE CULVERT
(CLASS IIIXTYPE 3 BEDDING) WITH F.E.S. LT. AND RT.
050 = 29 C.F.S. D.A. = 29.3 ACRES
29" X 18" R.C. ARCH PIPE = 280 LIN. FT.
29" X 18" F.E.S. = 4 EACH

PI = 784+58.12
Δ = 31°14'40"LT.
D = 3°45'00"
T = 427.23'
L = 833.18'
PC = 780+30.89
PT = 788+64.07
e = 0.090'/'
Ls = 630'

WIRE FENCE (TYPE D-1)

STA.	STA.	SIDE	LIN.FT.
775+56.01	792+14.00	RT.	1725
775+57.46	796+02.53	LT.	2027
794+10.67		RT.	324

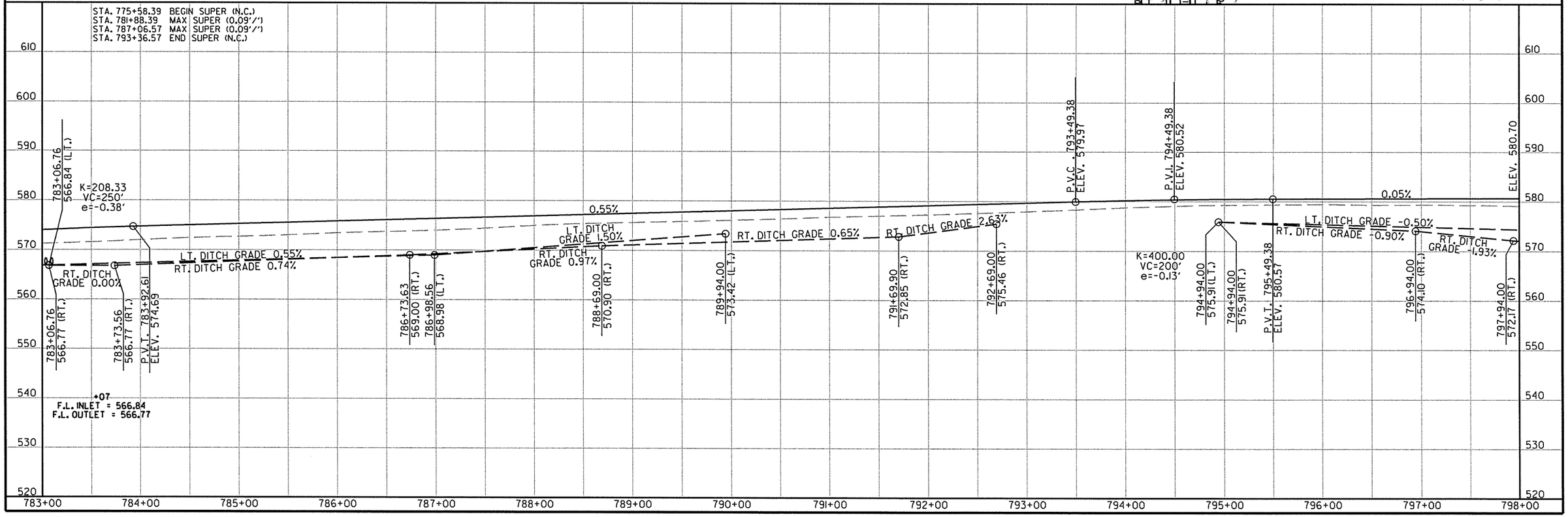
STA. 2400+00.00 ON FOREST LANE =
STA. 794+45.56 ON HWY. 167
Δ 90°00'00"



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

HWY. 167

STA. 775+58.39 BEGIN SUPER (N.C.)
STA. 781+88.39 MAX SUPER (0.09'/')
STA. 787+06.57 MAX SUPER (0.09'/')
STA. 793+36.57 END SUPER (N.C.)



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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	100	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 799+73 IN PLACE
DBL. 48" X 53' R.C. PIPE CULVERT
ON 30° LT. FWD. SKEW
WITH HDWL. LT. AND RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
65' LT. AND 24' RT.
(CLASS III (TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
050 = 119 C.F.S. D.A. = 118.5 ACRES
48" R.C. PIPE = 194 LIN. FT.
48" F.E.S. = 4 EACH

STA. 799+96.56 TO STA. 800+94.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 64.96 SQ. YD.

STA. 806+49 IN PLACE
18" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS. COMP. EMB.

STA. 810+94.00 TO STA. 812+79.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 123.33 SQ. YD.

STA. 801+87 IN PLACE
24" X 49' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 52' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 115 CU. YDS. COMP. EMB.

STA. 804+80 IN PLACE
24" X 60' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 54' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 95 CU. YDS. COMP. EMB.

STA. 805+81 IN PLACE
24" X 61' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 52' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS. COMP. EMB.

STA. 808+04 IN PLACE
24" X 19' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 58' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 130 CU. YDS. COMP. EMB.

STA. 809+64 IN PLACE
18" X 34' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 46' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 120 CU. YDS. COMP. EMB.

STA. 811+70.00 TO STA. 812+46.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 50.67 SQ. YD.

STA. 812+65 IN PLACE
18" X 38' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 105 CU. YDS. COMP. EMB.

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

HWY. 167

STA. 811+52 IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS. COMP. EMB.

+73
F.L. INLET = 572.96
F.L. OUTLET = 570.42

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(2) PLAN AND PROFILE SHEETS

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STA. 813+00 IN PLACE
18" X 21' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 130 CU. YDS. COMP. EMB.

WIRE FENCE			(TYPE D-1)
STA.	STA.	SIDE	LIN.FT.
821+43.37	826+25.42	RT.	4019

STA. 813+21.00 TO STA. 822+94.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 648.67 SQ. YD.

STA. 812+84.00 TO STA. 816+62.92 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 252.61 SQ. YD.

STA. 816+86 IN PLACE
18" X 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 46' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 140 CU. YDS. COMP. EMB.

PI = 817+18.75
Δ = 1°34'42"RT.
D = 0°15'00"
T = 315.66'
L = 631.28'
PC = 814+03.09
PT = 820+34.37
NO SUPER

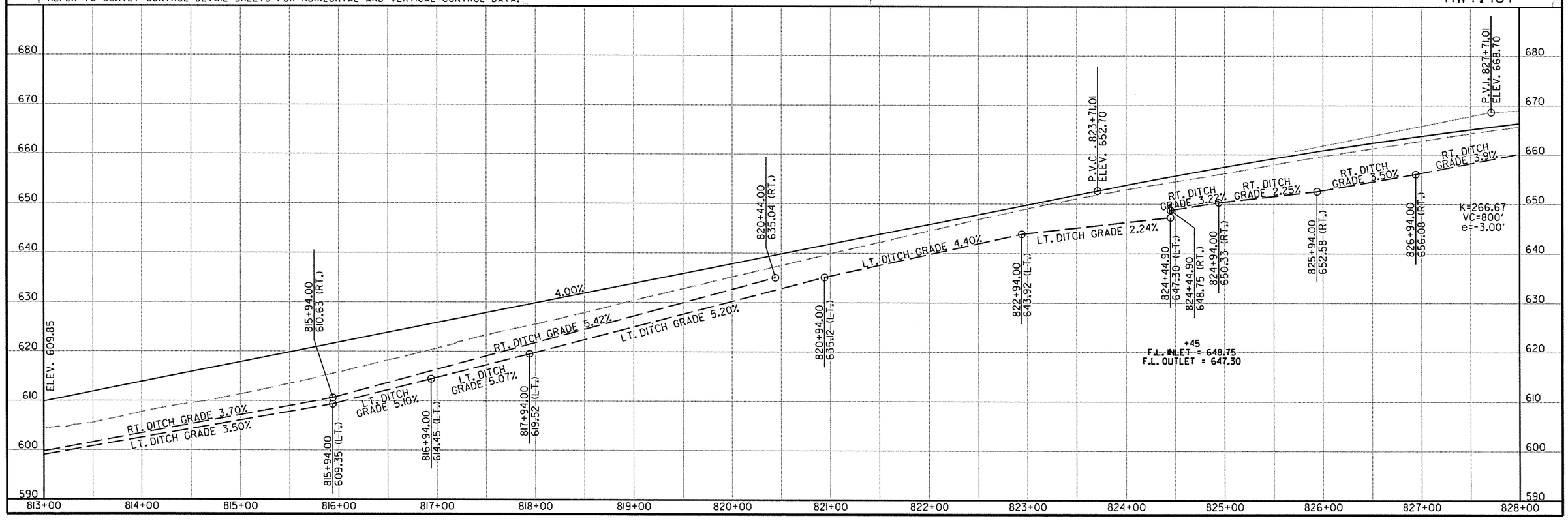
STA. 817+09.08 TO STA. 828+93.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 789.28 SQ. YD.

STA. 824+45 IN PLACE
18" X 45' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
REMOVE AND CONST.
24" X 120' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING)
Q50 = 9.5 C.F.S. D.A. = 3 ACRES
24" R.C. PIPE = 120 LIN. FT.
24" F.E.S. = 2 EACH

STA. 825+97.66 ON HWY. 167 =
STA. 2503+98.24 ON WIRE LANE
& 90°00'00"

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

HWY. 167



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(2) PLAN AND PROFILE SHEETS

WIRE FENCE			(TYPE C)
STA.	STA.	SIDE	LIN.FT.
834+59.72	834+97.72	LT.	38

STA. 832+38 IN PLACE
30" X 49' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
20' LT. AND 64' RT.
(CLASS IIIX(TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
050 = 23.1F.E.S. D.A. = 10.3 ACRES
30" R.C. PIPE = 92 LIN. FT.
30" F.E.S. = 2 EACH

STA. 842+05 IN PLACE
18" X 21' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH ON LT. = 190 CU. YDS. COMP. EMB.
= 20 CU. YDS. UNCL. EXC.

PI = 842+35.33
Δ = 15°36'51"RT.
D = 1°15'00"
T = 628.47'
L = 1249.14'
PC = 836+06.86
PT = 848+56.00
e = 0.037'/'
Ls = 540'

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PROPOSED R/W
EXIST. R/W
CONST. LIMITS
DITCH BLOCK
16' GATE
N 1°38'38" W
N 13°58'13" E
+44.00 94.00
+97.72 83.61
+85.59 98.46
+90.66 136.00
+22.69 97.82
+23.00 136.00
PI 842+35.33
+19.00 71.00
+34.00 95.00
+94.00 95.00
+94.00 73.00
PC 836+06.86

STA. 829+07 INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS. COMP. EMB.

STA. 832+37.43 TO STA. 833+72.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 89.71 SQ. YD.

STA. 834+16.00 TO STA. 835+94.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 118.67 SQ. YD.

STA. 833+94 IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 150 CU. YDS. COMP. EMB.

STA. 836+94.00 TO STA. 837+94.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 66.67 SQ. YD.

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

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STA. 832+01.86 BEGIN SUPER (N.C.)
STA. 837+41.86 MAX SUPER (0.037'/')
STA. 847+21.00 MAX SUPER (0.037'/')
STA. 852+61.00 END SUPER (N.C.)

720 710 700 690 680 670 660 650 640 630

828+94.00 663.91(RT.)
829+94.00 665.76 (LT.)
P.V.T. 831+71.01 ELEV. 672.70
831+97.20 P.V.C. ELEV. 672.96
832+38.32 666.44 (LT.)
832+38.32 661.18 (RT.)
833+94.00 669.71(LT.)
834+04.26 669.93 (LT.)
834+94.00 671.81(LT.)
P.V.I. 834+22.20 ELEV. 675.21
835+94.00 674.18 (LT.)
835+94.00 673.81(RT.)
P.V.T. 836+47.20 ELEV. 683.87
P.V.C. 836+72.16 ELEV. 684.83
836+94.00 675.91(RT.)
837+94.00 684.51(RT.)

K=266.67 VC=800' e=-3.00'
K=157.89 VC=450' e=1.60'
K=171.05 VC=1300' e=-12.35'
3.85%

LOOP
LT. DITCH GRADE 0.28%
LT. DITCH GRADE 2.10%
LT. DITCH GRADE 2.37%
RT. DITCH GRADE 3.91%
RT. DITCH GRADE 3.55%
RT. DITCH GRADE 2.10%
RT. DITCH GRADE 8.60%

+45
F.L. INLET = 666.44
F.L. OUTLET = 661.18

828+00 829+00 830+00 831+00 832+00 833+00 834+00 835+00 836+00 837+00 838+00 839+00 840+00 841+00 842+00 843+00

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(2) PLAN AND PROFILE SHEETS

STA. 843+61 IN PLACE
18" X 21' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 48' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 190 CU. YDS. COMP. EMB.
= 15 CU. YDS. UNCL. EXC.

WIRE FENCE			(TYPE C)	(TYPE D-1)
STA.	STA.	SIDE	LIN.FT.	LIN. FT.
846+19.00	855+15.68	LT.	874	
855+15.68	857+73.87	LT.		245
857+73.87	861+67.97	LT.	394	

PI = 842+35.33
Δ = 15°36'51"RT.
D = 1°15'00"
T = 628.47'
L = 1249.14'
PC = 836+06.86
PT = 848+56.00
e = 0.037'/'
Ls = 540'

STA. 845+73.67 TO STA. 846+44.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 46.89 SQ. YD.

STA. 848+94.00 TO STA. 851+86.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 194.67 SQ. YD.

STA. 852+06 IN PLACE
18" X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 105 CU. YDS. COMP. EMB.

STA. 852+26.00 TO STA. 852+40.00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 9.33 SQ. YD.

STA. 853+94.00 TO STA. 854+54.98 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 40.65 SQ. YD.

STA. 854+77 IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 135 CU. YDS. COMP. EMB.

STA. 857+27 CONSTRUCT
APPROACH ON LT. = 110 CU. YDS. COMP. EMB.

STA. 854+99.00 TO STA. 855+34.63 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 23.75 SQ. YD.

PI = 856+20.40
Δ = 0°45'28"RT.
D = 0°30'00"
T = 75.78'
L = 151.56'
PC = 855+44.62
PT = 856+96.18
NO SUPER

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STA. 845+94.00 TO STA. 847+14.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 80.00 SQ. YD.

STA. 854+15 IN PLACE
18" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS. COMP. EMB.

STA. 855+30 IN PLACE
54" X 50' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
36' LT. AND 38' RT.
(CLASS III)(TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
~~050 = 92.7 C.F.S. D.A. = 47.3 ACRES~~
54" R.C. PIPE = 82 LIN. FT.
54" F.E.S. = 2 EACH

STA. 852+94.00 TO STA. 853+97.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 68.67 SQ. YD.

STA. 854+33.00 TO STA. 855+33.24 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 66.83 SQ. YD.

720' LANE TAPER

HWY. 167

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

STA. 832+01.86 BEGIN SUPER (N.C.)
STA. 837+41.86 MAX SUPER (0.037'/')
STA. 847+21.00 MAX SUPER (0.037'/')
STA. 852+61.00 END SUPER (N.C.)

P.V.I. 843+22.16
ELEV. 709.86

K=171.05
VC=1300'
e=-12.35'

LT. DITCH GRADE -3.00%
RT. DITCH GRADE -8.80%
LT. DITCH GRADE -2.94%
RT. DITCH GRADE -2.44%
LT. DITCH GRADE -2.20%
RT. DITCH GRADE -1.30%
-3.75%
RT. DITCH GRADE -1.78%
RT. DITCH GRADE -2.85%
RT. DITCH GRADE -5.35%
LT. DITCH GRADE -5.70%
RT. DITCH GRADE -3.18%
LT. DITCH GRADE 2.23%
RT. DITCH GRADE 1.61%
-0.50%

845+74.00 694.00 (LT.)
846+44.00 691.90 (LT.)
847+44.00 688.96 (LT.)
848+94.00 685.66 (LT.)
P.V.T. 849+72.16 ELEV. 685.48
P.V.C. 851+01.74 ELEV. 680.62
853+94.00 667.41 (LT.)
K=184.62 VC=600' e=2.44'
P.V.I. 854+01.74 ELEV. 669.37
855+29.74 659.68 (LT.)
856+94.00 663.33 (LT.)
P.V.T. 857+01.74 ELEV. 667.87
ELEV. 667.38

845+94.00 690.90 (RT.)
847+14.00 680.34 (RT.)
848+94.00 675.95 (RT.)
849+94.00 674.65 (RT.)
851+94.00 671.10 (RT.)
852+94.00 668.25 (RT.)
853+94.00 662.90 (RT.)
855+29.74 658.59 (RT.)
857+94.00 662.83 (RT.)

+30
F.L. INLET = 659.68
F.L. OUTLET = 658.59

720 710 700 690 680 670 660 650 640 630

843+00 844+00 845+00 846+00 847+00 848+00 849+00 850+00 851+00 852+00 853+00 854+00 855+00 856+00 857+00 858+00

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(2) PLAN AND PROFILE SHEETS

WIRE FENCE			(TYPE C)
STA.	STA.	SIDE	LIN.FT.
857+73.87	861+67.97	LT.	394

STA. 862+21.12 TO STA. 862+32.52 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 7.60 SQ. YD.

STA. 861+78.90 IN PLACE
24" X 60' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 66' PIPE CULVERT
LT. SIDE DRAIN

100' TRANSITION

PROPOSED R/W
CONST. LIMITS
EXIST. R/W
GRADE TO DRAIN
720' LANE TAPER

PI = 863+48.49
Δ = 0°20'25"RT.
D = 0°15'00"
T = 68.07'
L = 136.14'
PC = 862+80.42
PT = 864+16.56
NO SUPER

PI = 871+40.71
Δ = 7°50'16"LT.
D = 1°30'00"
T = 261.67'
L = 522.53'
PC = 868+79.03
PT = 874+01.56

N 14°43'41" E
N 15°04'06" E
N 7°13'50" E

STA. 860+17.71 TO STA. 861+50.00 RT. SHLDR.
CURB AND GUTTER (TYPE A) = 132 LIN. FT.

STA. 861+50.00
END JOB 050214
LOG MILE 13.86

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ELEV. 667.38
-0.50%
P.V.I. 861+78.90
ELEV. 665.49

710 700 690 680 670 660 650 640 630 620

858+00 859+00 860+00 861+00 862+00 863+00 864+00 865+00 866+00 867+00 868+00 869+00 870+00 871+00 872+00 873+00

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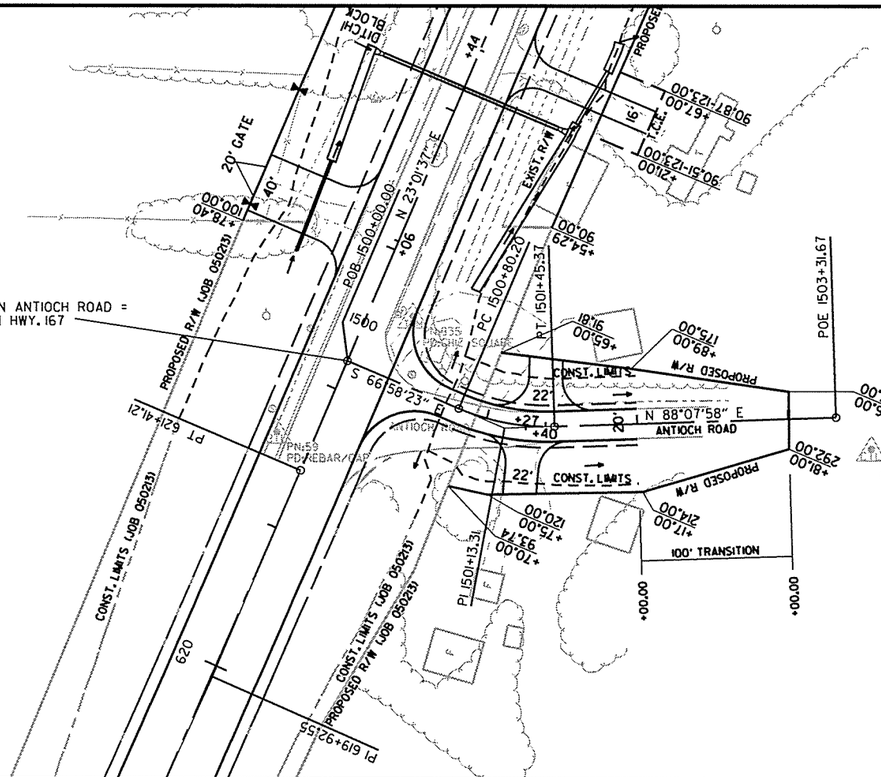


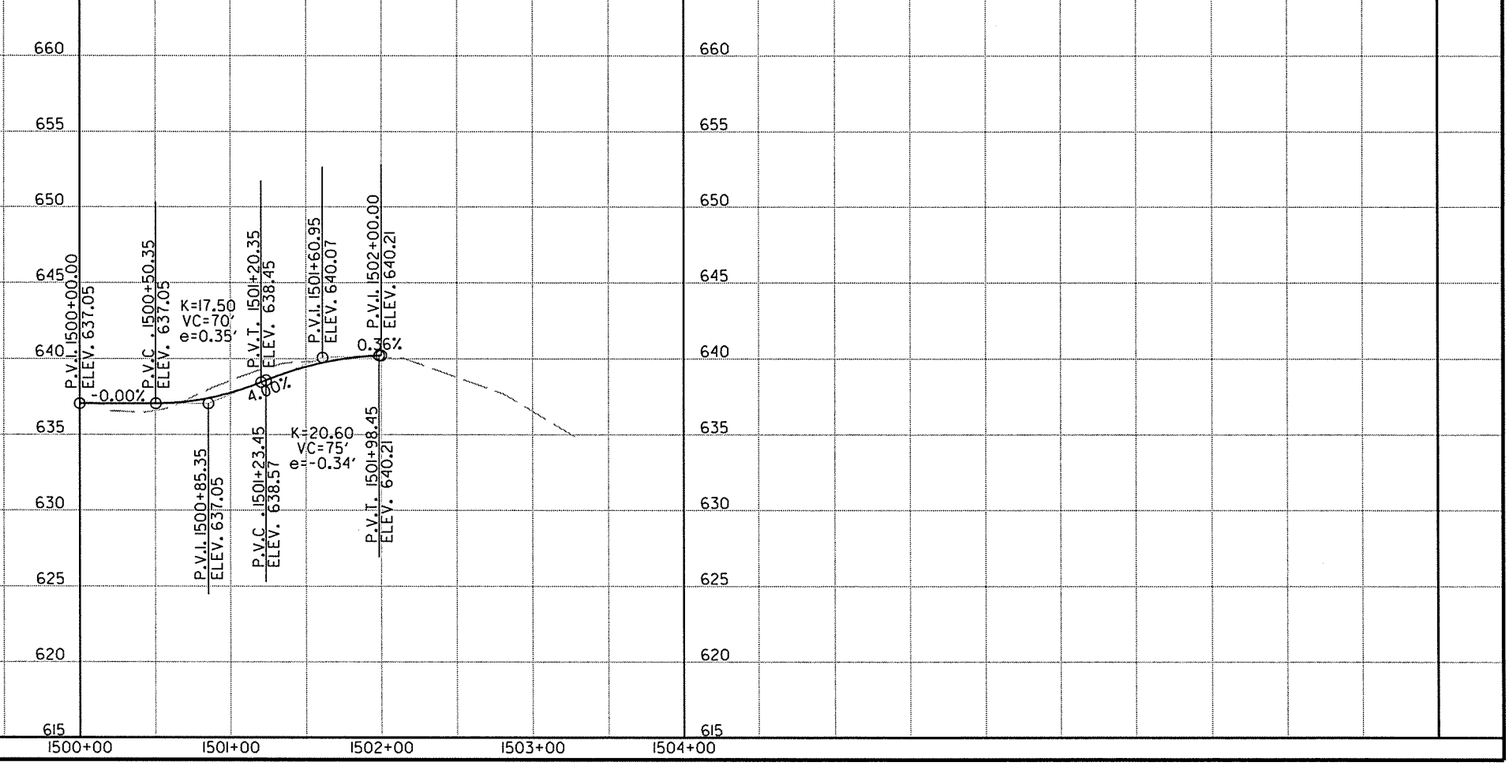
ANTIOCH ROAD
PI = 1501+13.31
Δ = 24°53'39"LT.
R = 150'
T = 33.11'
L = 65.17'
PC = 1500+80.20
PT = 1501+45.37

STA. 1501+27 CONSTRUCT
APPROACH ON LT. = 35 CU. YDS. COMP. EMB.

STA. 1501+40 CONSTRUCT
APPROACH ON LT. = 25 CU. YDS. COMP. EMB.

N

ANTIOCH ROAD



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(2) PLAN AND PROFILE SHEETS

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BELLER LAKE LANE
PI = 1700+84.45
Δ = 14°19'53"LT.
R = 150'
T = 18.86'
L = 37.52'
PC = 1700+65.59
PT = 1701+03.11

STA. 1702+84.40 ON BELLER LAKE LANE =
STA. 637+07.20 ON HWY. 167
∡ 90°00'00"

MISTY LANE
PI = 1601+28.90
Δ = 36°06'35"RT.
R = 150'
T = 48.90'
L = 94.54'
PC = 1600+80.00
PT = 1601+74.54

STA. 1600+00.00 ON MISTY LANE
STA. 634+73.20 ON HWY. 167
∡ 90°00'00"

STA. 1601+40 IN PLACE
18" X 22' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 60 CU. YDS. COMP. EMB.

STA. 1602+45 IN PLACE
15" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS. COMP. EMB.

STA. 1600+95 IN PLACE
DBL. 48" X 40' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND CONSTRUCT
TRP. 9' X 6' X 51' R.C. BOX CULVERT
ON 10° RT. FWD SKEW
050 = 865 C.F.S. D.A. = 525 ACRES

BELLER LAKE LANE - MISTY LANE

P.V.I. 1700+94.01
ELEV. 618.80
P.V.C. 1701+14.92
ELEV. 620.00
P.V.I. 1701+34.92
ELEV. 620.87
K=6.43
VC=35'
e=0.24'

P.V.C. 1700+76.51
ELEV. 618.74
P.V.T. 1701+11.51
ELEV. 619.80
P.V.I. 1701+24.92
ELEV. 620.57
P.V.I. 1701+54.90
ELEV. 621.47
K=7.29
VC=20'
e=-0.07'
0.30%
3.00%

P.V.I. 1600+00.00
ELEV. 624.16
P.V.C. 1600+62.50
P.V.I. 1600+72.50
ELEV. 624.16
K=4.00
VC=20'
e=-0.12'
P.V.C. 1600+87.25
ELEV. 623.42
P.V.T. 1600+82.50
ELEV. 623.66
-0.00%
P.V.T. 1602+07.25
ELEV. 622.22
K=15.00
VC=120'
e=1.20'
P.V.I. 1603+13.42
ELEV. 625.41
3.00%
1601+09.80
618.07 (RT.&LT.)
P.V.I. 1601+47.25
ELEV. 620.42
1601+62.10
618.69 (RT.&LT.)
LT. DITCH GRADE 1.19%
RT. DITCH GRADE 1.19%
+95
F.L. INLET = 613.94
F.L. OUTLET = 612.95

640 635 630 625 620 615 610 605 600 595

1700+00 1701+00 1702+00 1600+00 1601+00 1602+00 1603+00 1604+00

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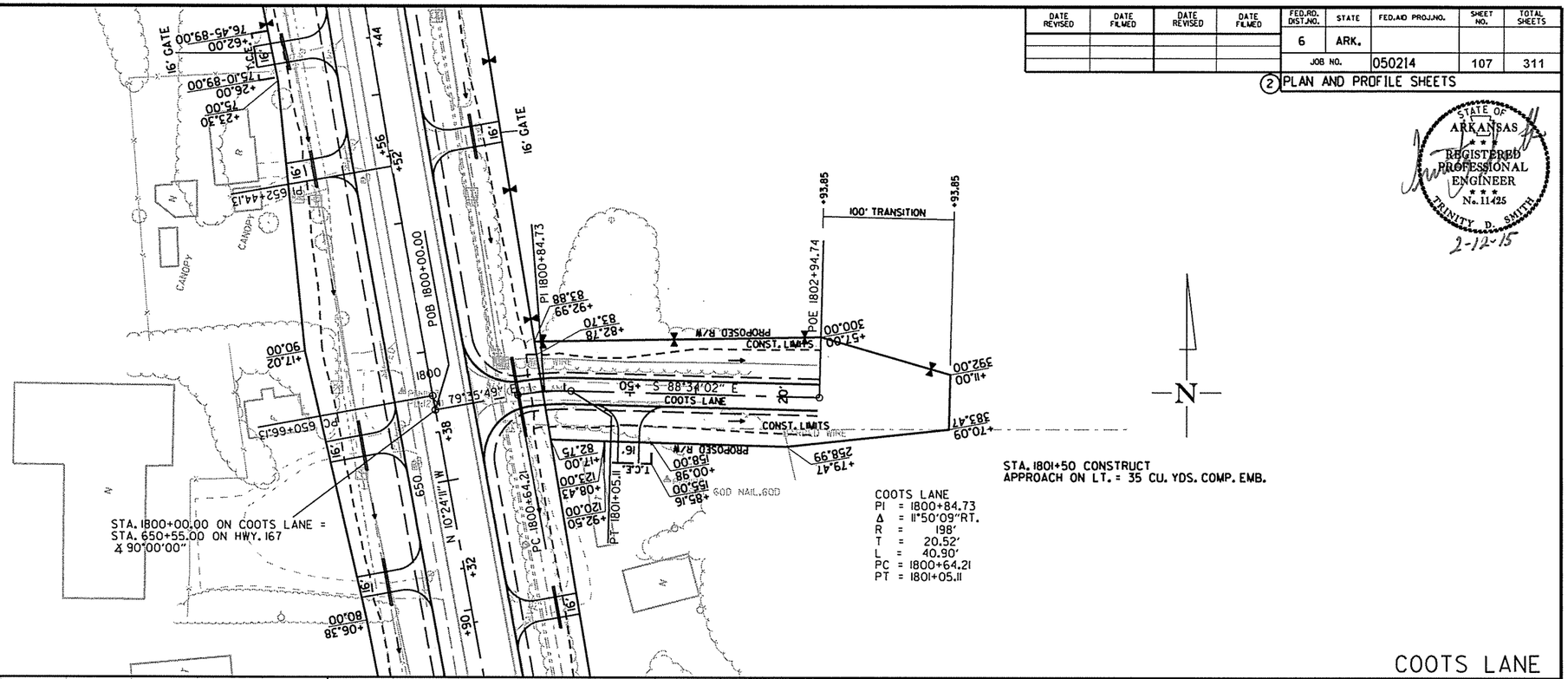
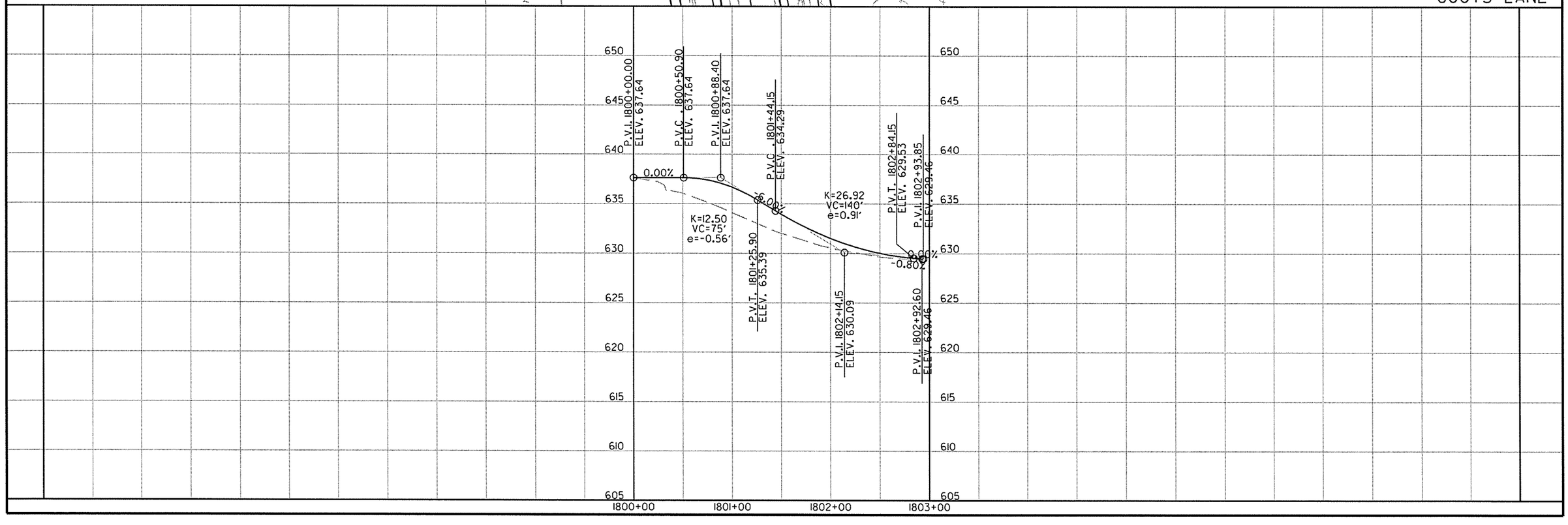


COOTS LANE



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STA. 2001+75 INSTALL DBL. 24" X 50' SIDE DRAIN

STA. 2001+57 IN PLACE 12" X 24' C.M. PIPE CULVERT REMOVE

STA. 2001+85 IN PLACE 18" X 32' C.M. PIPE CULVERT REMOVE

STA. 1901+65.00 ON RIM ROCK ROAD = STA. 2002+29.88 ON FOX RUN LANE
Δ 90°00'00"

FOX RUN LANE
PI = 2001+42.75
Δ = 35°57'46"RT.
R = 198'
T = 64.26'
L = 124.28'
PC = 2000+78.48
PT = 2002+02.76

RIM ROCK ROAD
PI = 1902+07.74
Δ = 43°06'32"RT.
R = 198'
T = 78.21'
L = 148.97'
PC = 1901+29.53
PT = 1902+78.50

STA. 1903+43.60 ON RIM ROCK ROAD = STA. 697+95.00 ON HWY. 167
Δ 90°00'00"

RIM ROCK ROAD - FOX RUN LANE

RIM ROCK ROAD

P.V.I. 1900+38.21
ELEV. 651.18
-5.45%
P.V.C. 1900+98.50
ELEV. 647.90
K=27.52
VC=150'
e=1.02'
P.V.T. 1902+48.50
ELEV. 643.81
0.00%
P.V.I. 1903+43.60
ELEV. 643.81
P.V.I. 1901+73.50
ELEV. 643.81

FOX RUN LANE

P.V.I. 2000+00.00
ELEV. 647.81
P.V.C. 2000+25.47
ELEV. 646.96
K=37.54
VC=125'
e=0.52'
P.V.T. 2001+50.47
ELEV. 644.88
0.00%
P.V.I. 2002+29.88
ELEV. 644.88
P.V.I. 2000+87.97
ELEV. 644.88
2001+00.00
642.83 (RT.)
RT. DITCH GRADE -3.02%
2001+75.00 (RT.)
640.56
RT. DITCH GRADE +0.36%
2001+99.88 (RT.)
643.14

1900+00 1901+00 1902+00 1903+00 1904+00
2000+00 2001+00 2002+00 2003+00
615 620 625 630 635 640 645 650 655 660

2/2/2015
R050214.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.		050214	109	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

STA. 2200+72 IN PLACE
8" X 20' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 15 CU. YDS. COMP. EMB.

SANDTOWN ROAD
PI = 2201+90.86
Δ = 0°47'06"RT.
R = 333'
T = 2.28'
L = 4.56'
PC = 2201+88.58
PT = 2201+93.14

STA. 2202+68.02 ON SANDTOWN ROAD =
STA. 714+91.75 ON HWY. 167
∡ 90°00'00"

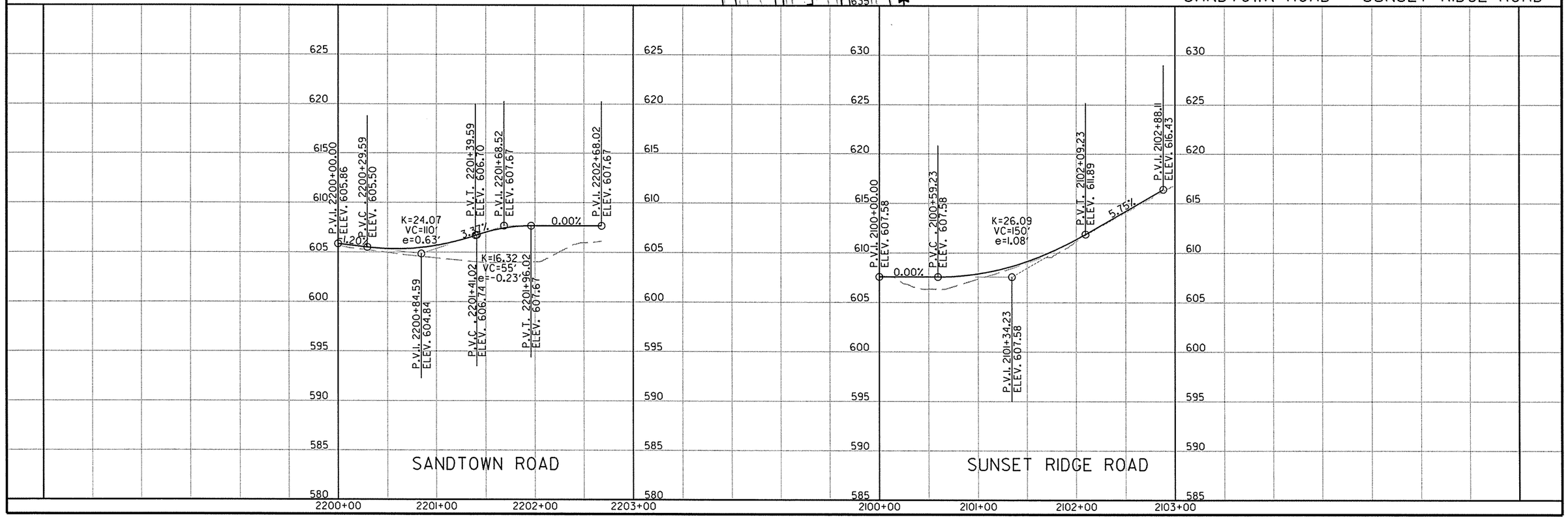
STA. 2101+28 IN PLACE
12" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 10 CU. YDS. COMP. EMB.

STA. 2102+74 IN PLACE
12" X 21' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 15 CU. YDS. COMP. EMB.

STA. 713+80.00 ON HWY. 167 =
STA. 2100+00.00 ON SUNSET RIDGE ROAD
∡ 90°00'00"

SUNSET RIDGE ROAD
PI = 2101+60.15
Δ = 12°25'21"RT.
R = 333'
T = 36.24'
L = 72.20'
PC = 2101+23.91
PT = 2101+96.11

SANDTOWN ROAD - SUNSET RIDGE ROAD

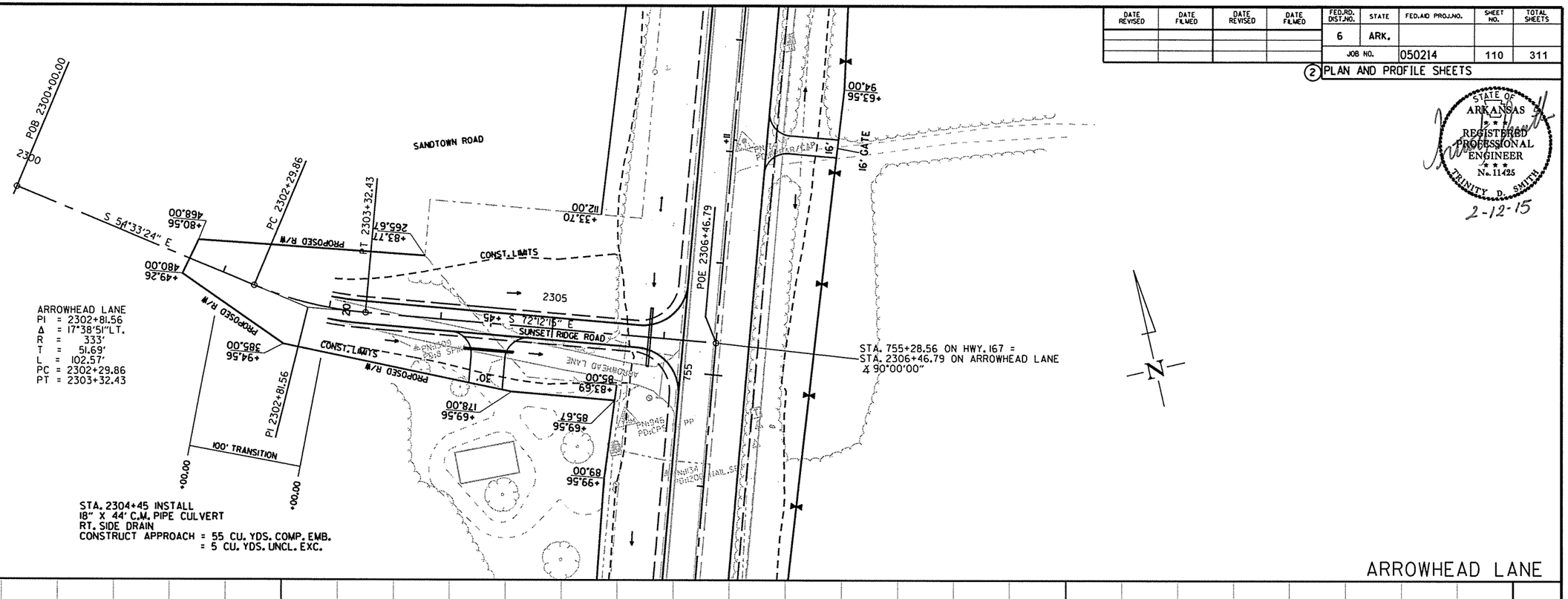


2/2/2015
R050214.DGN

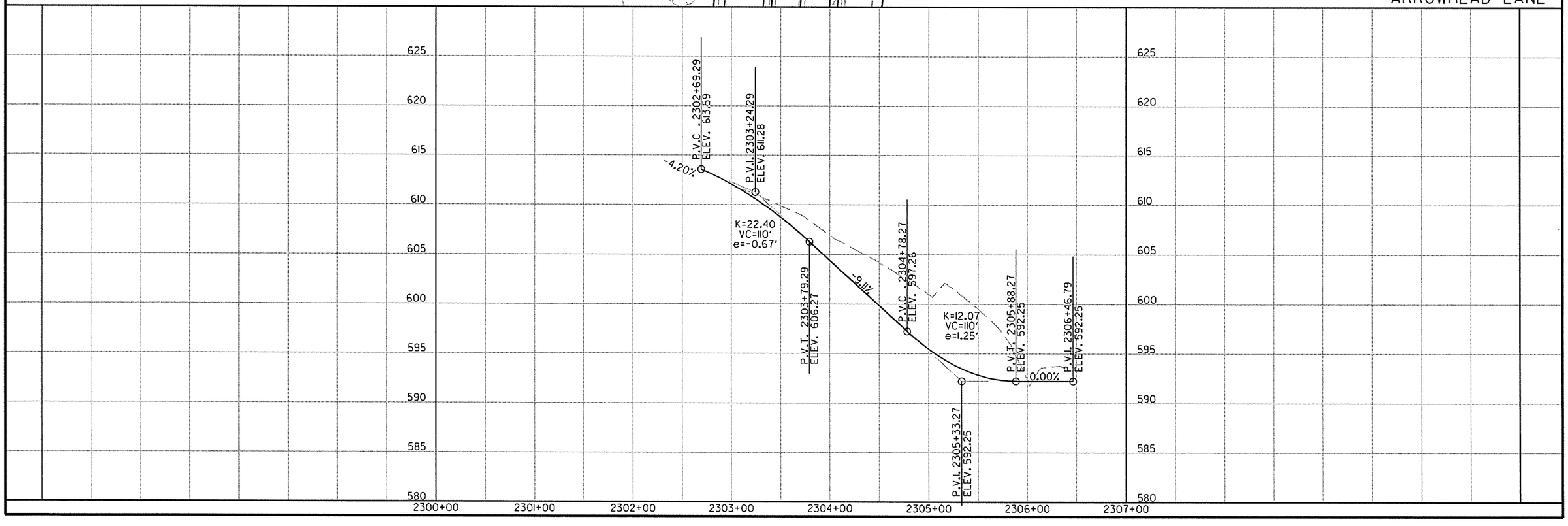
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	110	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



ARROWHEAD LANE



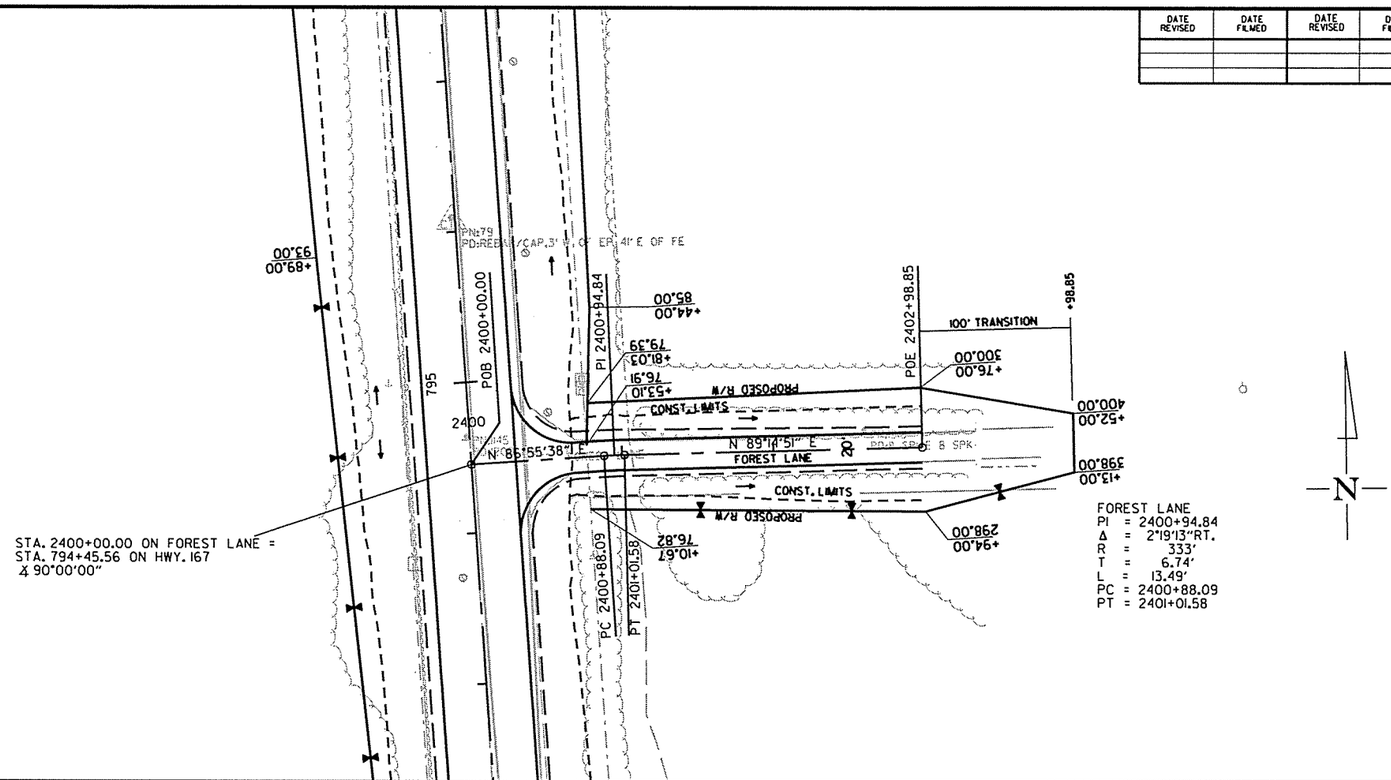
2/2/2015

R050214.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.		050214	111	311

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15



2/2/2015

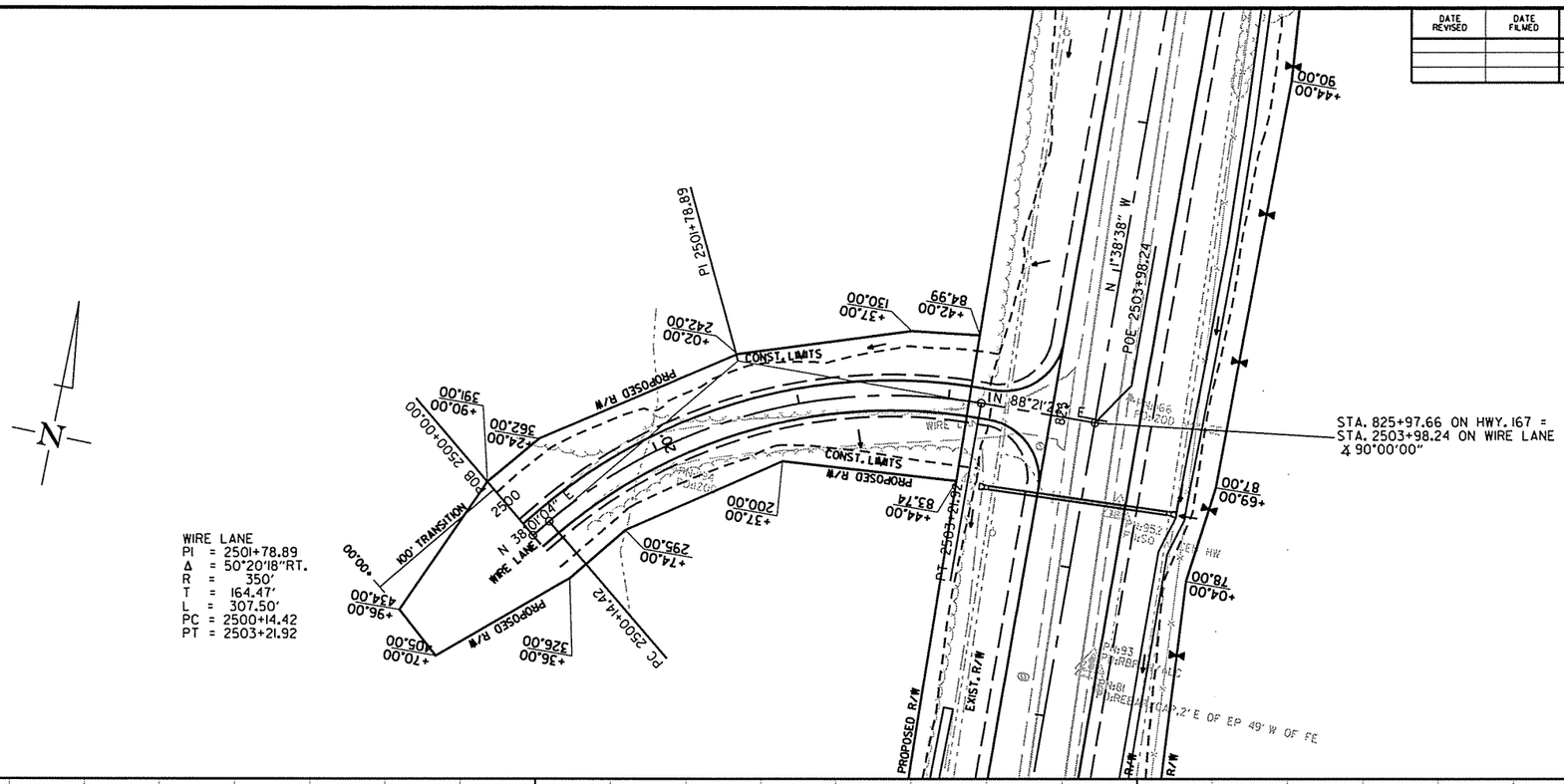
R050214.DGN

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.		050214	112	311

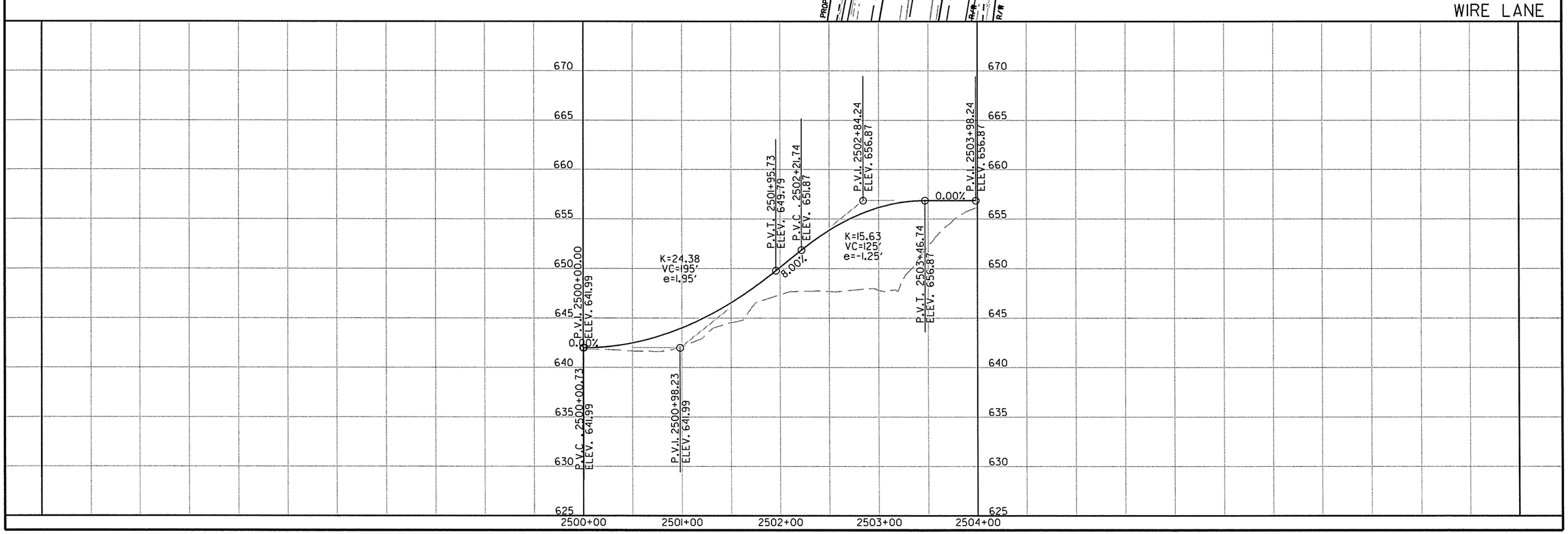
(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
2-12-15

WIRE LANE
PI = 2501+78.89
Δ = 50°20'18"RT.
R = 350'
T = 164.47'
L = 307.50'
PC = 2500+14.42
PT = 2503+21.92

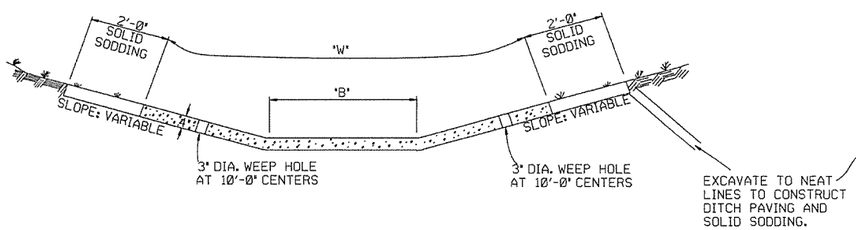


WIRE LANE



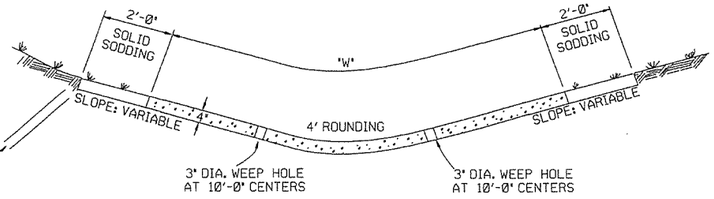
R050214.DGN 2/2/2015

REFER TO TABULATION OF QUANTITIES
FOR 'W' & 'B' DIMENSIONS



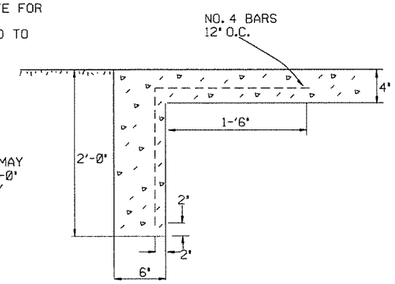
TYPE A

REFER TO TABULATION OF QUANTITIES
FOR 'W' DIMENSIONS



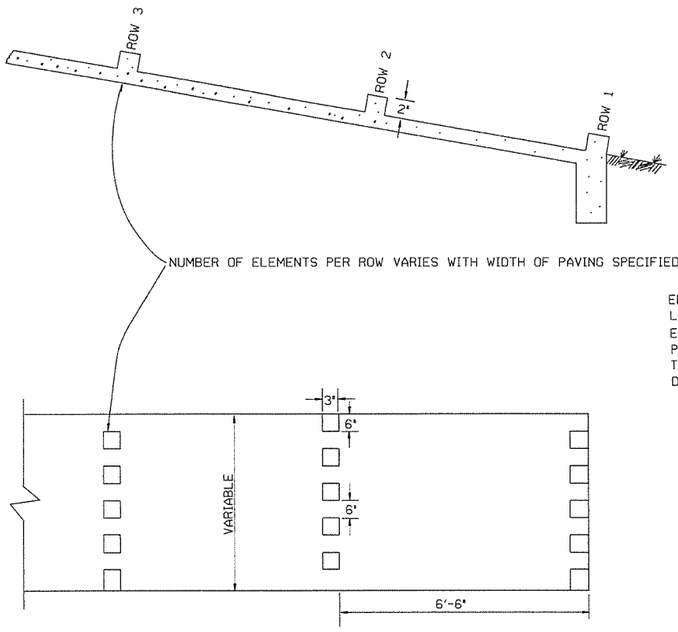
TYPE B

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



TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



ENERGY DISSIPATORS
(NO SCALE)

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

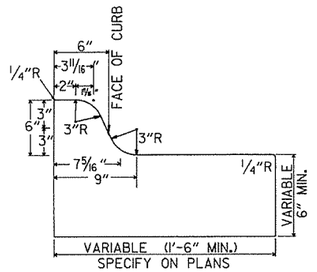
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

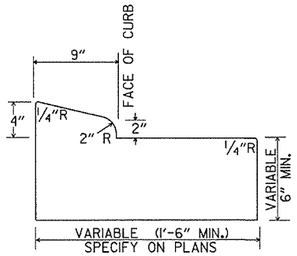
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

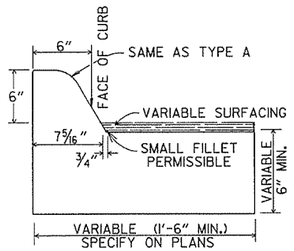
STANDARD DRAWING CDP-1



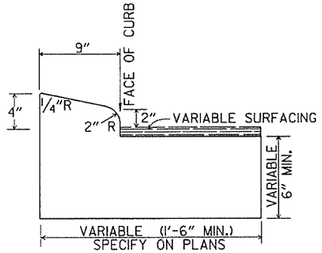
TYPE A



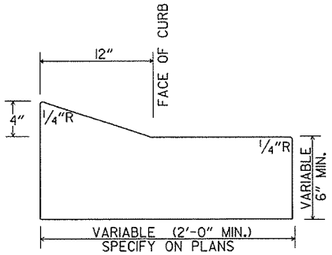
TYPE B-1



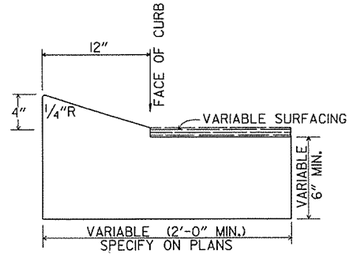
TYPE C



TYPE B-2

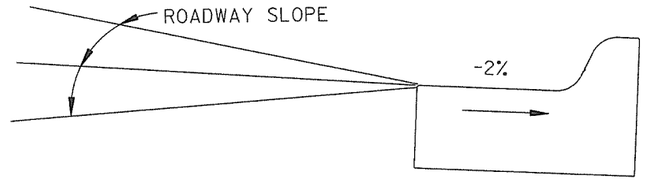


TYPE E-1



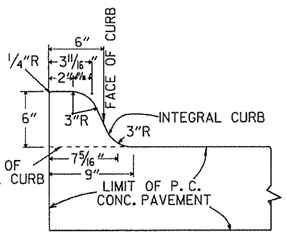
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

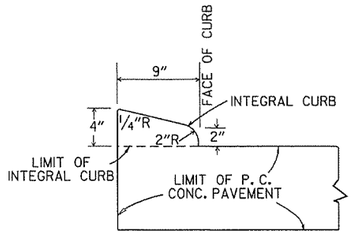


DETAIL OF GUTTER SLOPE

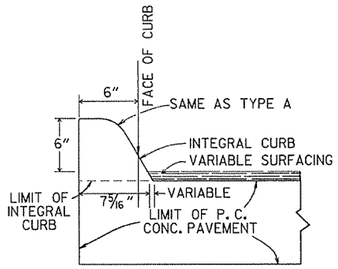
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

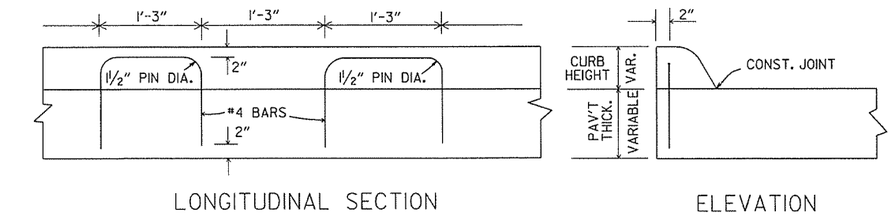


TYPE B

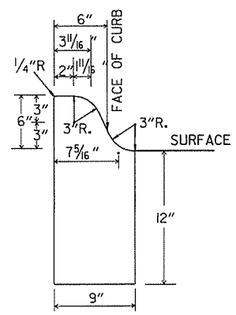


TYPE C

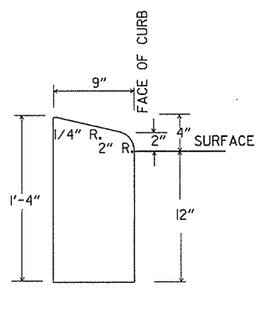
INTEGRAL CURB



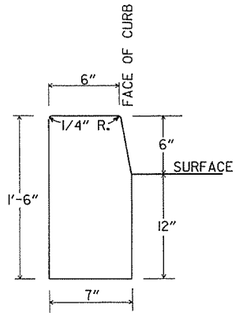
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



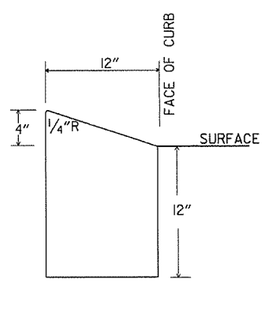
TYPE A



TYPE B

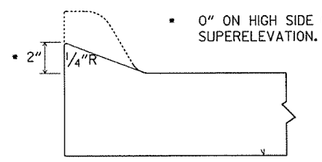


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

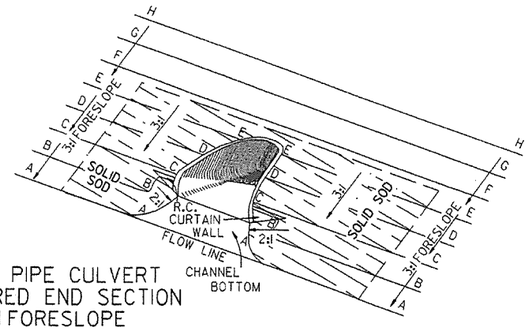
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-2-72

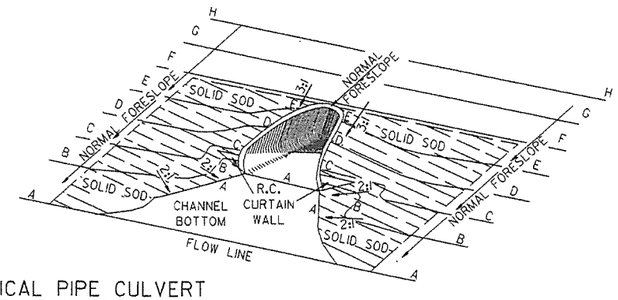
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

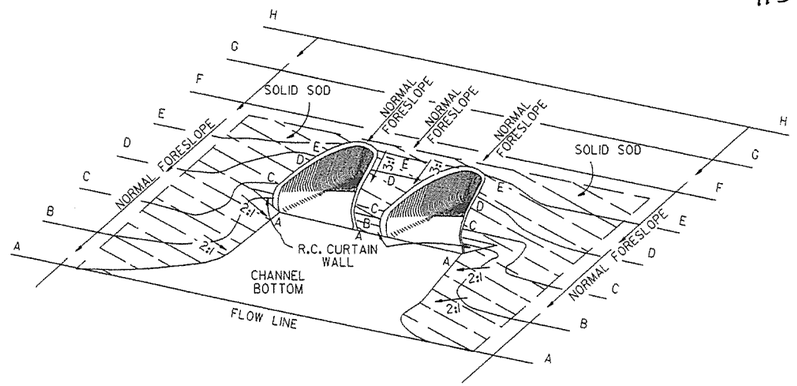
STANDARD DRAWING CG-1



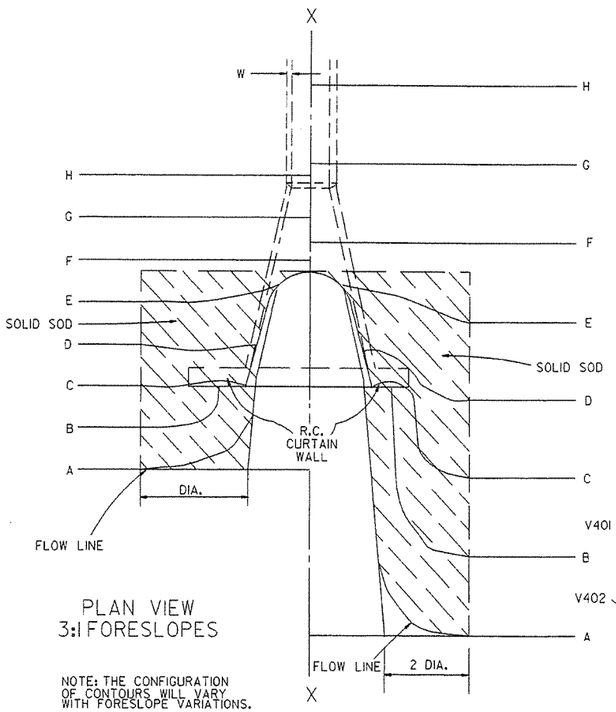
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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



PLAN VIEW
3:1 FORESLOPES

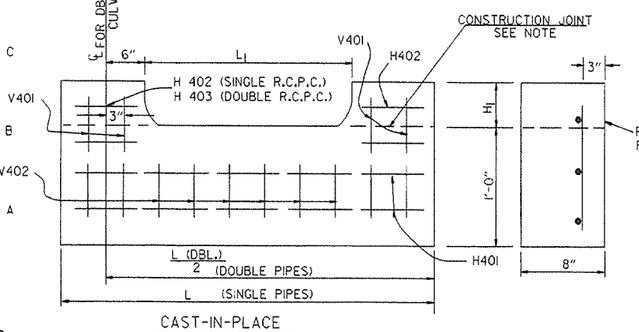
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

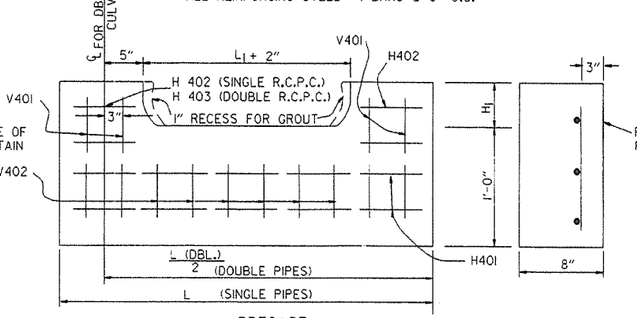
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

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



CAST-IN-PLACE

NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



PRECAST

NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

R.C. CURTAIN WALL DETAILS

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								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.	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.

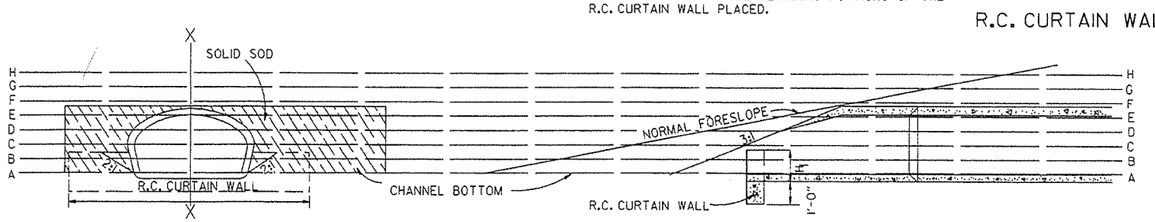
SOLID SODDING

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 ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

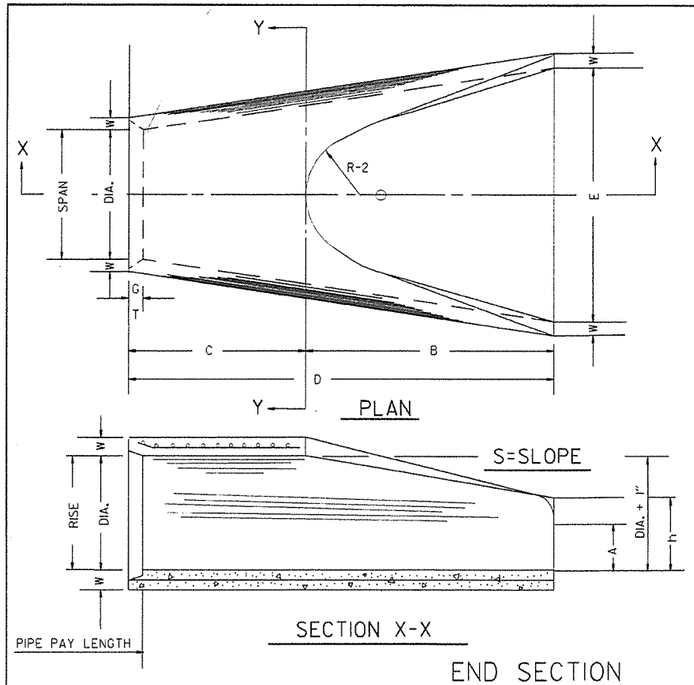
SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	10-18-96
10-12-95	CORRECTED SPELLING	
11-3-94	ADDED GENERAL NOTE NO. 4	
8-15-91	REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.	
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES	
5-15-80	ADDED PRECAST WALL & GENERAL NOTES	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

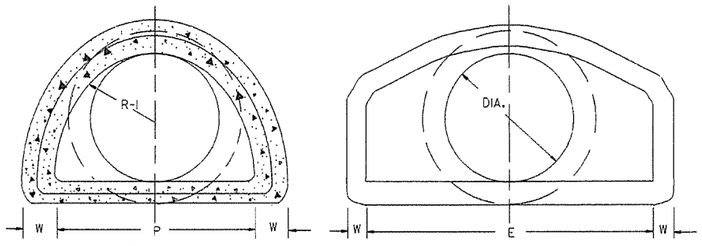
STANDARD DRAWING FES-1



END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33⅜"	16¹³⁄₁₆"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅜"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47¹⁄₁₆"	24⅝"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅞"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36¹¹⁄₁₆"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77¹¹⁄₁₆"	38⅝"	24"	5"	13250	4'-6"

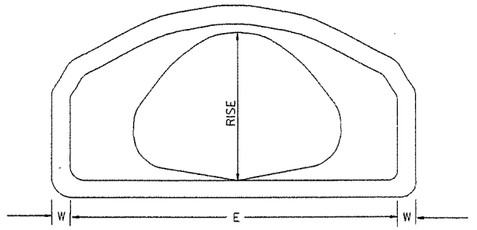


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

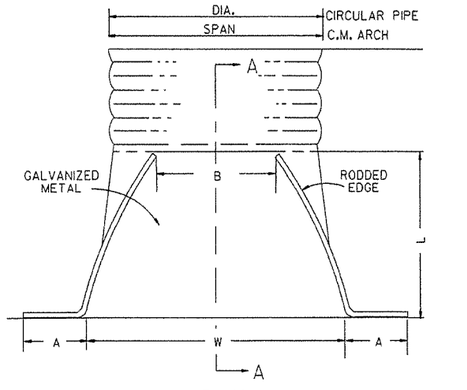
ARCH PIPE

EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36¹⁵⁄₁₆"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47¹³⁄₁₆"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54⅝"	22"	3½"	2½:1
42	51⅛	51	31⅝	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72¹⁄₁₆"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77¹³⁄₁₆"	24"	5"	2¼:1

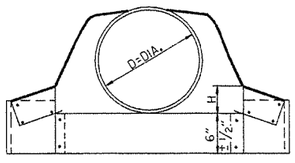
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



END VIEW
CONCRETE ARCH PIPE



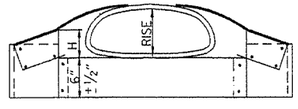
NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.



CIRCULAR PIPE

CIRCULAR PIPE

D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1¾:1
66	12	18	36	12	87	120	1½:1
72	12	18	39	12	87	126	1 1/3:1

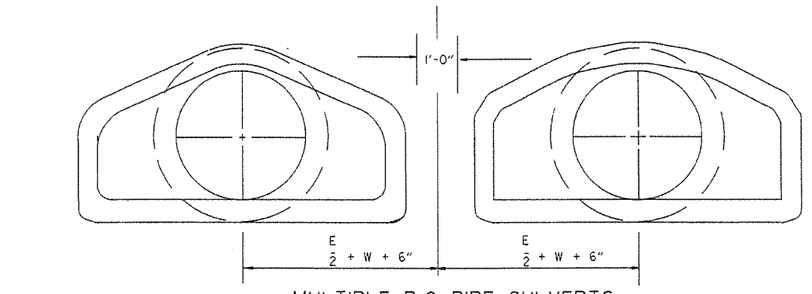


C.M. ARCH PIPE

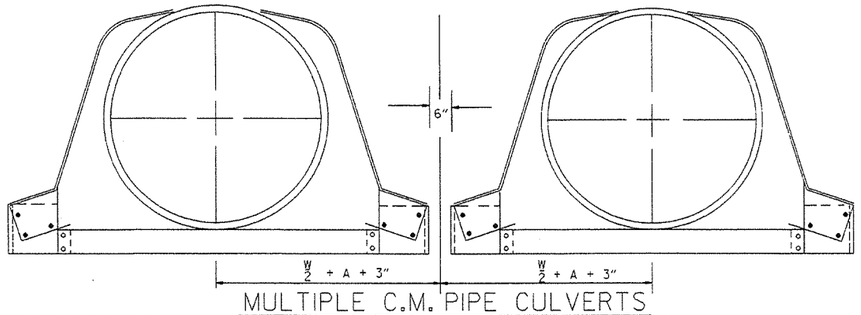
C.M. ARCH PIPE

EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
48"	57	38	18	26	12	63	90	2½:1	12
54"	64	43	18	30	12	70	102	2½:1	12
60"	71	47	18	33	12	77	114	2¼:1	12

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

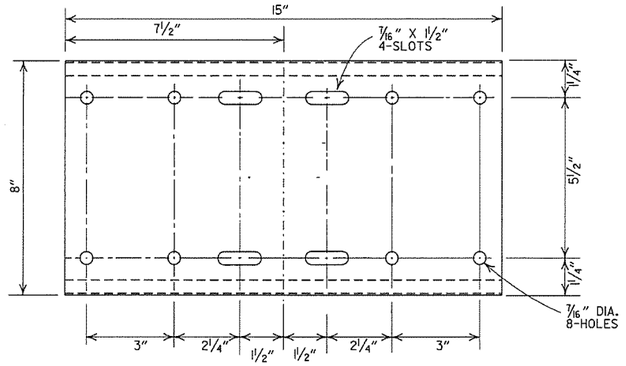
DATE	REVISION	APPROVED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73
10-2-72	REVISED AND REDRAWN	760-10-2-72

ARKANSAS STATE HIGHWAY COMMISION

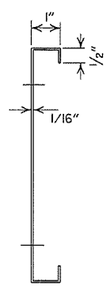
FLARED END SECTION

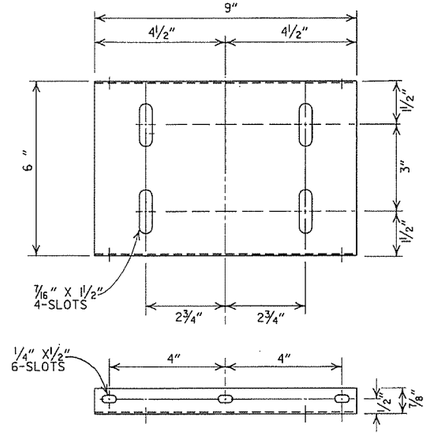
STANDARD DRAWING FES-2

stdfes2.dgn

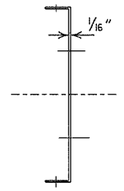


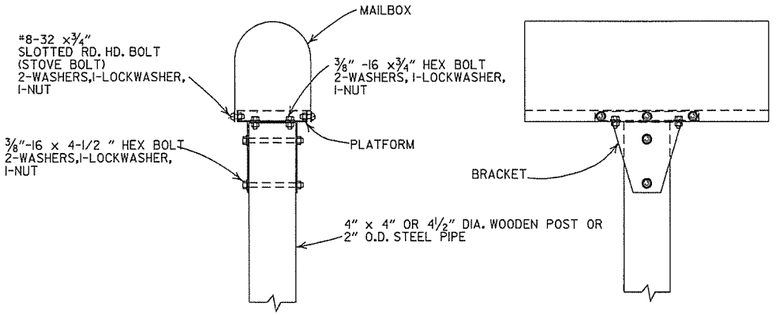
SHELF



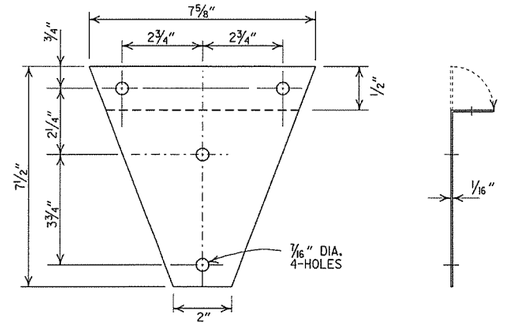


PLATFORM





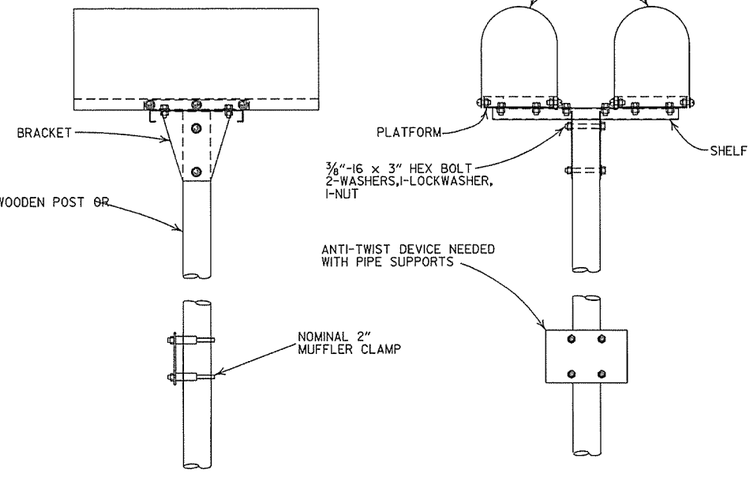
SINGLE INSTALLATION



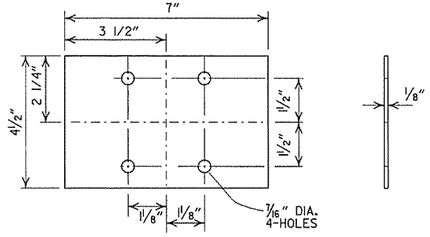
BRACKET

GENERAL NOTES

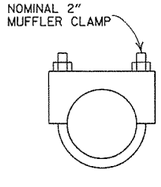
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X ¾" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



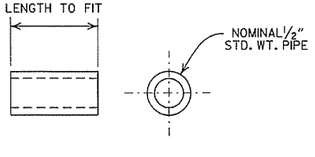
DOUBLE INSTALLATION



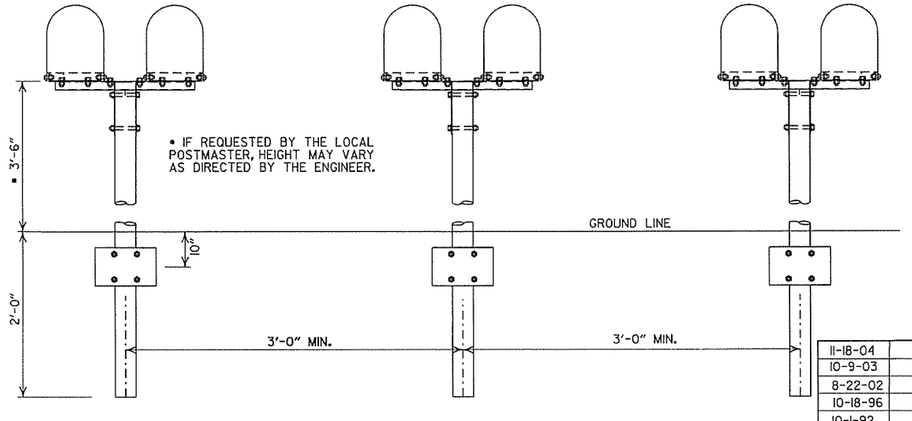
ANTI-TWIST PLATE



CLAMP



SPACER



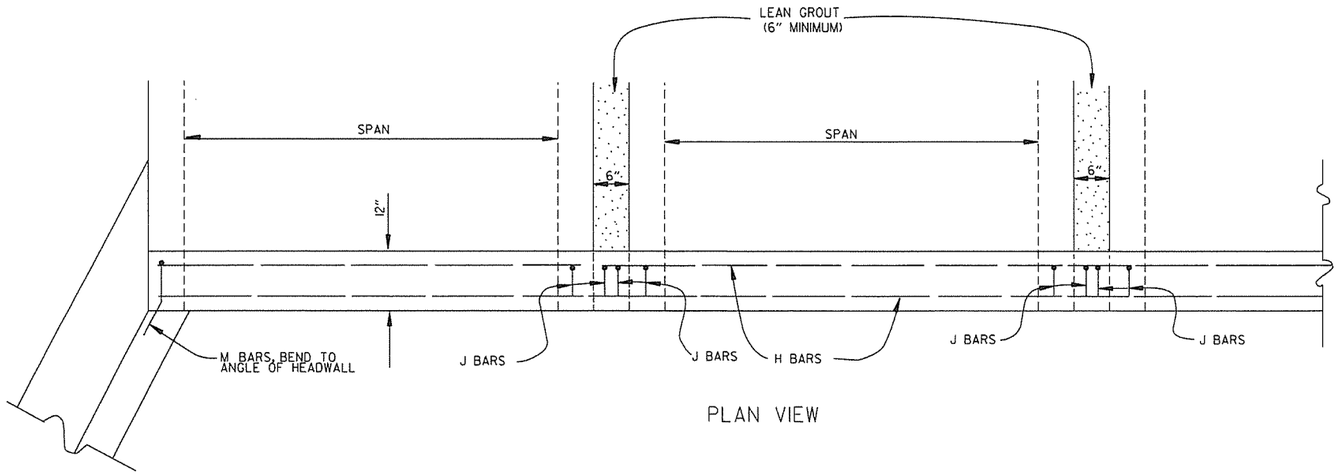
SPACING FOR MULTIPLE POST INSTALLATION

DATE	FILMED	REVISION
11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	20-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

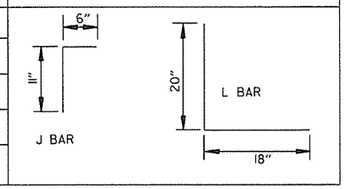
STANDARD DRAWING MB-1



PLAN VIEW

BAR LIST

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING, STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

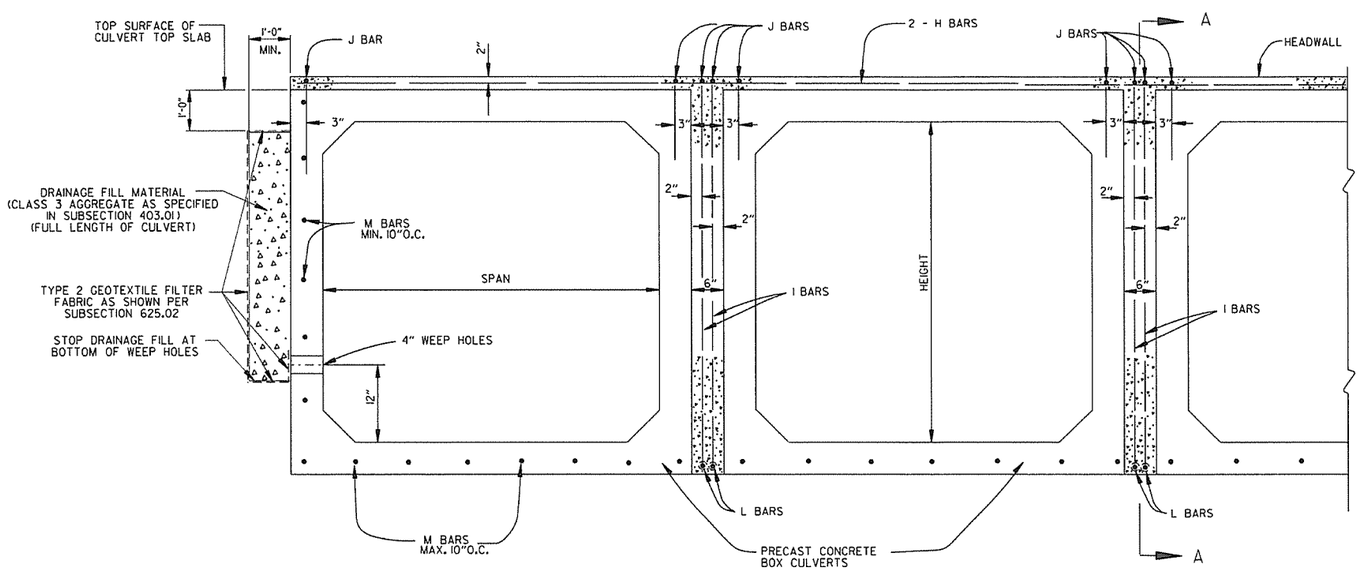
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

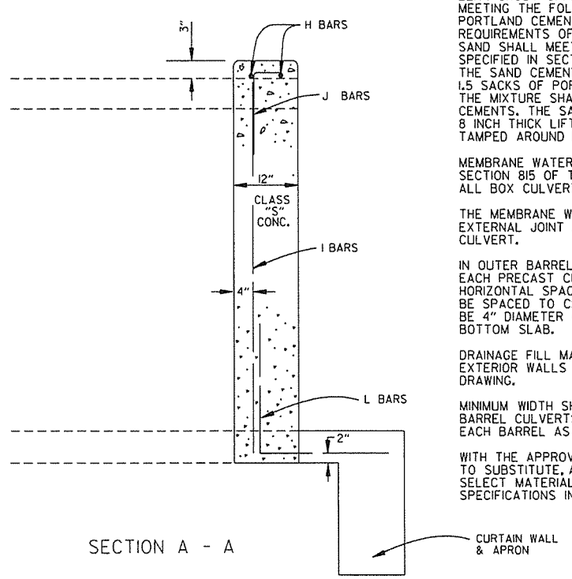
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11- 8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED: JABE	

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31 5/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

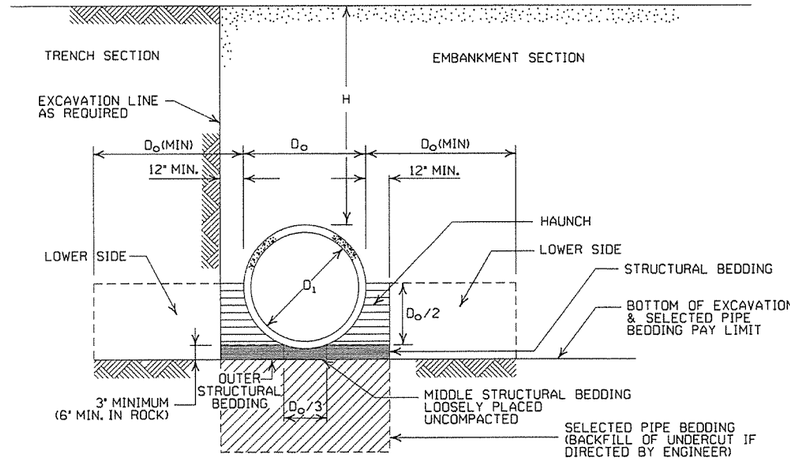
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_O = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

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

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

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

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION		INSTALLATION		INSTALLATION		INSTALLATION
				TYPE 1		TYPE 1		TYPE 1		TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM			
15	17x13	3	0.064	2		15	0.060	2		15
18	21x15	3	0.064	2		15	0.060	2		15
21	24x18	3	0.064	2.25		15	0.060	2.25		15
24	28x20	3	0.064	2.5		15	0.075	2.5		15
30	35x24	3	0.079	3		12	0.075	3		12
36	42x29	3½	0.079	3		12	0.105	3		12
42	49x33	4	0.079	3		12	0.105	3		12
48	57x38	5	0.109	3		13	0.135	3		13
54	64x43	6	0.109	3		14	0.135	3		14
60	71x47	7	0.138	3		15	0.164	3		15
66	77x52	8	0.168	3		15				
72	83x57	9	0.168	3		15				
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM							
				INSTALLATION		INSTALLATION				
				TYPE 2	TYPE 1	TYPE 2	TYPE 1			
36	40x31	5	0.079	3	2	12	15			
42	46x36	6	0.079	3	2	13	15			
48	53x41	7	0.079	3	2	13	15			
54	60x46	8	0.079	3	2	13	15			
60	66x51	9	0.079	3	2	13	15			
66	73x55	12	0.079	3	2	15	15			
72	81x59	14	0.079	3	2	15	15			
78	87x63	14	0.079	3	2	15	15			
84	95x67	16	0.109	3	2	15	15			
90	103x71	16	0.109	3	2	15	15			
96	112x75	18	0.109	3	2	15	15			
102	117x79	18	0.109	3	2	15	15			
108	128x83	18	0.138	3	2	15	15			

CONSTRUCTION SEQUENCE

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

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

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

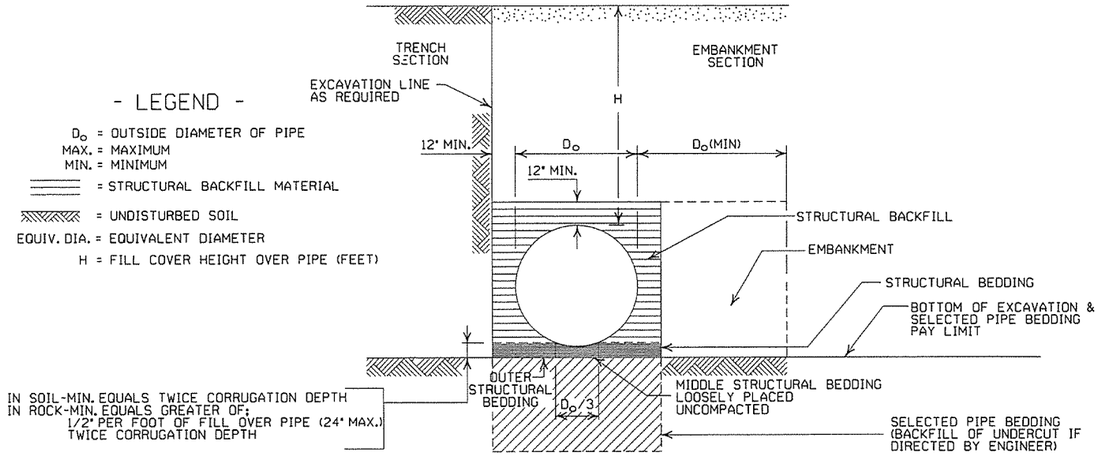
③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

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

- 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)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

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

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

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

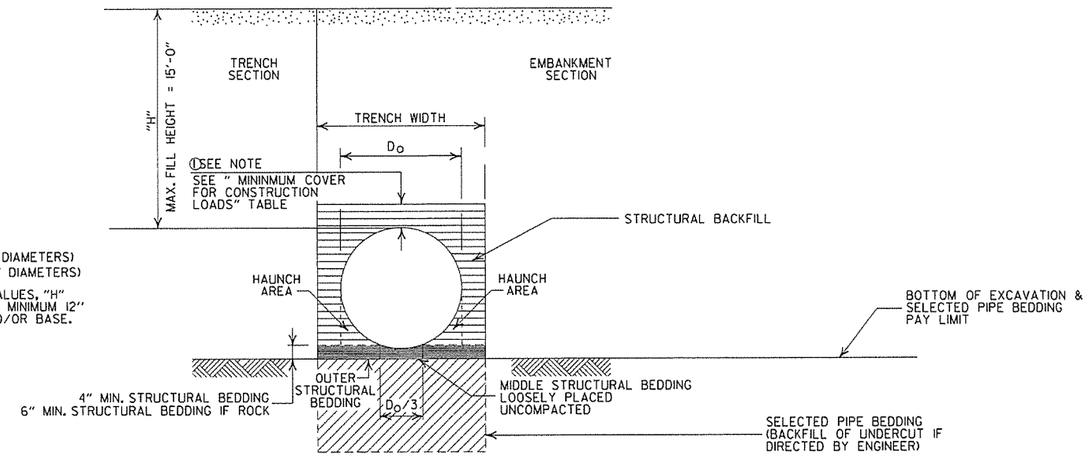
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET) "H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS 18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT
(HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET) "H" < 10'-0"	TRENCH WIDTH (FEET) "H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"

MULTIPLE INSTALLATION OF PVC PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

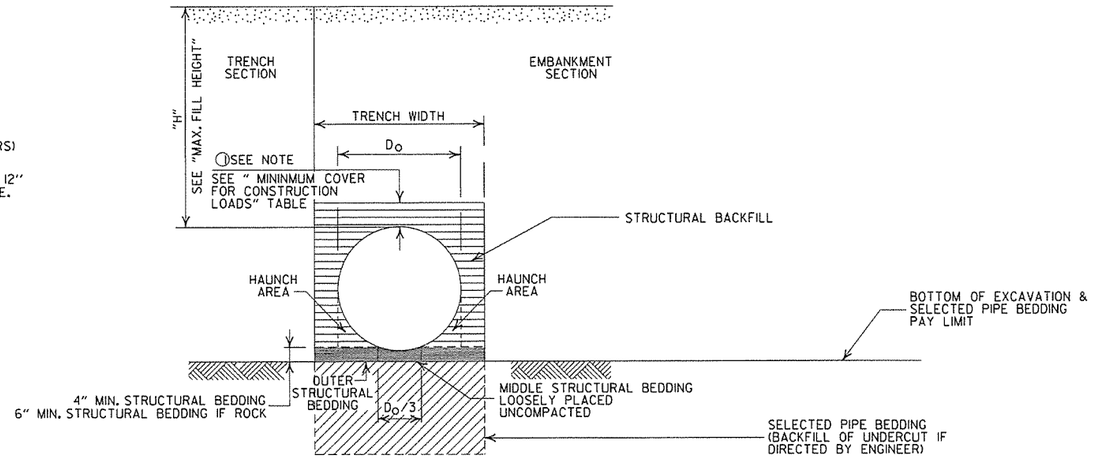
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS 18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
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6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

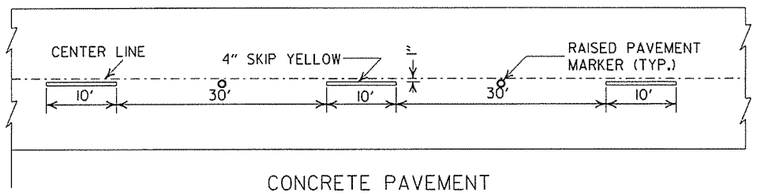
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

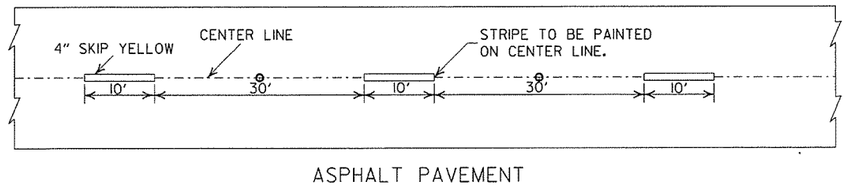
STANDARD DRAWING PCP-2

NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.

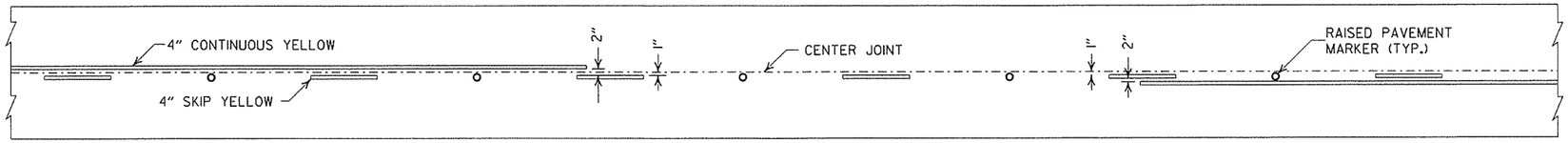


CONCRETE PAVEMENT

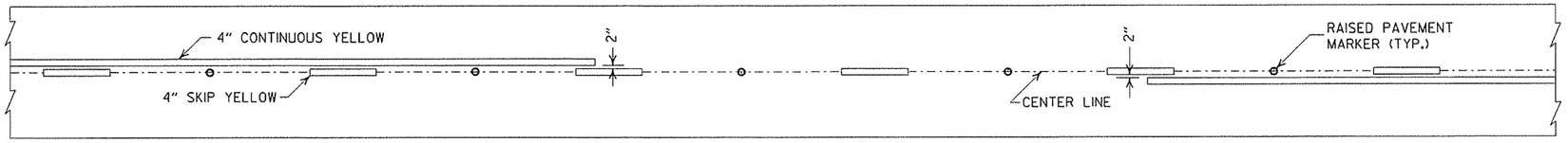


ASPHALT PAVEMENT

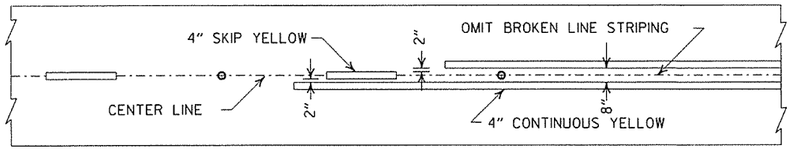
BROKEN LINE STRIPING



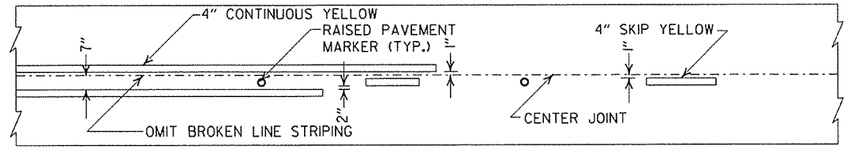
SOLID LINE STRIPING ON CONCRETE PAVEMENT



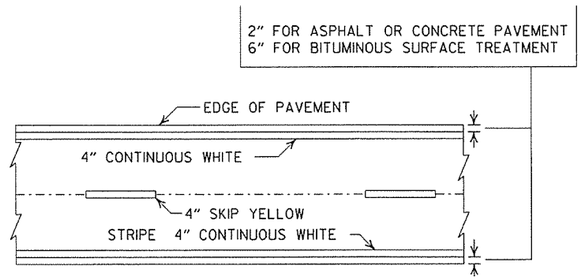
SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT



CONCRETE PAVEMENT



PAVEMENT EDGE LINE MARKING

GENERAL NOTES:

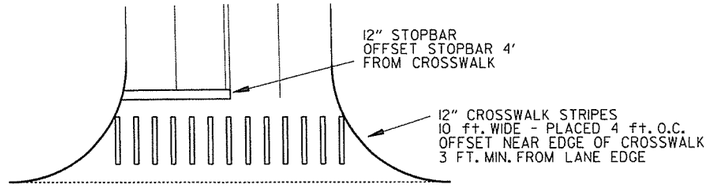
THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

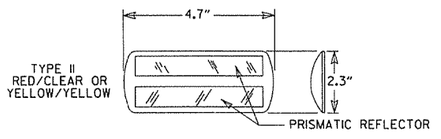
NOTE:

DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

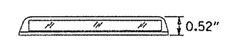
STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS



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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

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

ARKANSAS STATE HIGHWAY COMMISSION

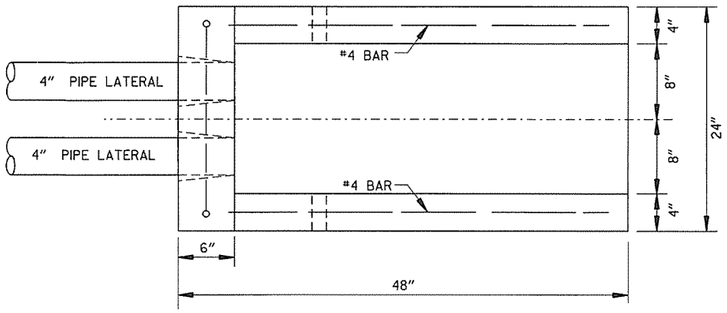
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

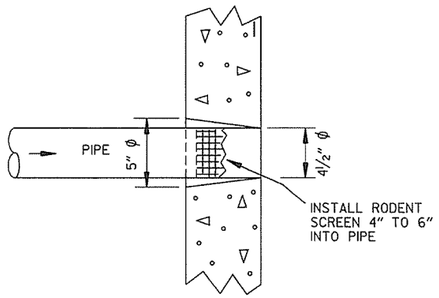
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

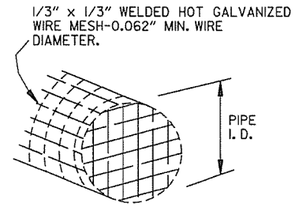
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



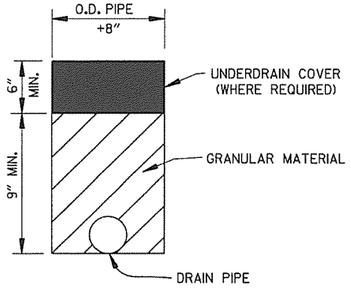
PLAN VIEW

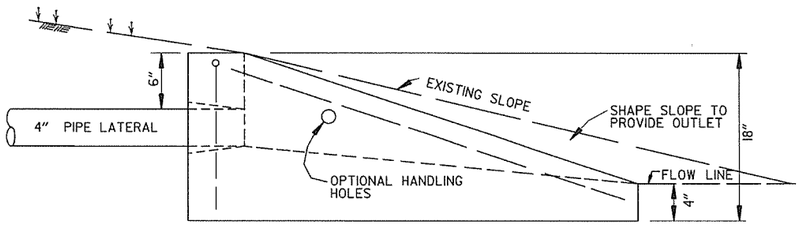


DETAIL OF HOLE FOR 4" PIPE

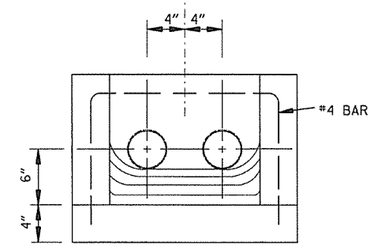


DETAIL OF RODENT SCREEN

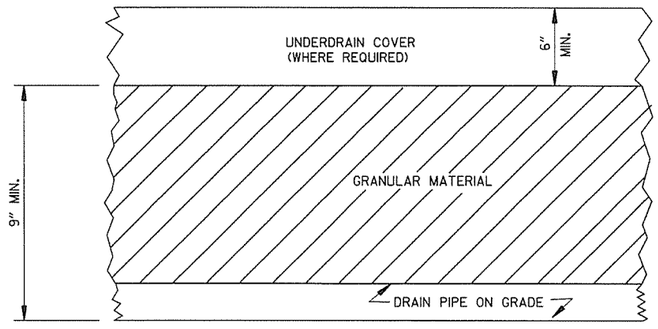




SIDE VIEW

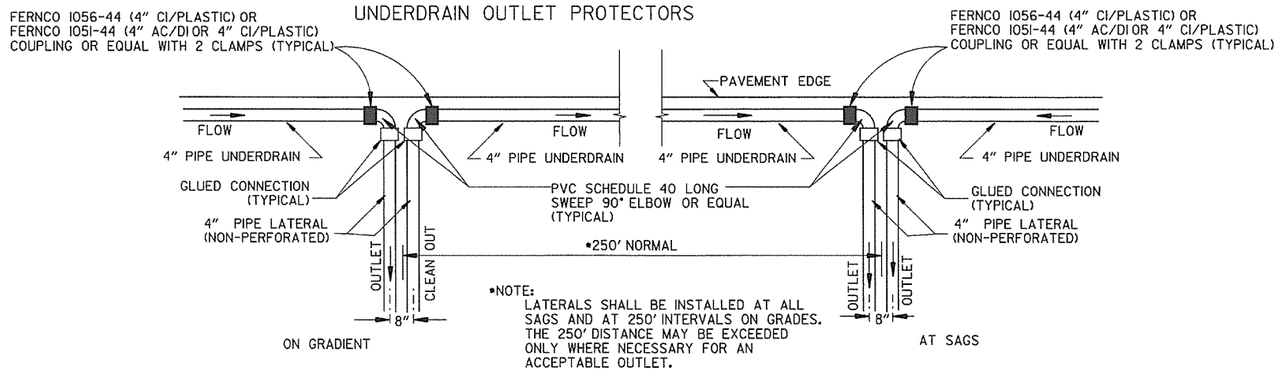


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

DATE	REVISION	DATE FILMED
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

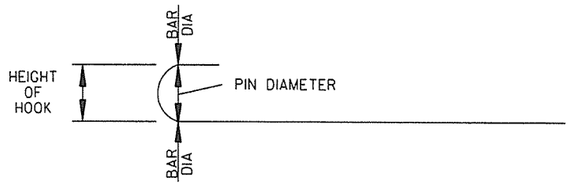
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

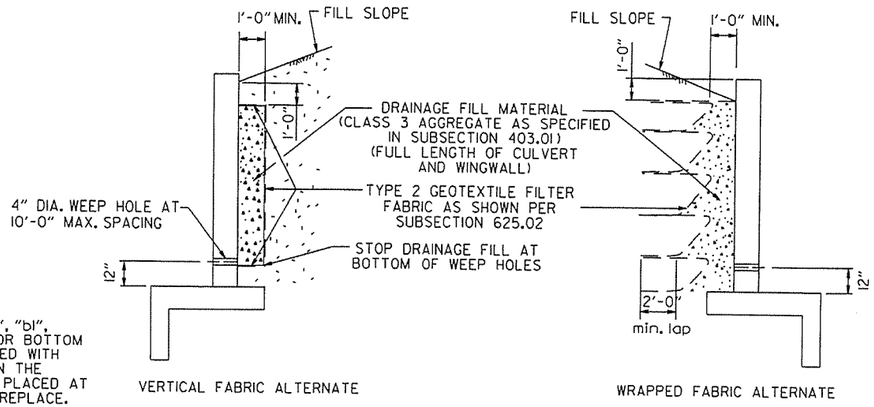
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

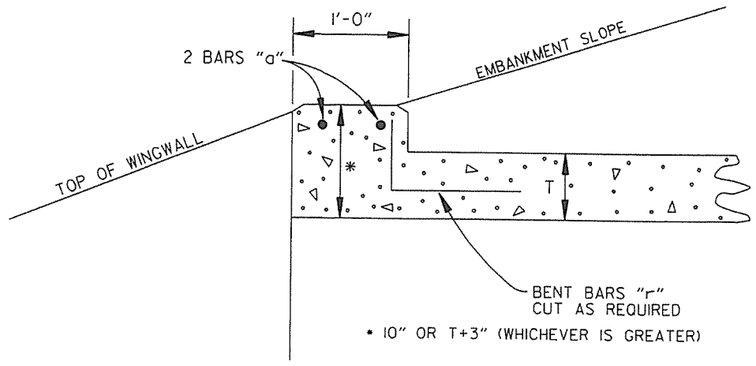
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL	
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

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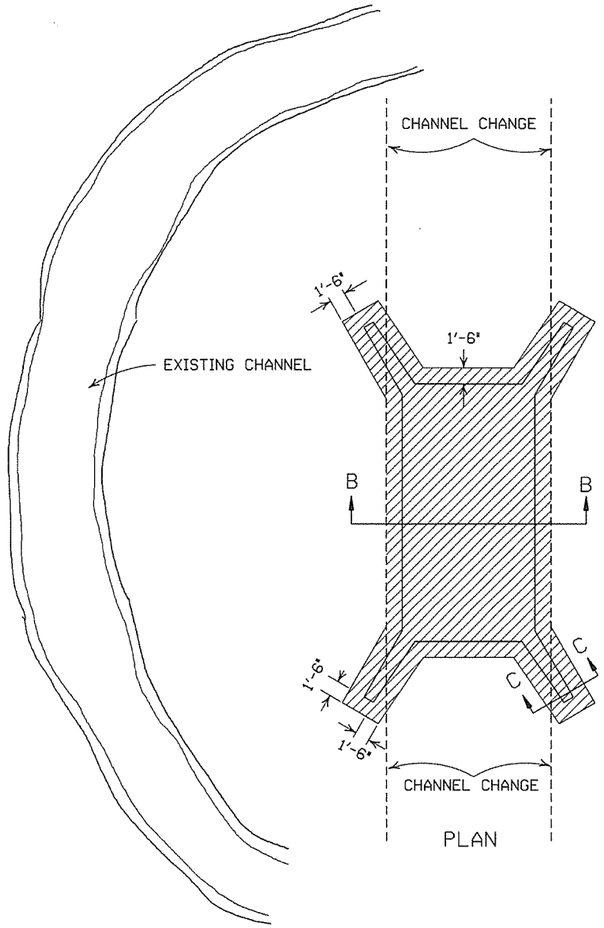
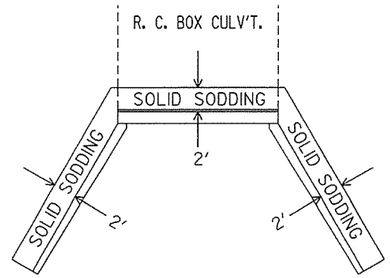
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

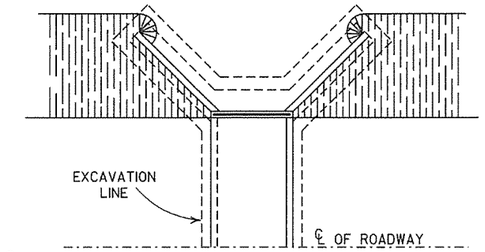
SOLID SODDING



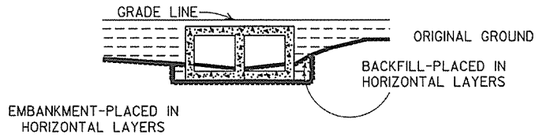
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

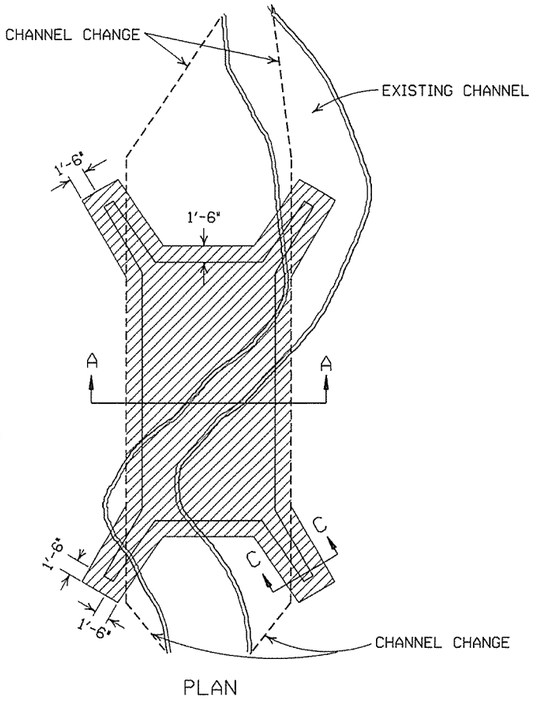


PLAN

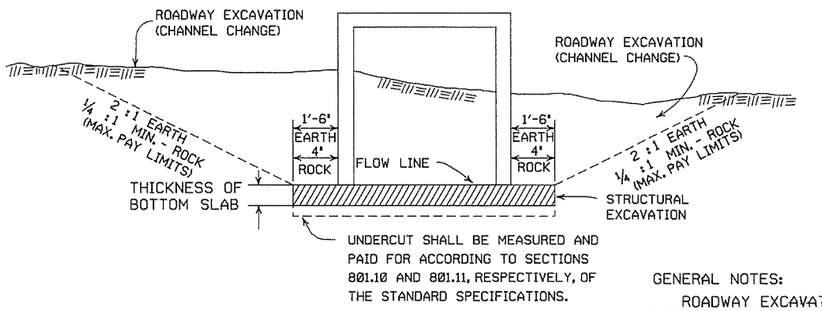


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

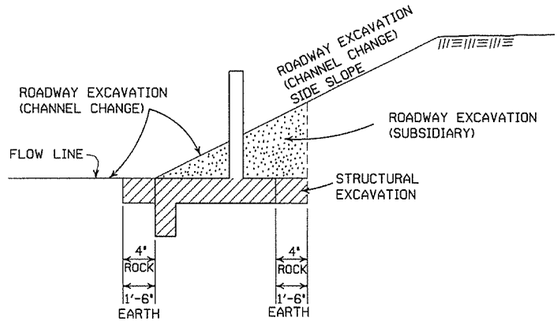


PLAN

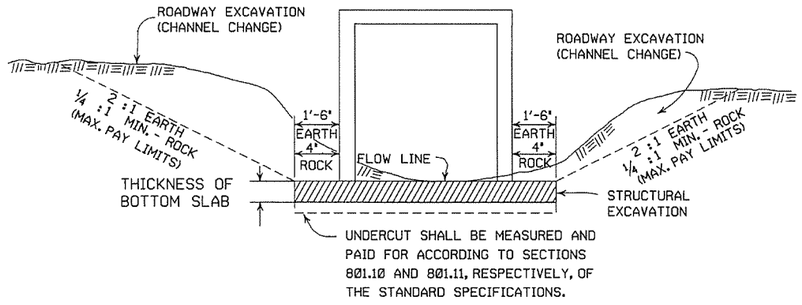


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

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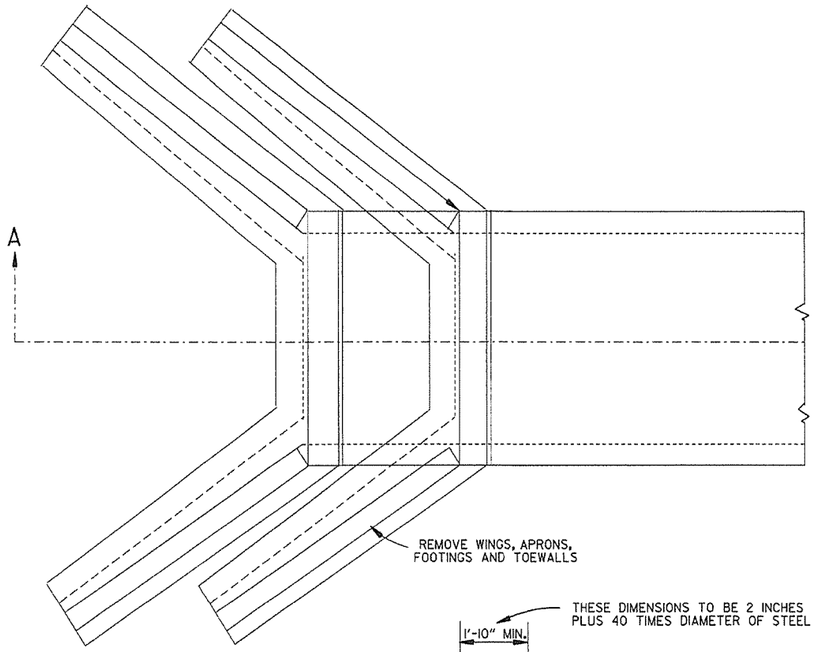
EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

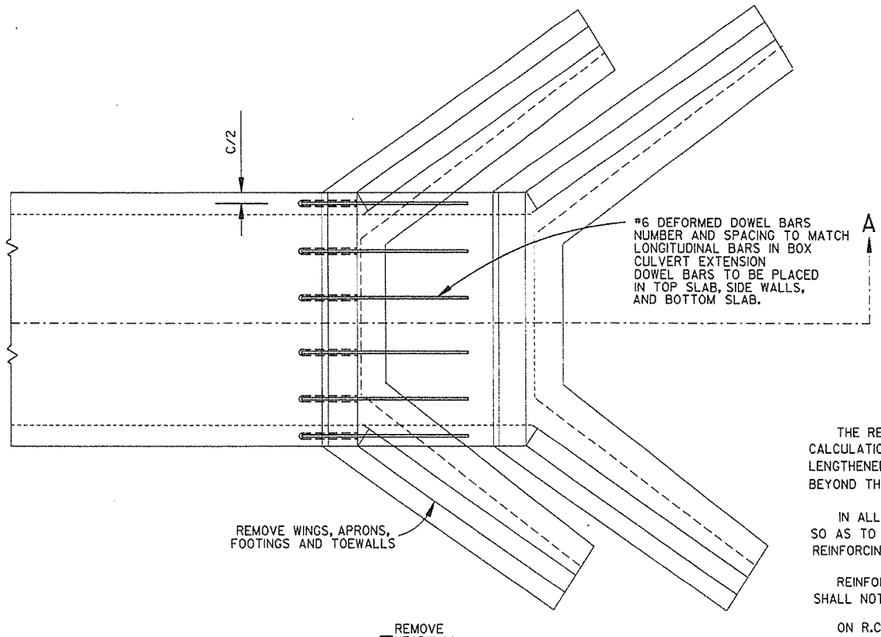
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

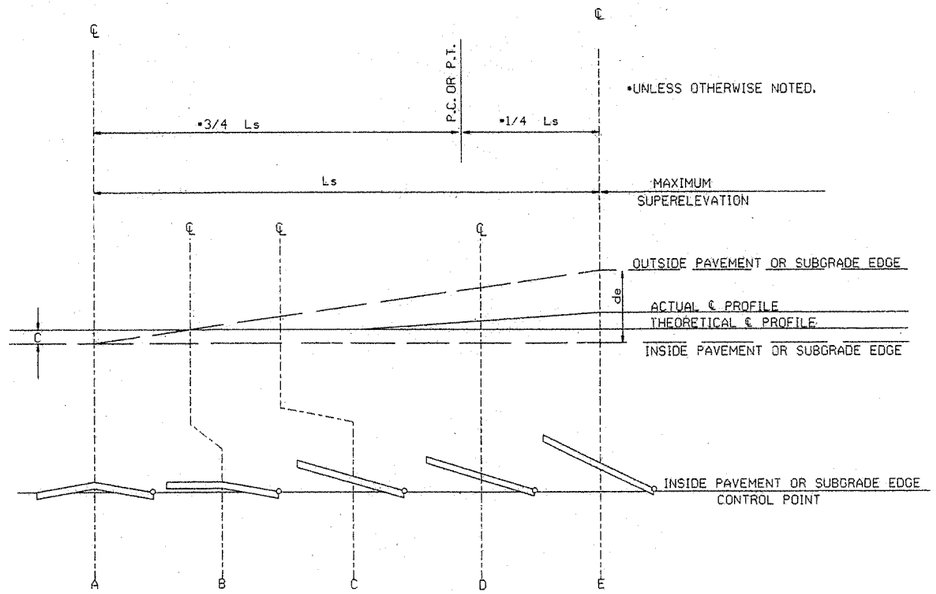
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 30′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 45′	N. C.			N. C.			R. C.			0. 022			0. 023			0. 028		
1° 00′	N. C.			N. C.			0. 021			0. 026			0. 030			0. 037	275	300
1° 15′	N. C.			R. C.			0. 026			0. 032			0. 037			0. 046		
1° 30′	N. C.			0. 021			0. 031	200		0. 037			0. 043	250		0. 054		
1° 45′	N. C.			0. 025	175		0. 036			0. 043	225		0. 049		300	0. 062		
2° 00′	R. C.			0. 028			0. 040		250	0. 048		300	0. 055			0. 070		
2° 15′	R. C.			0. 031			0. 045			0. 053			0. 061			0. 078	300	350
2° 30′	0. 021			0. 034			0. 049			0. 058			0. 067			0. 085	315	
2° 45′	0. 023			0. 037		200	0. 053			0. 063			0. 072			0. 091	335	
3° 00′	0. 025	150		0. 040			0. 057			0. 067	230		0. 077	260		0. 096	350	400
3° 15′	0. 027			0. 043			0. 061			0. 072	245		0. 082	275		0. 098	360	
3° 30′	0. 029			0. 046			0. 065	205		0. 076	255		0. 086	285		0. 100	360	
3° 45′	0. 031		200	0. 049			0. 069	215		0. 080	265		0. 090	295	350			
4° 00′	0. 033			0. 051			0. 072	225		0. 083	270		0. 093	305				
4° 30′	0. 037			0. 056			0. 078	240		0. 087	280		0. 096	315				
5° 00′	0. 040			0. 061			0. 083	250		0. 091	295	350	0. 098	320				
5° 30′	0. 043			0. 066	185		0. 088	260		0. 094	300							
6° 00′	0. 046			0. 070	190		0. 092	270		0. 096	305							
6° 30′	0. 050			0. 074	200		0. 095	280	300	0. 100	315							
7° 00′	0. 053			0. 078	210		0. 098	285										
7° 30′	0. 056			0. 081	215		0. 099	290										
8° 00′	0. 058			0. 084	220	250	0. 100	290										
8° 30′	0. 061			0. 087	225													
9° 00′	0. 063			0. 089	230													
10° 00′	0. 068	160		0. 094	235													
11° 00′	0. 072	170		0. 097	250													
12° 00′	0. 076	175		0. 099	250													
13° 00′	0. 080	180		0. 100	250													
14° 00′	0. 083	190																
15° 00′	0. 086	195																
16° 00′	0. 089	200																
17° 00′	0. 091	200																
18° 00′	0. 093	205																
19° 00′	0. 095	210																
20° 00′	0. 097	215	250															
21° 00′	0. 098	215																
22° 00′	0. 099	215																
23° 00′	0. 099	215																
24° 00′	0. 100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

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



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

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

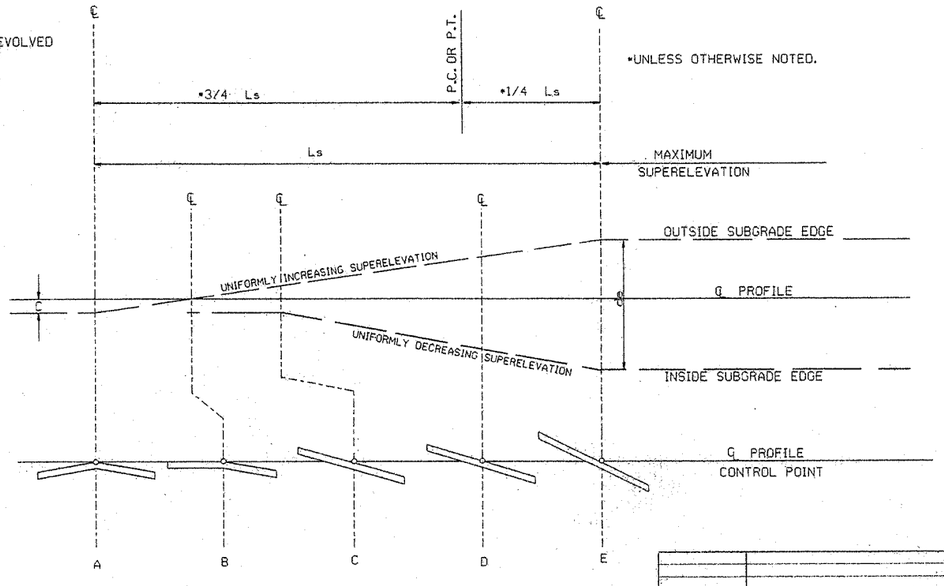
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

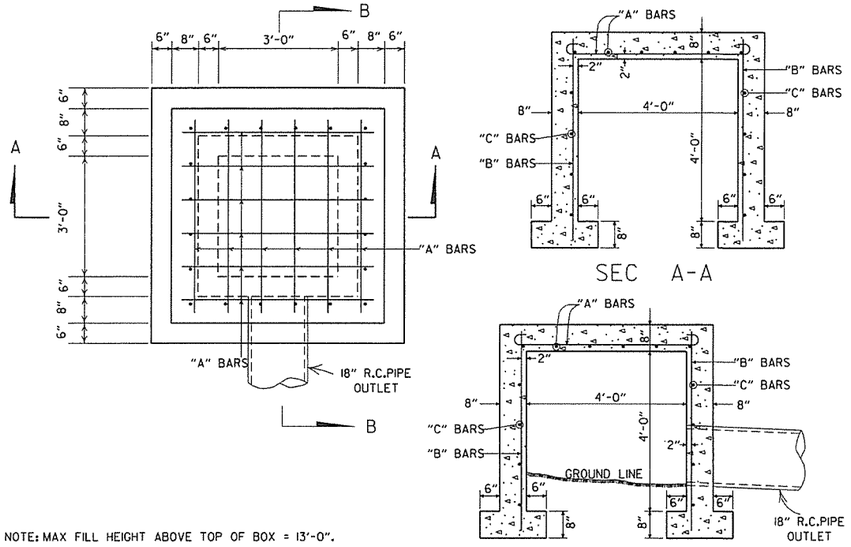
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

FILE STDSE2.DGN

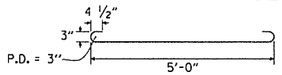


NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS

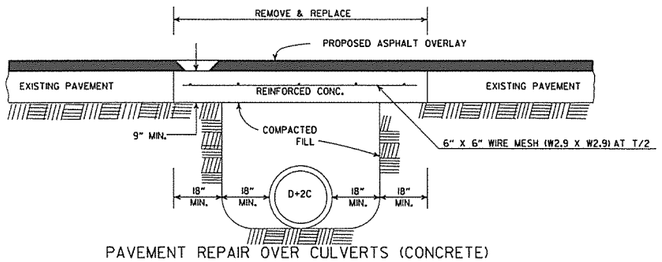


QUANTITIES

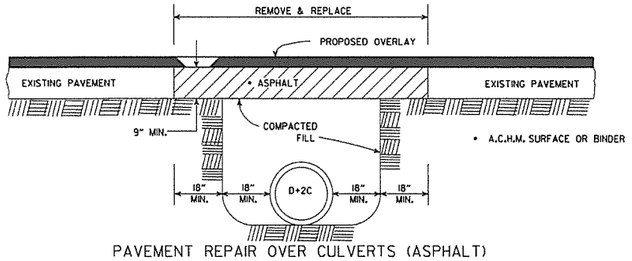
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

GENERAL NOTE:
THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITTIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



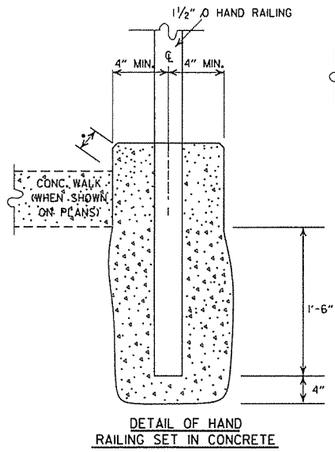
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



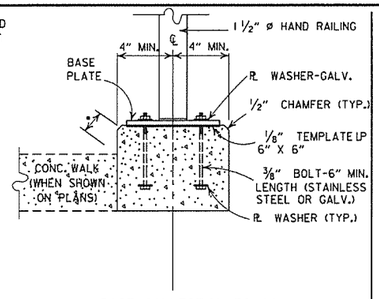
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

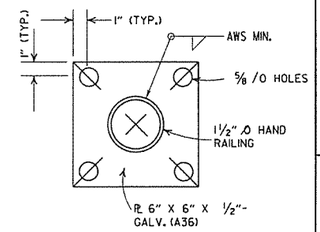
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

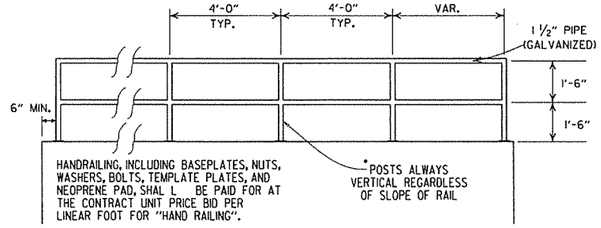


POST CONNECTION TO WALL

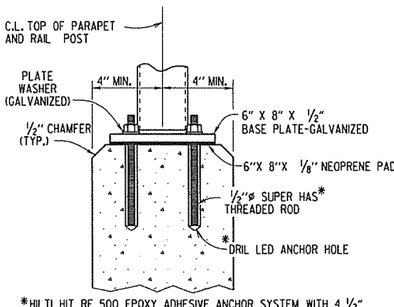


BASE PLATE

POST CONNECTION DETAILS



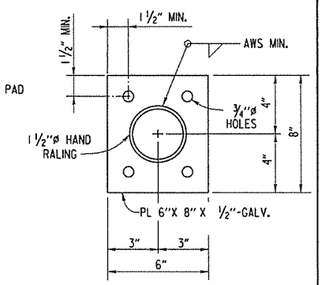
HAND RAILING SHAL L CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHAL L BE INSTAL LED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

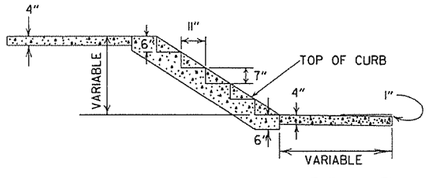
POST CONNECTION TO WALL

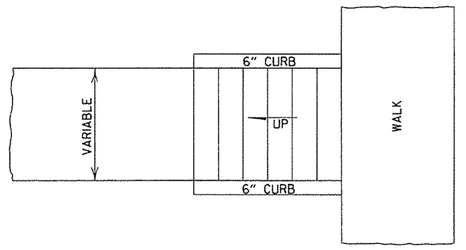


BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS





GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-96	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS. DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

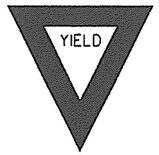
STANDARD DRAWING SI-1

R1-1



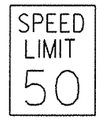
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

W3-5



STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

W3-5a



STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

R4-1



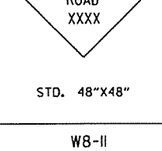
STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2



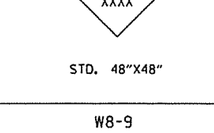
STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



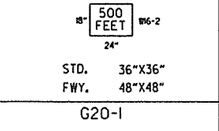
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2



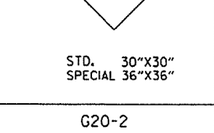
48"X30"

R11-3A



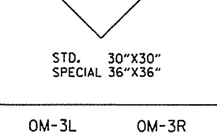
60"X30"

R11-4



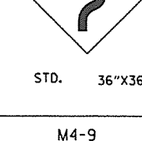
60"X30"

RSP-1



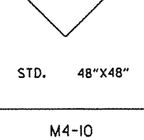
48"X30"

W1-1



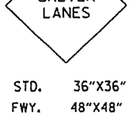
STD. 36"X36"
FWY. 48"X48"

W1-2



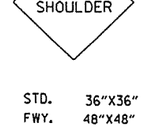
STD. 36"X36"
FWY. 48"X48"

W1-3



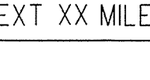
STD. 48"X48"

W1-4



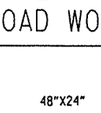
STD. 48"X48"

W1-6



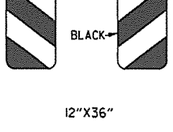
STD. 48"X24"
SPECIAL 60"X30"

W1-8



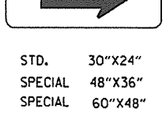
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



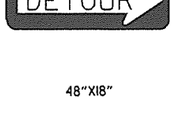
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



EXPWY. 36"X36"
FWY. 48"X48"

W9-2



STD. 36"X36"
FWY. 48"X48"

W13-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



STD. 36"X36"
FWY. 48"X48"

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b



STD. 48"X48"

R56-1



STD. 18"X18"

W8-11

STD. 36"X36"
FWY. 48"X48"

W8-9



STD. 36"X36"
FWY. 48"X48"

G20-1

60"X24"

G20-2

48"X24"

OM-3L OM-3R

12"X36"

M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1

36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

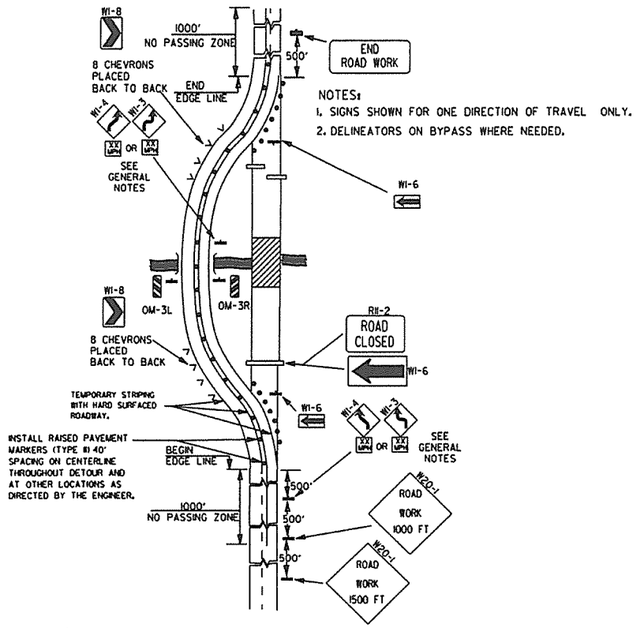
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

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

ARKANSAS STATE HIGHWAY COMMISSION

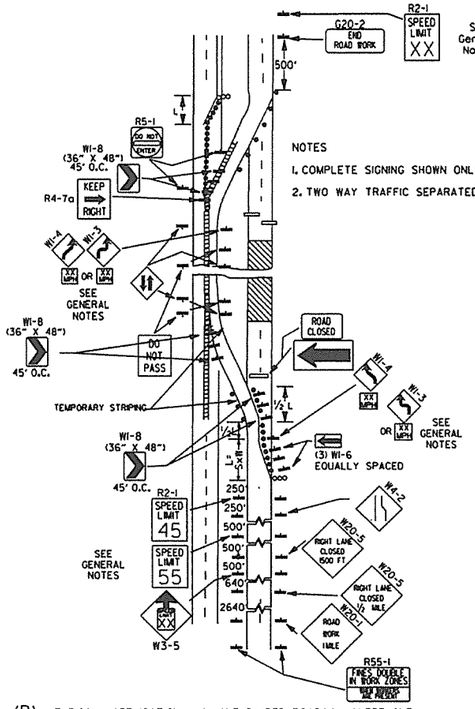
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



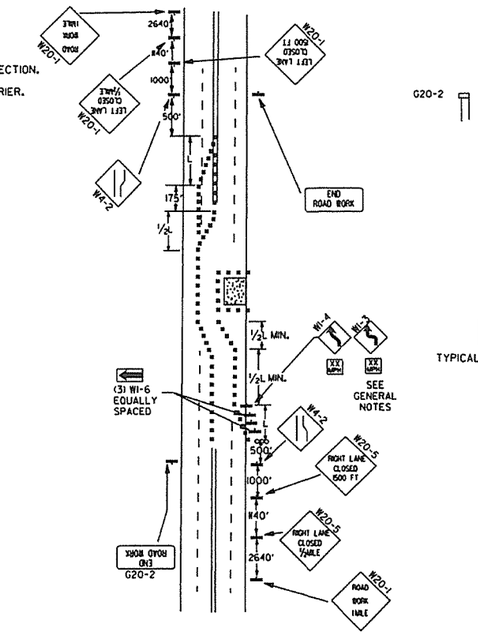
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

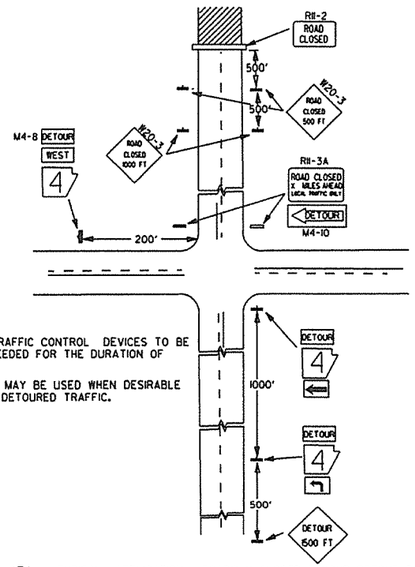


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

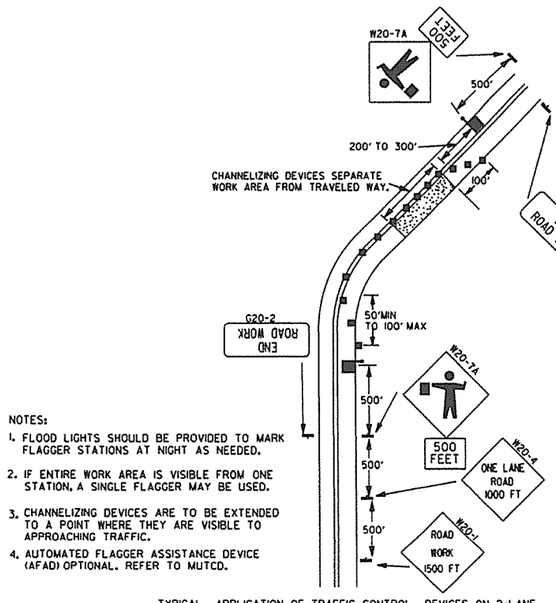


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



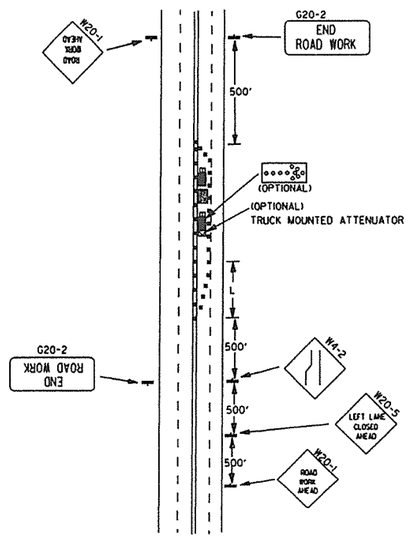
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



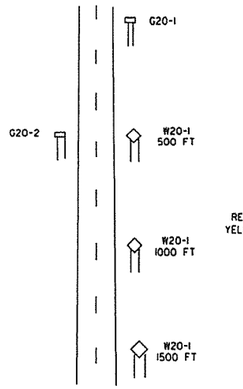
NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL. REFER TO MUTCD.

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

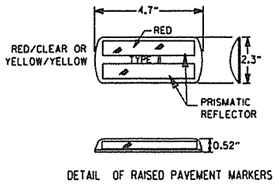


(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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



TYPICAL ADVANCE WARNING SIGN PLACEMENT



DETAIL OF RAISED PAVEMENT MARKERS

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

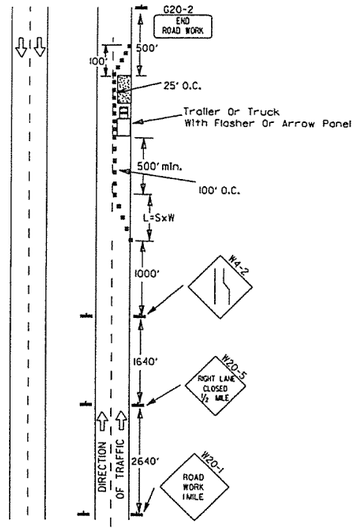
GENERAL NOTES:
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER, REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (G) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

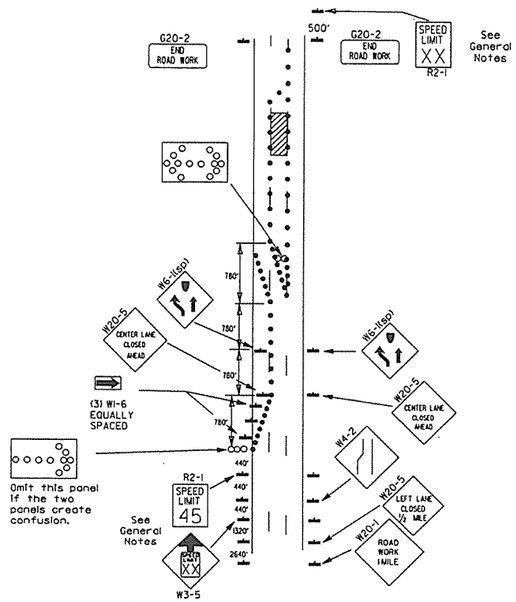
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

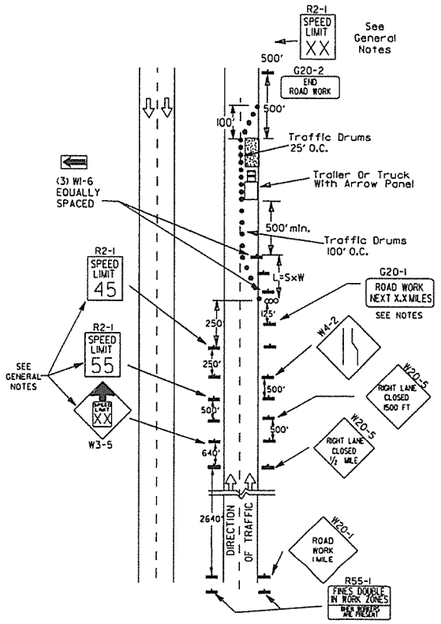
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

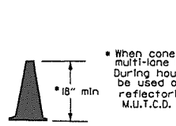
KEY:

- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

GENERAL NOTES:

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

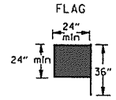
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

* When shown on the plans concrete barrier will be used.

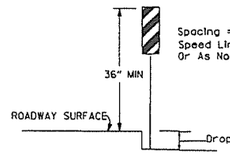
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

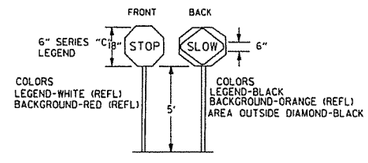


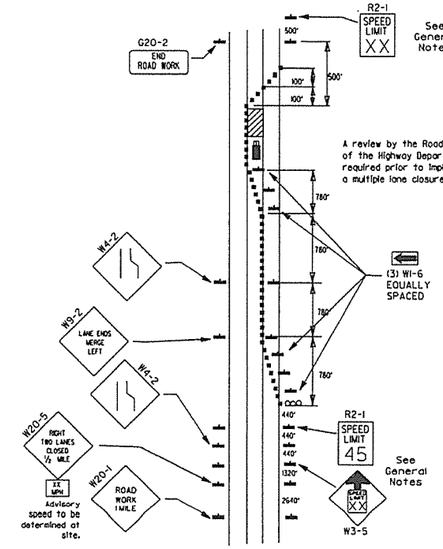
Flag shall be of good grade red material

VERTICAL PANEL PLACEMENT



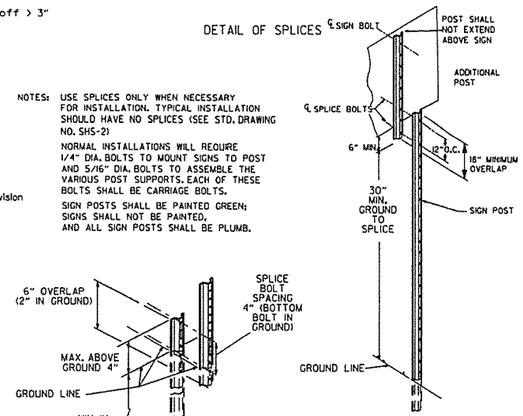
STOP SLOW PADDLE





(D) Typical application - closing multiple lanes of a multilane highway.

DETAIL OF SPLICES



NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1& REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

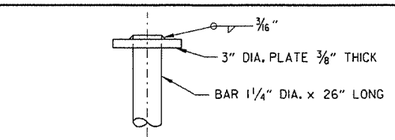
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

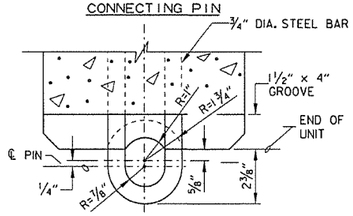
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", 90°, 3 3/8" R, LIFTING HOLE
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR BAR TO BAR; 5'-1" BAR W/ (4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER (3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16" R, 12°, 9 1/2", 2'-1 3/8", 4 3/8"

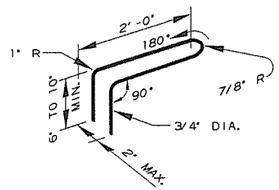


CONNECTING PIN

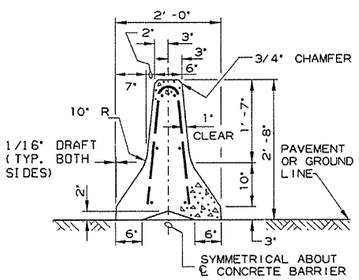


SECTION E-E

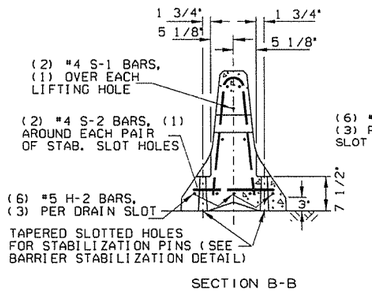
CONNECTION DETAILS



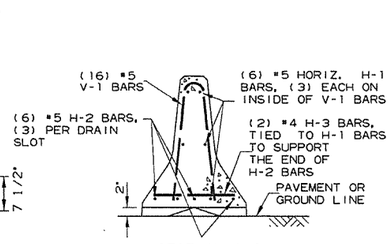
CONNECTION LOOP



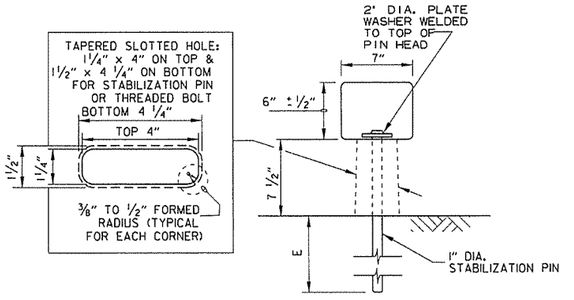
SECTION A-A



SECTION B-B



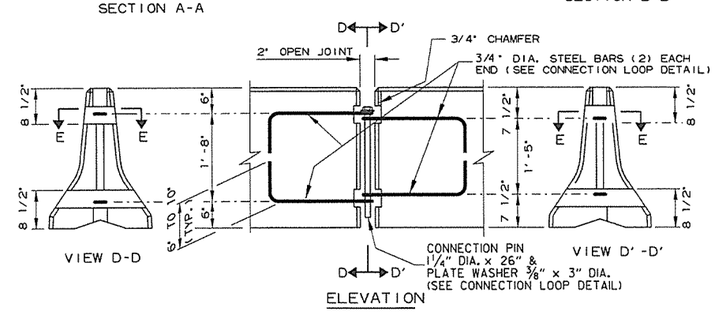
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

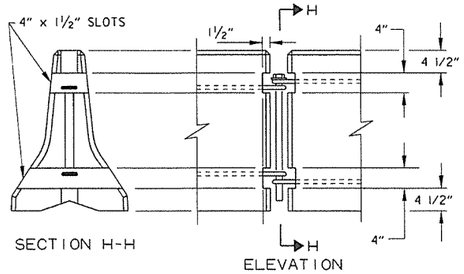
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



VIEW D-D

VIEW D'-D'

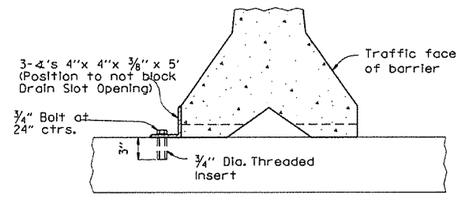
ELEVATION



SECTION H-H

ELEVATION

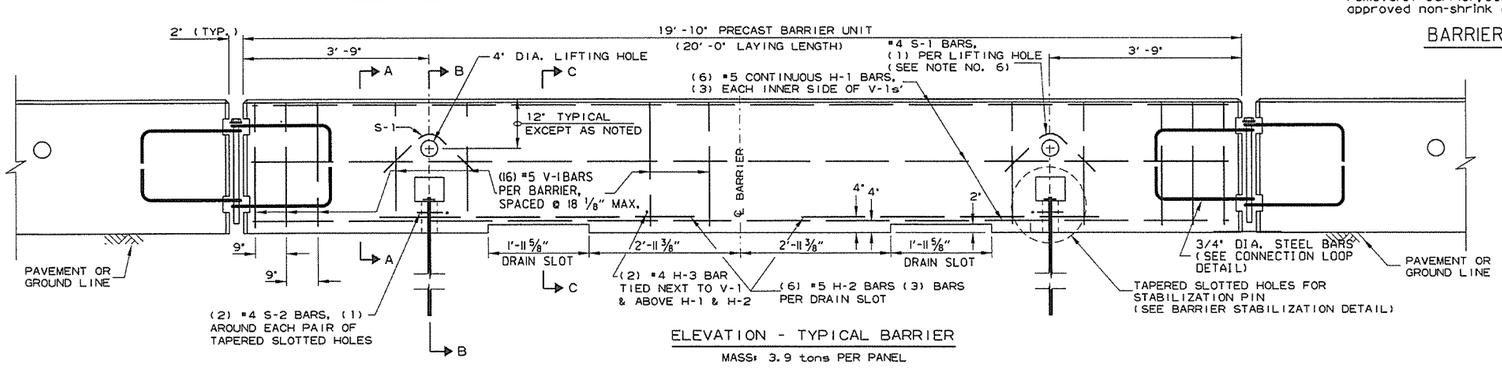
BARRIER REMOVAL SLOT DETAILS



NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

BRIDGE DECKS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

1. The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

2. Materials shall meet the following minimum requirements:
   Concrete: 2500 psi compressive strength at 28 days.
   Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
   Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
   Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

   In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
   Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
   Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

3. Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

4. Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

5. Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

6. A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

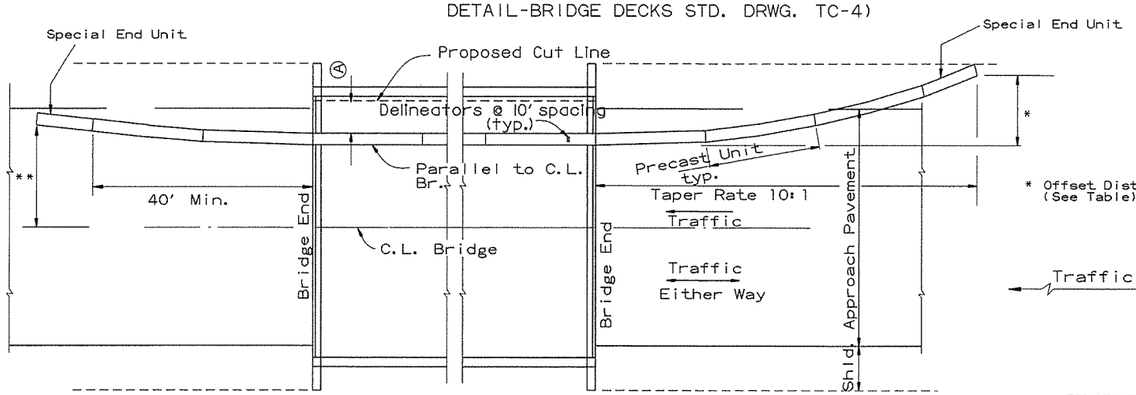
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

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

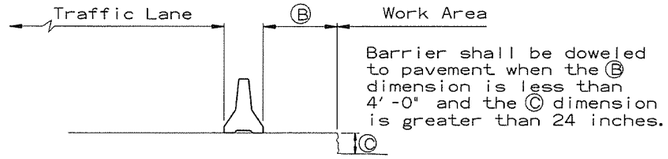


BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

* Offset Distance (See Table)

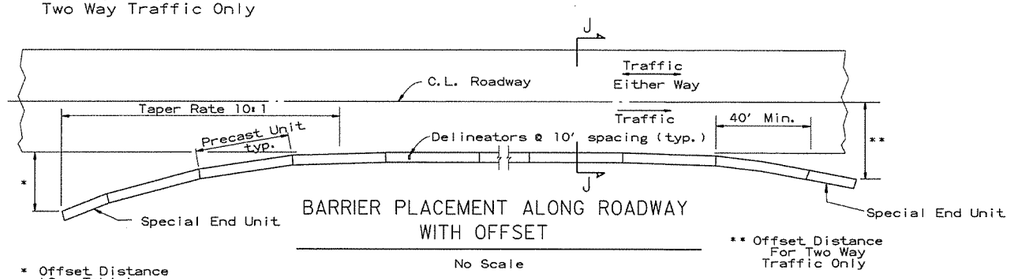
** Offset Distance for Two Way Traffic Only



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

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

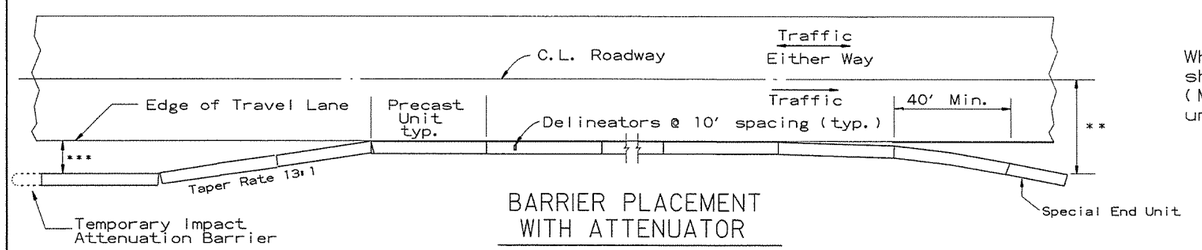
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Offset Distance Table

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

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

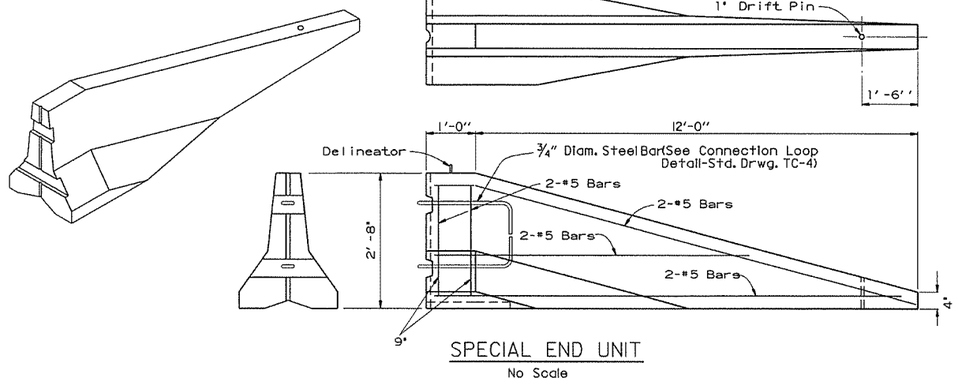


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

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



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
6-22-02	ISSUED NEW DRAWING	

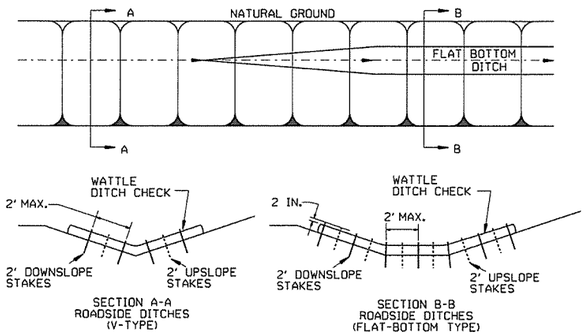
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

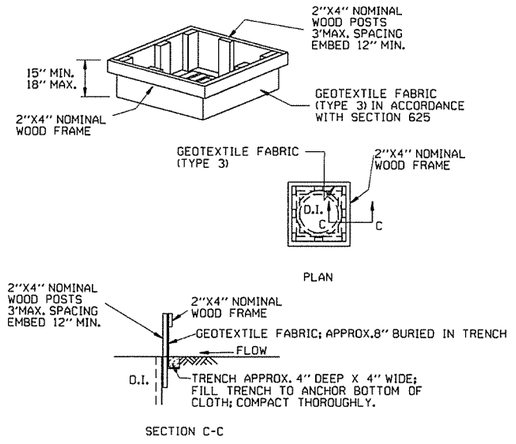
STANDARD DRAWING TC-5

GENERAL NOTES

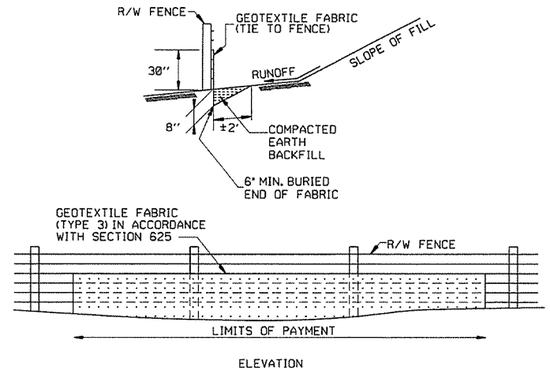
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

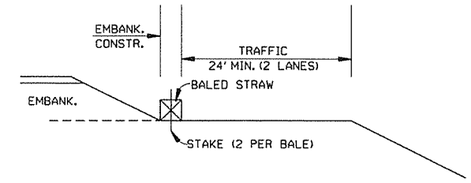
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

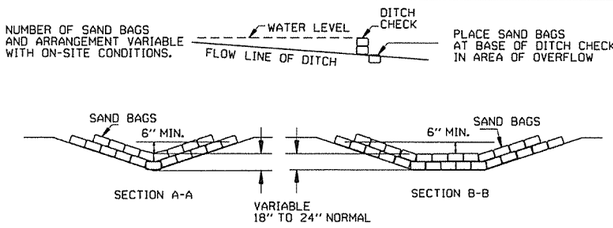
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

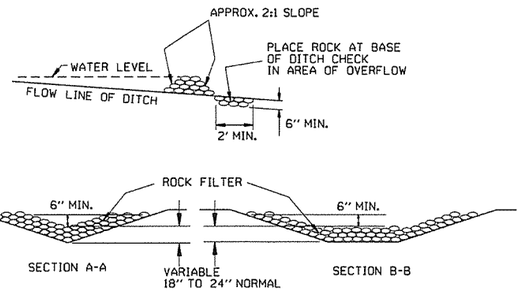
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



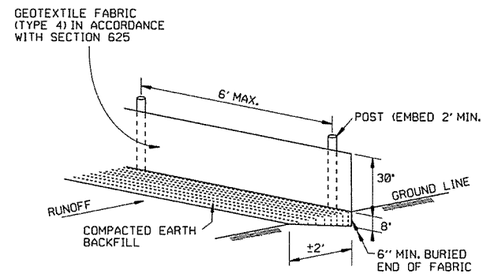
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

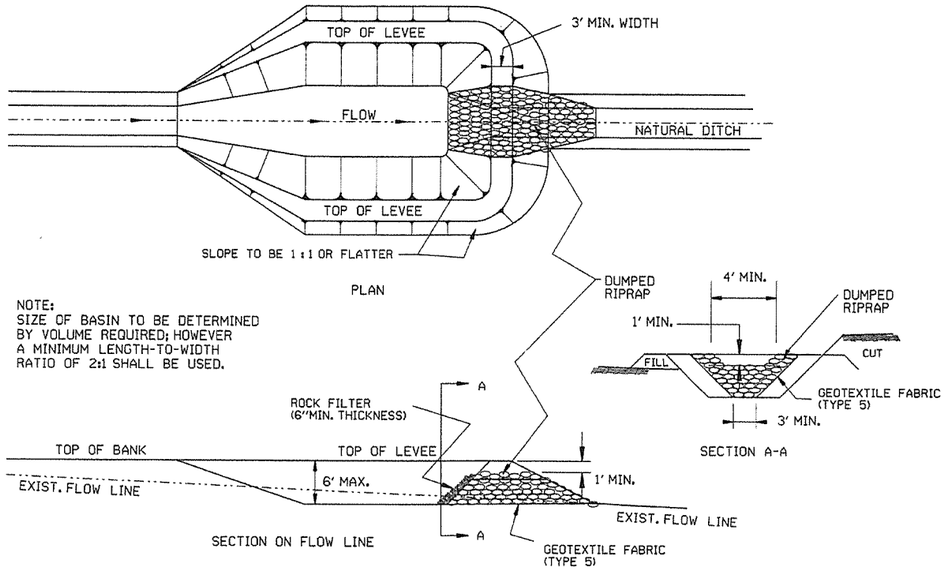
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

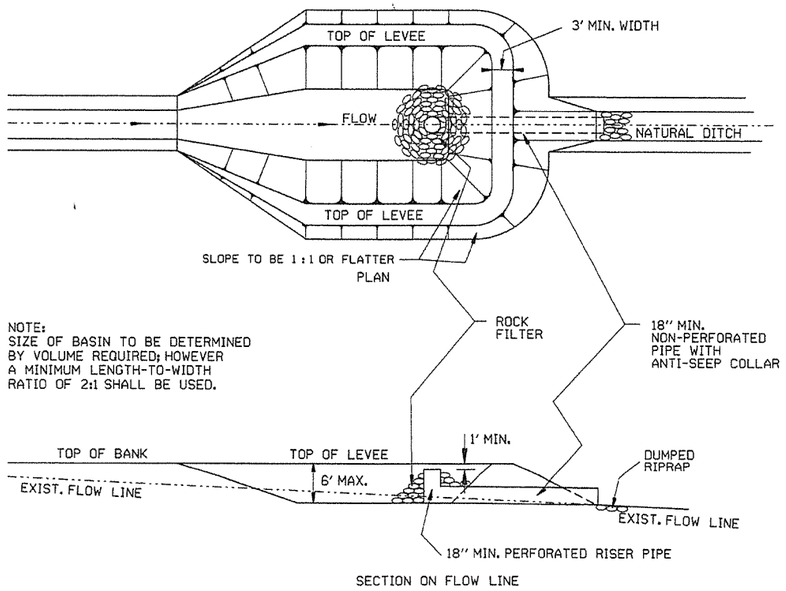
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

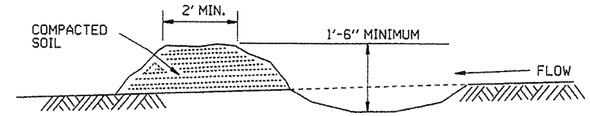
STANDARD DRAWING TEC-1



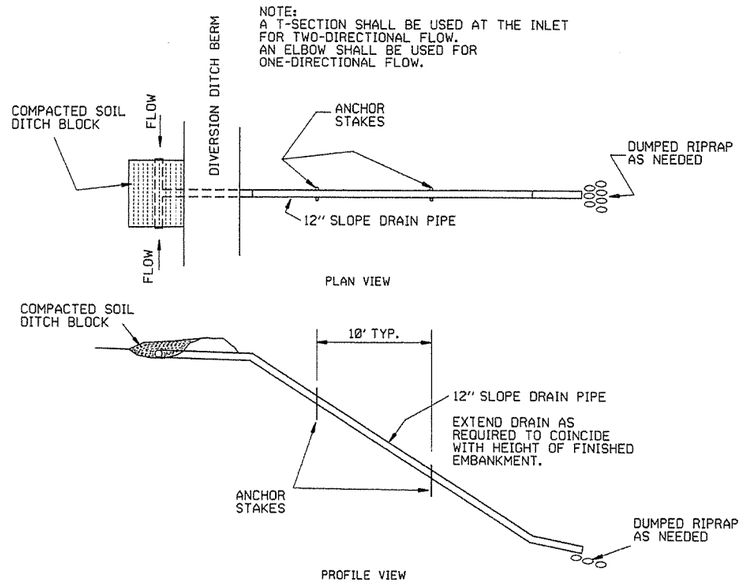
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



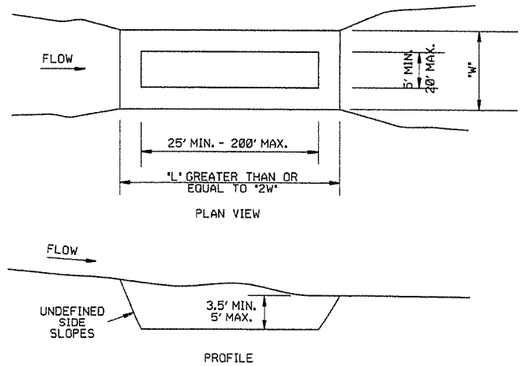
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

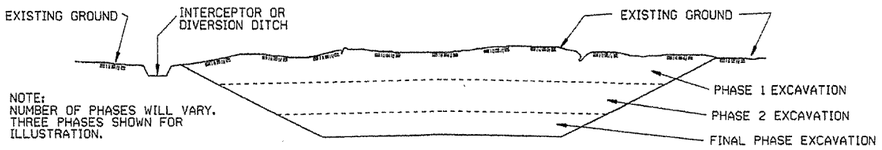
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



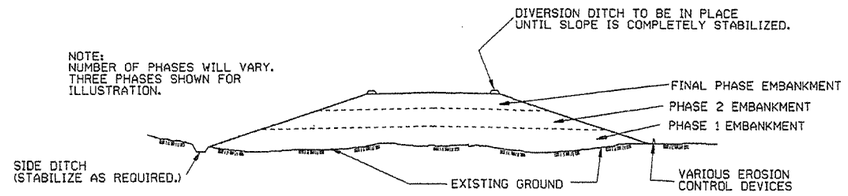
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

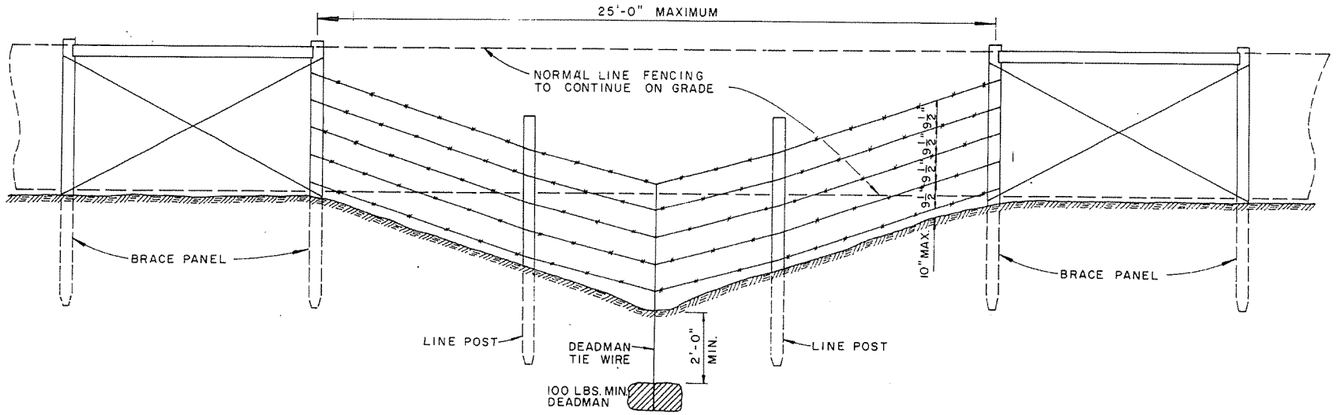
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

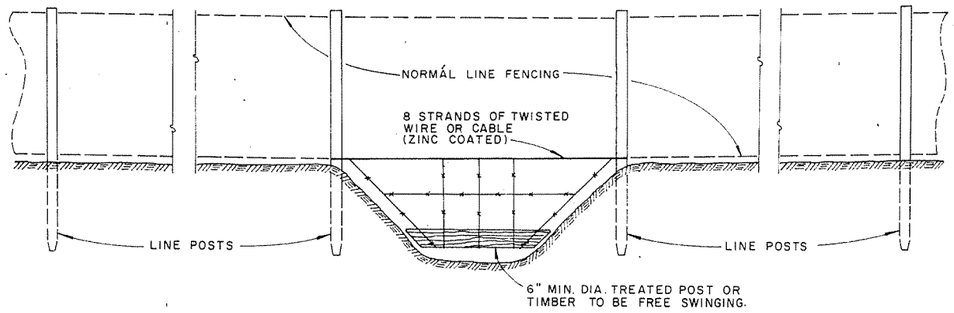
ARKANSAS STATE HIGHWAY COMMISSION

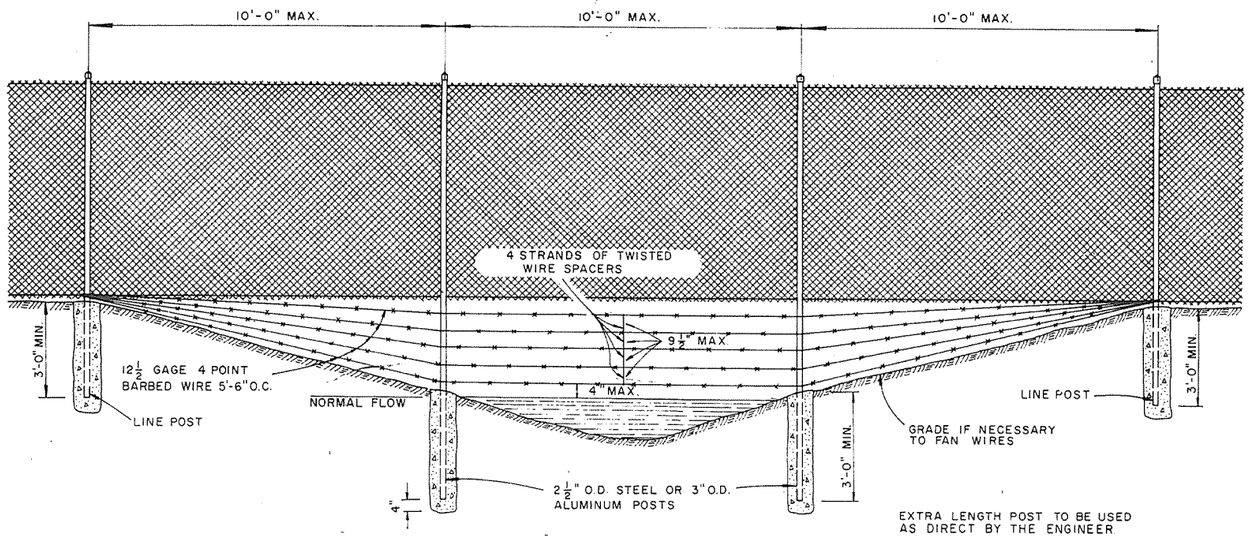
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

stdtec3.dgn







GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

DATE	REVISION	DATE FILM'D.
4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED & REDRAWN	529-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

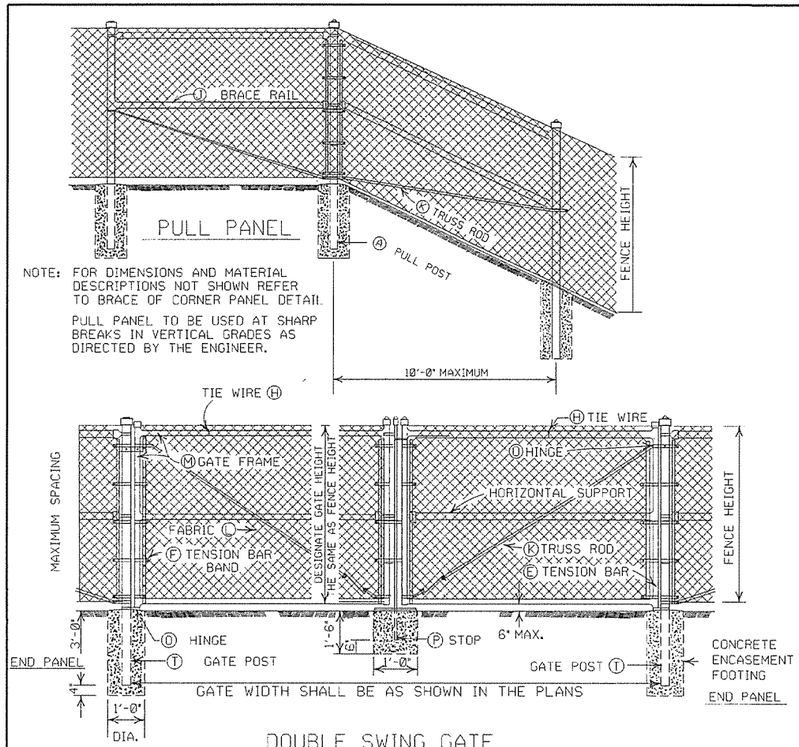
WIRE FENCE WATER GAPS

STANDARD DRAWING

WF-2

73

(M—11-71—67001—PPASC)

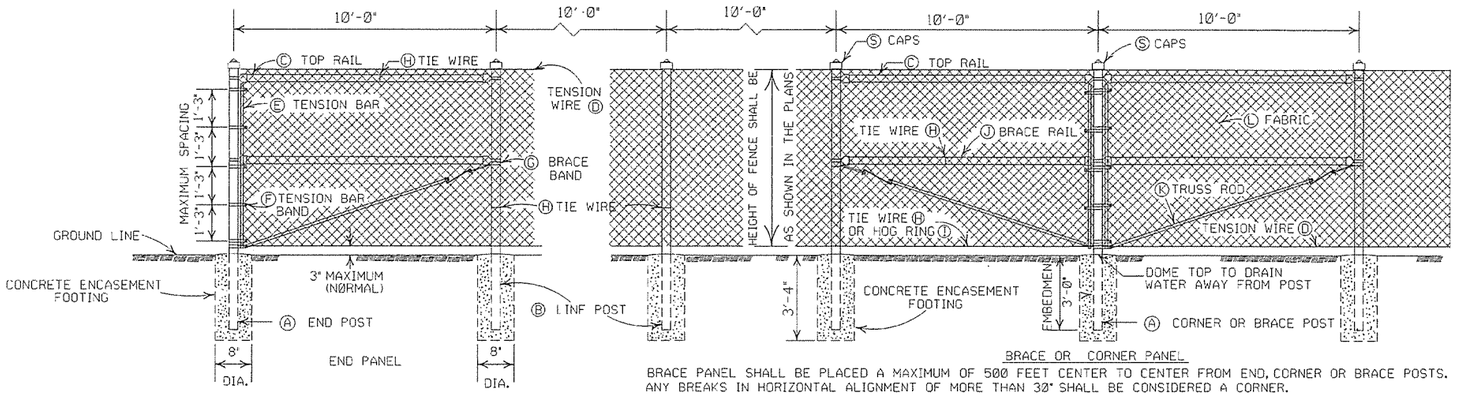


NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL.

PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.

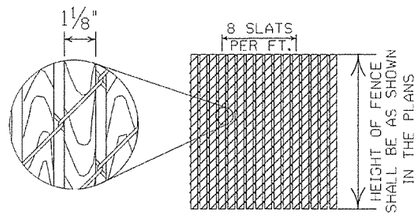
DOUBLE SWING GATE

POST SPACING DETAIL



BRACE OR CORNER PANEL

BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30° SHALL BE CONSIDERED A CORNER.



1⅛" X ¼" REDWOOD SLATS(LENGTH TO MATCH HEIGHT OF FENCE)

DETAIL OF REDWOOD SLAT INSTALLATION

(WHERE APPLICABLE)

GENERAL NOTES:

(C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.

(D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.

(J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

(M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.

(O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

(P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN LINK FENCE.

POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

EXCAVATION FOR POSTS: IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8 INCHES IN DIAMETER.

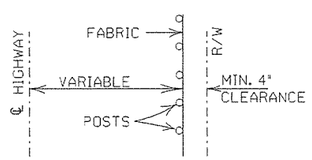
HEIGHT OF FENCE FABRIC	(A) END, PULL CORNER OR BRACE POST	(B) LINE POSTS SIZE	(B) LINE POSTS TIE SPACING	(C) TOP RAIL SIZE	(C) TOP RAIL TIE SPACING	(C) TOP RAIL MIN. LENGTH	(D) TENSION WIRE SIZE	(D) TENSION WIRE TIE SPACING	(E) TENSION BAR SIZE	(E) TENSION BAR LENGTH	(F) TENSION BAR BAND SIZE	(F) TENSION BAR BAND BOLT SIZE	(F) TENSION BAR BAND SPACING	(G) BRACE BAND SIZE	(G) BRACE BAND BOLT SIZE
6' AND LESS	2½" O.D.	2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1⅝" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF ⅜" X ¾"	MIN. OF 2" LESS THAN FABRIC HEIGHT	MIN. OF ¾" X 0.074	⅝" X 1¼"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF ¾" X 0.105	⅝" X 1¼"
OVER 6' TO 12' INCL.	3 ' O.D.	2½" O.D.													

HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL SIZE	(J) BRACE RAIL TIE SPACING	(K) TRUSS ROD	(L) FABRIC SIZE	(L) FABRIC MESH	(L) FABRIC SELVAGE	(M) GATE FRAME SIZE	(M) GATE FRAME TIE SPACING	(N) HORIZONTAL SUPPORT SIZE	(N) HORIZONTAL SUPPORT TIE SPACING	(O) HINGE TYPE 180° SWING	(T) GATE POST GATE WIDTH GATE WIDTH OVER 12' AND LESS	(T) GATE POST 12' TO 24' INCL.
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1⅝" O.D.	1 TIE EVERY 2'-0"	MIN. OF ⅝" ROUND WITH TIGHTNERS AND FITTINGS	9 GA.	2"	KNUCK -ING AND/OR TWIST -ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	OFFSET	3' O.D.	4" O.D.
OVER 6' TO 12' INCL.														4" O.D.	

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE DIAMETER OF 2½" FOR FENCE HEIGHT OF 6' AND LESS, AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS

TYPICAL INSTALLATION DIAGRAM

POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT. STEEL	LBS. PER LINEAR FT. ALUMINUM	GRADE 2 O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.
1⅝	1.660	0.140	2.27	0.786	1.660	0.111	1.84
2	1.900	0.145	2.72	0.940	1.900	0.120	2.28
2½	2.375	0.154	3.65	1.264	2.375	0.130	3.11
3	2.875	0.203	5.79	2.004	2.875	0.160	4.64
3½	3.500	0.216	7.58	2.621	3.500	0.160	5.71
4	4.000	0.226	9.11	3.151	4.000	0.160	6.56

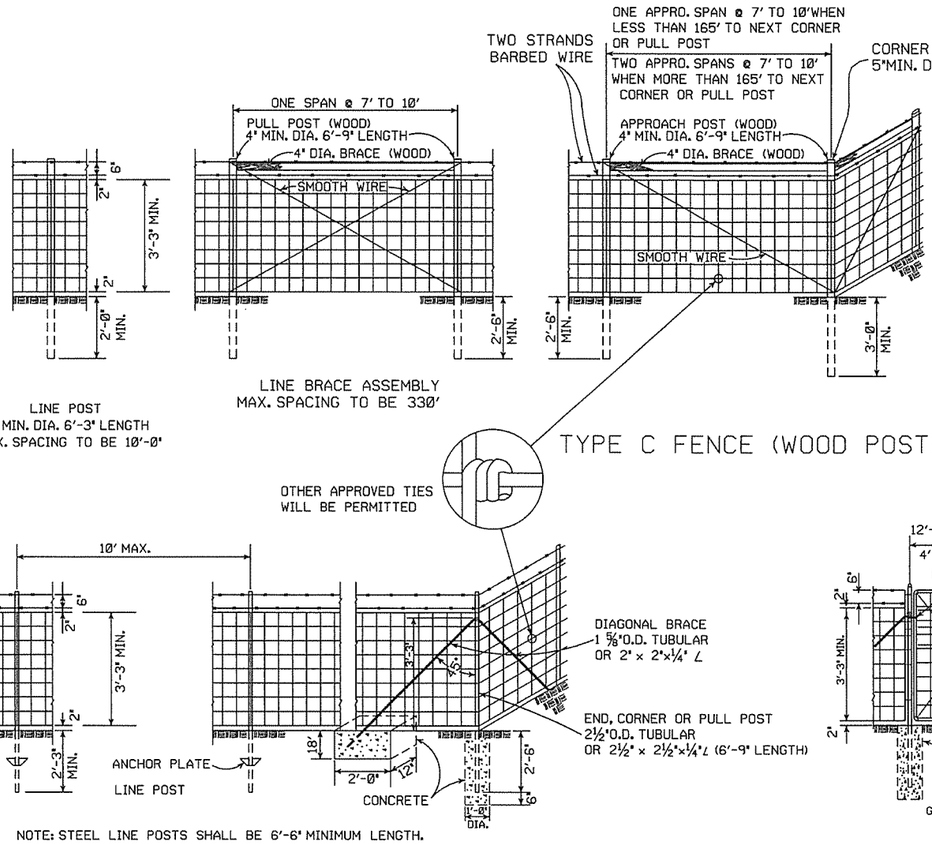
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DETAIL & ADDED NOTE	8-15-91 8-15-91
11-30-89	DELETED CLASS CONCRETE	11 30 89
11-17-88	REVISED O.D. SIZES	668-11-17-88
10-30-87	GENERAL REVISIONS	548-10-30-87
4-20-79	REVISED TOP RAIL & TENSION WIRE	695-4-20-79
10-2-72	REVISED AND REDRAWN	530-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

STANDARD DRAWING WF-3



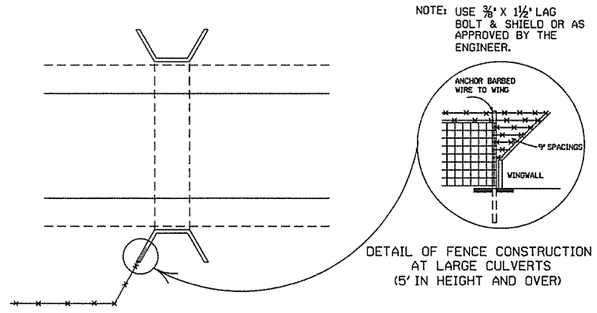
GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.



DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

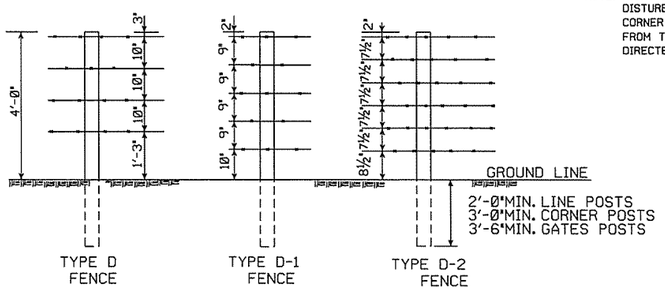
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

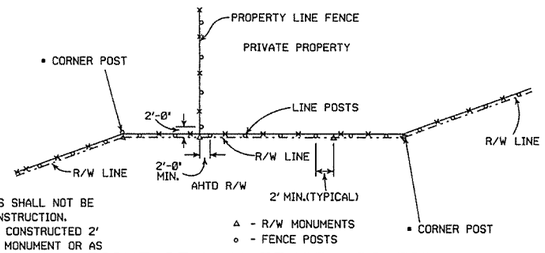
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)

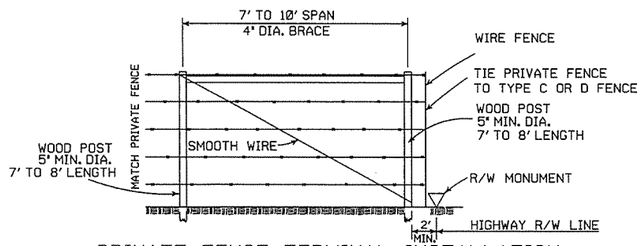


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

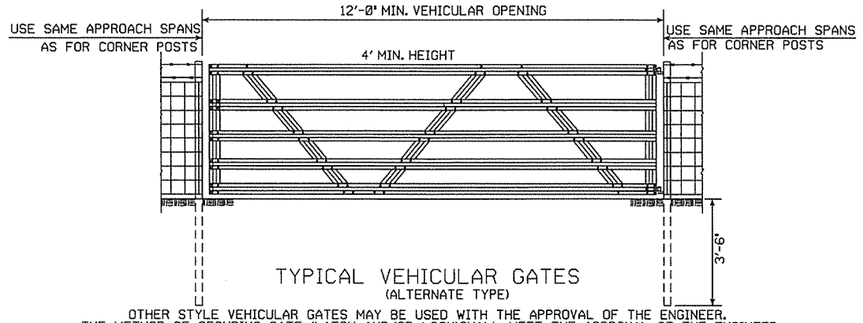


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION
WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.



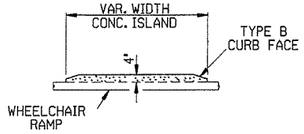
TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)
OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER. THE METHOD OF SECURING GATE (LATCH AND/OR LOCK)SHALL MEET THE APPROVAL OF THE ENGINEER.

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

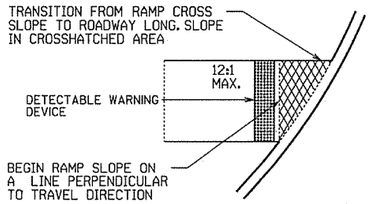
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

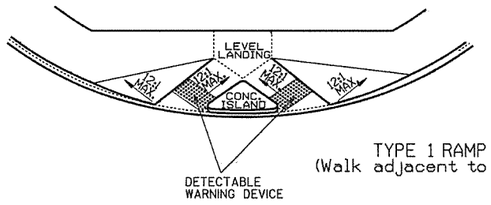
STANDARD DRAWING WF-4



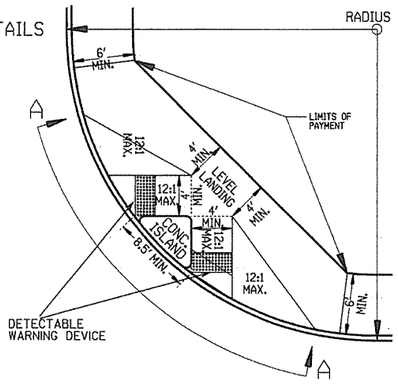
CONCRETE ISLAND DETAIL

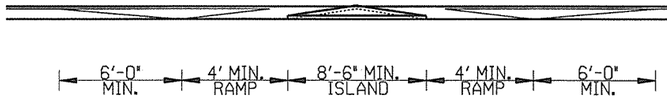


SLOPE TRANSITION DETAILS



TYPE 1 RAMP
(Walk adjacent to curb)

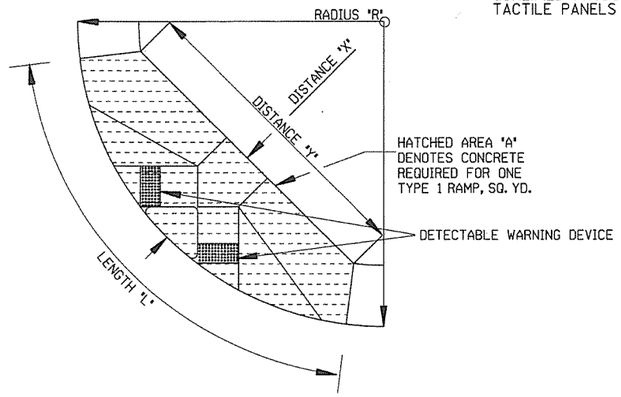




SECTION A-A

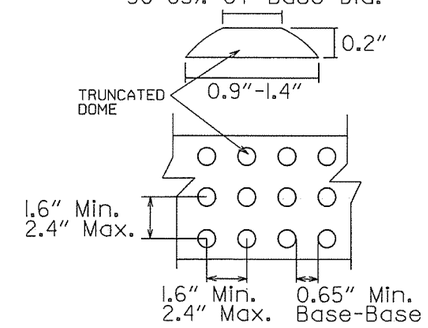
TYPE 1 RAMP DIMENSIONS AND QUANTITIES

RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80



GENERAL NOTES FOR DETECTABLE WARNING DEVICES

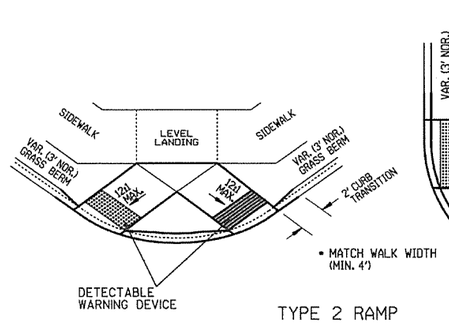
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).



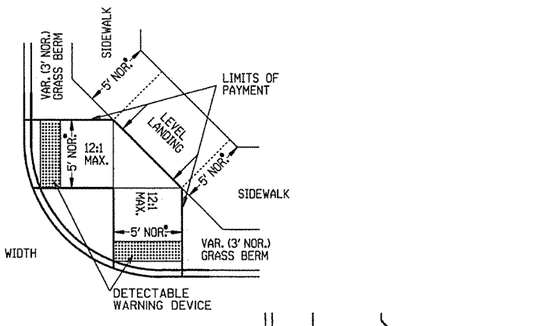
DETECTABLE WARNING DEVICE DETAIL

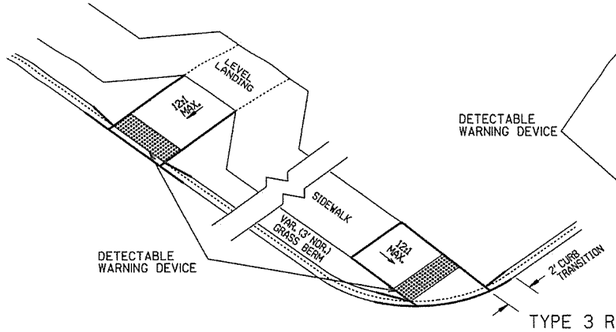
GENERAL NOTES:

IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS.
THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19.
THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4".
THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER.
RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION.
THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.

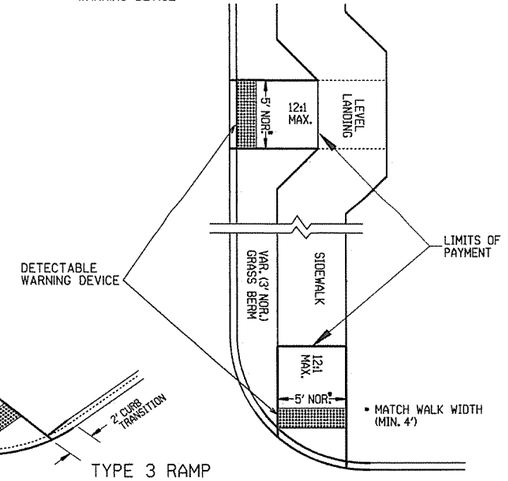


TYPE 2 RAMP

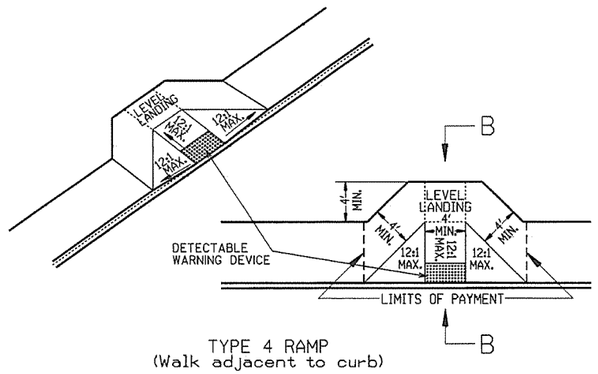




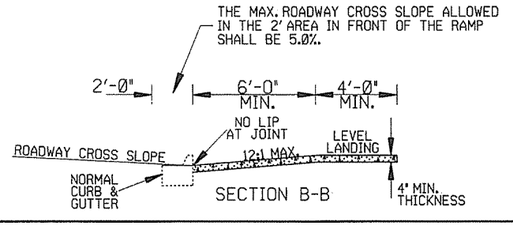
TYPE 3 RAMP



NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.



TYPE 4 RAMP
(Walk adjacent to curb)



SECTION B-B

RAMP SELECTION CRITERIA

FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY). THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.
AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

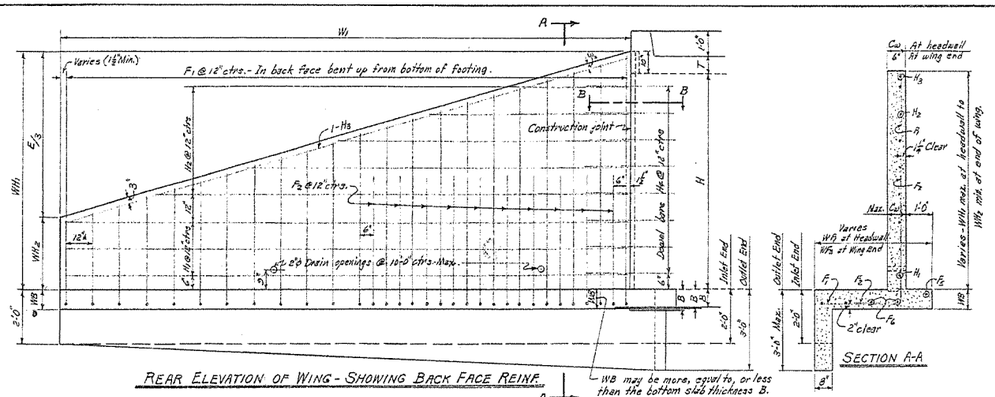
DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD.SLOPE TRANS. & REV. ISL. DIMS.	
11-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM8ITOI2/MAX.SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCLUD."CONC. ISLD."IN PAY ITEM	-------
6-02-76	ISSUED-P.H.D.	299-7-28-76

ARKANSAS STATE HIGHWAY COMMISSION

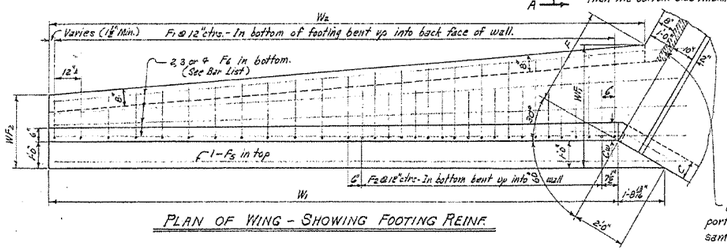
WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS

STANDARD DRAWING WR-1

FED. ROAD NO.	STATE PROJECT	FED. AID PROJECT	SHEET NO.	TOTAL SHEETS
8	ARK.		142	
JOB NO.				



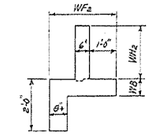
REAR ELEVATION OF WING - SHOWING BACK FACE REINF.



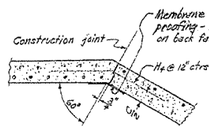
PLAN OF WING - SHOWING FOOTING REINF.

SECTION A-A

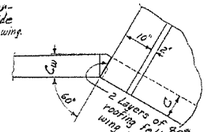
When B is more than W8, the shaded portion of the apron shall be made the same thickness as the barrel base B.



END VIEW OF WING



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

Note:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING	WINGWALL HEIGHTS		WIDTHS OF WING FOOTINGS		PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR FOOTING DIMENSION TO END OF WING	LENGTH OF WING WALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE	
		AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING					INLET END	OUTLET END
H	W8	C_W	WH_1	WH_2	W_1	W_2	F	E	W_1	W_2	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-9"	2'-0"	0'-11⅞"	6'-6"	7'-6"	7'-1½"	0.889	0.996
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-4⅜"	8'-6"	9'-10⅝"	9'-7½"	1.338	1.466
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-8"	10'-6"	12'-1⅝"	12'-1⅝"	1.666	2.027
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-6⅜"	2'-1⅜"	12'-6"	14'-5⅛"	14'-7⅝"	2.278	2.668
		7"	5'-10"	1'-8"	3'-4"	2'-6⅜"	2'-1⅜"	12'-6"	14'-5⅛"	14'-7⅝"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅜"	14'-6"	16'-9"	17'-1⅝"	3.440	3.661
		7⅝"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅜"	14'-6"	16'-9"	17'-1⅝"	3.511	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅜"	14'-6"	16'-9"	17'-1⅝"	3.582	3.803
7'	8½"	7⅞"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0½"	19'-8⅜"	9.505	9.758
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0½"	19'-8⅜"	9.597	9.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-3"	18'-6"	21'-4½"	22'-1"	5.761	6.097

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_3.

APRON DIMENSION W_3

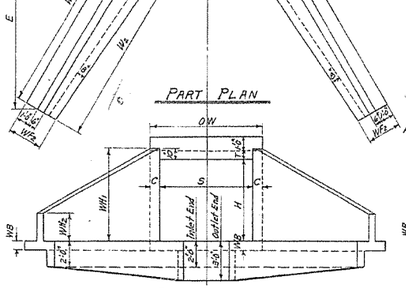
$W_3 = (OW - 2F)$

CLEAR SPAN	CLEAR HEIGHT	2 × FOOTING DIMENSION	SINGLE BARREL CULVERT		DOUBLE BARREL CULVERT		TRIPLE BARREL CULVERT		QUADRUPLE BARREL CULVERT		QUINTUPLE BARREL CULVERT	
			OW	W_3	OW	W_3	OW	W_3	OW	W_3	OW	W_3
S	H	2F										
4'	2'	1'-11⅛"	5'-0"	3'-0⅛"	9'-8"	7'-8⅛"	14'-4"	12'-8⅛"	19'-0"	17'-0⅛"	23'-8"	21'-8⅛"
	3'	2'-8⅛"	5'-0"	2'-3⅛"	9'-8"	6'-11⅛"	14'-4"	11'-7⅛"	19'-0"	16'-3⅛"	23'-8"	20'-11⅛"
	4'	3'-6"	5'-0"	1'-6"	9'-8"	6'-2"	14'-4"	10'-10"	19'-0"	15'-6"	23'-8"	20'-2"
	5'	4'-3⅜"	5'-0"	0'-8⅝"	9'-8"	5'-2⅝"	14'-4"	10'-3⅛"	19'-0"	14'-9⅛"	23'-8"	19'-9⅛"
	6'	5'-0⅝"	5'-2"	0'-1½"	9'-11"	4'-10⅛"	14'-8"	9'-7½"	19'-5"	14'-0⅝"	24'-2"	19'-1⅝"
5'	3'	2'-8⅝"	6'-0"	3'-3⅜"	11'-8"	8'-11⅛"	17'-4"	14'-7⅛"	23'-0"	20'-3⅛"	28'-8"	25'-11⅛"
	4'	3'-6"	6'-0"	2'-6"	11'-8"	8'-2"	17'-4"	13'-10"	23'-0"	19'-6"	28'-8"	25'-2"
	5'	4'-3⅜"	6'-0"	1'-8⅝"	11'-8"	7'-5⅝"	17'-4"	13'-0⅛"	23'-0"	18'-8⅝"	28'-8"	24'-5⅛"
	6'	5'-0⅝"	6'-2"	1'-1½"	11'-11"	6'-10⅛"	17'-8"	12'-7½"	23'-5"	18'-0⅝"	29'-2"	24'-1⅝"
	7'	6'-2⅝"	6'-3"	0'-0½"	12'-1"	5'-10⅛"	17'-11"	11'-8⅝"	23'-9"	17'-0⅝"	29'-7"	23'-0⅝"
6'	3'	2'-8⅝"	7'-0"	4'-3½"	13'-8"	10'-1⅛"	20'-4"	17'-7⅛"	27'-0"	24'-3½"	33'-8"	30'-11⅛"
	4'	3'-6"	7'-0"	3'-6"	13'-8"	10'-2"	20'-4"	16'-10"	27'-0"	23'-6"	33'-8"	30'-2"
	5'	4'-3⅜"	7'-0"	2'-8⅝"	13'-8"	9'-5⅝"	20'-4"	16'-0⅛"	27'-0"	22'-8⅝"	33'-8"	29'-4⅛"
	6'	5'-0⅝"	7'-2"	2'-1½"	13'-11"	8'-10⅛"	20'-8"	15'-7½"	27'-5"	22'-1⅝"	34'-2"	29'-1⅝"
	7'	6'-2⅝"	7'-3"	1'-0½"	14'-1"	7'-10⅛"	20'-11"	14'-8⅝"	27'-9"	21'-0⅝"	34'-7"	28'-0⅝"
	8'	7'-4"	7'-4"	0'-0"	14'-2"	6'-10"	21'-0"	13'-8"	27'-10"	20'-0"	34'-8"	27'-0"
7'	4'	3'-6"	8'-0"	4'-6"	15'-6"	12'-2"	23'-4"	19'-10"	31'-0"	27'-6"	38'-8"	35'-2"
	5'	4'-3⅜"	8'-0"	3'-8⅝"	15'-8"	11'-4⅝"	23'-4"	19'-0⅛"	31'-0"	26'-8⅝"	38'-8"	34'-6⅛"
	6'	5'-0⅝"	8'-2"	3'-1½"	15'-11"	10'-10⅛"	23'-8"	18'-7½"	31'-5"	26'-1⅝"	39'-2"	34'-1⅝"
	7'	6'-2⅝"	8'-3"	2'-0½"	16'-1"	9'-10⅛"	23'-11"	17'-8⅝"	31'-9"	25'-0⅝"	39'-7"	33'-0⅝"
	8'	7'-4"	8'-4"	1'-0"	16'-2"	8'-10"	24'-0"	16'-8"	31'-10"	24'-0"	39'-8"	32'-0"
8'	4'	3'-6"	9'-0"	5'-6"	17'-6"	14'-2"	26'-4"	22'-10"	35'-0"	31'-6"	43'-8"	40'-2"
	5'	4'-3⅜"	9'-2"	4'-10⅜"	17'-11"	13'-7⅜"	26'-8"	22'-0⅜"	35'-5"	31'-1⅜"	44'-2"	39'-10⅜"
	6'	5'-0⅝"	9'-2"	4'-1⅜"	17'-11"	12'-10⅜"	26'-8"	21'-2⅜"	35'-5"	30'-4⅜"	44'-2"	39'-1⅜"
	7'	6'-2⅝"	9'-3"	3'-0⅜"	18'-1"	11'-10⅜"	26'-11"	20'-3⅜"	35'-9"	29'-4⅜"	44'-7"	38'-4⅜"
	8'	7'-4"	9'-4"	2'-0"	18'-2"	10'-10"	27'-0"	19'-8"	35'-10"	28'-4"	44'-8"	37'-4"
9'	5'	4'-3⅜"	10'-2"	5'-0⅜"	19'-11"	15'-7⅜"	29'-8"	25'-0⅜"	39'-5"	35'-1⅜"	49'-2"	44'-10⅜"
	6'	5'-0⅝"	10'-3"	5'-1⅜"	20'-1"	15'-0⅜"	29'-11"	24'-1⅜"	39'-9"	34'-4⅜"	49'-7"	44'-1⅜"
	7'	6'-2⅝"	10'-3"	4'-0⅜"	20'-1"	13'-10⅜"	29'-11"	23'-3⅜"	39'-9"	33'-4⅜"	49'-7"	43'-4⅜"
	8'	7'-4"	10'-4"	3'-0"	20'-2"	12'-10"	30'-0"	22'-8"	39'-10"	32'-4"	49'-8"	42'-4"
10'	5'	4'-3⅜"	11'-2"	6'-0⅜"	21'-11"	19'-7⅜"	32'-8"	28'-4⅜"	43'-5"	39'-1⅜"	54'-2"	49'-10⅜"
	6'	5'-0⅝"	11'-3"	6'-2⅜"	22'-1"	17'-0⅜"	32'-11"	27'-10⅜"	43'-9"	38'-8⅜"	54'-7"	49'-2⅜"
	7'	6'-2⅝"	11'-3"	5'-0⅜"	22'-1"	15'-10⅜"	32'-11"	26'-10⅜"	43'-9"	37'-4⅜"	54'-7"	48'-4⅜"
	8'	7'-4"	11'-4"	4'-0"	22'-2"	14'-10"	33'-0"	25'-8"	43'-10"	36'-4"	54'-8"	47'-4"
11'	6'	5'-0⅝"	12'-4"	7'-3⅜"	24'-2"	19'-1⅜"	36'-0"	30'-11⅜"	47'-10"	43'-9⅜"		
	7'	6'-2⅝"	12'-4"	6'-1⅜"	24'-2"	17'-10⅜"	36'-0"	29'-9⅜"	47'-10"	41'-7⅜"		
	8'	7'-4"	12'-5"	5'-0"	24'-3"	16'-10"	36'-0"	28'-8"	47'-10"	40'-6"		
12'	6'	5'-0⅝"	13'-5"	8'-3⅜"	26'-2"	21'-1⅜"	39'-0"	33'-10⅜"	51'-10"	47'-9⅜"		
	7'	6'-2⅝"	13'-5"	7'-1⅜"	26'-2"	19'-11⅜"	39'-0"	32'-9⅜"	51'-10"	45'-7⅜"		
	8'	7'-4"	13'-6"	6'-0"	26'-3"	18'-10"	39'-0"	31'-8"	51'-10"	44'-6"		

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WINGS AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - FOR 4 WINGS ®	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS					
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT	
S	H	C_W	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	
4'	2'	6"	7"	108.0	4.50	5.46	6.42	7.38	8.34	
	3'	6"	7"	169.8	6.26	7.21	8.17	9.13	10.09	
	4'	6"	7"	255.6	8.33	9.28	10.24	11.20	12.16	
	5'	6"	7"	357.8	10.72	11.68	12.64	13.60	14.56	
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49	
5'	3'	6"	7"	169.8	6.97	7.63	8.29	8.96	11.12	
	4'	6"	7"	255.6	8.56	9.70	10.87	10.03	13.20	
	5'	6"	7"	357.8	10.96	12.10	13.26	14.42	15.59	
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54	
	7'	7⅞"	8½"	1139.6	18.94	20.15	21.37	22.59	23.80	
6'	3'	6"	7"	169.8	6.68	8.06	9.42	10.80	12.18	
	4'	6"	7"	255.6	8.75	10.13	11.49	12.87	14.25	
	5'	6"	7"	357.8	11.15	12.53	13.89	15.27	16.65	
	6'	7"	8"	583.1	14.98	16.39	17.78	19.18	20.59	
	7'	7⅞"	8½"	1139.6	19.16	20.58	22.00	23.43	24.86	
	8'	8"	9"	1925.6	24.09	25.53	26.96	28.39	29.83	
7'	4'	6"	7"	255.6	8.97	10.38	12.15	13.76	15.35	
	5'	6"	7"	357.8	11.36	12.97	14.58	16.15	17.75	
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66	
	7'	7⅞"	8½"	1139.6	19.38	21.02	22.68	24.28	25.92	
	8'	8"	9"	1925.6	24.32	25.97	27.60	29.25	30.89	
8'	4'	6"	7"	255.6	9.19	11.03	12.82	14.65	16.45	
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.36	
	6'	7"	8"	583.1	15.92	17.27	19.09	20.93	22.75	
	7'	7⅞"	8½"	1139.6	19.59	21.46	23.30	25.16	26.93	
	8'	8"	9"	1925.6	24.56	26.91	28.29	30.11	31.96	
9'	5'	7"	7"	357.8	12.26	13.89	16.87	18.65	20.47	
	6'	7⅞"	8"	583.1	15.94	18.04	20.09	22.19	24.23	
	7'	7⅞"	8½"	1139.6	19.81	21.91	23.96	26.06	28.10	
	8'	8"	9"	1925.6	24.76	26.86	28.91	31.00	33.05	
10'	5'	7"	7"	357.8	12.49	14.80	17.05	19.26	21.52	
	6'	7⅞"	8"	583.1	16.17	18.50	20.77	22.99	25.28	
	7'	7⅞"	8½"	1139.6	20.04	22.37	24.64	26.87	29.15	
	8'	8"	9"	1925.6	24.98	27.31	29.58	31.81	34.10	
11'	6'	8"	8"	583.1	16.69	19.27	21.76	24.23		
	7'	8"	8½"	1139.6	20.64	23.22	25.71	28.18		
	8'	8"	9"	1925.6	25.19	27.77	30.27	32.74		
12'	6'	8"	8"	583.1	16.92	19.75	22.95	25.18		
	7'	8"	8½"	1139.6	20.87	23.69	26.90	29.13		
	8'	8"	9"	1925.6	25.42	28.25	30.96	33.69		

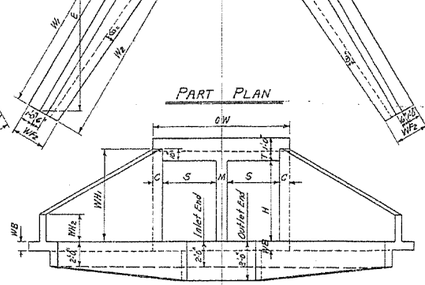
® For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT

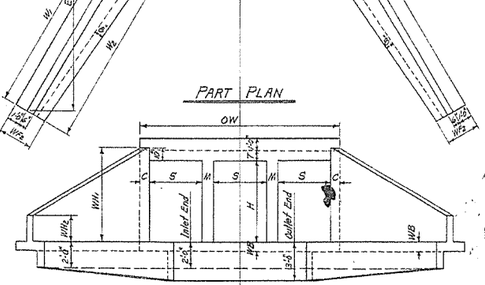


PART PLAN

END ELEVATION

DOUBLE BARREL CULVERT

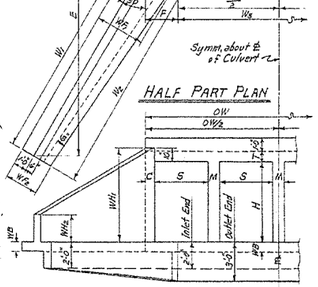
NOTE:- Plans and Elevations are not to scale.



PART PLAN

END ELEVATION

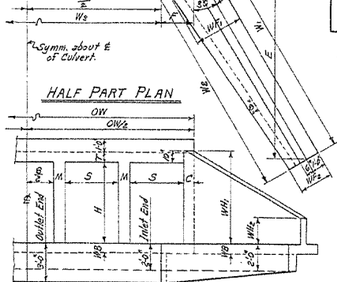
TRIPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUINTUPLE BARREL CULVERT

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings of waterproofing asphalt and two thicknesses layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F_1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length.							F_2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F_1 bars.						F_3 STRAIGHT: Longitudinal in top of wing footing heel.			F_4 STRAIGHT: Longitudinal in bottom of wing footing toe.			H_1 STRAIGHT: Horizontal in back face of wing.			H_2 STRAIGHT: Horizontal in back face of wing. One bar of each length.					H_3 STRAIGHT: In back face of wing at top - on slope.			H_4 BENT: Dowels thru construction joint at headwall.				QUANTITY REINFORCING STEEL PER WING	BAR BENDING DIAGRAMS
H	SIZE	SPACING	NO. REQD	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SIZE	SPACING	NO. REQD	LENGTH	X	Y	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	LENGTHS VARY MAX.	LENGTHS VARY MIN.	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	X		
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	#3	1	9'-8"	—	—	#3	2	6'-6"	#3	1	7'-5"	#3	12"	1	9'-8"	#3	1	7'-4"	#3	12"	2	2'-8"	1'-9"	27.0	
3'	#3	12"	10	2'-2"	5'-2"	0'-11"	1'-3"	1'-5"	4'-5"	#3	1	12'-0"	#3	2	11'-6"	#3	1	9'-6"	#3	2	7'-6"	#3	12"	3	2'-8"	#3	1	9'-3"	#3	12"	3	2'-8"	1'-9"	41.1	
4'	#3	12"	13	2'-9"	6'-6"	0'-11"	1'-7"	1'-8"	5'-10"	#3	1	14'-4"	#3	3	13'-6"	#3	1	11'-10"	#3	3	10'-11"	#3	12"	4	2'-8"	#3	1	12'-2"	#3	12"	4	2'-8"	1'-9"	63.7	
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-10"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#5	12"	2	14'-2"	#3	12"	3	10'-11"	4'-6"	#3	1	14'-2"	#3	12"	5	2'-8"	1'-9"	89.5	
6'	#4	12"	17	3'-6"	9'-3"	1'-2"	2'-3"	2'-5"	7'-1"	#3	12"	4	4'-6"	1'-4"	3'-3"	#3	1	19'-0"	#3	3	18'-6"	#3	12"	2	16'-6"	#3	12"	4	14'-4"	4'-6"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-9"	145.8	
7'	#4	12"	20	3'-9"	10'-9"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	21'-4"	#4	4	21'-0"	#4	12"	2	18'-9"	#4	12"	5	17'-3"	4'-6"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	283.7	
8'	#4	12"	22	4'-0"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	9	23'-5"	#4	12"	3	21'-1"	#4	12"	5	17'-9"	4'-6"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4	

NOTE:- Dimensions are to bar centers.

REVISIONS:- Membrane added. 5-10-66 W.C.H.

Designed By:- W.C.H. 6-20-62. Checked By:- RMS - 1-9-63
Drawn By:- W.C.H. 12-9-62. Checked By:- RMS - 1-31-63
Quantities By:- W.C.H. 12-19-62. Checked By:- RMS - 3-22-63
Rechecked By:-

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos. as listed below.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

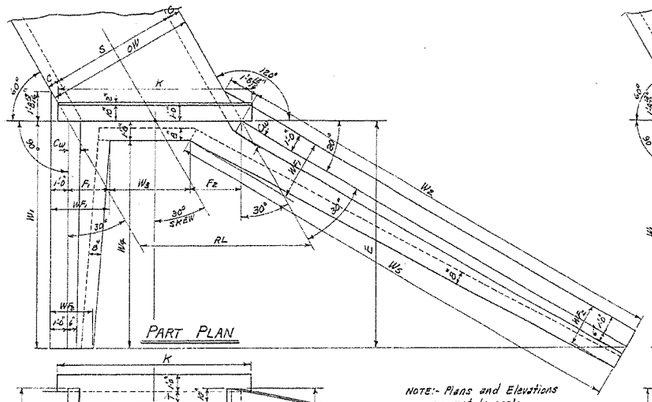
STANDARD DRAWING NO. W-X003-1

MV1-68 (3)

Reshot 3-8-93

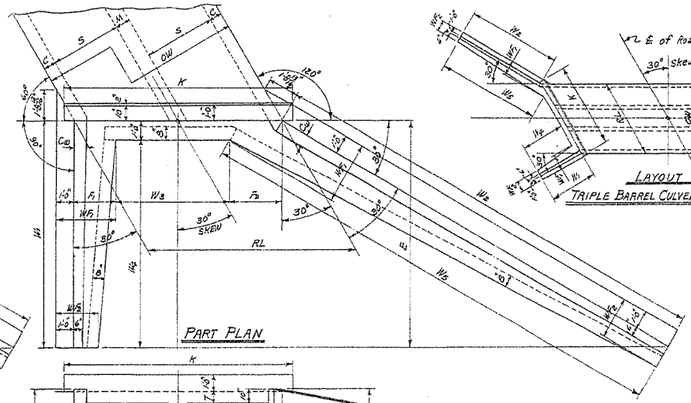
191

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			143	
JOB No.					



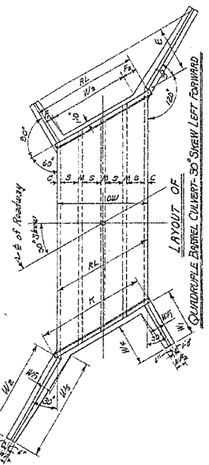
SINGLE BARREL CULVERT-30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Layout below.

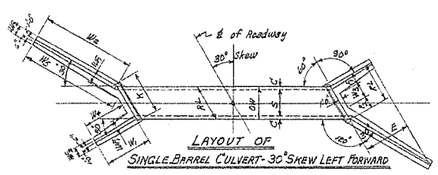


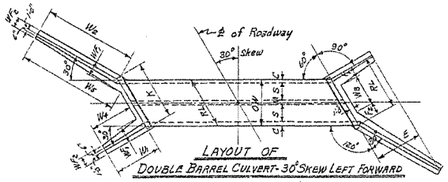
DOUBLE BARREL CULVERT-30° SKEW RIGHT FORWARD

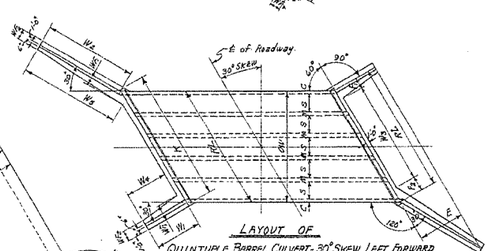
Details of Culvert with 30° Skew Left Forward is reversed, see Layout below.

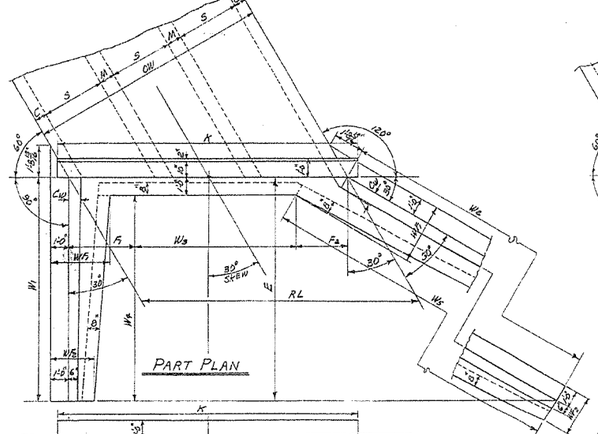


NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



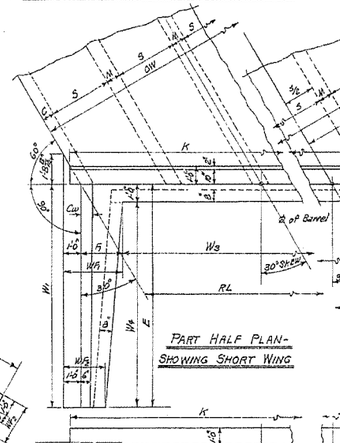






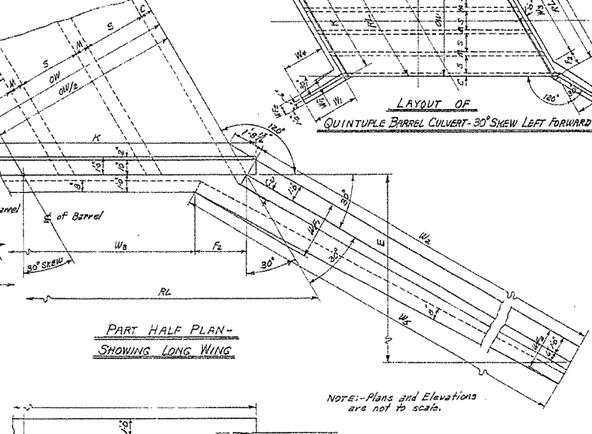
TRIPLE BARREL CULVERT - 30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT-30° SKEW RT. FWD.

Details of Culvert with 30° Skew Left Forward is reversed, see Layout at above center.



QUINTUPLE BARREL CULVERT- 30° SKEW RT. FWD.

Details of Culvert with 30° Skew Left Forward is reversed, see Layout above.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.1547$ — $K = RL + (1'-1\frac{7}{8}")$ — $W_3 = RL - (F_1 + F_2)$

USE WITH DRAWING No.	CLEAR SPAN	CLEAR HEIGHT	SKEW OF BARRELS	SINGLE BARREL CULVERT				DOUBLE BARREL CULVERT				TRIPLE BARREL CULVERT				QUADRUPLE BARREL CULVERT				QUINTUPLE BARREL CULVERT			
	S	H	F_1 & F_2	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3
W-X302-1, W-X303-1 OR W-X304-1. (FOR H=8'0" OR LESS)	4'	2'	3½"	5'-0"	5'-9½"	6'-11⅝"	3'-6"	9'-8"	11'-2"	12'-3⅝"	8'-10⅝"	14'-6"	16'-6⅝"	17'-10⅝"	13'-2"	19'-4"	21'-11½"	23'-1"	17'-6"	24'-2"	27'-6"	28'-10⅝"	25'-0⅝"
		3'	2'-3½"	5'-0"	"	"	2'-4"	9'-8"	"	"	7'-10⅝"	14'-9"	"	"	13'-3½"	19'-0"	"	"	18'-8"	23'-8"	"	"	24'-10⅝"
		4'	4'-3½"	5'-0"	"	"	1'-6"	9'-8"	"	"	6'-10⅝"	14'-9"	"	"	12'-3½"	19'-0"	"	"	17'-8"	23'-8"	"	"	23'-10⅝"
		5'	5'-3½"	5'-0"	5'-9⅝"	6'-11⅝"	0'-6"	9'-8"	11'-2"	12'-3⅝"	5'-10⅝"	14'-6"	16'-6⅝"	17'-10⅝"	11'-3½"	19'-0"	21'-11½"	23'-1"	16'-8"	23'-8"	27'-6"	28'-5½"	22'-0⅝"
		6'	6'-3½"	5'-2"	5'-11⅝"	7'-1⅝"	Ⓐ 0"	9'-11"	11'-5½"	12'-7½"	5'-12½"	14'-8"	16'-11⅝"	18'-1"	10'-8"	19'-5"	22'-5"	23'-7"	14'-11⅝"	24'-2"	27'-10⅝"	29'-0⅝"	21'-7⅝"
	5'	3'	3'-3½"	6'-0"	6'-11⅝"	8'-1"	3'-7⅝"	11'-8"	13'-5⅝"	14'-7½"	10'-2⅝"	17'-4"	20'-0⅛"	21'-2"	16'-9"	23'-0"	26'-6⅝"	27'-8⅝"	23'-3½"	28'-8"	33'-1¼"	34'-3"	29'-10"
		4'	4'-3½"	6'-0"	"	"	2'-7⅝"	11'-8"	"	"	9'-2⅝"	17'-4"	"	"	15'-3"	23'-0"	"	"	22'-3½"	28'-8"	"	"	28'-10"
		5'	5'-3½"	6'-0"	6'-11⅝"	8'-1"	1'-7⅝"	11'-8"	13'-5⅝"	14'-7½"	8'-2½"	17'-4"	20'-0⅛"	21'-2"	14'-9"	23'-0"	26'-6⅝"	27'-8⅝"	22'-8½"	28'-8"	33'-1⅛"	34'-3"	27'-10"
		6'	6'-3½"	6'-2"	7'-1⅝"	8'-3⅝"	0'-10⅝"	11'-11"	13'-9½"	15'-1⅛"	7'-5⅝"	17'-8"	20'-4⅜"	21'-6⅝"	14'-1⅛"	23'-5"	27'-0⅝"	28'-2⅝"	20'-10⅝"	29'-2"	33'-8½"	34'-10"	27'-5"
		7'	7'-3½"	6'-3"	7'-2⅝"	8'-4⅝"	Ⓐ 0"	12'-1"	13'-11⅛"	15'-1⅛"	6'-2⅝"	17'-11"	20'-8½"	21'-10"	13'-11⅛"	23'-9"	27'-5⅝"	28'-7"	19'-5"	29'-7"	34'-2"	35'-3½"	26'-9⅝"
	6'	3'	3'-3½"	7'-0"	8'-1"	9'-2⅛"	4'-3⅝"	13'-8"	15'-9⅜"	16'-11⅛"	12'-6⅜"	20'-9"	23'-5⅝"	24'-7⅛"	20'-2½"	27'-0"	31'-2⅝"	32'-4"	27'-11"	33'-8"	38'-10⅝"	40'-0⅛"	35'-7½"
		4'	4'-3½"	7'-0"	"	"	3'-9⅜"	13'-8"	"	"	11'-6⅜"	20'-9"	"	"	19'-2⅜"	27'-0"	"	"	26'-11"	33'-8"	"	"	34'-7½"
		5'	5'-3½"	7'-0"	8'-1"	9'-2⅛"	2'-9⅜"	13'-8"	15'-9⅜"	16'-11⅛"	10'-6⅜"	20'-9"	23'-5⅝"	24'-7⅛"	18'-2⅜"	27'-0"	31'-2⅝"	32'-4"	25'-11"	33'-8"	38'-10⅝"	40'-0⅛"	33'-7½"
		6'	6'-3½"	7'-2"	8'-3⅝"	9'-5⅝"	2'-0"	13'-11"	16'-0⅛"	17'-2⅝"	9'-10⅜"	20'-8"	23'-10⅛"	25'-0⅝"	17'-2⅝"	27'-5"	31'-7⅞"	32'-9⅝"	25'-0⅝"	34'-2"	39'-5½"	40'-7⅝"	33'-2½"
		7'	7'-3½"	7'-3"	8'-4⅝"	9'-6⅞"	0'-7⅜"	14'-1"	16'-3⅜"	17'-5"	8'-6"	20'-11"	24'-1½"	25'-3⅜"	16'-4½"	27'-9"	32'-0⅝"	33'-2⅝"	24'-2⅜"	34'-7"	39'-10⅝"	41'-1"	32'-2"
		8'	8'-3½"	7'-4"	8'-5⅝"	9'-7½"	Ⓐ 0"	14'-2"	16'-4⅝"	17'-6⅝"	7'-1"	21'-0"	24'-3"	25'-5⅝"	14'-11⅝"	28'-0"	32'-3⅛"	33'-5⅜"	22'-10⅝"	34'-11"	40'-0⅜"	41'-2⅝"	30'-9⅝"
	7'	4'	4'-3½"	8'-0"	9'-2⅝"	10'-5⅝"	4'-1⅛"	15'-6"	16'-1½"	19'-5"	13'-9⅜"	23'-6"	26'-11⅝"	28'-1⅛"	22'-8"	31'-0"	35'-3½"	36'-4½"	31'-4⅝"	38'-6"	44'-0⅜"	45'-0⅝"	40'-6½"
		5'	5'-3½"	8'-0"	9'-2⅝"	10'-5⅝"	3'-1⅛"	15'-8"	16'-1⅞"	19'-5"	12'-9⅜"	23'-6"	26'-11⅝"	28'-1⅛"	21'-8"	31'-0"	35'-3½"	36'-4½"	30'-4⅝"	38'-6"	44'-0⅜"	45'-0⅝"	39'-6½"
		6'	6'-3½"	8'-2"	9'-5⅝"	10'-7"	2'-2"	15'-11"	16'-4½"	19'-6⅝"	12'-1⅛"	23'-8"	27'-1"	28'-3⅝"	21'-0⅝"	31'-5"	36'-3⅝"	37'-5⅝"	30'-1''	39'-2"	45'-0⅝"	46'-1⅛"	38'-11½"
		7'	7'-3½"	8'-3"	9'-6⅛"	10'-8⅝"	1'-3"	16'-1"	16'-7⅛"	19'-8⅝"	10'-3⅜"	23'-11"	27'-3⅝"	28'-6⅛"	19'-10⅜"	31'-9"	36'-5⅞"	37'-8⅜"	28'-10⅝"	39'-7"	45'-3⅛"	46'-4⅝"	38'-4½"
		8'	8'-3½"	8'-4"	9'-7½"	10'-9⅞"	0'-4½"	16'-2"	16'-5"	19'-9⅝"	9'-4⅜"	24'-0"	27'-5⅝"	28'-8⅝"	18'-5⅝"	31'-10"	36'-7⅝"	37'-11"	27'-4"	39'-8"	45'-5⅜"	46'-6⅝"	37'-6½"
	8'	4'	4'-3½"	9'-0"	10'-4⅝"	11'-6⅝"	4'-1⅛"	17'-6"	20'-9⅝"	21'-4⅝"	16'-1⅝"	26'-9"	30'-6⅝"	31'-6⅝"	26'-1⅝"	35'-6"	40'-5"	41'-6⅝"	36'-1⅝"	43'-8"	50'-2⅝"	51'-3"	46'-1⅜"
		5'	5'-3½"	9'-2"	10'-7"	11'-8⅝"	3'-3½"	17'-11"	20'-8⅛"	21'-10"	15'-5"	26'-8"	30'-5⅜"	31'-11⅝"	25'-6⅝"	35'-5"	40'-3⅝"	41'-5⅝"	35'-5⅝"	43'-6"	49'-11⅝"	51'-0"	45'-3⅞"
		6'	6'-3½"	9'-2"	10'-7"	11'-8⅝"	4'-3½"	17'-11"	20'-8⅛"	21'-10"	14'-5"	26'-8"	30'-5⅜"	31'-11⅝"	24'-6⅝"	35'-5"	40'-10⅝"	42'-0⅝"	34'-10⅝"	44'-2"	51'-0"	52'-1⅝"	44'-5⅝"
		7'	7'-3½"	9'-3"	10'-8⅝"	11'-10"	2'-11"	18'-1"	20'-10⅛"	22'-0⅝"	13'-1⅝"	26'-11"	31'-1"	32'-3⅝"	23'-3⅝"	35'-10"	41'-3⅝"	42'-5⅝"	33'-6⅝"	44'-7"	51'-5⅜"	52'-7⅝"	43'-8⅝"
		8'	8'-3½"	9'-4"	10'-9⅝"	11'-11"	1'-6⅝"	18'-2"	20'-11⅝"	22'-1⅝"	11'-8⅝"	27'-0"	31'-2⅝"	32'-4"	21'-11"	35'-10"	41'-7½"	42'-6⅝"	32'-1⅝"	44'-8"	51'-7"	52'-8⅝"	42'-3½"
	9'	5'	5'-3½"	10'-2"	11'-8⅝"	12'-10⅝"	4'-1⅛"	19'-11"	23'-0"	24'-1⅝"	17'-0⅝"	29'-9"	34'-3⅜"	35'-5"	28'-1⅝"	39'-5"	45'-5⅝"	46'-8"	40'-3"	49'-3"	56'-9⅝"	57'-11⅝"	51'-6"
		6'	6'-3½"	10'-3"	11'-10"	13'-0"	5'-6⅜"	20'-1"	23'-2⅝"	24'-4⅝"	16'-11"	29'-11"	34'-6⅝"	35'-8⅝"	28'-3⅝"	39'-9"	45'-10⅝"	47'-0⅝"	39'-7⅝"	49'-7"	57'-3"	58'-5"	50'-11⅝"
		7'	7'-3½"	10'-3"	11'-10"	13'-0"	4'-0⅜"	20'-1"	23'-2⅝"	24'-4⅝"	15'-5"	29'-11"	34'-6⅝"	35'-8⅝"	26'-9⅝"	39'-9"	45'-10⅝"	47'-0⅝"	38'-1⅝"	49'-7"	57'-3"	58'-5"	49'-5⅝"
		8'	8'-3½"	10'-4"	11'-11⅝"	13'-1"	2'-6"	20'-2"	23'-3⅝"	24'-5⅝"	14'-0⅝"	30'-0"	34'-7⅝"	35'-9½"	25'-4½"	39'-10"	46'-0"	47'-1⅜"	36'-8⅝"	49'-8"	57'-4⅝"	58'-6"	48'-1"
	10'	5'	5'-3½"	11'-2"	12'-10⅜"	14'-0⅝"	7'-7½"	21'-4"	25'-3⅜"	26'-5⅛"	20'-0⅛"	32'-8"	37'-6⅝"	38'-10½"	32'-5⅝"	43'-5"	50'-2⅝"	51'-3⅝"	44'-10⅝"	54'-2"	62'-6⅝"	63'-8⅜"	57'-3⅝"
		6'	6'-3½"	11'-3"	12'-11⅝"	14'-1⅝"	6'-6⅜"	22'-1"	25'-6"	26'-7⅝"	19'-2⅝"	32'-11"	38'-0⅝"	39'-2"	31'-0"	43'-9"	50'-6⅝"	51'-8"	44'-3"	54'-7"	63'-0⅜"	64'-2⅝"	56'-9"
		7'	7'-3½"	11'-3"	12'-11⅝"	14'-1⅝"	5'-5⅜"	22'-1"	25'-6"	26'-7⅝"	17'-10⅜"	32'-11"	38'-0⅝"	39'-2"	30'-3"	43'-9"	50'-6⅝"	51'-8"	42'-9"	54'-7"	63'-0⅜"	64'-2⅝"	55'-8"
		8'	8'-3½"	11'-4"	13'-1"	14'-3"	3'-9⅝"	22'-2"	25'-7⅛"	26'-9"	16'-4"	33'-0"	38'-1⅛"	39'-3"	28'-10"	43'-10"	50'-7⅝"	51'-10⅜"	41'-4⅝"	54'-8"	63'-1½"	64'-3⅝"	53'-10⅛"
	11'	6'	6'-3½"	12'-4"	14'-0⅝"	15'-6⅛"	7'-10⅝"	24'-5"	27'-10⅝"	29'-0⅝"	21'-7⅛"	36'-0"	41'-6⅜"	42'-8⅜"	35'-3⅜"	47'-10"	55'-2⅜"	56'-4⅜"	48'-11"	—	—	—	—
		7'	7'-3½"	12'-5"	"	"	6'-5⅜"	24'-6"	"	"	20'-1⅝"	36'-0"	"	"	33'-9½"	47'-10"	"	"	47'-5"	—	—	—	—
		8'	8'-3½"	12'-6"	"	"	4'-11⅛"	24'-6"	"	"	18'-7⅝"	36'-0"	"	"	32'-1⅜"	47'-10"	"	"	45'-11⅝"	—	—	—	—
	12'	6'	6'-3½"	13'-6"	15'-5⅝"	16'-8⅝"	9'-1⅝"	26'-2"	30'-2⅝"	31'-4⅝"	23'-1⅛"	39'-0"	45'-0⅝"	46'-3"	38'-9⅝"	51'-10"	59'-10⅛"	61'-0"	53'-7"	—	—	—	—
		7'	7'-3½"	13'-7"	"	"	7'-7½"	26'-6"	"	"	22'-5⅝"	39'-0"	"	"	37'-3⅜"	51'-10"	"	"	52'-1"	—	—	—	—
		8'	8'-3½"	13'-8"	"	"	6'-1½"	26'-6"	"	"	20'-11¼"	39'-0"	"	"	35'-9⅝"	51'-10"	"	"	50'-7"	—	—	—	—
W-X302-2, W-X303-2 OR W-X304-2 (FOR H=9'0" & OVER)	7'	9'	10'-9⅝"	8'-6"	9'-9⅜"	10'-11⅝"	Ⓐ 0"	16'-5"	19'-11¼"	20'-1⅛"	6'-2⅛"	23'-4"	28'-1⅛"	29'-3"	17'-9"	32'-3"	37'-2⅜"	38'-5⅛"	26'-5⅜"	40'-2"	46'-6⅜"	47'-7⅝"	35'-7⅛"
	8'	9'	10'-9⅝"	9'-6"	10'-11⅝"	12'-1½"	0'-2⅜"	18'-5"	21'-3⅜"	22'-5"	10'-6"	27'-9"	31'-11⅜"	33'-1⅛"	19'-8⅜"	36'-8"	42'-6⅜"	43'-7⅝"	31'-1"	45'-2"	52'-1⅜"	53'-3⅝"	41'-1⅝"
		10'	12'-3⅜"	9'-8"	11'-2"	12'-3⅜"	Ⓐ 0"	18'-8"	21'-6⅜"	22'-8⅝"	9'-3⅜"	27'-8"	31'-11⅜"	33'-1⅛"	19'-8⅜"	36'-8"	42'-6⅜"	43'-7⅝"	30'-10⅜"	45'-8"	52'-8⅝"	53'-10⅜"	40'-5⅝"
	9'	9'	10'-9⅝"	10'-6"	12'-1½"	13'-3⅜"	1'-4⅛"	20'-5"	23'-6⅛"	24'-8⅝"	12'-9⅜"	30'-4"	35'-0⅝"	36'-2⅝"	26'-1"	40'-3"	46'-5⅜"	47'-7½"	35'-8⅜"	50'-2"	57'-1⅛"	58'-1"	47'-2"
		10'	12'-3⅜"	10'-8"	12'-3⅜"	13'-5⅜"	0'-10⅝"	20'-8"	23'-10⅝"	25'-0⅛"	11'-7⅛"	30'-8"	35'-4⅜"	36'-6⅜"	23'-1⅜"	40'-8"	46'-11⅜"	48'-1⅛"	34'-8⅜"	50'-8"	58'-6"	59'-8"	46'-10⅝"
		11'	13'-3⅛"	10'-10"	12'-5⅛"	13'-7⅛"	Ⓐ 0"	20'-10"	24'-0⅛"	25'-2⅝"	10'-3⅝"	30'-10"	35'-7⅛"	36'-9"	21'-10"	40'-10"	47'-1⅜"	48'-3⅜"	33'-4⅝"	50'-10"	58'-8⅜"	59'-10½"	44'-11⅝"
	10'	9'	10'-9⅝"	11'-5"	13'-3⅝"	14'-5⅝"	2'-6⅜"	22'-5"	25'-10⅜"	27'-0⅛"	15'-3⅜"	33'-0"	38'-5⅜"	39'-7⅜"	27'-8⅛"	44'-3"	51'-1⅛"	52'-3"	40'-6"	55'-2"	63'-8½"	64'-10⅝"	52'-11⅛"
		10'	12'-3⅜"	11'-8"	13'-6⅝"	14'-7⅝"	1'-2⅜"	22'-8"	26'-1⅛"	27'-2⅝"	13'-10⅜"	33'-3"	38'-10⅛"	40'-0⅛"	26'-7⅜"	44'-8"	51'-7"	52'-8⅜"	39'-3⅜"	55'-8"	64'-3⅜"	65'-5½"	52'-10"
		11'	13'-3⅛"	11'-10"	13'-8"	14'-9⅜"	Ⓐ 0"	22'-10"	26'-4⅜"	27'-4⅝"	12'-0⅝"	33'-10"	39'-0⅝"	40'-2⅝"	25'-3⅝"	44'-10"	51'-9⅝"	52'-11"	38'-0"	56'-1"	64'-7⅝"	65'-7½"	50'-8½"
		12'	15'-3⅜"	12'-0"	13'-10⅛"	15'-0⅝"	Ⓐ 0"	23'-0"	26'-6⅝"	27'-8⅝"	11'-3⅜"	34'-0"	39'-3⅜"	40'-5"	24'-0"	45'-0"	51'-11⅝"	53'-1⅛"	36'-8⅝"	56'-0"	64'-8"	65'-9⅜"	49'-7⅜"
	11'	9'	10'-9⅝"	12'-6"	14'-5⅝"	15'-7"	3'-8"	24'-5"	28'-2⅜"	29'-4⅜"	17'-5"	36'-4"	41'-11⅜"	43'-1⅛"	31'-2⅜"	48'-3"	55'-0⅜"	56'-2⅝"	44'-1⅛"	—	—	—	—
		10'	12'-3⅜"	12'-8"	14'-7⅜"	15'-9⅜"	2'-4⅛"	24'-10"	28'-8⅜"	29'-10⅝"	16'-2⅛"	36'-8"	42'-4⅝"	43'-6"	30'-0⅜"	48'-8"	55'-6⅜"	56'-8⅝"	43'-1⅛"	—	—	—	—
		11'	13'-3⅛"	13'-0"	15'-0⅛"	16'-2"	Ⓐ 0"	25'0"	28'-10⅜"	30'-0⅛"	13'-7⅝"	37'-0"	42'-8⅝"	43'-10⅛"	27'-5⅝"	49'-0"	56'-0"	57'-2⅝"	41'-3⅜"	—	—	—	—
	12'	9'	10'-9⅝"	13'-1"	15'-1⅝"	16'-3⅜"	4'-9⅜"	26'-5"	30'-1"	31'-2⅜"	19'-8⅝"	39'-4"	45'-5"	46'-7"	34'-7⅜"	53'-0"	60'-0⅜"	61'-2⅝"	48'-5⅜"	—	—	—	—
		10'	12'-3⅜"	13'-5"	15'-5⅜"	16'-7⅛"	3'-1⅝"	26'-8"	30'-5⅜"	31'-6⅛"	18'-6⅜"	39'-8"	45'-9⅜"	46'-11⅝"	33'-6⅝"	52'-8"	60'-0⅜"	61'-1⅜"	48'-2⅝"	—	—	—	—
		11'	13'-3⅛"	13'-10"	15'-11⅝"	17'-1⅝"	2'-2⅝"	26'-10"	30'-11⅜"	32'-1⅜"	17'-2⅝"	39'-10"	46'-0"	47'-1⅜"	32'-2⅜"	52'-10"	61'-0⅛"	62'-1⅜"	47'-2⅜"	—	—	—	—
		12'	15'-3⅜"	14'-0"	16'-2"	17'-3⅝"	1'-10⅝"	27'-0"	31'-2⅝"	32'-4"	15'-11"	40'-0"	46'-2⅝"	47'-3"	30'-11"	53'-0"	61'-2⅝"	62'-3⅝"	45'-11⅝"	—	—	—	—

Ⓐ *Special case for these boxes, See Detail "A" and Table "A" for revised values of F_1, F_2, W_2 and W_3, when apron width is more than 1'-0" and W_3=0. For Details "A" and Tables "A" for each slope, see Drawing Nos. W-X302-1, W-X302-2, or W-X303-1, W-X303-2, or W-X304-1, W-X304-2.*

NOTE:- *This drawing to be used in conjunction with Standard Wing Drawings for 30° Skews for each slope as listed below.*

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X302-1 or W-X302-2	W-X303-1 or W-X303-2	W-X304-1 or W-X304-2.

NOTE:- *This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-*

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

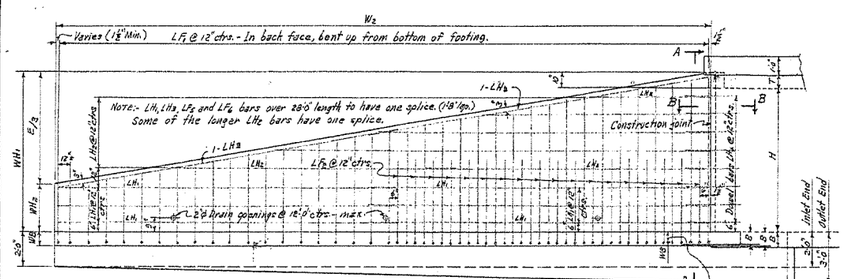
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H=2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'.

STANDARD DRAWING NO. W-X30

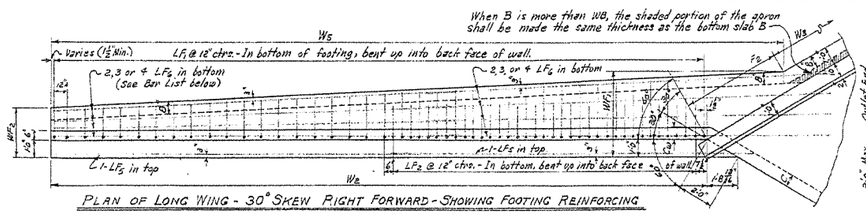
Designed by:- W.C.H. 5-16-63 Checked by:-
Drawn by:- W.C.H. 7-15-63 Checked by:- JBAS - 8-21-63
Quantities by:- Checked by:-

Reshot 3-8-93

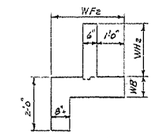
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			144	
JOB No.					



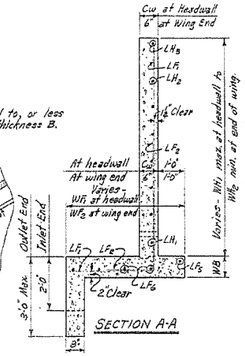
REAR ELEVATION OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING



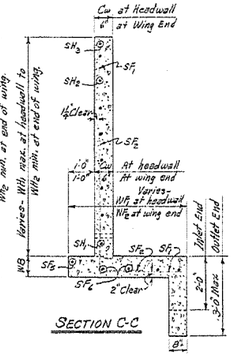
PLAN OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING



TYPICAL END VIEW OF WING



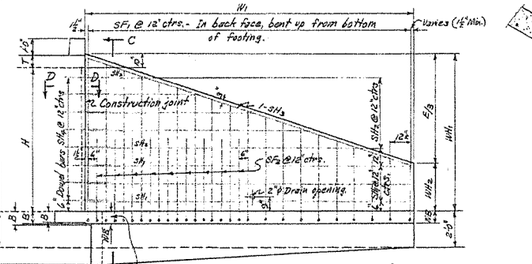
SECTION A-A



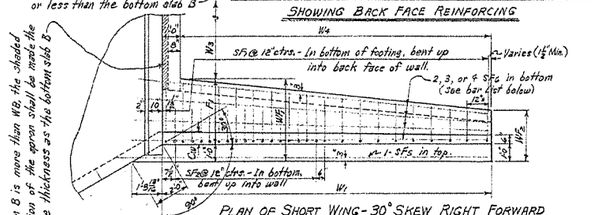
SECTION C-C

Varies - WH1 max. at headwall to WF2 min. at end of wing.

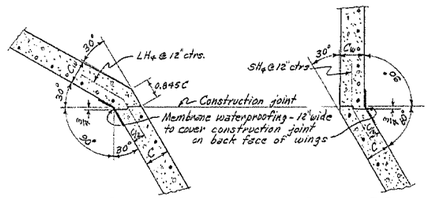
Varies - WH2 max. at headwall to WF2 min. at end of wing.



REAR ELEVATION OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING BACK FACE REINFORCING



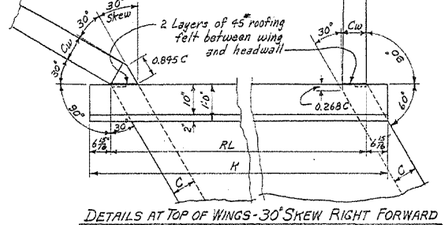
PLAN OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING FOOTING REINFORCING



SECTION B-B SECTION D-D

SECTIONS THRU CONSTRUCTION JOINTS

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



DETAILS AT TOP OF WINGS - 30° SKEW RIGHT FORWARD

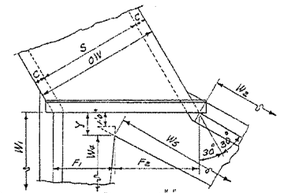
REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT	THICKNESS OF WING FOOTING	THICKNESS OF WING AT TOP = C	WING WALL HEIGHTS		WIDTHS OF WING FOOTINGS		FOOTING DIMENSION PARALLEL WITH HEADWALL	PERPENDICULAR DIST. FROM WING TO END OF WING	LENGTHS OF WINGWALLS		INSIDE FOOTING DIMENSION		* QUANTITY PER WING			
			AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING	SHORT WING	LONG WING	SHORT WING	LONG WING	SHORT WING	LONG WING	CLASS S CONCRETE INLET END SHORT WING	CLASS S CONCRETE INLET END LONG WING	CLASS S CONCRETE OUTLET END SHORT WING	CLASS S CONCRETE OUTLET END LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	CU.YD.	CU.YD.	CU.YD.	CU.YD.
2'	7"	6"	2'-10	0'-8	2'-6	2'-0	1'-4"	0'-11½"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3⅜"	0.752	1.599	0.836	1.717
3'	7"	6"	3'-10	1'-0"	2'-8	2'-1½"	1'-8"	1'-7½"	8'-6"	8'-6"	17'-0"	7'-6"	17'-10⅝"	1.130	2.346	1.239	2.565
4'	7"	6"	4'-10	1'-6"	3'-0"	2'-3"	2'-0"	2'-3⅜"	10'-6"	10'-6"	21'-0"	9'-6"	22'-5¼"	1.577	3.270	1.711	3.552
5'	7"	6"	5'-10	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11⅛"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.093	4.391	2.252	4.680
		7"	5'-10	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11⅛"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.179	4.526	2.337	4.862
6'	8"	7"	6'-10	2'-0	3'-8	2'-6"	2'-8"	3'-7⅝"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.908	6.024	3.092	6.419
		7½"	6'-10	2'-0	3'-8	2'-6"	2'-8"	3'-7⅝"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.964	6.147	3.150	6.543
		8"	6'-10	2'-0	3'-8	2'-6"	2'-8"	3'-7⅝"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7⅝"	3.025	6.272	3.208	6.667
◎ 7'	8½"	7½"	7'-10	2'-0"	4'-2"	2'-7½"	3'-2"	3'-7⅝"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.811	7.895	4.019	8.350
		8"	7'-10	2'-0"	4'-2"	2'-7½"	3'-2"	3'-7⅝"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.857	8.057	4.095	8.512
◎ 8'	9"	8"	8'-10	2'-8	4'-8"	2'-9"	3'-8"	3'-7⅝"	18'-6"	18'-6"	37'-0"	17'-6"	41'-4⅛"	4.870	10.097	5.107	10.612

* Quantity per wing does not include headwall or that portion of apron or footwall for the length W3.
◎ See Table "A" for special values of F1 & F2 and W4 & W5 for Single 9'x6', 9'x7' and 6'x8' Box Culverts.

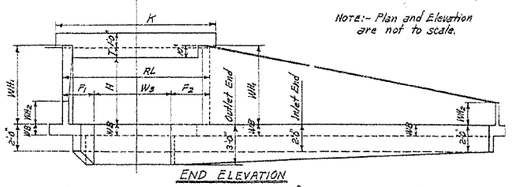
TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F1	F2	W3	Y	W4	W5
4'	6'	2'-7⅞"	3'-8⅝"	0"	1'-1⅜"	13'-9⅛"	31'-3½"
5'	7'	3'-1⅝"	4'-1"	0'	1'-3⅜"	15'-2⅜"	35'-10⅜"
6'	8'	3'-7⅛"	4'-10⅝"	0'	1'-6⅜"	17'-1⅛"	40'-6"



PART PLAN

Note:- Plan and Elevation are not to scale.



END ELEVATION

SINGLE BARREL CULVERT - 30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Drawing No. W-X30.

TYPICAL WING DETAILS

NOTE:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X30. For values of RL, K and W3 for each box, see above Std. also.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints of same.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	® STEEL - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS: HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	141	5.80	6.90	8.01	9.12	10.23
	3'	6"	7"	213	8.08	9.18	10.29	11.40	12.51
	4'	6"	7"	327	10.78	11.88	12.99	14.10	15.21
	5'	6"	7"	460	13.90	15.00	16.11	17.22	18.32
	6'	7"	8"	762	18.85	19.99	21.13	22.27	23.41
5'	3'	6"	7"	213	8.33	9.67	11.01	12.36	13.70
	4'	6"	7"	327	11.03	12.36	13.71	15.06	16.40
	5'	6"	7"	460	14.14	15.48	16.83	18.17	19.52
	6'	7"	8"	762	19.11	20.49	21.86	23.24	24.62
	7'	7⅞"	8½"	1494	24.51	25.96	27.35	28.75	30.16
6'	3'	6"	7"	213	8.57	10.17	11.73	13.33	14.92
	4'	6"	7"	327	11.27	12.86	14.93	16.03	17.62
	5'	6"	7"	460	14.38	15.98	17.55	19.15	20.73
	6'	7"	8"	762	19.35	20.98	22.59	24.21	25.83
	7'	7⅞"	8½"	1494	25.19	26.90	28.08	29.73	31.38
	8'	8"	9"	1870	31.15	32.87	34.51	36.17	37.83
7'	4'	6"	7"	327	11.52	13.37	15.19	17.05	18.85
	5'	6"	7"	460	14.68	14.49	18.31	20.16	21.97
	6'	7"	8"	762	19.61	21.98	23.32	25.20	27.04
	7'	7⅞"	8½"	1494	25.05	26.94	28.82	30.71	32.59
	8'	8"	9"	1870	31.47	33.37	35.25	37.16	39.05
8'	4'	6"	7"	327	11.77	13.89	15.97	18.09	20.12
	5'	7"	7"	460	15.46	17.60	19.70	21.83	23.89
	6'	7"	8"	762	19.86	21.98	24.05	26.17	28.20
	7'	7⅞"	8½"	1494	25.30	27.96	29.58	31.73	33.81
	8'	8"	9"	1870	31.72	33.88	36.00	38.16	40.27
9'	5'	7"	7"	460	15.72	18.13	20.97	22.87	25.15
	6'	7½"	8"	762	20.50	22.93	25.29	27.71	30.01
	7'	7⅞"	8½"	1494	25.55	27.98	30.89	32.76	35.07
	8'	8"	9"	1870	31.97	34.39	36.76	39.18	41.49
10'	5'	7"	7"	460	15.98	18.65	21.25	23.80	26.92
	6'	7½"	8"	762	20.76	23.45	26.07	28.69	31.28
	7'	7⅞"	8½"	1494	25.81	28.50	31.12	33.70	36.94
	8'	8"	9"	1870	32.22	34.91	37.59	40.12	42.76
11'	6'	8"	8"	762	21.39	24.98	27.25	30.11	——
	7'	8"	8½"	1494	26.55	29.53	32.41	35.27	——
	8'	8"	9"	1870	32.49	35.45	38.33	41.19	——
12'	6'	8"	8"	762	21.64	24.93	28.05	31.20	——
	7'	8"	8½"	1494	26.81	30.08	33.21	36.36	——
	8'	8"	9"	1870	32.73	35.99	39.13	42.28	——

® For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10)	1200 #/sq"
Reinforcing Steel	20,000 #/sq"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.:-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT	WING LOCATION	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar (or two bars) of each length						SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing (typ).			SF4 & LF4 STRAIGHT: Longitudinal in bottom of wing footing typ2.			SH1 & LH1 STRAIGHT: Horizontal in back face of wing.			SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. *				SH3 & LH3 STRAIGHT: In back face of wing at top - on slope.			SH4 & LH4 BENT: Dowels thru construction joint at headwall				BAR BENDING DIAGRAM	QUANTITY: REINFORCING STEEL PER WING - LBS.	
					LENGTHS VARY																				LENGTHS VARY														
H	SHORT OR LONG	SIZE	SPACING	NO. REQD	MIN.	MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SIZE	SPACING	NO. REQD	LENGTH	X	Y	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	MIN.	MAX.	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	X	SF1 & SF2 / LF1 & LF2 BENT: Y, LF1 & LF2, ∠ 5° Pin, X	SHORT WING	LONG WING
2'	Short	#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	1'-6"	3'-0"	—	—	—	—	—	—	#3	1	9'-0"	#3	2	8'-6"	#3	12"	1	6'-3"	#3	12"	1	—	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-4"				29.7	45.6
	Long	#3	12"	14	1'-5"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	15'-6"	#3	2	15'-6"	#3	12"	1	12'-8"	#3	12"	1	—	6'-6"	#3	1	12'-11"	#3	12"	2	"	"					
3'	Short	#3	12"	9	2'-1"	5'-3"	0'-10"	1'-2"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	11'-6"	#3	2	10'-6"	#3	12"	1	8'-3"	#3	12"	2	6'-3"	9'-3"	#5	1	9'-8"	#5	12"	3	"	"				37.0	69.5
	Long	#3	12"	18	1'-11"	5'-3"	0'-10"	1'-2"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	19'-6"	#3	2	20'-2"	#3	12"	1	16'-8"	#3	12"	2	12'-6"	6'-6"	#3	1	16'-11"	#3	12"	3	"	"					
4'	Short	#3	12"	11	2'-6"	6'-7"	0'-11"	1'-8"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	13'-0"	#3	3	12'-0"	#3	12"	1	10'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	10'-5"	#3	12"	4	"	"				56.2	107.2
	Long	#3	12"	22	2'-5"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	23'-6"	#3	3	24'-10"	#3	12"	1	20'8"	#3	12"	3	18'-0"	6'-6"	#3	1	21'-0"	#3	12"	4	"	"					
5'	Short	#3	12"	13	2'-11"	7'-11"	1'-0"	2'-0"	2'-0"	6'-0"	#3	12"	3	3'-6"	1'-1"	2'-6"	#3	1	15'-0"	#3	3	14'-0"	#3	12"	2	12'-5"	#4	12"	3	11'-3"	3'-3"	#3	1	12'-1"	#3	12"	5	"	"				78.0	152.2
	Long	#3	12"	26	2'-9"	7'-10"	1'-0"	1'-11"	1'-10"	6'-0"	#3	12"	6	3'-6"	1'-1"	2'-6"	#3	2	27'-6"	#3	6	26'-0"	#3	12"	2	24'-9"	#3	12"	3	18'-6"	6'-6"	#3	2	25'-1"	#3	12"	5	"	"					
6'	Short	#4	12"	15	3'-6"	9'-6"	1'-2"	2'-4"	2'-5"	7'-1"	#3	12"	3	4'-2"	1'-6"	3'-3"	#3	1	17'-0"	#3	3	16'-6"	#3	12"	2	14'-3"	#3	12"	4	12'-3"	3'-3"	#3	1	13'-6"	#3	12"	6	"	"				127.8	253.1
	Long	#4	12"	30	3'-4"	9'-5"	1'-2"	2'-3"	2'-3"	7'-1"	#3	12"	6	4'-2"	1'-6"	3'-3"	#3	2	16'-8"	#3	6	18'-0"	#3	12"	4	15'-2"	#3	12"	6	24'-6"	6'-6"	#3	2	15'-5"	#3	12"	6	2'-8"	1'-9"					
7'	Short	#4	12"	17	3'-11"	10'-10"	1'-3"	2'-10"	2'-9"	8'-1"	#4	12"	3	4'-8"	1'-9"	4'-0"	#4	1	19'-0"	#4	4	18'-0"	#4	12"	2	16'3"	#4	12"	5	15'-3"	3'-3"	#4	1	17'-1"	#4	12"	7	3'-6"	1'-3"				267.0	989.8
	Long	#4	12"	36	3'-9"	10'-9"	1'-3"	2'-8"	2'-7"	8'-1"	#4	12"	12	5'-6"	1'-7"	4'-0"	#4	2	18'-8"	#4	6	20'-6"	#4	12"	4	17'2"	#4	12"	5	*30'-6"	6'-6"	#4	2	17'-5"	#4	12"	7	"	"					
8'	Short	#4	12"	19	4'-6"	12'-5"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	9	6'-6"	1'-10"	4'-9"	#4	2	21'0"	#4	4	20'-6"	#4	12"	3	18'3"	#4	12"	5	15'-3"	3'-3"	#4	1	19'-5"	#4	12"	8	"	"				312.9	622.3
	Long	#4	12"	38	4'-5"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	18	6'-6"	1'-10"	4'-9"	#4	2	20'8"	#4	8	22'9"	#4	12"	6	19'2"	#4	12"	5	*30'-6"	6'-6"	#4	2	19'-6"	#4	12"	8	3'-6"	1'-9"					

NOTE:- Bars for short wing shall be marked with prefix letter "S", while those for long wing shall be marked with letter "L".

* Length without splice. Bars over 28'-6" length may be spliced. (1'-8" lap.)

SH4 & LH4: X, 3/12

NOTE:- Dimensions are to bar centers.

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

Designed By:- W.C.H. 5-13-63 Checked By:-
Drawn By:- W.C.H. 7-26-63 Checked By:- DMT 7-15-64
Quantities By:- W.C.H. 1-7-64

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X303-1

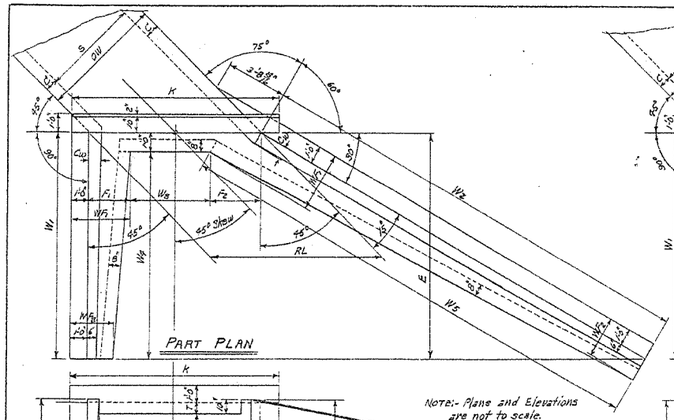
CLASS S CONCRETE

(53)

Reshot 3-8-93

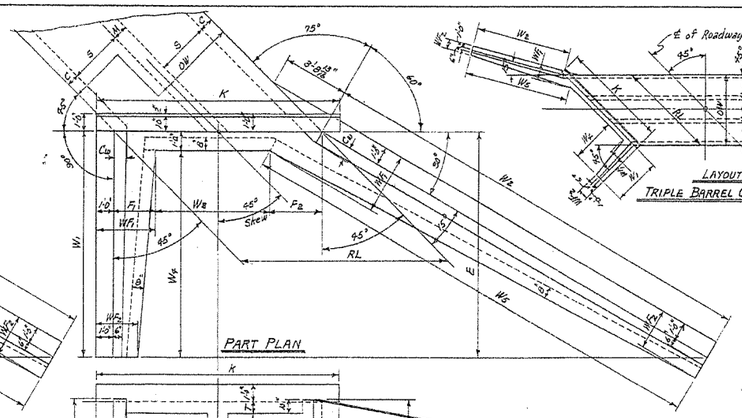
21

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			145	
JOB No.					



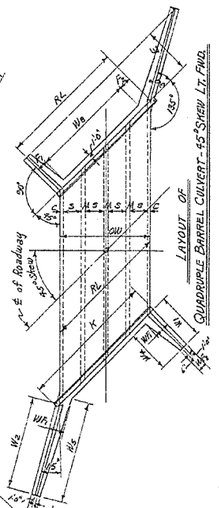
SINGLE BARREL CULVERT - 45° SKEW RIGHT FORWARD.

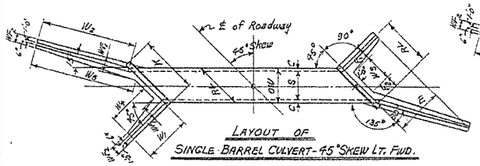
Details of Culvert with 45° Skew Left Forward is reversed, see Layout below.

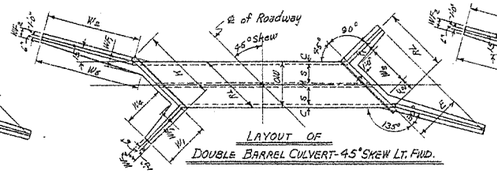


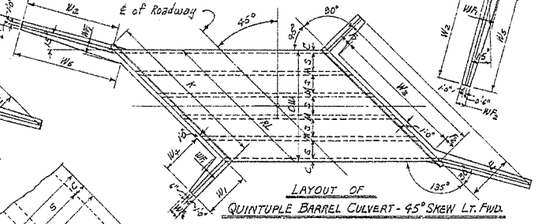
DOUBLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

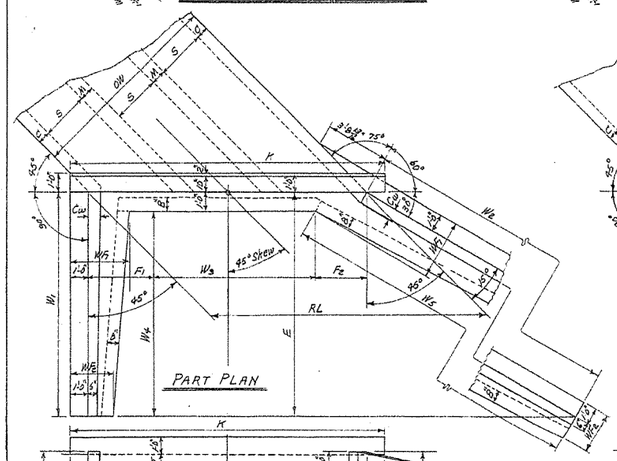
Details of Culvert with 45° Skew Left Forward is reversed, see Layout below.

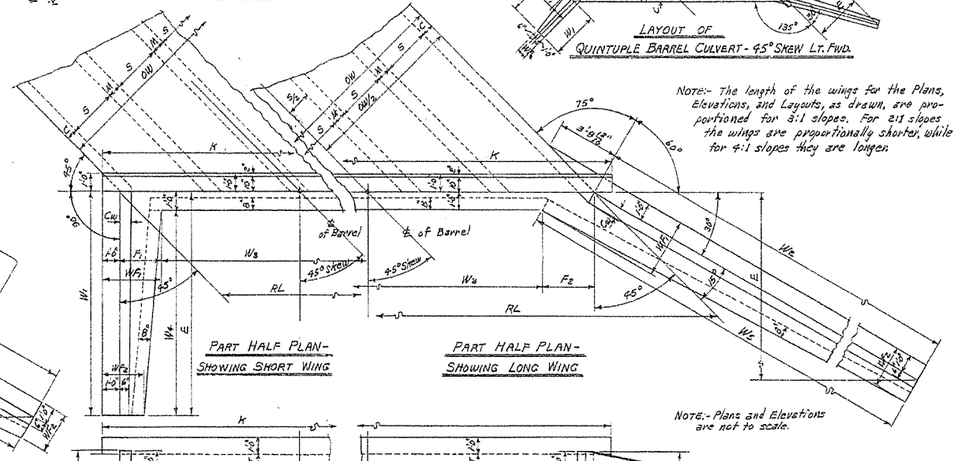


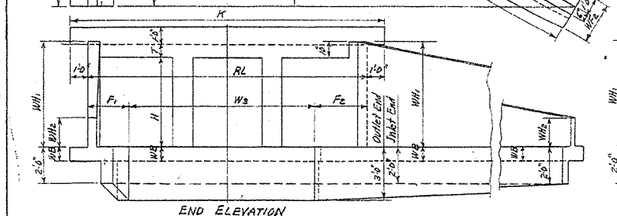






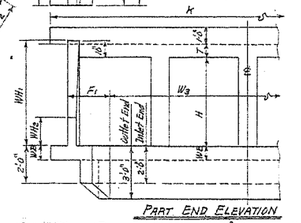






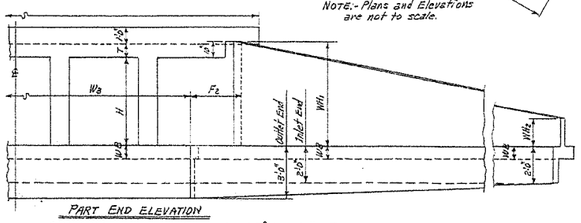
TRIPLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

Details of Culvert with 45° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT - 45° SKEW RT. FWD.

Details of Culvert with 45° Skew Left Forward is reversed, see Layout at above center.



QUINTUPLE BARREL CULVERT - 45° SKEW RT. FWD.

Details of Culvert with 45° Skew Left Forward is reversed, see Layout above.

ROADWAY LENGTH RL = .OW x 1.4142 1

HEADWALL LENGTH K = RL + (2'0")

APRON DIMENSION $W_3 = RL - (F_1 + F_2)$

USE WITH DRAWING No.	CLEAR SPAN S	CLEAR HEIGHT H	SUM OF FOOTING DIMENSIONS $F_1 + F_2$	SINGLE BARREL CULVERT OW	SINGLE BARREL CULVERT RL	SINGLE BARREL CULVERT K	SINGLE BARREL CULVERT W_3	DOUBLE BARREL CULVERT OW	DOUBLE BARREL CULVERT RL	DOUBLE BARREL CULVERT K	DOUBLE BARREL CULVERT W_3	TRIPLE BARREL CULVERT OW	TRIPLE BARREL CULVERT RL	TRIPLE BARREL CULVERT K	TRIPLE BARREL CULVERT W_3	QUADRUPLE BARREL CULVERT OW	QUADRUPLE BARREL CULVERT RL	QUADRUPLE BARREL CULVERT K	QUADRUPLE BARREL CULVERT W_3	QUINTUPLE BARREL CULVERT OW	QUINTUPLE BARREL CULVERT RL	QUINTUPLE BARREL CULVERT K	QUINTUPLE BARREL CULVERT W_3
W-X452-1, W-X453-1 OR W-X454-1. (FOR H=8'0" OR LESS)	4'	2	2'3⅜"	5'6"	7'0⅝"	9'1⅝"	4'3⅝"	9'8"	13'8"	15'8"	11'4⅝"	14'0"	20'3⅛"	22'3⅛"	18'1⅝"	19'0"	26'10⅝"	28'10⅝"	26'1⅞"	23'8"	33'5⅜"	35'5⅜"	31'2⅝"
		3'	3'3¼"	5'0"	"	"	3'7⅝"	9'8"	"	"	10'4⅜"	14'6"	"	"	17'0"	19'0"	"	"	23'7⅛"	23'8"	"	"	30'2⅝"
		4'	4'3⅜"	5'0"	"	"	2'9⅞"	9'8"	"	"	9'4⅜"	14'6"	"	"	16'0"	19'0"	"	"	22'7⅛"	23'8"	"	"	29'2⅝"
		5'	5'3⅜"	5'0"	7'0⅝"	9'0⅝"	1'9⅝"	9'8"	13'8"	15'8"	8'4⅜"	14'6"	20'3⅛"	22'3⅛"	15'0"	19'0"	26'10⅝"	28'10⅝"	21'7⅛"	23'8"	33'5⅜"	35'5⅜"	28'2⅝"
		6'	6'3⅜"	5'2"	7'3⅝"	9'3⅝"	1'0⅝"	9'11"	14'0⅝"	16'0⅝"	7'0⅝"	14'8"	20'8⅞"	22'8"	14'5⅜"	18'5"	27'5⅝"	29'5⅝"	20'1⅝"	24'2"	34'2⅜"	36'2⅜"	27'10⅜"
		3'	3'3¼"	6'0"	9'5⅝"	11'5⅝"	5'2⅝"	11'8"	16'6"	18'6"	13'2⅝"	17'4"	24'4⅝"	26'4⅝"	21'3"	23'0"	32'6⅝"	34'6⅝"	29'3"	28'8"	40'6⅝"	42'6⅝"	37'3⅜"
		4'	4'3⅜"	6'0"	"	"	4'2⅝"	11'8"	"	"	12'2⅝"	17'4"	"	"	20'3"	23'0"	"	"	28'3"	28'8"	"	"	36'3⅜"
	5'	5'	5'3⅜"	6'0"	8'5⅝"	10'5⅝"	3'2⅝"	11'8"	16'6"	18'6"	11'2⅝"	17'4"	24'6⅝"	26'6⅝"	19'3"	23'0"	32'6⅝"	34'6⅝"	27'3"	28'8"	40'6⅝"	42'6⅝"	35'3⅜"
		6'	6'3⅜"	7'2"	10'1⅝"	12'1⅝"	3'10⅝"	13'11"	19'10½"	21'10½"	13'5"	20'9"	29'2⅝"	31'2⅝"	22'11½"	27'5"	38'3⅜"	40'3⅜"	32'4"	34'2"	48'3⅝"	50'3⅝"	42'2⅜"
		7'	7'3⅜"	7'3"	10'3"	12'3"	2'5⅝"	14'1"	19'11"	21'11"	12'1⅜"	20'11"	29'3"	31'3"	21'9⅜"	27'9"	38'3"	40'3"	31'3"	34'8"	48'10⅝"	50'3"	41'1⅞"
		8'	9'3⅜"	7'4"	10'4½"	12'4½"	1'1½"	14'2"	20'0⅝"	22'0⅝"	10'9⅜"	21'0"	29'6⅝"	31'6⅝"	20'5⅜"	28'0"	39'4⅝"	41'4⅝"	30'1"	34'8"	49'0⅝"	51'0⅝"	39'9"
	6'	4'	4'3⅜"	8'0"	11'3⅜"	13'3⅜"	7'0⅝"	15'8"	22'1⅝"	24'1⅝"	17'0½"	23'4"	33'1⅜"	35'1⅜"	28'1⅝"	31'0"	45'0⅛"	47'0⅛"	39'6⅝"	39'8"	56'0⅝"	58'0⅝"	50'5"
		5'	5'3⅜"	9'0"	11'3⅜"	13'3⅜"	6'0⅝"	15'9"	22'1⅝"	24'1⅝"	16'10½"	23'4"	33'1⅜"	35'1⅜"	27'10⅝"	31'0"	45'0⅛"	47'0⅛"	38'6⅝"	39'8"	56'0⅝"	58'0⅝"	49'5"
		6'	6'3⅜"	9'2"	11'6⅝"	13'6⅝"	5'3⅜"	15'11"	22'6⅝"	24'6⅝"	16'2⅝"	23'8"	33'10⅝"	35'10⅝"	27'2⅜"	31'5"	46'1½"	48'1½"	37'11⅝"	39'10"	57'3⅛"	59'3⅛"	48'10⅛"
		7'	7'3⅜"	9'3"	11'8"	13'8"	5'10⅝"	16'2"	22'10"	24'10"	15'4⅜"	23'11"	33'9⅛"	35'9⅛"	26'10⅝"	31'10"	46'5⅜"	48'5⅜"	37'1⅝"	39'11"	57'6⅜"	59'6⅜"	48'2⅛"
		8'	8'3⅜"	8'4"	11'10⅝"	13'10⅝"	2'6⅝"	16'2"	22'10⅝"	24'10⅝"	13'7"	24'0"	33'11⅛"	35'11⅛"	24'6"	31'10"	46'9⅝"	48'9⅝"	35'1"	39'11"	57'10⅝"	59'10⅝"	45'2⅛"
	8'	4'	4'3⅜"	9'0"	12'0⅝"	14'0⅝"	8'5⅛"	17'8"	24'1⅝"	26'1⅝"	20'8⅛"	26'4"	37'1⅜"	39'1⅜"	32'1⅝"	35'0"	49'9⅛"	51'9⅛"	45'3⅝"	44'8"	61'7⅜"	63'7⅜"	57'0⅝"
		5'	5'3⅜"	9'2"	12'1⅛"	14'1⅛"	7'0⅝"	17'8"	24'1⅝"	27'1⅝"	20'0⅝"	26'8"	37'2⅝"	39'1⅝"	32'1⅝"	35'5"	50'1"	52'1"	44'10⅝"	44'8"	62'2⅝"	64'2⅝"	57'2⅝"
		6'	6'3⅜"	9'2"	12'1⅛"	14'1⅛"	6'10⅜"	17'11"	25'1⅛"	27'1⅛"	19'10⅝"	26'8"	37'2⅝"	39'2⅝"	31'5⅝"	35'5"	50'1"	52'1"	43'9⅜"	44'8"	62'2⅝"	64'2⅝"	56'2⅜"
		7'	7'3⅜"	9'3"	12'1"	14'1"	5'11⅜"	18'1"	25'2⅝"	27'2⅝"	19'9⅜"	26'11"	38'0⅝"	40'0⅝"	30'8⅜"	35'9"	50'6⅝"	52'6⅝"	42'8⅝"	44'8"	62'7⅝"	64'7⅝"	55'2⅝"
		8'	9'3⅜"	9'4"	12'2⅝"	14'2⅝"	5'1⅞"	18'2"	25'5⅛"	27'5⅛"	19'5"	27'0"	38'2⅝"	40'2⅝"	29'10⅝"	35'10"	50'11⅝"	52'11⅝"	41'6⅝"	44'8"	63'0⅝"	65'0⅝"	53'10⅝"
	9'	5'	5'3⅜"	10'2"	14'3⅝"	16'3⅝"	9'0⅝"	19'11"	28'2"	30'2"	22'0⅛"	29'8"	41'11⅝"	43'11⅝"	36'0⅝"	39'5"	55'6⅝"	57'6⅝"	50'3⅝"	49'8"	69'2⅝"	71'2⅝"	64'3⅜"
		6'	6'3⅜"	10'3"	14'4"	16'4"	8'3⅜"	20'1"	28'3⅝"	30'3⅝"	22'1⅛"	29'11"	42'3⅜"	44'3⅜"	36'0⅝"	39'6"	55'11⅝"	57'11⅝"	49'8⅜"	49'9"	69'7⅝"	71'7⅝"	63'10⅝"
		7'	7'3⅜"	10'3"	14'4"	16'4"	7'8⅜"	20'1"	28'4⅛"	30'4⅛"	20'7⅝"	29'11"	42'3⅜"	44'3⅜"	34'5⅛"	39'9"	56'2⅝"	58'2⅝"	48'5⅝"	49'9"	70'1⅛"	72'1⅛"	62'5⅛"
		8'	9'3⅜"	10'4"	14'5⅜"	16'5⅜"	5'7⅛"	20'2"	28'6⅛"	30'6⅛"	19'3"	30'0"	42'5⅛"	44'5⅛"	33'2"	39'10"	56'4⅛"	58'4⅛"	47'0⅛"	49'10"	70'2⅝"	72'2⅝"	60'11⅜"
	10'	5'	5'3⅜"	11'2"	15'5⅜"	17'5⅜"	10'1⅝"	21'11"	31'1"	33'1"	25'0⅜"	32'8"	46'2⅝"	48'2⅝"	40'1⅝"	43'5"	61'4⅛"	63'4⅛"	56'1⅛"	55'8"	76'7⅝"	78'7⅝"	71'4"
		6'	6'3⅜"	11'3"	15'4⅛"	17'4⅛"	9'7⅝"	22'1"	31'2⅝"	33'2⅝"	24'8⅛"	32'11"	46'6⅝"	48'6⅝"	39'7⅝"	43'6"	61'7⅝"	63'7⅝"	55'3⅝"	55'9"	76'7⅝"	78'7⅝"	70'2⅝"
		7'	7'3⅜"	11'3"	15'4⅛"	17'4⅛"	8'11⅜"	22'1"	31'2⅝"	33'2⅝"	23'5⅛"	32'11"	46'6⅝"	48'6⅝"	38'10⅝"	43'6"	61'7⅝"	63'7⅝"	54'6⅛"	55'9"	77'2⅛"	79'2⅛"	69'5"
		8'	9'3⅜"	11'4"	15'5⅜"	17'5⅜"	8'3⅜"	22'2"	31'4⅛"	33'4⅛"	22'1"	33'1"	46'8⅛"	48'8⅛"	37'10⅝"	43'7"	61'8⅛"	63'8⅛"	53'7⅛"	55'10"	77'3⅝"	79'3⅝"	68'6½"
	12'	6'	6'3⅜"	12'0"	17'5⅛"	19'5⅛"	11'2⅝"	24'2"	34'2⅝"	36'2"	27'11"	36'0"	50'6"	52'6"	44'7⅜"	47'10"	67'7⅜"	69'7⅜"	62'4⅜"	—	—	—	—
		7'	7'3⅜"	12'0"	"	"	9'8⅛"	24'2"	"	"	24'5"	36'0"	"	"	41'8⅛"	47'10"	"	"	59'0⅝"	—	—	—	—
		8'	9'3⅜"	12'0"	"	"	8'3⅛"	24'2"	"	"	24'11"	36'0"	"	"	41'7⅜"	47'10"	"	"	58'10⅝"	—	—	—	—
		6'	6'3⅜"	13'4"	18'10⅝"	20'10⅝"	12'7⅛"	26'2"	37'0⅝"	39'0"	30'8⅝"	38'4"	55'1⅜"	57'1⅜"	48'0⅝"	51'8"	73'3⅝"	75'3⅝"	67'0⅛"	—	—	—	—
		7'	7'3⅜"	13'4"	"	"	11'1⅜"	26'2"	"	"	29'2⅝"	38'4"	"	"	47'1⅜"	51'10"	"	"	65'5⅛"	—	—	—	—
		8'	9'3⅜"	13'4"	"	"	9'7⅛"	26'2"	"	"	27'10⅝"	38'4"	"	"	46'10⅝"	51'10"	"	"	64'10⅝"	—	—	—	—
	7'	9'	10'3⅝"	8'4"	12'0⅝"	14'0⅝"	1'3"	16'5"	23'8⅝"	25'8⅝"	12'2⅜"	24'4"	34'5"	36'5"	23'3⅞"	32'3"	45'7⅝"	47'7⅝"	34'1⅛"	40'2"	56'9⅜"	58'9⅜"	46'10⅝"
	8'	9'	10'3⅝"	9'4"	13'5⅝"	15'5⅝"	2'8"	18'5"	26'0⅝"	28'0⅝"	15'3⅝"	27'4"	38'7⅜"	40'7⅜"	26'10⅝"	36'3"	51'3⅜"	53'3⅜"	40'1⅜"	45'2"	63'10⅝"	65'10⅝"	53'1⅜"
		10'	12'3⅛"	9'8"	13'8"	15'8"	1'4⅜"	18'8"	26'4⅜"	28'4⅜"	16'1⅜"	27'8"	39'1⅛"	41'1⅛"	26'10⅝"	36'6"	51'10⅜"	53'10⅜"	39'7"	45'8"	64'2"	66'2"	52'3⅜"
	9'	9'	10'3⅝"	10'6"	14'10⅝"	16'10⅝"	4'1"	20'5"	28'10⅝"	30'10⅝"	18'1⅝"	30'6"	43'2⅝"	45'2⅝"	32'1⅜"	40'3"	56'11⅜"	58'11"	46'1⅜"	50'2"	70'1⅜"	72'1⅜"	60'2⅝"
		10'	12'3⅝"	10'8"	15'1"	17'1"	2'3⅜"	20'8"	29'2⅝"	31'2⅝"	18'5⅜"	30'10"	43'6⅜"	45'6⅜"	32'5⅝"	40'8"	57'3"	59'3"	46'5⅜"	50'6"	71'0⅝"	73'0⅝"	60'7⅛"
		11'	13'3⅛"	10'10"	15'3⅜"	17'3⅜"	1'11⅝"	20'10"	29'5⅛"	31'5⅛"	18'8⅝"	30'10"	43'10⅝"	45'10⅝"	32'9⅞"	40'10"	57'5"	59'5"	46'9⅞"	50'10"	71'3⅛"	73'3⅛"	60'11⅝"
	10'	9'	10'3⅝"	11'4"	16'3⅝"	18'3⅝"	5'4"	22'5"	31'8⅜"	33'8⅜"	20'11⅝"	33'4"	47'1⅛"	49'1⅛"	36'4⅜"	44'3"	62'7"	64'7"	51'9⅜"	55'2"	78'0⅝"	80'0⅝"	67'3"
		10'	12'3⅝"	11'8"	16'8"	18'8"	4'2⅜"	22'10"	32'4⅝"	34'4⅝"	19'9½"	33'8"	47'7⅞"	49'7⅞"	35'4⅛"	43'8"	61'8"	63'8"	50'4⅛"	54'8"	77'3⅝"	79'3⅝"	66'6"
		11'	13'3⅝"	11'10"	16'8⅜"	18'8⅜"	2'11⅝"	22'10"	32'5⅜"	34'5⅜"	18'6⅝"	33'10"	47'10⅜"	49'10⅜"	34'1"	44'10"	63'4⅜"	65'5"	49'11⅝"	55'10"	78'10⅜"	80'11"	65'8⅝"
		12'	15'3⅜"	12'0"	16'11⅞"	18'11⅞"	1'8⅝"	23'1"	32'10⅝"	34'10⅝"	17'3"	34'1"	48'1"	50'1"	32'9⅜"	45'1"	63'7⅜"	65'7⅜"	48'4½"	56'1"	79'6⅜"	81'6⅜"	63'11⅛"
	11'	9'	10'3⅝"	12'4"	17'8⅝"	19'8⅝"	6'10⅜"	24'5"	33'8⅝"	35'8⅝"	23'4⅛"	34'8"	48'3⅝"	50'3⅝"	37'6⅜"	45'10"	64'5⅛"	66'5⅛"	53'6⅜"	55'10"	79'1⅝"	81'1⅝"	67'4⅜"
		10'	12'3⅝"	12'8"	17'11"	19'11"	5'7⅝"	24'5"	33'9⅛"	35'9⅛"	21'4⅝"	34'8"	48'4⅛"	50'4⅛"	36'3"	45'10"	64'5⅝"	66'5⅝"	52'10⅝"	55'10"	79'2⅛"	81'2⅛"	66'11⅝"
		11'	13'3⅝"	12'10"	18'1⅜"	20'1⅜"	4'4⅛"	24'10"	35'1⅜"	37'1⅜"	21'4⅝"	34'10"	49'1⅝"	51'1⅝"	35'1⅜"	46'0"	65'6⅛"	67'6⅛"	52'3⅝"	55'11"	80'3⅛"	82'3⅛"	67'6⅛"
		12'	15'3⅜"	13'0"	18'4⅝"	20'4⅝"	3'1⅜"	25'0"	35'4⅝"	37'4⅝"	20'1"	37'0"	52'3⅜"	54'3⅜"	39'0⅝"	49'3"	69'3⅜"	71'3⅜"	56'10⅝"	59'0"	84'5⅛"	86'5⅛"	71'10⅝"
	12'	9'	10'3⅝"	13'4"	19'1⅛"	21'1"	8'3⅜"	24'5"	33'10⅝"	35'10⅝"	22'7"	34'9"	48'5⅛"	50'5⅛"	36'4⅜"	45'11"	64'6⅝"	66'6⅝"	52'9⅜"	55'10"	79'3⅛"	81'3⅛"	66'10⅝"
		10'	12'3⅝"	13'8"	19'2⅝"	21'2⅝"	7'0⅜"	24'8"	34'0⅜"	36'0⅜"	23'5⅝"	34'10"	48'6⅜"	50'6⅜"	36'5⅝"	46'0"	64'7⅛"	66'7⅛"	52'10⅝"	56'0"	79'4⅜"	81'4⅜"	67'0⅝"
		11'	13'3⅝"	13'10"	19'4⅝"	21'4⅝"	5'10⅜"	24'10"	34'1⅝"	36'1⅝"	24'2⅝"	35'0"	48'7⅝"	50'7⅝"	37'1⅜"	46'1"	64'8⅛"	66'8⅛"	53'0⅝"	56'1"	79'5⅜"	81'5⅜"	67'2⅝"
		12'	15'3⅜"	14'0"	19'5⅝"	21'5⅝"	4'6⅜"	25'0"	34'2⅝"	36'2⅝"	22'11"	40'0"	54'6⅝"	56'6⅝"	41'3⅜"	53'0"	74'11⅝"	76'11⅝"	59'8⅝"	—	—	—	—

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 45° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X452-1 or W-X452-2	W-X453-1 or W-X453-2	W-X454-1 or W-X454-2.

NOTE:-

This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-145X-0	R-245X-01	R-345X-01	R-445X-01	R-545X-01
	R-245X-02	R-345X-02	R-445X-02	R-545X-02
R-145X-1	R-245X-1	R-345X-1	R-445X-1	
	R-245X-2	R-345X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 45° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

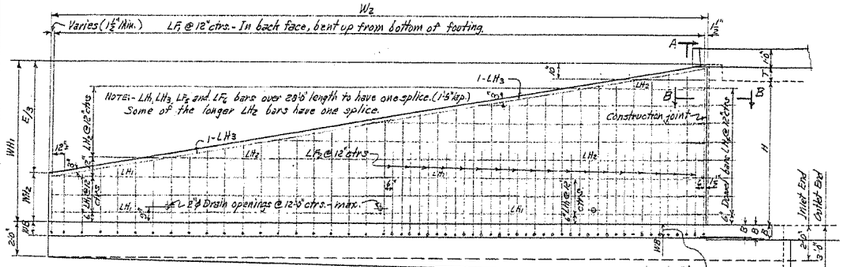
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES — ALL DEPTHS OF COVER H = 2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'

STANDARD DRAWING No. W-X45

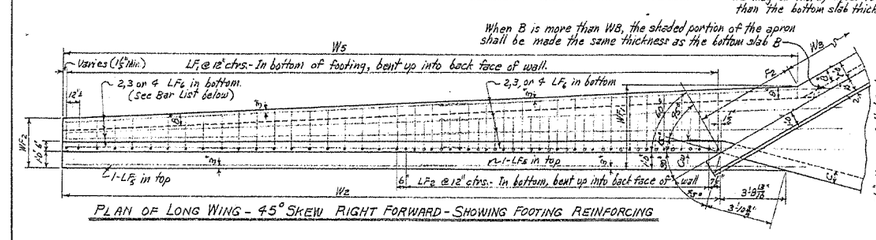
Designed by:- W.C.M. 5-16-63 Checked by:-
Drawn by:- W.C.H. 6-15-64 Checked by:- J.E.M. 6-23-64
Quantities by:- Checked by:-

Reshot 3-8-93 352

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			146	
JOB No.					

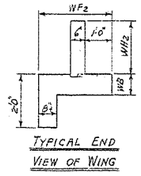


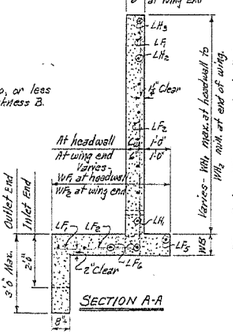
REAR ELEVATION OF LONG WING - 45° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

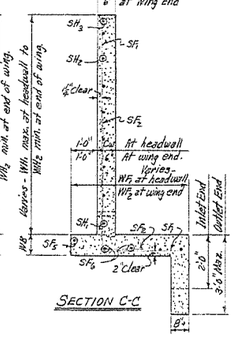


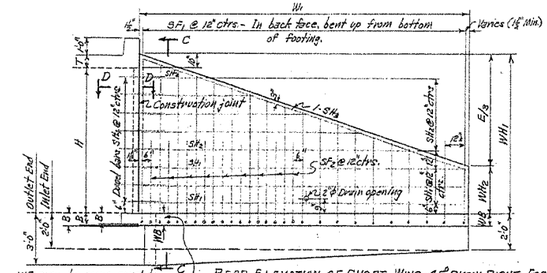
PLAN OF LONG WING - 45° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

When B is more than W8, the shaded portion of the apron shall be made the same thickness as the bottom slab B

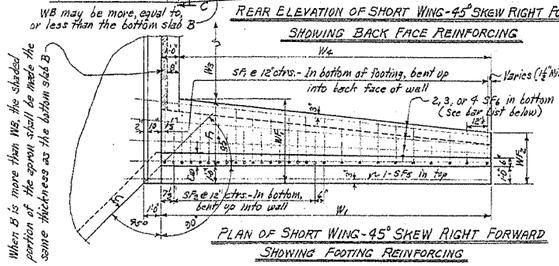




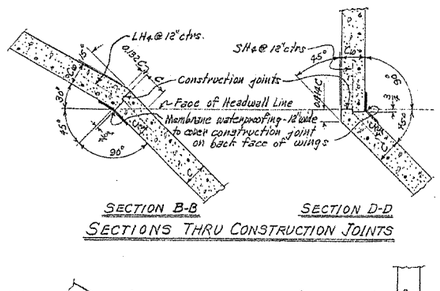




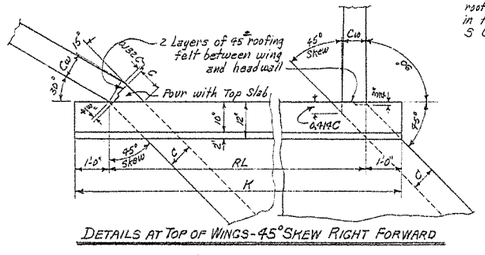
REAR ELEVATION OF SHORT WING - 45° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING



PLAN OF SHORT WING - 45° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING



SECTIONS THRU CONSTRUCTION JOINTS

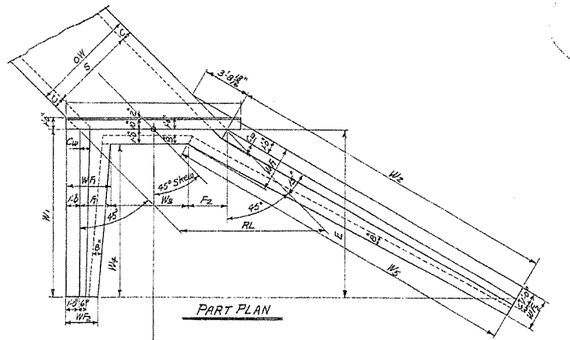


NOTE:- Payment for the membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

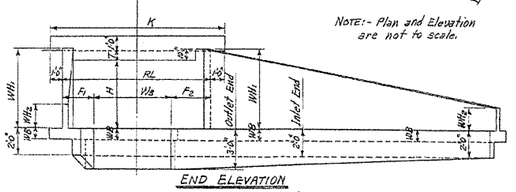
REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT H=0	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING PARALLEL WITH HEADWALL SHORT WING	FOOTING PARALLEL WITH HEADWALL LONG WING	PERPENDICULAR DIST. FROM HWL TO END OF WING	LENGTHS OF WINGWALLS SHORT WING	LENGTHS OF WINGWALLS LONG WING	INSIDE FOOTING DIMENSION SHORT WING	INSIDE FOOTING DIMENSION LONG WING	* QUANTITY PER WING CLASS S CONCRETE INLET END SHORT WING	* QUANTITY PER WING CLASS S CONCRETE INLET END LONG WING	* QUANTITY PER WING CLASS S CONCRETE OUTLET END SHORT WING	* QUANTITY PER WING CLASS S CONCRETE OUTLET END LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
2'	7"	6"	2'-1 0"	0'-8"	2'-6"	2'-0"	1'-6"	0'-11 5/8"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3 3/8"	0.793	1.572	0.827	1.791
3'	7"	6"	3'-1 0"	1'-0"	2'-9"	2'-1 1/2"	1'-8"	1'-2 5/8"	8'-6"	8'-6"	17'-0"	7'-6"	17'-1 0 5/8"	1.120	2.369	1.229	2.590
4'	7"	6"	4'-1 0"	1'-6"	3'-1 0"	2'-3"	2'-0"	2'-3 5/8"	10'-6"	10'-6"	21'-0"	9'-6"	22'-5 1/2"	1.547	3.295	1.700	3.577
5'	7"	6"	5'-1 0"	1'-9"	3'-4"	2'-4 1/2"	2'-4"	2'-11 1/2"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0 5/8"	2.088	4.367	2.291	4.705
		7"	5'-1 0"	1'-9"	3'-4"	2'-4 1/2"	2'-4"	2'-11 1/2"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0 5/8"	2.166	4.551	2.325	4.889
6'	8'	7"	6'-1 0"	2'-0"	3'-8"	2'-6"	2'-8"	3'-2 7/8"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7 1/4"	2.899	6.055	3.078	6.460
		7 1/2"	6'-1 0"	2'-0"	3'-8"	2'-6"	2'-8"	3'-2 7/8"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7 1/4"	2.952	6.180	3.135	6.575
		8"	6'-1 0"	2'-0"	3'-8"	2'-6"	2'-8"	3'-2 7/8"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7 1/4"	3.009	6.305	3.192	6.700
7'	8 1/2"	7 1/2"	7'-1 0"	2'-3"	4'-1"	2'-7 1/2"	3'-0"	3'-6 7/8"	16'-6"	16'-6"	33'-0"	15'-6"	36'-1 5/8"	3.794	7.930	4.003	8.385
		8"	7'-1 0"	2'-3"	4'-1"	2'-7 1/2"	3'-0"	3'-6 7/8"	16'-6"	16'-6"	33'-0"	15'-6"	36'-1 5/8"	3.870	8.093	4.078	8.569
8'	9"	8"	8'-1 0"	2'-8"	4'-8"	2'-9"	3'-6"	3'-10 3/8"	18'-6"	18'-6"	37'-0"	17'-6"	41'-0 1/8"	4.855	10.196	5.098	10.651

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W5.



Note:- Plan and Elevation are not to scale.



SINGLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

Details of Culvert with 45° Skew Left Forward is reversed, see Drawing No. W-X45.

TYPICAL WING DETAILS

NOTE:-
For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X45.
For values of RL, K and W5 for each box, see above Std. also.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric, shall be applied to the back face of wing to cover the construction joints in wings.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - WINGS FOR 4	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
4'	2'	6"	7"	192	6.15	7.50	8.86	10.22	11.58
	3'	6"	7"	214	8.66	9.79	11.14	12.50	13.86
	4'	6"	7"	328	11.18	12.98	13.86	15.20	16.54
	5'	6"	7"	468	14.25	15.60	16.96	18.32	19.68
	6'	7"	8"	763	19.23	20.62	22.02	23.41	24.81
5'	3'	6"	7"	214	8.76	10.38	12.03	13.67	15.32
	4'	6"	7"	328	11.93	13.07	14.72	16.37	18.02
	5'	6"	7"	463	14.55	16.19	17.84	19.49	21.13
	6'	7"	8"	763	19.53	21.21	22.90	24.59	26.28
	7'	7½"	8½"	1925	26.98	28.69	28.91	30.14	31.86
6'	3'	6"	7"	214	9.03	10.99	12.91	14.86	16.79
	4'	6"	7"	328	11.75	13.49	15.60	17.54	19.48
	5'	6"	7"	463	14.85	16.80	18.72	20.68	22.60
	6'	7"	8"	763	19.83	21.82	23.79	25.78	27.74
	7'	7½"	8½"	1925	25.28	27.30	29.31	31.33	33.35
	8'	8"	9"	1872	31.70	33.74	36.75	37.79	39.81
7'	4'	6"	7"	328	12.04	14.31	15.54	18.81	21.02
	5'	6"	7"	463	15.15	17.93	19.65	21.93	24.13
	6'	7"	8"	763	20.14	22.99	24.99	26.99	28.24
	7'	7½"	8½"	1925	25.59	27.91	30.21	32.53	34.83
	8'	8"	9"	1872	32.02	34.36	36.66	38.99	41.31
8'	4'	6"	7"	328	12.35	14.95	17.49	20.08	22.57
	5'	7"	7"	463	16.05	18.47	21.23	23.86	26.37
	6'	7"	8"	763	20.95	23.07	25.66	28.26	30.77
	7'	7½"	8½"	1925	25.90	28.54	31.18	33.78	36.32
	8'	8"	9"	1872	32.33	34.97	37.56	40.21	42.80
9'	5'	7"	7"	463	16.37	19.32	22.18	25.02	27.81
	6'	7½"	8"	763	21.14	24.13	27.02	29.89	32.81
	7'	7½"	8½"	1925	26.21	29.18	32.08	34.96	37.84
	8'	8"	9"	1872	32.63	35.61	38.51	41.37	44.29
10'	5'	7"	7"	463	16.69	19.96	23.14	26.27	29.47
	6'	7½"	8"	763	21.68	24.72	27.99	31.13	34.34
	7'	7½"	8½"	1925	26.53	29.82	33.09	36.19	39.42
	8'	8"	9"	1872	32.95	34.25	39.96	42.42	45.96
11'	6'	8"	8"	763	22.16	25.23	29.35	32.84	——
	7'	8"	8½"	1925	27.38	30.89	34.51	38.01	——
	8'	8"	9"	1872	33.86	36.91	40.98	43.33	——
12'	6'	8"	8"	763	22.60	26.51	30.83	34.19	——
	7'	8"	8½"	1925	27.66	31.66	35.69	39.35	——
	8'	8"	9"	1872	33.58	37.58	41.41	45.27	——

⊕ For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.
REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.
CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.
UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

NOTE:-
This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-145X-0	R-245X-01	R-345X-01	R-445X-01	R-545X-01
	R-245X-02	R-345X-02	R-445X-02	R-545X-02
R-145X-1	R-245X-1	R-345X-1	R-445X-1	
	R-245X-2	R-345X-2		

BAR LIST FOR ONE SHORT AND ONE LONG WING — 2 EACH REQUIRED

CLEAR HEIGHT	WING	LOCATION	SF1 & LF1 BENT In bottom of footing, bent up into back face of wing. One bar (or two bars) of each length.							SF2 & LF2 BENT In bottom of footing, bent up into back face of wing. Rft. with F1 bars						SF3 & LF3 STRAIGHT Longitudinal at top of wing footing heel.			SF4 & LF4 STRAIGHT Longitudinal in bottom of wing footing toe.			SH1 & LH1 STRAIGHT Horizontal in back face of wing.			SH2 & LH2 STRAIGHT Horizontal in back face of wing One bar of each length. ⁂						SH3 & LH3 STRAIGHT In back face of wing at top - on slope			SH4 & LH4 BENT Dowels thru construction joint at headwall.				BAR BENDING DIAGRAM	QUANTITY REINFORCING STEEL PER WING - LBS.	
H	WING	LOCATION	Short or Long	SIZE	SPACING	No. REQD	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SIZE	SPACING	No. REQD	LENGTH	X	Y	SIZE	No. REQD	LENGTH	SIZE	No. REQD	LENGTH	SIZE	SPACING	No. REQD	LENGTH	SIZE	SPACING	No. REQD	LENGTH	SIZE	No. REQD	LENGTH	SIZE	SPACING	No. REQD	LENGTH	X		SHORT WING	LONG WING
2'	Short	#3	12"	7	1'-0"	3'-11"	0'-8"	1'-0"	1'-0"	3'-6"	——	——	#3	12"	1	8'-0"	#3	1	6'-3"	#3	12"	1	——	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-9"	SF1 & SF3 LF1 & LF2 3" Pin	REINFORCING STEEL PER WING - LBS.						

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
8	ARK.			147	
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

SECTION & BAR GROUP	LENGTH OF SECTIONS	DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars STRAIGHT: In Top end Bottom Slabs of Barrel. & Add'l. in Apron and Headwall - Each. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
SECTION "A" & BAR GROUP "A"	D	S	H						
3:1 = 22'-0" 4:1 = 32'-0"	10'-0" TO 0'		5'		#5	12"	48	68	7'-9"
		1 @ 7'	6'				48	68	7'-11"
			7'				48	68	8'-0"
			8'				48	68	8'-1"
			9'				48	68	8'-3"
			6'		#6	12"	48	68	8'-11"
		1 @ 8'	7'				48	68	9'-0"
			8'				48	68	9'-1"
			9'				48	68	9'-3"
			10'				48	68	9'-5"
			7'		#6	12"	52	74	10'-0"
		1 @ 8'	8'				52	74	10'-1"
			9'				52	74	10'-3"
			10'				52	74	10'-5"
			11'				52	74	10'-7"
			8'		#7	12"	48	68	11'-1"
		1 @ 9'	9'				48	68	11'-3"
			10'				48	68	11'-5"
			11'				48	68	11'-7"
			12'				48	68	11'-9"
SECTION "B" & BAR GROUP "B"									
3:1 = 11'-0" 4:1 = 16'-0"	15'-0" TO 10'-0"		6'		#6	12"	24	36	7'-9"
		1 @ 7'	7'				24	36	7'-11"
			8'				24	36	8'-0"
			9'				24	36	8'-1"
			6'		#7	12"	22	32	8'-11"
		1 @ 8'	7'				22	32	9'-0"
			8'				22	32	9'-1"
			9'				22	32	9'-3"
			10'				22	32	9'-5"
			7'		#7	12"	22	32	10'-0"
		1 @ 8'	8'				22	32	10'-1"
			9'				22	32	10'-3"
			10'				22	32	10'-5"
			11'				22	32	10'-7"
			8'		#8	12"	22	32	11'-1"
		1 @ 9'	9'				22	32	11'-3"
			10'				22	32	11'-5"
			11'				22	32	11'-7"
			12'				22	32	11'-9"
SECTION "C" & BAR GROUP "C"									
3:1 = 16'-0" 4:1 = 16'-0"	20'-0" TO 15'-0"		6'		#7	12"	20	30	7'-9"
		1 @ 7'	7'				20	30	7'-11"
			8'				20	30	8'-0"
			9'				20	30	8'-1"
			6'		#8	12"	22	32	8'-11"
		1 @ 8'	7'				22	32	9'-0"
			8'				22	32	9'-1"
			9'				22	32	9'-3"
			10'				22	32	9'-5"
			7'		#8	12"	22	32	10'-1"
		1 @ 9'	8'				22	32	10'-3"
			9'				22	32	10'-5"
			10'				22	32	10'-7"
			11'				22	32	10'-9"
			8'		#9	12"	22	32	11'-1"
		1 @ 9'	9'				22	32	11'-3"
			10'				22	32	11'-5"
			11'				22	32	11'-7"
			12'				22	32	11'-9"
SECTION "D" & BAR GROUP "D"									
3:1 = 11'-0" 4:1 = 16'-0"	25'-0" TO 20'-0"		6'		#7	12"	22	32	10'-1"
		1 @ 7'	7'				22	32	10'-3"
			8'				22	32	10'-5"
			9'				22	32	10'-7"
			10'				22	32	10'-9"
			7'		#8	12"	22	32	11'-1"
		1 @ 8'	8'				22	32	11'-3"
			9'				22	32	11'-5"
			10'				22	32	11'-7"
			11'				22	32	11'-9"
			8'		#9	12"	22	32	12'-1"
		1 @ 9'	9'				22	32	12'-3"
			10'				22	32	12'-5"
			11'				22	32	12'-7"
			12'				22	32	12'-9"
SECTION "E" & BAR GROUP "E"									
3:1 = 11'-0" 4:1 = 16'-0"	30'-0" TO 25'-0"		6'		#7	12"	20	30	7'-9"
		1 @ 7'	7'				20	30	7'-11"
			8'				20	30	8'-0"
			9'				20	30	8'-1"
			6'		#8	12"	22	32	8'-11"
		1 @ 8'	7'				22	32	9'-0"
			8'				22	32	9'-1"
			9'				22	32	9'-3"
			10'				22	32	9'-5"
			7'		#8	12"	22	32	10'-1"
		1 @ 9'	8'				22	32	10'-3"
			9'				22	32	10'-5"
			10'				22	32	10'-7"
			11'				22	32	10'-9"
			8'		#9	12"	22	32	11'-1"
		1 @ 9'	9'				22	32	11'-3"
			10'				22	32	11'-5"
			11'				22	32	11'-7"
			12'				22	32	11'-9"

SECTION & BAR GROUP	"b" bars BENT - See Diagram at Right. Alternate with "a" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X
SECTION "A" & BAR GROUP "A"						
3:1 = 22'-0" 4:1 = 32'-0"	#5	12"	44	64	8'-10"	7'-8"
			44	64	9'-0"	7'-10"
			44	64	9'-1"	7'-11"
			44	64	9'-3"	8'-0"
			44	64	9'-4"	8'-2"
	#6	12"	44	64	10'-0"	8'-10"
			44	64	10'-1"	8'-11"
			44	64	10'-3"	9'-0"
			44	64	10'-4"	9'-2"
			44	64	10'-6"	9'-3"
	#7	12"	44	64	10'-8"	9'-5"
			44	64	10'-9"	9'-6"
			44	64	10'-11"	9'-8"
			44	64	11'-0"	9'-9"
			44	64	11'-2"	9'-11"
SECTION "B" & BAR GROUP "B"						
3:1 = 11'-0" 4:1 = 16'-0"	#6	12"	22	32	10'-0"	8'-10"
			22	32	10'-1"	8'-11"
			22	32	10'-3"	9'-0"
			22	32	10'-4"	9'-2"
			22	32	10'-6"	9'-3"
	#7	12"	22	32	10'-8"	9'-5"
			22	32	10'-9"	9'-6"
			22	32	10'-11"	9'-8"
			22	32	11'-0"	9'-9"
			22	32	11'-2"	9'-11"
	#8	12"	22	32	11'-4"	10'-0"
			22	32	11'-5"	10'-2"
			22	32	11'-7"	10'-3"
			22	32	11'-9"	10'-5"
			22	32	11'-11"	10'-6"
SECTION "C" & BAR GROUP "C"						
3:1 = 11'-0" 4:1 = 16'-0"	#7	12"	20	30	9'-9"	7'-11"
			20	30	9'-11"	8'-0"
			20	30	10'-0"	8'-2"
			20	30	10'-2"	8'-3"
			20	30	10'-4"	8'-5"
	#8	12"	22	32	10'-6"	8'-6"
			22	32	10'-8"	8'-8"
			22	32	10'-9"	8'-9"
			22	32	10'-11"	8'-11"
			22	32	11'-1"	9'-0"
	#9	12"	22	32	11'-3"	9'-2"
			22	32	11'-4"	9'-3"
			22	32	11'-6"	9'-5"
			22	32	11'-8"	9'-6"
			22	32	11'-9"	9'-8"
SECTION "D" & BAR GROUP "D"						
3:1 = 11'-0" 4:1 = 16'-0"	#7	12"	22	32	10'-1"	8'-3"
			22	32	10'-3"	8'-5"
			22	32	10'-4"	8'-6"
			22	32	10'-6"	8'-8"
			22	32	10'-8"	8'-9"
	#8	12"	22	32	10'-9"	8'-11"
			22	32	10'-11"	9'-0"
			22	32	11'-1"	9'-2"
			22	32	11'-2"	9'-3"
			22	32	11'-4"	9'-5"
	#9	12"	22	32	11'-6"	9'-6"
			22	32	11'-7"	9'-8"
			22	32	11'-9"	9'-9"
			22	32	11'-11"	9'-11"
			22	32	12'-0"	10'-0"
SECTION "E" & BAR GROUP "E"						
3:1 = 11'-0" 4:1 = 16'-0"	#7	12"	20	30	9'-9"	7'-11"
			20	30	9'-11"	8'-0"
			20	30	10'-0"	8'-2"
			20	30	10'-2"	8'-3"
			20	30	10'-4"	8'-5"
	#8	12"	22	32	10'-6"	8'-6"
			22	32	10'-8"	8'-8"
			22	32	10'-9"	8'-9"
			22	32	10'-11"	8'-11"
			22	32	11'-1"	9'-0"
	#9	12"	22	32	11'-3"	9'-2"
			22	32	11'-4"	9'-3"
			22	32	11'-6"	9'-5"
			22	32	11'-8"	9'-6"
			22	32	11'-9"	9'-8"

SECTION & BAR GROUP	"c" bars STRAIGHT: In Top end Bottom Slabs of Barrel. Alternate with "a" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
SECTION "A" & BAR GROUP "A"					
3:1 = 22'-0" 4:1 = 32'-0"	#5	12"	44	64	8'-10"
			44	64	9'-0"
			44	64	9'-1"
			44	64	9'-3"
			44	64	9'-4"
	#6	12"	44	64	10'-0"
			44	64	10'-1"
			44	64	10'-3"
			44	64	10'-4"
			44	64	10'-6"
	#7	12"	44	64	10'-8"
			44	64	10'-9"
			44	64	10'-11"
			44	64	11'-0"
			44	64	11'-2"
SECTION "B" & BAR GROUP "B"					
3:1 = 11'-0" 4:1 = 16'-0"	#6	12"	22	32	10'-0"
			22	32	10'-1"
			22	32	10'-3"
			22	32	10'-4"
			22	32	10'-6"
	#7	12"	22	32	10'-8"
			22	32	10'-9"
			22	32	10'-11"
			22	32	11'-0"
			22	32	11'-2"
	#8	12"	22	32	11'-4"
			22	32	11'-5"
			22	32	11'-7"
			22	32	11'-9"
			22	32	11'-11"
SECTION "C" & BAR GROUP "C"					
3:1 = 11'-0" 4:1 = 16'-0"	#7	12"	20	30	9'-9"
			20	30	9'-11"
			20	30	10'-0"
			20	30	10'-2"
			20	30	10'-4"
	#8	12"	22	32	10'-6"
			22	32	10'-8"
			22	32	10'-9"
			22	32	10'-11"
			22	32	11'-1"
	#9	12"	22	32	11'-3"
			22	32	11'-4"
			22	32	11'-6"
			22	32	11'-8"
			22	32	11'-9"
SECTION "D" & BAR GROUP "D"					
3:1 = 11'-0" 4:1 = 16'-0"	#7	12"	22	32	10'-1"
			22	32	10'-3"
			22	32	10'-4"
			22	32	10'-6"
			22	32	10'-8"
	#8	12"	22	32	10'-9"
			22	32	10'-11"
			22	32	11'-1"
			22	32	11'-2"
			22	32	11'-4"
	#9	12"	22	32	11'-6"
			22	32	11'-7"
			22	32	11'-9"
			22	32	11'-11"
			22	32	12'-0"
SECTION "E" & BAR GROUP "E"					
3:1 = 11'-0" 4:1 = 16'-0"	#7	12"	20	30	9'-9"
			20	30	9'-11"
			20	30	10'-0"
			20	30	10'-2"
			20	30	10'-4"
	#8	12"	22	32	10'-6"
			22	32	10'-8"
			22	32	10'-9"
			22	32	10'-11"
			22	32	11'-1"
	#9	12"	22	32	11'-3"
			22	32	11'-4"
			22	32	11'-6"
			22	32	11'-8"
			22	32	11'-9"

SECTION & BAR GROUP	"d" bars Longitudinal in Top Slab of Barrel SIZE	SPACING	NO. REQ'D	LENGTH
SECTION "A" & BAR GROUP "A"				
3:1 = 22'-0" 4:1 = 32'-0"	#4	12"	8	33'-3" for 32'-0" Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "B" & BAR GROUP "B"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 32'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "C" & BAR GROUP "C"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 33'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "D" & BAR GROUP "D"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 33'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "E" & BAR GROUP "E"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 33'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	

SECTION & BAR GROUP	"e" bars. Longitudinal in Bottom Slab of Barrel SIZE	SPACING	NO. REQ'D	LENGTH
SECTION "A" & BAR GROUP "A"				
3:1 = 22'-0" 4:1 = 32'-0"	#4	12"	8	33'-3" for 32'-0" Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "B" & BAR GROUP "B"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 32'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "C" & BAR GROUP "C"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 33'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "D" & BAR GROUP "D"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 33'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	
SECTION "E" & BAR GROUP "E"				
3:1 = 11'-0" 4:1 = 16'-0"	#4	12"	8	33'-3" for 33'-0" Length Section
			8	
			8	
			8	
			8	
	#5	12"	9	
			9	
			9	
			9	
			9	
	#6	12"	9	
			10	
			10	
			10	
			10	
	#7	12"	10	
			10	
			10	
			10	
			10	

NOTE:- Bars for each Section to be marked with the Section letter thus for Section B, the bars should be marked Ba, Bb, Bd, Be and Bf.

Designed By: W.C.H. 7-18-62. Checked By:- KMS 7-25-62
Drawn By: W.C.H. 8-3-62. Checked By:- KMS 8-10-62
Quantities By: W.C.H. 8-1-62. Checked By:- KMS 8-10-62

DIMENSIONS

BARREL DIMENSIONS

MAX. DESIGN DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT
D	S	H	A	OW	T	C	B	OH
SECTION "A" - 10'-0"	5'	35	8'-0"		7"			6'-4½"
	6'	42	8'-2"		7½"			7'-4½"
1 @ 7'	7'	49	8'-3"	8'-0"	8"	6"	7½"	8'-4½"
	8'	56	8'-4"		8½"			9'-4½"
	9'	63	8'-6"		9"			10'-4½"
	6'	48	9'-2"		7"			7'-6"
	7'	56	9'-3"		7½"			8'-6"
1 @ 8'	8'	64	9'-4"	8'-6"	8"	6"	8½"	9'-6"
	9'	72	9'-6"		8½"			10'-6"
	10'	80	9'-8"		9"			11'-6"
	7'	63	10'-3"		7½"			8'-8"
	8'	72	10'-4"		8"			9'-8"
1 @ 9'	9'	81	10'-6"	9'-8"	8½"	6"	9½"	10'-8"
	10'	90	10'-8"		9"			11'-8"
	11'	99	10'-10"		9½"			12'-8"
	8'	80	11'-4"		8½"			9'-10"
1 @ 10'	9'	90	11'-6"	9'-10"	9"	6"	10"	10'-10"
	10'	100	11'-8"		9½"			11'-10"
	11'	110	11'-10"		10"			12'-10"
	12'	120	12'-0"		10½"			13'-10"
SECTION "B" - 15'-0"	5'	35	8'-0"		6"			6'-6"
	6'	42	8'-2"		6½"			7'-6"
1 @ 7'	7'	49	8'-3"	8'-3"	7½"	6"	9½"	8'-6"
	8'	56	8'-4"		8"			9'-6"
	9'	63	8'-6"		8½"			10'-6"
	6'	48	9'-2"		7"			7'-8"
	7'	56	9'-3"		7½"			8'-8"
1 @ 8'	8'	64	9'-4"	8'-8"	8"	6"	10"	9'-8"
	9'	72	9'-6"		8½"			10'-8"
	10'	80	9'-8"		9"			11'-8"
	7'	63	10'-3"		7½"			8'-10"
	8'	72	10'-4"		8"			9'-10"
1 @ 9'	9'	81	10'-6"	9'-10"	8½"	6"	10½"	10'-10"
	10'	90	10'-8"		9"			11'-10"
	11'	99	10'-10"		9½"			12'-10"
	8'	80	11'-4"		8½"			9'-12"
1 @ 10'	9'	90	11'-6"	9'-12"	9"	6"	11"	10'-12"
	10'	100	11'-8"		9½"			11'-12"
	11'	110	11'-10"		10"			12'-12"
	12'	120	12'-0"		10½"			13'-12"
SECTION "C" - 20'-0"	5'	35	8'-0"		6"			6'-8"
	6'	42	8'-2"		6½"			7'-8"
1 @ 7'	7'	49	8'-3"	8'-4"	7½"	6"	9½"	8'-8"
	8'	56	8'-4½"		8"			9'-8"
	9'	63	8'-6½"		8½"			10'-8"
	6'	48	9'-2"		7"			7'-10½"
	7'	56	9'-3"		7½"			8'-10½"
1 @ 8'	8'	64	9'-4½"	8'-10½"	8"	6"	10"	9'-10½"
	9'	72	9'-6½"		8½"			10'-10½"
	10'	80	9'-8½"		9"			11'-10½"
	7'	63	10'-3"		7½"			8'-11"
	8'	72	10'-4½"		8"			9'-11"
1 @ 9'	9'	81	10'-6½"	9'-11"	8½"	6"	10½"	10'-11"
	10'	90	10'-8½"		9"			11'-11"
	11'	99	10'-10½"		9½"			12'-11"
	8'	80	11'-4½"		8½"			9'-1"
1 @ 10'	9'	90	11'-6½"	9'-1"	9"	6"	11"	10'-1"
	10'	100	11'-8½"		9½"			11'-1"
	11'	110	11'-10½"		10"			12'-1"
	12'	120	12'-0½"		10½"			13'-1"
SECTION "D" - 25'-0"	5'	35	8'-0"		6"			6'-10"
	6'	42	8'-2"		6½"			7'-10"
1 @ 7'	7'	49	8'-3"	8'-5"	7"	6"	9½"	8'-10"
	8'	56	8'-5"		8"			9'-10"
	9'	63	8'-7"		8½"			10'-10"
	6'	48	9'-3"		7"			8'-0"
	7'	56	9'-4"		7½"			9'-0"
1 @ 8'	8'	64	9'-5"	8'-11"	8"	6"	10"	10'-0"
	9'	72	9'-7"		8½"			11'-0"
	10'	80	9'-9"		9"			12'-0"
	7'	63	10'-4"		7½"			9'-2"
	8'	72	10'-5"		8"			10'-2"
1 @ 9'	9'	81	10'-7"	10'-1"	8½"	6"	10½"	11'-2"
	10'	90	10'-9"		9"			12'-2"
	11'	99	10'-11"		9½"			13'-2"
	8'	80	11'-5"		8½"			10'-4"
1 @ 10'	9'	90	11'-7"	10'-4"	9"	6"	11"	11'-4"
	10'	100	11'-9"		9½"			12'-4"
	11'	110	11'-11"		10"			13'-4"
	12'	120	12'-1"		10½"			14'-4"
SECTION "E" - 30'-0"	5'	35	8'-1"		6"			6'-12"
	6'	42	8'-3"		6½"			7'-12"
1 @ 7'	7'	49	8'-4"	8'-7"	7"	6"	9½"	8'-12"
	8'	56	8'-5½"		8"			9'-12"
	9'	63	8'-6½"		8½"			10'-12"
	6'	48	9'-2"		7"			7'-10½"
	7'	56	9'-3"		7½"			8'-10½"
1 @ 8'	8'	64	9'-4½"	8'-10½"	8"	6"	10"	9'-10½"
	9'	72	9'-6½"		8½"			10'-10½"
	10'	80	9'-8½"		9"			11'-10½"
	7'	63	10'-3"		7½"			8'-11"
	8'	72	10'-4½"		8"			9'-11"
1 @ 9'	9'	81	10'-6½"	9'-11"	8½"	6"	10½"	10'-11"
	10'	90	10'-8½"		9"			11'-11"
	11'	99	10'-10½"		9½"			12'-11"
	8'	80	11'-4½"		8½"			9'-1"
1 @ 10'	9'	90	11'-6½"	9'-1"	9"	6"	11"	10'-1"
	10'	100	11'-8½"		9½"			11'-1"
	11'	110	11'-10½"		10"			12'-1"
	12'	120	12'-0½"		10½"			13'-1"

QUANTITIES

UNIT QUANTITIES

CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	REINFORCING STEEL ADDITIONAL PER LAP	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & WINGS
CU. YD.	LB.	LB.	LB
0.593	68.20	21.71	107.42
0.675	71.72	23.38	108.81
0.744	75.80	25.05	109.50
0.819	84.72	26.72	110.29
0.933	90.91	28.39	111.59
0.769	86.55	25.05	157.02
0.838	89.72	26.72	158.02
0.914	93.84	28.39	159.02
1.028	106.20	30.06	161.03
1.154	113.38	31.73	163.03
0.957	116.90	28.39	177.61
1.033	127.28	30.06	178.61
1.148	138.97	31.73	180.61
1.276	141.46	33.40	182.62
1.416	152.81	35.07	184.62
1.165	141.10	31.73	249.37
1.281	145.89	33.40	252.10
1.409	155.50	35.07	254.82
1.550	167.01	36.74	257.55
1.704	176.42	38.41	260.27
0.630	80.06	21.71	
0.713	89.83	23.38	
0.782	93.23	25.05	
0.858	105.69	26.72	
0.972	111.13	28.39	
0.839	96.99	25.05	
0.909	106.02	26.72	
0.986	113.96	28.39	
1.101	126.20	30.06	
1.229	136.58	31.73	
1.036	127.99	28.39	
1.113	135.59	30.06	
1.229

RESHOT 3-5-93

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FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			148	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars STRAIGHT In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall - Each. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
D	S	H					
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#5	12"	126	128	18'-9"
		3'			126	128	18'-9"
		4'			126	128	18'-9"
		5'			128	128	18'-9
		6'			128	128	19'-2"
	5 @ 4'	3'			126	128	22'-9"
		4'			128	128	22'-8"
		5'	#6	12"	128	128	22'-8"
		6'			128	128	23'-2"
		7'			128	128	23'-6"
	6 @ 4'	3'			190	190	26'-9"
		4'			190	190	26'-9"
		5'	#6	11"	190	190	26'-9"
		6'			190	190	27'-2"
		7'			190	190	27'-6"
		8'			190	190	27'-7"
	7 @ 4'	4'			128	128	30'-9"
		5'			128	128	30'-9"
		6'	#6	12"	128	128	31'-2"
		7'			128	128	31'-6"
		8'			128	128	31'-7"
		9'			128	128	32'-0"
	8 @ 4'	4'			190	190	34'-9"
		5'			190	190	35'-2"
		6'	#6	11"	190	190	35'-2"
		7'			190	190	35'-6"
		8'			190	190	35'-7"
		9'			190	190	36'-0"
		10'			190	190	36'-5"
	9 @ 4'	5'			280	280	20'-7"
		6'	Ⓚ		280	280	20'-9"
		7'			280	280	20'-9"
		8'	#6	11"	280	280	20'-10"
		9'			280	280	21'-0"
		10'			280	280	21'-3"
		11'			280	280	21'-5"
	10 @ 4'	5'			256	256	22'-5"
		6'			256	256	22'-11"
		7'	Ⓚ		256	256	22'-11"
		8'			256	256	23'-0"
		9'	#7	12"	256	256	23'-2"
		10'			256	256	23'-5"
		11'			256	256	23'-6"
		12'			256	256	23'-7"
	11 @ 4'	6'			280	280	25'-0"
		7'	Ⓚ		280	280	25'-0"
		8'			280	280	25'-0"
		9'	#7	11"	280	280	25'-2"
		10'			280	280	25'-5"
		11'			280	280	25'-6"
		12'			280	280	25'-7"
	12 @ 4'	6'			280	280	27'-0"
		7'			280	280	27'-0"
		8'	Ⓚ		280	280	27'-0"
		9'	#7	11"	280	280	27'-2"
		10'			280	280	27'-5"
		11'			280	280	27'-6"
		12'			280	280	27'-7"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b" bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Walls - hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z
D	S	H								
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#5	12"	59	59	20'-2"	0'-3"	2'-2"	3'-4½"
		3'			59	59	20'-2"	0'-3"	2'-2"	3'-4½"
		4'			59	59	20'-2"	0'-3"	2'-2"	3'-4½"
		5'			59	59	20'-2"	0'-3"	2'-2"	3'-4½"
		6'			59	59	20'-7"	0'-3"	2'-3"	3'-5½"
	5 @ 4'	3'			59	59	24'-3"	0'-3½"	2'-7"	4'-1½"
		4'			59	59	24'-3"	0'-3½"	2'-7"	4'-1½"
		5'	#6	12"	59	59	24'-3"	0'-3½"	2'-7"	4'-1½"
		6'			59	59	24'-8"	0'-3½"	2'-8"	4'-2½"
		7'			59	59	25'-0"	0'-3½"	2'-9"	4'-2½"
	6 @ 4'	3'			65	65	28'-4"	0'-4½"	3'-0"	4'-10½"
		4'			65	65	28'-5"	0'-4½"	3'-0"	4'-10½"
		5'	#6	11"	65	65	28'-5"	0'-4½"	3'-0"	4'-10½"
		6'			65	65	28'-9"	0'-4½"	3'-0"	4'-11½"
		7'			65	65	29'-1"	0'-4½"	3'-2"	4'-11½"
		8'			65	65	29'-2"	0'-4½"	3'-2"	5'-0½"
	7 @ 4'	4'			59	59	32'-8"	0'-4½"	3'-5"	5'-7"
		5'			59	59	32'-8"	0'-4½"	3'-5"	5'-7"
		6'	#6	12"	59	59	33'-1"	0'-4½"	3'-6"	5'-8"
		7'			59	59	33'-1"	0'-4½"	3'-7"	5'-8½"
		8'			59	59	33'-6"	0'-4½"	3'-7"	5'-9"
		9'			59	59	33'-11"	0'-4½"	3'-8"	5'-10"
	8 @ 4'	4'			65	65	36'-9"	0'-5"	3'-10"	6'-4"
		5'			65	65	37'-2"	0'-5"	3'-11"	6'-5"
		6'			65	65	37'-2"	0'-5"	3'-11"	6'-5"
		7'	#6	11"	65	65	37'-6"	0'-5"	4'-0"	6'-5½"
		8'			65	65	37'-7"	0'-5"	4'-0"	6'-6"
		9'			65	65	38'-0"	0'-5"	4'-1"	6'-7"
		10'			65	65	38'-5"	0'-5"	4'-2"	6'-8"
	9 @ 4'	5'			180	180	21'-8"	0'-5½"	4'-6"	7'-2"
		6'	Ⓚ		180	180	21'-10"	0'-5½"	4'-5"	7'-2½"
		7'			180	180	21'-10"	0'-5½"	4'-5"	7'-2½"
		8'	#6	11"	180	180	21'-10"	0'-5½"	4'-5"	7'-3"
		9'			180	180	22'-1"	0'-5½"	4'-6"	7'-4"
		10'			180	180	22'-3"	0'-5½"	4'-7"	7'-5"
		11'			180	180	22'-8"	0'-5½"	4'-7"	7'-6"
	10 @ 4'	5'			118	118	23'-8"	0'-6"	4'-9"	7'-11"
		6'			118	118	23'-10"	0'-6"	4'-10"	7'-11½"
		7'	Ⓚ		118	118	23'-10"	0'-6"	4'-10"	7'-11½"
		8'			118	118	23'-11"	0'-6"	4'-10"	8'-0"
		9'	#6	12"	118	118	24'-1"	0'-6"	4'-11"	8'-1"
		10'			118	118	24'-3"	0'-6"	5'-0"	8'-2"
		11'			118	118	24'-8"	0'-6"	5'-0"	8'-3"
		12'			118	118	24'-5"	0'-6"	5'-0"	8'-4"
	11 @ 4'	6'			130	130	25'-11"	0'-6½"	5'-3"	8'-9"
		7'	Ⓚ		130	130	25'-11"	0'-6½"	5'-3"	8'-9"
		8'			130	130	25'-11"	0'-6½"	5'-3"	8'-9"
		9'	#6	11"	130	130	26'-2"	0'-6½"	5'-4"	8'-10"
		10'			130	130	26'-5"	0'-6½"	5'-5"	9'-0"
		11'			130	130	26'-6"	0'-6½"	5'-5"	9'-0"
		12'			130	130	26'-6"	0'-6½"	5'-5"	9'-1"
	12 @ 4'	6'			130	130	28'-0"	0'-7"	5'-8"	9'-6"
		7'	Ⓚ		130	130	28'-0"	0'-7"	5'-8"	9'-6"
		8'			130	130	28'-10"	0'-7"	5'-8"	9'-6"
		9'	#6	11"	130	130	28'-10"	0'-7"	5'-8"	9'-7"
		10'			130	130	28'-5"	0'-7"	5'-8"	9'-8"
		11'			130	130	28'-6"	0'-7"	5'-10"	9'-9"
		12'			130	130	28'-7"	0'-7"	5'-10"	9'-10"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b'" bars BENT - See Diagram below. In Top of Bottom Slab bent down under Division Walls - hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z
D	S	H								
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#5	12"	59	59	20'-1"	0'-2½"	2'-3"	3'-4½"
		3'			59	59	20'-1"	0'-2½"	2'-3"	3'-4½"
		4'			59	59	20'-1"	0'-2½"	2'-3"	3'-4½"
		5'			59	59	20'-1"	0'-2½"	2'-3"	3'-4½"
		6'			59	59	20'-6"	0'-2½"	2'-4"	3'-5½"
	5 @ 4'	3'			59	59	26'-2"	0'-3"	2'-8"	4'-1½"
		4'			59	59	26'-2"	0'-3"	2'-8"	4'-1½"
		5'	#6	12"	59	59	26'-2"	0'-3"	2'-8"	4'-1½"
		6'			59	59	26'-7"	0'-3"	2'-9"	4'-2½"
		7'			59	59	26'-11"	0'-3"	2'-10"	4'-2½"
	6 @ 4'	3'			65	65	28'-3"	0'-3½"	3'-1"	4'-10½"
		4'			65	65	28'-5"	0'-3½"	3'-1"	4'-10½"
		5'	#6	11"	65	65	28'-5"	0'-3½"	3'-1"	4'-10½"
		6'			65	65	28'-9"	0'-3½"	3'-2"	4'-11½"
		7'			65	65	29'-0"	0'-3½"	3'-3"	4'-11½"
		8'			65	65	29'-1"	0'-3½"	3'-3"	5'-0½"
	7 @ 4'	4'			59	59	32'-7"	0'-4½"	3'-5½"	5'-7"
		5'			59	59	32'-7"	0'-4½"	3'-5½"	5'-7"
		6'	#6	12"	59	59	33'-0"	0'-4½"	3'-6½"	5'-8"
		7'			59	59	33'-0"	0'-4½"	3'-7½"	5'-8½"
		8'			59	59	33'-5"	0'-4½"	3'-7½"	5'-9"
		9'			59	59	33'-10"	0'-4½"	3'-8½"	5'-10"
	8 @ 4'	4'			65	65	36'-9"	0'-5"	3'-10"	6'-4"
		5'			65	65	37'-2"	0'-5"	3'-11"	6'-5"
		6'			65	65	37'-2"	0'-5"	3'-11"	6'-5"
		7'	#6	11"	65	65	37'-6"	0'-5"	4'-0"	6'-5½"
		8'			65	65	37'-7"	0'-5"	4'-0"	6'-6"
		9'			65	65	38'-0"	0'-5"	4'-1"	6'-7"
		10'			65	65	38'-5"	0'-5"	4'-2"	6'-8"
	9 @ 4'	5'			180	180	21'-8"	0'-5½"	4'-6"	7'-2"
		6'	Ⓚ		180	180	21'-10"	0'-5½"	4'-5"	7'-2½"
		7'			180	180	21'-10"	0'-5½"	4'-5"	7'-2½"
		8'	#6	11"	180	180	21'-10"	0'-5½"	4'-5"	7'-3"
		9'			180	180	22'-1"	0'-5½"	4'-6"	7'-4"
		10'			180	180	22'-3"	0'-5½"	4'-7"	7'-5"
		11'			180	180	22'-8"	0'-5½"	4'-7"	7'-6"
	10 @ 4'	5'			118	118	23'-8"	0'-6"	4'-9"	7'-11"
		6'			118	118	23'-10"	0'-6"	4'-10"	7'-11½"
		7'	Ⓚ		118	118	23'-10"	0'-6"	4'-10"	7'-11½"
		8'			118	118	23'-11"	0'-6"	4'-10"	8'-0"
		9'	#6	12"	118	118	24'-1"	0'-6"	4'-11"	8'-1"
		10'			118	118	24'-3"	0'-6"	5'-0"	8'-2"
		11'			118	118	24'-8"	0'-6"	5'-0"	8'-3"
		12'			118	118	24'-5"	0'-6"	5'-0"	8'-4"
	11 @ 4'	6'			130	130	26'-0"	0'-7"	5'-2"	8'-9"
		7'	Ⓚ		130	130	26'-0"	0'-7"	5'-2"	8'-9"
		8'			130	130	26'-0"	0'-7"	5'-2"	8'-9"
		9'	#6	11"	130	130	26'-3"	0'-7"	5'-3"	8'-10"
		10'			130	130	26'-5"	0'-7"	5'-3"	9'-0"
		11'			130	130	26'-6"	0'-7"	5'-3"	9'-1"
		12'			130	130	26'-7"	0'-7"	5'-3"	9'-1"
	12 @ 4'	6'			130	130	28'-1"	0'-8"	5'-6"	9'-6"
		7'	Ⓚ		130	130	28'-1"	0'-8"	5'-6"	9'-6"
		8'			130	130	28'-1"	0'-8"	5'-6"	9'-6"
		9'	#6	11"	130	130	28'-2"	0'-8"	5'-7"	9'-7"
		10'			130	130	28'-5"	0'-8"	5'-7"	9'-8"
		11'			130	130	28'-7"	0'-8"	5'-8"	9'-9"
		12'			130	130	28'-8"	0'-8"	5'-8"	9'-10"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with "b" and "b'" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
D	S	H					
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#5	12"	120	120	16'-0"
		3'			120	120	16'-0"
		4'			120	120	16'-0"
		5'			120	120	16'-3"
		6'			120	120	16'-3"
	5 @ 4'	3'			120	120	17'-0"
		4'			120	120	17'-0"
		5'	#6	12"	120	120	17'-0"
		6'			120	120	17'-3"
		7'			120	120	17'-6"
	6 @ 4'	3'			132	132	20'-0"
		4'			132	132	20'-0"
		5'	#6	11"	132	132	20'-0"
		6'			132	132	20'-3"
		7'			132	132	20'-6"
		8'			132	132	20'-7"
	7 @ 4'	4'			120	120	23'-0"
		5'			120	120	23'-0"
		6'	#6	12"	120	120	23'-3"
		7'			120	120	23'-6"
		8'			120	120	23'-7"
		9'			120	120	23'-10"
	8 @ 4'	4'			132	132	26'-0"
		5'			132	132	26'-3"
		6'	#6	11"	132	132	26'-5"
		7'			132	132	26'-8"
		8'			132	132	26'-9"
		9'			132	132	27'-0"
		10'			132	132	27'-3"
	9 @ 4'	5'			132	132	29'-3"
		6'	Ⓚ		132	132	29'-6"
		7'			132	132	29'-9"
		8'	#6	11"	132	132	29'-11"
		9'			132	132	30'-2"
		10'			132	132	30'-5"
	10 @ 4'	5'			120	120	32'-3"
		6'			120	120	32'-6"
		7'	Ⓚ		120	120	32'-6"
		8'			120	120	32'-6"
		9'	#6	12"	120	120	32'-9"
		10'			120	120	33'-0"
		11'			120	120	33'-0"
		12'			120	120	33'-0"
	11 @ 4'	6'			132	132	35'-6"
		7'	Ⓚ		132	132	35'-6"
		8'			132	132	35'-6"
		9'	#6	11"	132	132	35'-9"
		10'			132	132	36'-0"
		11'			132	132	36'-0"
		12'			132	132	36'-0"
	12 @ 4'	6'			132	132	38'-6"
		7'	Ⓚ		132	132	38'-6"
		8'			132	132	38'-6"
		9'	#6	11"	132	132	38'-9"
		10'			132	132	39'-0"
		11'			132	132	39'-0"
		12'			132	132	39'-0"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel SIZE	SPACING	No. REQ'D	LENGTH
D	S	H				
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#4	12"	30	
		3'			30	
		4'			30	
		5'			30	
		6'			30	
	5 @ 4'	3'			36	
		4'			36	
		5'	#5	12"	36	
		6'			34	
		7'			34	
	6 @ 4'	3'			38	
		4'			38	
		5'	#5	11½"	38	
		6'			38	
		7'			38	
		8'			38	
	7 @ 4'	4'			44	
		5'			44	
		6'	#5	11½"	44	
		7'			44	
		8'			44	
		9'			44	
	8 @ 4'	4'			98	
		5'			98	
		6'	#5	11½"	98	
		7'			98	
		8'			98	
		9'			98	
		10'			98	
	9 @ 4'	5'			55	
		6'	Ⓚ		55	
		7'			55	
		8'	#5	11½"	55	
		9'			55	
		10'			55	
		11'			55	
	10 @ 4'	5'			118	
		6'			118	
		7'	Ⓚ		118	
		8'			118	
		9'	#5	11½"	118	
		10'			118	
		11'			118	
		12'			118	
	11 @ 4'	6'			130	
		7'	Ⓚ		130	
		8'			130	
		9'	#5	11½"	130	
		10'			130	
		11'			130	
		12'			130	
	12 @ 4'	6'			130	
		7'	Ⓚ		130	
		8'			130	
		9'	#5	11½"	130	
		10'			130	
		11'			130	
		12'			130	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d'" bars STRAIGHT Longitudinal in Sidewalls and Division Walls. SIZE	SPACING	No. REQ'D	LENGTH
D	S	H				
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#4	12"	16	
		3'			24	
		4'			32	
		5'			40	
		6'			48	
	5 @ 4'	3'			24	
		4'			32	
		5'	#4	12"	40	
		6'			48	
		7'			56	
	6 @ 4'	3'			28	
		4'			32	
		5'	#4	12"	40	
		6'			48	
		7'			56	
		8'			64	
	7 @ 4'	4'			32	
		5'			40	
		6'	#4	12"	48	
		7'			56	
		8'			64	
		9'			72	
	8 @ 4'	4'			36	
		5'			45	
		6'	#4	12"	54	
		7'			63	
		8'			72	
		9'			81	
		10'			90	
	9 @ 4'	5'			45	
		6'	Ⓚ		54	
		7'			63	
		8'	#4	12"	72	
		9'			81	
		10'			90	
		11'			99	
	10 @ 4'	5'			50	
		6'			60	
		7'	Ⓚ		70	
		8'			80	
		9'	#4	12"	90	
		10'			100	
		11'			110	
		12'			120	
	11 @ 4'	6'			66	
		7'	Ⓚ		77	
		8'			88	
		9'	#4	12"	99	
		10'			110	
		11'			121	
		12'			132	
	12 @ 4'	6'			72	
		7'	Ⓚ		84	
		8'			96	
		9'	#4	12"	108	
		10'			120	
		11'			132	
		12'			144	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE	SPACING	No. REQ'D	LENGTH
D	S	H				
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#4	12"	30	
		3'			30	
		4'			30	
		5'			30	
		6'			30	
	5 @ 4'	3'			30	
		4'			30	
		5'	#4	12"	30	
		6'			30	
		7'			30	
	6 @ 4'	3'			38	
		4'			38	
		5'	#4	12"	38	
		6'			38	
		7'			38	
		8'			38	
	7 @ 4'	4'			42	
		5'			42	
		6'	#4	12"	42	
		7'			42	
		8'			42	
		9'			42	
	8 @ 4'	4'			96	
		5'			96	
		6'	#4	12"	96	
		7'			96	
		8'			96	
		9'			96	
		10'			96	
	9 @ 4'	5'			53	
		6'	Ⓚ		53	
		7'			53	
		8'	#4	12"	53	
		9'			53	
		10'			53	
		11'			53	
	10 @ 4'	5'			57	
		6'			57	
		7'	Ⓚ		57	
		8'			57	
		9'	#4	12"	57	
		10'			57	
		11'			57	
		12'			57	
	11 @ 4'	6'			61	
		7'	Ⓚ		61	
		8'			61	
		9'	#4	12"	61	
		10'			61	
		11'			61	
		12'			61	
	12 @ 4'	6'			65	
		7'	Ⓚ		65	
		8'			65	
		9'	#4	12"	65	
		10'			65	
		11'			65	
		12'			65	

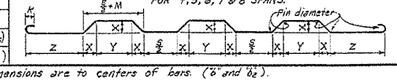
DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"f" bars STRAIGHT Vertical in Sidewalls and Division Walls. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
D	S	H					
0'-0" TO 5'-0" MAXIMUM	4 @ 4'	2'	#5	12"	480	480	2'-10"
		3'			480	480	3'-10"
		4'			480	480	4'-10"
		5'			480	480	5'-10"
		6'			480	480	6'-10"
	5 @ 4'	3'			480	480	3'-11"
		4'			480	480	4'-11"
		5'	#6	12"	480	480	5'-11"
		6'			480	480	6'-11"
		7'			480	480	7'-11"
	6 @ 4'	3'			480	480	5'-1"
		4'			480	480	5'-1"
		5'	#6	12"	480	480	6'-1"
		6'			480	480	7'-1"
		7'			480	480	8'-1"
		8'			480	480	9'-1"
	7 @ 4'	4'			480	480	5'-5"
		5'			480	480	6'-2"
		6'	#6	12"	480	480	7'-5"
		7'			480	480	8'-2"
		8'			480	480	9'-5"
		9'			480	480	10'-2"
	8 @ 4'	4'			480	480	6'-8"
		5'			480	480	7'-2"
		6'	#6	12"	480	480	8'-5"
		7'			480	480	8'-11"
		8'			480	480	10'-2"
		9'			480	480	10'-8"
		10'			480	480	11'-5"
	9 @ 4'	5'			480	480	7'-11"
		6'	Ⓚ		480	480	8'-6"
		7'			480	480	9'-0"
		8'	#5	11½"	526	528	10'-5"
		9'			480	480	10'-11"
		10'			480	480	11'-5"
		11'			526	528	11'-11"
	10 @ 4'	5'			480	480	8'-11"
		6'			480	480	9'-6"
		7'	Ⓚ		480	480	10'-1"
		8'			480	480	10'-7"
		9'	#5	11½"	480	480	11'-2"
		10'			480	480	11'-8"
		11'			526	528	12'-2"
		12'			576	576	12'-8"
	11 @ 4'	6'			480	480	9'-11"
		7'	Ⓚ		480	480	10'-6"
		8'			480	480	11'-1"
		9'	#5	11½"	480	480	11'-7"
		10'			480	480	12'-2"
		11'			526	528	12'-8"
		12'			576	576	13'-3"
	12 @ 4'	6'			480	480	10'-11"
		7'	Ⓚ		480	480	11'-6"
		8'			480	480	12'-1"
		9'	#5	11½"	480	480	12'-7"
		10'			480	480	13'-2"
		11'			526	528	13'-8"
		12'			576	576	14'-3"

Ⓚ These "a", "b" and "b'" bars are to be spliced at center of middle division wall to make a full length bar. Lap #6 bars 2'-6" min. and #7 bars 2'-9" min.

BAR SIZE	PIN DIAM.	K	ADD FOR HOOKS
#5	2½"	4⅝"	0'-11⅝"
#6	3"	5"	1'-2" (Bent)
#6	3"	5"	0'-7" (Hook)

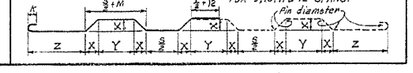
BENDING DIAGRAM FOR BARS "b" and "b'"

FOR 4',5',6',7' & 8' SPANS.



BENDING DIAGRAM FOR BARS "b" and "b'"

FOR 9',10',11' & 12' SPANS.



NOTE:- Dimensions are to centers of bars. ("b" and "b'").

DOWEL BARS FOR TWO HEADWALLS

"a" SPANS @	SIZE	SPACING	NO. REQD	LENGTH	X	Bars "f" Dowel bars in Headwalls
4'	#4	12"c	40	2'-5"	1'-2½"	
5'	#4	12"c	48	2'-6"	1'-3"	
6'	#4	12"c	56	2'-7"	1'-3½"	
7'	#4	12"c	64	2'-8"	1'-4"	
8'	#4	12"c	72	2'-9"	1'-4½"	
9'	#4	12"c	80	2'-10"	1'-5"	
10'	#4	12"c	88	2'-11"	1'-5½"	
11'	#4	12"c	96	3'-0"	1'-6"	
12'	#4	12"c	104	3'-1"	1'-6½"	

RESHOT 3-8-93

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FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			149	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 30° SKEWED ENDS.

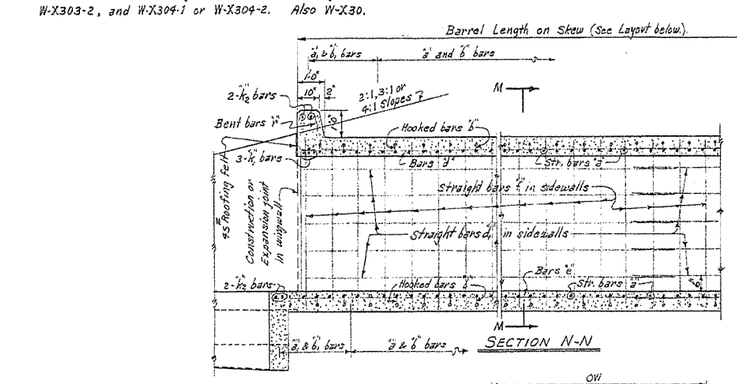
NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X.302-1 or W-X.302-2; W-X.303-1 or W-X.303-2, and W-X.304-1 or W-X.304-2. Also W-X30.

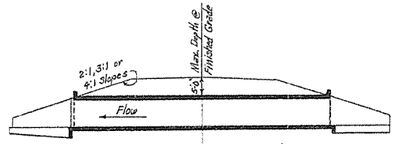
DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	'a' bars STRAIGHT In Top and Bottom Slabs of Barrel. SIZE	SPACING	No. Reqd	LENGTH	'a1' bars STRAIGHT In Top and Bottom Slab of Barrel - (Four of each Length) SIZE	SPACING	No. Reqd	LENGTH	'c' bars BENT - See Diagrams below In Top and Bottom Slabs of Barrel-hooked. Alternate with 'a' bars SIZE	SPACING	No. Reqd	LENGTH	X
0'-0" TO 5'-0" MAXIMUM	1@4	2'	#5	13"	108	4'-9"	#5	13"	4	2'-11"	#6	18"	108	5'-10"	4'-8"
		3'			108	4'-9"			4	"			108	5'-10"	"
		4'			108	4'-9"			4	"			108	5'-10"	"
		5'			108	4'-9"			4	"			108	5'-10"	"
		6'			108	4'-11"			4	3'-1"			108	6'-0"	4'-10"
	1@5	3'			108	5'-9"			4	3'-1"			106	6'-10"	5'-8"
		4'			108	5'-9"			4	"			106	6'-10"	"
		5'	#6	18"	108	5'-9"	#6	13"	4	"	#6	13"	106	6'-10"	"
		6'			108	5'-11"			4	3'-1"			106	7'-0"	5'-10"
		7'			108	6'-0"			4	3'-2"			106	7'-1"	5'-11"
	1@6	5'			114	6'-9"			8	5'-0"	3'-3"		114	7'-10"	6'-8"
		6'			114	6'-9"			8	" "			114	7'-10"	"
		7'	#6	12"	114	6'-9"	#6	12"	8	" "	3'-5"	#6	114	7'-10"	"
		8'			114	7'-1"			8	5'-3"	3'-6"		114	8'-1"	6'-11"
		9'			114	7'-1"			8	5'-4"	3'-7"		114	8'-2"	7'-0"
	1@7	5'			122	7'-9"			12	6'-2"	3'-0"		122	8'-10"	7'-8"
		6'			122	7'-9"			12	" "			122	8'-10"	"
		7'	#6	11"	122	7'-9"	#6	11"	12	6'-4"	3'-2"	#6	122	9'-0"	7'-10"
		8'			122	9'-1"			12	6'-5"	3'-3"		122	9'-1"	7'-11"
		9'			122	9'-2"			12	6'-6"	3'-4"		122	9'-2"	8'-0"
	1@8	9'			112	8'-8"			12	7'-0"	3'-6"		112	9'-10"	8'-8"
		5'			112	8'-11"			12	7'-2"	3'-8"		112	10'-0"	8'-10"
		6'	#7	12"	112	8'-11"	#6	12"	12	" "	"	#6	112	10'-0"	"
		7'			112	9'-0"			12	7'-3"	3'-9"		112	10'-1"	8'-11"
		8'			112	9'-1"			12	7'-4"	3'-10"		112	10'-2"	9'-0"
		9'			112	9'-3"			12	7'-6"	4'-0"		112	10'-4"	9'-2"
		10'			112	9'-5"			16	7'-8"	2'-5"		110	10'-6"	9'-4"
	1@9	5'			122	9'-11"			16	8'-9"	3'-7"		120	11'-0"	9'-10"
		6'			122	10'-0"			16	9'-5"	3'-8"		120	11'-1"	9'-11"
		7'	#7	11"	122	10'-0"	#6	11"	16	" "	"	#6	120	11'-1"	"
		8'			122	10'-1"			20	8'-10"	3'-4"		120	11'-2"	10'-0"
		9'			120	10'-3"			20	10'-5"	3'-8"		120	11'-4"	10'-2"
		10'			120	10'-5"			20	10'-8"	3'-10"		120	11'-6"	10'-4"
		11'			120	10'-7"			20	10'-11"	4'-0"		120	11'-8"	10'-6"
	1@10	5'			110	10'-11"			16	9'-2"	3'-11"		110	12'-2"	10'-10"
		6'			110	11'-0"			16	" "	"		110	12'-3"	"
		8'	#7	12"	110	11'-1"	#7	12"	20	9'-4"	2'-6"	#7	110	12'-4"	11'-0"
		9'			110	11'-2"			20	9'-6"	2'-7"		108	12'-5"	11'-1"
		10'			110	11'-3"			20	9'-8"	2'-8"		108	12'-6"	11'-2"
		11'			110	11'-5"			20	9'-10"	2'-10"		108	12'-8"	11'-4"
		12'			110	11'-7"			20	10'-0"	3'-0"		108	13'-0"	11'-5"
		5'			118	12'-1"			24	10'-6"	2'-7"		118	13'-4"	12'-0"
		6'			118	12'-1"			24	" "	"		118	13'-5"	"
		7'			118	12'-1"			24	" "	"		118	13'-6"	"
	1@11	8'	#7	11"	118	12'-3"	#7	11"	24	10'-8"	2'-9"	#7	118	13'-6"	12'-2"
		9'			118	12'-5"			24	10'-10"	2'-11"		116	13'-8"	12'-4"
		10'			118	12'-7"			24	11'-0"	3'-1"		116	13'-10"	12'-6"
		11'			118	12'-9"			24	11'-2"	3'-3"		116	14'-0"	12'-8"
		12'			118	12'-9"			24	11'-2"	3'-3"		116	14'-0"	12'-8"
		5'			108	13'-1"			24	11'-4"	2'-7"		106	14'-6"	13'-0"
		6'			108	13'-1"			24	" "	"		106	14'-6"	"
		7'			108	13'-1"			24	" "	"		106	14'-6"	"
	1@12	8'	#8	12"	108	13'-3"	#8	12"	24	11'-6"	2'-9"	#7	106	14'-6"	13'-2"
		9'			108	13'-5"			24	11'-8"	2'-11"		106	14'-8"	13'-4"
		10'			108	13'-7"			24	11'-10"	3'-1"		106	14'-10"	13'-6"
		11'			108	13'-7"			24	12'-0"	3'-3"		106	15'-0"	13'-8"
		12'			106	13'-9"			24	12'-0"	3'-3"		106	15'-0"	13'-8"

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	'b' bars STRAIGHT In Top and Bottom Slabs of Barrel-one end hooked. (Four of each Length) Alternate with 'a1' bars LENGTH Max.	LENGTH Min.	X Max.	X Min.	'd' bars STRAIGHT Longitudinal in Top Slab of Barrel. SIZE	SPACING	No. Reqd	LENGTH	'd' bars STRAIGHT Longitudinal in Sidewalls. SIZE	SPACING	No. Reqd	LENGTH	'd' bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE	SPACING	No. Reqd	LENGTH
0'-0" TO 5'-0" MAXIMUM	1@4	2'	4'-5"	—	3'-10"	—	#5	10½"	6		#4	12"	5		#4	12"	5	
		3'	"	—	"	—												
		4'	"	—	"	—												
		5'	"	—	"	—												
		6'	4'-8"	2'-8"	4'-0"	2'-11"												
	1@5	3'	5'-5"	3'-6"	4'-10"	2'-11"	#5	10½"	7		#4	12"	6		#4	12"	6	
		4'	"	"	"	"												
		5'	"	"	"	"												
		6'	5'-7"	3'-8"	5'-0"	3'-11"	#5	10½"	8		#4	12"	7		#4	12"	6	
		7'	5'-8"	3'-8"	5'-1"	3'-12"												
		8'	5'-8"	3'-8"	5'-1"	3'-12"												
		9'	5'-8"	3'-8"	5'-2"	3'-12"												
	1@6	5'	6'-4"	2'-11"	5'-10"	2'-9"	#5	10½"	8		#4	12"	7		#4	12"	7	
		6'	6'-7"	3'-1"	6'-0"	2'-6"												
		7'	6'-8"	3'-2"	6'-1"	2'-7"												
		8'	6'-9"	3'-3"	6'-2"	2'-8"												
		9'	6'-9"	3'-3"	6'-2"	2'-8"												
	1@7	5'	7'-5"	3'-0"	6'-10"	2'-9"	#5	10½"	9		#4	12"	8		#4	12"	8	
		6'	7'-6"	3'-1"	6'-11"	2'-10"												
		7'	7'-7"	3'-2"	7'-0"	2'-11"												
		8'	7'-8"	3'-3"	7'-1"	3'-0"												
		9'	7'-8"	3'-3"	7'-1"	3'-0"												
	1@8	9'	8'-5"	3'-2"	7'-10"	2'-7"	#5	10½"	11		#4	12"	9		#4	12"	9	
		5'	8'-6"	3'-3"	7'-11"	2'-8"												
		6'	8'-7"	3'-4"	8'-0"	2'-9"												
		7'	8'-8"	3'-5"	8'-1"	2'-10"												
		8'	8'-9"	3'-6"	8'-2"	2'-11"												
		9'	8'-9"	3'-6"	8'-2"	2'-11"												
	1@9	5'	9'-4"	3'-5"	8'-11"	2'-10"	#5	10½"	12		#4	12"	10		#4	12"	10	
		6'	9'-5"	3'-6"	9'-0"	2'-11"												
		7'	9'-6"	3'-7"	9'-1"	3'-0"												
		8'	9'-7"	3'-8"	9'-2"	3'-1"												
		9'	9'-7"	3'-8"	9'-2"	3'-1"												
	1@10	5'	10'-2"	3'-7"	9'-11"	3'-0"	#5	10½"	13		#4	12"	11		#4	12"	11	
		6'	10'-3"	3'-8"	10'-0"	3'-1"												
		7'	10'-4"	3'-9"	10'-1"	3'-2"												
		8'	10'-5"	3'-10"	10'-2"	3'-3"												
		9'	10'-6"	4'-0"	9'-9"	3'-5"												
		10'	10'-7"	4'-1"	10'-4"	3'-6"												
		11'	10'-8"	4'-2"	10'-5"	3'-7"												
		12'	10'-9"	4'-3"	10'-6"	3'-8"												
		5'	11'-0"	3'-10"	10'-8"	3'-9"	#5	10½"	13		#4	12"	11		#4	12"	11	
		6'	11'-1"	3'-11"	10'-9"	3'-10"												
		7'	11'-2"	4'-0"	10'-10"	3'-11"												
		8'	11'-3"	4'-1"	10'-11"	4'-0"												
		9'	11'-4"	4'-2"	11'-0"	4'-1"												
		10'	11'-5"	4'-3"	11'-1"	4'-2"												
		11'	11'-6"	4'-4"	11'-2"	4'-3"												
		12'	11'-7"	4'-5"	11'-3"	4'-4"												

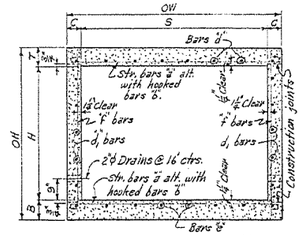
DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	'e' bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE	SPACING	No. Reqd	LENGTH	'f' bars STRAIGHT Verticals in Sidewalls. SIZE	SPACING	No. Reqd	LENGTH	'h1' bars STRAIGHT In Bottom of Headwall. SIZE	No. Reqd	LENGTH	'k2' bars STRAIGHT In Top of Headwall and Apron (2 Each) SIZE	No. Reqd	LENGTH
0'-0" TO 5'-0" MAXIMUM	1@4	2'	#4	12"	5		#4	12"	120	2'-11"	#5	6	5'-6"	#5	8	6'-8"
		3'							120	3'-11"		6	"		8	"
		4'							120	4'-11"		6	"		8	"
		5'							120	5'-11"		6	"		8	"
		6'							120	6'-11"		6	6'-8"		8	6'-8"
	1@5	3'	#4	12"	6		#4	12"	120	4'-10"	#5	6	6'-5"	#5	8	7'-10"
		4'							120	5'-10"		6	"		8	"
		5'							120	6'-10"		6	"		8	"
		6'	#4	12"	6		#4	12"	120	7'-10"	#5	6	6'-11"	#5	8	8'-0"
		7'							120	8'-10"		6	6'-11"		8	8'-1"
		8'														
		9'														
	1@6	5'	#4	12"	7		#4	12"	120	6'-11"	#5	6	7'-10"	#5	8	9'-0"
		6'							120	7'-11"		6	" "		8	"
		7'	#4	12"	7		#4	12"	120	8'-11"	#5	6	8'-10"	#5	8	9'-12"
		8'							120	9'-11"		6	8'-10"		8	9'-12"
		9'							120	9'-11"		6	8'-2"		8	9'-4"
	1@7	5'	#4	12"	8		#4	12"	120	5'-2"	#5	6	9'-0"	#5	8	10'-2"
		6'							120	7'-2"		6	9'-2"		8	10'-4"
		7'	#4	12"	8		#4	12"	120	9'-2"	#5	6	9'-4"	#5	8	10'-5"
		8'							144	9'-2"		6	9'-4"		8	10'-6"
		9'							120	10'-2"		6	9'-6"		8	10'-8"
	1@8	9'	#5	12"	9		#4	12"	120	5'-4"	#5	6	10'-1"	#5	8	11'-3"
		5'							120	6'-4"		6	10'-3"		8	11'-6"
		6'	#5	12"	9		#4	12"	120	7'-4"	#5	6	"	#5	8	"
		7'							120	8'-4"		6	10'-5"		8	11'-7"
		8'							144	9'-4"		6	10'-6"		8	11'-8"
		9'							132	11'-4"		6	10'-11"		8	12'-1"
	1@9	5'	#5	12"	10		#4	12"	120	6'-5"	#5	6	11'-5"	#5	8	12'-7"
		6'							120	7'-5"		6	11'-7"		8	12'-9"
		7'	#5	12"	10		#4	12"	120	8'-5"	#5	6	"	#5	8	"
		8'							144	9'-5"		6	11'-8"		8	12'-10"
		9'							120	10'-5"		6	11'-10"		8	13'-0"
		10'							132	11'-5"		6	12'-1"		8	13'-2"
		11'							144	12'-5"		6	12'-3"		8	13'-5"
	1@10	5'	#5	12"	11		#4	12"	120	6'-6"	#5	6	12'-7"	#5	8	13'-9"
		6'							120	7'-6"		6	12'-8"		8	13'-10"
		7'	#5	12"	11		#4	12"	120	8'-6"	#5	6	"	#5	8	"
		8'							144	9'-6"		6	12'-10"		8	14'-0"
		9'							120	10'-6"		6	13'-0"		8	14'-2"
		10'							132	11'-6"		6	13'-2"		8	14'-4"
		11'							144	12'-6"		6	13'-3"		8	14'-5"
		12'							120	13'-6"		6	13'-7"		8	14'-9"
	1@11	5'	#5	12"	12		#4	12"	120	7'-9"	#5	6	14'-0"	#5	8	15'-1"
		6'							120	8'-7"		6	"		8	"
		7'	#5	12"	12		#4	12"	120	9'-7"	#5	6	"	#5	8	"
		8'							144	9'-7"		6	"		8	"
		9'							120	10'-7"		6	14'-2"		8	15'-4"
		10'							132	11'-7"		6	14'-3"		8	15'-5"
		11'							144	12'-7"		6	14'-5"		8	15'-7"
		12'							120	13'-7"		6	14'-8"		8	15'-11"
	1@12	5'	#5	12"	13		#4	12"	120	7'-9"	#5	6	15'-1"	#5	8	16'-3"
		6'							120	8'-9"		6	"		8	"
		7'	#5	12"	13		#4	12"	120	9'-9"	#5	6	"	#5	8	"
		8'							144	9'-9"		6	"		8	"
		9'							120	10'-9"		6	15'-4"		8	16'-6"
		10'							132	11'-9"		6	15'-6"		8	16'-8"
		11'							144	12'-9"		6	15'-8"		8	16'-10"
		12'							120	13'-9"		6	15'-11"		8	17'-0"

These bars are in the skewed portion of barrel only. The length of 'a' bars and overall length X of 'b' bars vary by 1'-11" for 13" spacing, 1'-9" for 12" spacing and 1'-7" for 11" spacing.

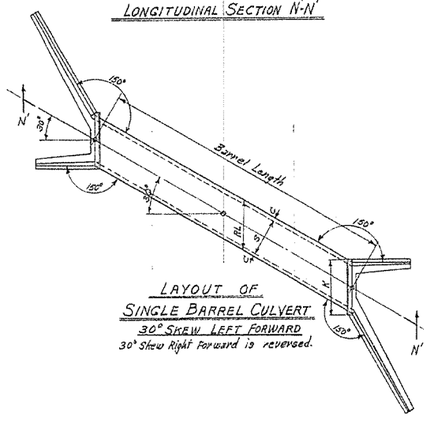




LONGITUDINAL SECTION N'-N'



TYPICAL SECTION M-M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150°
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NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X452-1 or W-X452-2; W-X453-1 or W-X453-2, and W-X454-1 or W-X454-2. Also W-X45.

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 45° SKEWED ENDS.

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars (Straight; in top and bottom slabs of barrel) Size	Spacing	No. Reqd	Length	"a₁" bars (Straight; in top and bottom slab of barrel - four of each length) Size	Spacing	No. Reqd	Length Max.	Length Min.
0'-0" TO 5'-0" MAXIMUM	1@4'	2'	#5	13"	104	4'-9"	#5	13"	8	3'-8"	2'-7"
		3'			104	4'-9"			8	"	"
		4'			104	4'-9"			8	"	"
		5'			104	4'-9"			8	"	"
		6'			104	4'-11"			8	3'-10"	2'-9"
	1@5'	3'	#6	13"	102	5'-9"	#6	13"	12	4'-8"	2'-6"
		4'			102	5'-9"			12	"	"
		5'			102	5'-9"			12	"	"
		6'			102	5'-11"			12	4'-10"	2'-8"
		7'			102	6'-0"			12	4'-11"	2'-9"
	1@6'	3'	#6	12"	110	6'-9"	#6	12"	16	5'-9"	2'-9"
		4'			110	6'-9"			16	"	"
		5'			110	6'-9"			16	"	"
		6'			108	6'-11"			16	5'-11"	2'-11"
		7'			108	7'-0"			16	6'-0"	3'-0"
		8'			108	7'-1"			16	6'-1"	3'-1"
	1@7'	4'	#6	11"	116	7'-9"	#6	11"	24	6'-10"	2'-3"
		5'			116	7'-9"			24	"	"
		6'			116	7'-11"			24	7'-0"	2'-5"
		7'			116	8'-0"			24	7'-1"	2'-6"
		8'			116	8'-1"			24	7'-2"	2'-7"
		9'			116	8'-2"			24	7'-4"	2'-9"
	1@8'	4'	#7	12"	106	8'-9"	#7	12"	24	7'-9"	2'-9"
		5'			104	8'-11"			24	7'-11"	2'-11"
		6'			104	8'-11"			24	"	"
		7'			104	9'-0"			24	8'-0"	3'-0"
		8'			104	9'-1"			24	8'-1"	3'-1"
		9'			104	9'-3"			24	8'-3"	3'-3"
		10'			104	9'-5"			28	8'-5"	2'-5"
	1@9'	5'	#7	11"	112	9'-11"	#7	11"	32	9'-0"	2'-7"
		6'			112	10'-0"			32	9'-1"	2'-8"
		7'			112	10'-0"			32	"	"
		8'			112	10'-1"			32	9'-2"	2'-9"
		9'			112	10'-3"			32	9'-4"	2'-11"
		10'			110	10'-5"			32	9'-6"	3'-1"
		11'			110	10'-7"			32	9'-8"	3'-3"
	1@10'	5'	#7	12"	100	10'-11"	#7	12"	32	9'-11"	2'-11"
		6'			100	11'-0"			32	10'-0"	3'-0"
		7'			100	11'-0"			32	"	"
		8'			100	11'-1"			32	10'-1"	3'-1"
		9'			100	11'-3"			32	10'-3"	3'-3"
		10'			100	11'-5"			36	10'-5"	2'-5"
		11'			100	11'-7"			36	10'-7"	2'-7"
		12'			100	11'-9"			36	10'-9"	2'-9"
	1@11'	6'	#7	11"	108	12'-1"	#7	11"	40	11'-2"	2'-11"
		7'			106	12'-1"			40	"	"
		8'			106	12'-1"			40	"	"
		9'			106	12'-3"			40	11'-4"	3'-1"
		10'			106	12'-5"			44	11'-6"	2'-4"
		11'			106	12'-7"			44	11'-8"	2'-6"
		12'			106	12'-9"			44	11'-10"	2'-8"
	1@12'	6'	#8	12"	96	13'-1"	#8	12"	40	12'-1"	3'-1"
		7'			96	13'-1"			40	"	"
		8'			96	13'-1"			40	"	"
		9'			96	13'-3"			40	12'-3"	3'-1"
		10'			96	13'-5"			44	12'-5"	2'-5"
		11'			96	13'-7"			44	12'-7"	2'-7"
		12'			96	13'-9"			44	12'-9"	2'-9"

S	H	"b" bars (Bent - see diagrams below; in top and bottom slabs of barrel - hooked; alternate with "a" bars) Size	Spacing	No. Reqd	Length	X	"b₁" bars (Bent; in top and bottom slabs of barrel - one end hooked (four of each length); alternate with "a₁" bars) Size	Spacing	No. Reqd	Length Max.	Length Min.	X Max.	X Min.
1@4'	2'	#6	13"	104	5'-10"	4'-8"	#6	13"	8	4'-9"	3'-8"	4'-2"	3'-1"
	3'			104	5'-10"	"			8	"	"	"	"
	4'			104	5'-10"	"			8	"	"	"	"
	5'			104	5'-10"	"			8	"	"	"	"
	6'			104	6'-0"	4'-10"			8	4'-11"	3'-10"	4'-4"	3'-3"
1@5'	3'	#6	13"	102	6'-10"	5'-8"	#6	13"	12	5'-9"	3'-7"	5'-2"	3'-0"
	4'			102	6'-10"	"			12	"	"	"	"
	5'			102	6'-10"	"			12	"	"	"	"
	6'			102	7'-0"	5'-10"			12	5'-11"	3'-9"	5'-4"	3'-2"
	7'			102	7'-1"	5'-11"			12	6'-0"	3'-10"	5'-5"	3'-3"
1@6'	3'	#6	12"	108	7'-10"	6'-8"	#6	12"	16	6'-9"	3'-9"	6'-2"	3'-2"
	4'			108	7'-10"	"			16	"	"	"	"
	5'			108	7'-10"	"			16	"	"	"	"
	6'			108	8'-0"	6'-10"			20	6'-11"	2'-11"	6'-4"	2'-4"
	7'			108	8'-1"	6'-11"			20	7'-0"	3'-0"	6'-5"	2'-5"
	8'			108	8'-2"	7'-0"			20	7'-1"	3'-1"	6'-6"	2'-6"
1@7'	4'	#6	11"	116	8'-10"	7'-8"	#6	11"	24	7'-10"	3'-5"	7'-3"	2'-8"
	5'			116	8'-10"	"			24	"	"	"	"
	6'			116	9'-0"	7'-10"			24	8'-0"	3'-5"	7'-5"	2'-10"
	7'			116	9'-1"	7'-11"			24	8'-1"	3'-6"	7'-6"	2'-11"
	8'			114	9'-2"	8'-0"			24	8'-2"	3'-7"	7'-7"	3'-0"
	9'			114	9'-4"	8'-2"			24	8'-4"	3'-9"	7'-9"	3'-2"
1@8'	4'	#6	12"	104	9'-10"	8'-8"	#6	12"	24	8'-9"	3'-9"	8'-2"	3'-2"
	5'			104	10'-0"	8'-10"			28	8'-11"	2'-11"	8'-4"	2'-4"
	6'			104	10'-0"	"			28	"	"	"	"
	7'			104	10'-1"	8'-11"			28	9'-0"	3'-0"	8'-5"	2'-5"
	8'			104	10'-2"	9'-0"			28	9'-1"	3'-1"	8'-6"	2'-6"
	9'			104	10'-4"	9'-2"			28	9'-3"	3'-3"	8'-8"	2'-8"
	10'			102	10'-6"	9'-4"			28	9'-5"	3'-5"	8'-10"	2'-10"
1@9'	5'	#6	11"	110	11'-0"	9'-10"	#6	11"	32	10'-0"	3'-7"	9'-5"	3'-0"
	6'			110	11'-1"	9'-11"			32	10'-1"	3'-8"	9'-6"	3'-1"
	7'			110	11'-1"	9'-11"			32	"	"	"	"
	8'			110	11'-2"	10'-0"			32	10'-2"	3'-9"	9'-7"	3'-2"
	9'			110	11'-4"	10'-2"			36	10'-4"	3'-0"	9'-9"	2'-5"
	10'			110	11'-6"	10'-4"			36	10'-6"	3'-2"	9'-11"	2'-7"
	11'			110	11'-8"	10'-6"			36	10'-8"	3'-4"	10'-1"	2'-9"
1@10'	5'	#7	12"	100	12'-2"	10'-10"	#7	12"	36	11'-0"	3'-0"	10'-9"	2'-4"
	6'			100	12'-3"	10'-11"			36	11'-1"	3'-1"	10'-5"	2'-5"
	7'			100	12'-3"	"			36	"	"	"	"
	8'			100	12'-4"	11'-0"			36	11'-2"	3'-2"	10'-6"	2'-6"
	9'			100	12'-6"	11'-2"			36	11'-4"	3'-4"	10'-8"	2'-8"
	10'			98	12'-8"	11'-4"			36	11'-6"	3'-6"	10'-10"	2'-10"
	11'			98	12'-10"	11'-6"			36	11'-8"	3'-8"	11'-0"	3'-0"
	12'			98	13'-0"	11'-8"			36	11'-10"	3'-10"	11'-2"	3'-2"
1@11'	6'	#7	11"	106	13'-4"	12'-0"	#7	11"	44	12'-3"	4'-1"	11'-7"	2'-5"
	7'			106	13'-4"	"			44	"	"	"	"
	8'			106	13'-4"	"			44	"	"	"	"
	9'			106	13'-6"	12'-2"			44	12'-5"	4'-3"	11'-9"	2'-7"
	10'			106	13'-8"	12'-4"			44	12'-7"	4'-5"	11'-11"	2'-9"
	11'			106	13'-10"	12'-6"			44	12'-9"	4'-7"	12'-1"	2'-11"
	12'			104	14'-0"	12'-8"			44	12'-11"	4'-9"	12'-3"	3'-1"
1@12'	6'	#7	12"	96	14'-4"	13'-0"	#7	12"	44	13'-2"	3'-2"	12'-6"	2'-6"
	7'			96	14'-4"	"			44	"	"	"	"
	8'			96	14'-4"	"			44	"	"	"	"
	9'			96	14'-6"	13'-2"			44	13'-4"	3'-4"	12'-8"	2'-8"
	10'			94	14'-8"	13'-4"			44	13'-6"	3'-6"	12'-10"	2'-10"
	11'			94	14'-10"	13'-6"			44	13'-8"	3'-8"	13'-0"	3'-0"
	12'			94	15'-0"	13'-8"			44	13'-10"	3'-10"	13'-2"	3'-2"

S	H	"d" bars (Straight; longitudinal in top slab of barrel) Size	Spacing	No. Reqd	Length	"d₁" bars (Straight; longitudinal in sidewalls) Size	Spacing	No. Reqd	Length	"e" bars (Straight; longitudinal in bottom slab of barrel) Size	Spacing	No. Reqd	Length
1@4'	2'	#5	10½"	6	2@30'-8", for 60'-0" Length Barrel. (1'-8" Lap)	#4	12"	4	2@30'-6", for 60'-0" Length Barrel. (1'-3" Lap)	#4	12"	5	2@31'-10", for 60'-0" Length Barrel. (1'-3" Lap)
	3'			6				6				5	
	4'			6				8				5	
	5'			6				10				5	
	6'			6				12				5	
1@5'	3'	#5	10½"	7		#4	12"	6		#4	12"	6	
	4'			7				8				6	
	5'			7				10				6	
	6'			7				12				6	
	7'			7				14				6	
1@6'	3'	#5	10½"	8		#4	12"	6		#4	12"	7	
	4'			8				8				7	
	5'			8				10				7	
	6'			8				12				7	
	7'			8				14				7	
	8'			8				16				7	
1@7'	4'	#5	10½"	9		#4	12"	8		#4	12"	8	
	5'			9				10				8	
	6'			9				12				8	
	7'			9				14				8	
	8'			9				16				8	
	9'			9				18				8	
1@8'	4'	#5	10"	11		#4	12"	8		#4	12"	9	
	5'			11				10				9	
	6'			11				12				9	
	7'			11				14				9	
	8'			11				16				9	
	9'			11				18				9	
	10'			11				20				9	
1@9'	5'	#5	10"	12		#4	12"	10		#4	12"	10	
	6'			12				12				10	
	7'			12				14				10	
	8'			12				16				10	
	9'			12				18				10	
	10'			12				20				10	
	11'			12				22				10	
1@10'	5'	#5	10"	13		#4	12"	10		#4	12"	11	
	6'			13				12				11	
	7'			13				14				11	
	8'			13				16				11	
	9'			13				18				11	
	10'			13				20				11	
	11'			13				22				11	
	12'			13				24				11	
1@11'	6'	#5	9½"	15		#4	12"	12		#4	12"	12	
	7'			15				14				12	
	8'			15				16				12	
	9'			15				18				12	
	10'			15				20				12	
	11'			15				22				12	
	12'			15				24				12	
1@12'	6'	#5	9½"	16		#4	12"	12		#4	12"	13	
	7'			16				14				13	
	8'			16				16				13	
	9'			16				18				13	
	10'			16				20				13	
	11'			16				22				13	
	12'			16				24				13	

S	H	"f" bars (Straight; verticals in sidewalls) Size	Spacing	No. Reqd	Length	"k₁" bars (Straight; in bottom of headwall) Size	No. Reqd	Length	"k₂" bars (Straight; in top of headwall and apron (2 each)) Size	No. Reqd	Length
1@4'	2'	#4	12"	120	2'-11"	#5	6	6'-9"	#5	8	8'-10"
	3'			120	3'-11"		6	"		8	
	4'			120	4'-11"		6	"		8	"
	5'			120	5'-11"		6	"		8	"
	6'			120	6'-11"		6	6'-11"		8	9'-0"
1@5'	3'	#4	12"	120	4'-0"	#6	6	8'-1"	#6	8	10'-3"
	4'			120	5'-0"		6	"		8	"
	5'			120	6'-0"		6	"		8	"
	6'			120	7'-0"		6	8'-4"		8	10'-5"
	7'			120	8'-0"		6	8'-5"		8	10'-7"
1@6'	3'	#4	12"	120	4'-1"	#6	6	9'-6"	#6	8	11'-7"
	4'			120	5'-1"		6	"		8	"
	5'			120	6'-1"		6	"		8	"
	6'			120	7'-1"		6	9'-9"		8	11'-10"
	7'			120	8'-1"		6	9'-10"		8	12'-0"
	8'	#5	12"	120	9'-1"		6	10'-0"		8	12'-1"
1@7'	4'	#4	12"	120	5'-2"	#7	6	10'-11"	#7	8	13'-0"
	5'			120	6'-2"		6	"		8	"
	6'			120	7'-2"		6	11'-2"		8	13'-3"
	7'			120	8'-2"		6	11'-3"		8	13'-5"
	8'		10"	144	9'-2"		6	11'-4"		8	13'-6"
	9'	#5	12"	120	10'-2"		6	11'-7"		8	13'-9"
1@8'	4'	#4	12"	120	5'-4"	#7	6	12'-4"	#7	8	14'-5"
	5'			120	6'-4"		6	12'-7"		8	14'-8"
	6'			120	7'-4"		6	"		8	"
	7'			120	8'-4"		6	12'-8"		8	14'-10"
	8'		10"	144	9'-4"		6	12'-10"		8	14'-11"
	9'	#5	12"	120	10'-4"		6	13'-0"		8	15'-2"
	10'		11"	132	11'-4"		6	13'-3"		8	15'-5"
1@9'	5'	#4	12"	120	6'-5"	#8	6	14'-0"	#8	8	16'-1"
	6'			120	7'-5"		6	14'-1"		8	16'-3"
	7'			120	8'-5"		6	"		8	"
	8'		10"	144	9'-5"		6	14'-2"		8	16'-4"
	9'	#5	12"	120	10'-5"		6	14'-5"		8	16'-7"
	10'		11"	132	11'-5"		6	14'-8"		8	16'-10"
	11'		10"	144	12'-5"		6	14'-11"		8	17'-0"
1@10'	5'	#4	12"	120	6'-6"	#8	6	15'-5"	#8	8	17'-6"
	6'			120	7'-6"		6	15'-6"		8	17'-8"
	7'			120	8'-6"		6	"		8	"
	8'		10"	144	9'-6"		6	15'-7"		8	17'-9"
	9'	#5	12"	120	10'-6"		6	15'-10"		8	18'-0"
	10'		11"	132	11'-6"		6	16'-1"		8	18'-3"
	11'		10"	144	12'-6"		6	16'-4"		8	18'-5"
	12'	#6	12"	120	13'-6"		6	16'-7"		8	18'-8"
1@11'	6'	#4	12"	120	7'-7"	#9	6	17'-0"	#9	8	19'-2"
	7'			120	8'-7"		6	"		8	"
	8'		10"	144	9'-7"		6	"		8	"
	9'	#5	12"	120	10'-7"		6	17'-3"		8	19'-5"
	10'		11"	132	11'-7"		6	17'-6"		8	19'-8"
	11'		10"	144	12'-7"		6	17'-9"		8	19'-10"
	12'	#6	12"	120	13'-7"		6	18'-0"		8	20'-1"
1@12'	6'	#4	12"	120	7'-9"	#9	6	18'-5"	#9	8	20'-7"
	7'			120	8'-9"		6	"		8	"
	8'		10"	144	9'-9"		6	"		8	"
	9'	#5	12"	120	10'-9"		6	18'-8"		8	20'-10"
	10'		11"	132	11'-9"		6	18'-11"		8	21'-1"
	11'		10"	144	12'-9"		6	19'-2"		8	21'-3"
	12'	#6	12"	120	13'-9"		6	19'-5"		8	21'-6"

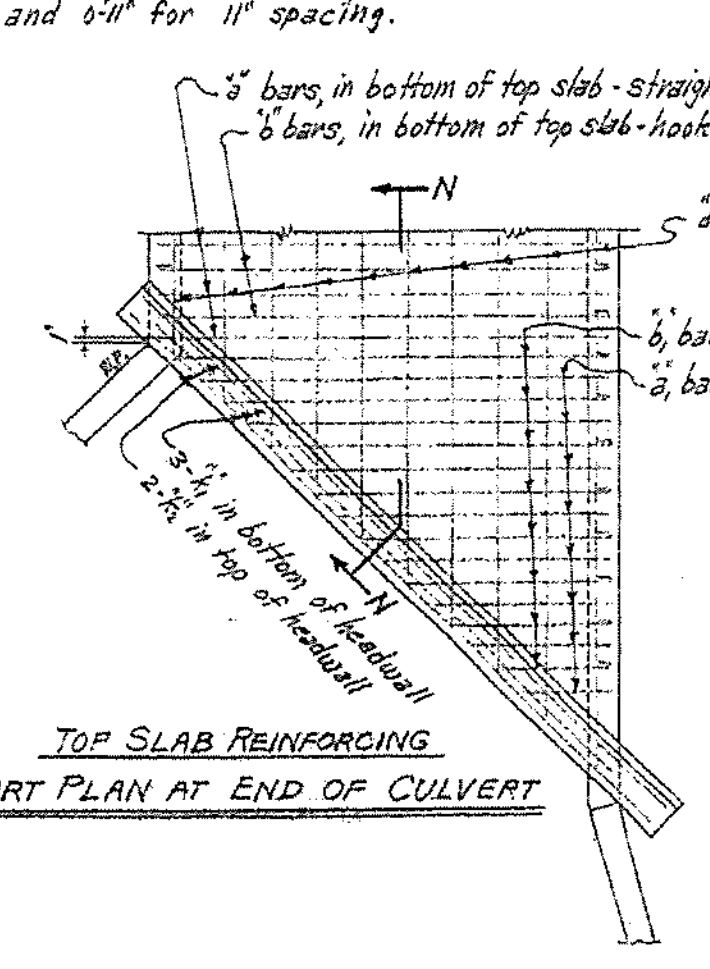
These bars are in the skewed portion of barrel only. The length of "a₁" bars and overall length X of "b₁" bars vary by 1'-1" for 13" spacing, 1'-0" for 12" spacing and 0'-11" for 11" spacing.

BAR SIZE	PIN DIAM.	K	ADD FOR HOOKS	BENDING DIAGRAMS FOR BARS "b" & "b₁"
#6	3"	5"	1'-2"	2 Hooks: "b" bars — K, Pin diam., X
#7	3½"	5¾"	1'-4"	
#6	3"	5"	0'-7"	1 Hook: "b₁" bars — K, Pin diam., X
#7	3½"	5¾"	0'-8"	

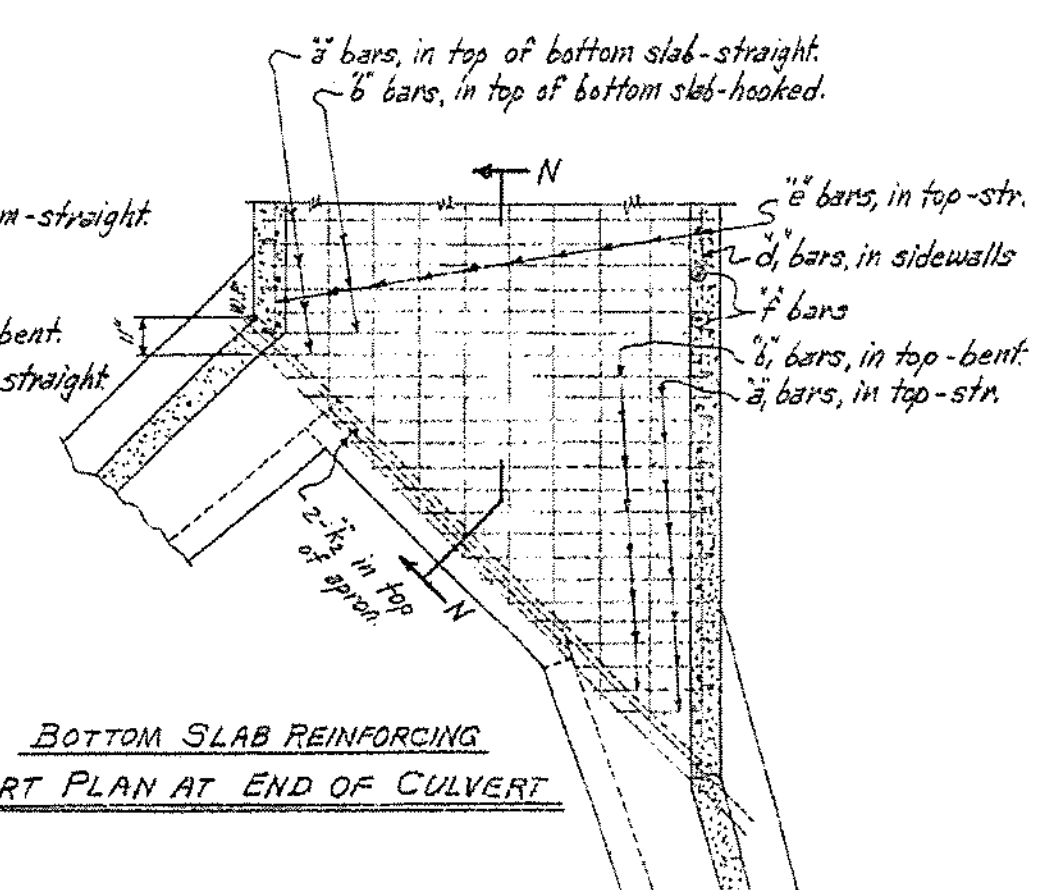
NOTE:- Dimensions are to centers of bars ("b" and "b₁")

DOWEL BARS FOR TWO HEADWALLS

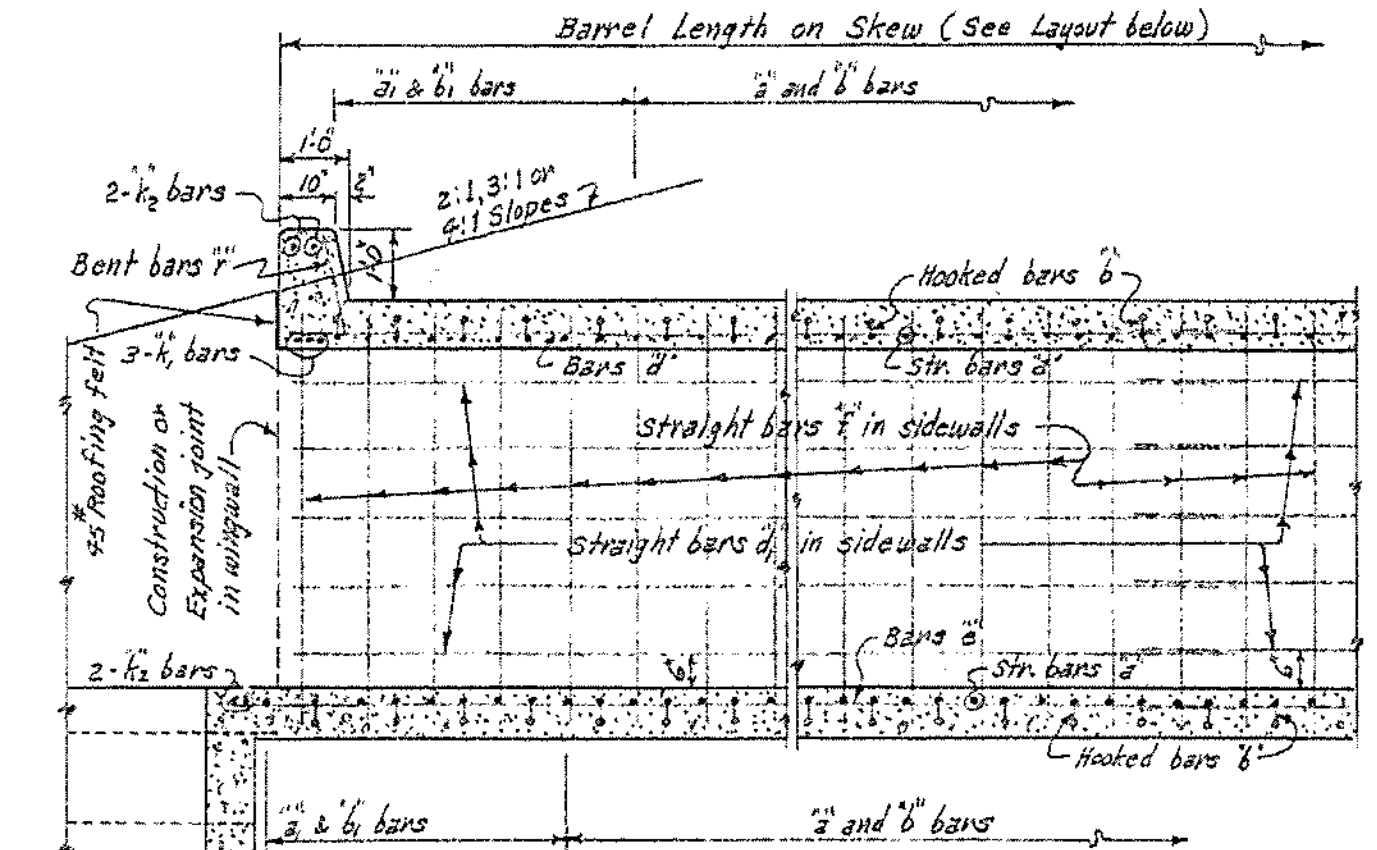
SPAN	SIZE	SPACING	NO. REQD	LENGTH	X	Dowel bars "r" in Two Headwalls
4'	#4	12"±	16	2'-6"	1'-3"	(sketch: X, 2, 12, X)
5'	#4	12"±	18	2'-7"	1'-3½"	
6'	#4	12"±	22	2'-8"	1'-4"	
7'	#4	12"±	24	2'-9"	1'-4½"	
8'	#4	12"±	28	2'-11"	1'-5½"	
9'	#4	12"±	30	3'-0"	1'-6"	
10'	#4	12"±	34	3'-1"	1'-6½"	
11'	#4	12"±	36	3'-2"	1'-7"	
12'	#4	12"±	40	3'-3"	1'-7½"	



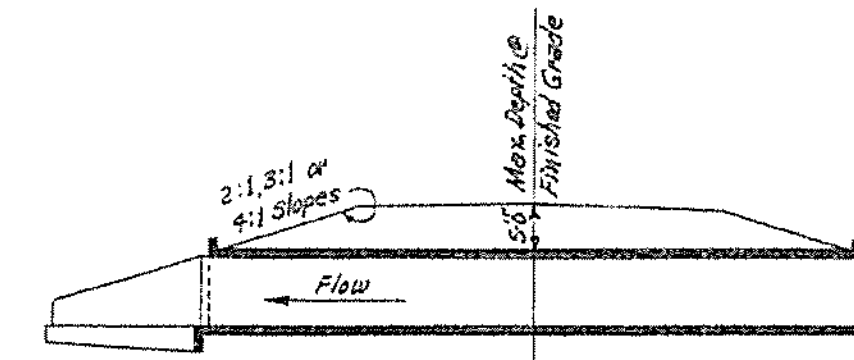
TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT



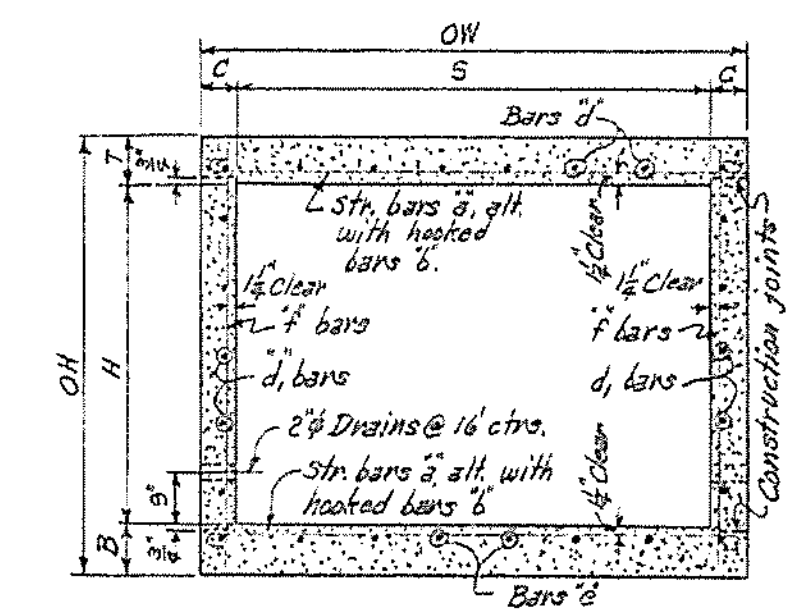
BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT



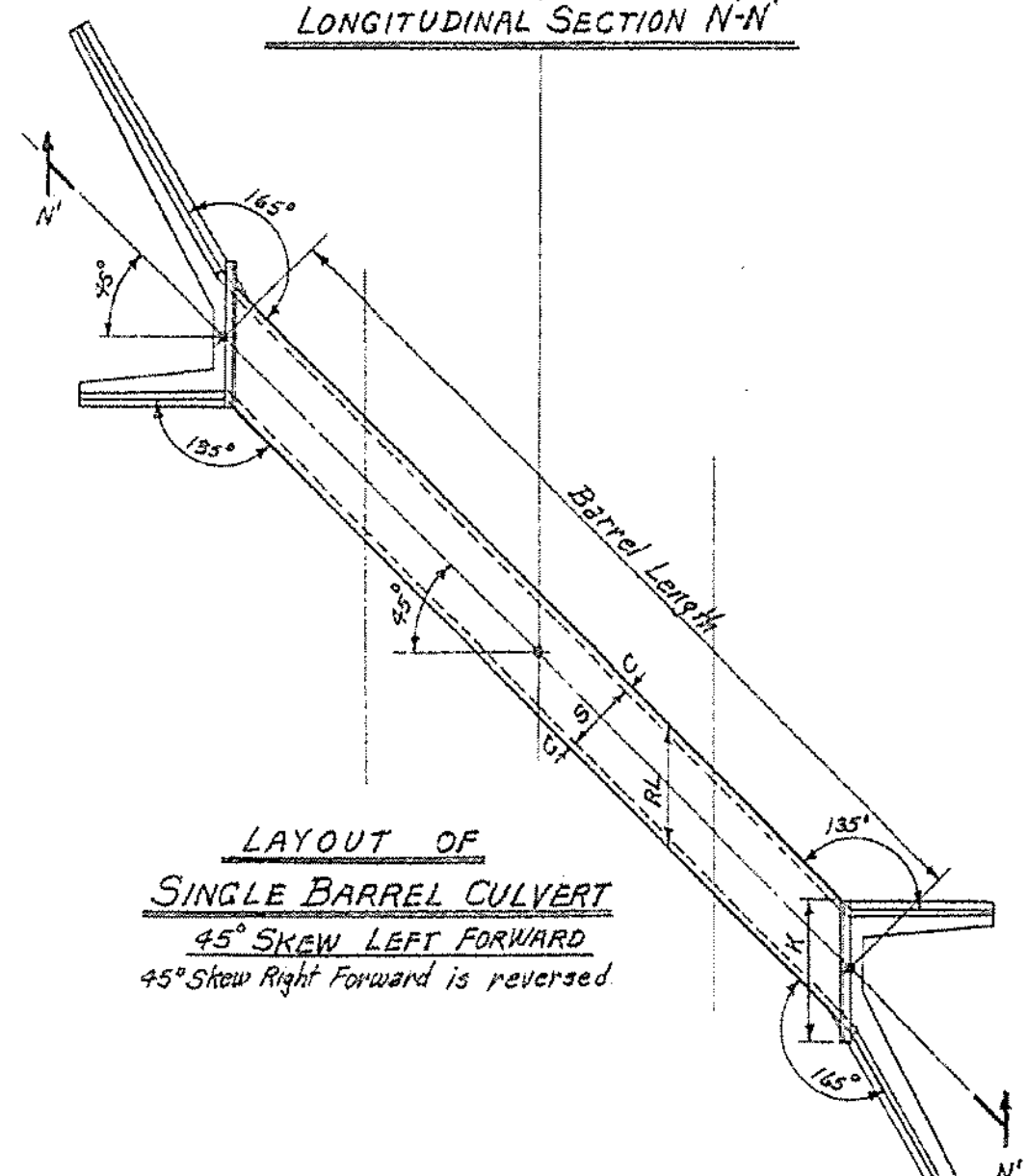
SECTION N-N



LONGITUDINAL SECTION N'-N'



TYPICAL SECTION M-M



LAYOUT OF
SINGLE BARREL CULVERT
45° SKEW LEFT FORWARD
45° Skew Right Forward is reversed.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. W-X432-1 or W-X452-2, W-X453-1 or W-X453-2, and W-X454-1 or W-X454-2. Also W-X45.

MAX. DESIGN DEPTH OF COVER D	CLEAR SPANS S	CLEAR HEIGHT H	SQ. FT. OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	ROADWAY LENGTH RL	LENGTH OF HEADWALL K	* CLASS S CONC. PER LIN. FT. OF BARREL Cu.Yd.	REINFORCING STEEL: TOTAL FOR 60'-0" LENGTH OF BARREL Lb.	PER LIN. FT. OF BARREL Lb.	ADDITIONAL PER LAP Lb.
5'-0"	1@4'	2'	8	5'-0"	7"	6"	6½"	3'-1½"	7'-0⅞"	9'-0⅞"	0.282	2635	41.49	17.95
		3'	12	5'-0"		6"		4'-1½"	"	"	0.319	2797	44.16	19.62
		4'	16	5'-0"		6"		5'-1½"	"	"	0.356	2958	46.83	21.29
		5'	20	5'-0"		6"		6'-1½"	"	"	0.394	3120	49.50	22.96
		6'	24	5'-2"		7"		7'-1½"	7'-3⅝"	9'-3⅝"	0.474	3336	52.96	24.63
	1@5'	3'	15	6'-0"	7½"	6"	7"	4'-2½"	8'-5⅝"	10'-5⅝"	0.380	3572	55.55	22.19
		4'	20	6'-0"		6"		5'-2½"	"	"	0.417	3733	58.23	23.86
		5'	25	6'-0"		6"		6'-2½"	"	"	0.454	3895	60.90	25.53
		6'	30	6'-2"		7"		7'-2½"	8'-8⅝"	10'-8⅝"	0.535	4115	64.49	27.20
		7'	35	6'-3"		7½"		8'-2½"	8'-10⅛"	10'-10⅛"	0.604	4308	67.63	28.87
	1@6'	3'	18	7'-0"	8"	6"	7½"	4'-3½"	9'-10⅞"	11'-10⅞"	0.446	4260	66.29	24.76
		4'	24	7'-0"		6"		5'-3½"	"	"	0.483	4421	68.96	26.43
		5'	30	7'-0"		6"		6'-3½"	"	"	0.520	4583	71.64	28.10
		6'	36	7'-2"		7"		7'-3½"	10'-1⅝"	12'-1⅝"	0.602	4813	75.31	29.77
		7'	42	7'-3"		7½"		8'-3½"	10'-3"	12'-3"	0.671	5008	78.98	31.44
		8'	48	7'-4"		8"		9'-3½"	10'-4½"	12'-4½"	0.746	5610	88.97	33.11
	1@7'	4'	28	8'-0"	8½"	6"	8½"	5'-5"	11'-3⅜"	13'-3⅜"	0.568	5303	81.32	29.01
		5'	35	8'-0"		6"		6'-5"	"	"	0.605	5464	84.00	30.68
		6'	42	8'-2"		7"		7'-5"	11'-6⅝"	13'-6⅝"	0.688	5700	87.76	32.35
		7'	49	8'-3"		7½"		8'-5"	11'-8"	13'-8"	0.757	5901	90.98	34.02
		8'	56	8'-4"		8"		9'-5"	11'-9⅜"	13'-9⅜"	0.832	6219	96.65	35.69
		9'	63	8'-6"		9"		10'-5"	12'-0½"	14'-0½"	0.946	6976	105.59	37.36
	1@8'	4'	32	9'-0"	9½"	6"	9½"	5'-7"	12'-8⅜"	14'-8⅜"	0.676	6196	95.26	33.32
		5'	40	9'-2"		7"		6'-7"	12'-11⅝"	14'-11⅝"	0.754	6423	99.12	34.99
		6'	48	9'-2"		7"		7'-7"	"	"	0.797	6584	101.79	36.66
		7'	56	9'-3"		7½"		8'-7"	13'-1"	15'-1"	0.867	6788	105.05	38.33
		8'	64	9'-4"		8"		9'-7"	13'-2⅜"	15'-2⅜"	0.942	7141	110.81	40.00
		9'	72	9'-6"		9"		10'-7"	13'-5¼"	15'-5¼"	1.057	7701	119.92	41.67
		10'	80	9'-8"		10"		11'-7"	13'-8"	15'-8"	1.184	8121	126.67	43.34
	1@9'	5'	45	10'-2"	10"	7"	10"	6'-8"	14'-4½"	16'-4½"	0.874	7535	114.72	37.56
		6'	54	10'-3"		7½"		7'-8"	14'-6"	16'-6"	0.910	7745	119.04	39.23
		7'	63	10'-3"		7½"		8'-8"	"	"	0.957	7906	120.71	40.90
		8'	72	10'-4"		8"		9'-8"	14'-7⅞"	16'-7⅞"	1.033	8264	126.54	42.57
		9'	81	10'-6"		9"		10'-8"	14'-10⅞"	16'-10⅞"	1.148	8856	135.80	44.24
		10'	90	10'-8"		10"		11'-8"	15'-1"	17'-1"	1.276	9248	142.68	45.91
		11'	99	10'-10"		11"		12'-8"	15'-3⅝"	17'-3⅝"	1.416	9717	150.40	47.58
	1@10'	5'	50	11'-2"	10½"	7"	11"	6'-9½"	15'-9½"	17'-9½"	0.957	8572	130.64	40.13
		6'	60	11'-3"		7½"		7'-9½"	15'-11"	17'-11"	1.024	8784	133.39	41.80
		7'	70	11'-3"		7½"		8'-9½"	"	"	1.071	8946	136.66	43.47
		8'	80	11'-4"		8"		9'-9½"	16'-0⅜"	18'-0⅜"	1.147	9308	142.55	45.14
		9'	90	11'-6"		9"		10'-9½"	16'-3⅜"	18'-3⅜"	1.263	9891	151.92	46.81
		10'	100	11'-8"		10"		11'-9½"	16'-6"	18'-6"	1.391	10,310	158.89	48.48
		11'	110	11'-10"		11"		12'-9½"	16'-8⅞"	18'-8⅞"	1.532	10,785	166.71	50.15
		12'	120	12'-0"		12"		13'-9½"	16'-11⅝"	18'-11⅝"	1.685	11,524	178.67	51.82
	1@11'	6'	66	12'-4"	11"	8"	11½"	7'-10½"	17'-5⅛"	19'-5⅛"	1.153	10,378	155.16	46.12
		7'	77	12'-4"		8"		8'-10½"	"	"	1.202	10,539	157.83	47.79
		8'	88	12'-4"		8"		9'-10½"	"	"	1.252	10,855	163.06	49.46
		9'	99	12'-6"		9"		10'-10½"	17'-8⅛"	19'-8⅛"	1.368	11,443	172.60	51.13
		10'	110	12'-8"		10"		11'-10½"	17'-11"	19'-11"	1.497	11,886	179.70	52.80
		11'	121	12'-10"		11"		12'-10½"	18'-1⅞"	20'-1⅞"	1.638	12,374	187.67	54.47
		12'	132	13'-0"		12"		13'-10½"	18'-4⅝"	20'-4⅝"	1.792	13,071	199.79	56.14
	1@12'	6'	72	13'-4"	11¾"	8"	12¼"	8'-0"	18'-10⅞"	20'-10⅞"	1.284	11,420	172.20	48.69
		7'	84	13'-4"		8"		9'-0"	"	"	1.333	11,581	174.87	50.36
		8'	96	13'-4"		8"		10'-0"	"	"	1.383	11,899	180.15	52.03
		9'	108	13'-6"		9"		11'-0"	19'-1⅝"	21'-1"	1.500	12,500	189.85	53.70
		10'	120	13'-8"		10"		12'-0"	19'-3⅞"	21'-4"	1.630	12,948	197.07	55.37
		11'	132	13'-10"		11"		13'-0"	19'-6¾"	21'-6¾"	1.772	13,446	205.16	57.04
		12'	144	14'-0"		12"		14'-0"	19'-9⅝"	21'-9⅝"	1.926	14,212	217.45	58.71

* For remainder of quantities see Std. Wing Drawings listed at left. Total steel quantities listed above include one lap of longitudinal bars.

GENERAL NOTES

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.
REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.
BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters min.
CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls, and slabs shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
45° SKEW

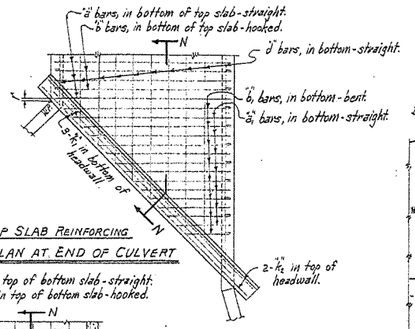
4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 OR 4:1 SLOPES
SINGLES — UNDER 5'-0" COVER

STANDARD DRAWING NO. R-145X-0

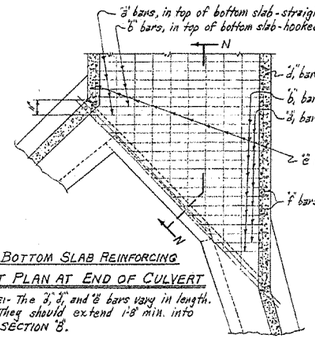
Designed by:- W.C.H. 1-23-63. Checked by:- R.H.S. 5-8-63
Drawn by:- W.C.H. 7-10-64 Checked by:-
Quantities by:- W.C.H. 9-30-64 Checked by:-

Reshot 3-9-93 356

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			151	
JOB No.					

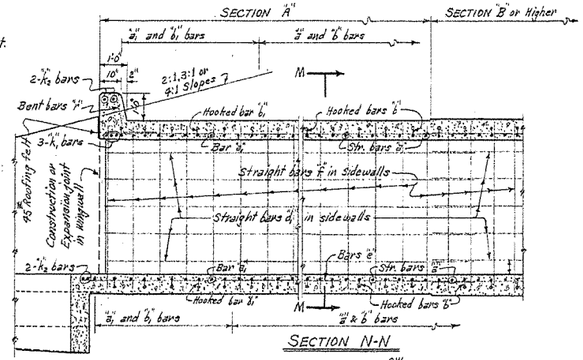


TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT

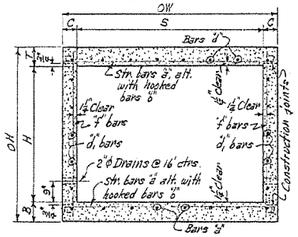


BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

NOTE:- The "d", "d1" and "e" bars vary in length. They should extend 1'-8" min. into SECTION "B".



SECTION N-N



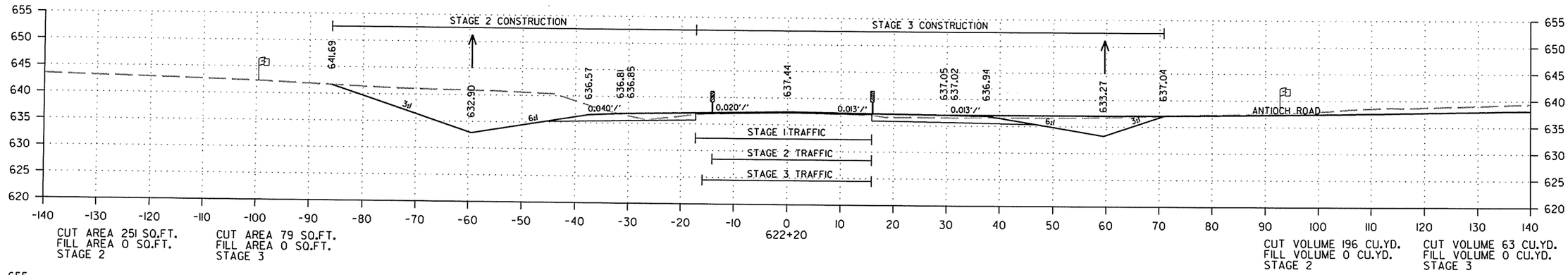
TYPICAL SECTION M-M

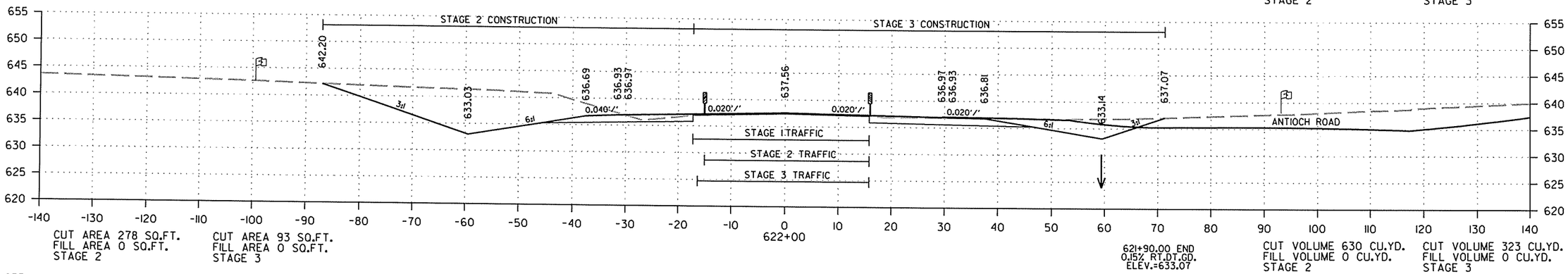
BAR LIST FOR SECTION "A" ON 45° SKEW - ONE END ONLY.

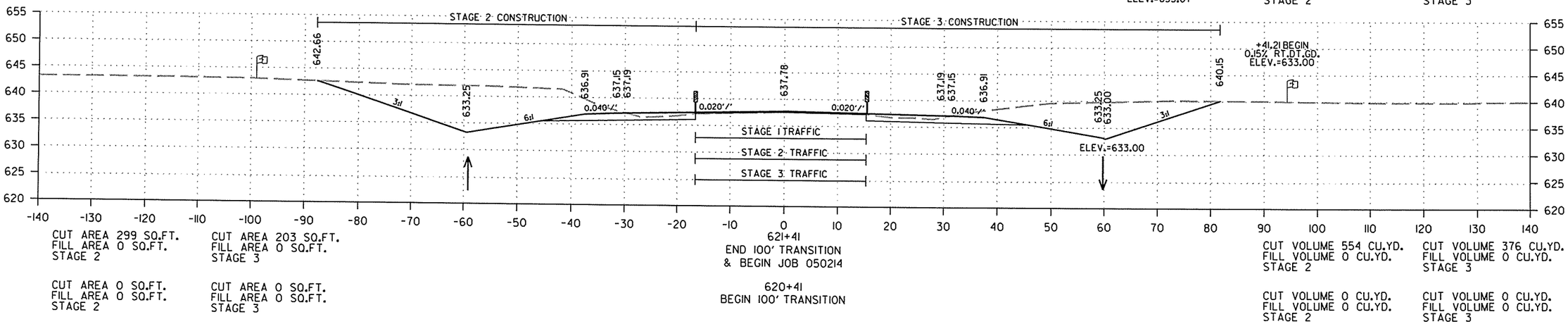
| SECTION "A" & BAR GROUP | DEPTH OF SECTION | CLEAR SPAN | CLEAR HEIGHT | "a" bars: Straight, In Top and Bottom Slabs of Barrel. Size | Spacing | Number Reqd 2:1 | 3:1 | 4:1 | Length | "a1" bars: Straight, In Top and Bottom Slab of Barrel-(two of each Length). Size | Spacing | No. Reqd | Length | "b" bars: Bent-See Diagrams at Right. In Top and Bottom Slabs of Barrel-hooked. Alternate with "a" bars. Size | Spacing | Number Reqd 2:1 | 3:1 | 4:1 | Length Max. | Length Min. | X | "b1" bars: In Top and Bottom Slabs of Barrel-one end hooked. (Two of each Length). Alternate with "a1" bars. Size | Spacing | No. Reqd | Length Max. | Length Min. | X | "d" bars: Straight, Longitudinal in Top Slab of Barrel. Size | Spacing | No. Reqd | Length | "d1" bars: Straight, Longitudinal in Sidewalls. Size | Spacing | No. Reqd | Length | "e" bars: Straight, Longitudinal in Bottom Slab of Barrel. Size | Spacing | No. Reqd | Length | "f" bars: Straight, Verticals in Sidewalls. Size | Spacing | Number Reqd 2:1 | 3:1 | 4:1 | Length | "H" bars: Straight, In Bottom of Headwall. Size | No. Reqd | Length | "K" bars: Straight, In Top of Headwall and Apron. (2 Each) Size | No. Reqd | Length |
|---|---|---|---|---|---

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.		050214	152	311

(2) CROSS SECTIONS - HWY. 167







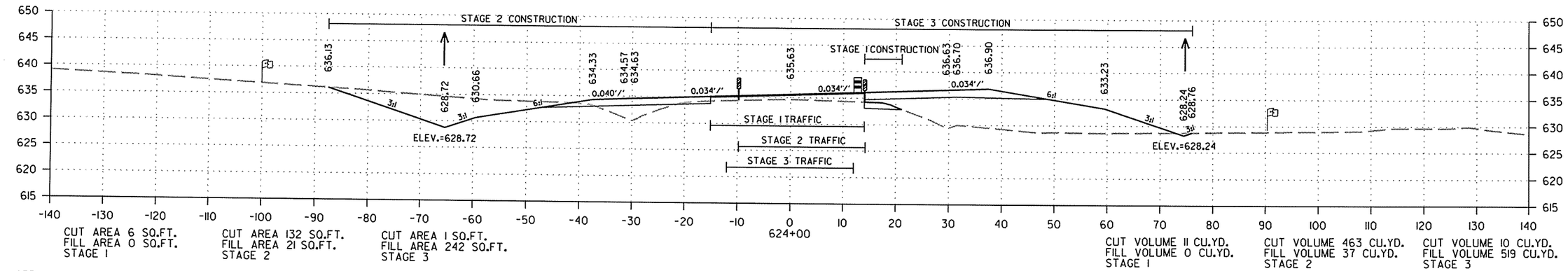
CROSS SECTION STA. 621+41 TO STA. 622+20

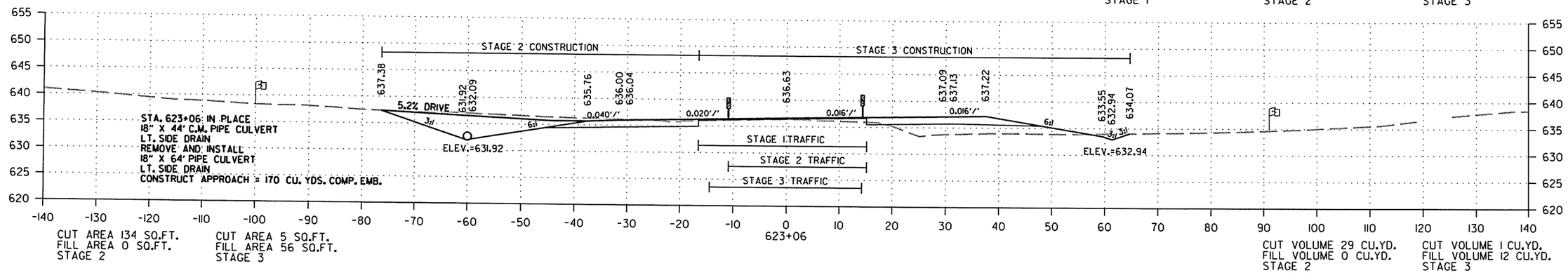
8/8/2014

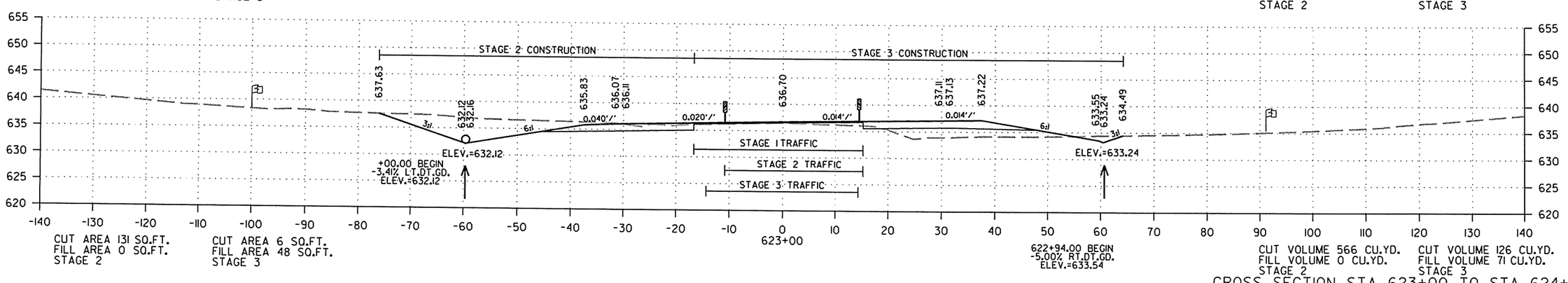
R050214.DGN

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.		050214	153	311

(2) CROSS SECTIONS - HWY. 167







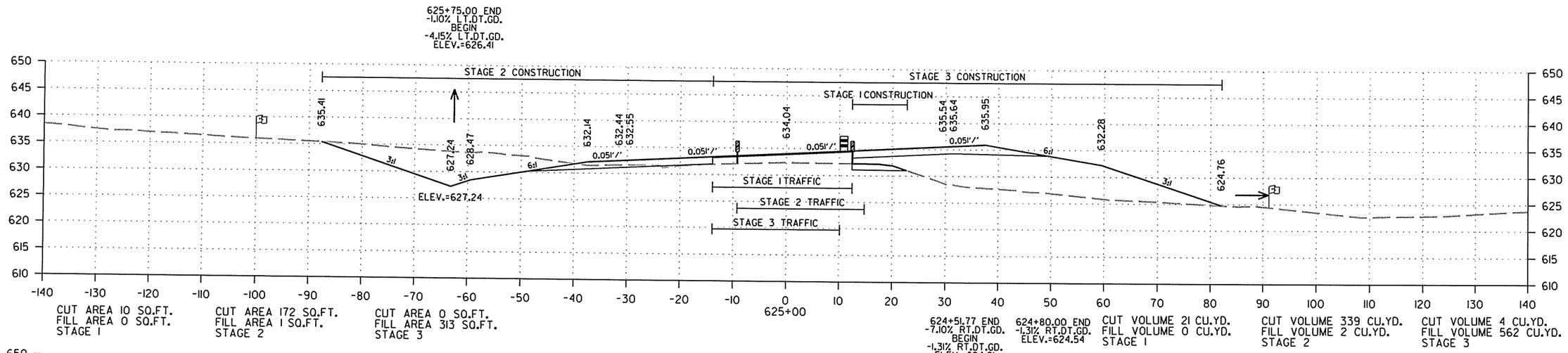
CROSS SECTION STA. 623+00 TO STA. 624+00

8/8/2014

R050214.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.		050214	154	311

(2) CROSS SECTIONS - HWY. 167



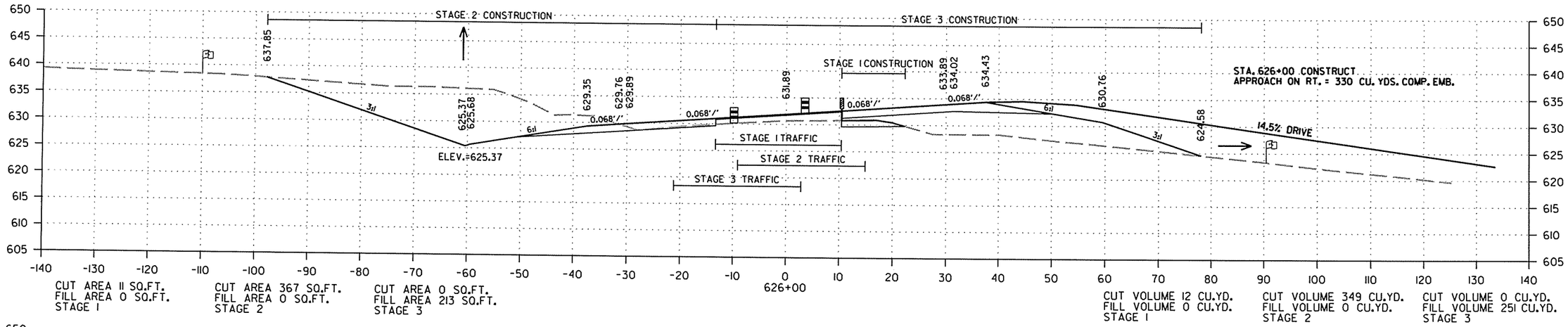
CROSS SECTION STA. 624+16 TO STA. 625+00

8/8/2014

R050214.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.		050214	155	311

(2) CROSS SECTIONS - HWY. 167



CUT AREA 11 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 1

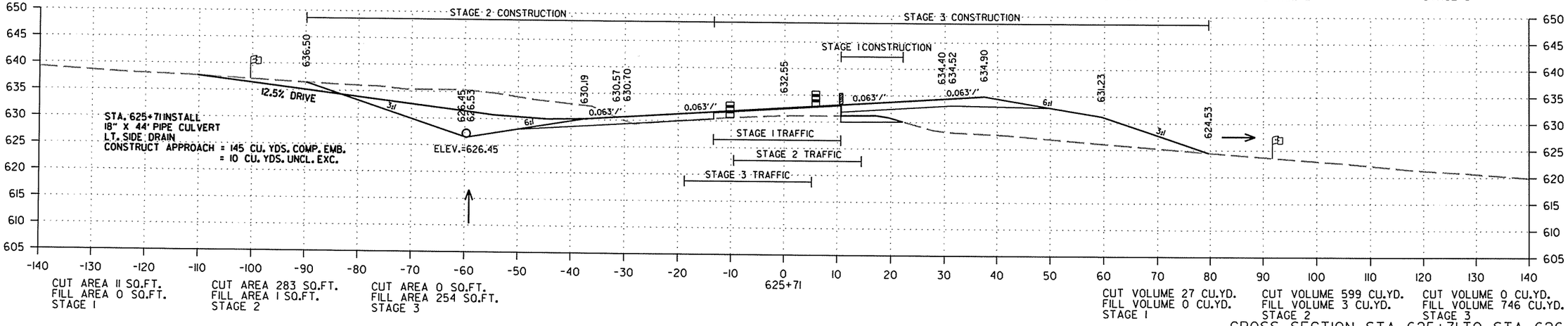
CUT AREA 367 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 213 SQ.FT.
STAGE 3

CUT VOLUME 12 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 1

CUT VOLUME 349 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 251 CU.YD.
STAGE 3



CUT AREA 11 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 1

CUT AREA 283 SQ.FT.
FILL AREA 1 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 254 SQ.FT.
STAGE 3

CUT VOLUME 27 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 1

CUT VOLUME 599 CU.YD.
FILL VOLUME 3 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 746 CU.YD.
STAGE 3

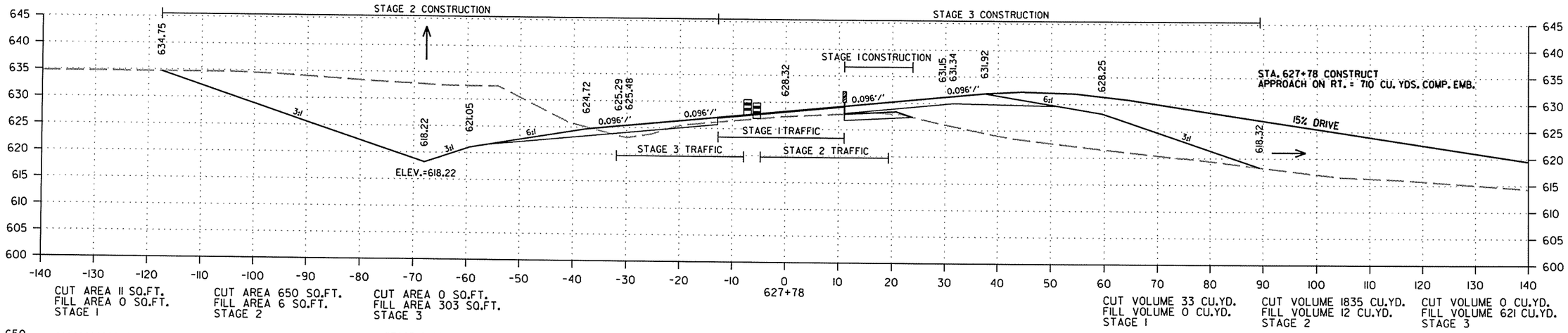
CROSS SECTION STA. 625+71 TO STA. 626+00

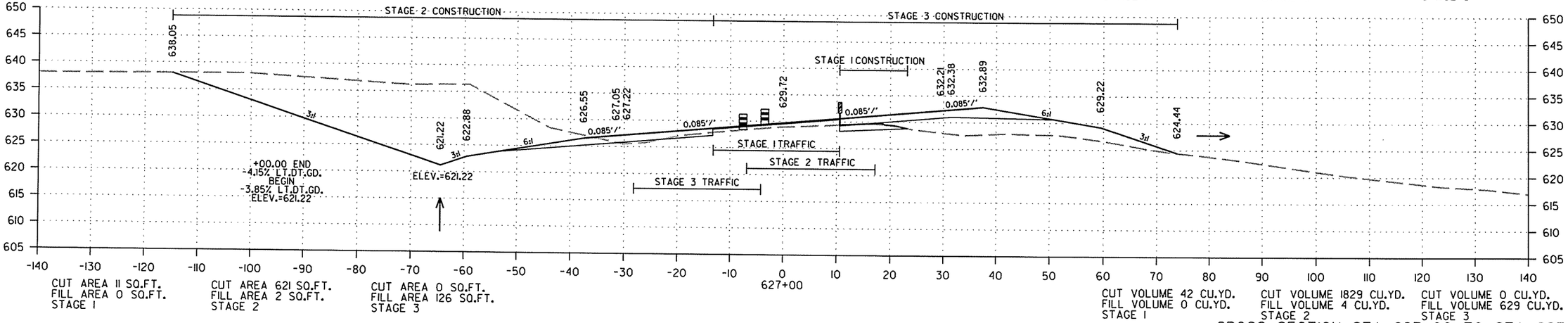
8/8/2014

R050214.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.		050214	156	311

(2) CROSS SECTIONS - HWY. 167





CROSS SECTION STA. 627+00 TO STA. 627+78

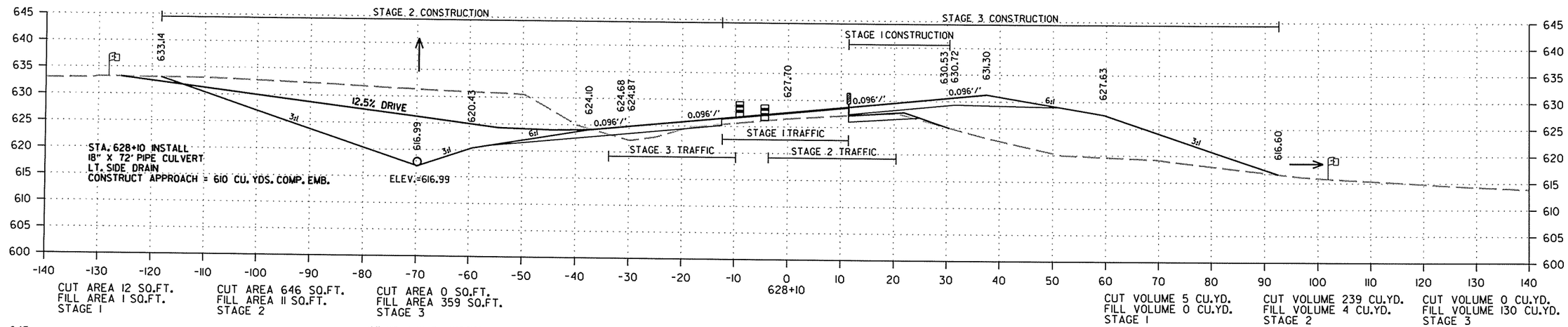
8/8/2014

R050214.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.		050214	157	311

(2) CROSS SECTIONS - HWY. 167

628+50.00 BEGIN
-3.85% RT.DT.GD.
ELEV.=615.61



CUT AREA 12 SQ.FT.
FILL AREA 1 SQ.FT.
STAGE 1

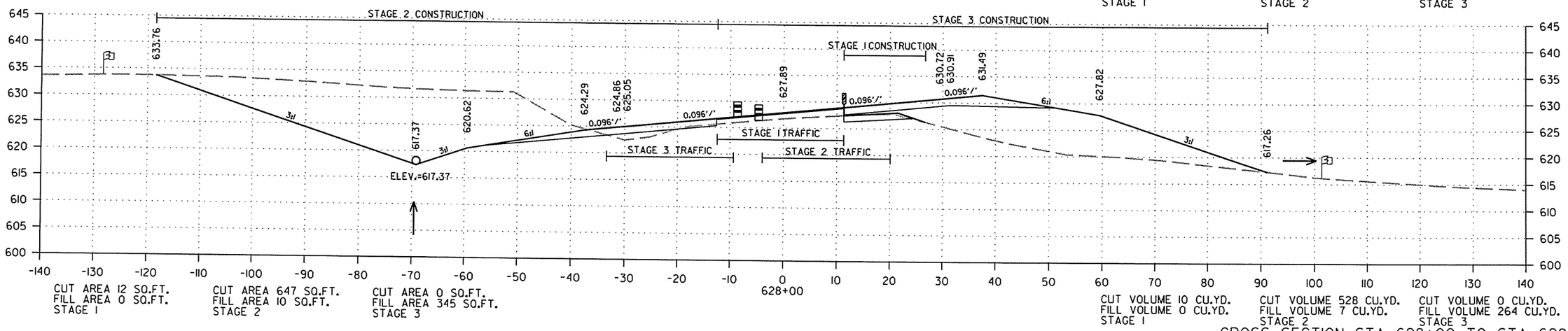
CUT AREA 646 SQ.FT.
FILL AREA 11 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 359 SQ.FT.
STAGE 3

CUT VOLUME 5 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 1

CUT VOLUME 239 CU.YD.
FILL VOLUME 4 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 130 CU.YD.
STAGE 3



CUT AREA 12 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 1

CUT AREA 647 SQ.FT.
FILL AREA 10 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 345 SQ.FT.
STAGE 3

CUT VOLUME 10 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 1

CUT VOLUME 528 CU.YD.
FILL VOLUME 7 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 264 CU.YD.
STAGE 3

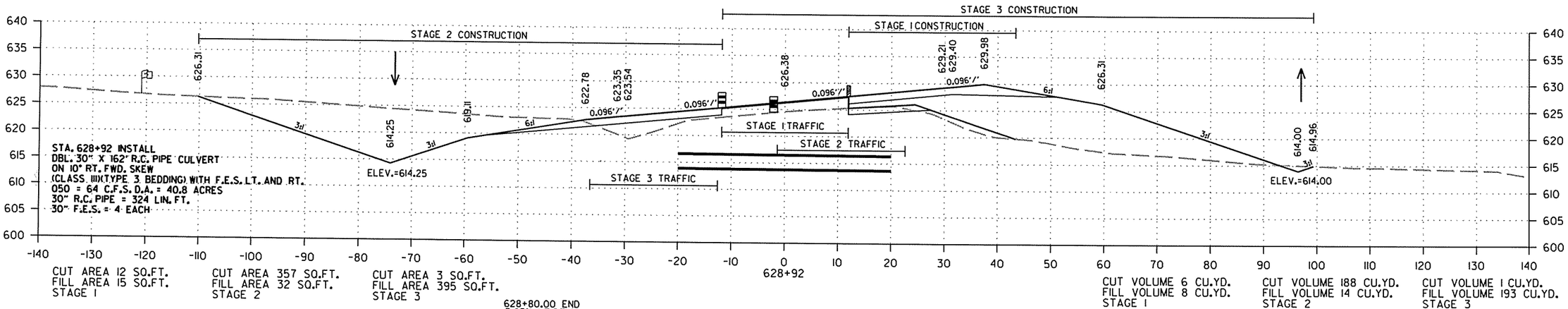
CROSS SECTION STA. 628+00 TO STA. 628+10

8/8/2014

R050214.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.		050214	158	311

(2) CROSS SECTIONS - HWY. 167



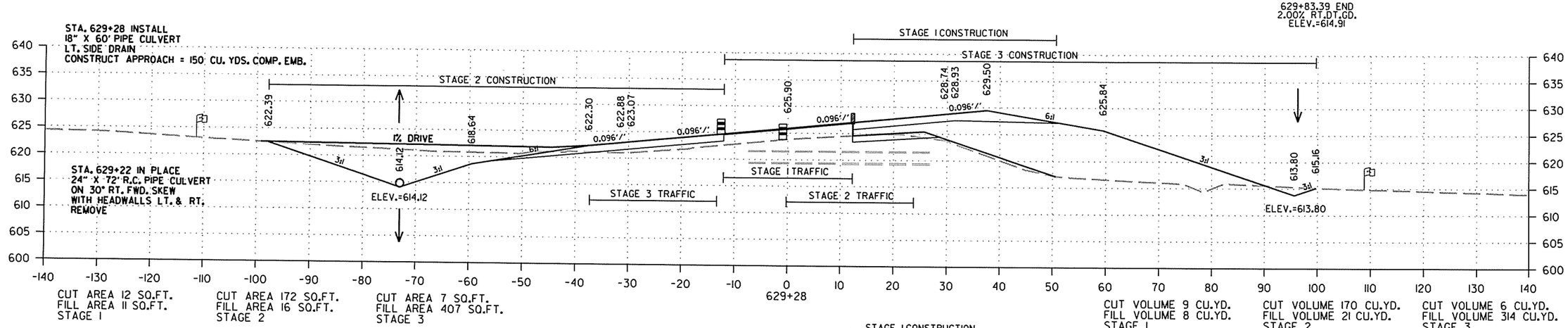
CROSS SECTION STA. 628+79 TO STA. 628+92

8/8/2014

R050214.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.		050214	159	311

(2) CROSS SECTIONS - HWY. 167



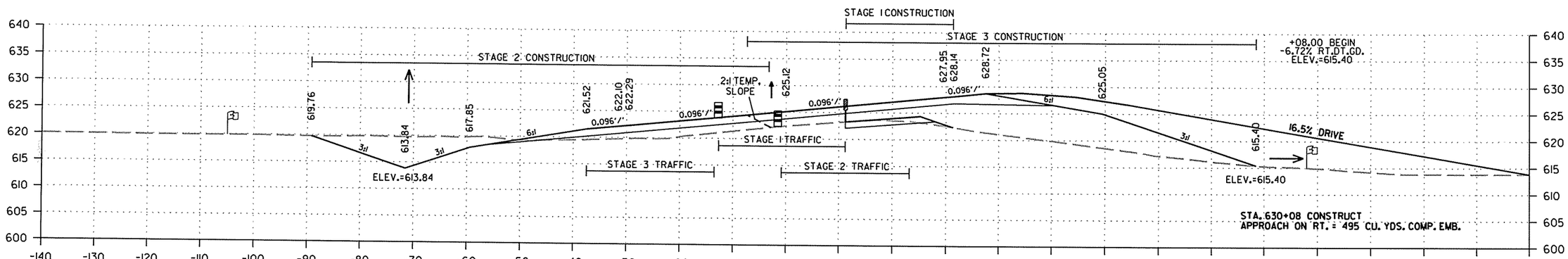
CROSS SECTION STA. 629+00 TO STA. 629+28

8/8/2014

R050214.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.		050214	160	311

(2) CROSS SECTIONS - HWY. 167



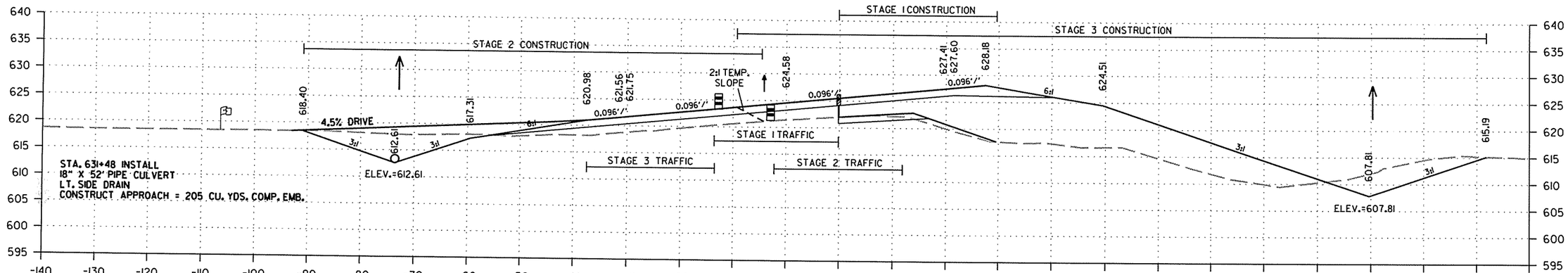
CROSS SECTION STA. 630+00 TO STA. 630+08

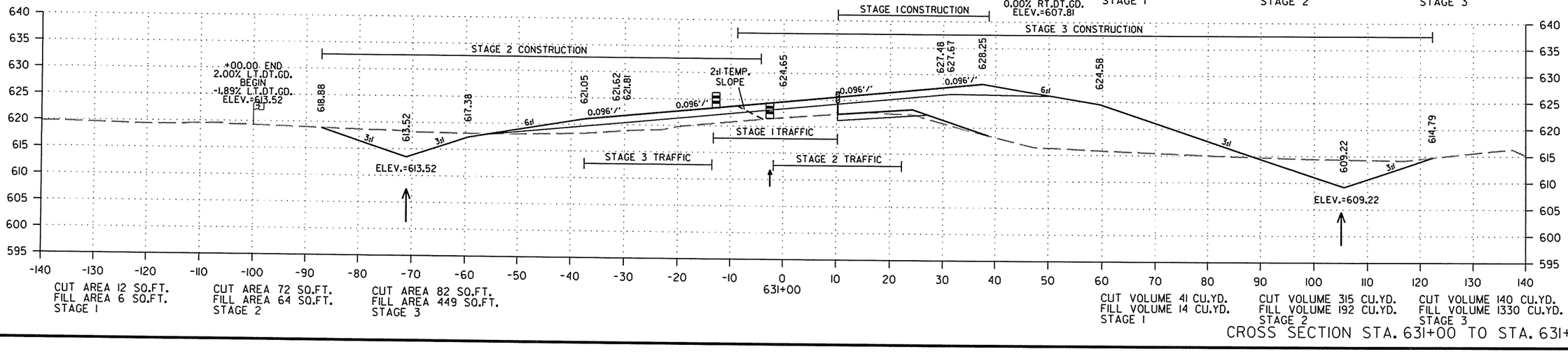
8/8/2014

R050214.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.		050214	161	311

(2) CROSS SECTIONS - HWY. 167





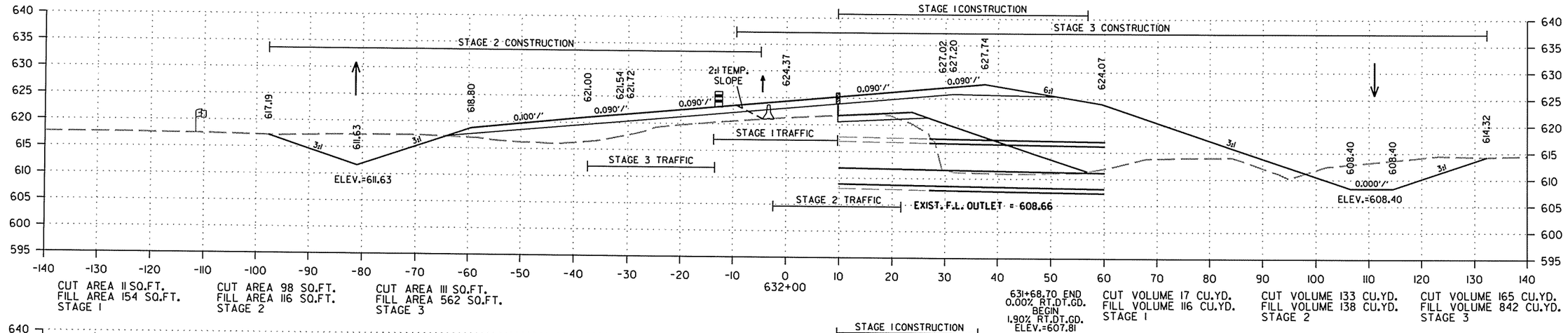
CROSS SECTION STA. 631+00 TO STA. 631+48

8/8/2014

R050214.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.		050214	162	311

(2) CROSS SECTIONS - HWY. 167



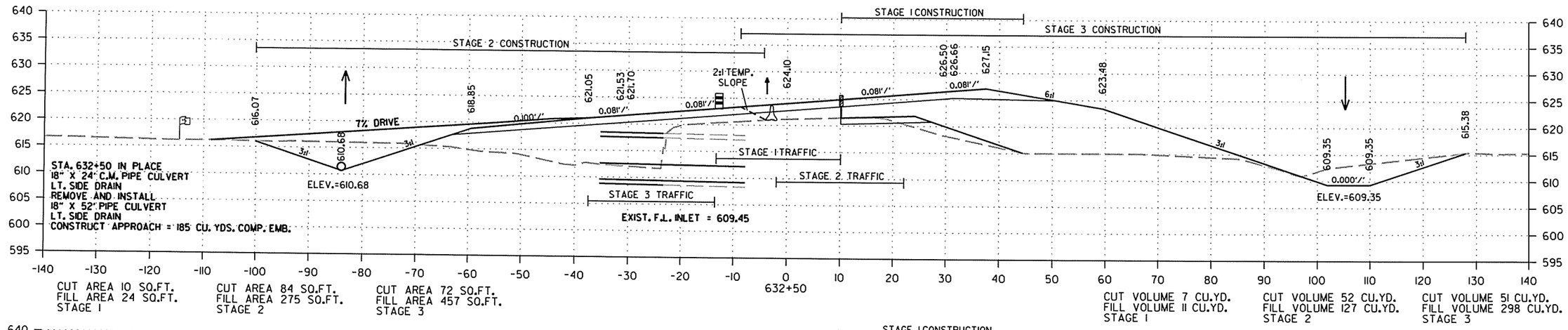
CROSS SECTION STA. 631+62 TO STA. 632+00

8/8/2014

R050214.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.		050214	163	311

(2) CROSS SECTIONS - HWY. 167



CROSS SECTION STA. 632+33 TO STA. 632+50

8/8/2014

R050214.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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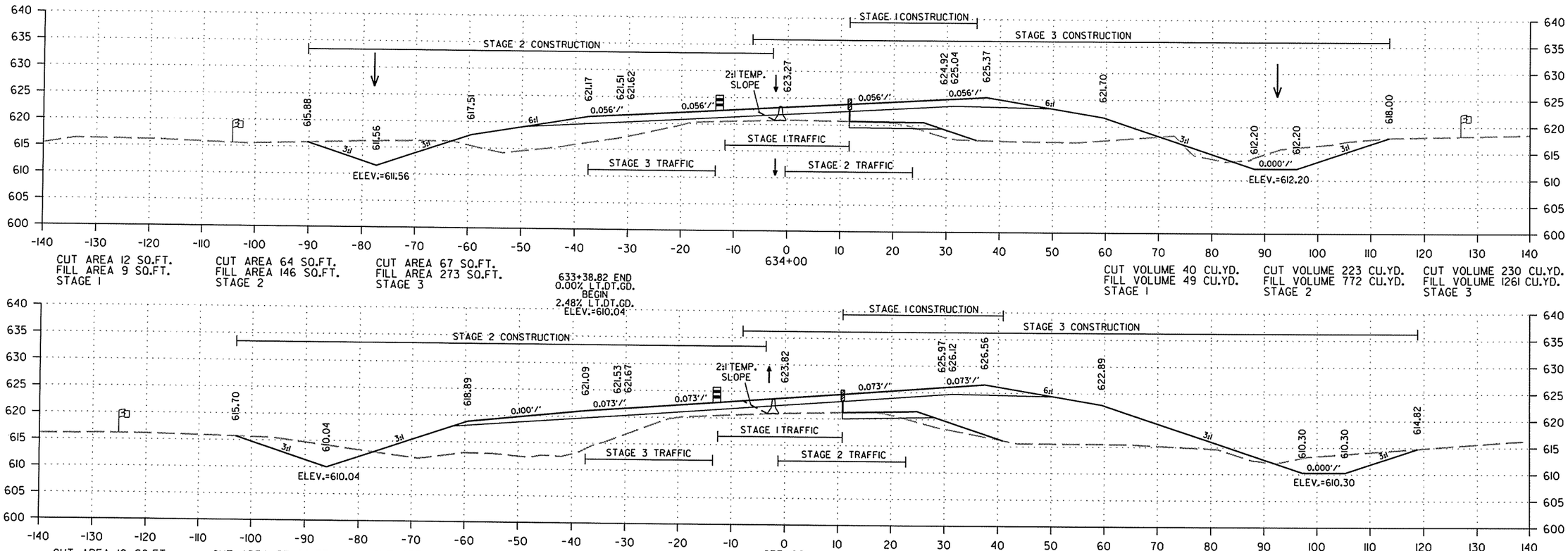
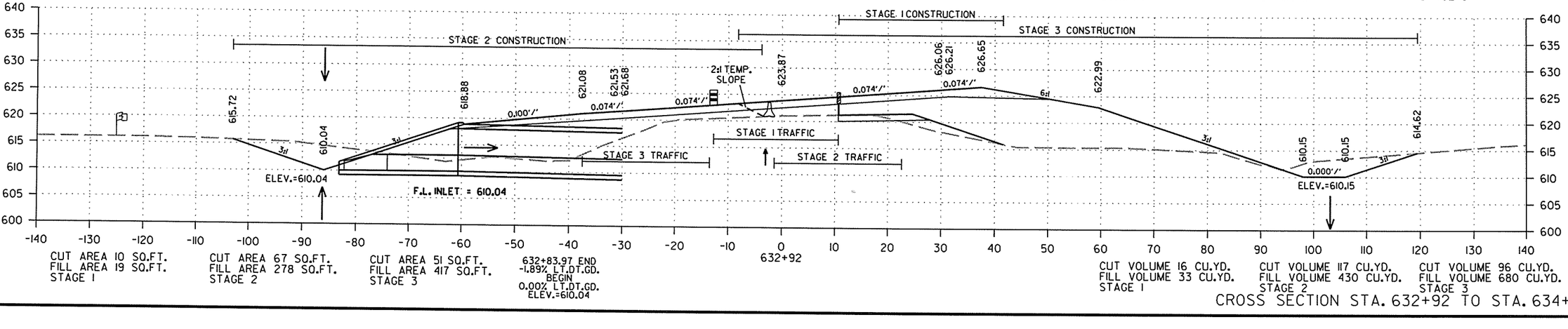
				JOB NO.		050214	164	311

(2) CROSS SECTIONS - HWY. 167





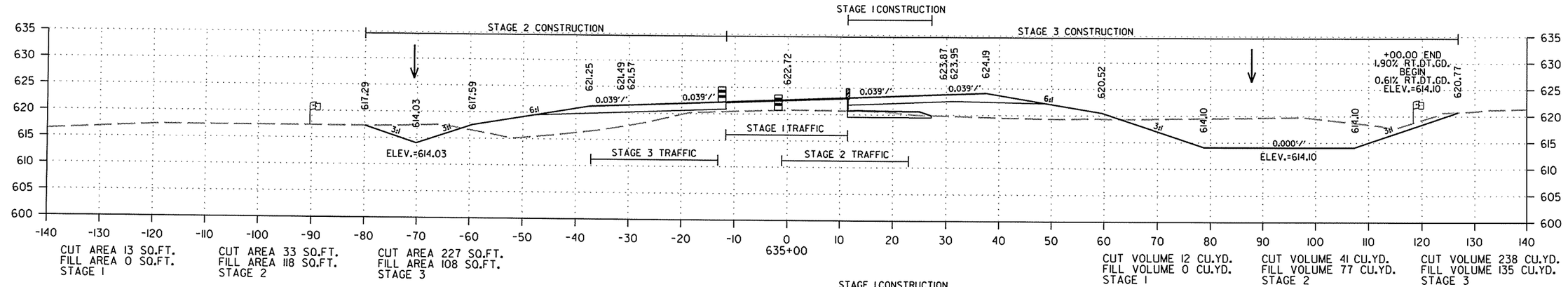
CROSS SECTION STA. 632+92 TO STA. 634+00

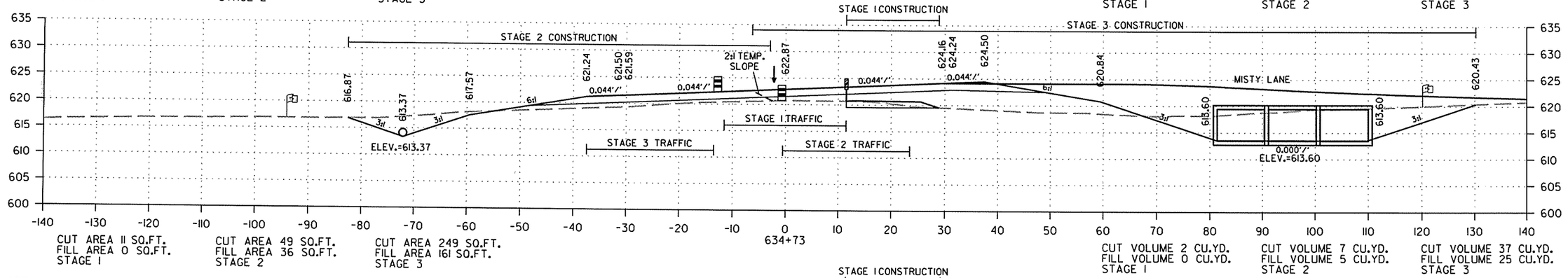
8/8/2014

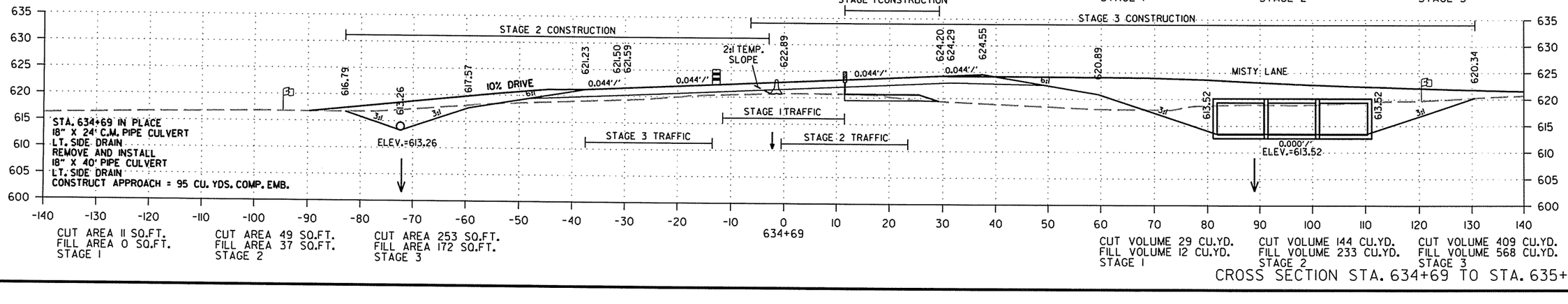
R050214.DGN

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.		050214	165	311

(2) CROSS SECTIONS - HWY. 167







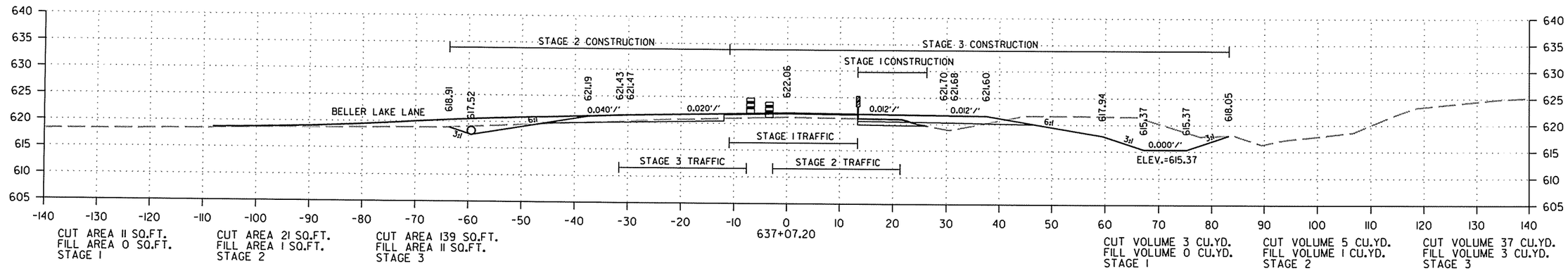
CROSS SECTION STA. 634+69 TO STA. 635+00

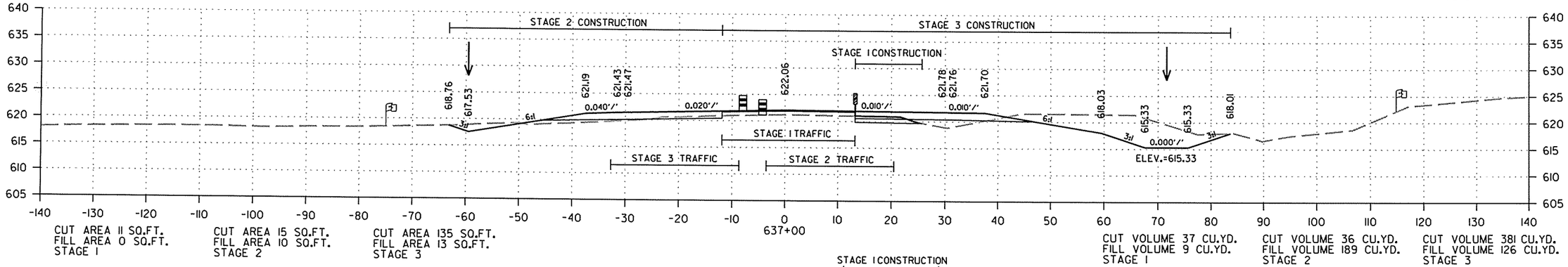
8/8/2014

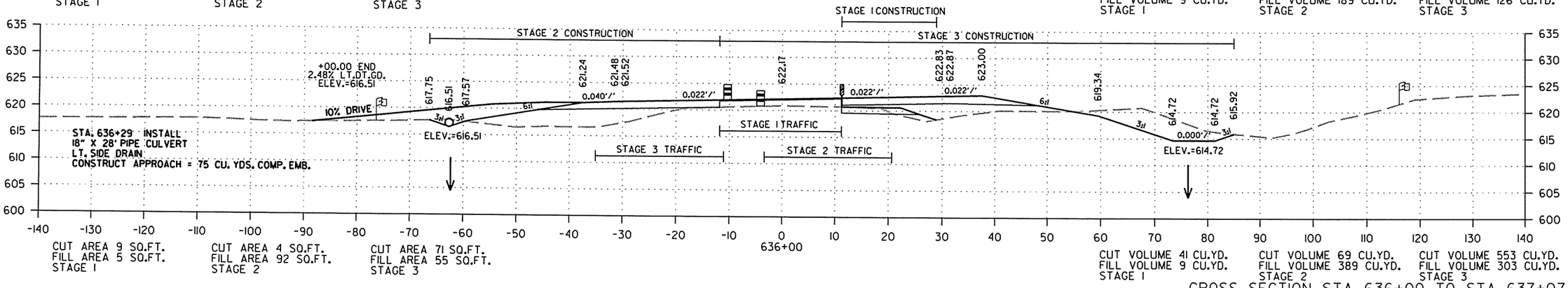
R050214.DGN

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.		050214	166	311

(2) CROSS SECTIONS - HWY. 167







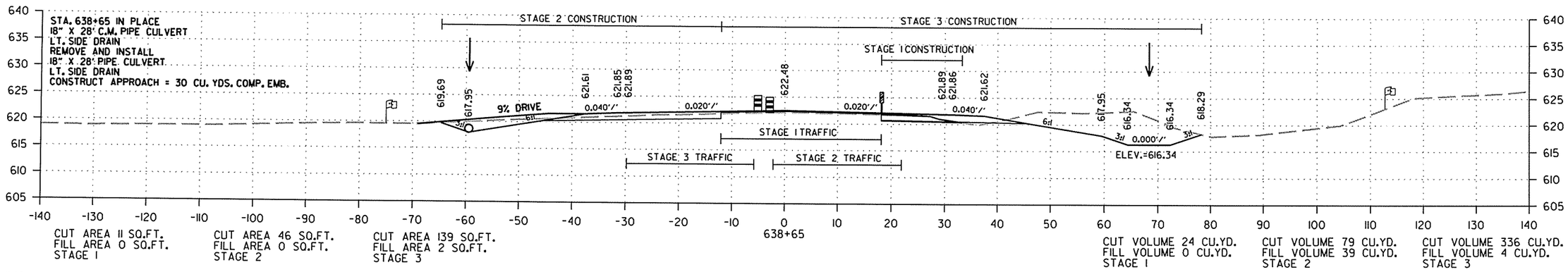
CROSS SECTION STA. 636+00 TO STA. 637+07.20

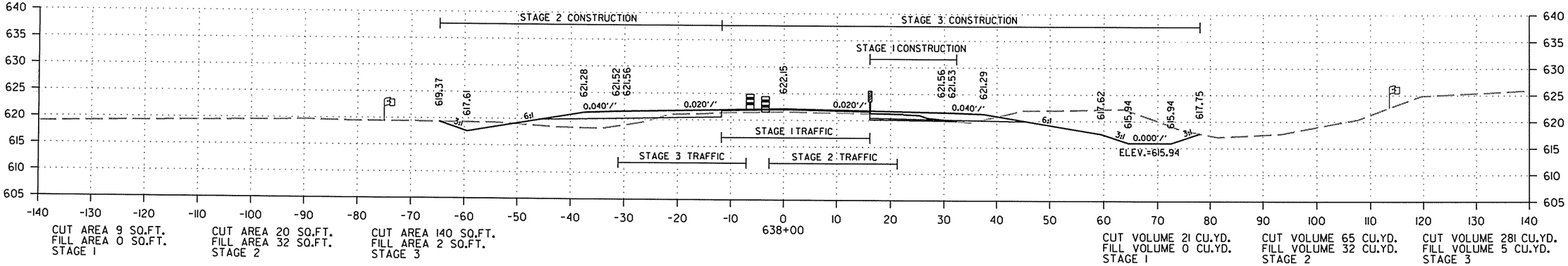
8/8/2014

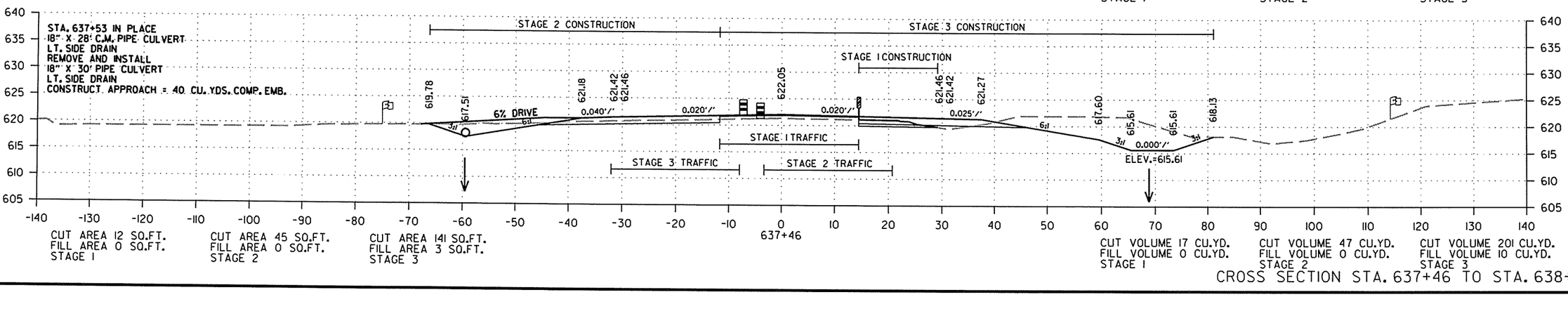
R050214.DGN

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.		050214	167	311

(2) CROSS SECTIONS - HWY. 167







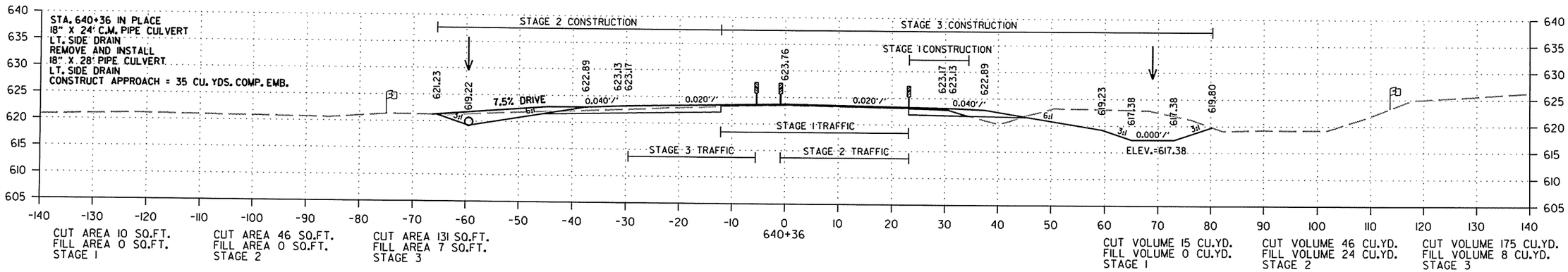
CROSS SECTION STA. 637+46 TO STA. 638+65

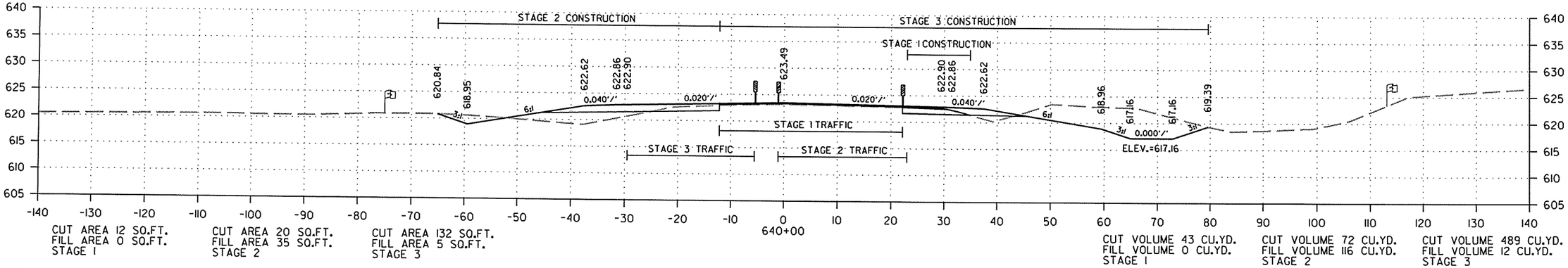
8/8/2014

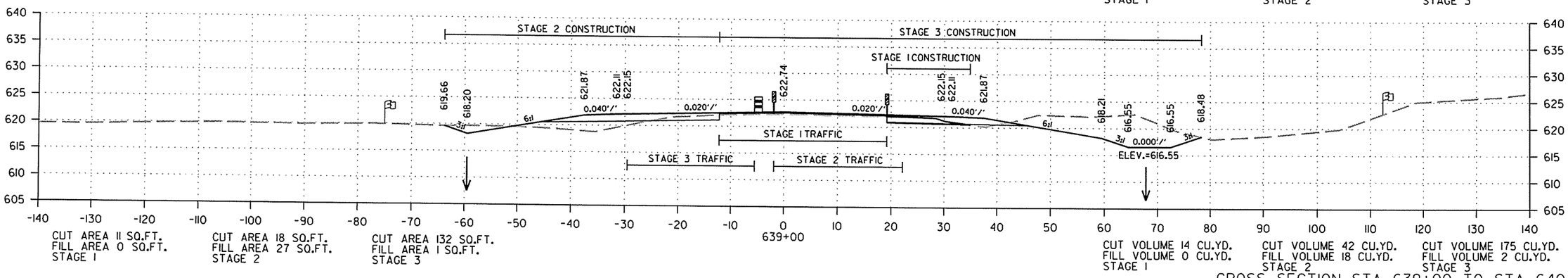
R050214.DGN

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.		050214	168	311

(2) CROSS SECTIONS - HWY. 167







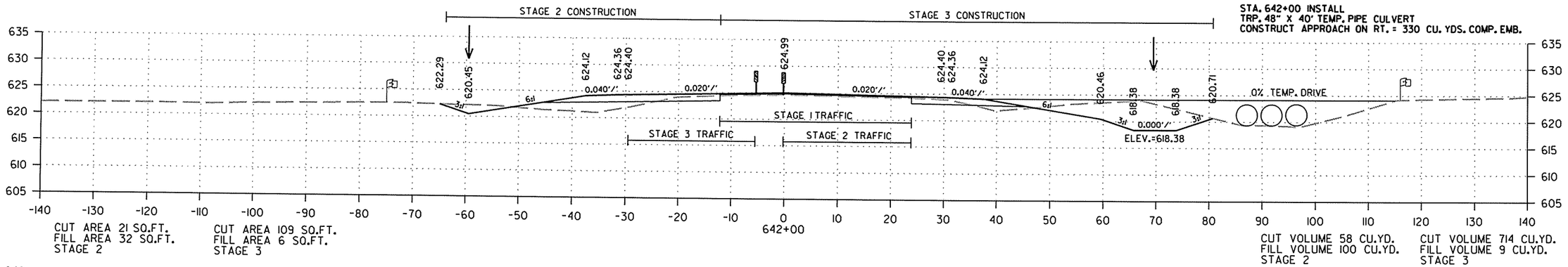
CROSS SECTION STA. 639+00 TO STA. 640+36

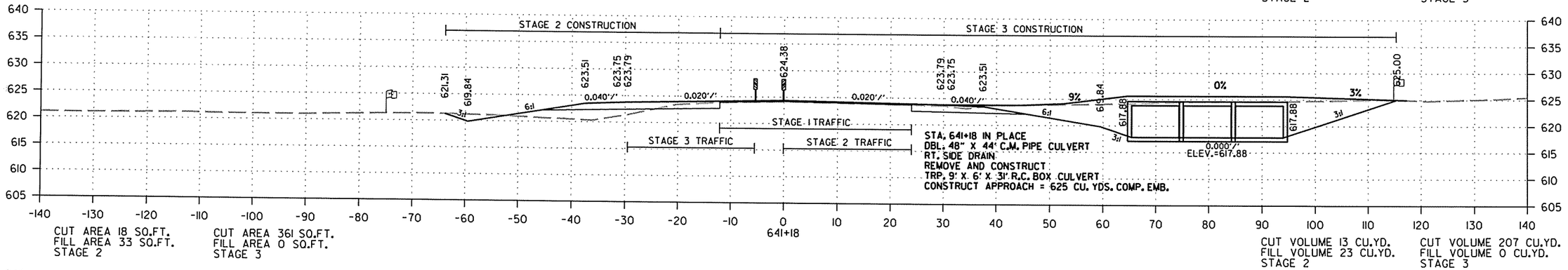
8/8/2014

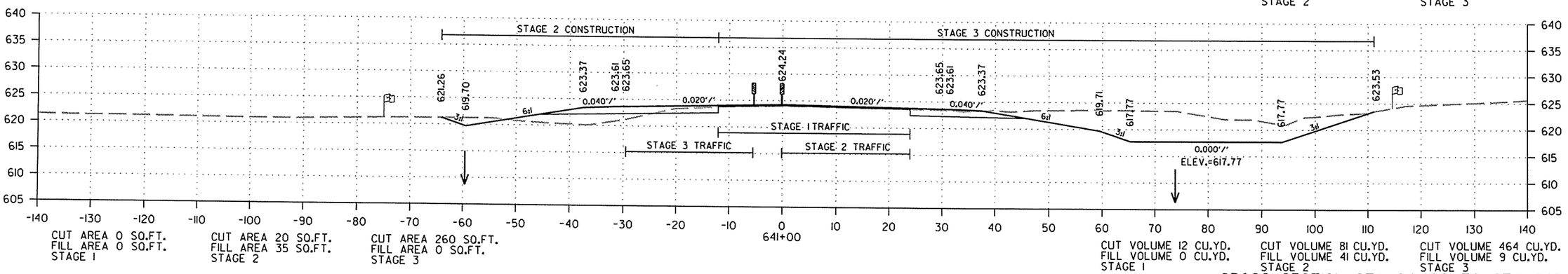
R050214.DGN

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.		050214	169	311

(2) CROSS SECTIONS - HWY. 167







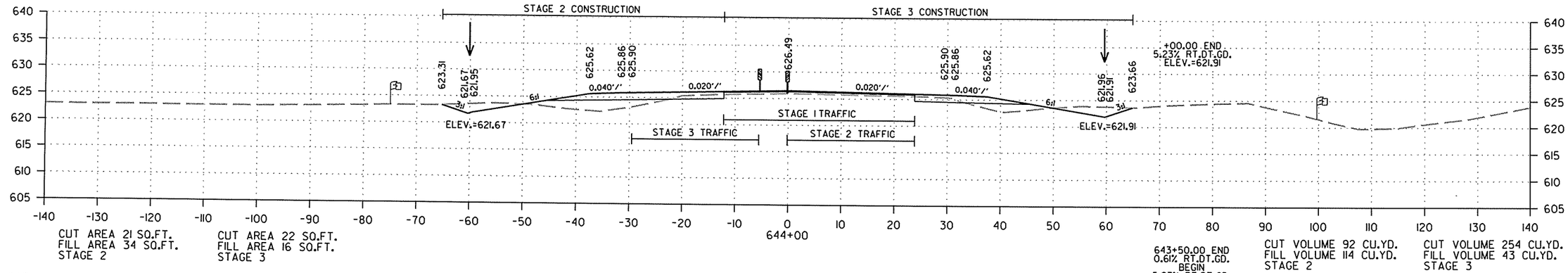
CROSS SECTION STA. 641+00 TO STA. 642+00

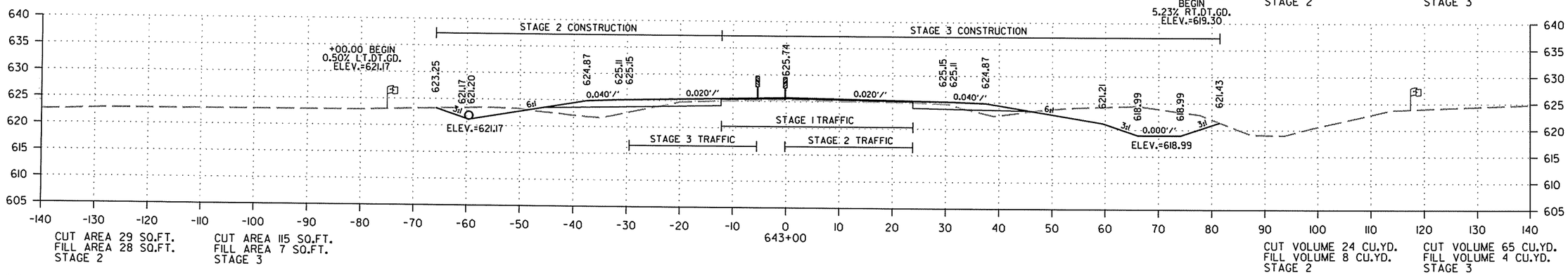
8/8/2014

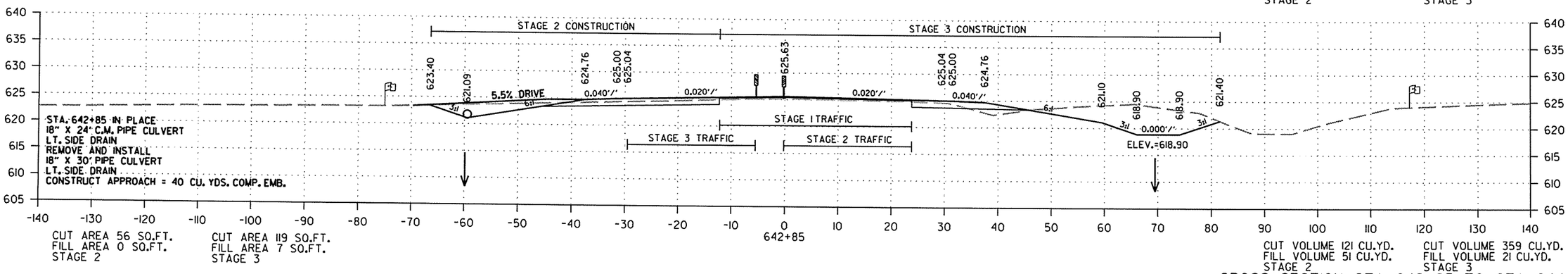
R050214.DGN

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.		050214	170	311

(2) CROSS SECTIONS - HWY. 167







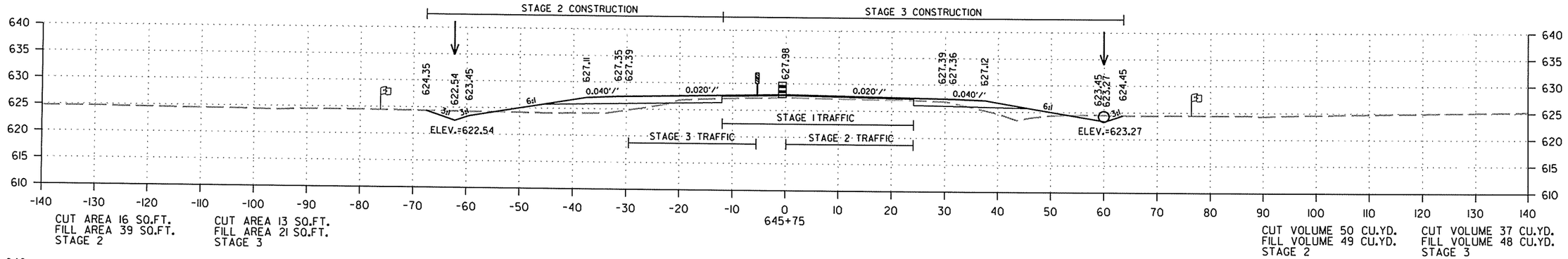
CROSS SECTION STA. 642+85 TO STA. 644+00

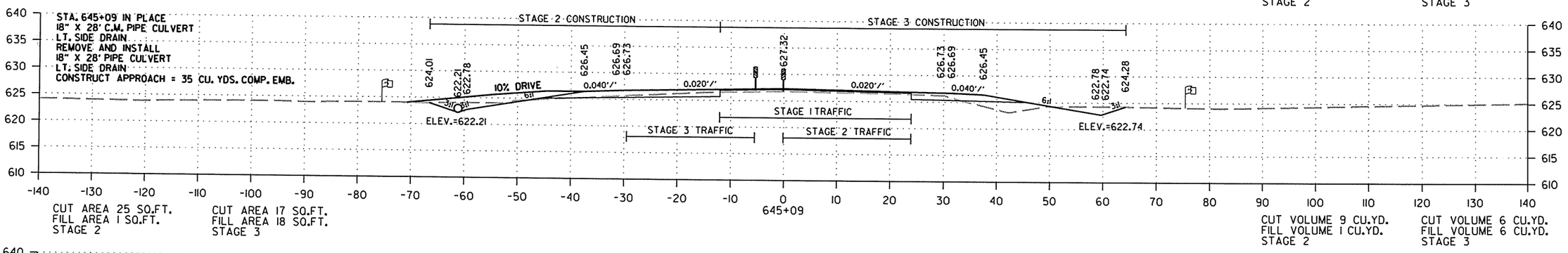
8/8/2014

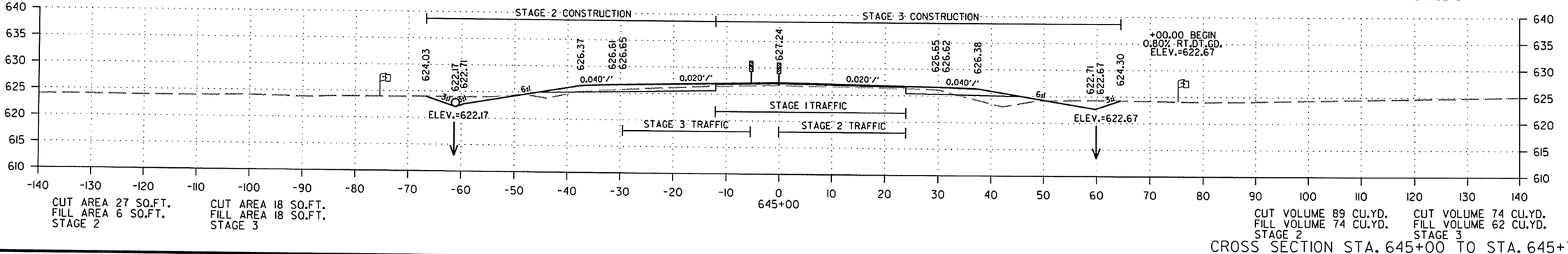
R050214.DGN

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.		050214	171	311

(2) CROSS SECTIONS - HWY. 167







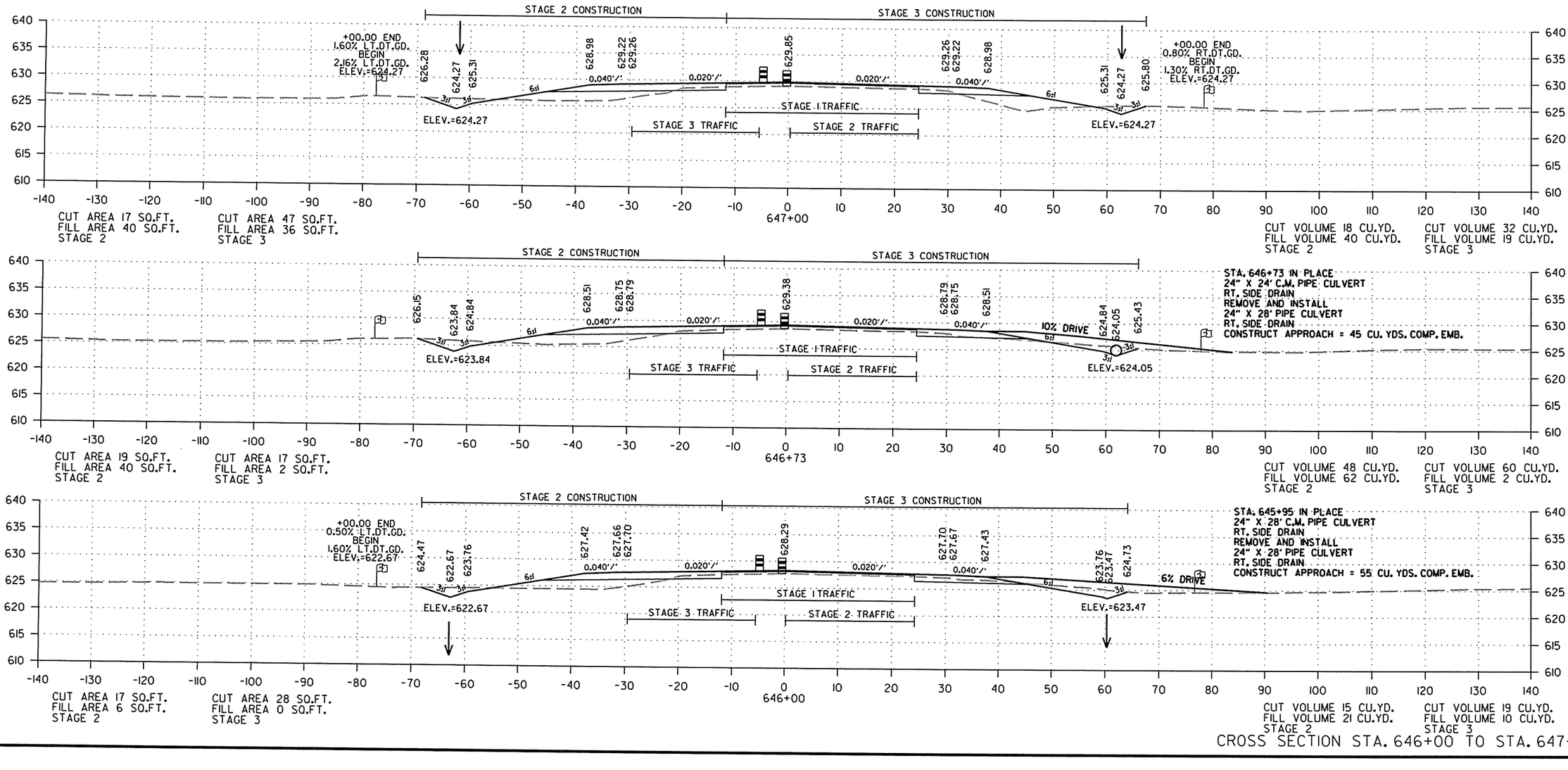
CROSS SECTION STA. 645+00 TO STA. 645+75

8/8/2014

R050214.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.		050214	172	311

(2) CROSS SECTIONS - HWY. 167



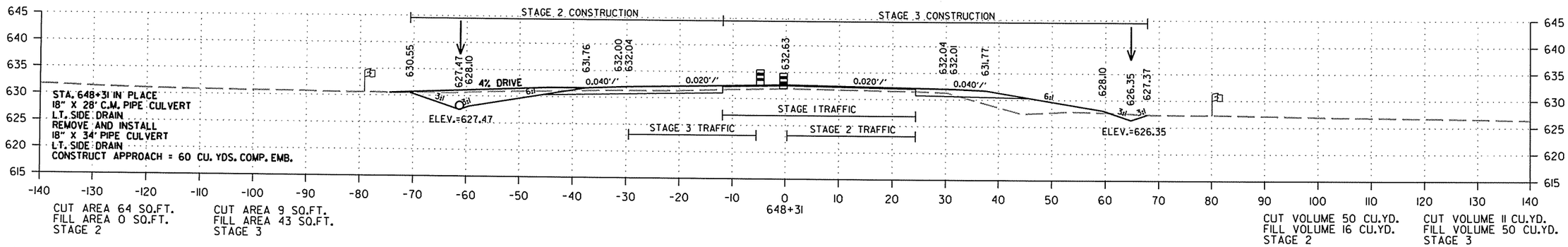
CROSS SECTION STA. 646+00 TO STA. 647+00

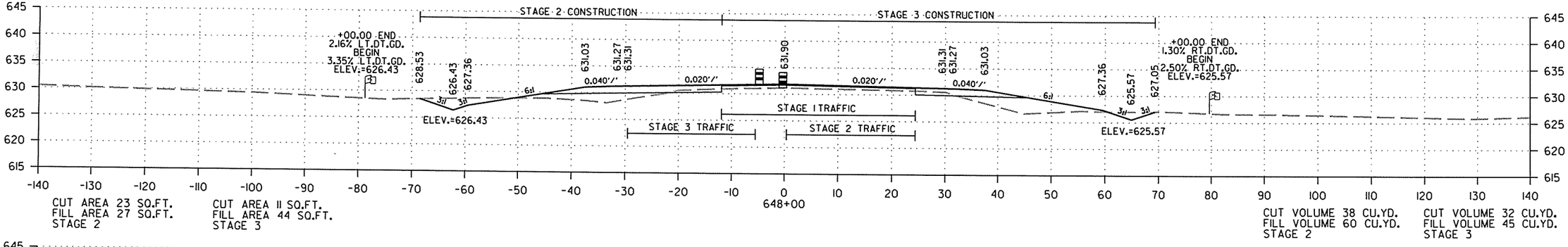
8/8/2014

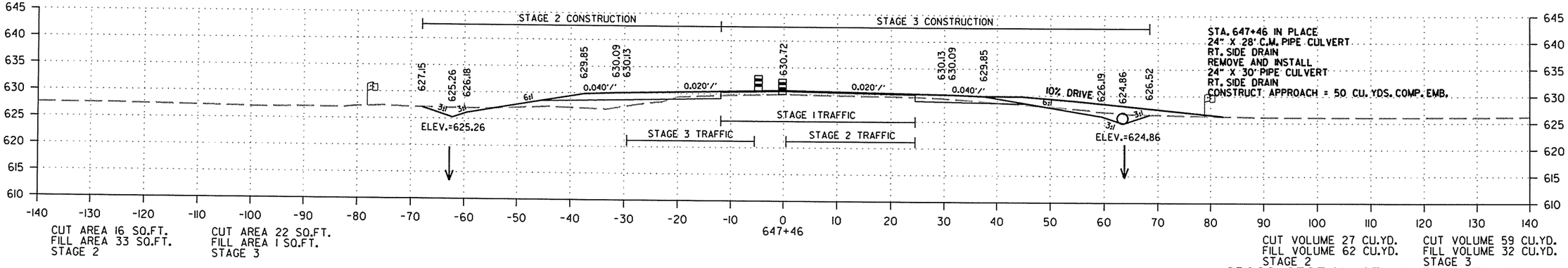
R050214.DGN

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.		050214	173	311

(2) CROSS SECTIONS - HWY. 167







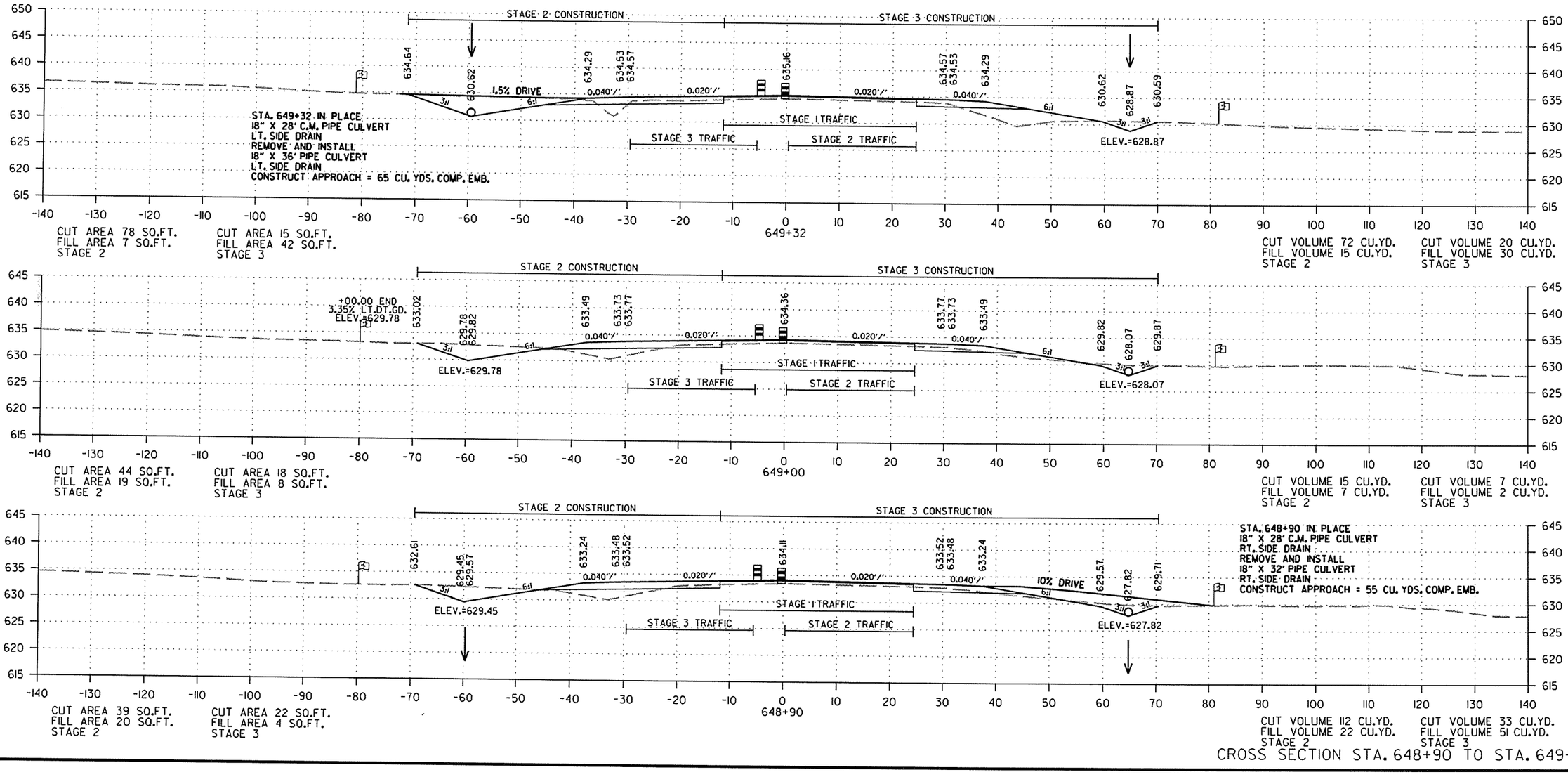
CROSS SECTION STA. 647+46 TO STA. 648+31

8/8/2014

R050214.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.		050214	174	311

(2) CROSS SECTIONS - HWY. 167



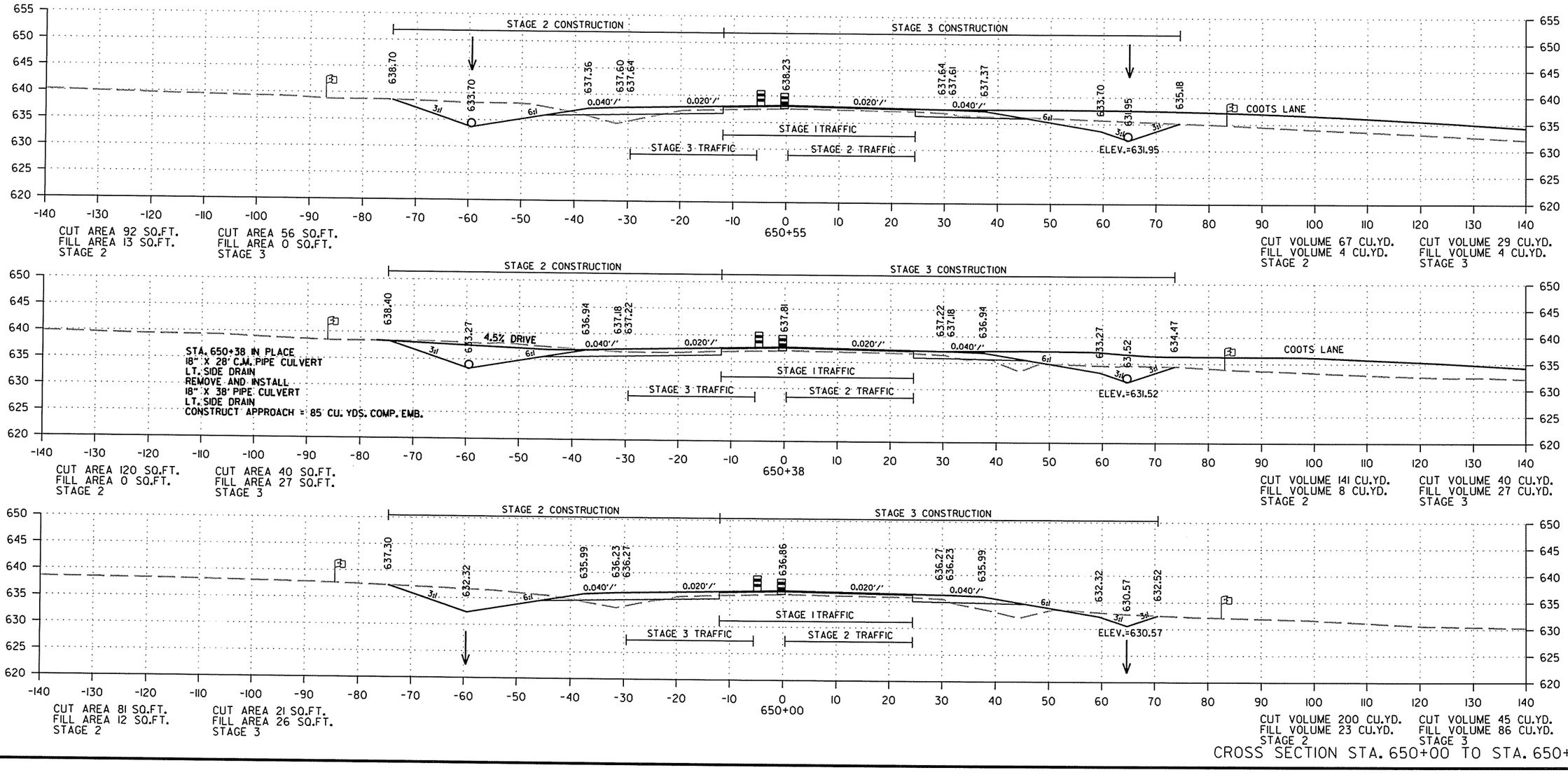
CROSS SECTION STA. 648+90 TO STA. 649+32

8/8/2014

R050214.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.		050214	175	311

(2) CROSS SECTIONS - HWY. 167



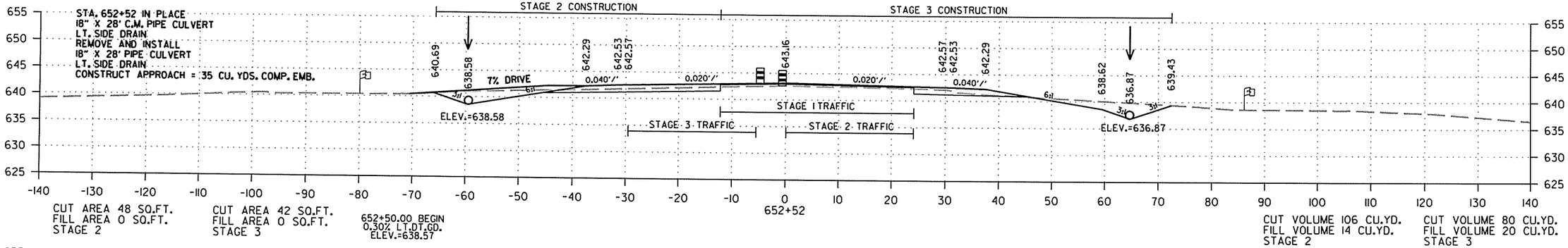
CROSS SECTION STA. 650+00 TO STA. 650+55

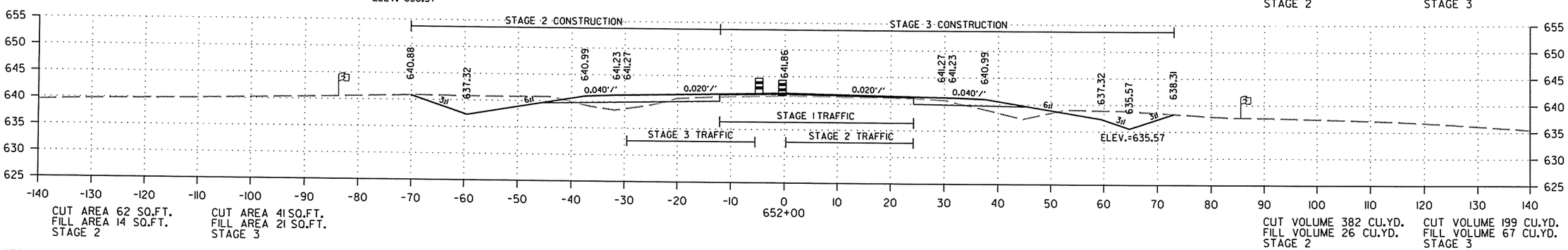
8/8/2014

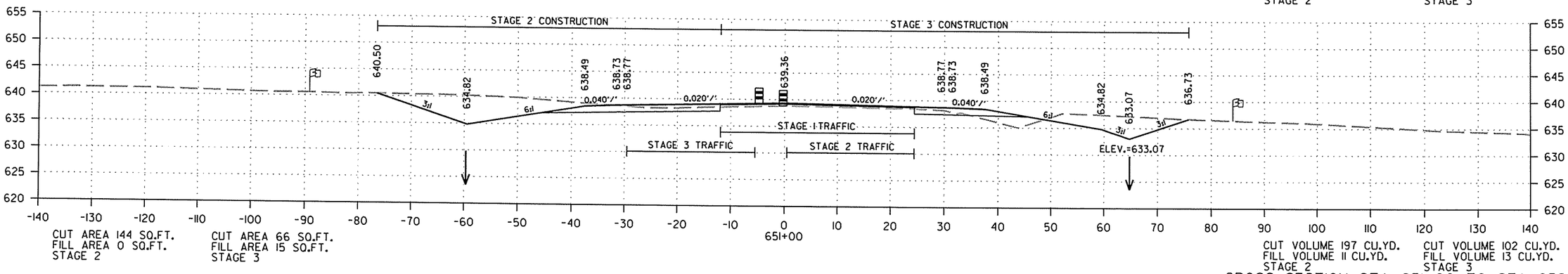
R050214.DGN

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.		050214	176	311

(2) CROSS SECTIONS - HWY. 167







CROSS SECTION STA. 651+00 TO STA. 652+52

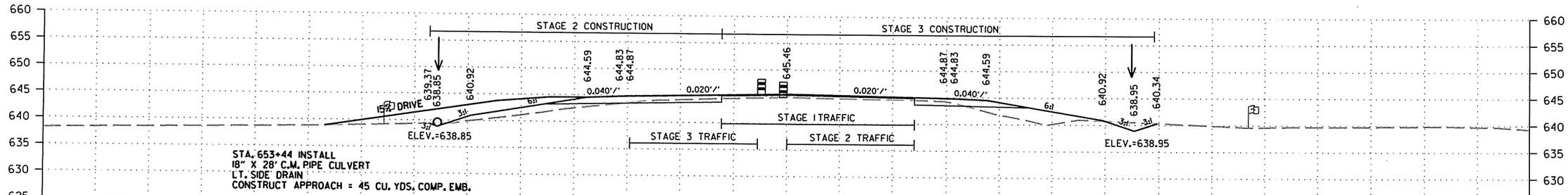
8/8/2014

R050214.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.		050214	177	311

(2) CROSS SECTIONS - HWY. 167

653+75.00 END
0.30% LT.DT.GD.
BEGIN
1.03% LT.DT.GD.
ELEV.=638.95



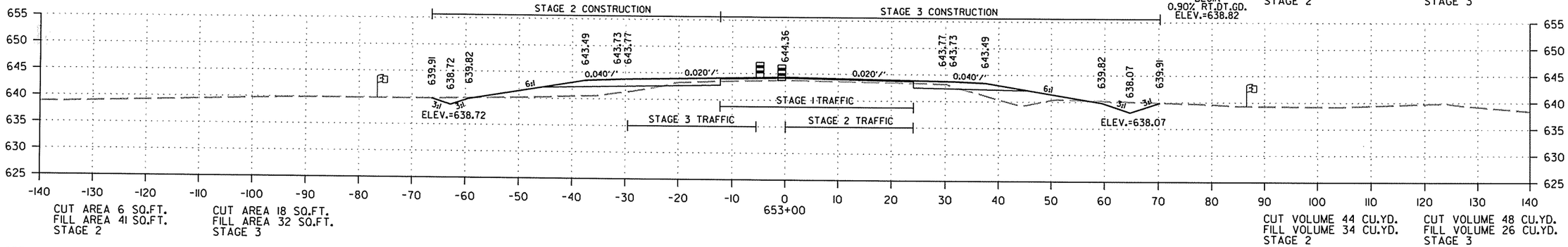
CUT AREA 9 SQ.FT.
FILL AREA 29 SQ.FT.
STAGE 2

CUT AREA 14 SQ.FT.
FILL AREA 37 SQ.FT.
STAGE 3

653+30.00 END
2.50% RT.DT.GD.
BEGIN
0.90% RT.DT.GD.
ELEV.=638.82

CUT VOLUME 12 CU.YD.
FILL VOLUME 58 CU.YD.
STAGE 2

CUT VOLUME 26 CU.YD.
FILL VOLUME 56 CU.YD.
STAGE 3

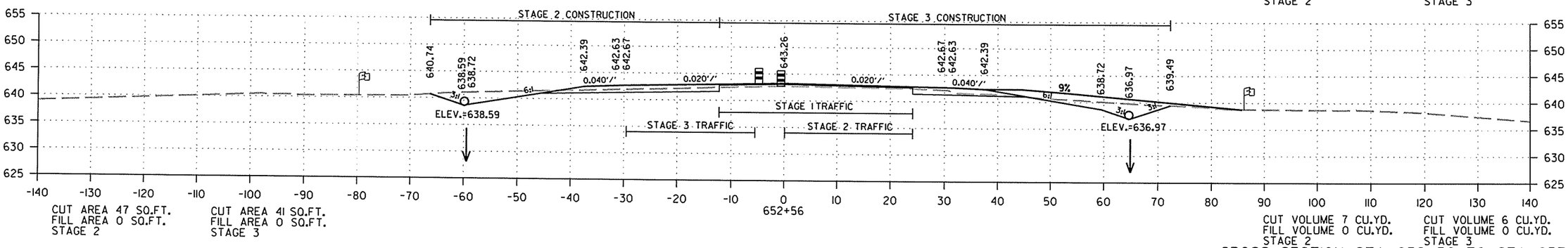


CUT AREA 6 SQ.FT.
FILL AREA 41 SQ.FT.
STAGE 2

CUT AREA 18 SQ.FT.
FILL AREA 32 SQ.FT.
STAGE 3

CUT VOLUME 44 CU.YD.
FILL VOLUME 34 CU.YD.
STAGE 2

CUT VOLUME 48 CU.YD.
FILL VOLUME 26 CU.YD.
STAGE 3



CUT AREA 47 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 2

CUT AREA 41 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 7 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 2

CUT VOLUME 6 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

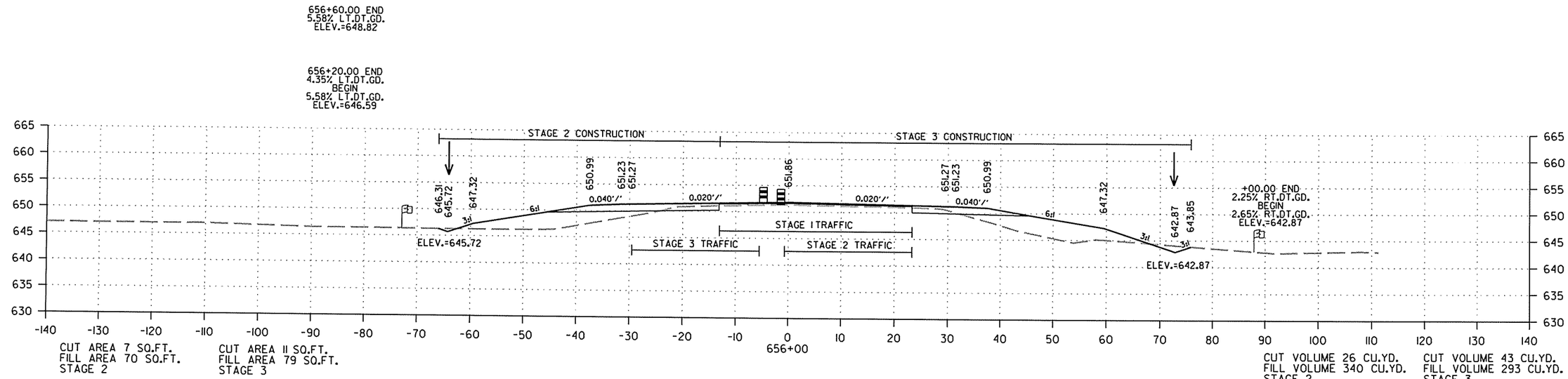
CROSS SECTION STA. 652+56 TO STA. 653+44

8/8/2014

R050214.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.		050214	178	311

(2) CROSS SECTIONS - HWY. 167



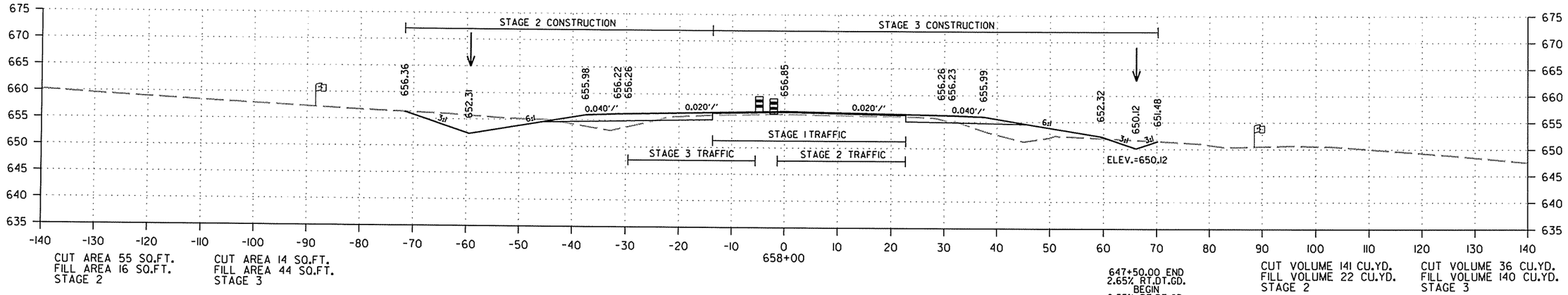
CROSS SECTION STA. 654+00 TO STA. 656+00

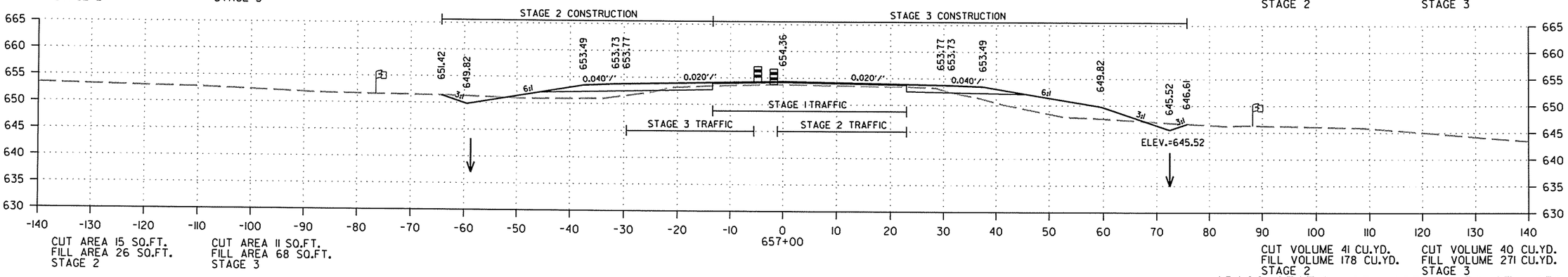
8/8/2014

R050214.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.		050214	179	311

(2) CROSS SECTIONS - HWY. 167





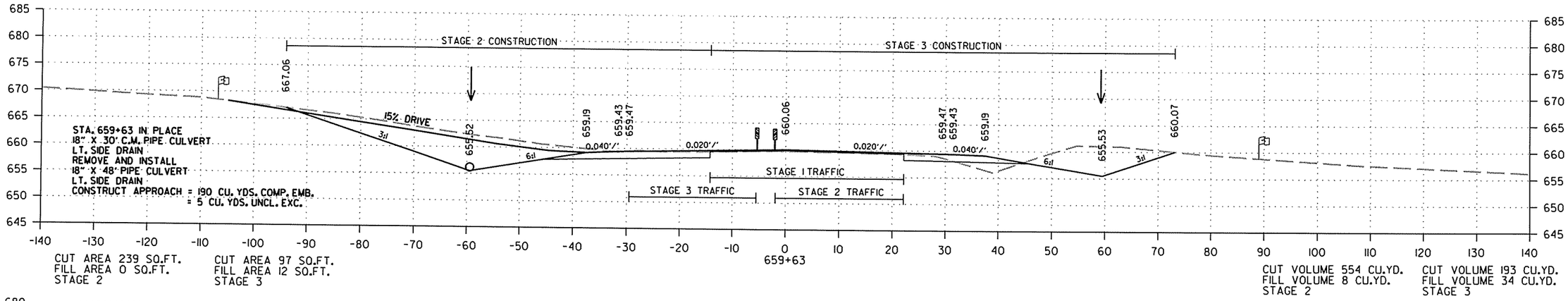
CROSS SECTION STA. 657+00 TO STA. 658+00

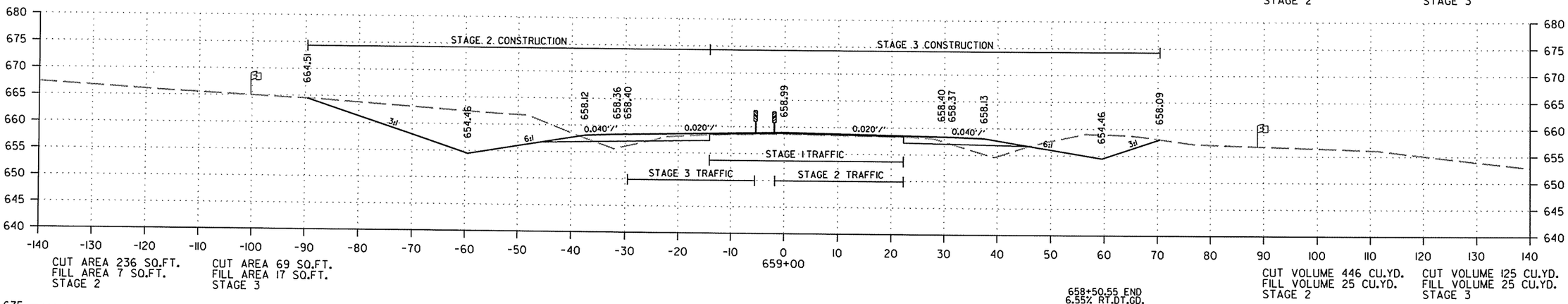
8/8/2014

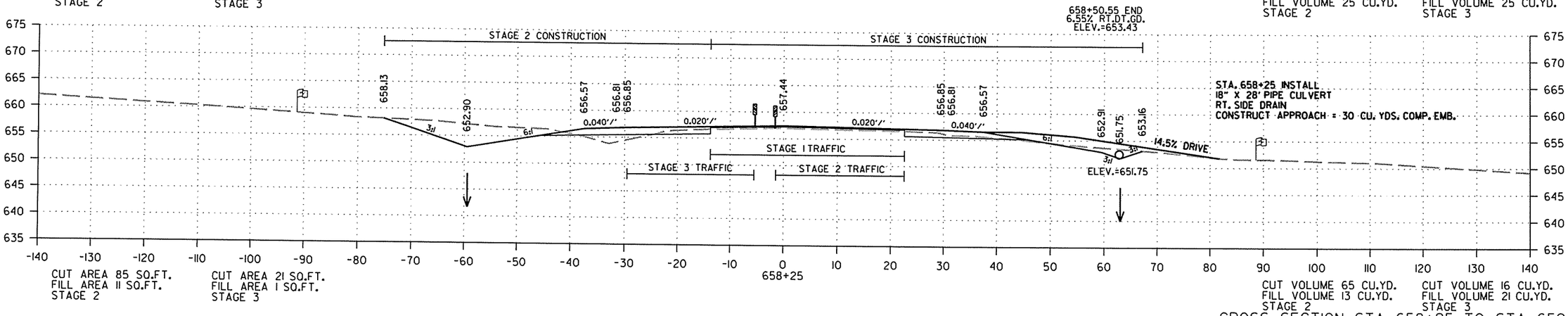
R050214.DGN

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.		050214	180	311

(2) CROSS SECTIONS - HWY. 167







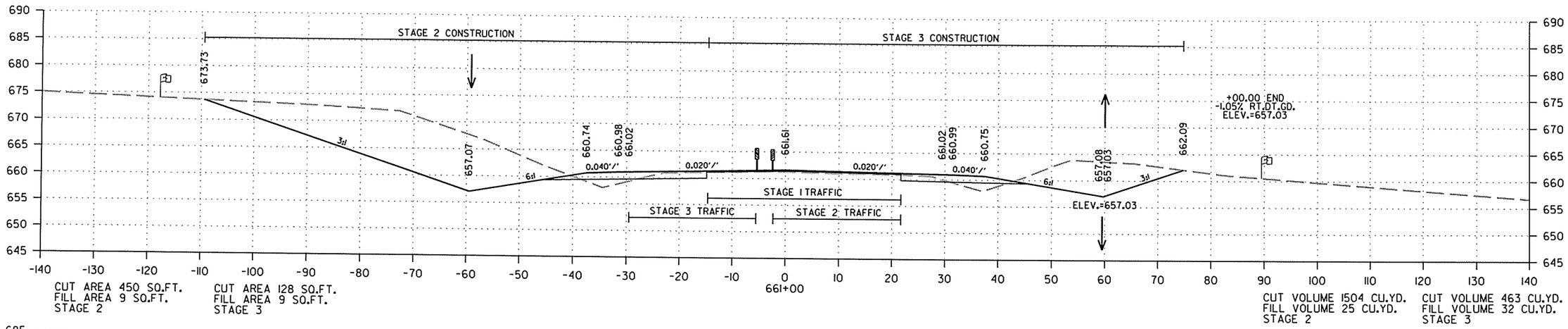
CROSS SECTION STA. 658+25 TO STA. 659+63

8/8/2014

R050214.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.		050214	181	311

(2) CROSS SECTIONS - HWY. 167



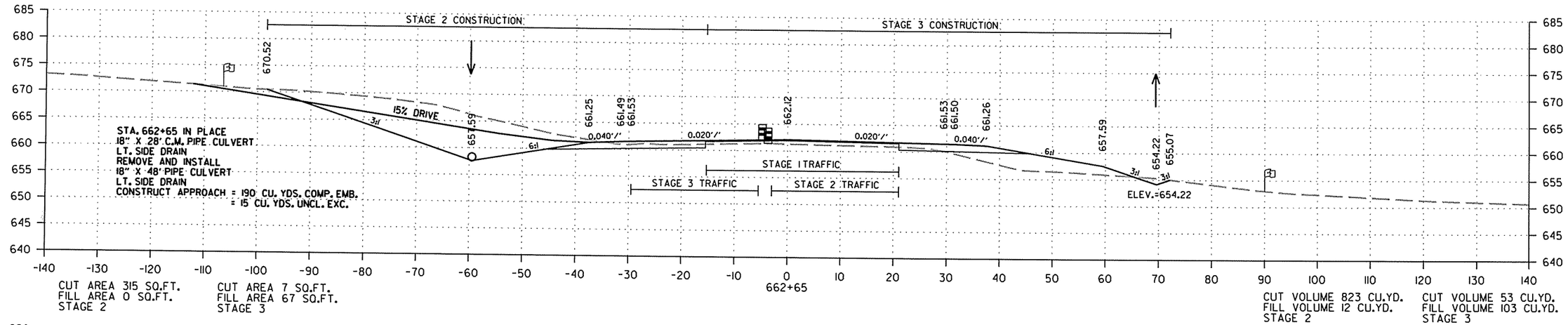
CROSS SECTION STA. 660+00 TO STA. 661+00

8/8/2014

R050214.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.		050214	182	311

(2) CROSS SECTIONS - HWY. 167



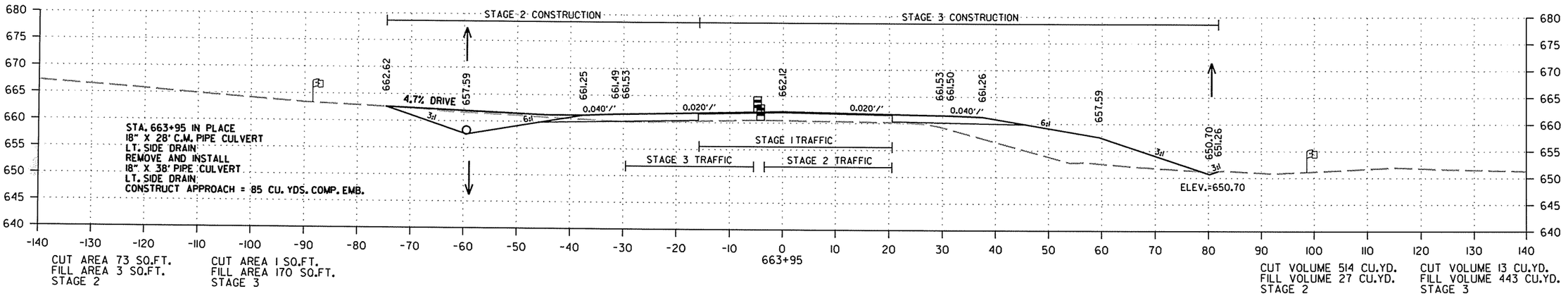
CROSS SECTION STA. 662+00 TO STA. 662+65

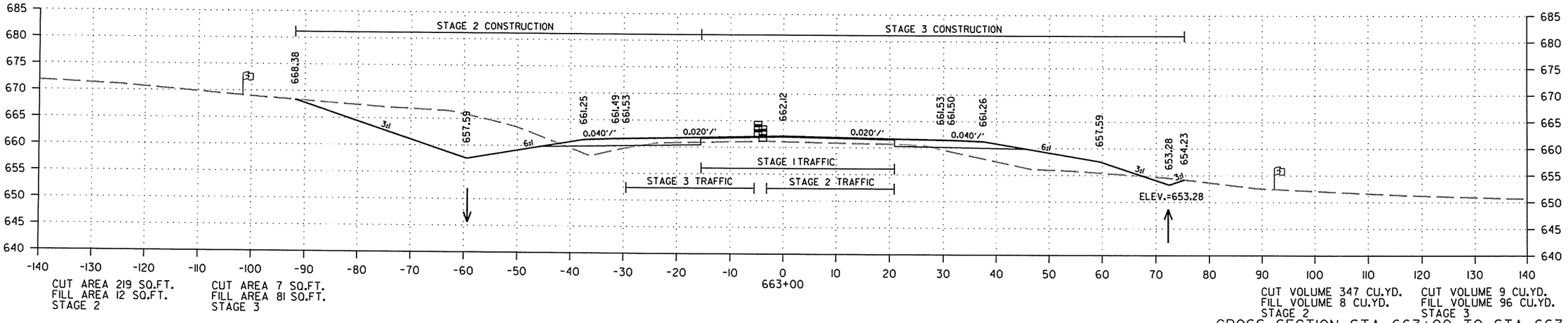
8/8/2014

R050214.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.		050214	183	311

(2) CROSS SECTIONS - HWY. 167





CROSS SECTION STA. 663+00 TO STA. 663+95

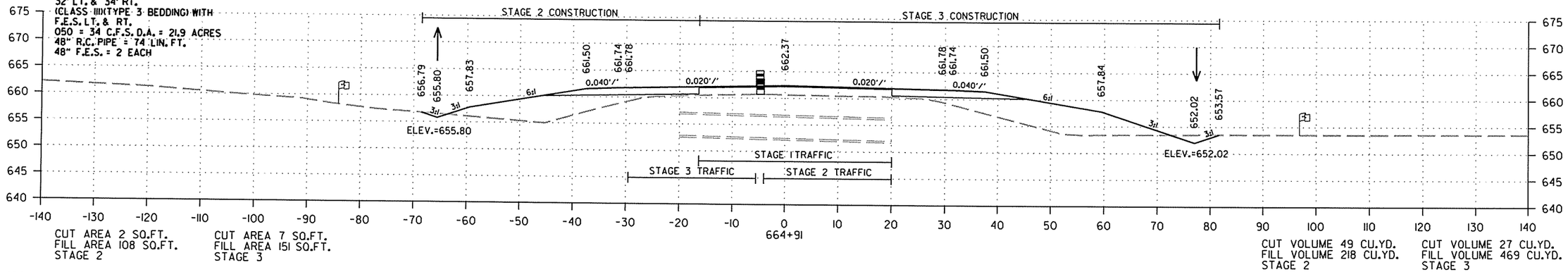
8/8/2014

R050214.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.		050214	184	311

(2) CROSS SECTIONS - HWY. 167

STA. 664+91 IN PLACE
48" X 116' R.C. PIPE CULVERT
ON 45° RT. FWD. SKEW
WITH FES LT. AND RT.
REMOVE F.E.S. LT. & RT. AND EXTEND R.C. PIPE
32' LT. & 34' RT.
(CLASS III(TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
050 = 34 C.F.S. D.A. = 21.9 ACRES
48" R.C. PIPE = 74 LIN. FT.
48" F.E.S. = 2 EACH

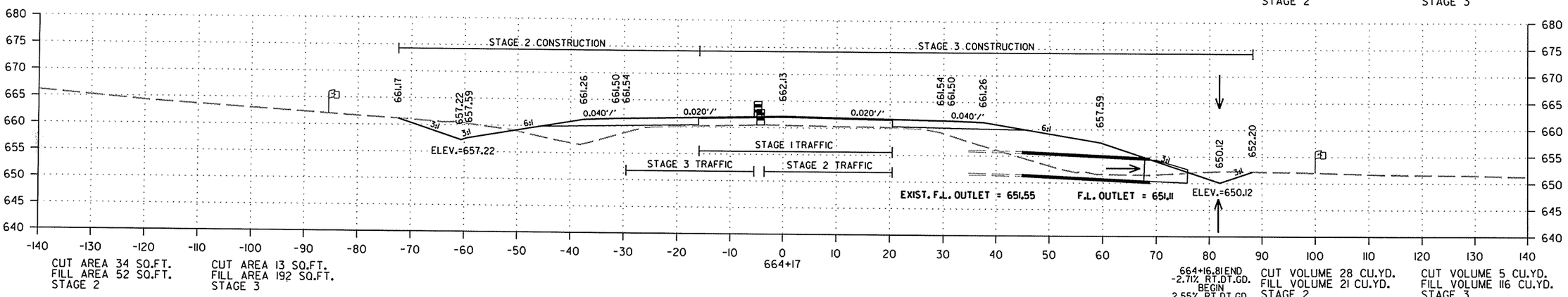


CUT AREA 2 SQ.FT.
FILL AREA 108 SQ.FT.
STAGE 2

CUT AREA 7 SQ.FT.
FILL AREA 151 SQ.FT.
STAGE 3

CUT VOLUME 49 CU.YD.
FILL VOLUME 218 CU.YD.
STAGE 2

CUT VOLUME 27 CU.YD.
FILL VOLUME 469 CU.YD.
STAGE 3



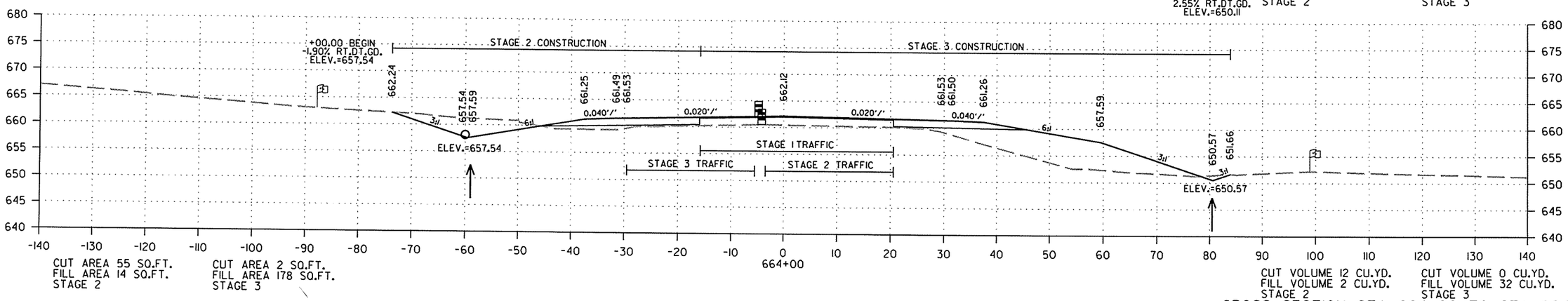
CUT AREA 34 SQ.FT.
FILL AREA 52 SQ.FT.
STAGE 2

CUT AREA 13 SQ.FT.
FILL AREA 192 SQ.FT.
STAGE 3

664+16.81 END
-2.71% RT.DT.GD.
BEGIN
2.55% RT.DT.GD.
ELEV.=650.11

CUT VOLUME 28 CU.YD.
FILL VOLUME 21 CU.YD.
STAGE 2

CUT VOLUME 5 CU.YD.
FILL VOLUME 116 CU.YD.
STAGE 3



CUT AREA 55 SQ.FT.
FILL AREA 14 SQ.FT.
STAGE 2

CUT AREA 2 SQ.FT.
FILL AREA 178 SQ.FT.
STAGE 3

CUT VOLUME 12 CU.YD.
FILL VOLUME 2 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 32 CU.YD.
STAGE 3

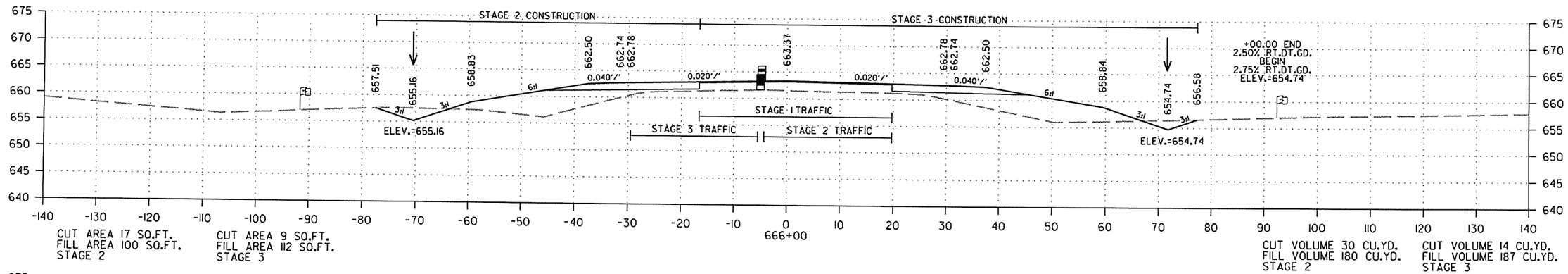
CROSS SECTION STA. 664+00 TO STA. 664+91

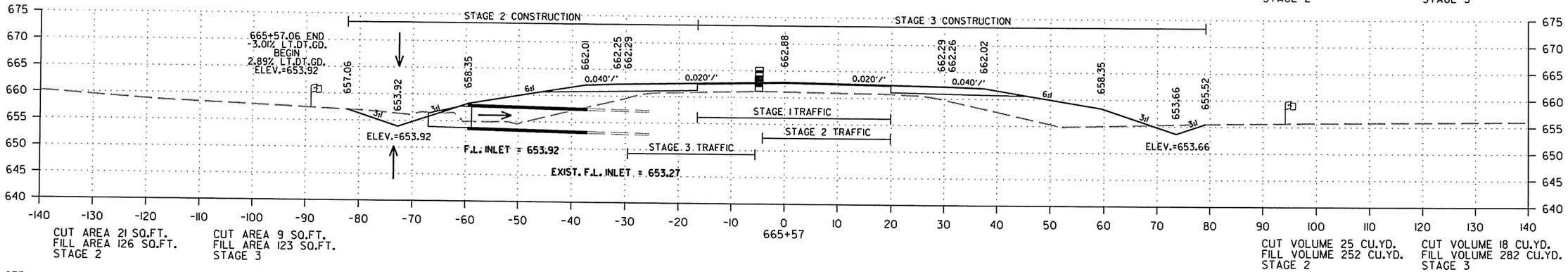
8/8/2014

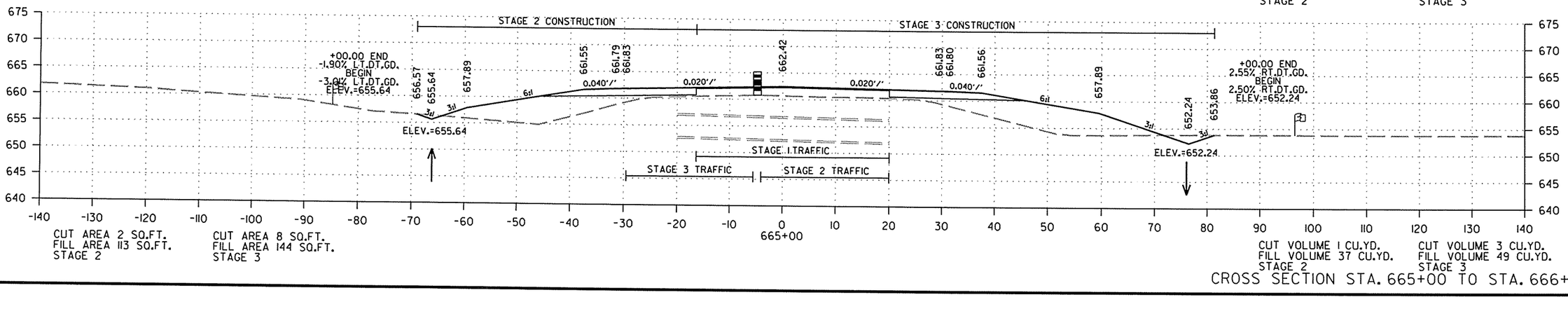
R050214.DGN

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.		050214	185	311

(2) CROSS SECTIONS - HWY. 167







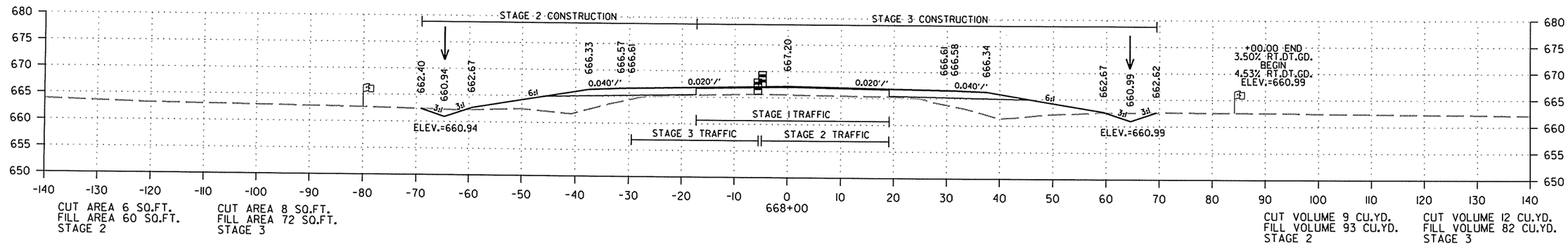
CROSS SECTION STA. 665+00 TO STA. 666+00

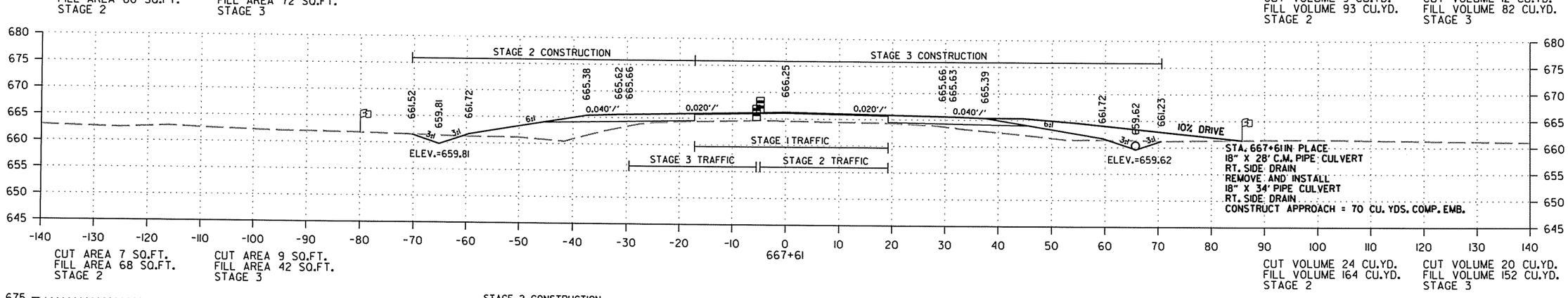
8/8/2014

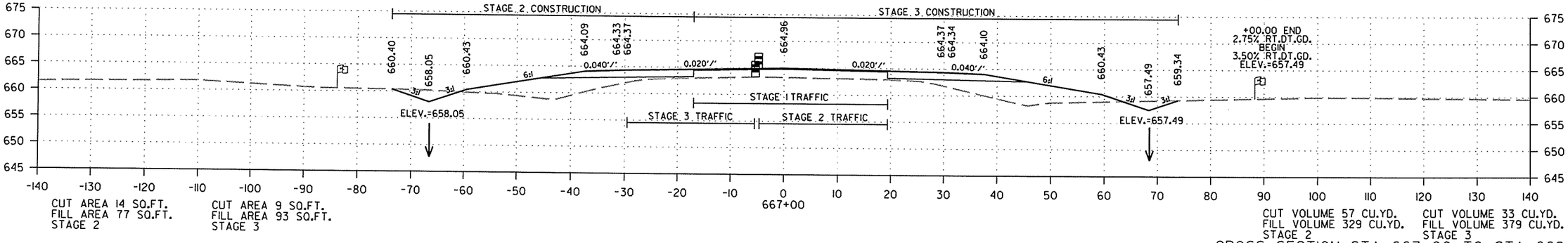
R050214.DGN

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.		050214	186	311

(2) CROSS SECTIONS - HWY. 167







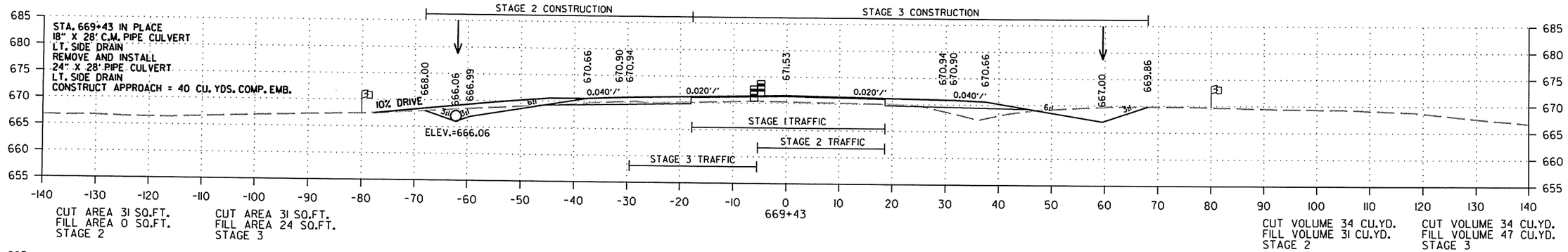
CROSS SECTION STA. 667+00 TO STA. 668+00

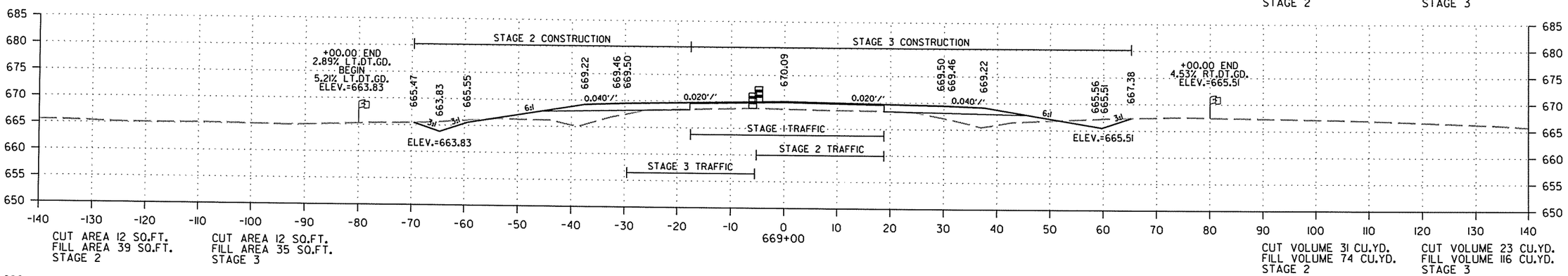
8/8/2014

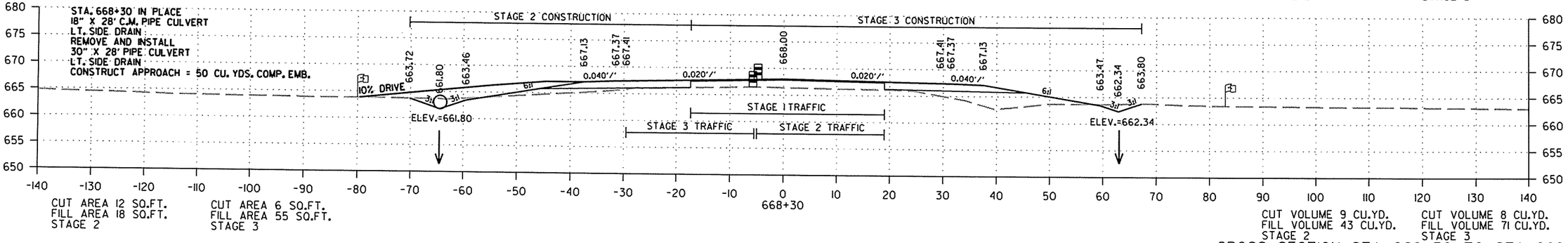
R050214.DGN

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.		050214	187	311

(2) CROSS SECTIONS - HWY. 167







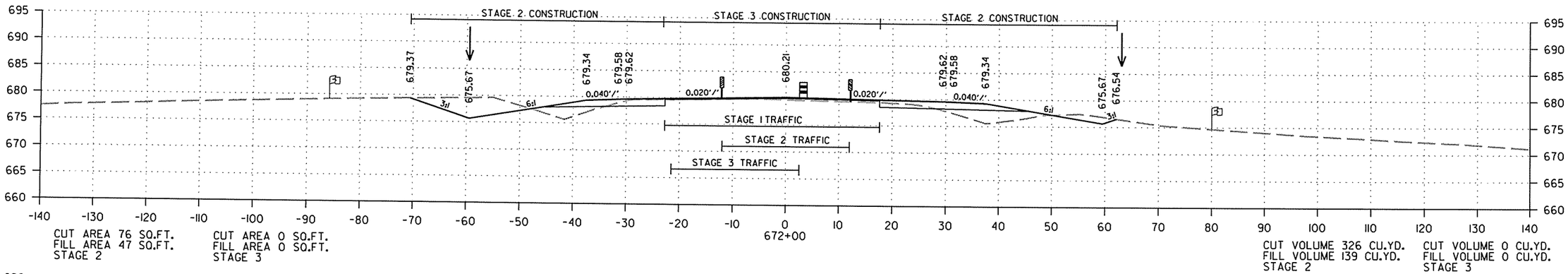
CROSS SECTION STA. 668+30 TO STA. 669+43

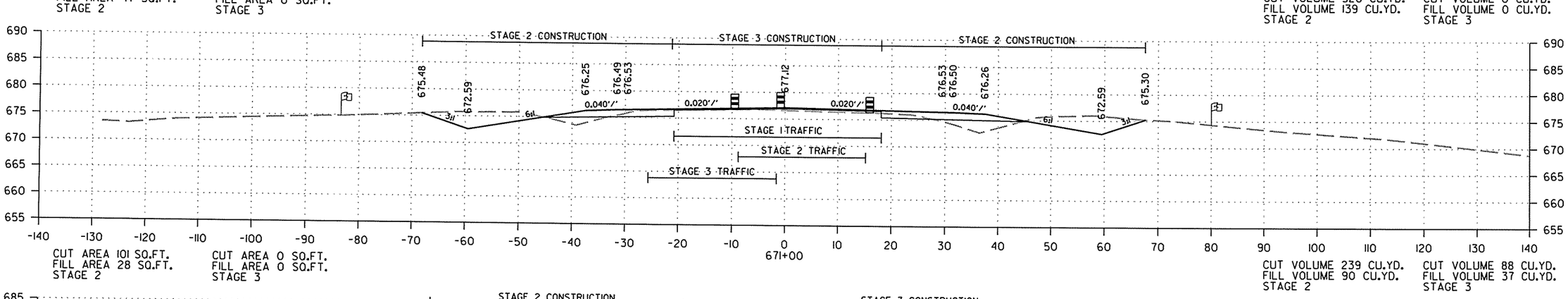
8/8/2014

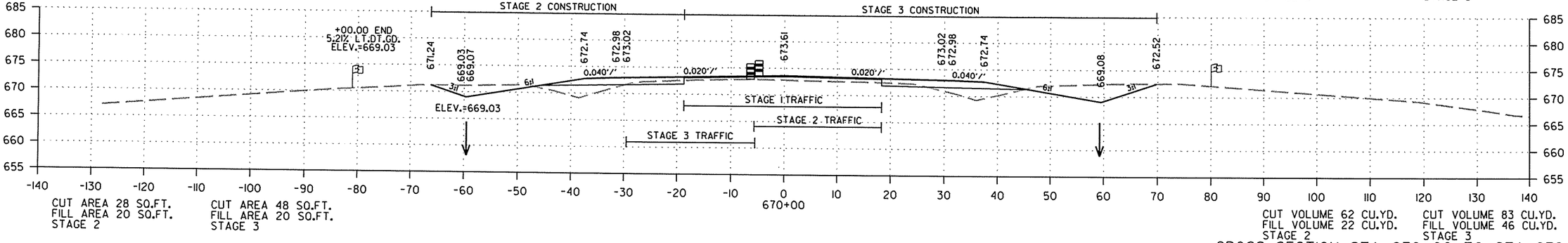
R050214.DGN

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.		050214	188	311

(2) CROSS SECTIONS - HWY. 167







CROSS SECTION STA. 670+00 TO STA. 672+00

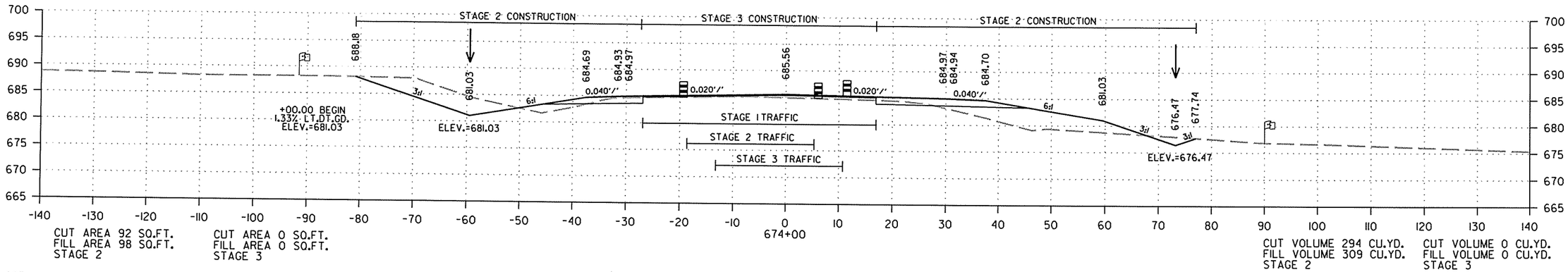
8/8/2014

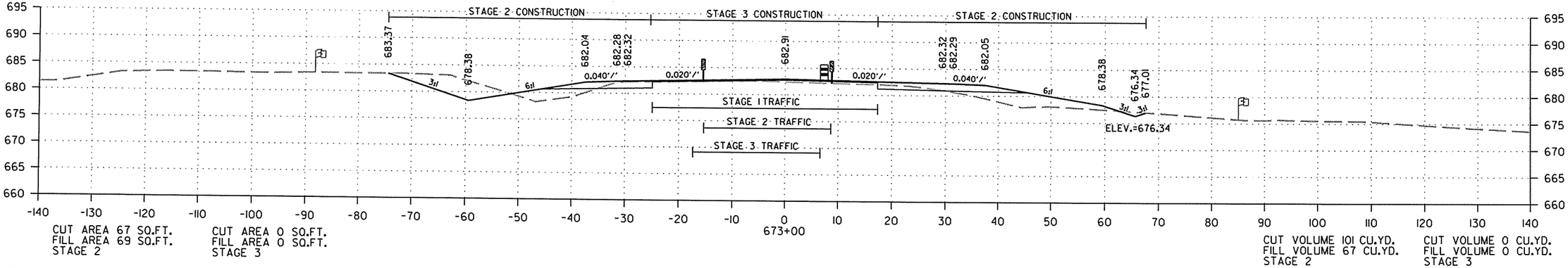
R050214.DGN

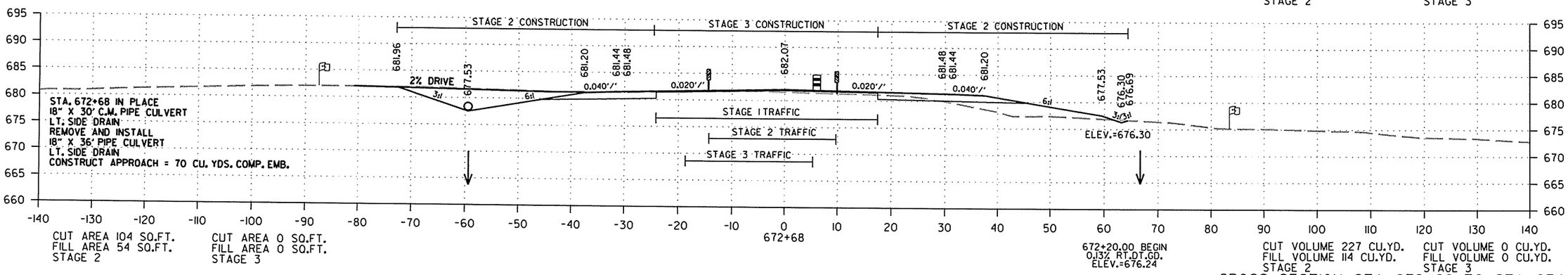
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	189	311

(2) CROSS SECTIONS - HWY. 167

674+26.00 END
0.13% RT.DT.GD.
BEGIN
2.15% RT.DT.GD.
ELEV.=676.50







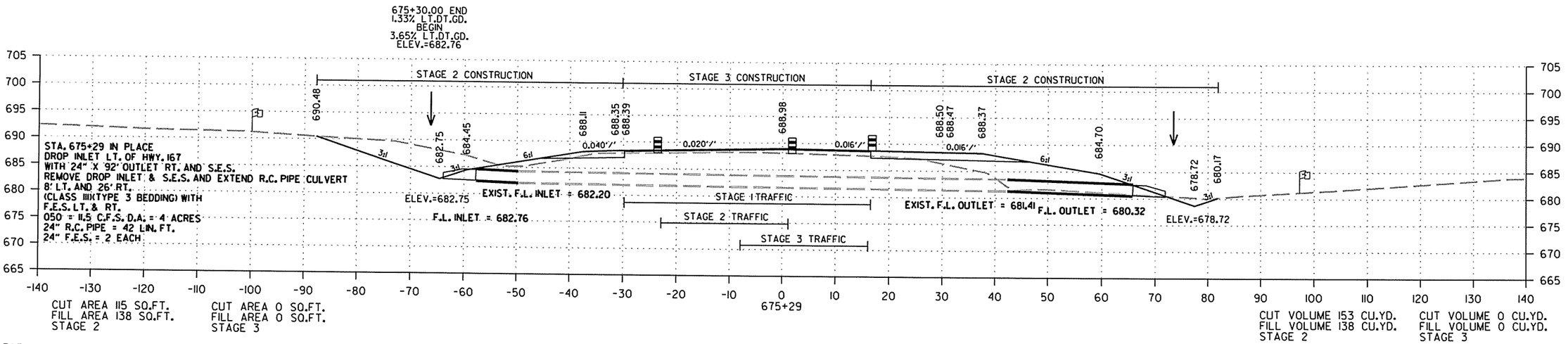
CROSS SECTION STA. 672+68 TO STA. 674+00

8/8/2014

R050214.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.		050214	190	311

(2) CROSS SECTIONS - HWY. 167



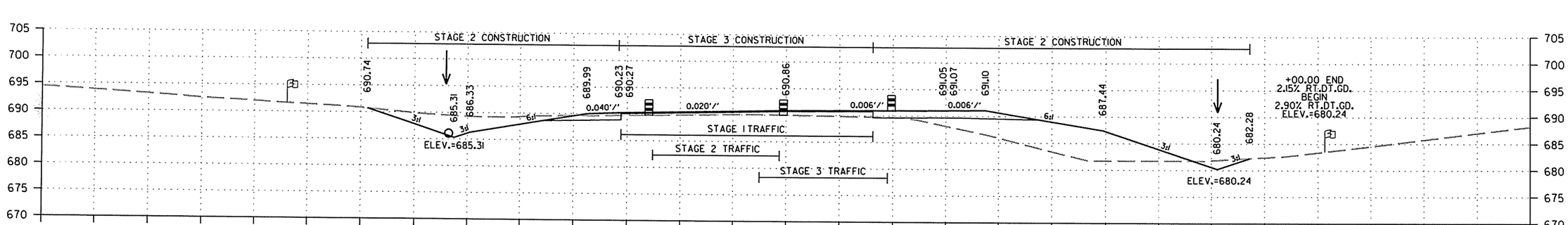
CROSS SECTION STA. 675+00 TO STA. 675+29

8/8/2014

R050214.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.		050214	191	311

(2) CROSS SECTIONS - HWY. 167



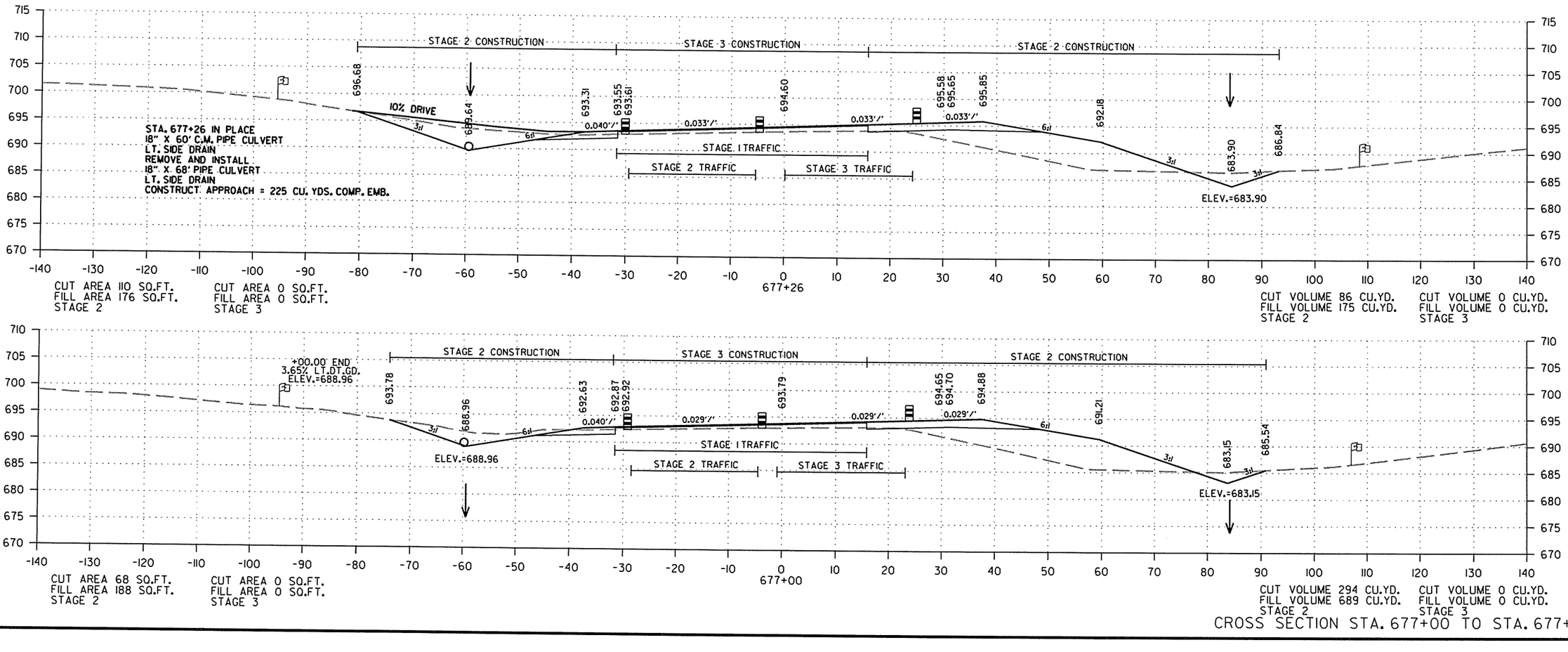
CROSS SECTION STA. 675+85 TO STA. 676+00

8/8/2014

R050214.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.		050214	192	311

(2) CROSS SECTIONS - HWY. 167



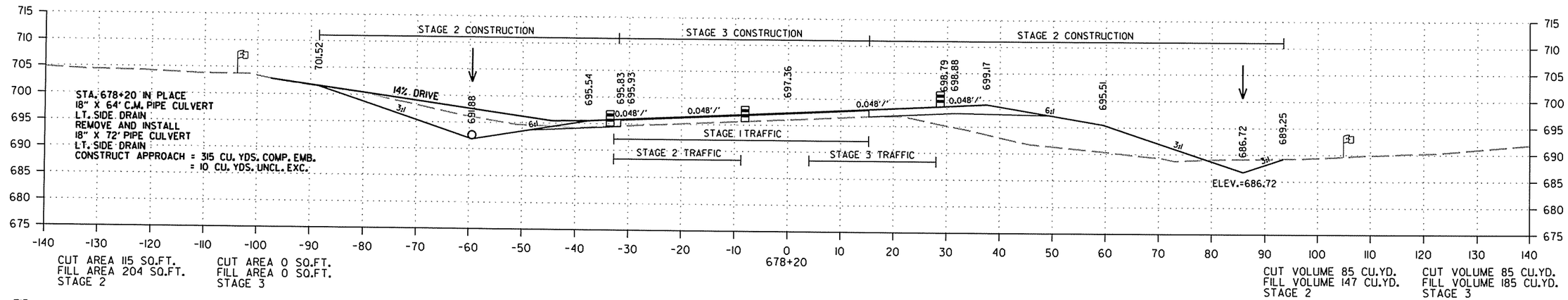
CROSS SECTION STA. 677+00 TO STA. 677+26

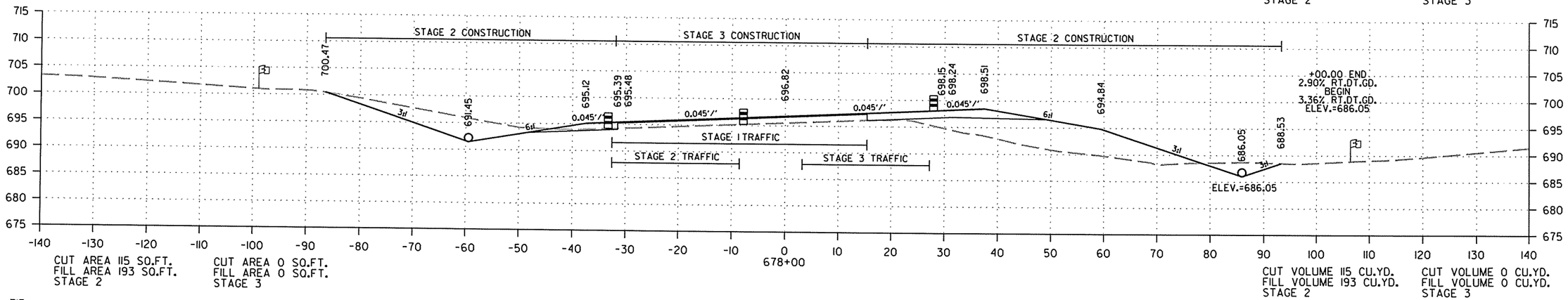
8/8/2014

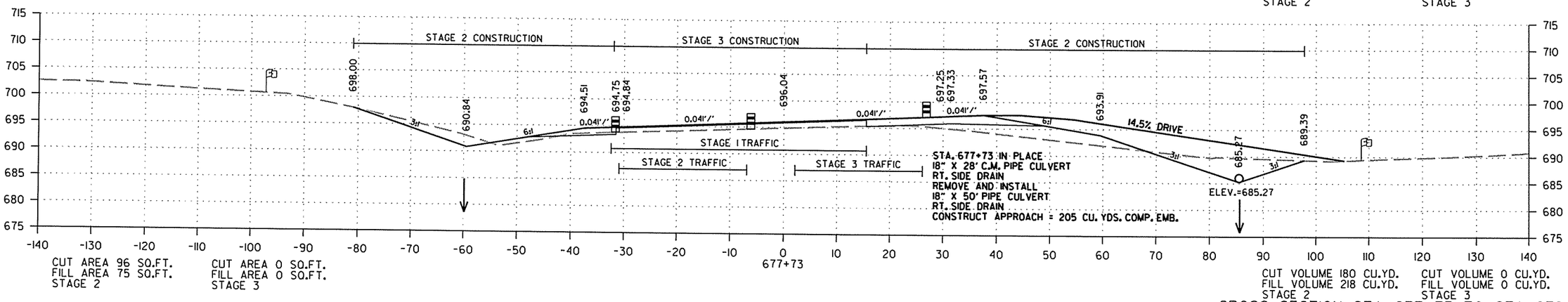
R050214.DGN

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.		050214	193	311

(2) CROSS SECTIONS - HWY. 167







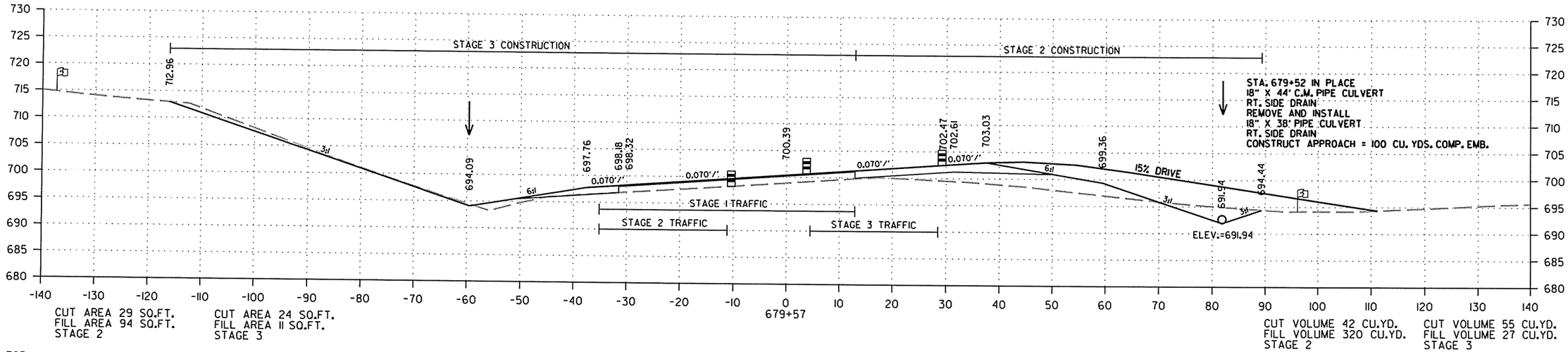
CROSS SECTION STA. 677+73 TO STA. 678+20

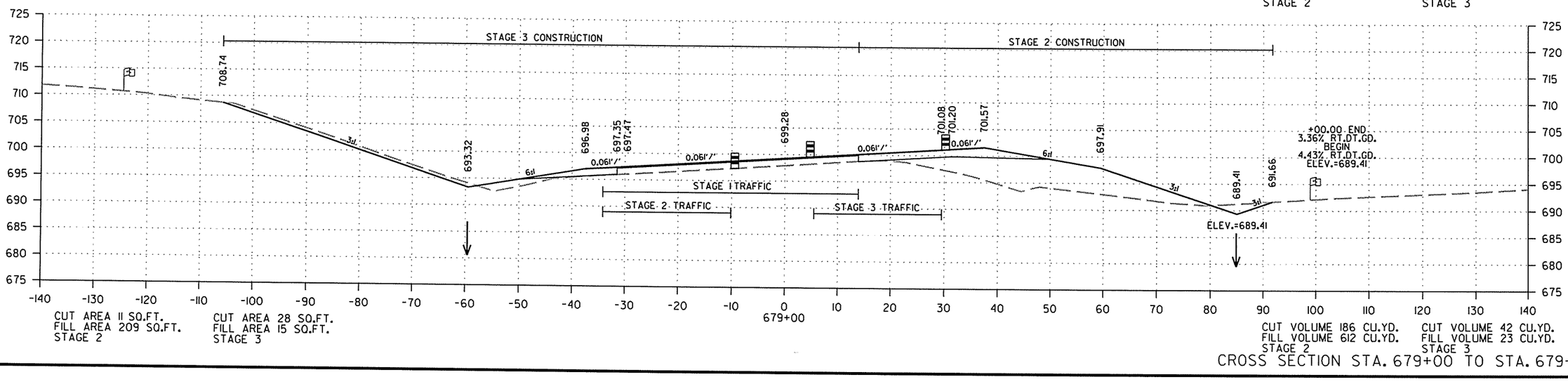
8/8/2014

R050214.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.		050214	194	311

(2) CROSS SECTIONS - HWY. 167





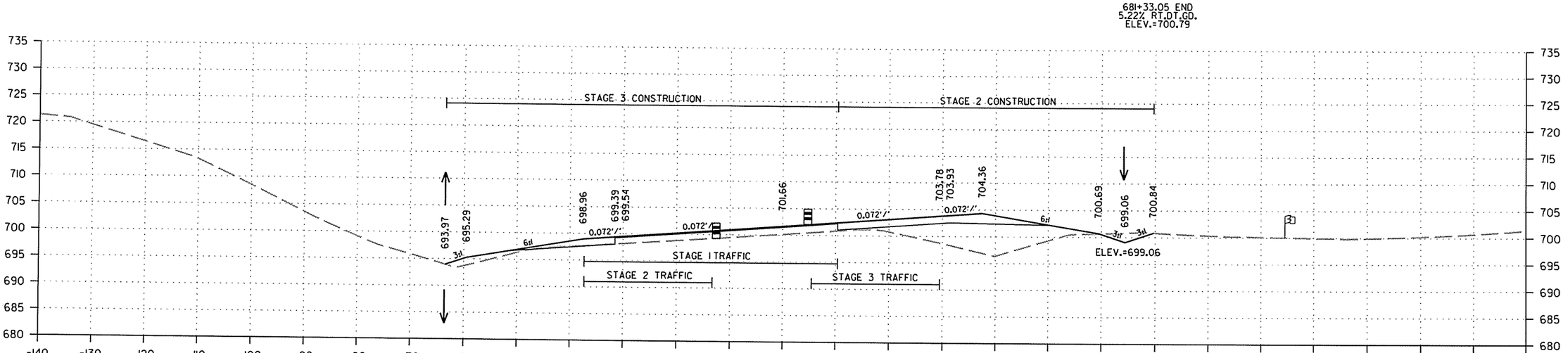
CROSS SECTION STA. 679+00 TO STA. 679+57

8/8/2014

R050214.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.		050214	195	311

(2) CROSS SECTIONS - HWY. 167



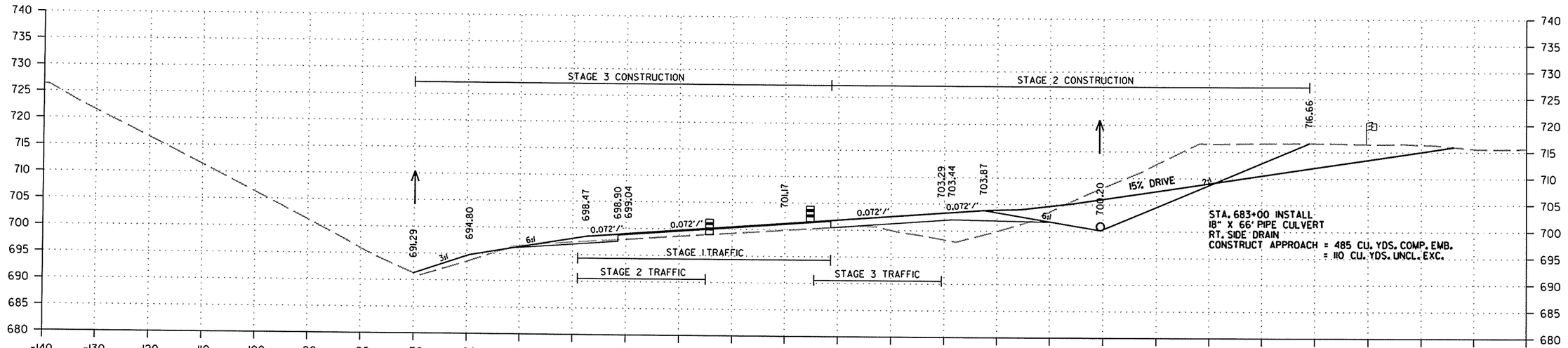
CROSS SECTION STA. 680+00 TO STA. 681+00

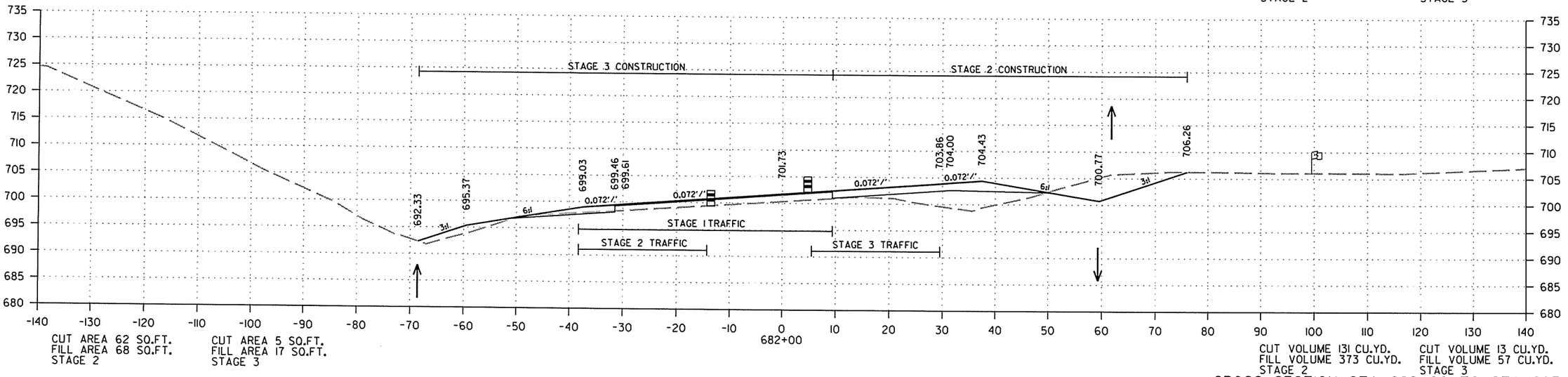
8/8/2014

R050214.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.		050214	196	311

(2) CROSS SECTIONS - HWY. 167





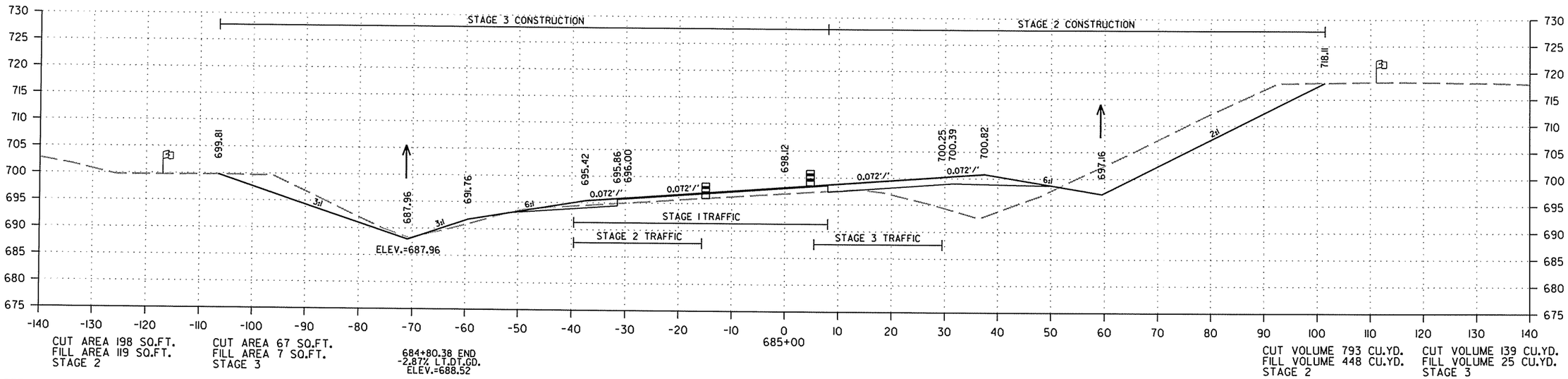
CROSS SECTION STA. 682+00 TO STA. 683+00

8/8/2014

R050214.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.		050214	197	311

(2) CROSS SECTIONS - HWY. 167



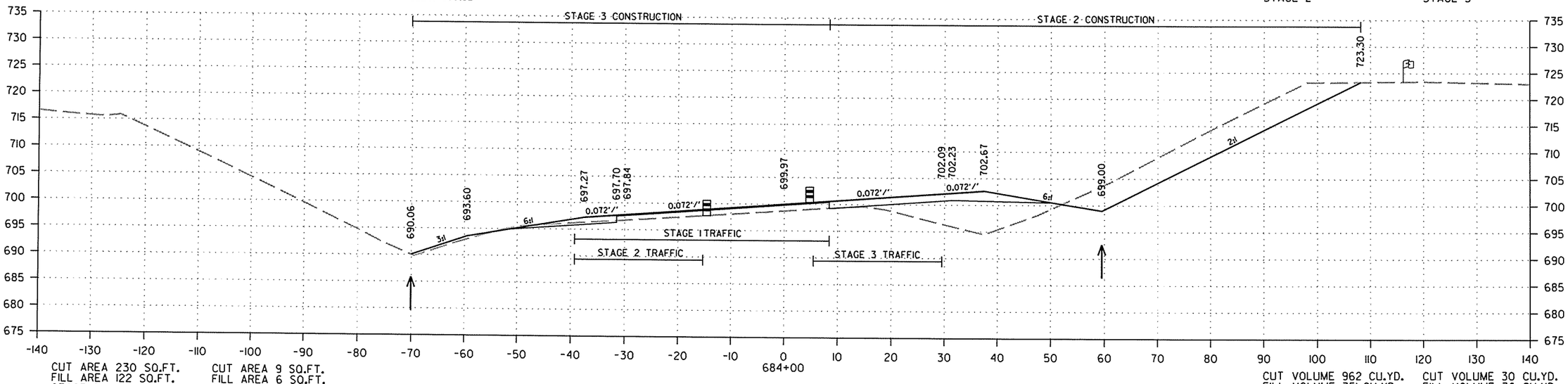
CUT AREA 198 SQ.FT.
FILL AREA 119 SQ.FT.
STAGE 2

CUT AREA 67 SQ.FT.
FILL AREA 7 SQ.FT.
STAGE 3

684+80.38 END
-2.87% LT.DT.GD.
ELEV.=688.52

CUT VOLUME 793 CU.YD.
FILL VOLUME 448 CU.YD.
STAGE 2

CUT VOLUME 139 CU.YD.
FILL VOLUME 25 CU.YD.
STAGE 3



CUT AREA 230 SQ.FT.
FILL AREA 122 SQ.FT.
STAGE 2

CUT AREA 9 SQ.FT.
FILL AREA 6 SQ.FT.
STAGE 3

CUT VOLUME 962 CU.YD.
FILL VOLUME 351 CU.YD.
STAGE 2

CUT VOLUME 30 CU.YD.
FILL VOLUME 36 CU.YD.
STAGE 3

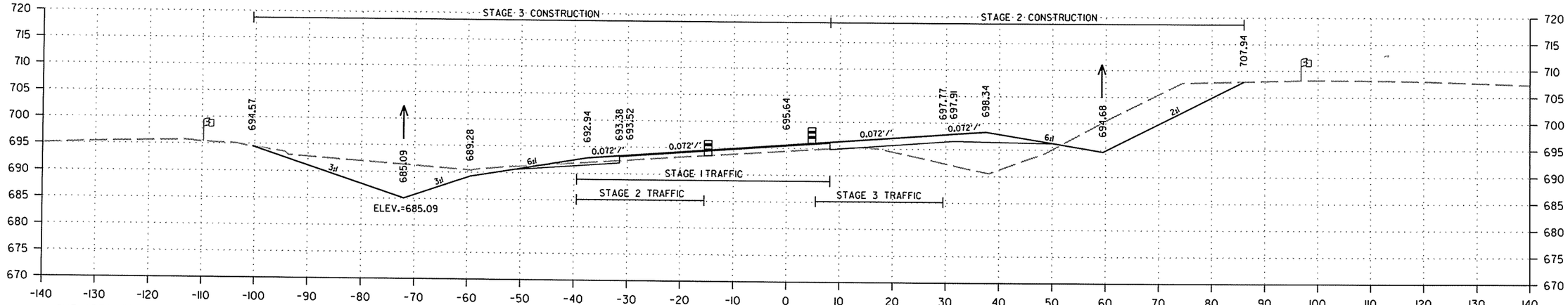
CROSS SECTION STA. 684+00 TO STA. 685+00

8/8/2014

R050214.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.		050214	198	311

(2) CROSS SECTIONS - HWY. 167

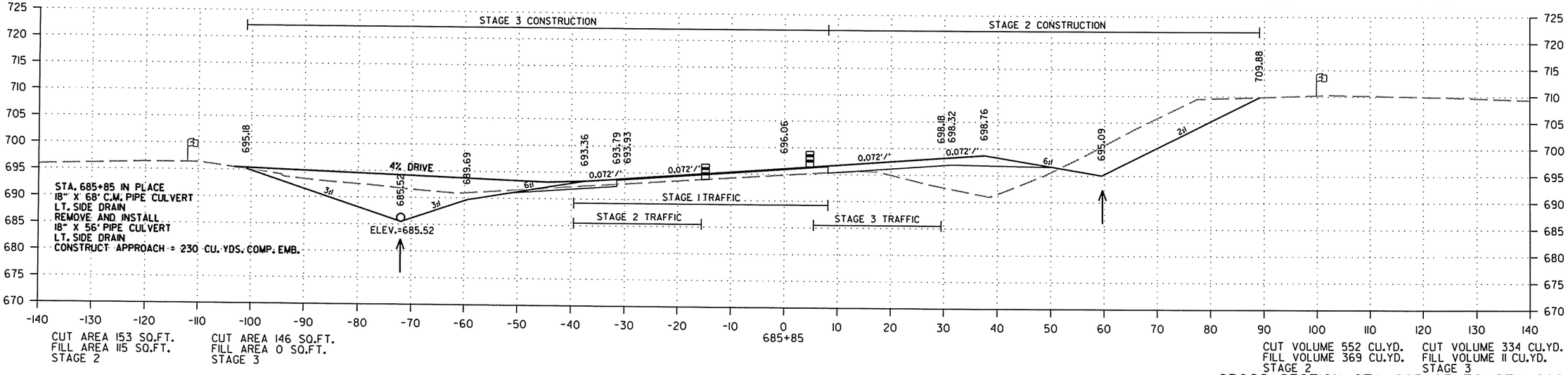


CUT AREA 137 SQ.FT.
FILL AREA 115 SQ.FT.
STAGE 2

CUT AREA 145 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 81 CU.YD.
FILL VOLUME 64 CU.YD.
STAGE 2

CUT VOLUME 81 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



CUT AREA 153 SQ.FT.
FILL AREA 115 SQ.FT.
STAGE 2

CUT AREA 146 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 552 CU.YD.
FILL VOLUME 369 CU.YD.
STAGE 2

CUT VOLUME 334 CU.YD.
FILL VOLUME 11 CU.YD.
STAGE 3

CROSS SECTION STA. 685+85 TO STA. 686+00

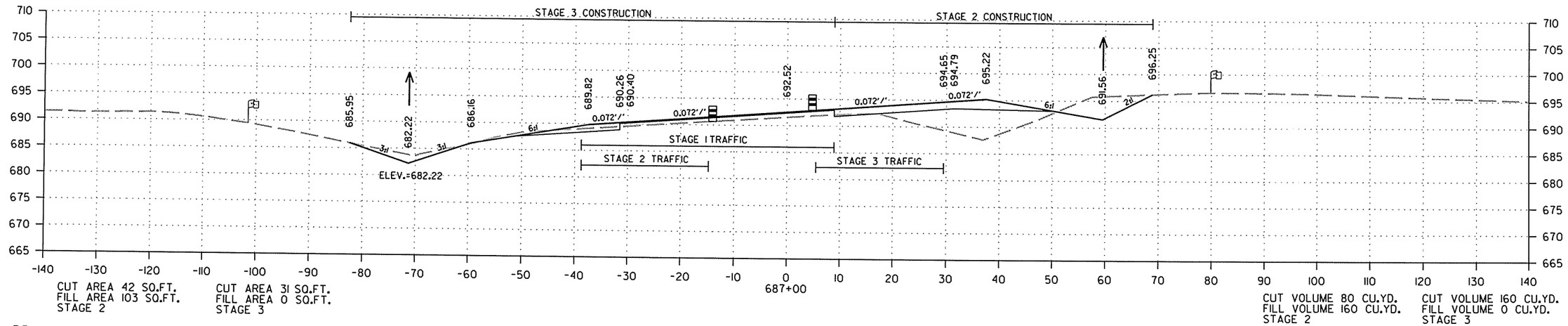
8/8/2014

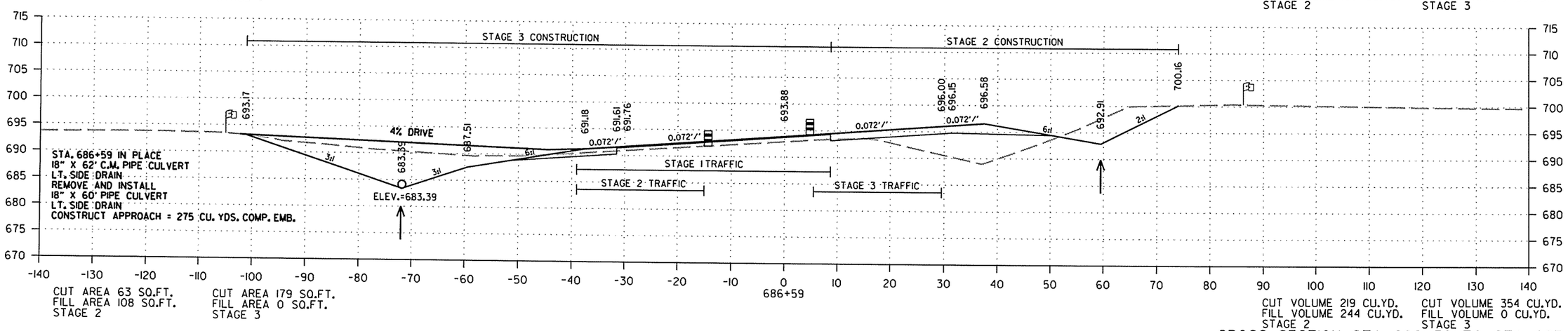
R050214.DGN

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.		050214	199	311

(2) CROSS SECTIONS - HWY. 167

687+30.00 END
-2.87% L.T.DT.GD.
ELEV.=681.35





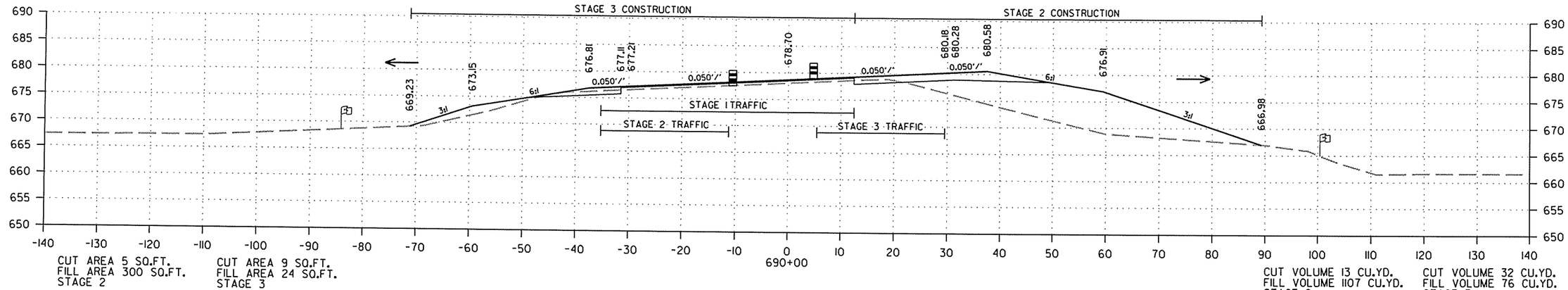
CROSS SECTION STA. 686+59 TO STA. 687+00

8/8/2014

R050214.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.		050214	200	311

(2) CROSS SECTIONS - HWY. 167

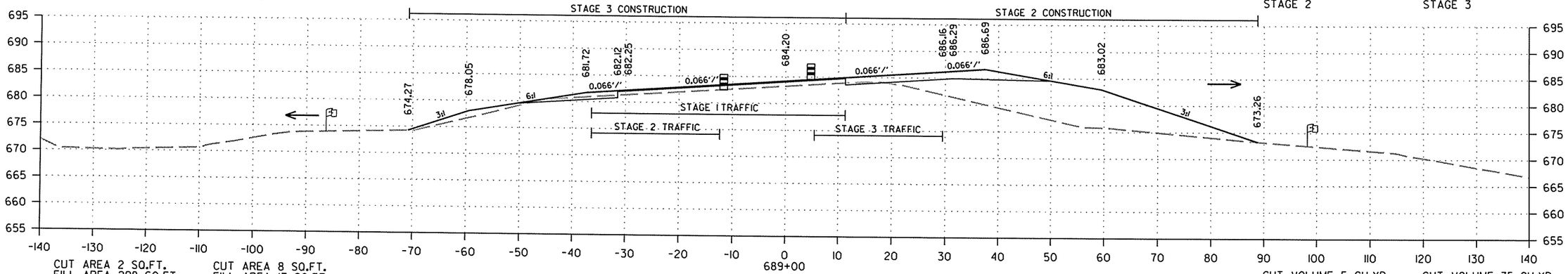


CUT AREA 5 SQ.FT.
FILL AREA 300 SQ.FT.
STAGE 2

CUT AREA 9 SQ.FT.
FILL AREA 24 SQ.FT.
STAGE 3

CUT VOLUME 13 CU.YD.
FILL VOLUME 1107 CU.YD.
STAGE 2

CUT VOLUME 32 CU.YD.
FILL VOLUME 76 CU.YD.
STAGE 3

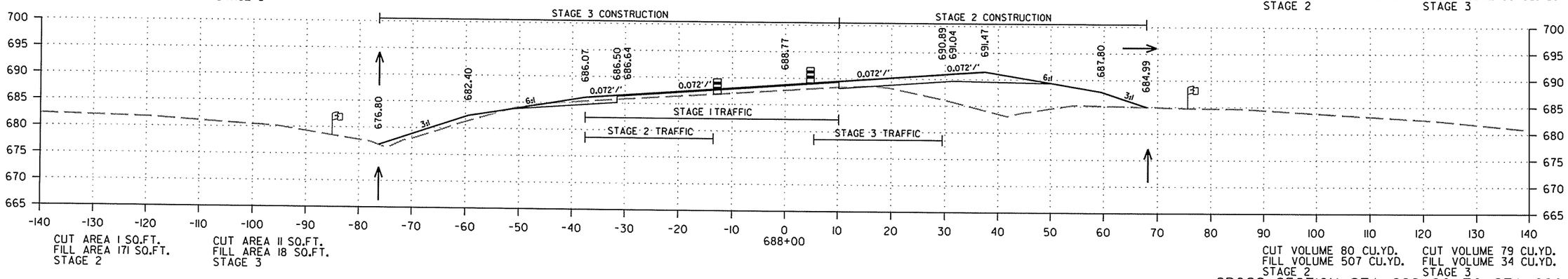


CUT AREA 2 SQ.FT.
FILL AREA 298 SQ.FT.
STAGE 2

CUT AREA 8 SQ.FT.
FILL AREA 17 SQ.FT.
STAGE 3

CUT VOLUME 5 CU.YD.
FILL VOLUME 868 CU.YD.
STAGE 2

CUT VOLUME 35 CU.YD.
FILL VOLUME 66 CU.YD.
STAGE 3



CUT AREA 1 SQ.FT.
FILL AREA 171 SQ.FT.
STAGE 2

CUT AREA 11 SQ.FT.
FILL AREA 18 SQ.FT.
STAGE 3

CUT VOLUME 80 CU.YD.
FILL VOLUME 507 CU.YD.
STAGE 2

CUT VOLUME 79 CU.YD.
FILL VOLUME 34 CU.YD.
STAGE 3

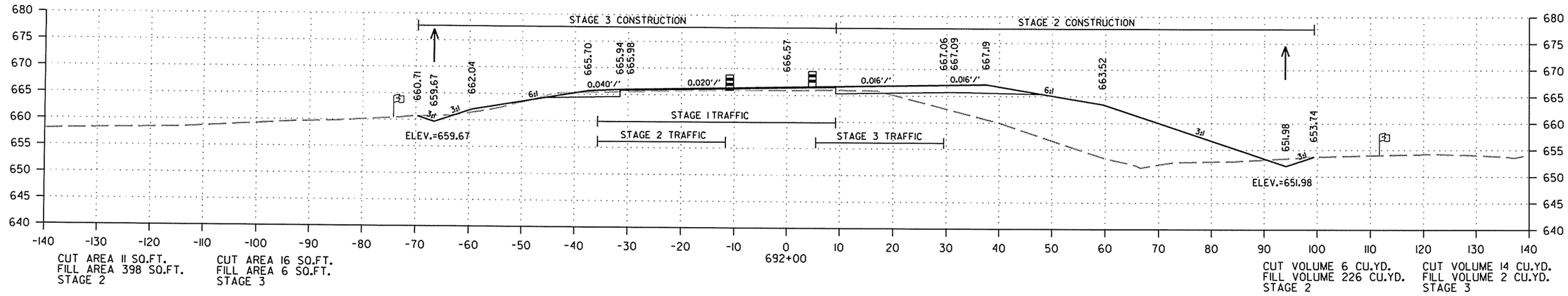
CROSS SECTION STA. 688+00 TO STA. 690+00

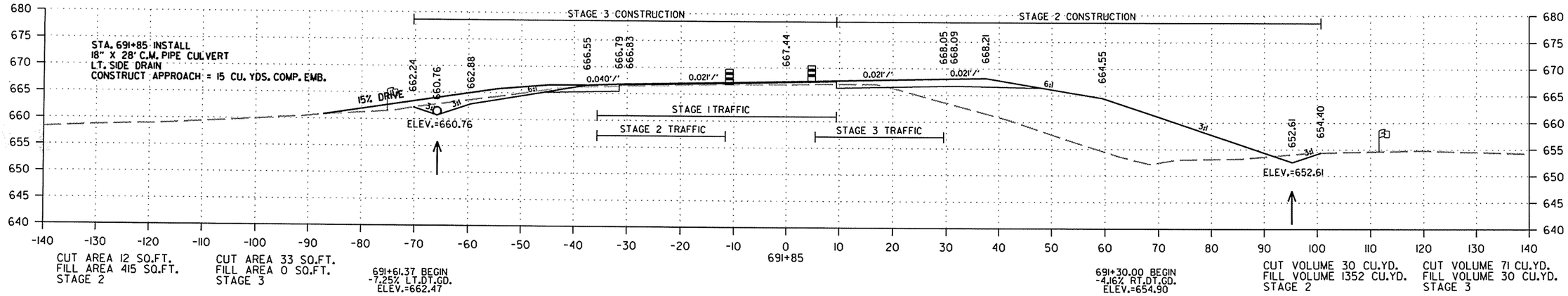
8/8/2014

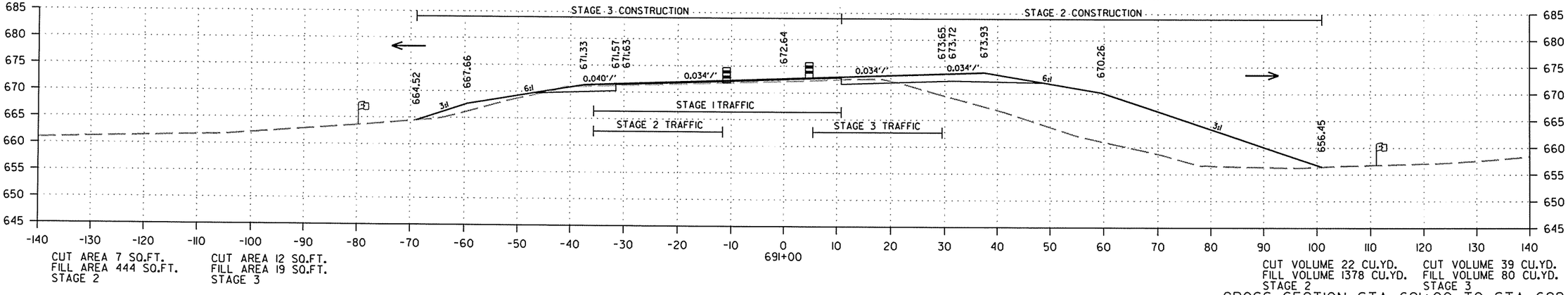
R050214.DGN

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.		050214	201	311

(2) CROSS SECTIONS - HWY. 167







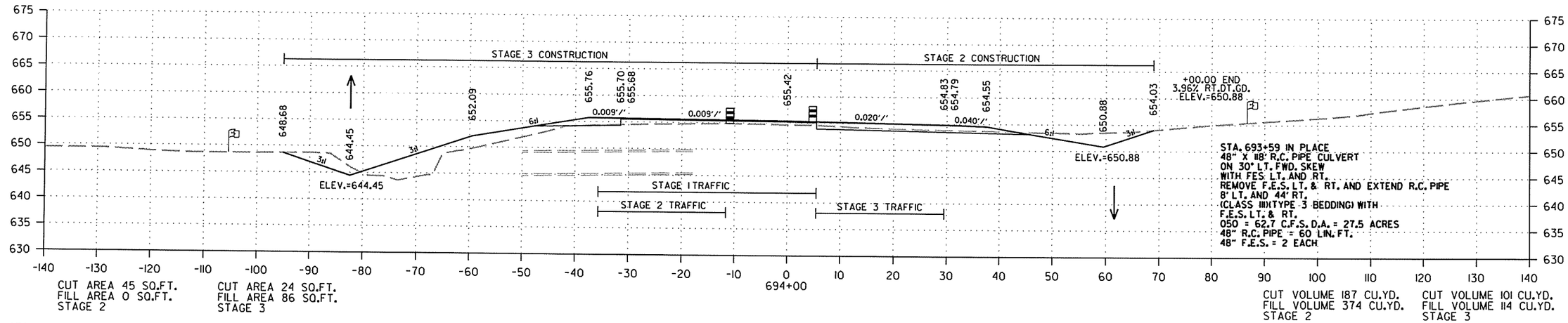
CROSS SECTION STA. 691+00 TO STA. 692+00

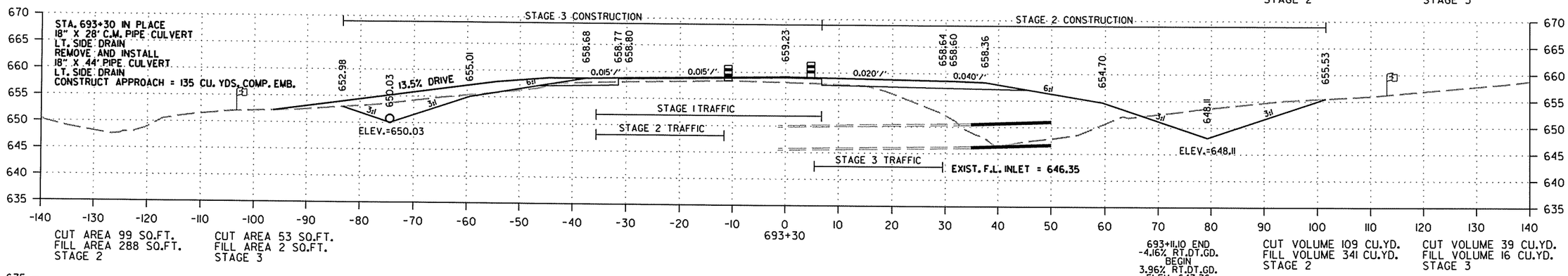
8/8/2014

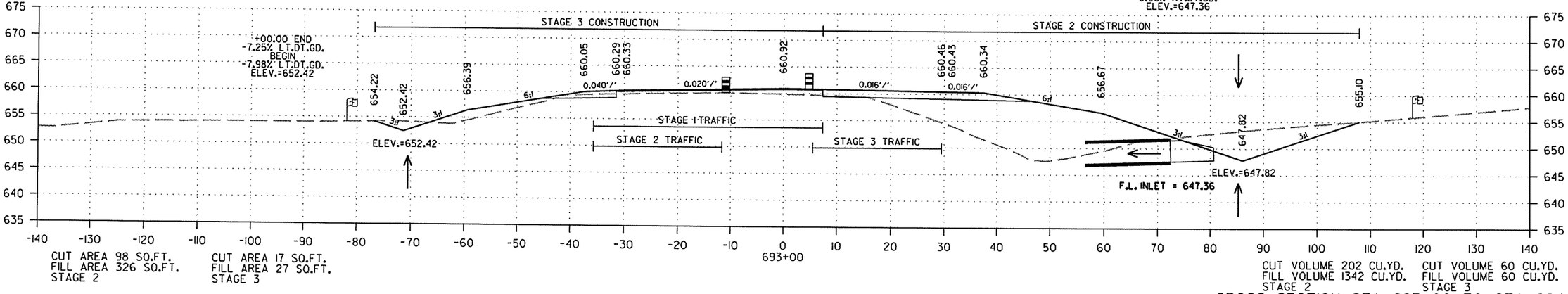
R050214.DGN

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.		050214	202	311

(2) CROSS SECTIONS - HWY. 167







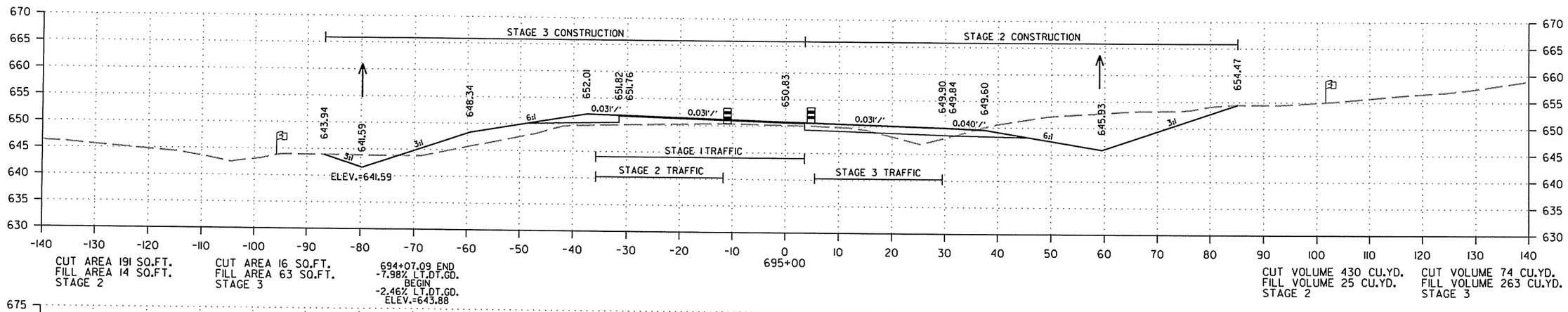
CROSS SECTION STA. 693+00 TO STA. 694+00

8/8/2014

R050214.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.		050214	203	311

(2) CROSS SECTIONS - HWY. 167



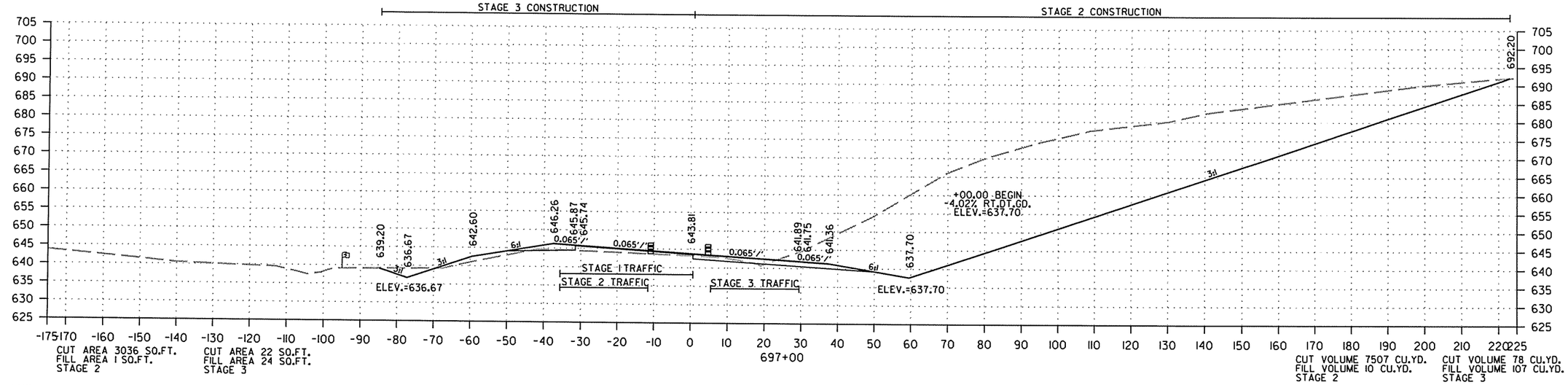
CROSS SECTION STA. 694+03 TO STA. 695+00

8/8/2014

R050214.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.		050214	204	311

(2) CROSS SECTIONS - HWY. 167



CROSS SECTION STA. 696+00 TO STA. 697+00

8/8/2014

R050214.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.		050214	205	311

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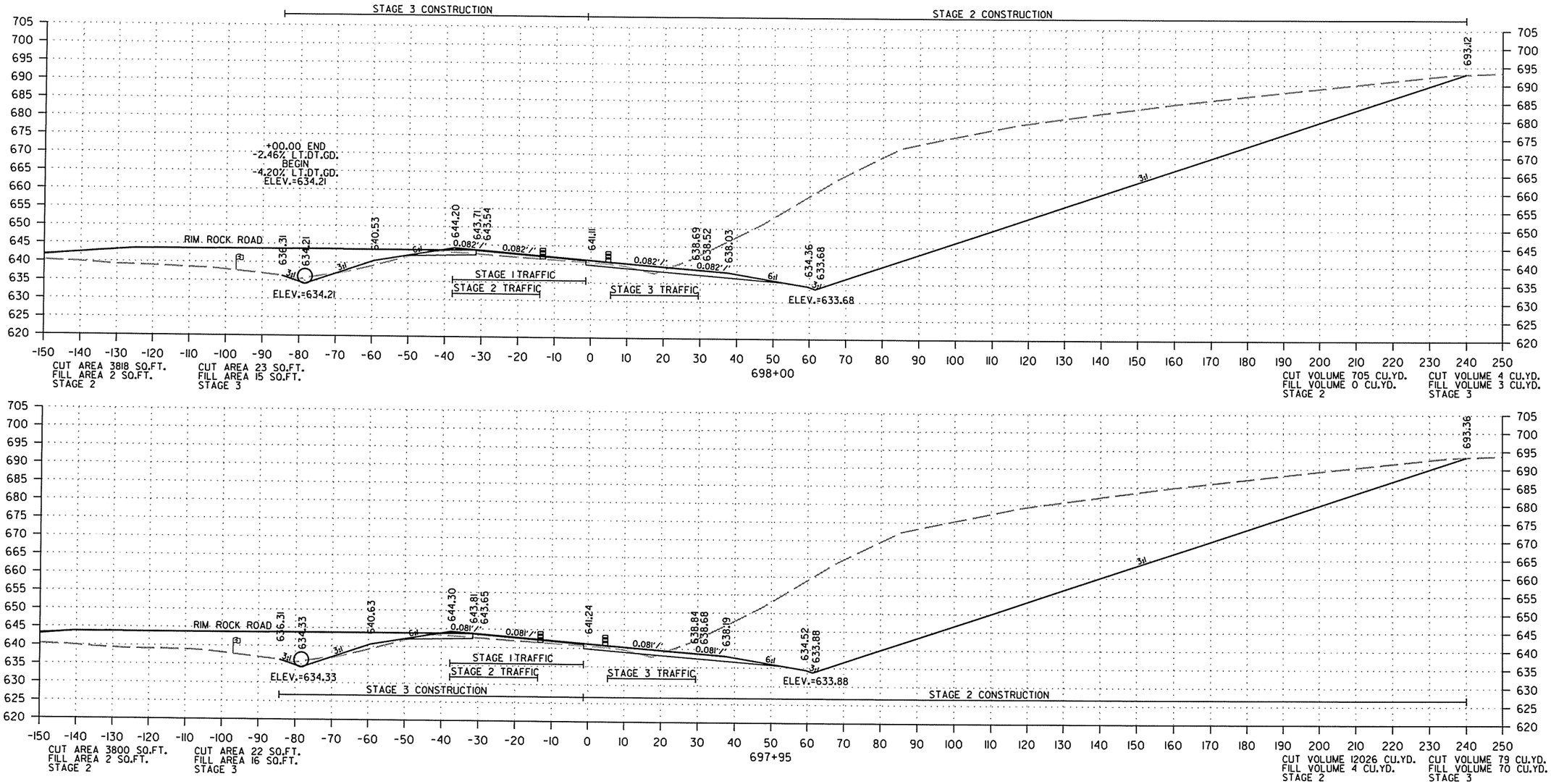

8/8/2014

R050214.DGN

CROSS SECTION STA. 697+95 TO STA. 698+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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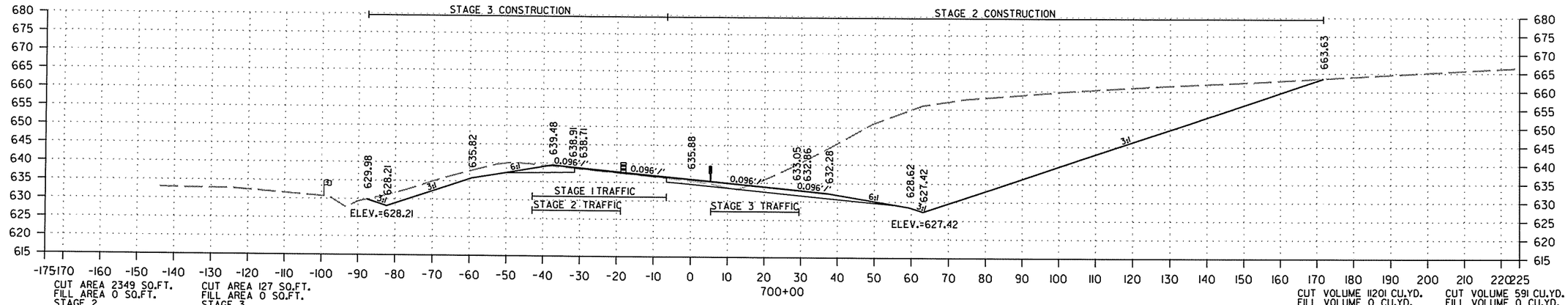
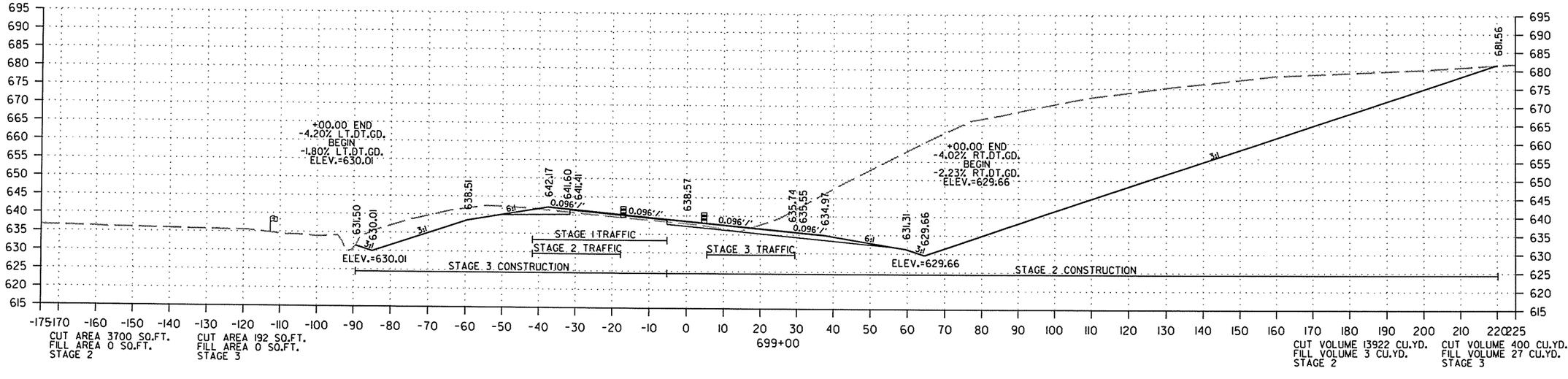
				JOB NO.		050214	206	311

(2) CROSS SECTIONS - HWY. 167





8/8/2014

R050214.DGN

CROSS SECTION STA. 699+00 TO STA. 700+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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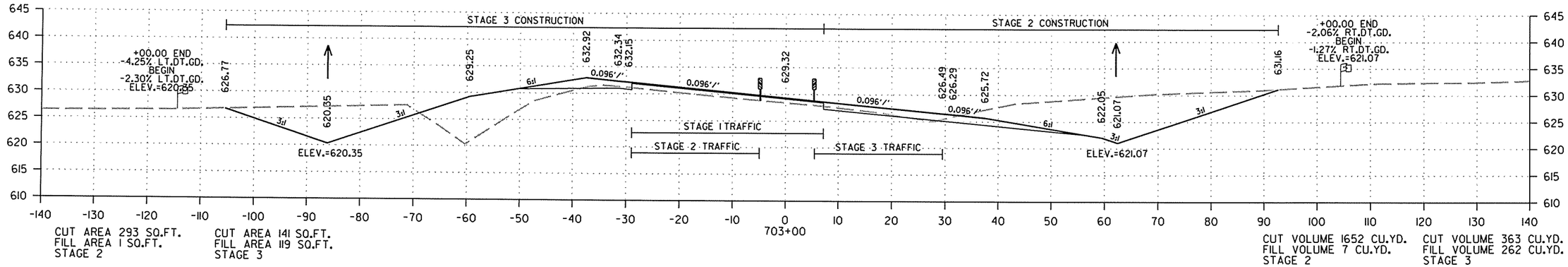
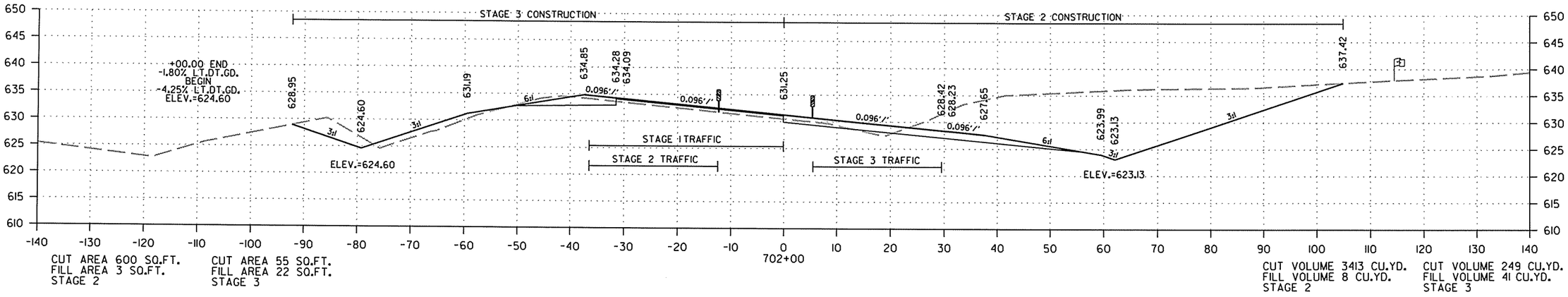
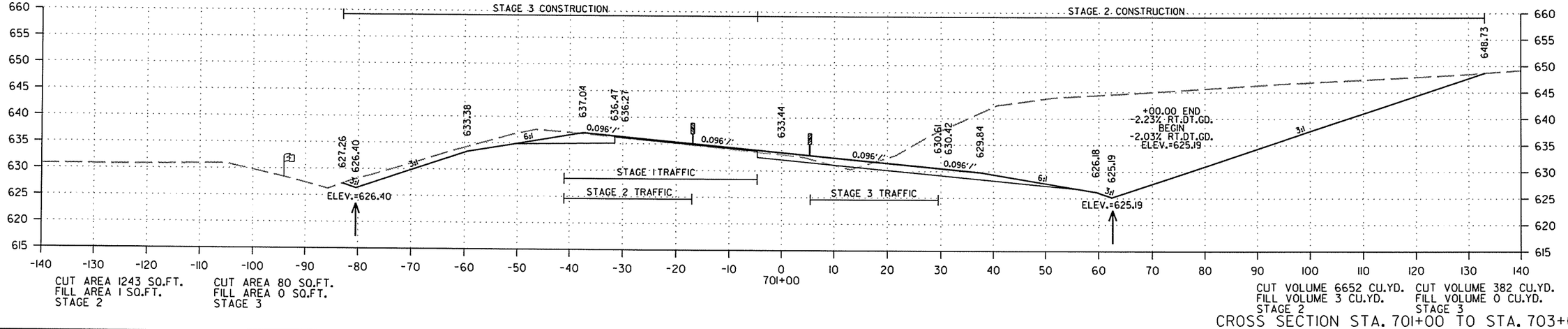
				JOB NO.		050214	207	311

(2) CROSS SECTIONS - HWY. 167







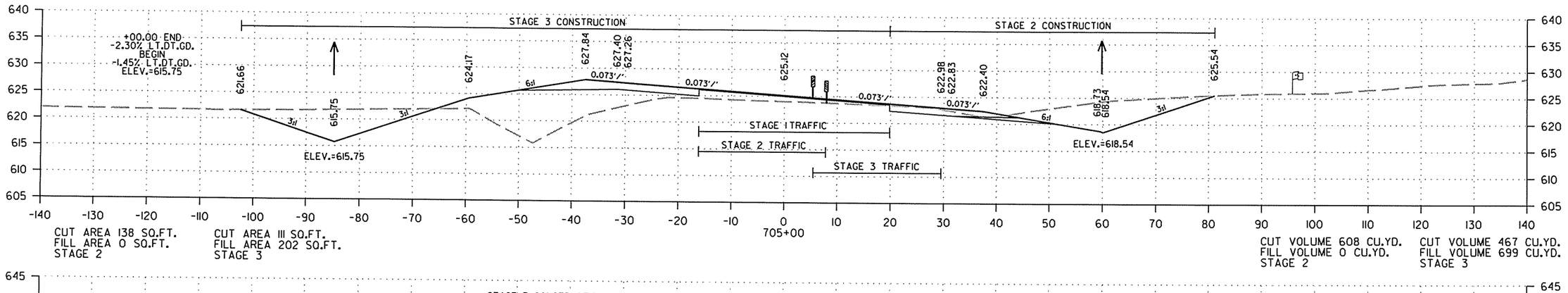
CROSS SECTION STA. 701+00 TO STA. 703+00

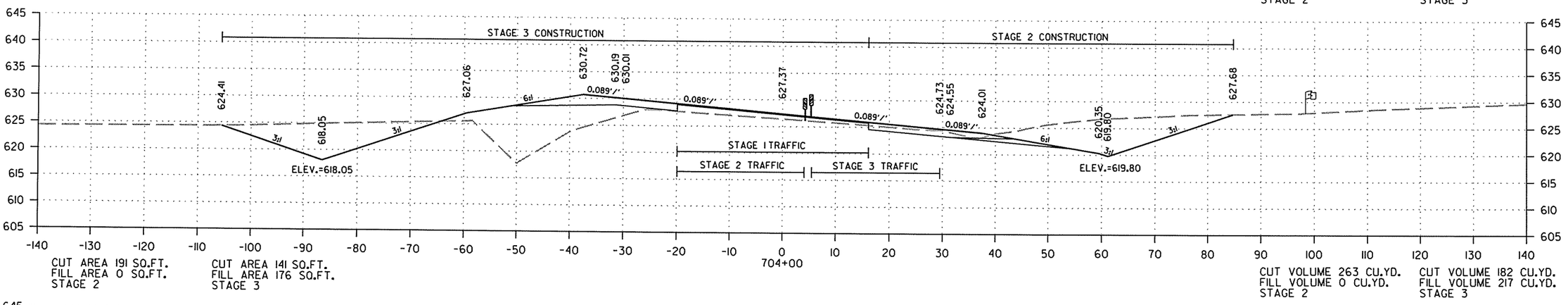
8/8/2014

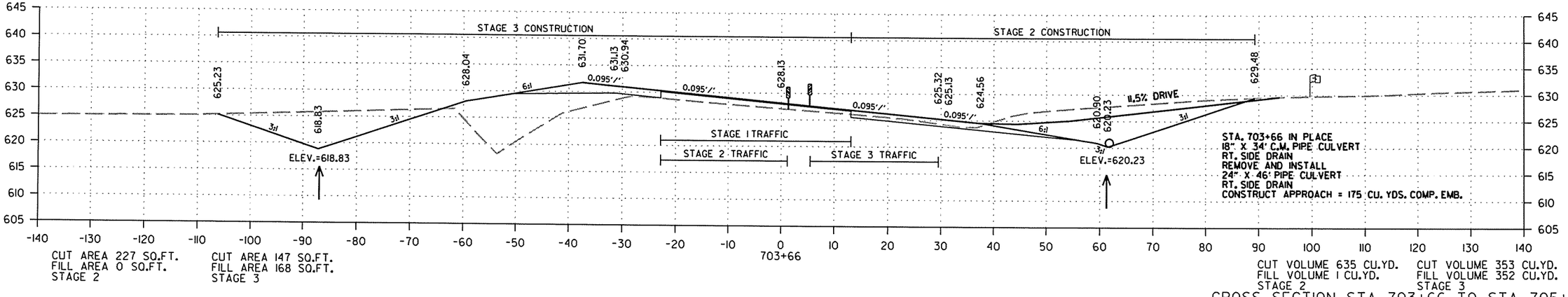
R050214.DGN

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.		050214	208	311

(2) CROSS SECTIONS - HWY. 167







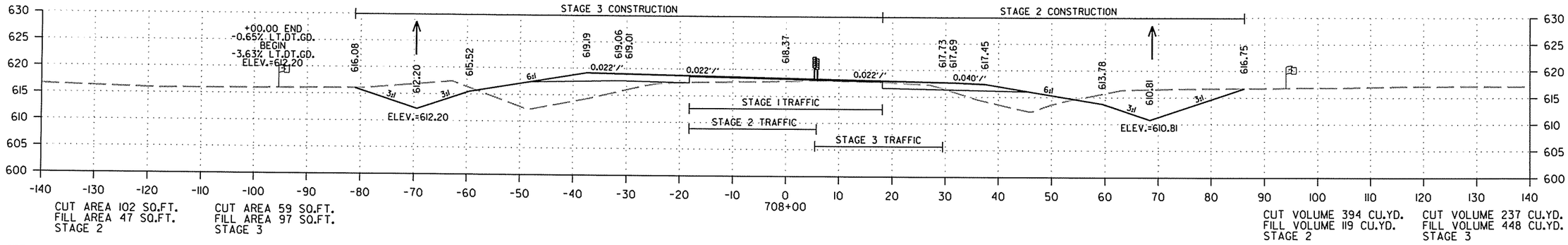
CROSS SECTION STA. 703+66 TO STA. 705+00

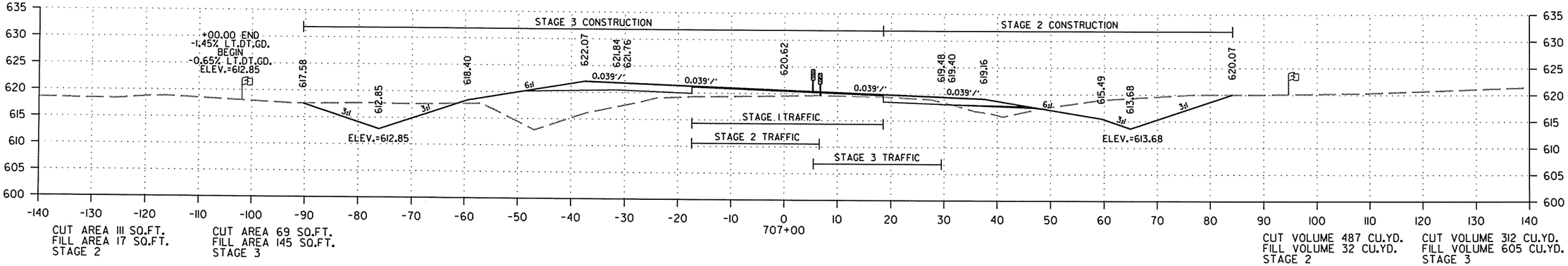
8/8/2014

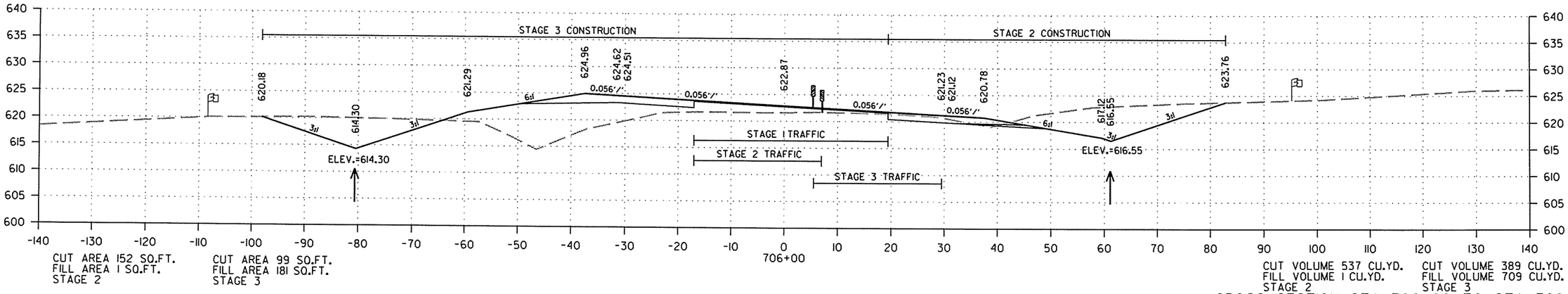
R050214.DGN

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.		050214	209	311

(2) CROSS SECTIONS - HWY. 167







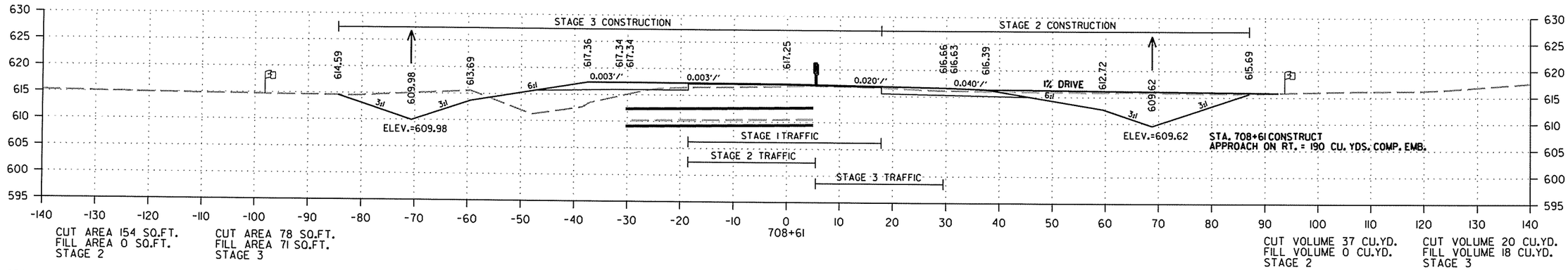
CROSS SECTION STA. 706+00 TO STA. 708+00

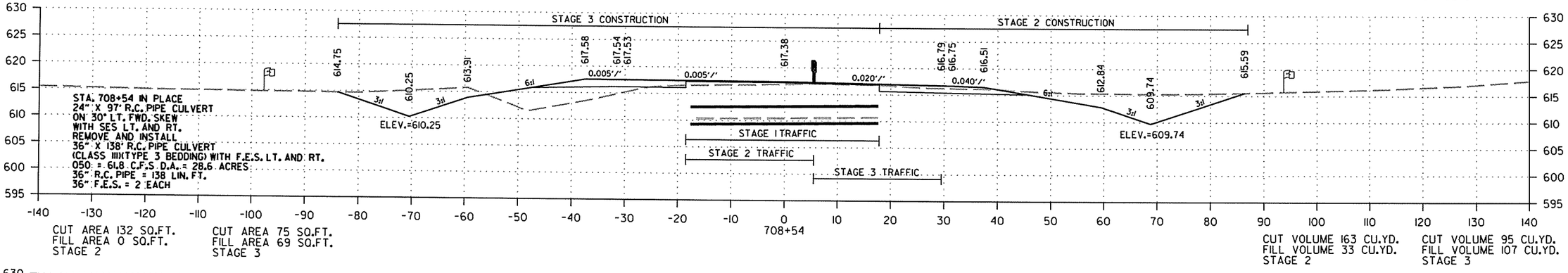
8/8/2014

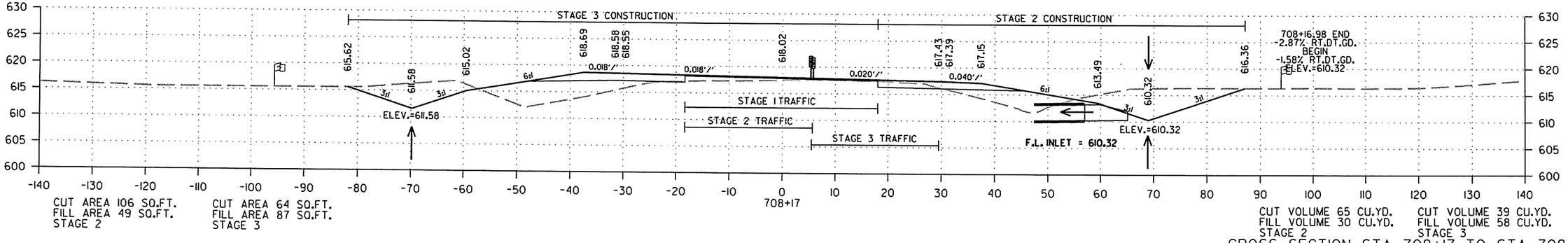
R050214.DGN

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.		050214	210	311

(2) CROSS SECTIONS - HWY. 167







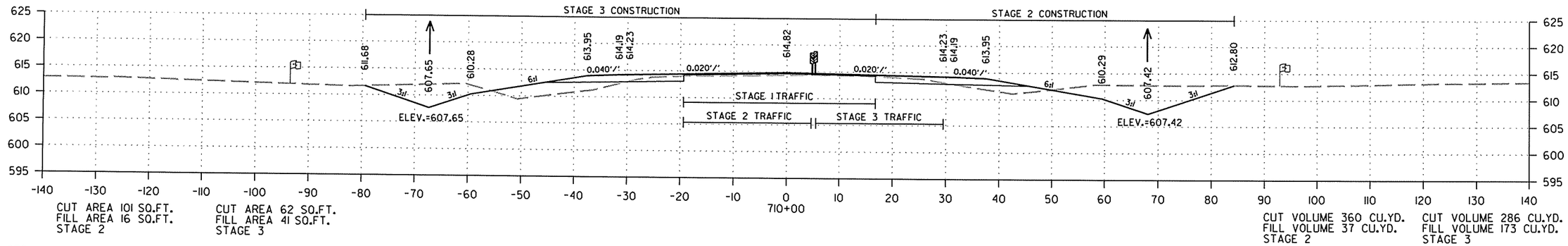
CROSS SECTION STA. 708+17 TO STA. 708+61

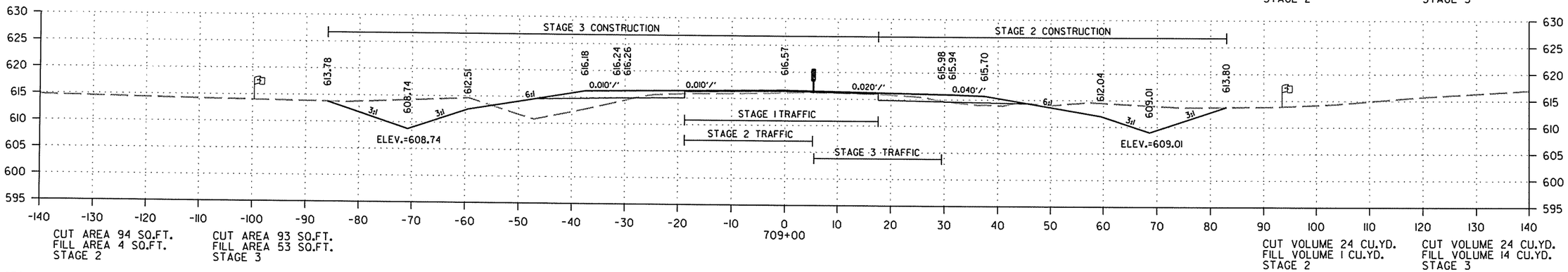
8/8/2014

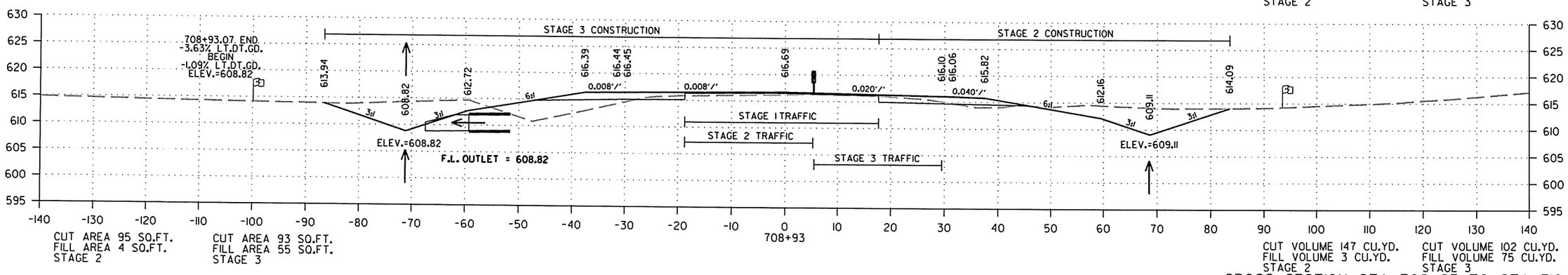
R050214.DGN

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.		050214	211	311

(2) CROSS SECTIONS - HWY. 167







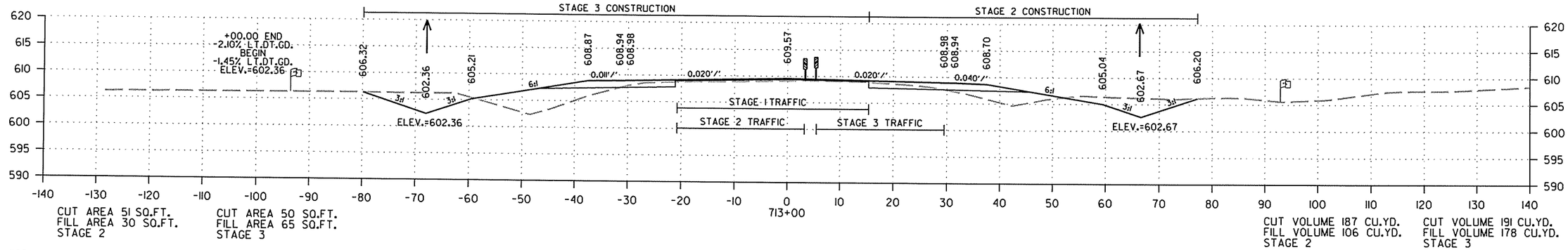
CROSS SECTION STA. 708+93 TO STA. 710+00

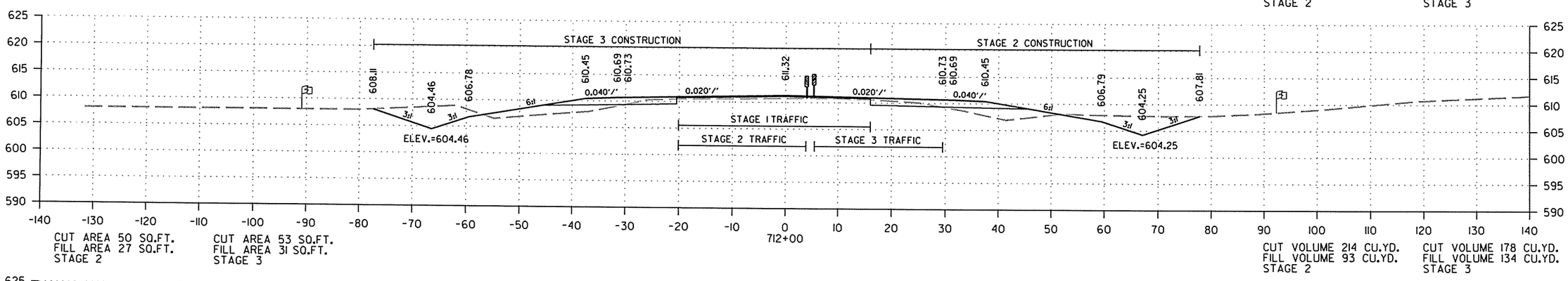
8/8/2014

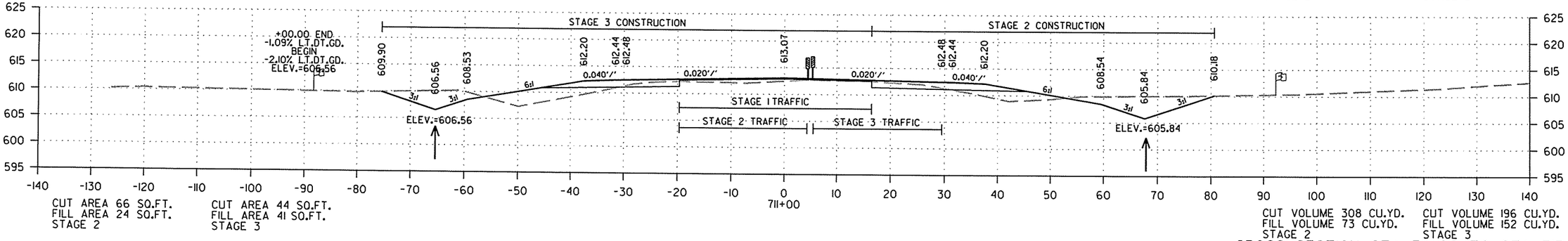
R050214.DGN

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.		050214	212	311

(2) CROSS SECTIONS - HWY. 167







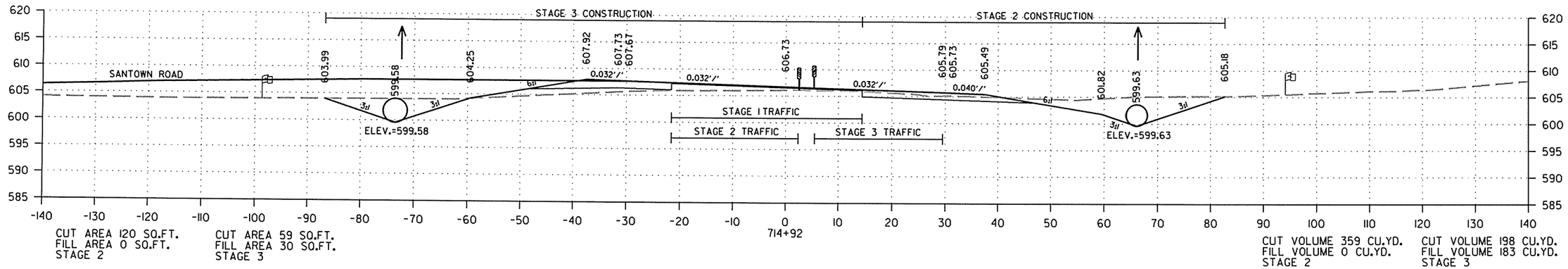
CROSS SECTION STA. 711+00 TO STA. 713+00

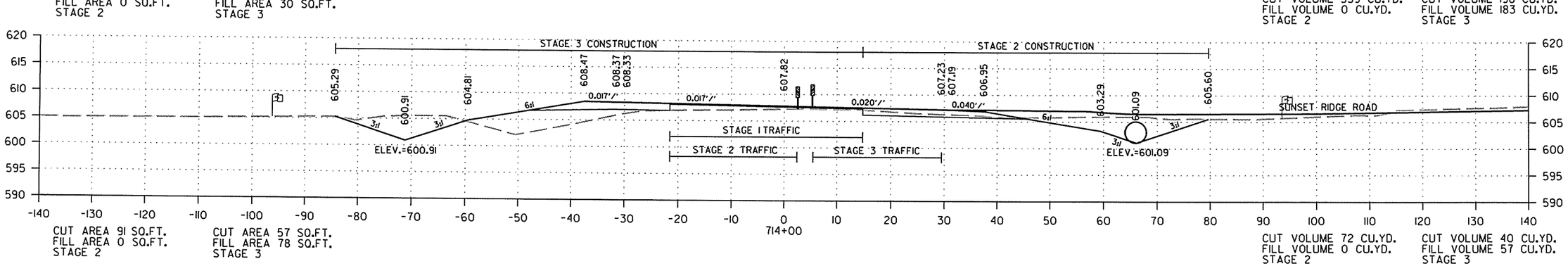
8/8/2014

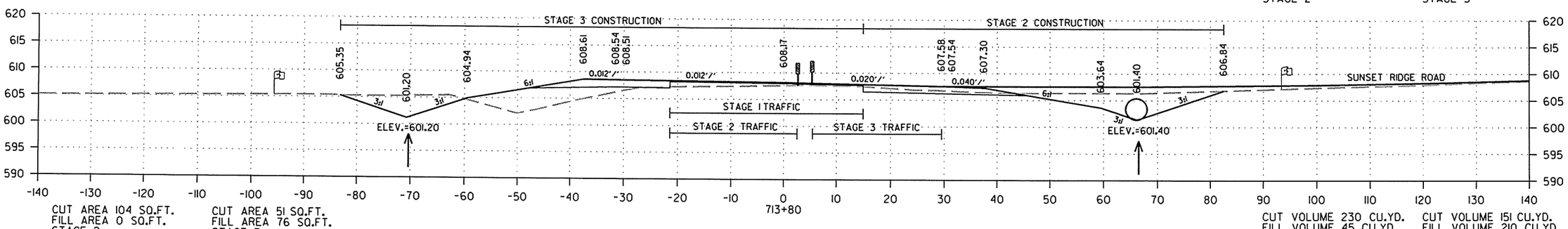
R050214.DGN

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.		050214	213	311

(2) CROSS SECTIONS - HWY. 167







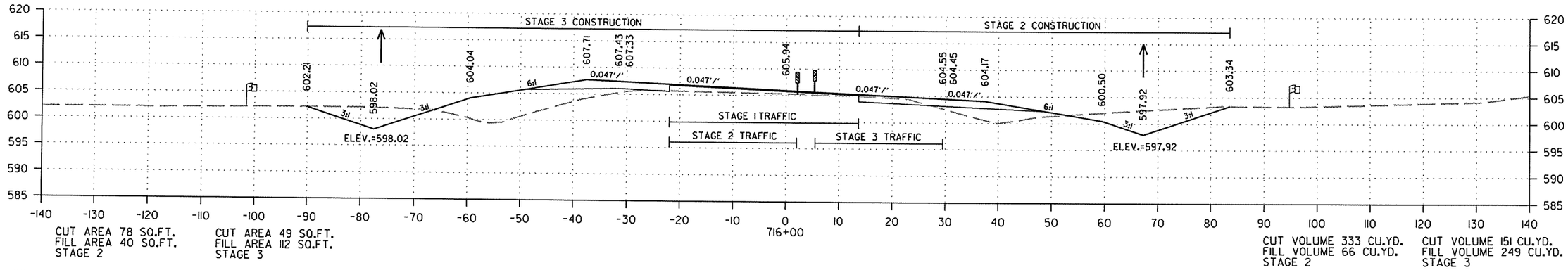
CROSS SECTION STA. 713+80 TO STA. 714+92

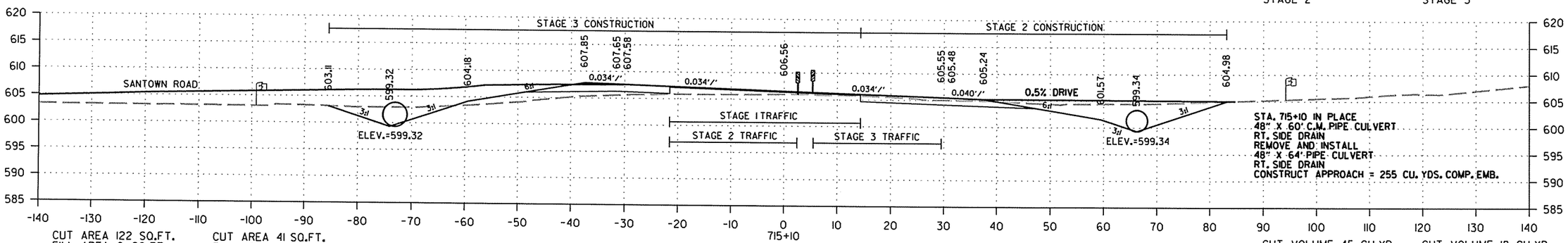
8/8/2014

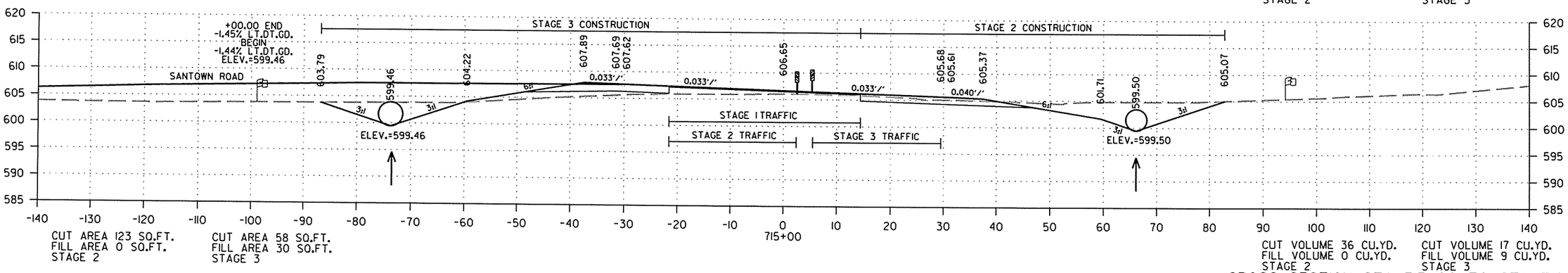
R050214.DGN

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.		050214	214	311

(2) CROSS SECTIONS - HWY. 167







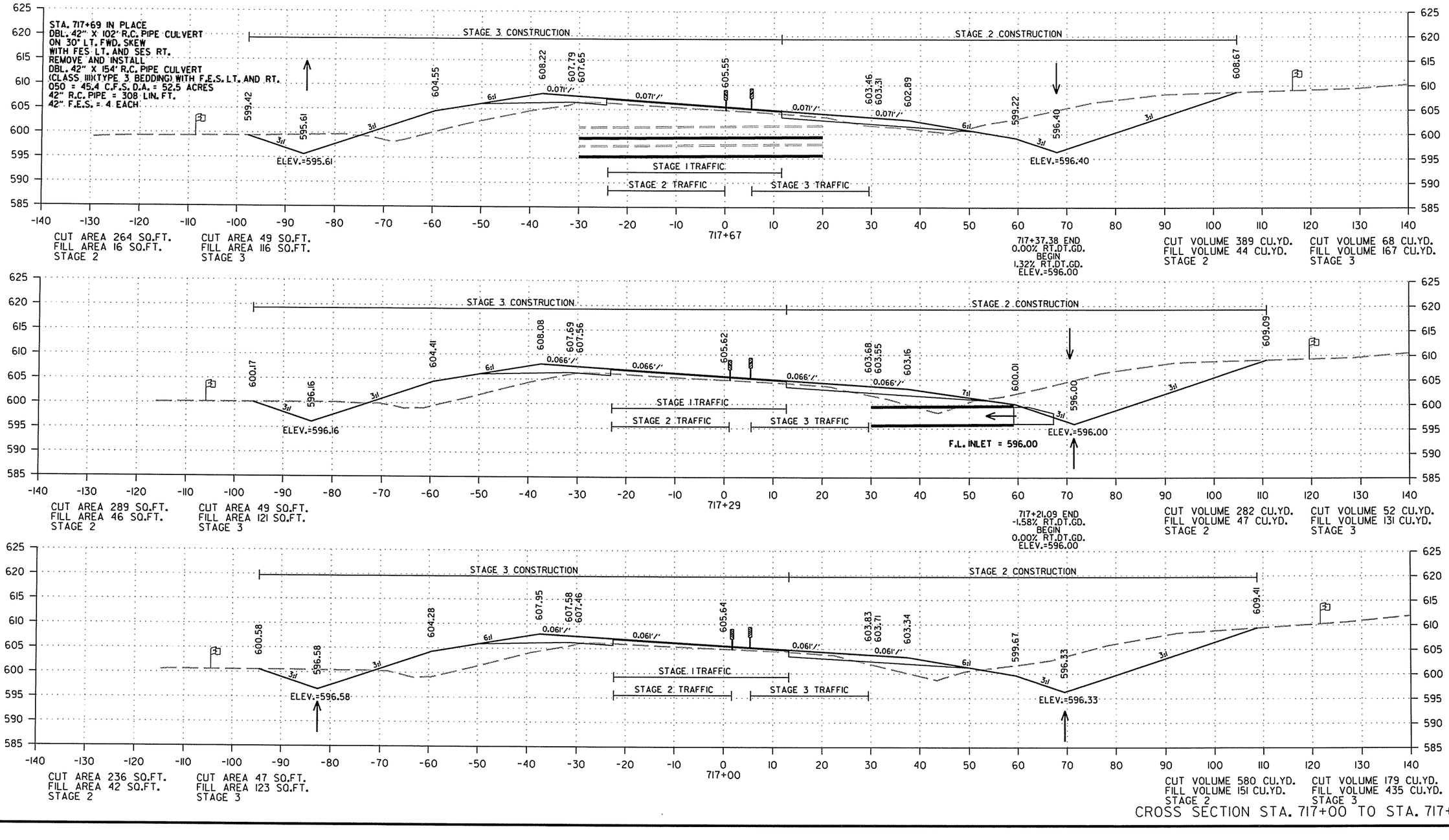
CROSS SECTION STA. 715+00 TO STA. 716+00

8/8/2014

R050214.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.		050214	215	311

(2) CROSS SECTIONS - HWY. 167



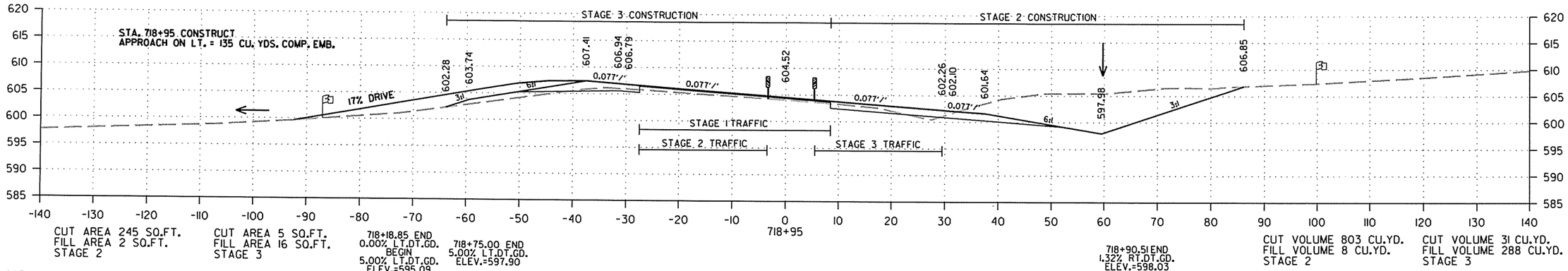
CROSS SECTION STA. 717+00 TO STA. 717+67

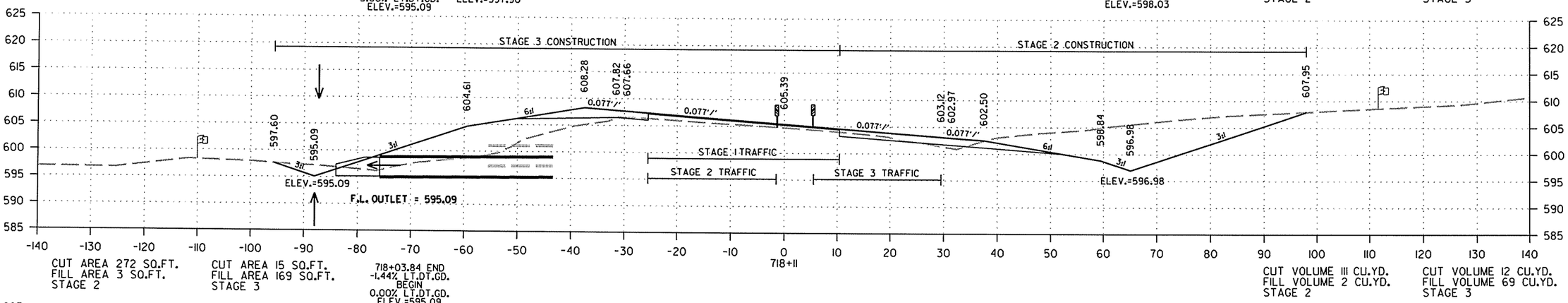
8/8/2014

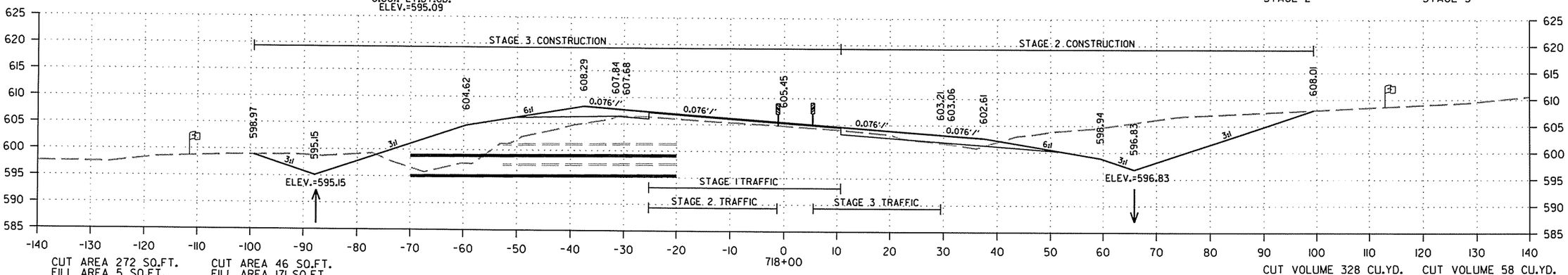
R050214.DGN

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.		050214	216	311

(2) CROSS SECTIONS - HWY. 167







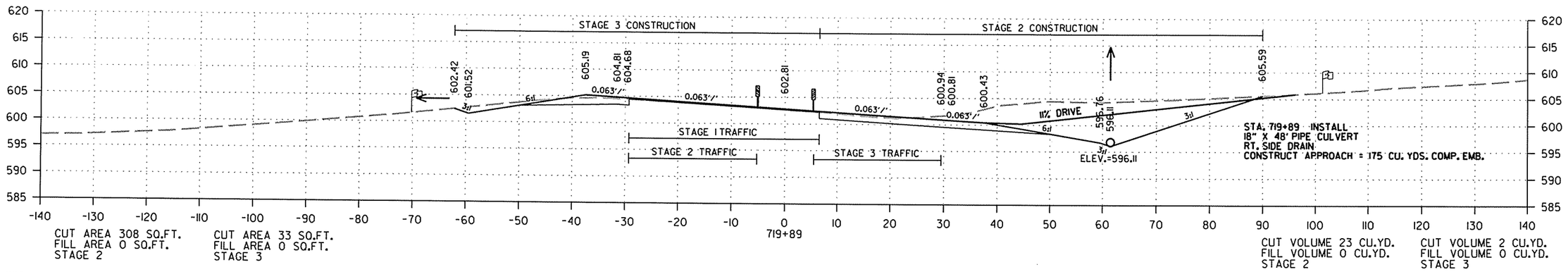
CROSS SECTION STA. 718+00 TO STA. 718+95

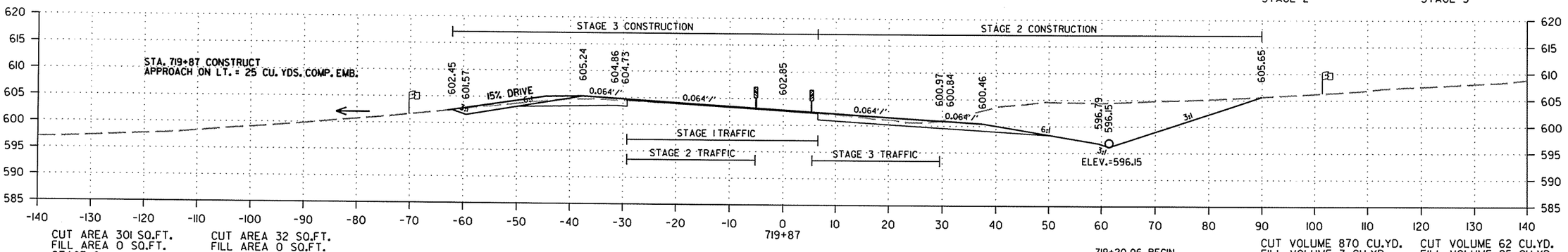
8/8/2014

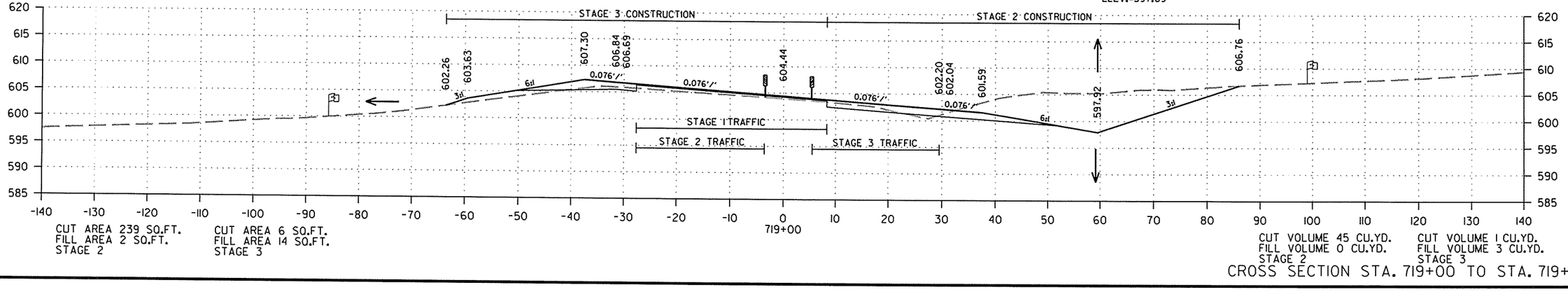
R050214.DGN

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.		050214	217	311

(2) CROSS SECTIONS - HWY. 167







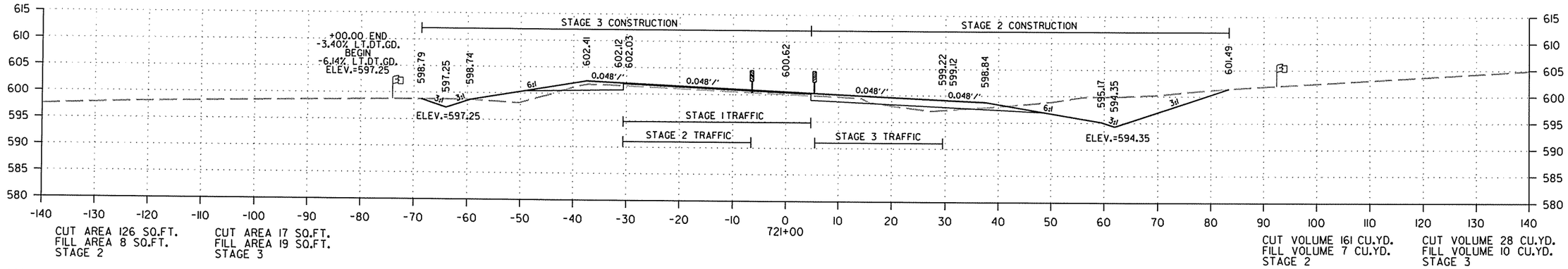
CROSS SECTION STA. 719+00 TO STA. 719+89

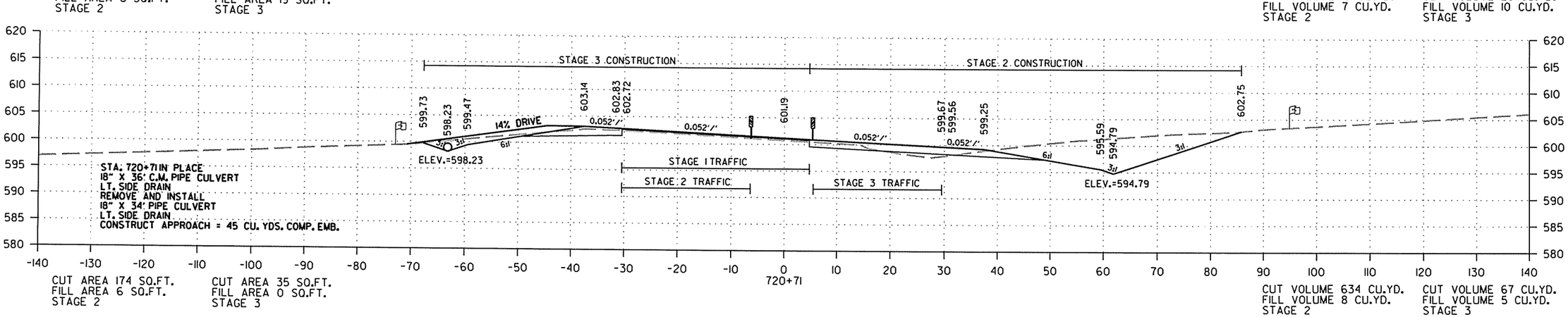
8/8/2014

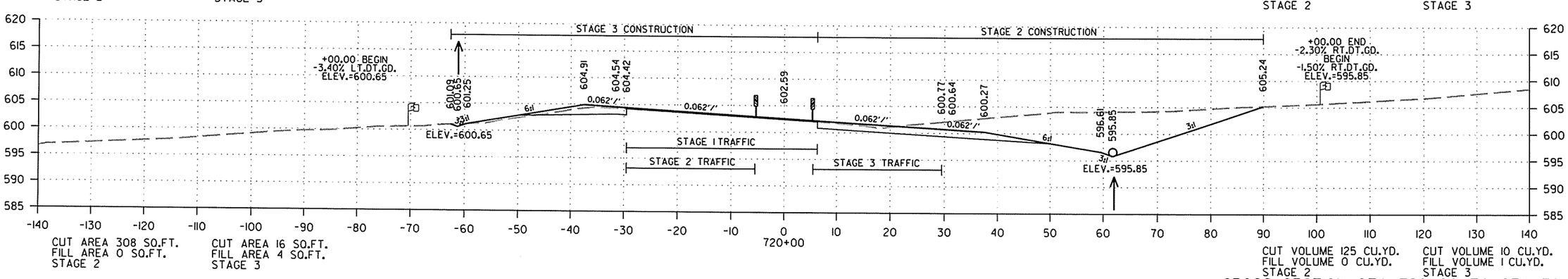
R050214.DGN

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.		050214	218	311

(2) CROSS SECTIONS - HWY. 167







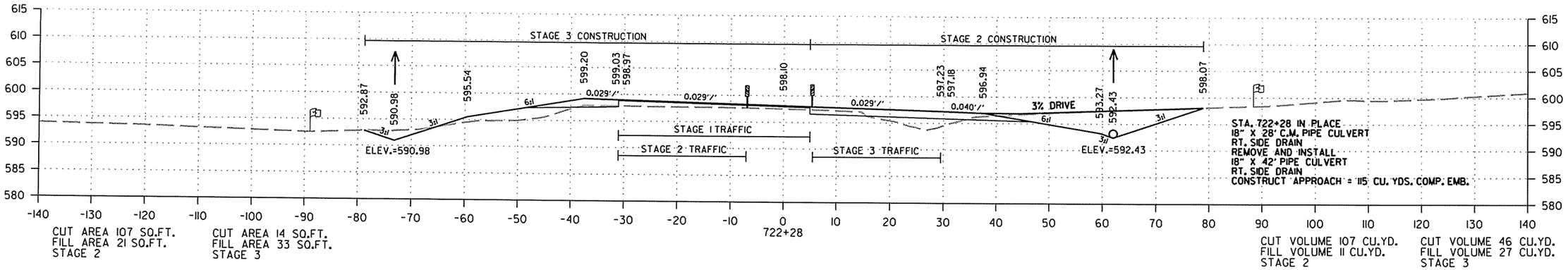
CROSS SECTION STA. 720+00 TO STA. 721+00

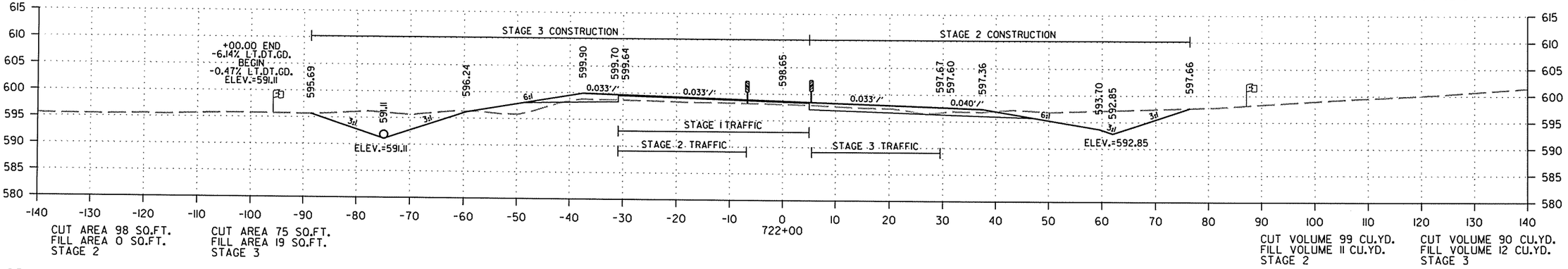
8/8/2014

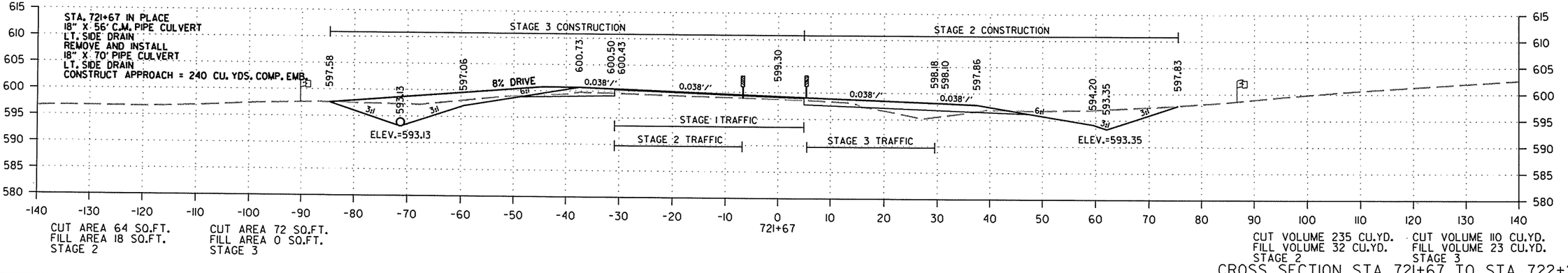
R050214.DGN

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.		050214	219	311

(2) CROSS SECTIONS - HWY. 167







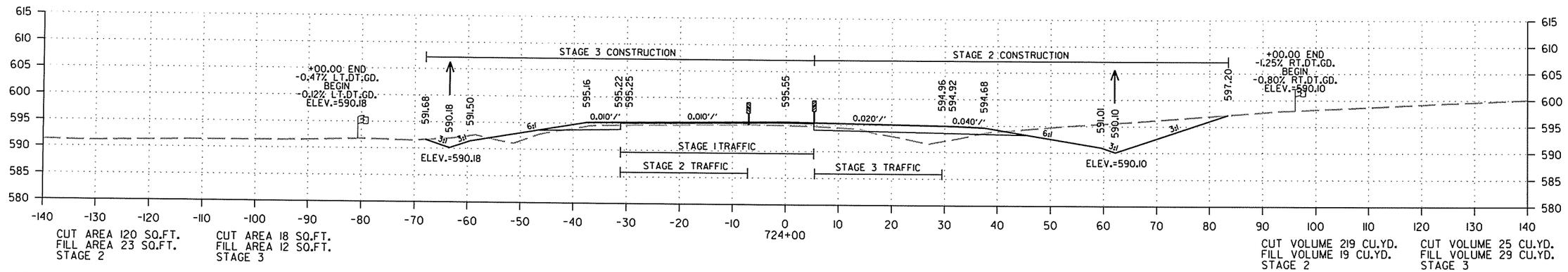
CROSS SECTION STA. 721+67 TO STA. 722+28

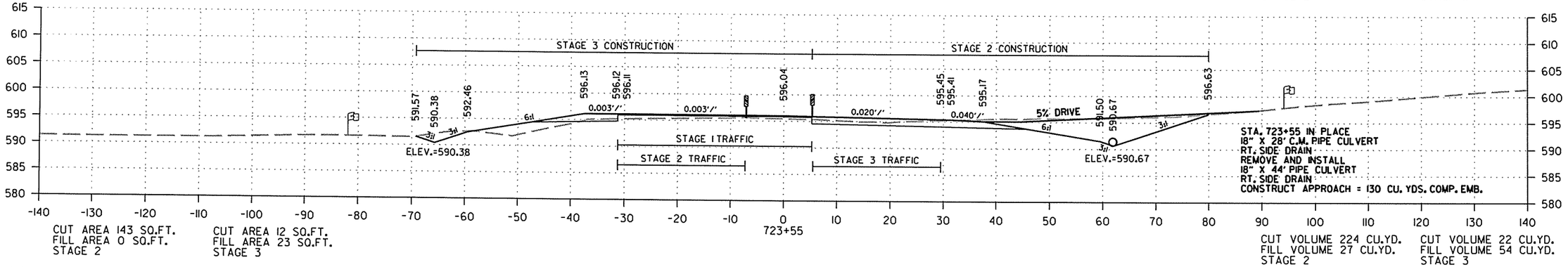
8/8/2014

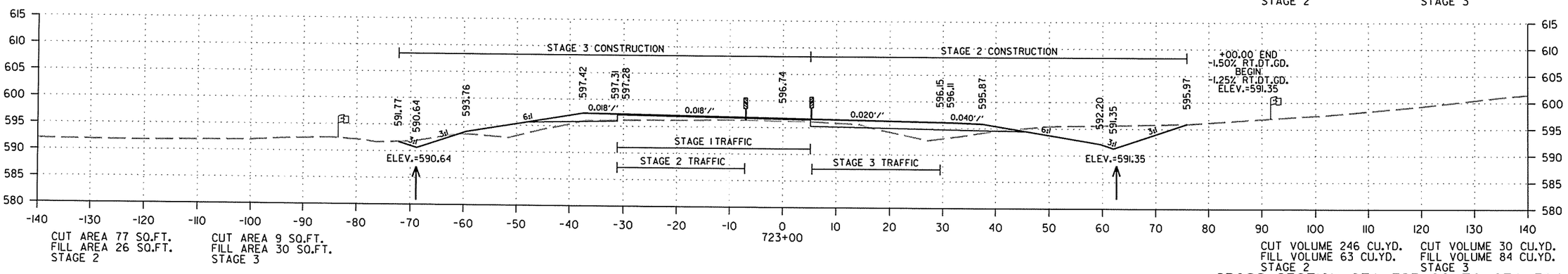
R050214.DGN

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.		050214	220	311

(2) CROSS SECTIONS - HWY. 167







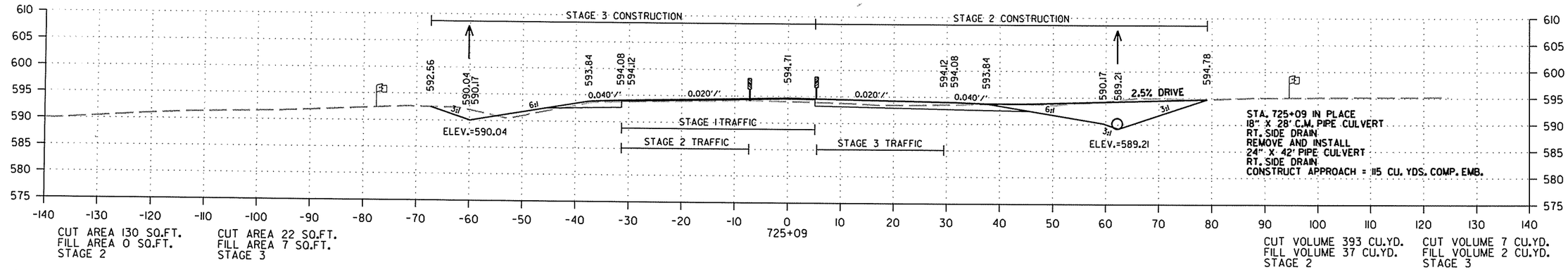
CROSS SECTION STA. 723+00 TO STA. 724+00

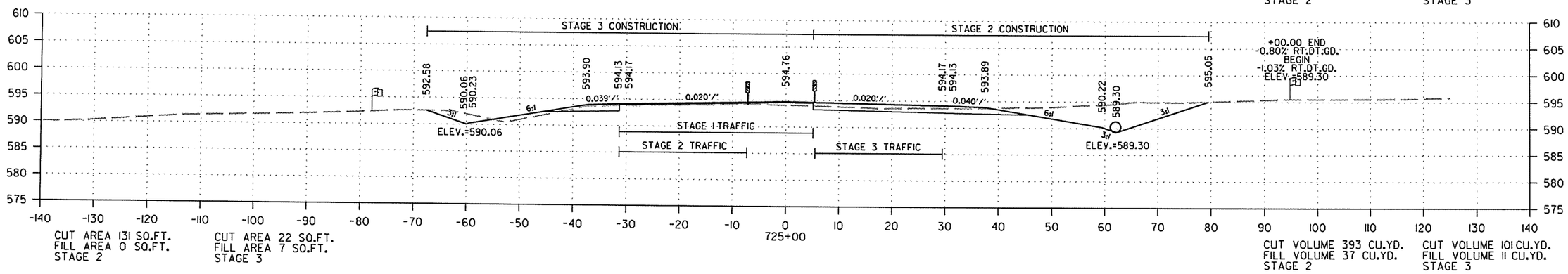
8/8/2014

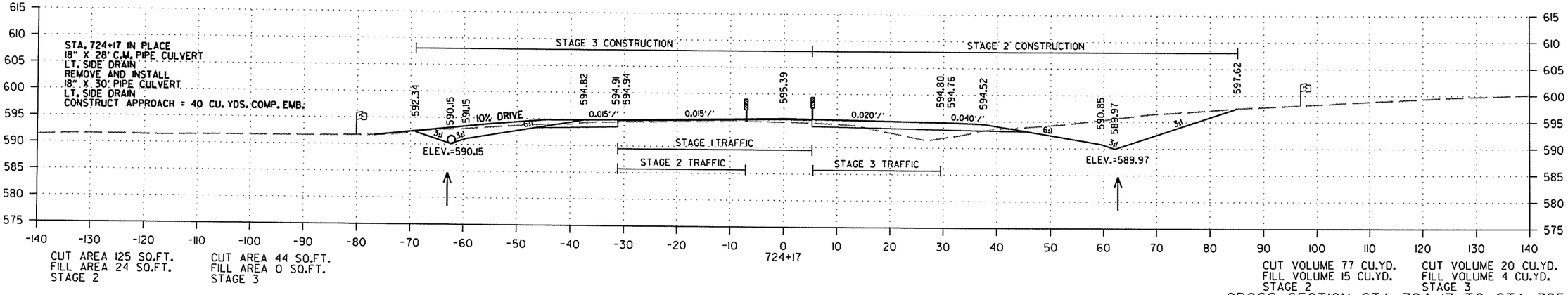
R050214.DGN

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.		050214	221	311

(2) CROSS SECTIONS - HWY. 167







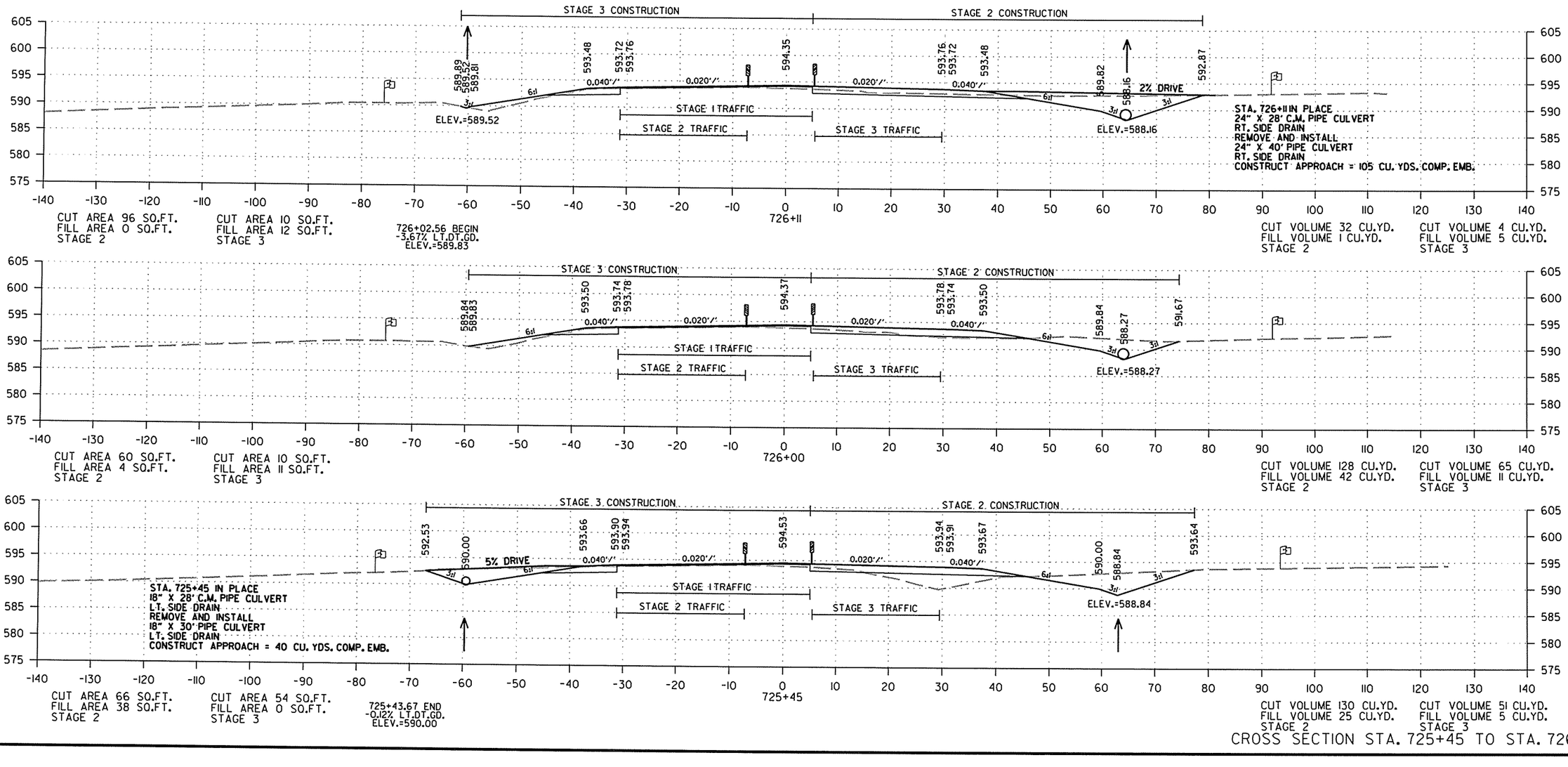
CROSS SECTION STA. 724+17 TO STA. 725+09

8/8/2014

R050214.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.		050214	222	311

(2) CROSS SECTIONS - HWY. 167



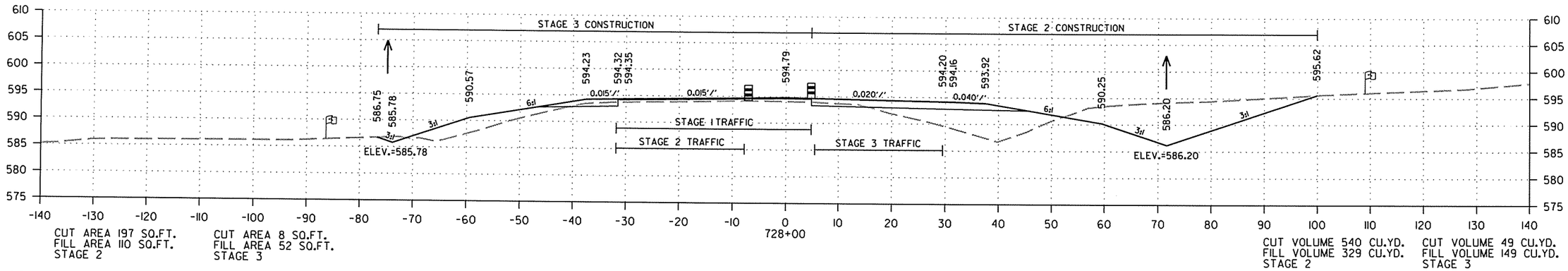
CROSS SECTION STA. 725+45 TO STA. 726+11

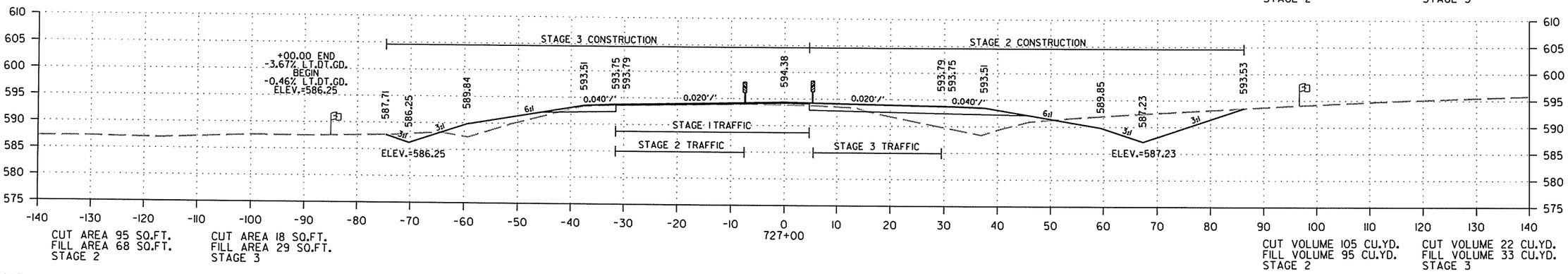
8/8/2014

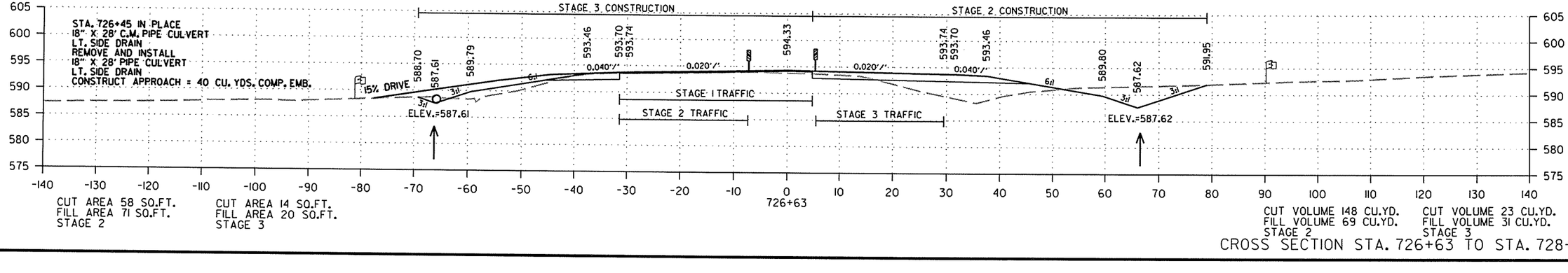
R050214.DGN

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.		050214	223	311

(2) CROSS SECTIONS - HWY. 167







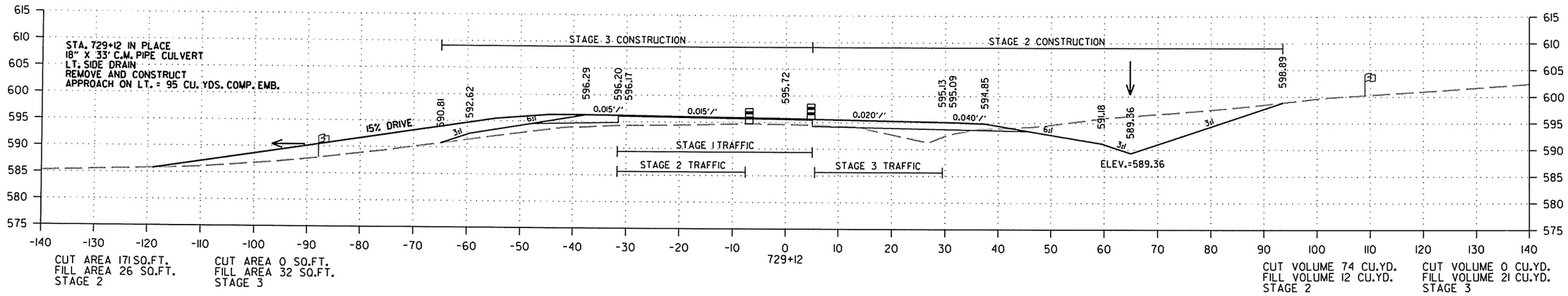
CROSS SECTION STA. 726+63 TO STA. 728+00

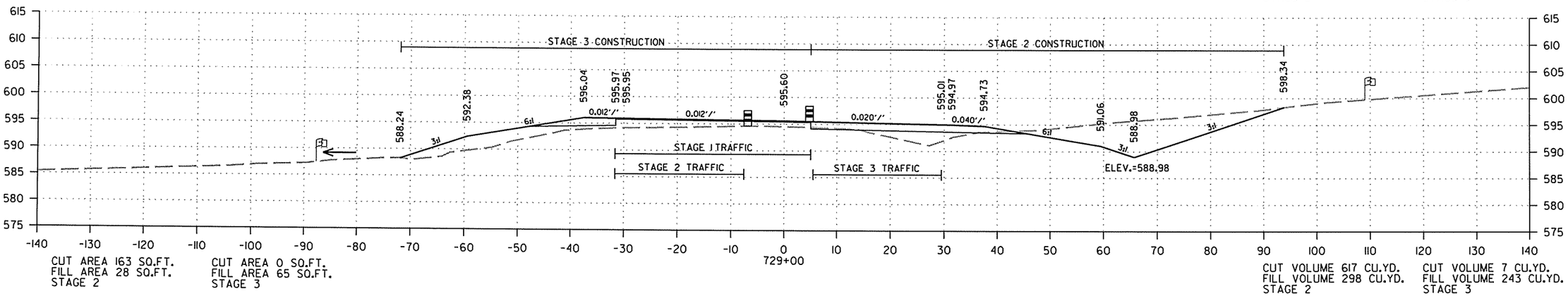
8/8/2014

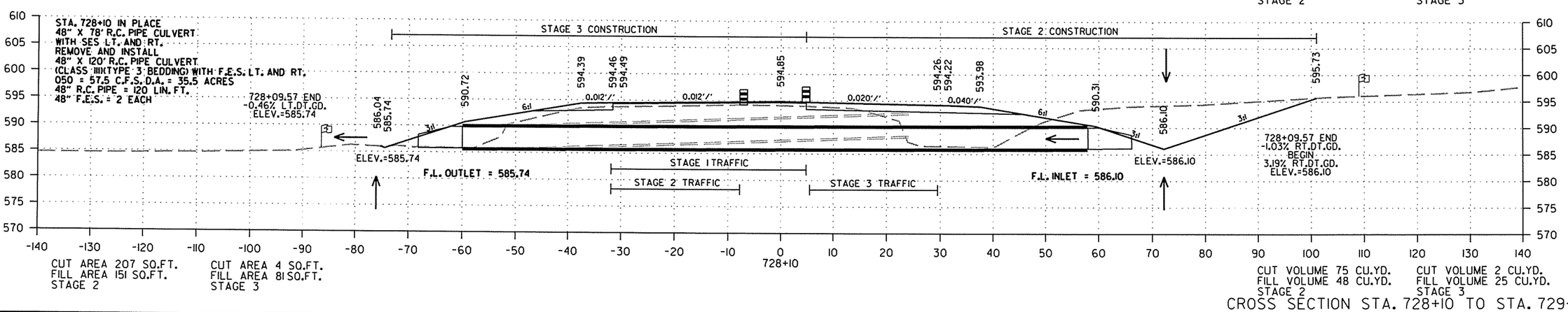
R050214.DGN

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.		050214	224	311

(2) CROSS SECTIONS - HWY. 167







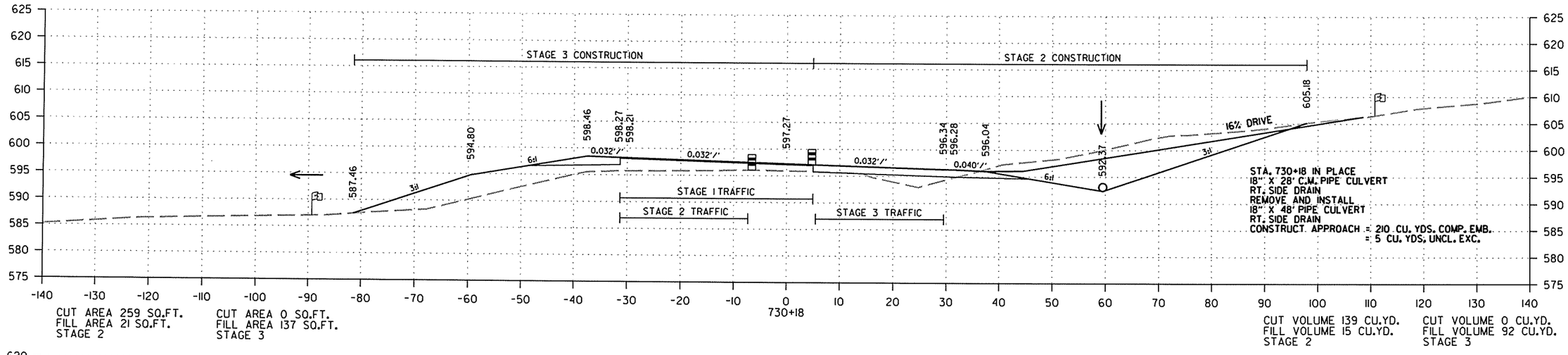
CROSS SECTION STA. 728+10 TO STA. 729+12

8/8/2014

R050214.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.		050214	225	311

(2) CROSS SECTIONS - HWY. 167



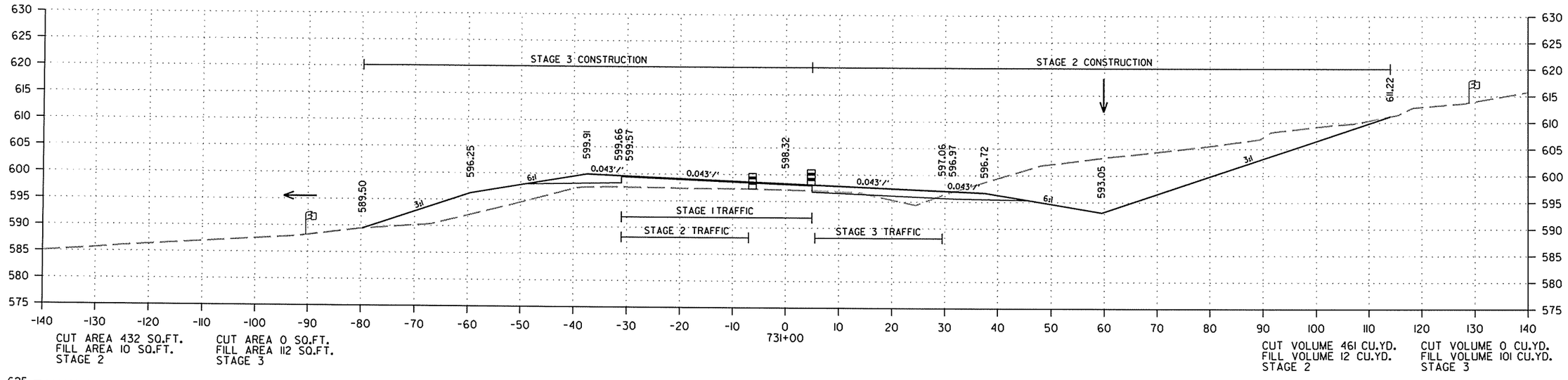
CROSS SECTION STA. 730+00 TO STA. 730+18

8/8/2014

R050214.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.		050214	226	311

(2) CROSS SECTIONS - HWY. 167

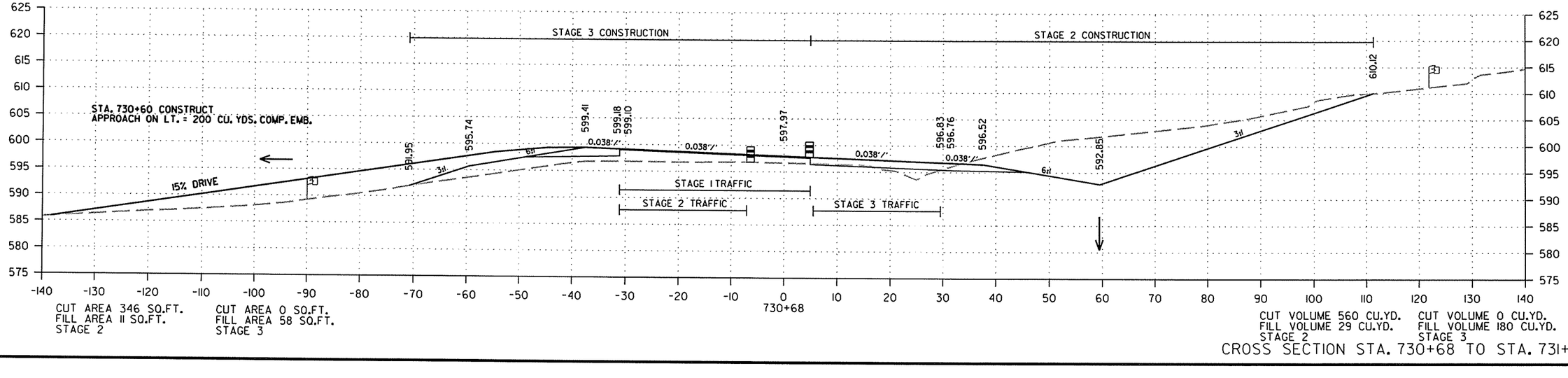


CUT AREA 432 SQ.FT.
FILL AREA 10 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 112 SQ.FT.
STAGE 3

CUT VOLUME 461 CU.YD.
FILL VOLUME 12 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 101 CU.YD.
STAGE 3



CUT AREA 346 SQ.FT.
FILL AREA 11 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 58 SQ.FT.
STAGE 3

CUT VOLUME 560 CU.YD.
FILL VOLUME 29 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 180 CU.YD.
STAGE 3

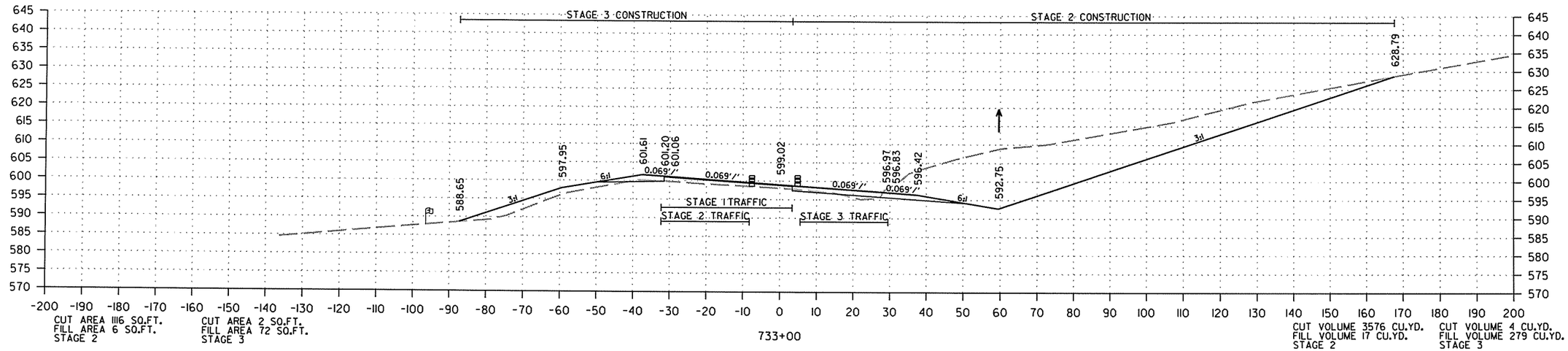
CROSS SECTION STA. 730+68 TO STA. 731+00

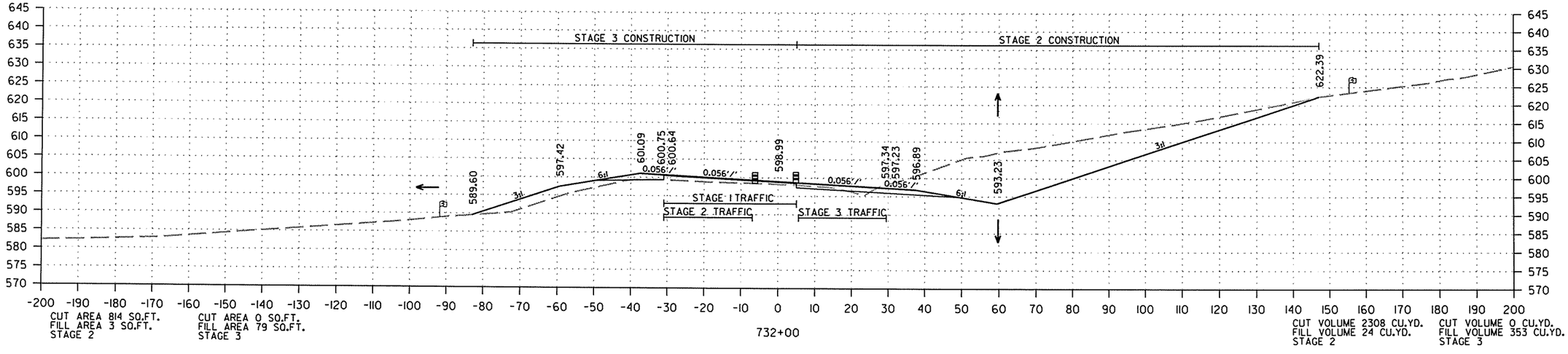
8/8/2014

R050214.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.		050214	227	311

(2) CROSS SECTIONS - HWY. 167





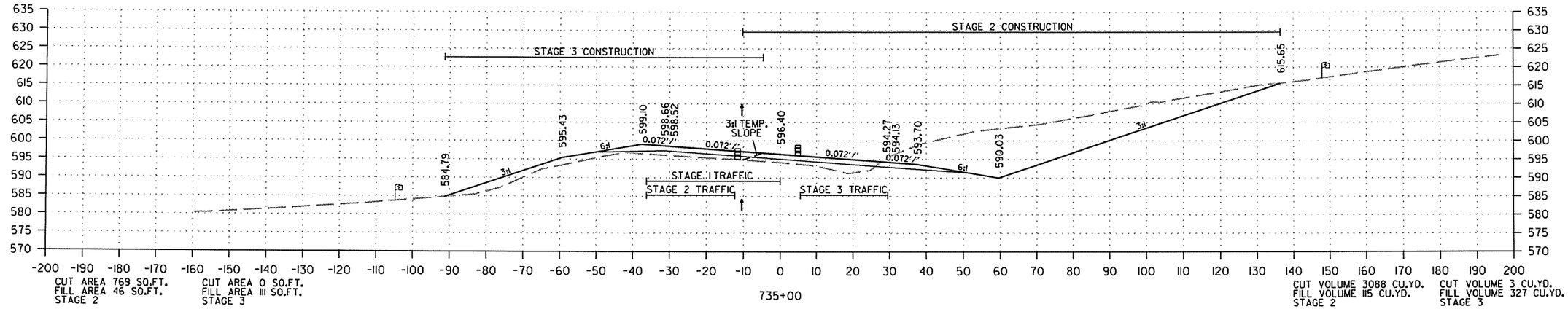
8/8/2014

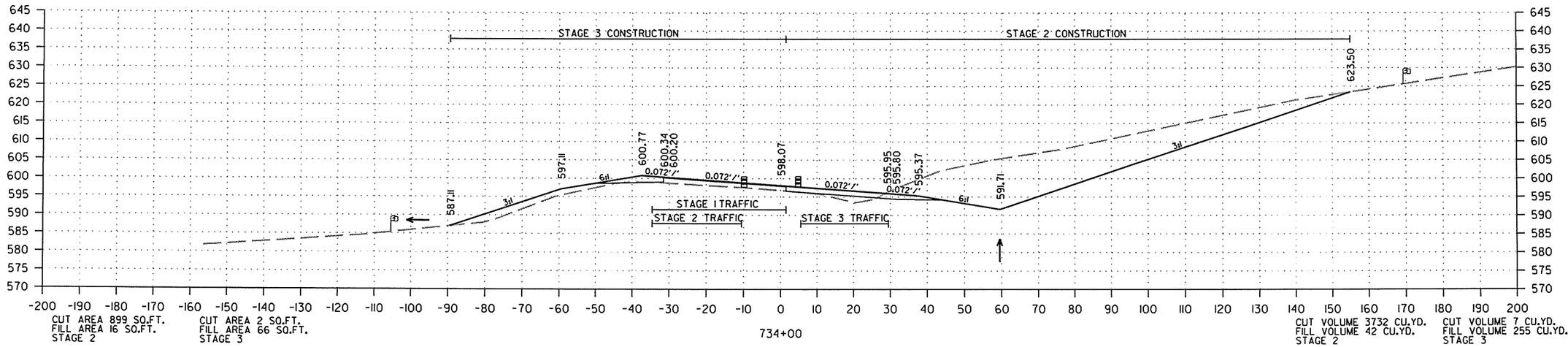
R050214.DGN

CROSS SECTION STA. 732+00 TO STA. 733+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	228	311

(2) CROSS SECTIONS - HWY. 167





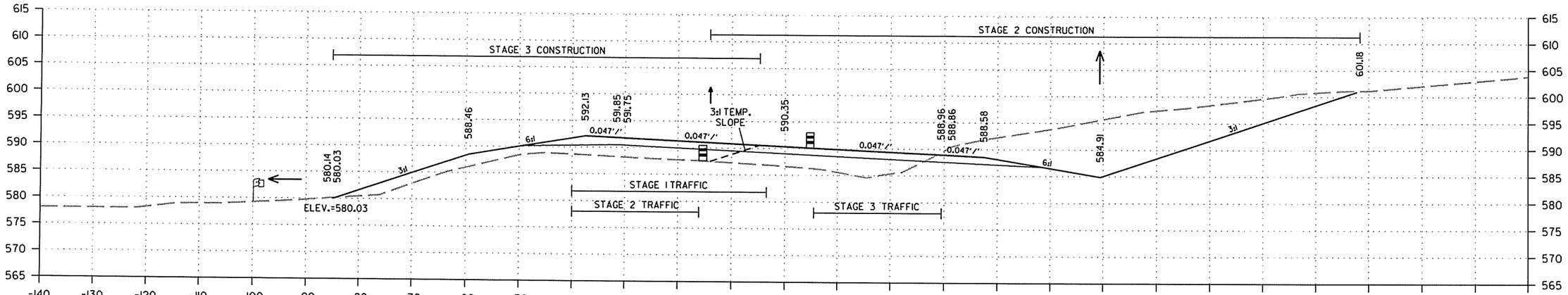
8/8/2014

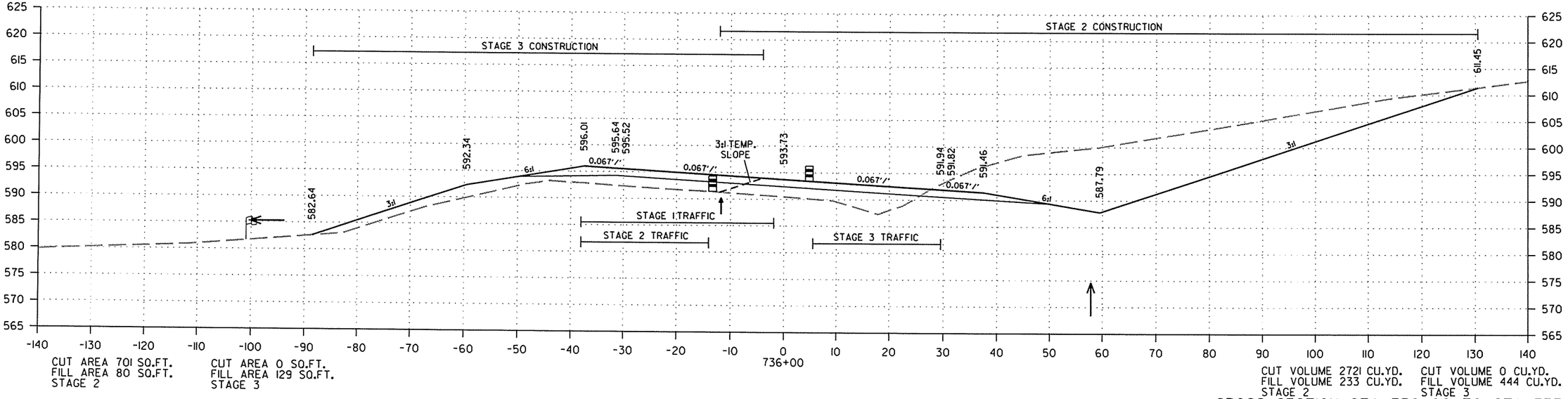
R050214.DGN

CROSS SECTION STA. 734+00 TO STA. 735+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	229	311

(2) CROSS SECTIONS - HWY. 167





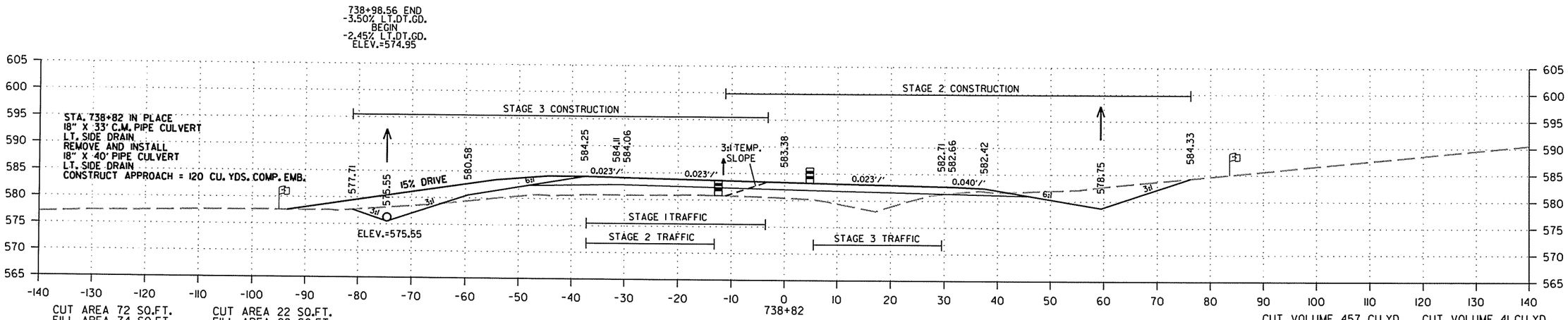
CROSS SECTION STA. 736+00 TO STA. 737+00

8/8/2014

R050214.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.		050214	230	311

(2) CROSS SECTIONS - HWY. 167



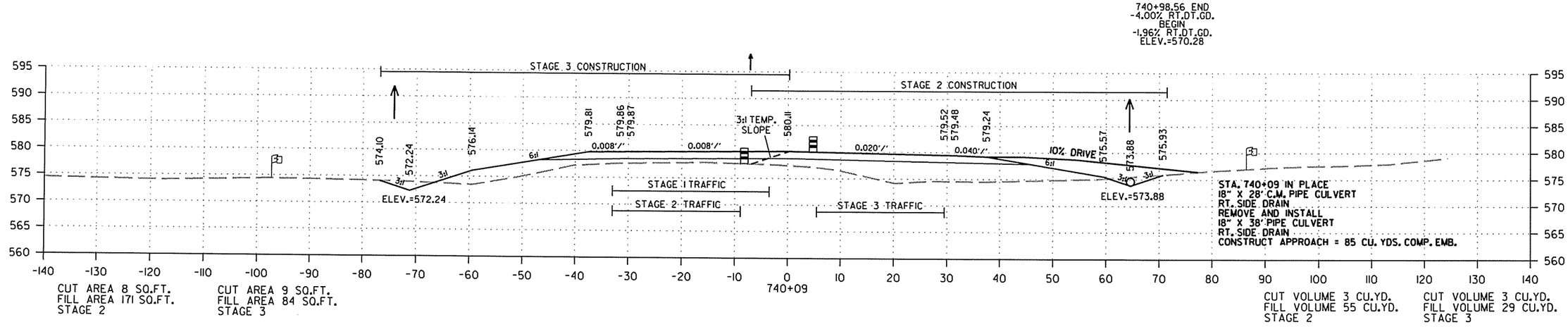
CROSS SECTION STA. 738+00 TO STA. 738+82

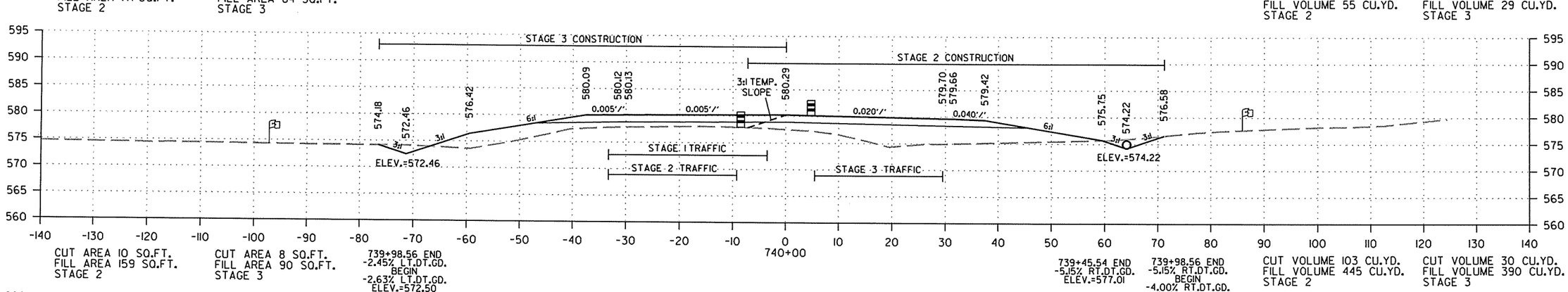
8/8/2014

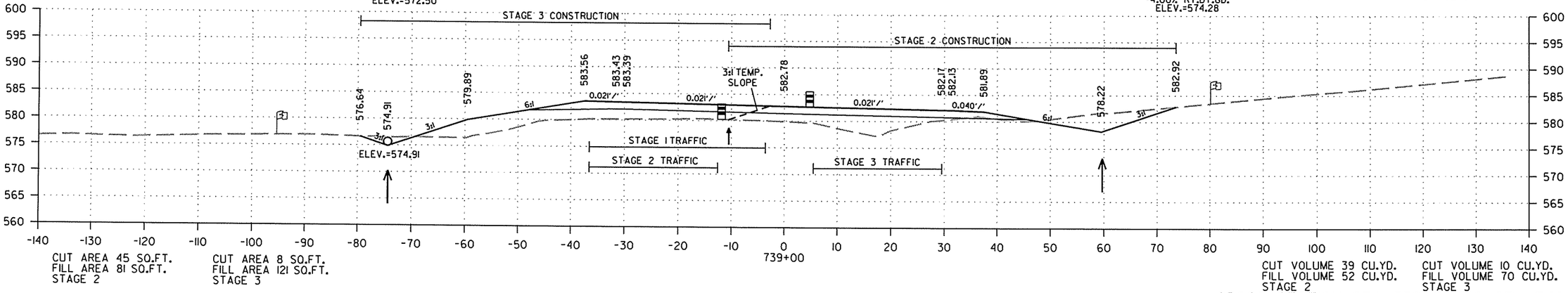
R050214.DGN

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.		050214	231	311

(2) CROSS SECTIONS - HWY. 167







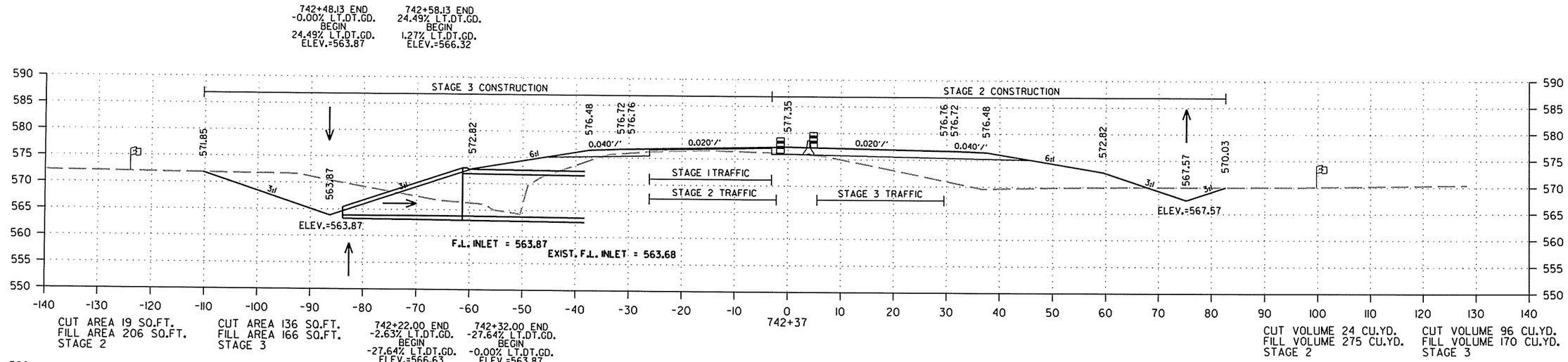
CROSS SECTION STA. 739+00 TO STA. 740+09

8/8/2014

R050214.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.		050214	232	311

(2) CROSS SECTIONS - HWY. 167



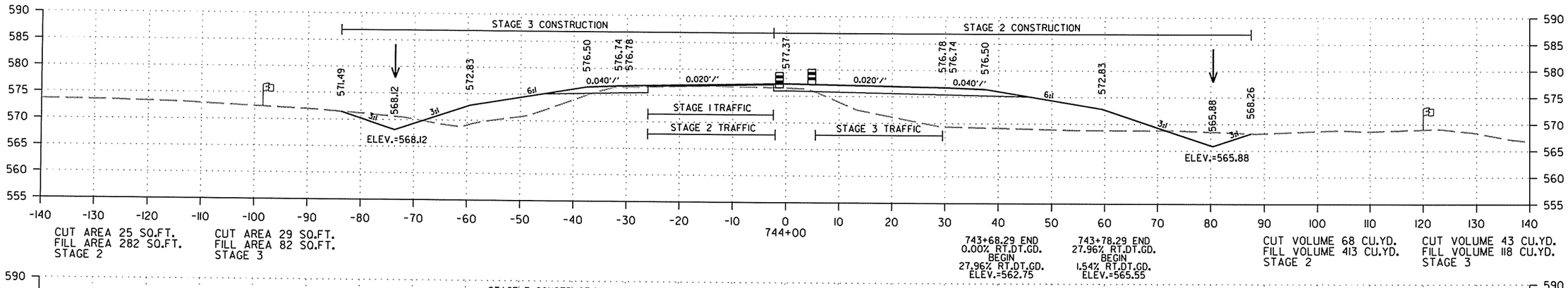
CROSS SECTION STA. 741+00 TO STA. 742+37

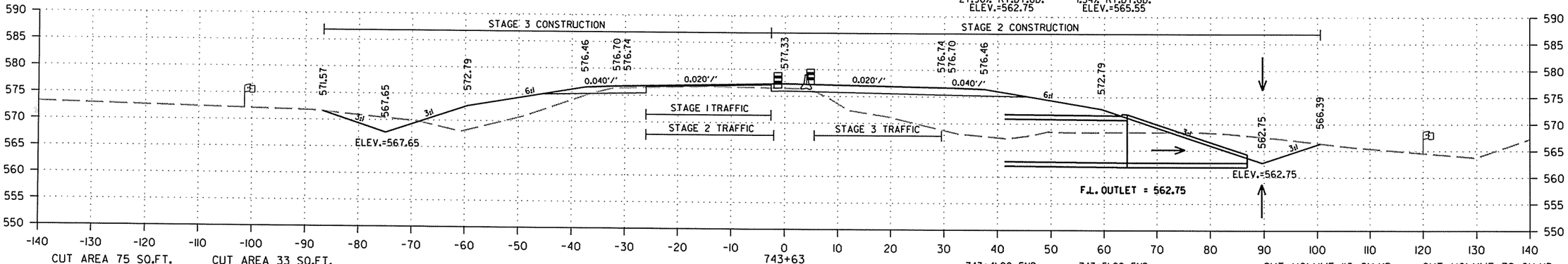
8/8/2014

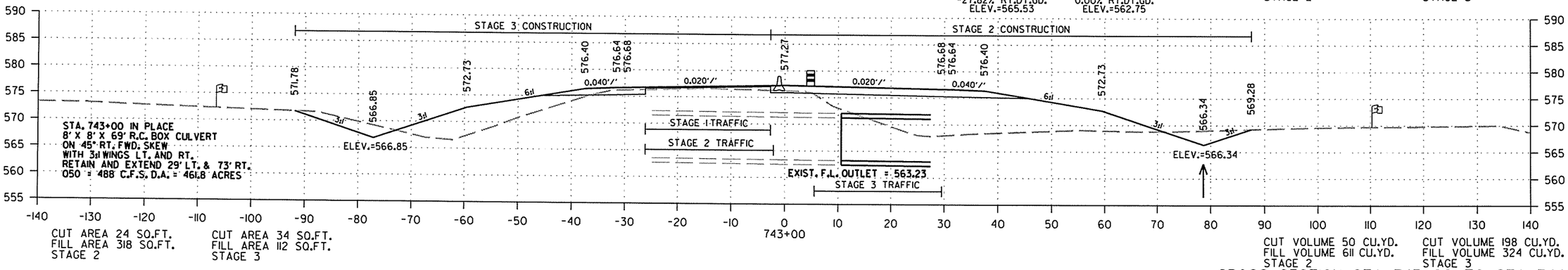
R050214.DGN

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.		050214	233	311

(2) CROSS SECTIONS - HWY. 167







CROSS SECTION STA. 743+00 TO STA. 744+00

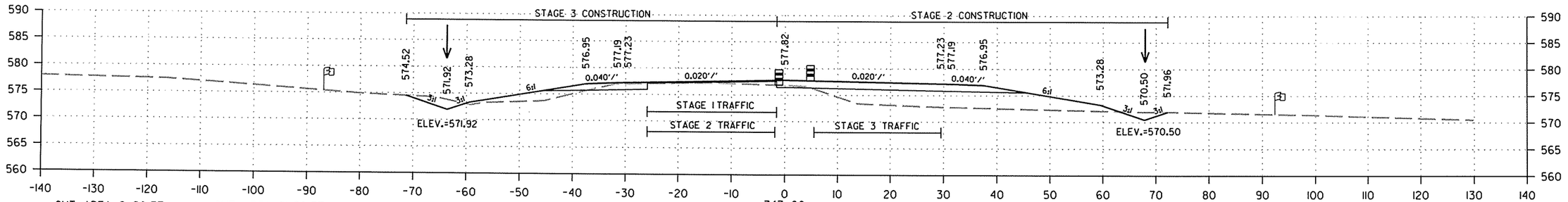
8/8/2014

R050214.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.		050214	234	311

(2) CROSS SECTIONS - HWY. 167

747+98.56 END
1.27% LT.DT.GD.
BEGIN
1.35% LT.DT.GD.
ELEV.=573.16



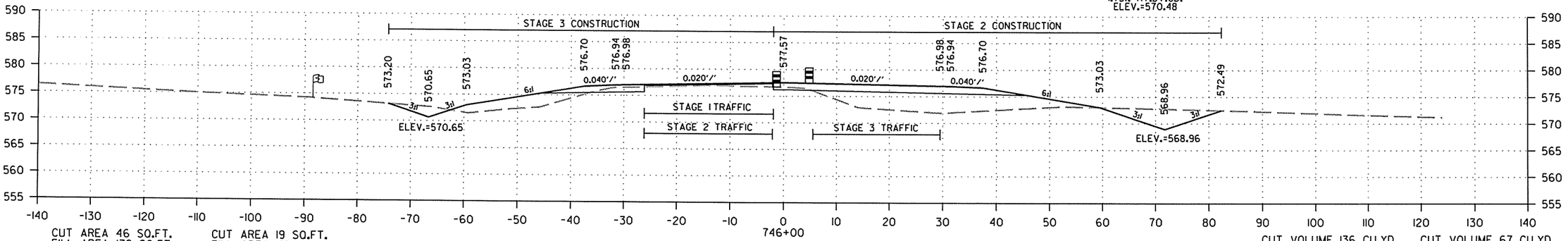
CUT AREA 9 SQ.FT.
FILL AREA 141 SQ.FT.
STAGE 2

CUT AREA 21 SQ.FT.
FILL AREA 23 SQ.FT.
STAGE 3

746+98.56 END
1.54% RT.DT.GD.
BEGIN
1.75% RT.DT.GD.
ELEV.=570.48

CUT VOLUME 102 CU.YD.
FILL VOLUME 506 CU.YD.
STAGE 2

CUT VOLUME 74 CU.YD.
FILL VOLUME 119 CU.YD.
STAGE 3

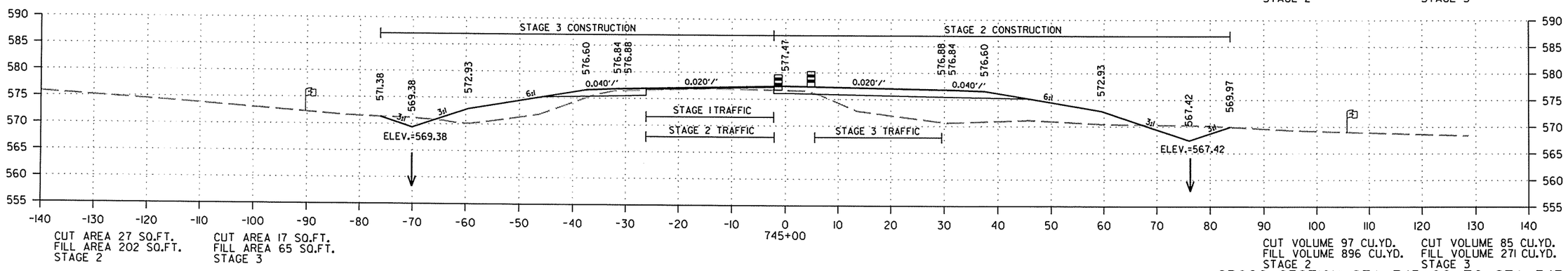


CUT AREA 46 SQ.FT.
FILL AREA 132 SQ.FT.
STAGE 2

CUT AREA 19 SQ.FT.
FILL AREA 42 SQ.FT.
STAGE 3

CUT VOLUME 136 CU.YD.
FILL VOLUME 619 CU.YD.
STAGE 2

CUT VOLUME 67 CU.YD.
FILL VOLUME 197 CU.YD.
STAGE 3



CUT AREA 27 SQ.FT.
FILL AREA 202 SQ.FT.
STAGE 2

CUT AREA 17 SQ.FT.
FILL AREA 65 SQ.FT.
STAGE 3

CUT VOLUME 97 CU.YD.
FILL VOLUME 896 CU.YD.
STAGE 2

CUT VOLUME 85 CU.YD.
FILL VOLUME 271 CU.YD.
STAGE 3

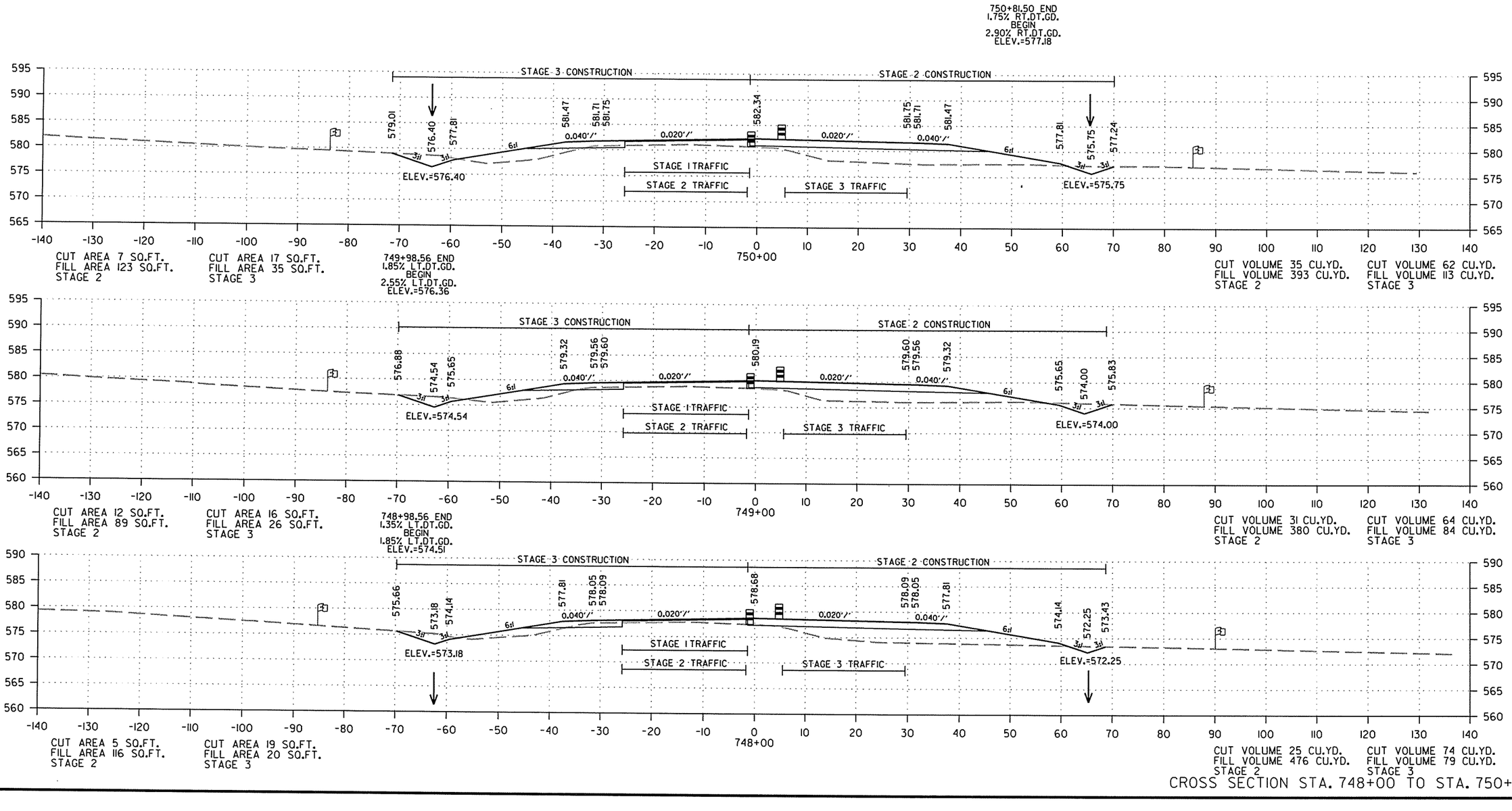
CROSS SECTION STA. 745+00 TO STA. 747+00

8/8/2014

R050214.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.		050214	235	311

(2) CROSS SECTIONS - HWY. 167



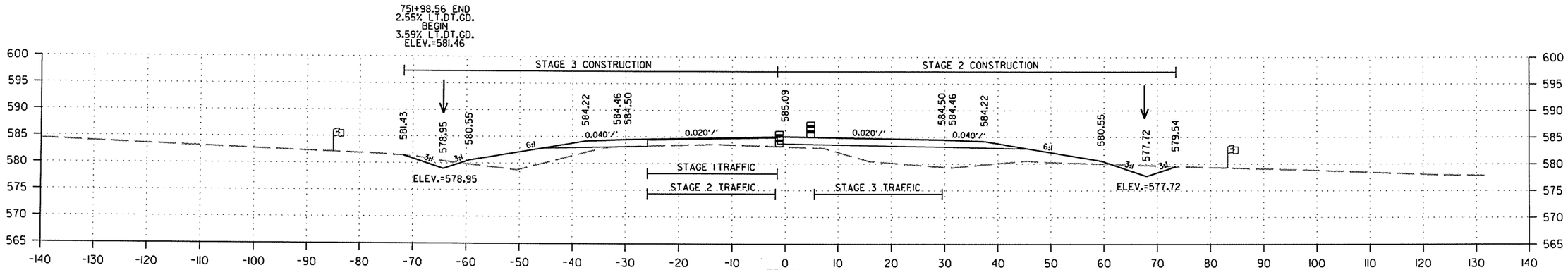
CROSS SECTION STA. 748+00 TO STA. 750+00

8/8/2014

R050214.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.		050214	236	311

(2) CROSS SECTIONS - HWY. 167

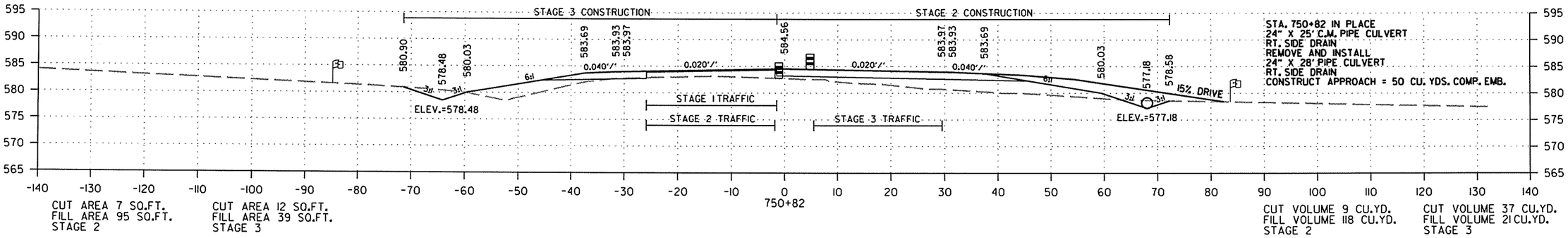


CUT AREA 12 SQ.FT.
FILL AREA 139 SQ.FT.
STAGE 2

CUT AREA 8 SQ.FT.
FILL AREA 51 SQ.FT.
STAGE 3

CUT VOLUME 6 CU.YD.
FILL VOLUME 78 CU.YD.
STAGE 2

CUT VOLUME 7 CU.YD.
FILL VOLUME 30 CU.YD.
STAGE 3

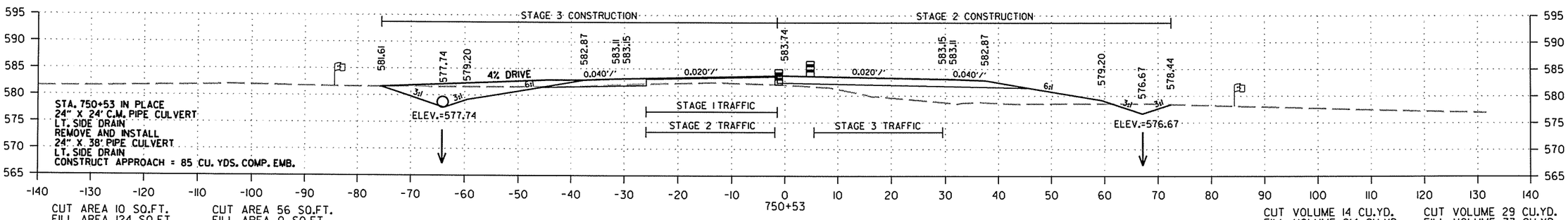


CUT AREA 7 SQ.FT.
FILL AREA 95 SQ.FT.
STAGE 2

CUT AREA 12 SQ.FT.
FILL AREA 39 SQ.FT.
STAGE 3

CUT VOLUME 9 CU.YD.
FILL VOLUME 118 CU.YD.
STAGE 2

CUT VOLUME 37 CU.YD.
FILL VOLUME 21 CU.YD.
STAGE 3



CUT AREA 10 SQ.FT.
FILL AREA 124 SQ.FT.
STAGE 2

CUT AREA 56 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 14 CU.YD.
FILL VOLUME 214 CU.YD.
STAGE 2

CUT VOLUME 29 CU.YD.
FILL VOLUME 73 CU.YD.
STAGE 3

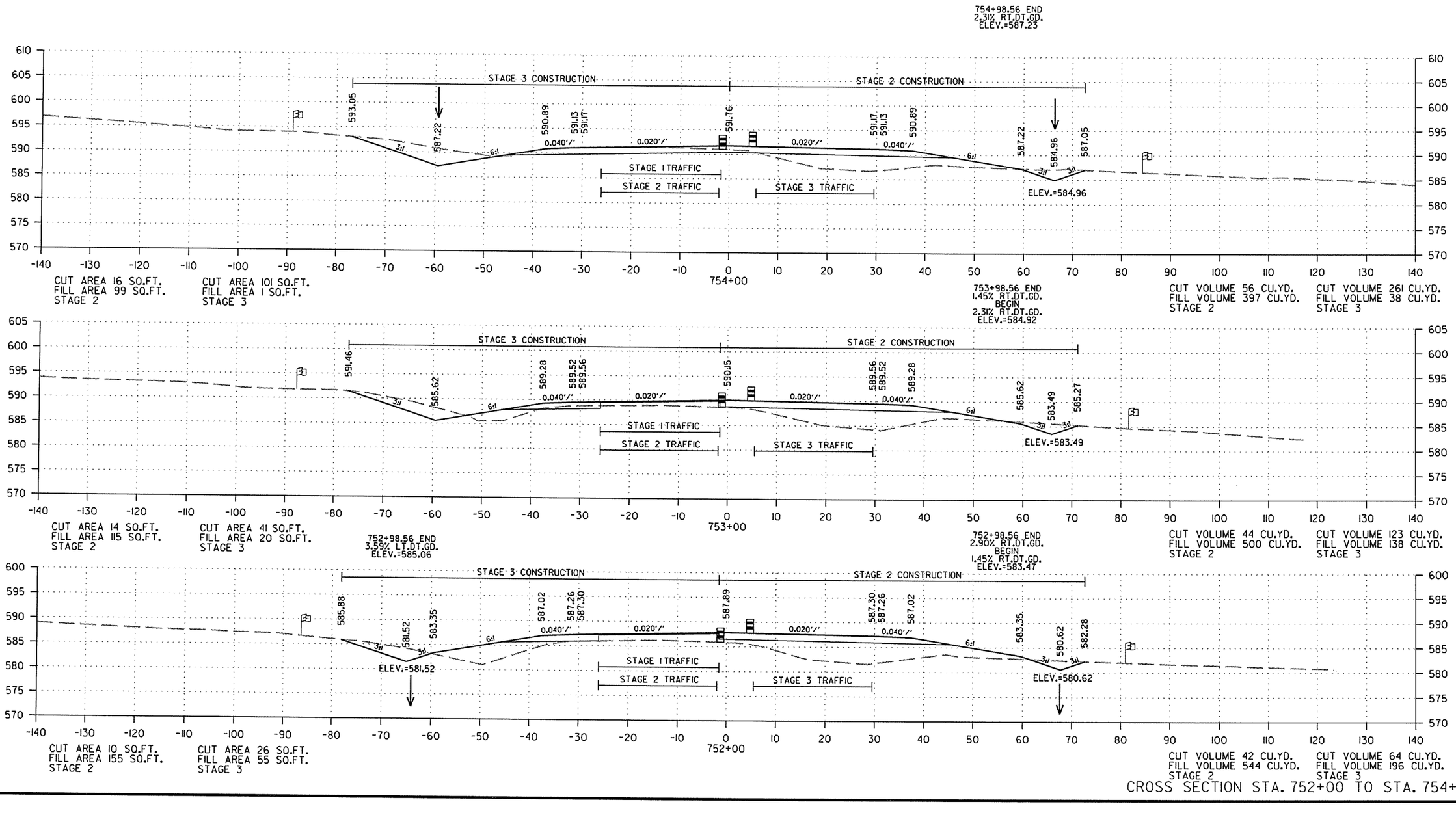
CROSS SECTION STA. 750+53 TO STA. 751+00

8/8/2014

R050214.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.		050214	237	311

(2) CROSS SECTIONS - HWY. 167



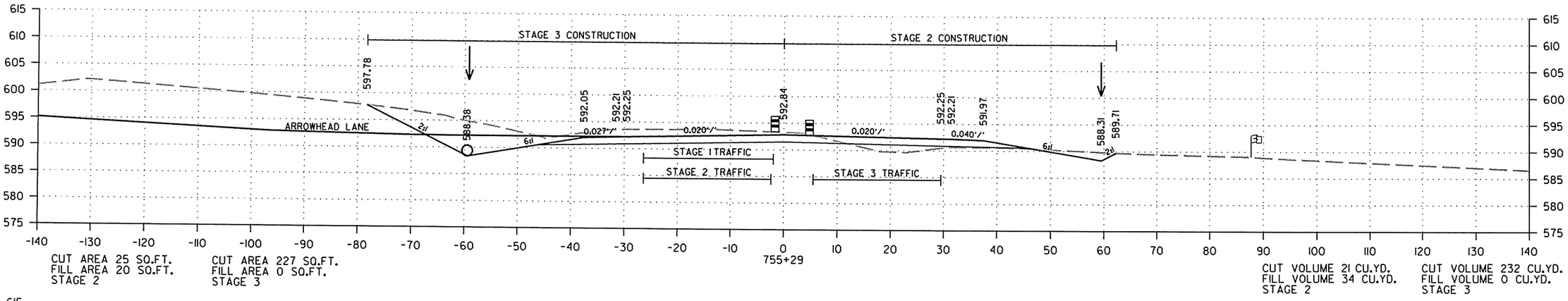
CROSS SECTION STA. 752+00 TO STA. 754+00

8/8/2014

R050214.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.		050214	238	311

(2) CROSS SECTIONS - HWY. 167



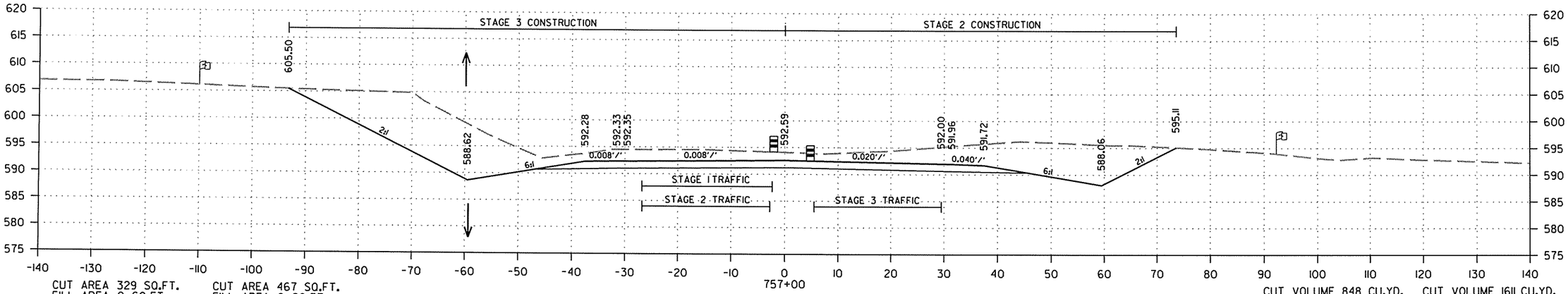
CROSS SECTION STA. 755+00 TO STA. 755+29

8/8/2014

R050214.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.		050214	239	311

(2) CROSS SECTIONS - HWY. 167

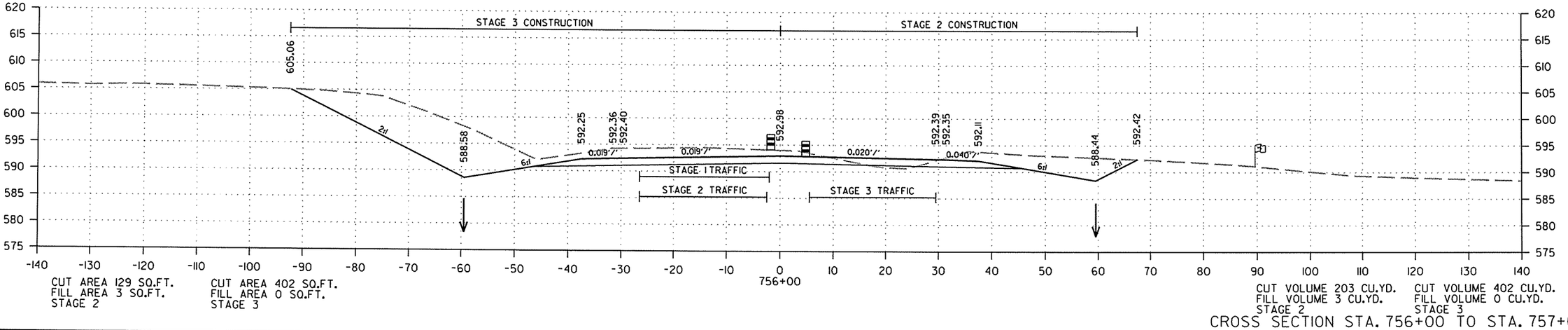


CUT AREA 329 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 2

CUT AREA 467 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 848 CU.YD.
FILL VOLUME 6 CU.YD.
STAGE 2

CUT VOLUME 1611 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



CUT AREA 129 SQ.FT.
FILL AREA 3 SQ.FT.
STAGE 2

CUT AREA 402 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 203 CU.YD.
FILL VOLUME 3 CU.YD.
STAGE 2

CUT VOLUME 402 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

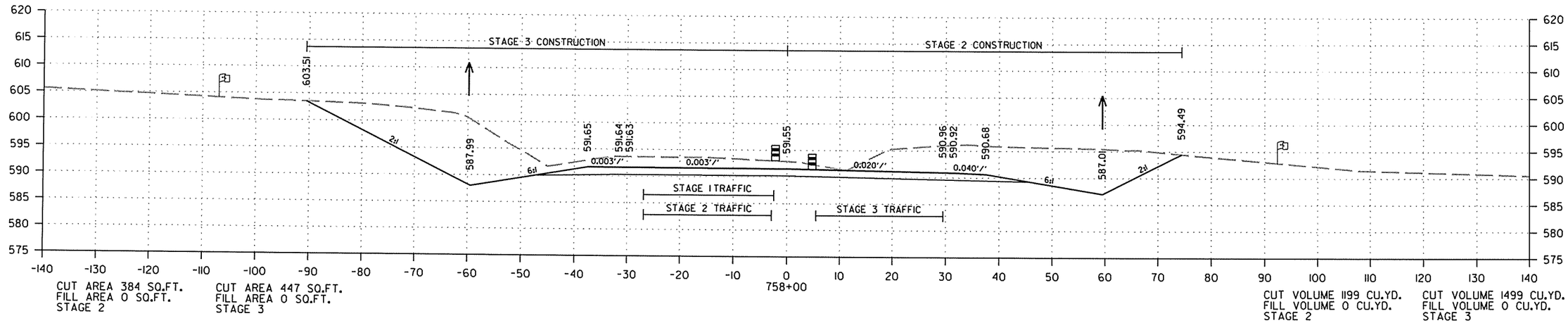
CROSS SECTION STA. 756+00 TO STA. 757+00

8/8/2014

R050214.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.		050214	240	311

(2) CROSS SECTIONS - HWY. 167



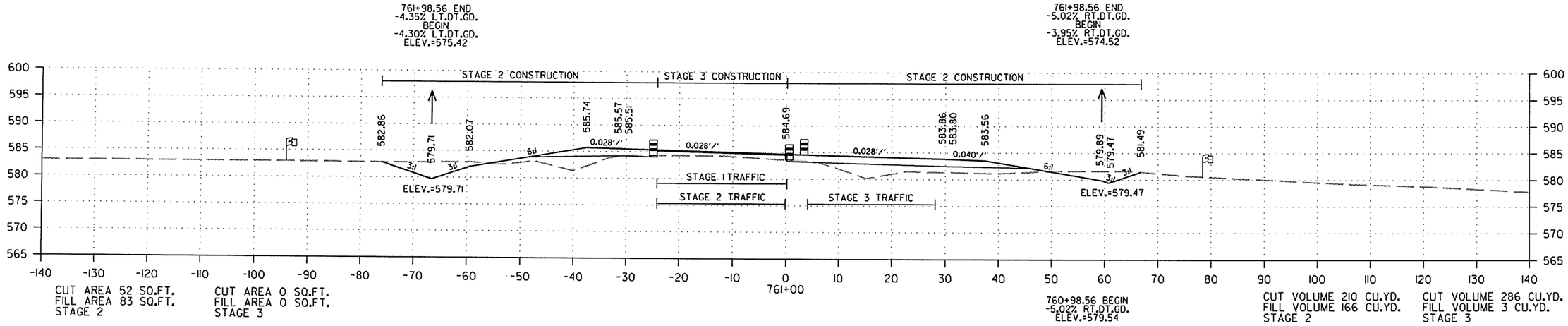
CROSS SECTION STA. 757+11 TO STA. 758+00

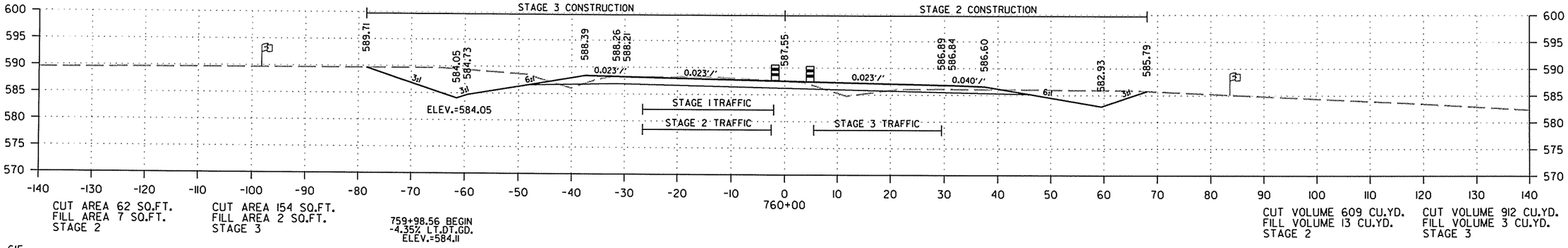
8/8/2014

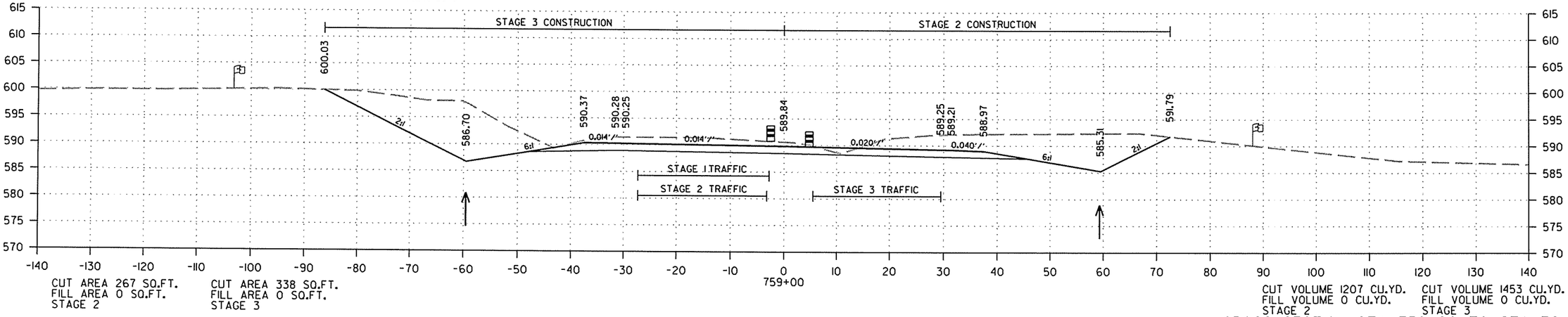
R050214.DGN

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.		050214	241	311

(2) CROSS SECTIONS - HWY. 167







CROSS SECTION STA. 759+00 TO STA. 761+00

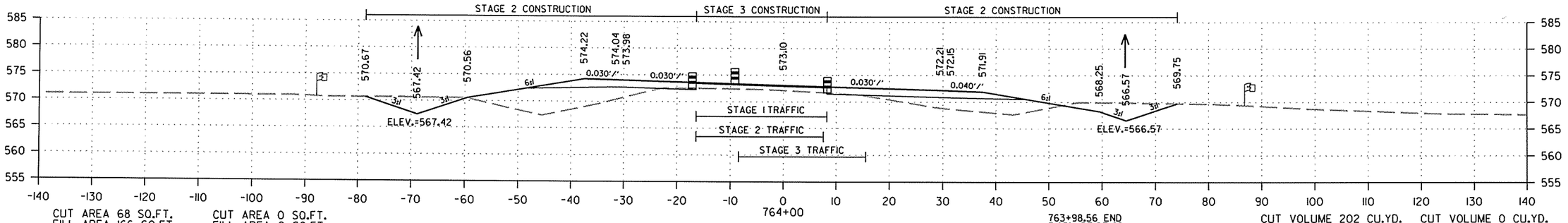
8/8/2014

R050214.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.		050214	242	311

(2) CROSS SECTIONS - HWY. 167

764+98.56 END
-3.40% RT.DT.GD.
BEGIN
-2.80% RT.DT.GD.
ELEV.=563.22



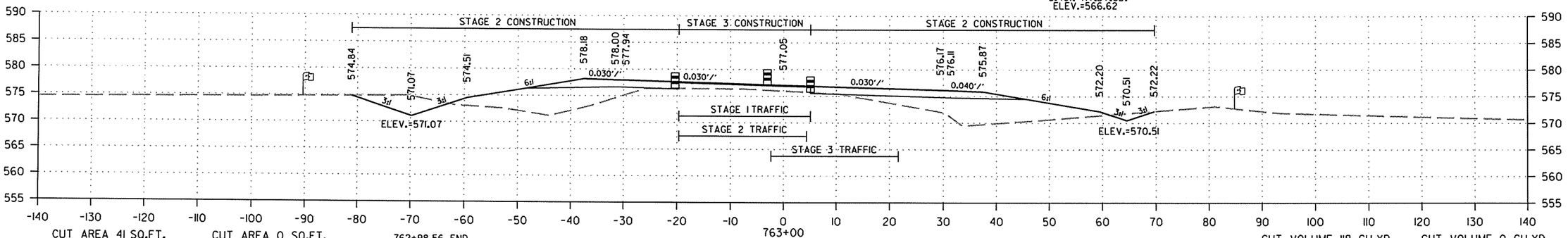
CUT AREA 68 SQ.FT.
FILL AREA 166 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

763+98.56 END
-3.95% RT.DT.GD.
BEGIN
-3.40% RT.DT.GD.
ELEV.=566.62

CUT VOLUME 202 CU.YD.
FILL VOLUME 754 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



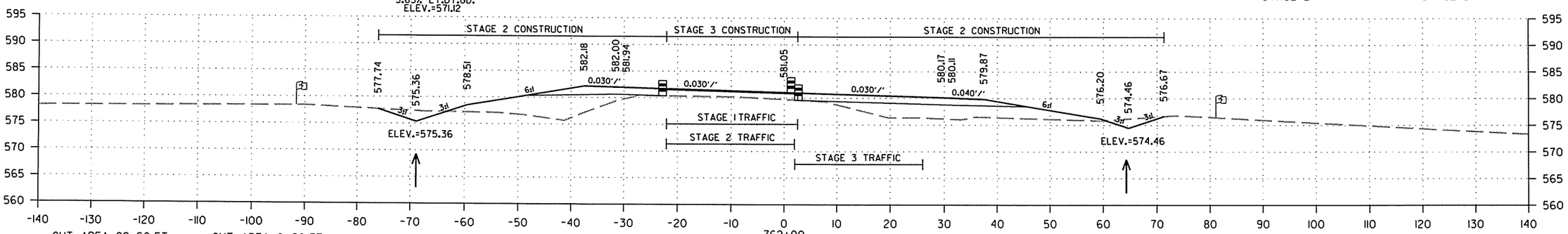
CUT AREA 41 SQ.FT.
FILL AREA 241 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

762+98.56 END
-4.30% LT.DT.GD.
BEGIN
-3.65% LT.DT.GD.
ELEV.=571.12

CUT VOLUME 118 CU.YD.
FILL VOLUME 803 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



CUT AREA 22 SQ.FT.
FILL AREA 192 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 137 CU.YD.
FILL VOLUME 510 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

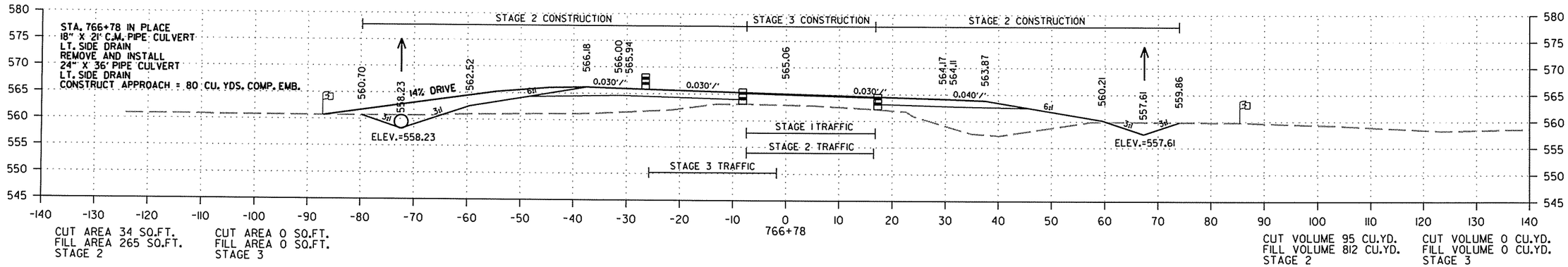
CROSS SECTION STA. 762+00 TO STA. 764+00

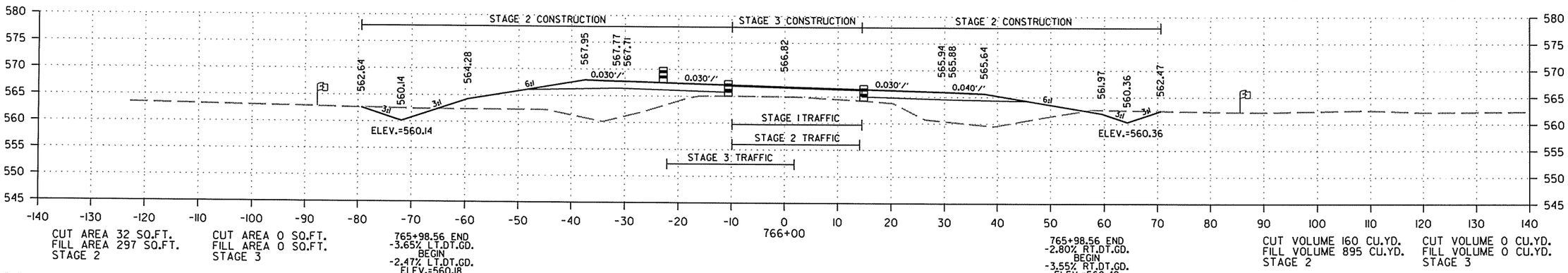
8/8/2014

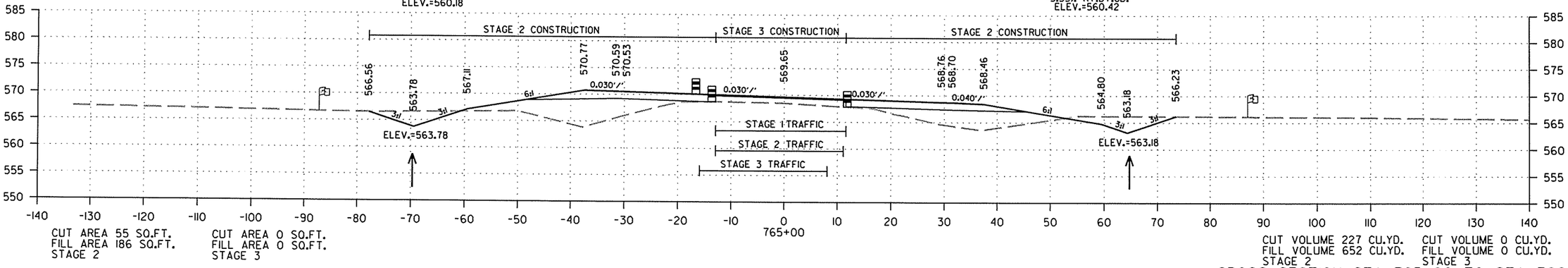
R050214.DGN

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.		050214	243	311

(2) CROSS SECTIONS - HWY. 167







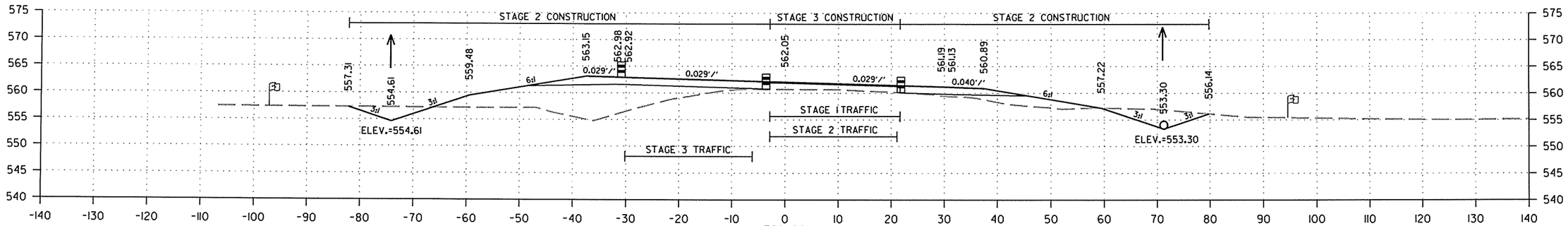
CROSS SECTION STA. 765+00 TO STA. 766+78

8/8/2014

R050214.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.		050214	244	311

(2) CROSS SECTIONS - HWY. 167



CUT AREA 58 SQ.FT.
FILL AREA 228 SQ.FT.
STAGE 2

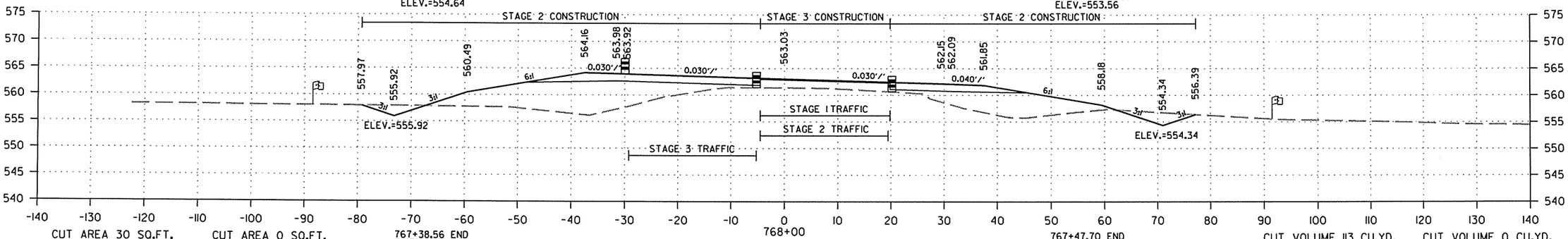
CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

768+98.56 END
-1.30% LT.DT.GD.
BEGIN
-1.99% LT.DT.GD.
ELEV.=554.64

768+51.82 END
-1.50% RT.DT.GD.
BEGIN
-0.55% RT.DT.GD.
ELEV.=553.56

CUT VOLUME 163 CU.YD.
FILL VOLUME 1006 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



CUT AREA 30 SQ.FT.
FILL AREA 315 SQ.FT.
STAGE 2

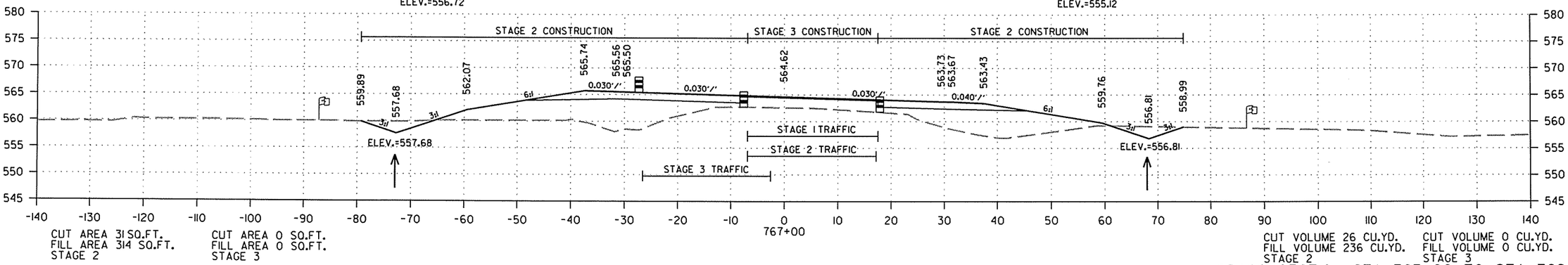
CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

767+38.56 END
-2.47% LT.DT.GD.
BEGIN
-1.30% LT.DT.GD.
ELEV.=556.72

767+47.70 END
-3.55% RT.DT.GD.
BEGIN
-1.50% RT.DT.GD.
ELEV.=555.12

CUT VOLUME 113 CU.YD.
FILL VOLUME 1166 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



CUT AREA 31 SQ.FT.
FILL AREA 314 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 26 CU.YD.
FILL VOLUME 236 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

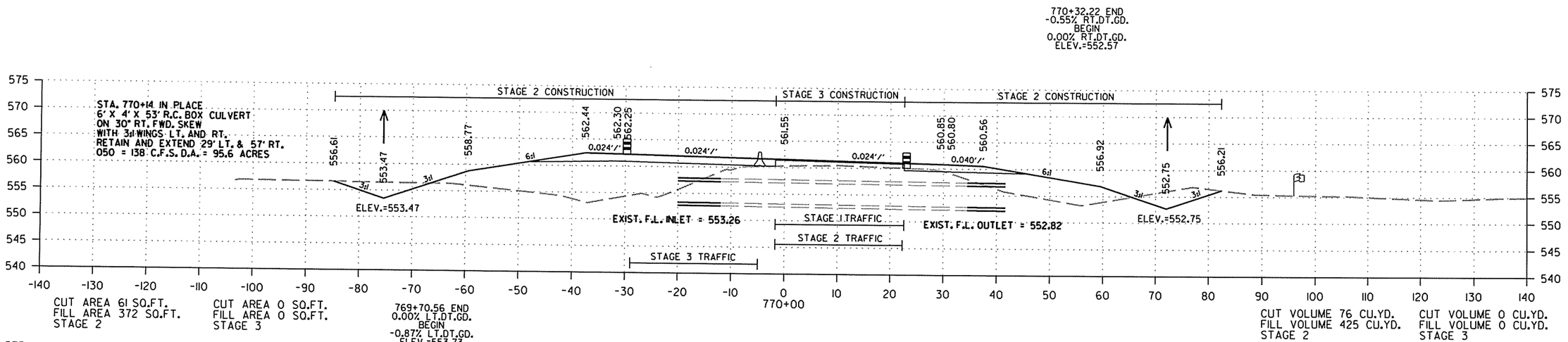
CROSS SECTION STA. 767+00 TO STA. 769+00

8/8/2014

R050214.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.		050214	245	311

(2) CROSS SECTIONS - HWY. 167



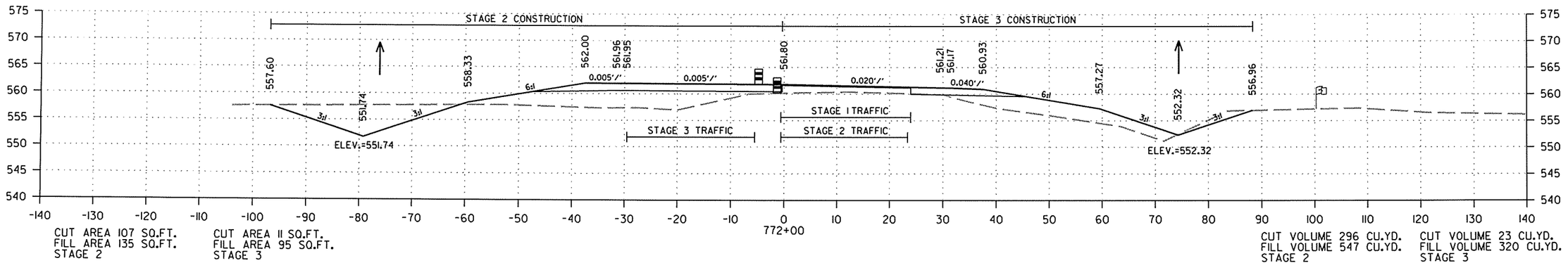
CROSS SECTION STA. 769+12 TO STA. 770+00

8/8/2014

R050214.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.		050214	246	311

(2) CROSS SECTIONS - HWY. 167

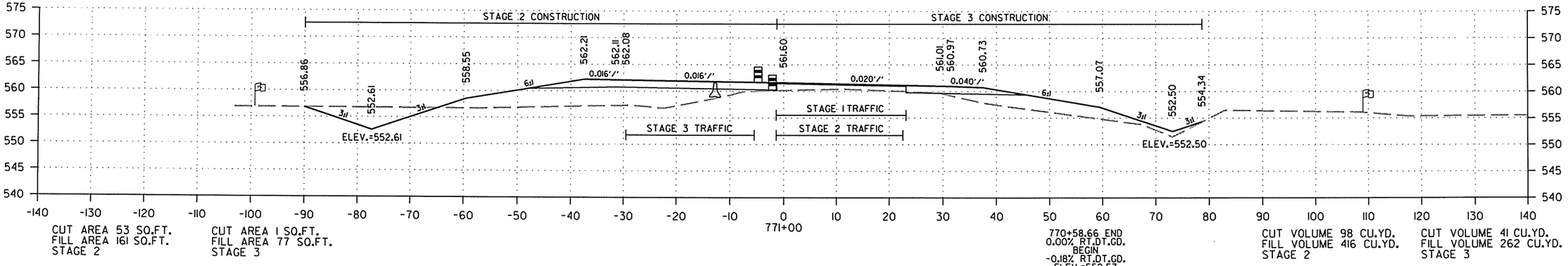


CUT AREA 107 SQ.FT.
FILL AREA 135 SQ.FT.
STAGE 2

CUT AREA 11 SQ.FT.
FILL AREA 95 SQ.FT.
STAGE 3

CUT VOLUME 296 CU.YD.
FILL VOLUME 547 CU.YD.
STAGE 2

CUT VOLUME 23 CU.YD.
FILL VOLUME 320 CU.YD.
STAGE 3



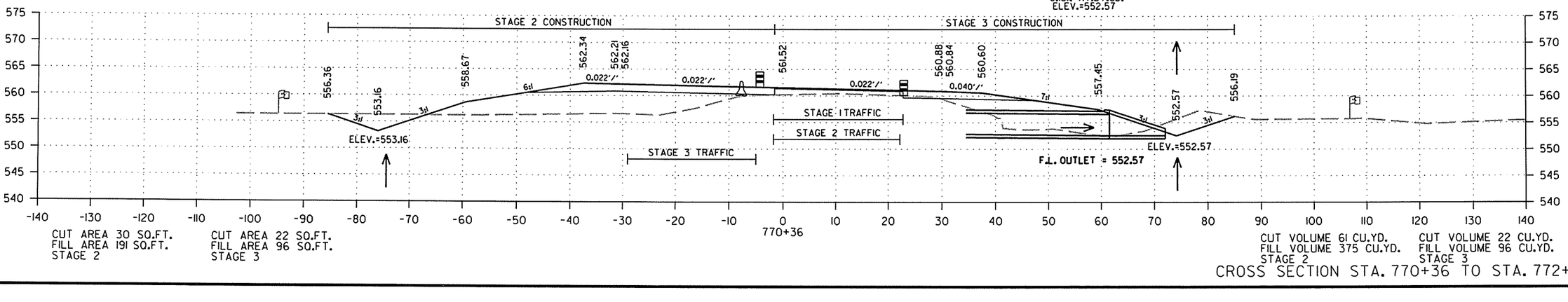
CUT AREA 53 SQ.FT.
FILL AREA 161 SQ.FT.
STAGE 2

CUT AREA 1 SQ.FT.
FILL AREA 77 SQ.FT.
STAGE 3

770+58.66 END
0.00% RT.DT.GD.
BEGIN
-0.18% RT.DT.GD.
ELEV.=552.57

CUT VOLUME 98 CU.YD.
FILL VOLUME 416 CU.YD.
STAGE 2

CUT VOLUME 41 CU.YD.
FILL VOLUME 262 CU.YD.
STAGE 3



CUT AREA 30 SQ.FT.
FILL AREA 191 SQ.FT.
STAGE 2

CUT AREA 22 SQ.FT.
FILL AREA 96 SQ.FT.
STAGE 3

CUT VOLUME 61 CU.YD.
FILL VOLUME 375 CU.YD.
STAGE 2

CUT VOLUME 22 CU.YD.
FILL VOLUME 96 CU.YD.
STAGE 3

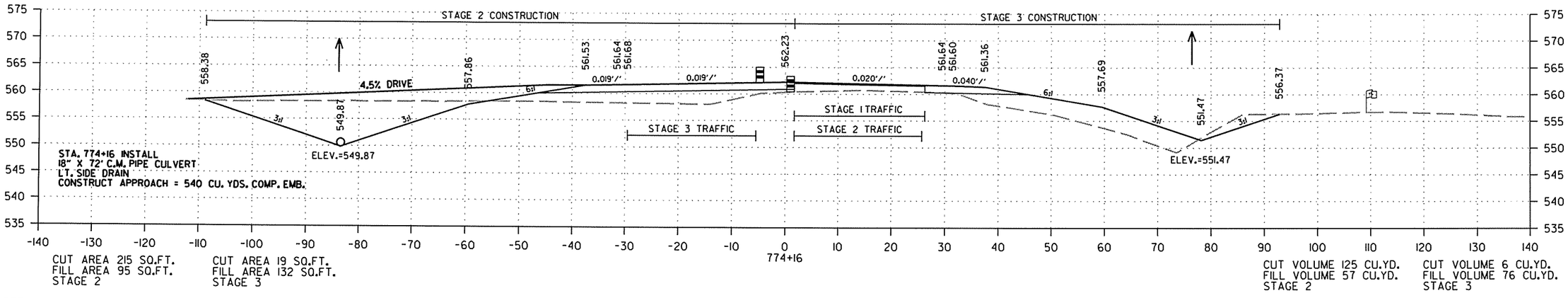
CROSS SECTION STA. 770+36 TO STA. 772+00

8/8/2014

R050214.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.		050214	247	311

(2) CROSS SECTIONS - HWY. 167

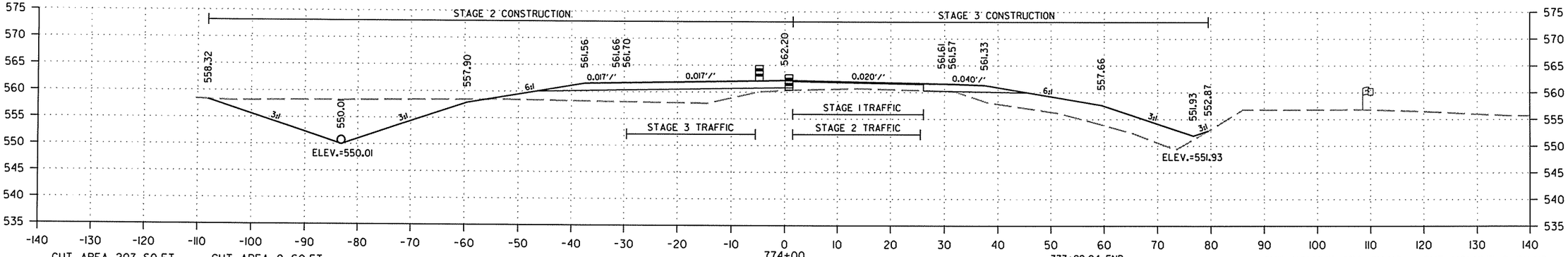


CUT AREA 215 SQ.FT.
FILL AREA 95 SQ.FT.
STAGE 2

CUT AREA 19 SQ.FT.
FILL AREA 132 SQ.FT.
STAGE 3

CUT VOLUME 125 CU.YD.
FILL VOLUME 57 CU.YD.
STAGE 2

CUT VOLUME 6 CU.YD.
FILL VOLUME 76 CU.YD.
STAGE 3



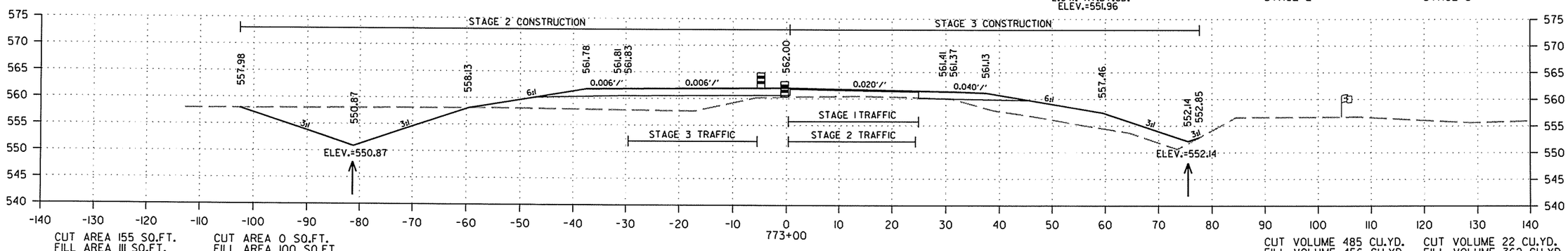
CUT AREA 207 SQ.FT.
FILL AREA 98 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 125 SQ.FT.
STAGE 3

773+99.04 END
-0.18% RT.DT.GD.
BEGIN
-2.94% RT.DT.GD.
ELEV.=551.96

CUT VOLUME 670 CU.YD.
FILL VOLUME 388 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 418 CU.YD.
STAGE 3



CUT AREA 155 SQ.FT.
FILL AREA 111 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 100 SQ.FT.
STAGE 3

CUT VOLUME 485 CU.YD.
FILL VOLUME 456 CU.YD.
STAGE 2

CUT VOLUME 22 CU.YD.
FILL VOLUME 362 CU.YD.
STAGE 3

CROSS SECTION STA. 773+00 TO STA. 774+16

8/8/2014

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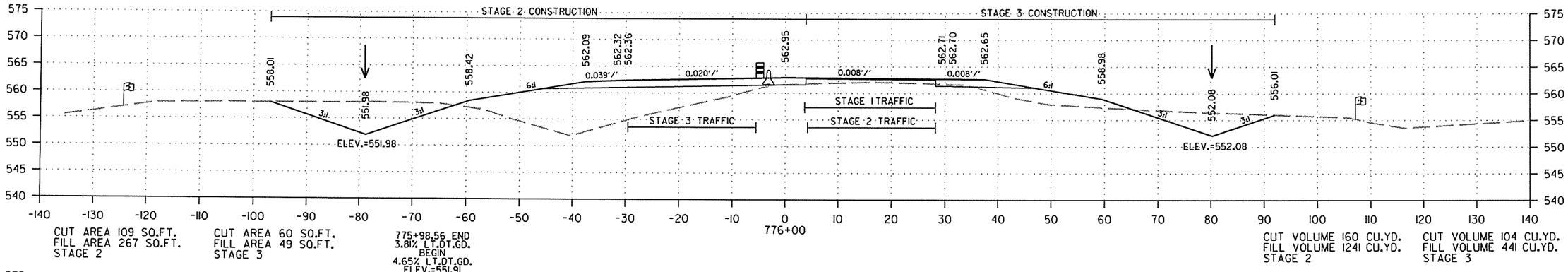
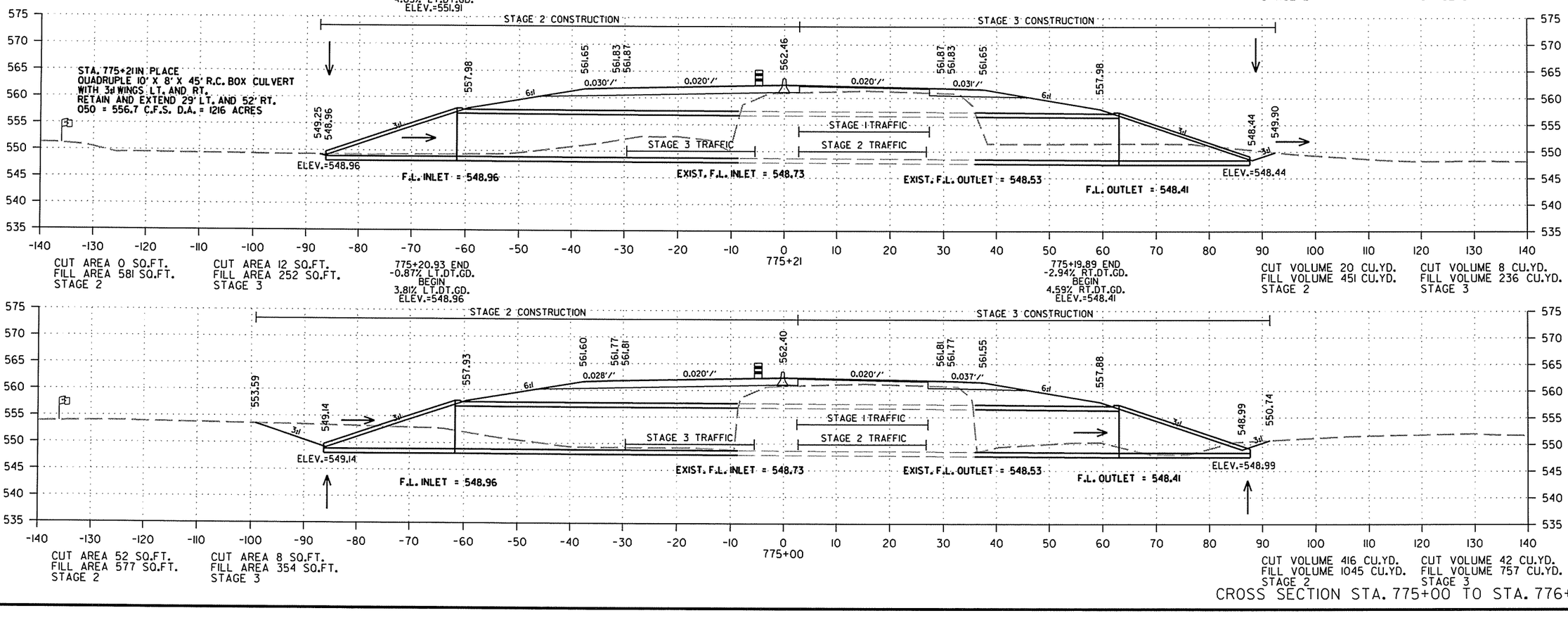
				6	ARK.			
				JOB NO.		050214	248	311

(2) CROSS SECTIONS - HWY. 167

776+52.61 END
4.59% RT.DT.GD.
BEGIN
5.95% RT.DT.GD.
ELEV.=554.50



STA. 775+21 IN PLACE
QUADRUPLE 10' X 8' X 45' R.C. BOX CULVERT
WITH 3:1 WINGS LT. AND RT.
RETAIN AND EXTEND 29' LT. AND 52' RT.
Q50 = 556.7 C.F.S. D.A. = 1216 ACRES



CROSS SECTION STA. 775+00 TO STA. 776+00

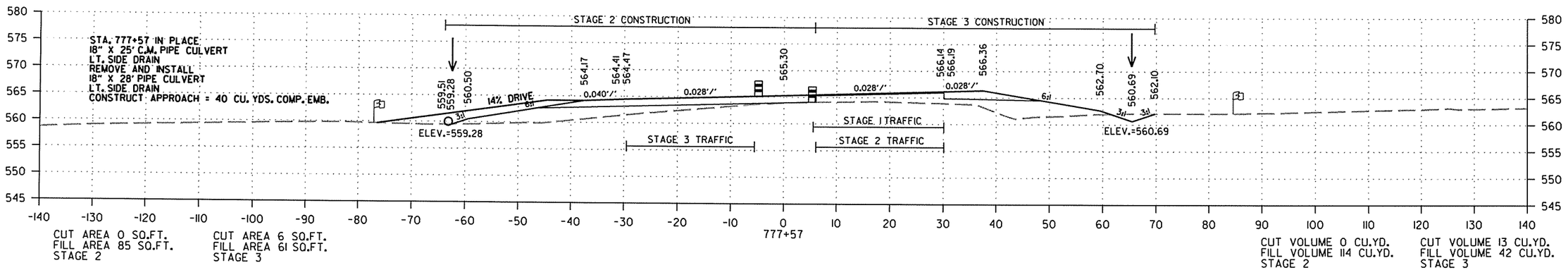
8/8/2014

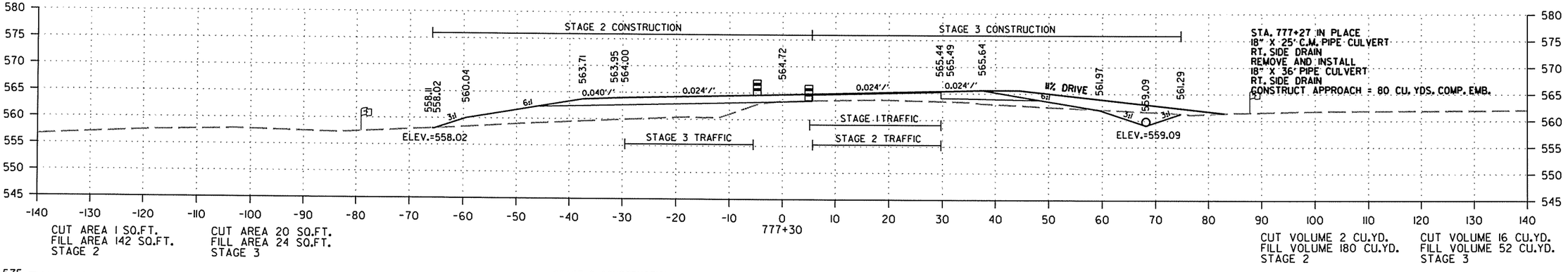
R050214.DGN

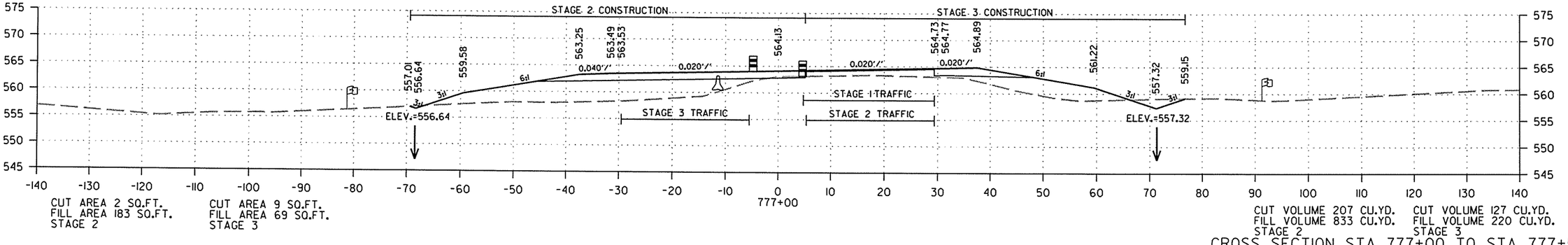
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	249	311

(2) CROSS SECTIONS - HWY. 167

777+98.56 END
4.65% LT.DT.GD.
ELEV.=561.22







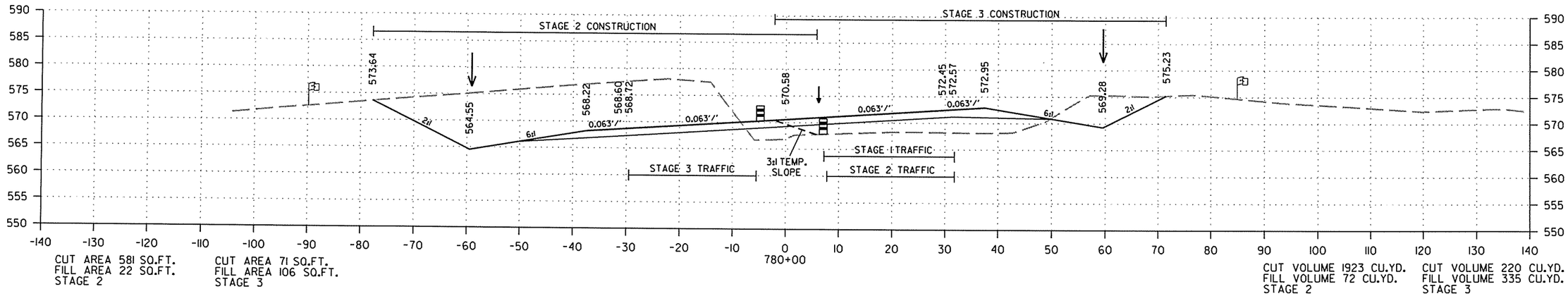
CROSS SECTION STA. 777+00 TO STA. 777+57

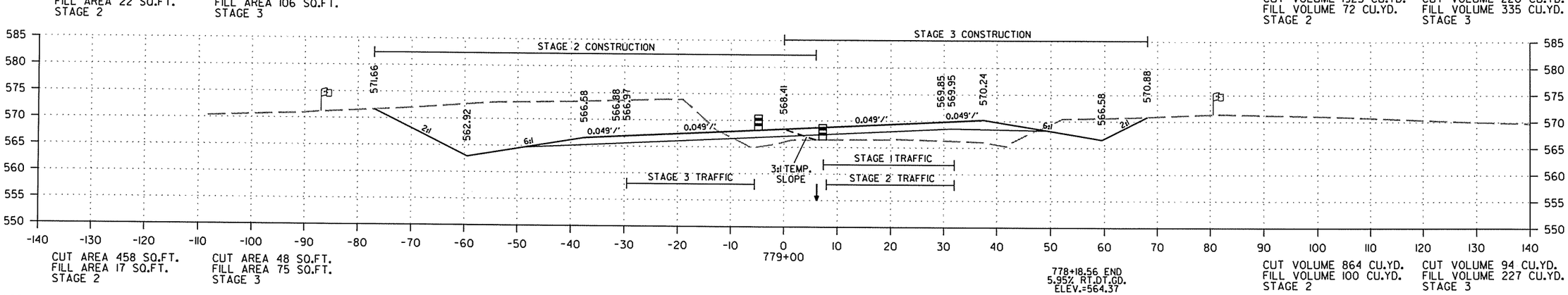
8/8/2014

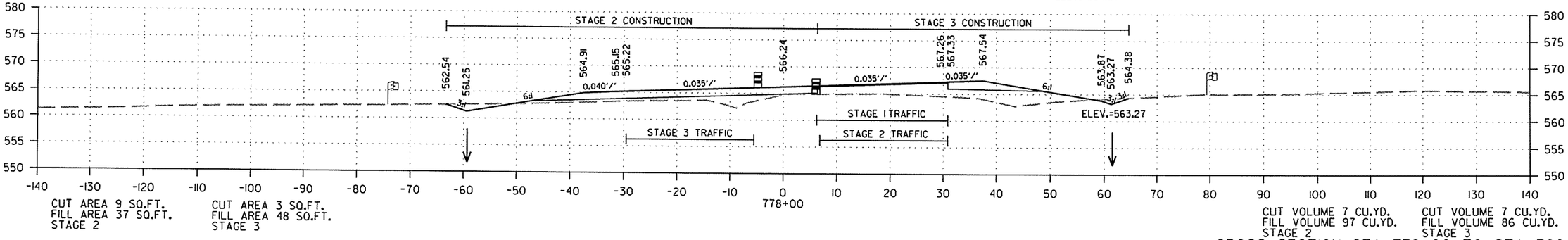
R050214.DGN

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.		050214	250	311

(2) CROSS SECTIONS - HWY. 167







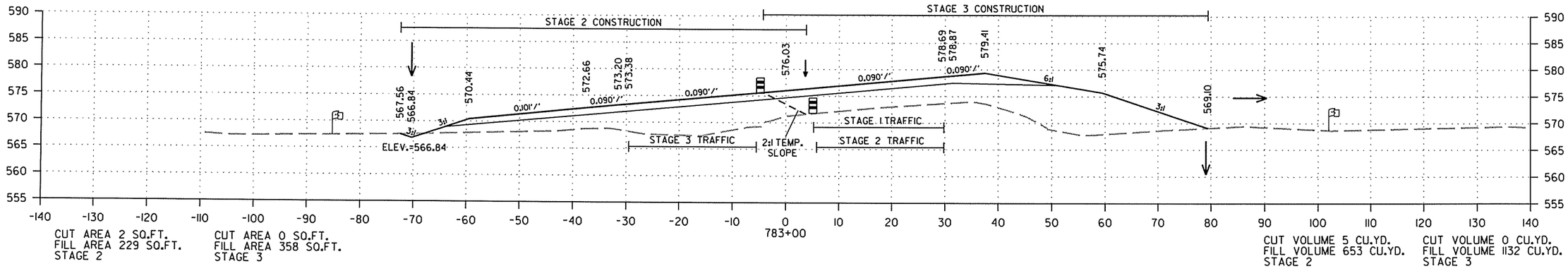
CROSS SECTION STA. 778+00 TO STA. 780+00

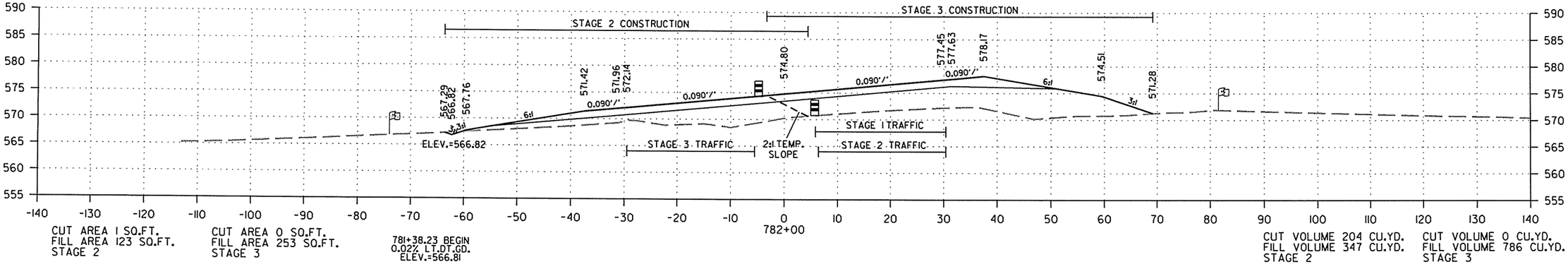
8/8/2014

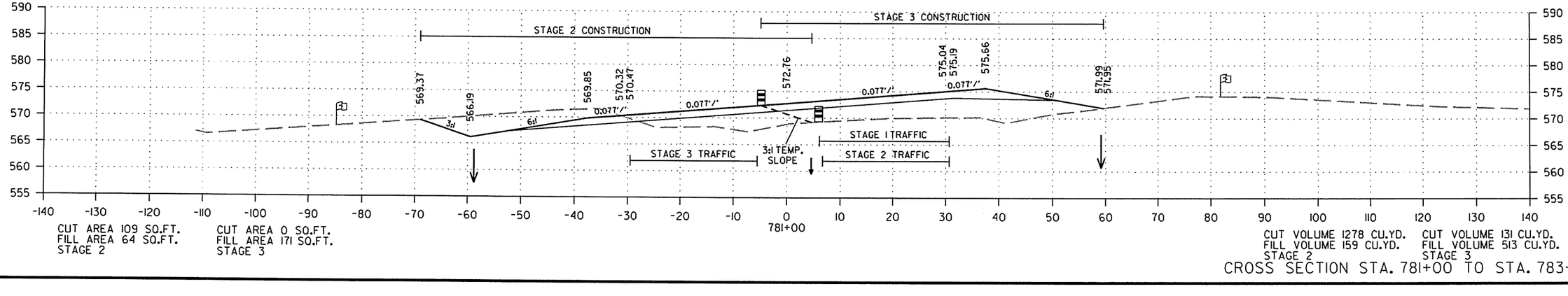
R050214.DGN

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.		050214	251	311

(2) CROSS SECTIONS - HWY. 167







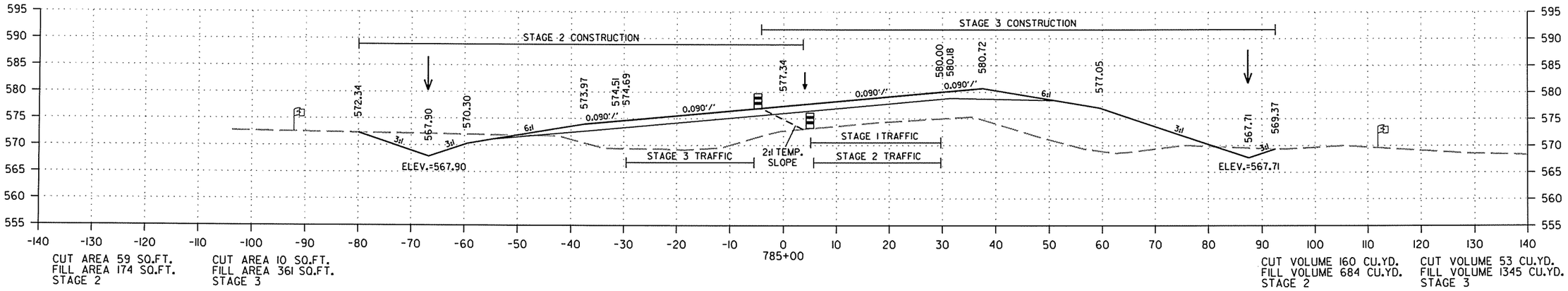
CROSS SECTION STA. 781+00 TO STA. 783+00

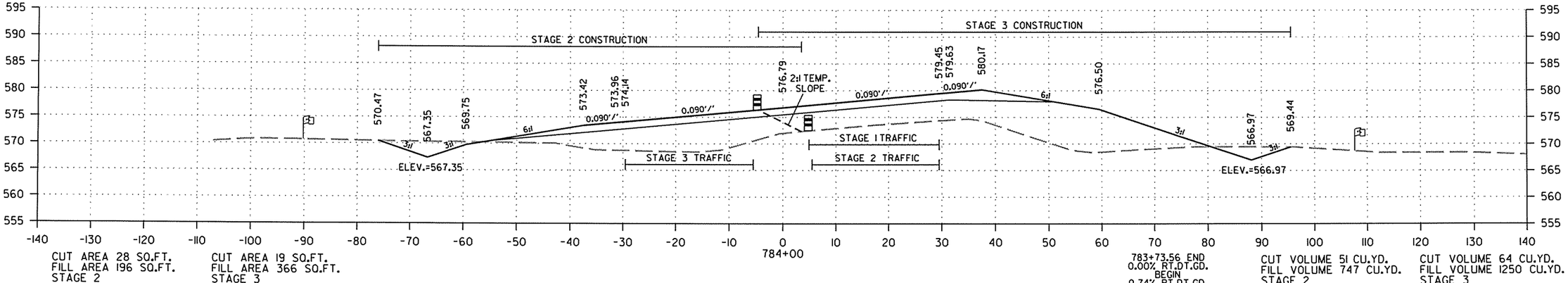
8/8/2014

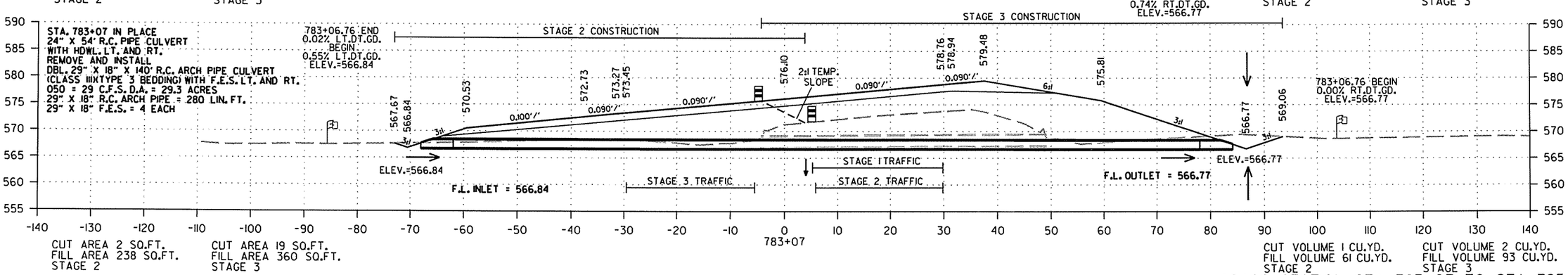
R050214.DGN

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.		050214	252	311

(2) CROSS SECTIONS - HWY. 167







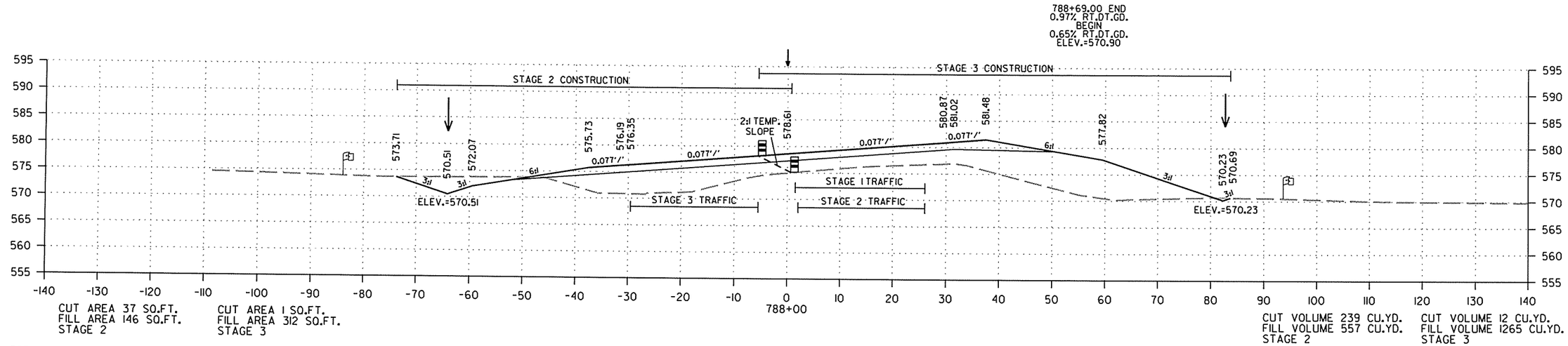
CROSS SECTION STA. 783+07 TO STA. 785+00

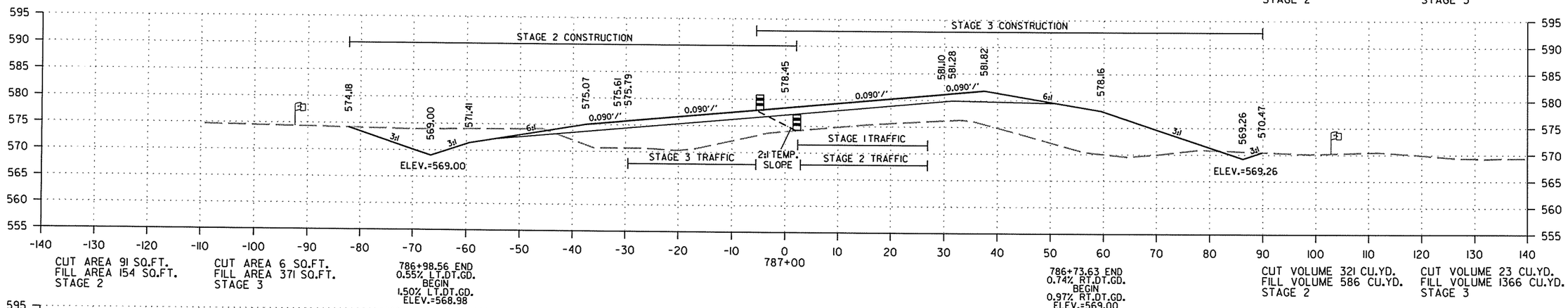
8/8/2014

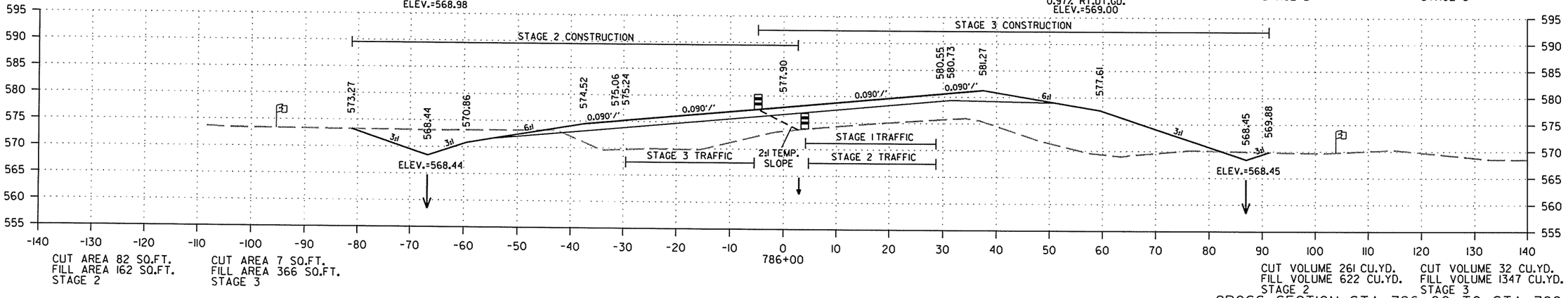
R050214.DGN

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.		050214	253	311

(2) CROSS SECTIONS - HWY. 167







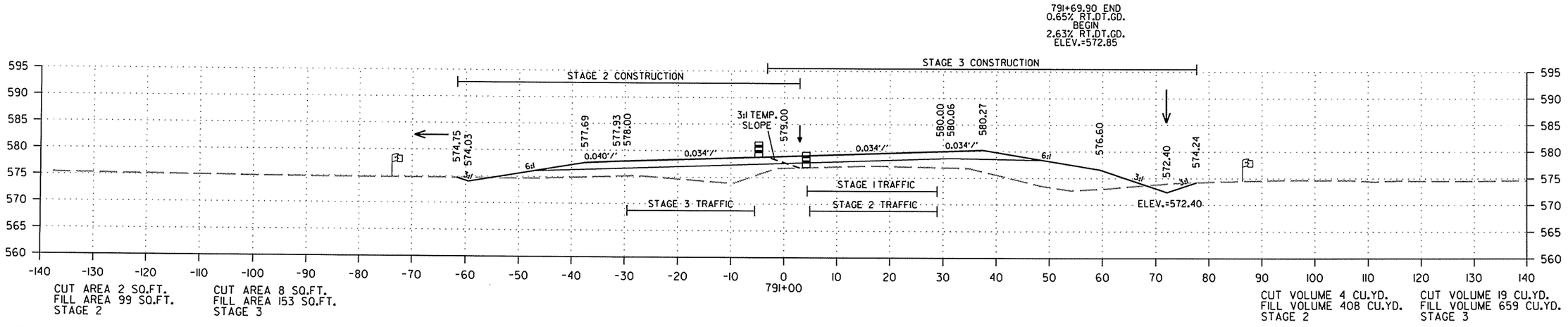
CROSS SECTION STA. 786+00 TO STA. 788+00

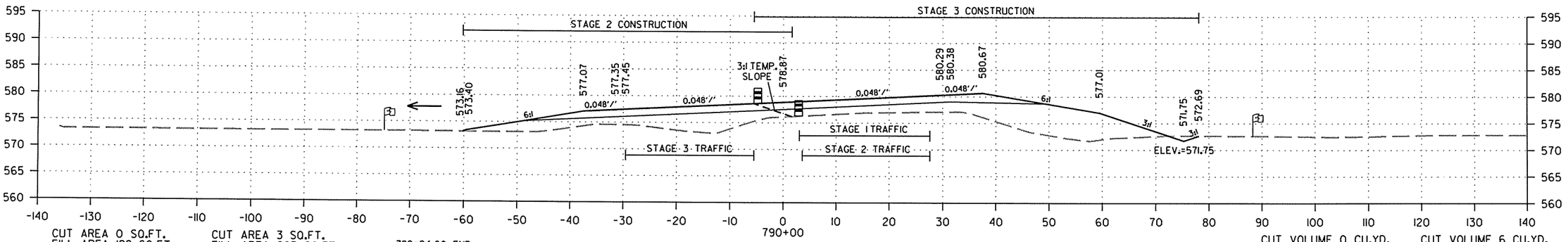
8/8/2014

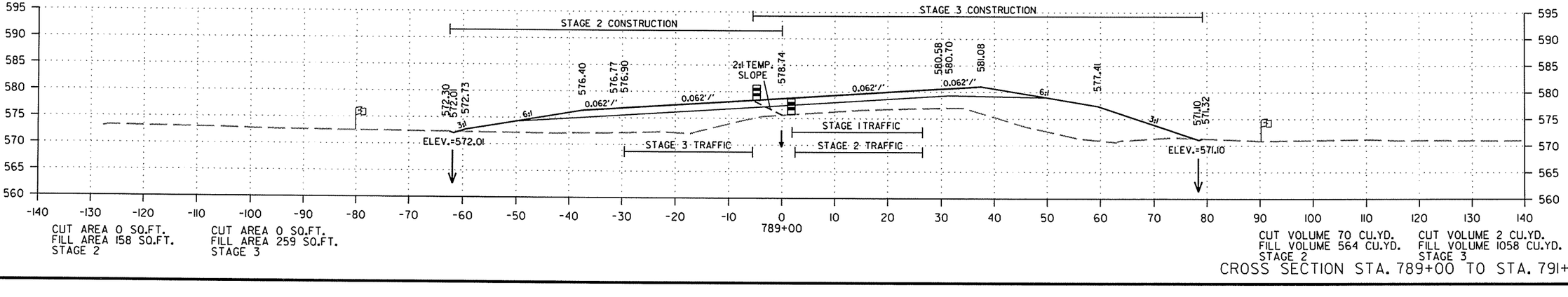
R050214.DGN

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.		050214	254	311

(2) CROSS SECTIONS - HWY. 167







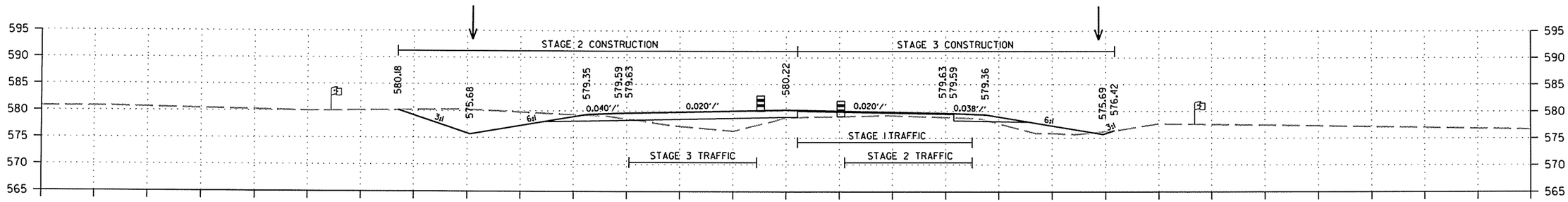
CROSS SECTION STA. 789+00 TO STA. 791+00

8/8/2014

R050214.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.		050214	255	311

(2) CROSS SECTIONS - HWY. 167

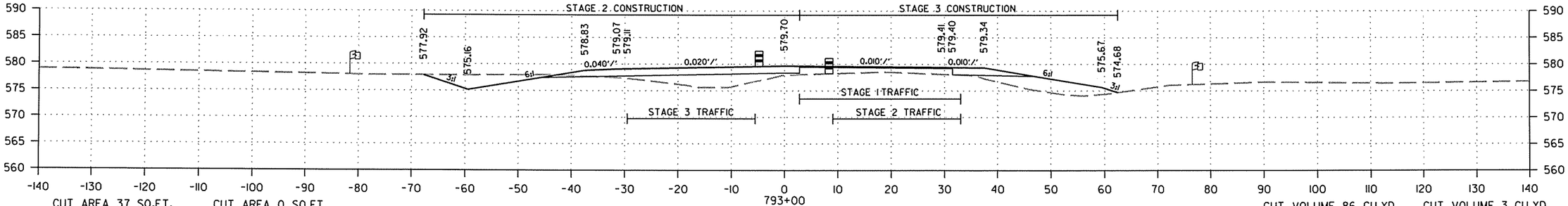


CUT AREA 90 SQ.FT.
FILL AREA 38 SQ.FT.
STAGE 2

CUT AREA 4 SQ.FT.
FILL AREA 20 SQ.FT.
STAGE 3

CUT VOLUME 236 CU.YD.
FILL VOLUME 162 CU.YD.
STAGE 2

CUT VOLUME 7 CU.YD.
FILL VOLUME 126 CU.YD.
STAGE 3



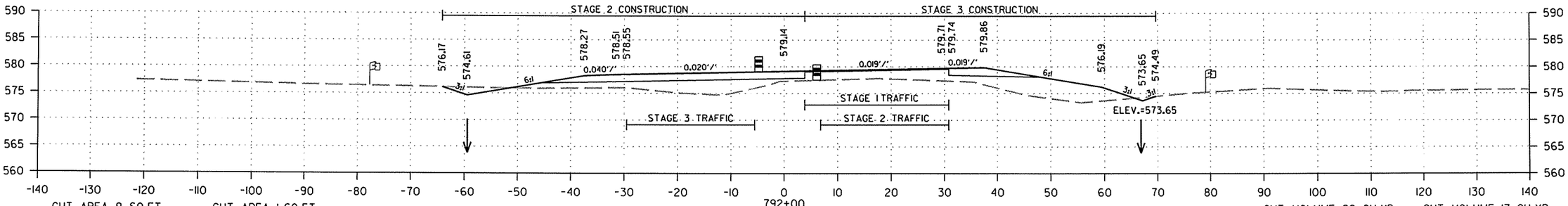
CUT AREA 37 SQ.FT.
FILL AREA 50 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 48 SQ.FT.
STAGE 3

791+69.90 END
2.63% RT.DT.GD.
ELEV.=575.46

CUT VOLUME 86 CU.YD.
FILL VOLUME 241 CU.YD.
STAGE 2

CUT VOLUME 3 CU.YD.
FILL VOLUME 245 CU.YD.
STAGE 3



CUT AREA 9 SQ.FT.
FILL AREA 81 SQ.FT.
STAGE 2

CUT AREA 1 SQ.FT.
FILL AREA 85 SQ.FT.
STAGE 3

CUT VOLUME 22 CU.YD.
FILL VOLUME 332 CU.YD.
STAGE 2

CUT VOLUME 17 CU.YD.
FILL VOLUME 440 CU.YD.
STAGE 3

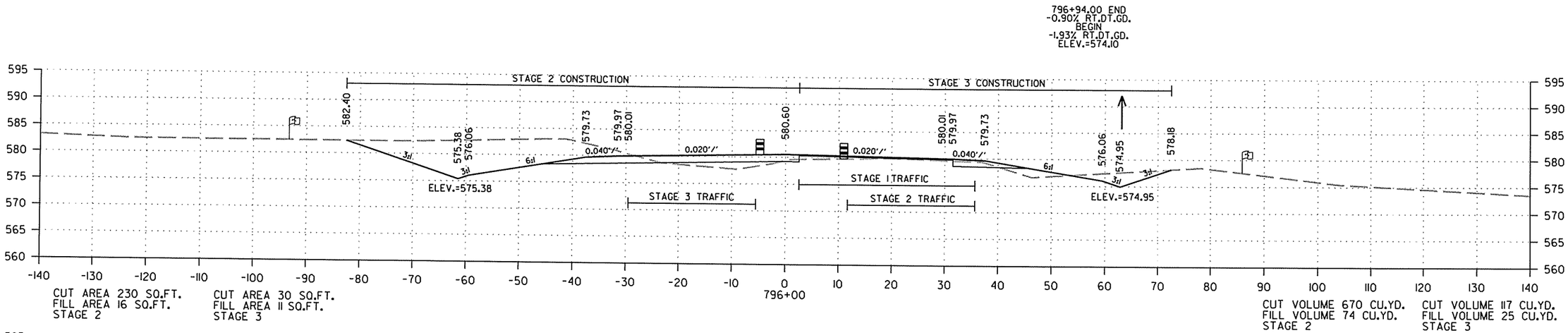
CROSS SECTION STA. 792+00 TO STA. 794+00

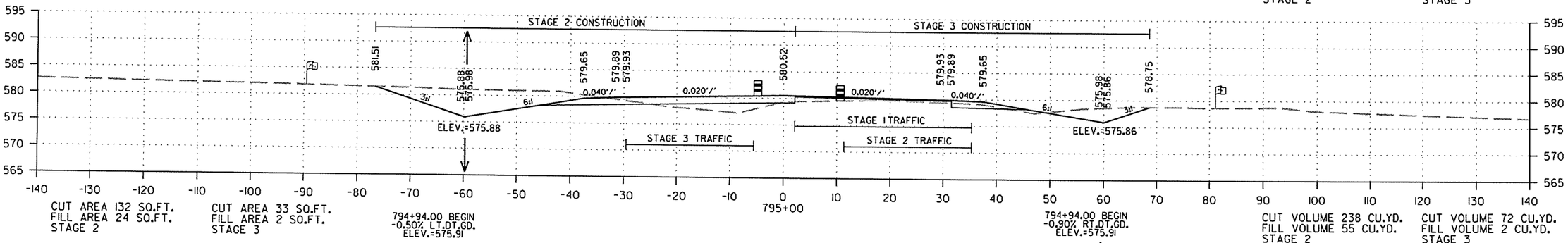
8/8/2014

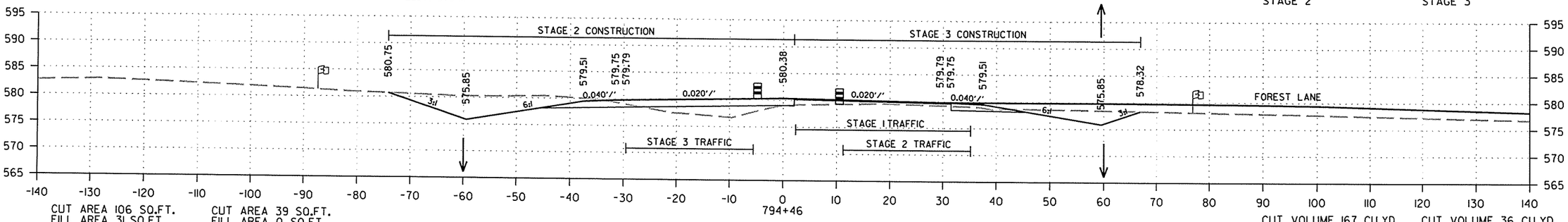
R050214.DGN

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.		050214	256	311

(2) CROSS SECTIONS - HWY. 167







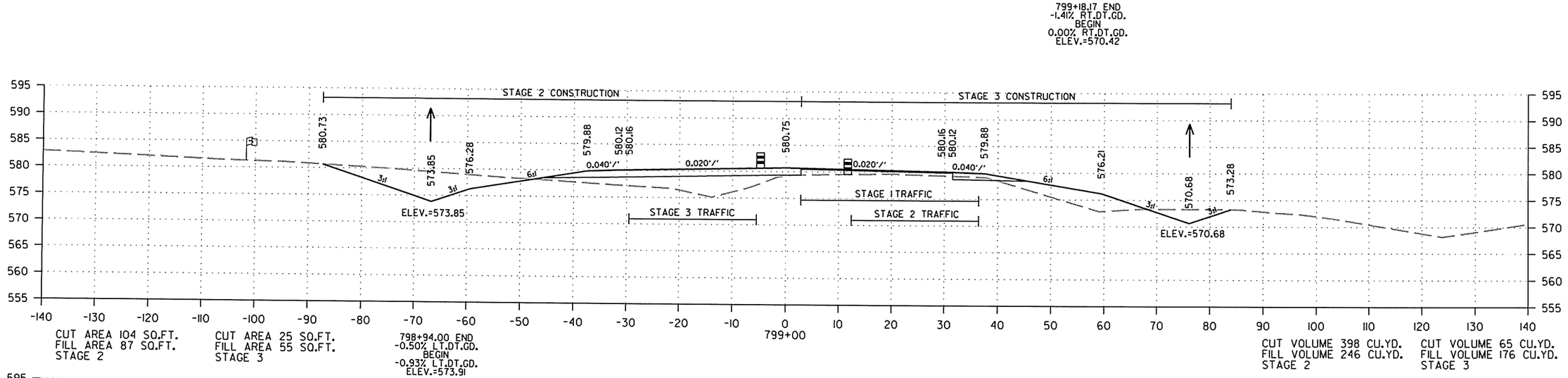
CROSS SECTION STA. 794+46 TO STA. 796+00

8/8/2014

R050214.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.		050214	257	311

(2) CROSS SECTIONS - HWY. 167



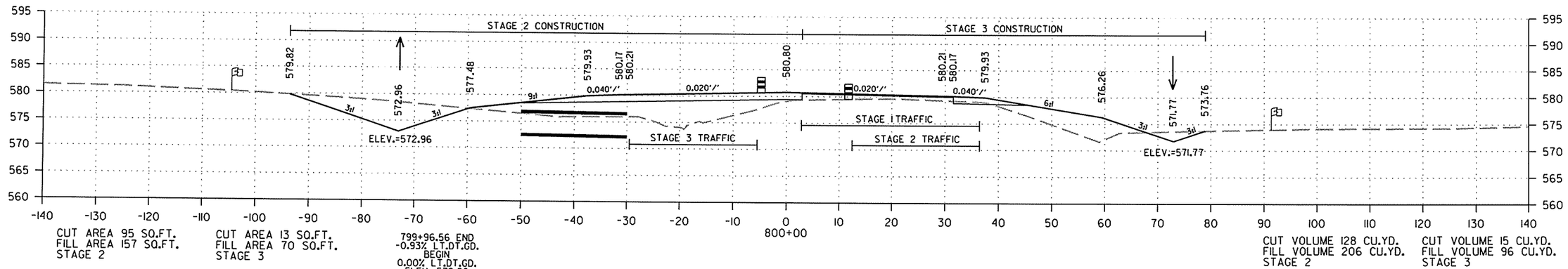
CROSS SECTION STA. 797+00 TO STA. 799+00

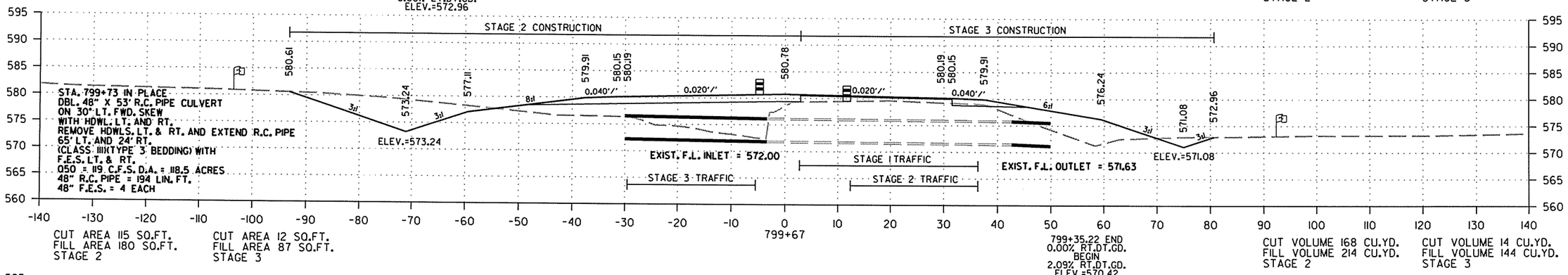
8/8/2014

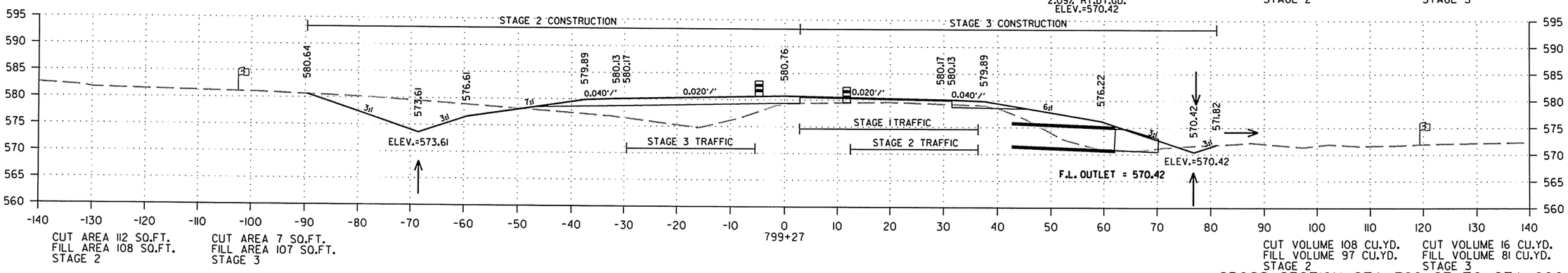
R050214.DGN

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.		050214	258	311

(2) CROSS SECTIONS - HWY. 167







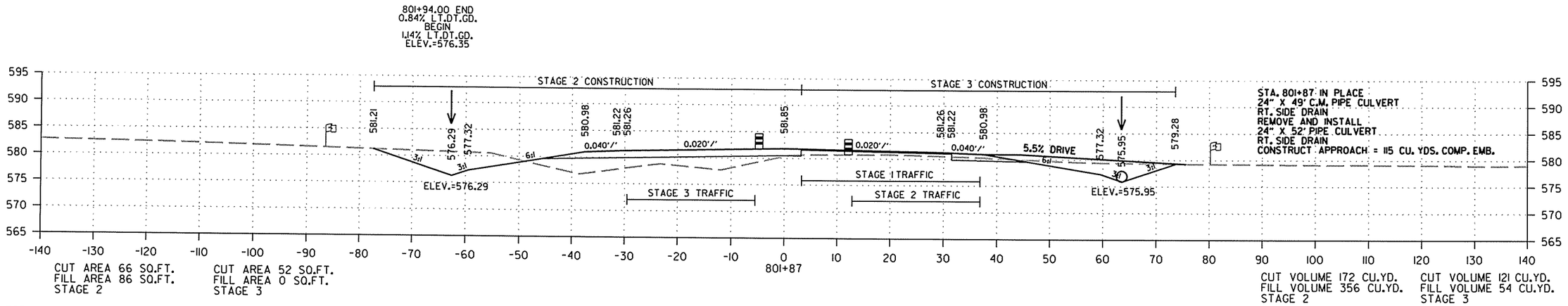
CROSS SECTION STA. 799+27 TO STA. 800+00

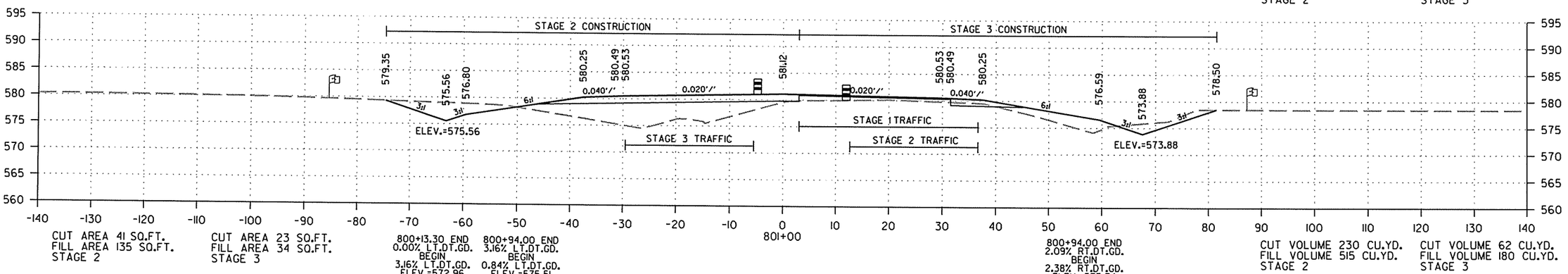
8/8/2014

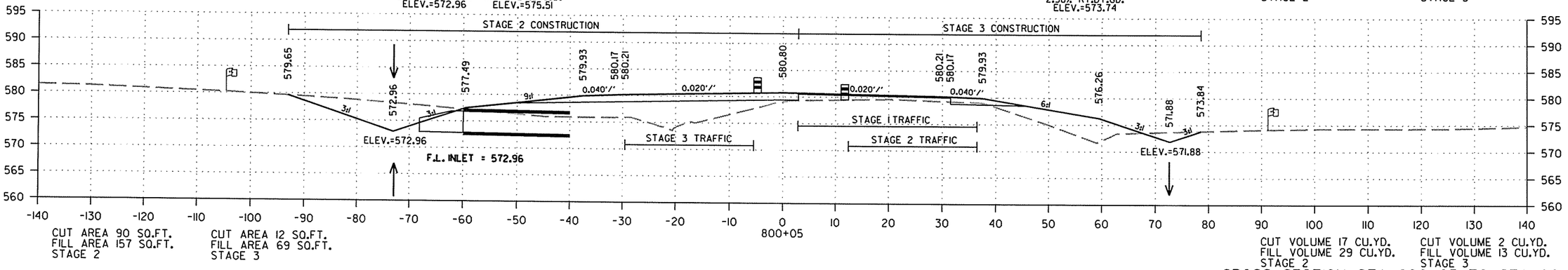
R050214.DGN

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.		050214	259	311

(2) CROSS SECTIONS - HWY. 167







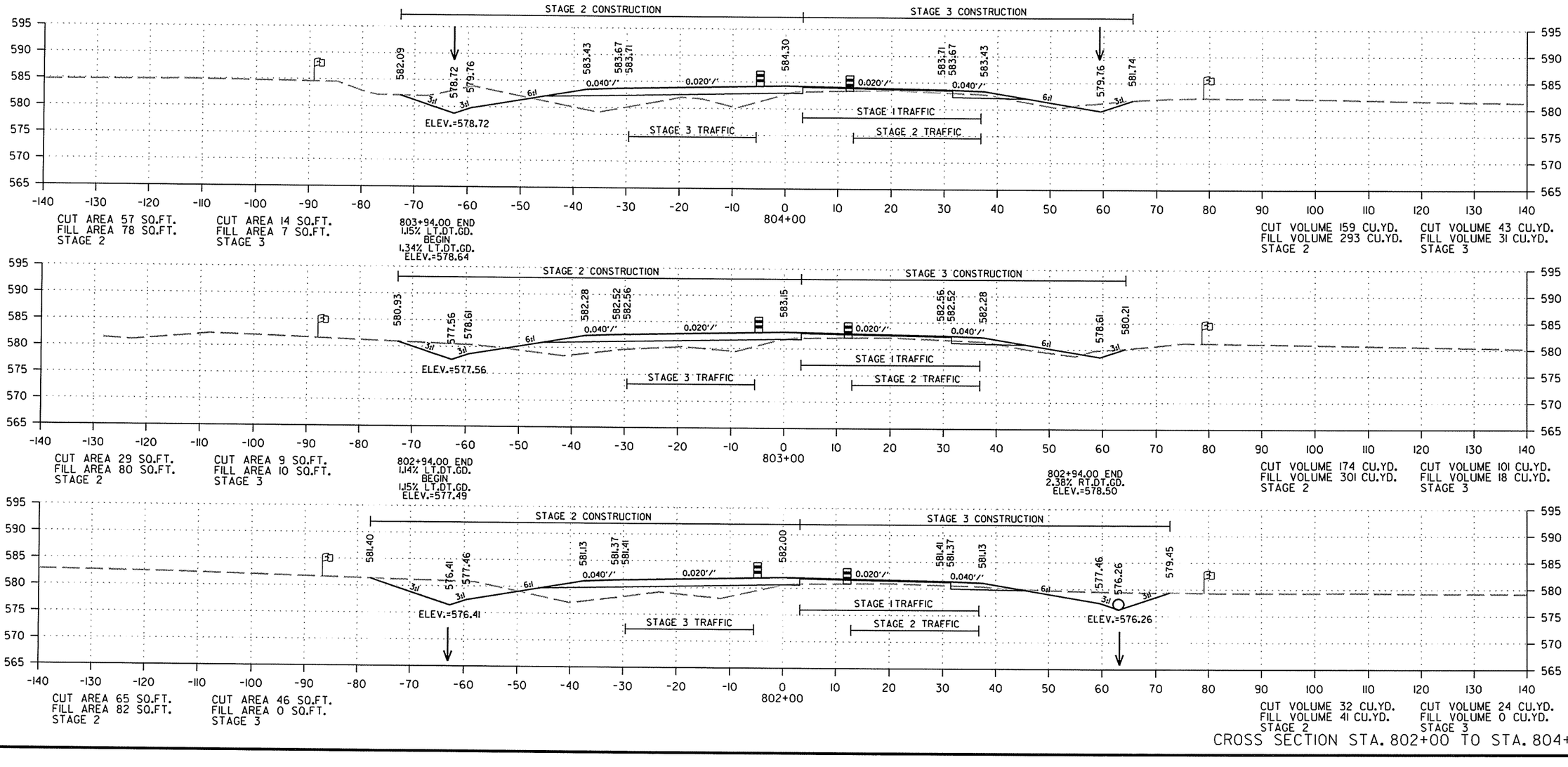
CROSS SECTION STA. 800+05 TO STA. 801+87

8/8/2014

R050214.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.		050214	260	311

(2) CROSS SECTIONS - HWY. 167



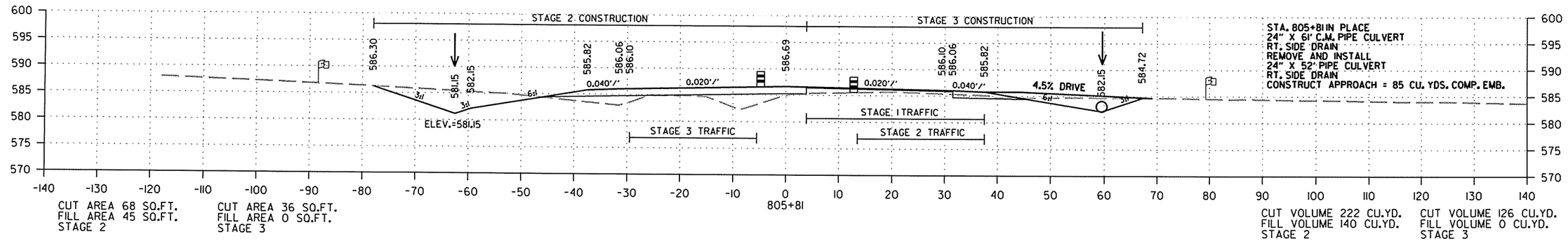
CROSS SECTION STA. 802+00 TO STA. 804+00

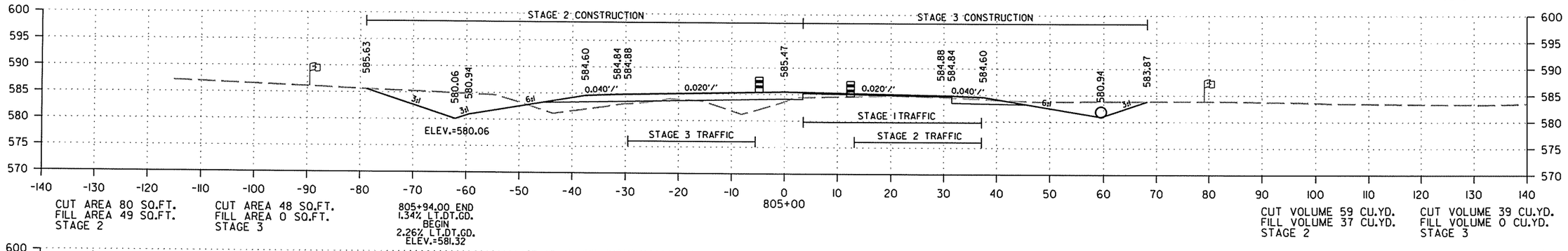
8/8/2014

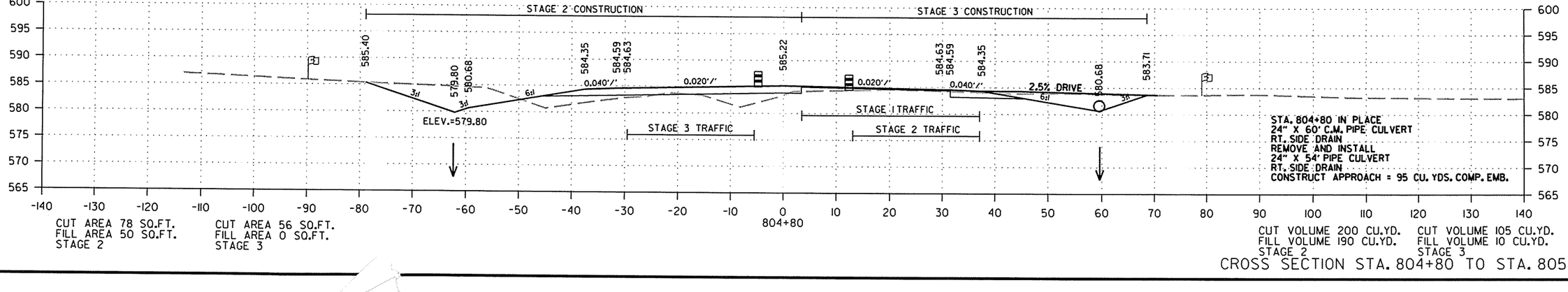
R050214.DGN

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.		050214	261	311

(2) CROSS SECTIONS - HWY. 167







CROSS SECTION STA. 804+80 TO STA. 805+81

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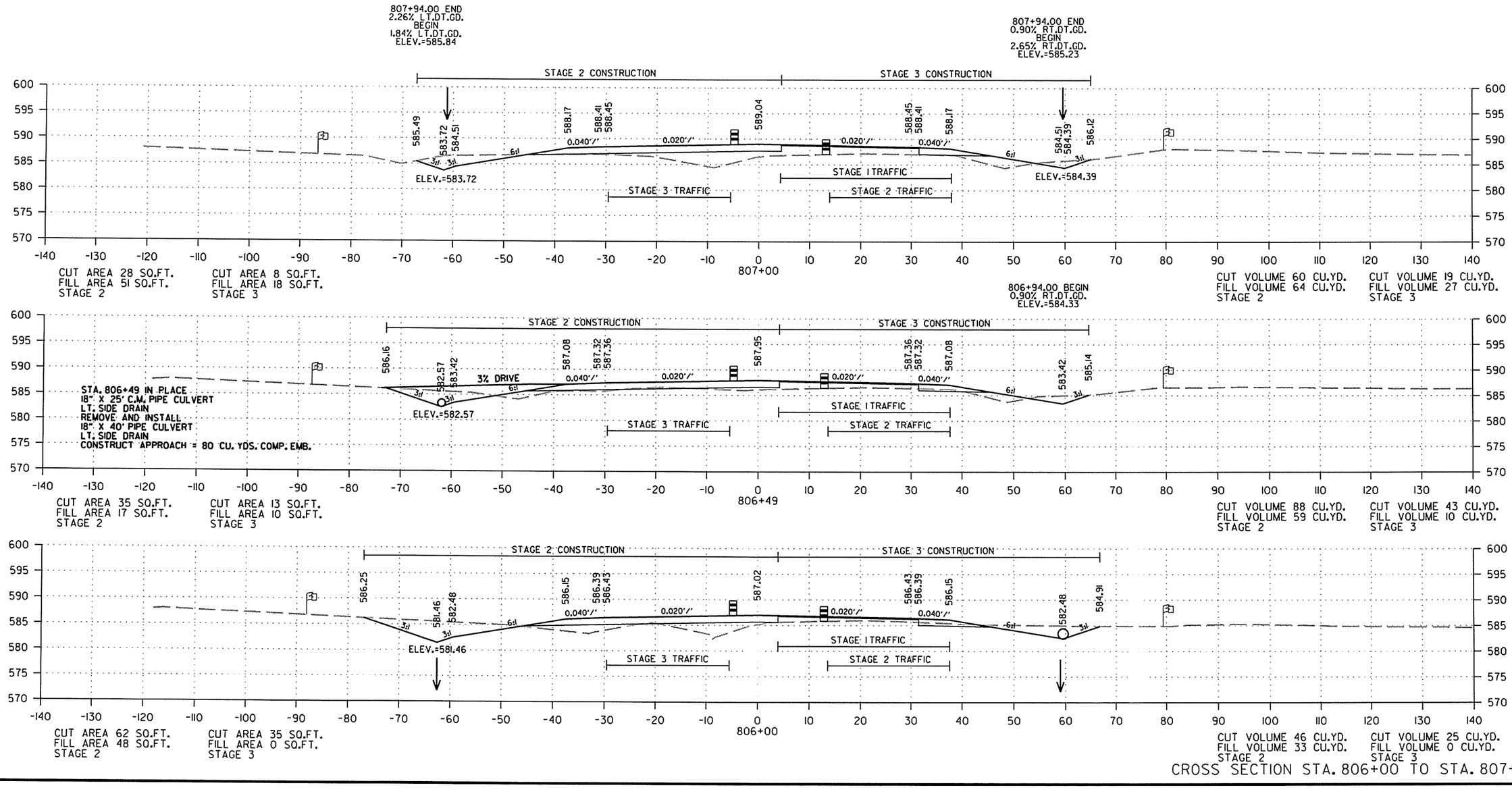
R050214.DGN

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.		050214	262	311

(2) CROSS SECTIONS - HWY. 167



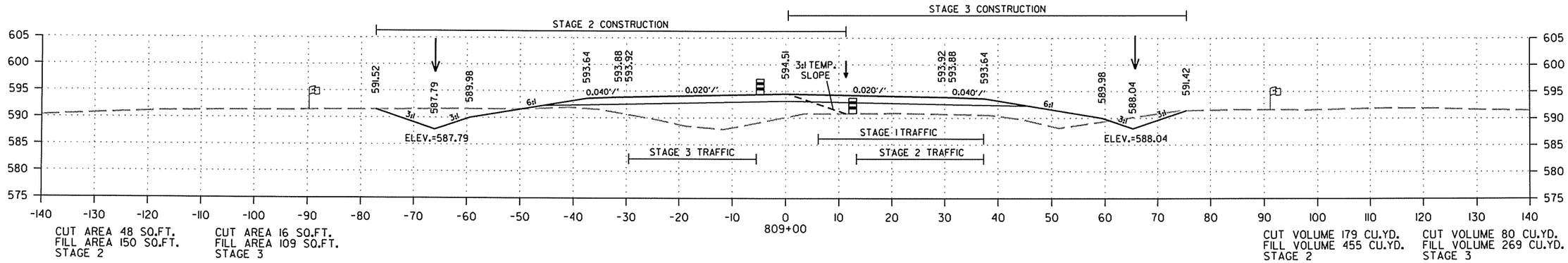
CROSS SECTION STA. 806+00 TO STA. 807+00

8/8/2014

R050214.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.		050214	263	311

(2) CROSS SECTIONS - HWY. 167

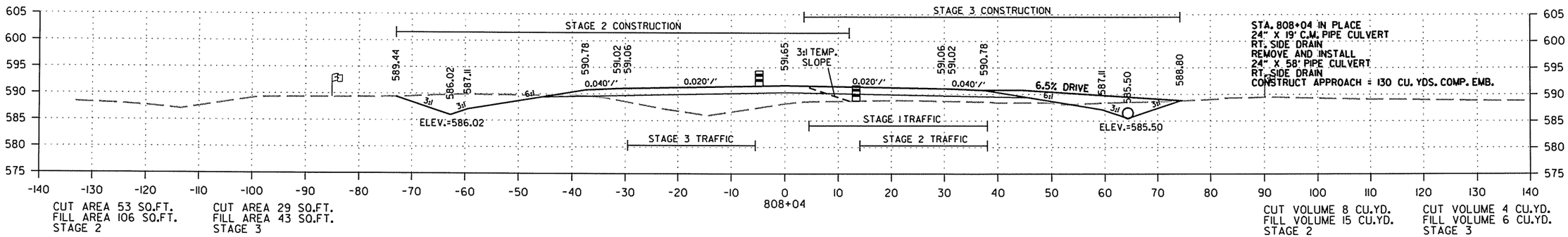


CUT AREA 48 SQ.FT.
FILL AREA 150 SQ.FT.
STAGE 2

CUT AREA 16 SQ.FT.
FILL AREA 109 SQ.FT.
STAGE 3

CUT VOLUME 179 CU.YD.
FILL VOLUME 455 CU.YD.
STAGE 2

CUT VOLUME 80 CU.YD.
FILL VOLUME 269 CU.YD.
STAGE 3



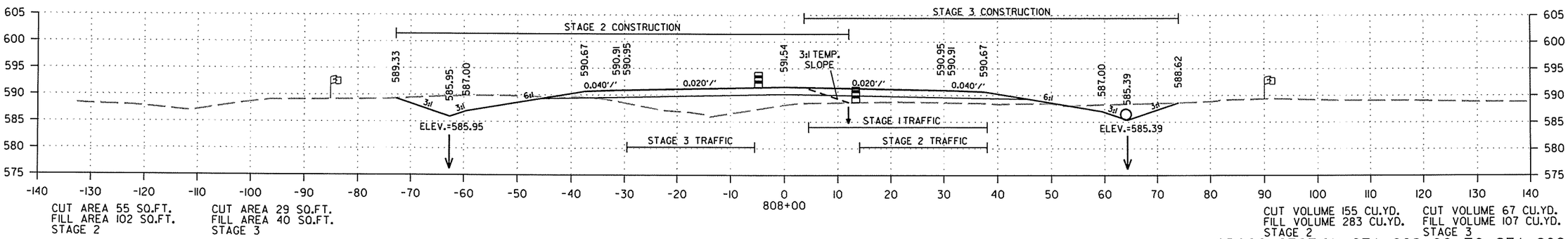
STA. 808+04 IN PLACE
24" X 19' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 58' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 130 CU. YDS. COMP. EMB.

CUT AREA 53 SQ.FT.
FILL AREA 106 SQ.FT.
STAGE 2

CUT AREA 29 SQ.FT.
FILL AREA 43 SQ.FT.
STAGE 3

CUT VOLUME 8 CU.YD.
FILL VOLUME 15 CU.YD.
STAGE 2

CUT VOLUME 4 CU.YD.
FILL VOLUME 6 CU.YD.
STAGE 3



CUT AREA 55 SQ.FT.
FILL AREA 102 SQ.FT.
STAGE 2

CUT AREA 29 SQ.FT.
FILL AREA 40 SQ.FT.
STAGE 3

CUT VOLUME 155 CU.YD.
FILL VOLUME 283 CU.YD.
STAGE 2

CUT VOLUME 67 CU.YD.
FILL VOLUME 107 CU.YD.
STAGE 3

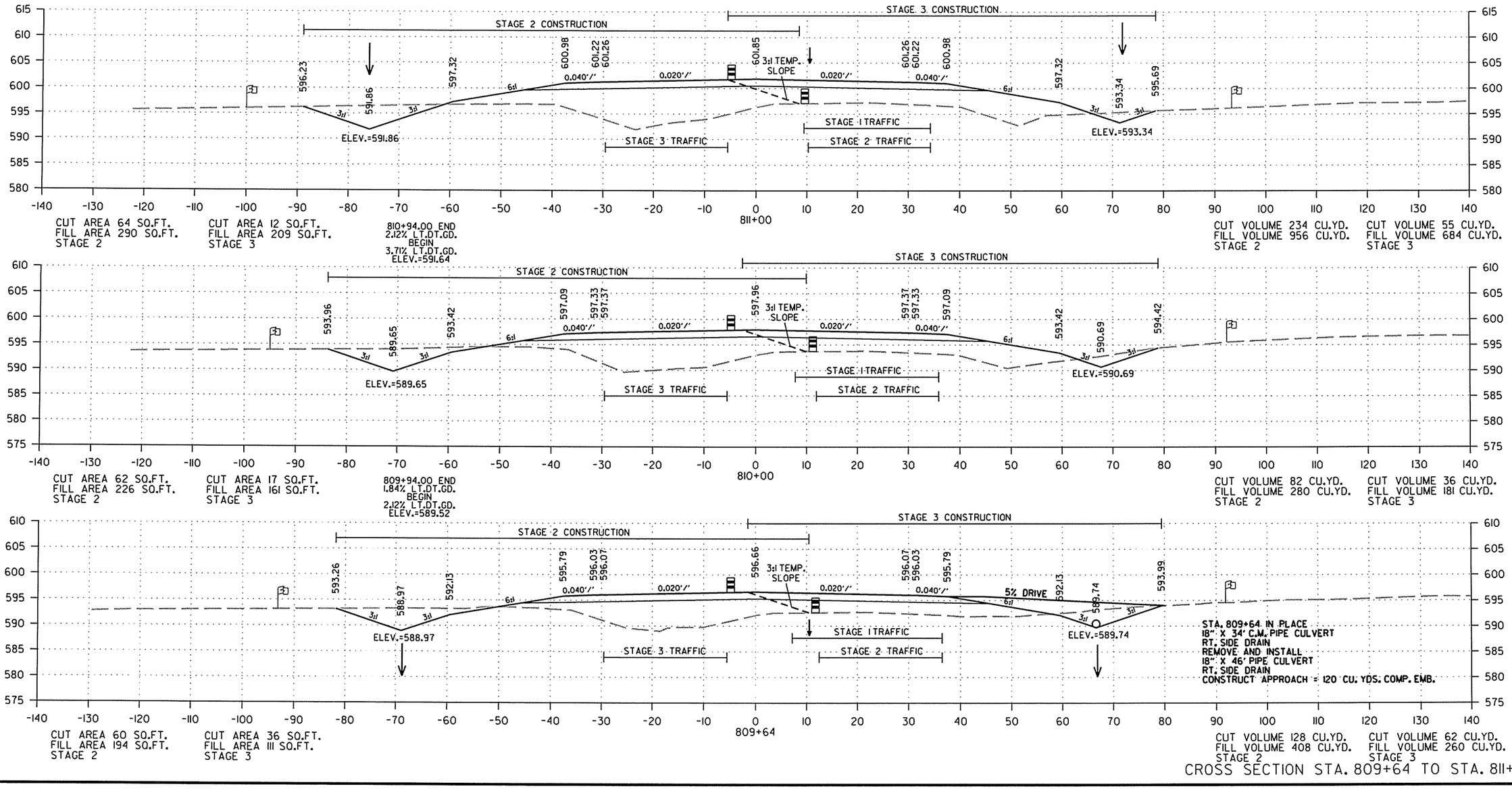
CROSS SECTION STA. 808+00 TO STA. 809+00

8/8/2014

R050214.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.		050214	264	311

(2) CROSS SECTIONS - HWY. 167



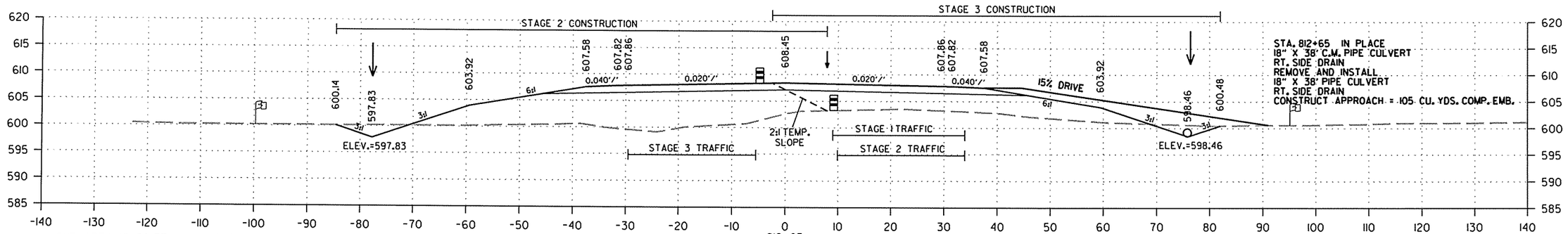
CROSS SECTION STA. 809+64 TO STA. 811+00

8/8/2014

R050214.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.		050214	265	311

(2) CROSS SECTIONS - HWY. 167

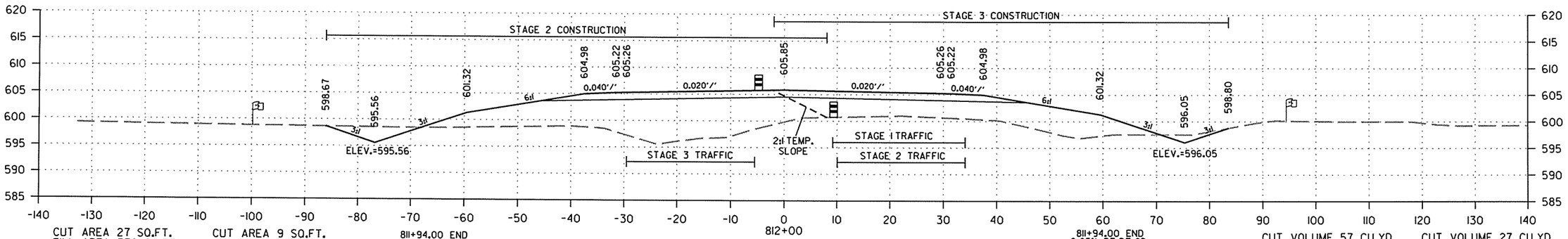


CUT AREA 16 SQ.FT.
FILL AREA 394 SQ.FT.
STAGE 2

CUT AREA 14 SQ.FT.
FILL AREA 205 SQ.FT.
STAGE 3

CUT VOLUME 52 CU.YD.
FILL VOLUME 926 CU.YD.
STAGE 2

CUT VOLUME 27 CU.YD.
FILL VOLUME 525 CU.YD.
STAGE 3



CUT AREA 27 SQ.FT.
FILL AREA 376 SQ.FT.
STAGE 2

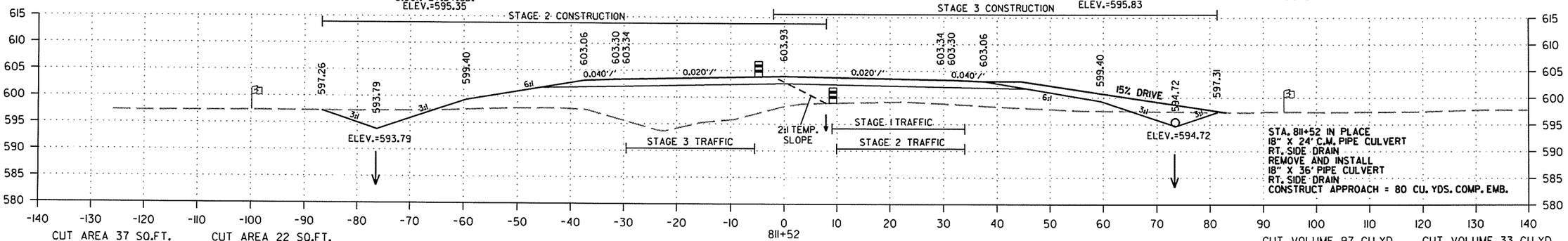
CUT AREA 9 SQ.FT.
FILL AREA 231 SQ.FT.
STAGE 3

811+94.00 END
3.71% LT.DT.GD.
BEGIN
3.50% LT.DT.GD.
ELEV.=595.35

811+94.00 END
2.65% RT.DT.GD.
BEGIN
3.70% RT.DT.GD.
ELEV.=595.83

CUT VOLUME 57 CU.YD.
FILL VOLUME 633 CU.YD.
STAGE 2

CUT VOLUME 27 CU.YD.
FILL VOLUME 366 CU.YD.
STAGE 3



CUT AREA 37 SQ.FT.
FILL AREA 337 SQ.FT.
STAGE 2

CUT AREA 22 SQ.FT.
FILL AREA 181 SQ.FT.
STAGE 3

CUT VOLUME 97 CU.YD.
FILL VOLUME 604 CU.YD.
STAGE 2

CUT VOLUME 33 CU.YD.
FILL VOLUME 375 CU.YD.
STAGE 3

CROSS SECTION STA. 811+52 TO STA. 812+65

8/8/2014

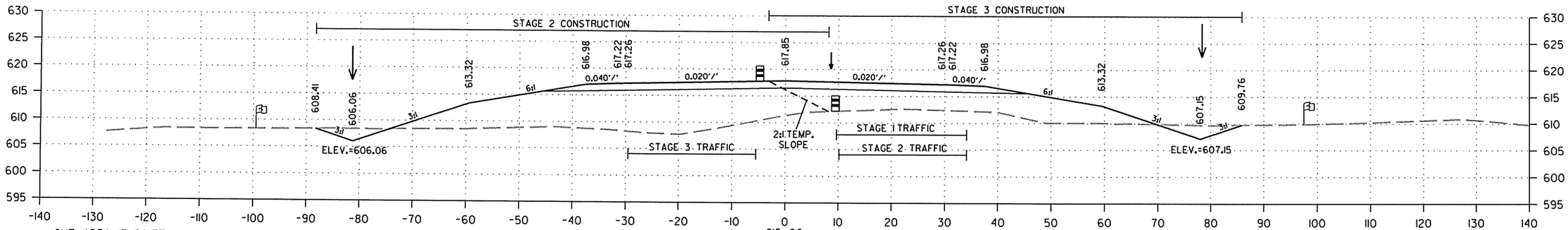
R050214.DGN

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.		050214	266	311

(2) CROSS SECTIONS - HWY. 167

815+94.00 END
3.50% LT.DT.GD.
BEGIN
5.10% LT.DT.GD.
ELEV.=609.35

815+94.00 END
3.70% RT.DT.GD.
BEGIN
5.42% RT.DT.GD.
ELEV.=610.63

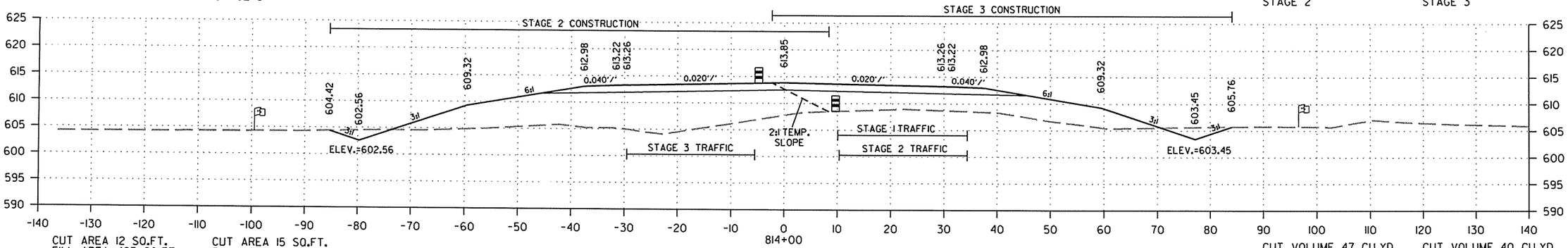


CUT AREA 17 SQ.FT.
FILL AREA 461 SQ.FT.
STAGE 2

CUT AREA 20 SQ.FT.
FILL AREA 235 SQ.FT.
STAGE 3

CUT VOLUME 52 CU.YD.
FILL VOLUME 1637 CU.YD.
STAGE 2

CUT VOLUME 66 CU.YD.
FILL VOLUME 843 CU.YD.
STAGE 3

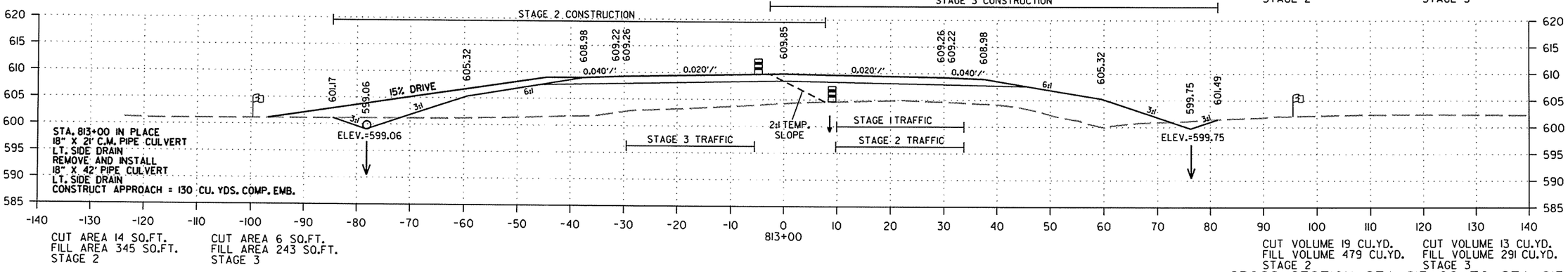


CUT AREA 12 SQ.FT.
FILL AREA 423 SQ.FT.
STAGE 2

CUT AREA 15 SQ.FT.
FILL AREA 220 SQ.FT.
STAGE 3

CUT VOLUME 47 CU.YD.
FILL VOLUME 1422 CU.YD.
STAGE 2

CUT VOLUME 40 CU.YD.
FILL VOLUME 859 CU.YD.
STAGE 3



STA. 813+00 IN PLACE
18" X 21' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 130 CU. YDS. COMP. EMB.

CUT AREA 14 SQ.FT.
FILL AREA 345 SQ.FT.
STAGE 2

CUT AREA 6 SQ.FT.
FILL AREA 243 SQ.FT.
STAGE 3

CUT VOLUME 19 CU.YD.
FILL VOLUME 479 CU.YD.
STAGE 2

CUT VOLUME 13 CU.YD.
FILL VOLUME 291 CU.YD.
STAGE 3

CROSS SECTION STA. 813+00 TO STA. 815+00

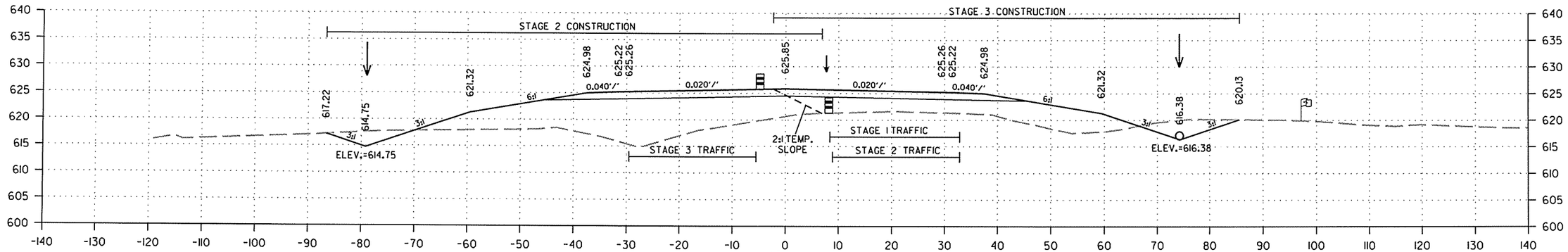
8/8/2014

R050214.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.		050214	267	311

(2) CROSS SECTIONS - HWY. 167

817+94.00 END
5.07% LT.DT.GD.
BEGIN
5.20% LT.DT.GD.
ELEV.=619.52



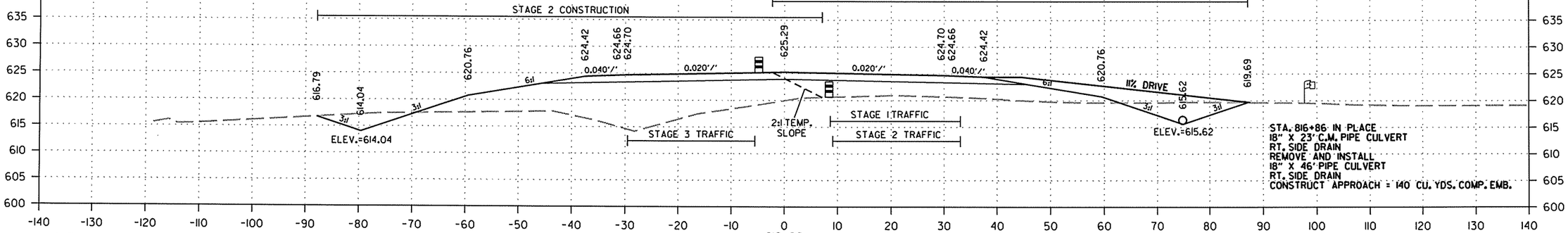
CUT AREA 24 SQ.FT.
FILL AREA 383 SQ.FT.
STAGE 2

CUT AREA 36 SQ.FT.
FILL AREA 192 SQ.FT.
STAGE 3

816+94.00 END
5.10% LT.DT.GD.
BEGIN
5.07% LT.DT.GD.
ELEV.=614.45

CUT VOLUME 14 CU.YD.
FILL VOLUME 198 CU.YD.
STAGE 2

CUT VOLUME 22 CU.YD.
FILL VOLUME 89 CU.YD.
STAGE 3



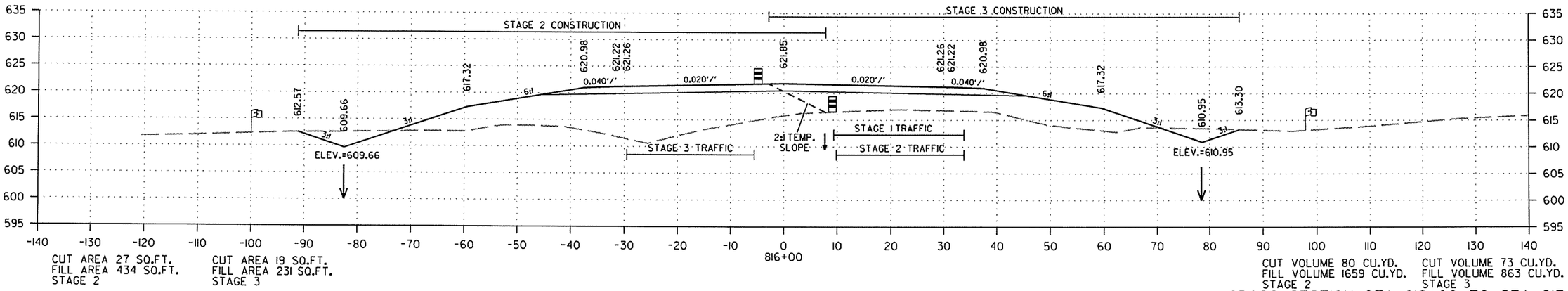
STA. 816+86 IN PLACE
18" X 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 46' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 140 CU. YDS. COMP. EMB.

CUT AREA 30 SQ.FT.
FILL AREA 382 SQ.FT.
STAGE 2

CUT AREA 49 SQ.FT.
FILL AREA 152 SQ.FT.
STAGE 3

CUT VOLUME 91 CU.YD.
FILL VOLUME 1300 CU.YD.
STAGE 2

CUT VOLUME 108 CU.YD.
FILL VOLUME 610 CU.YD.
STAGE 3



CUT AREA 27 SQ.FT.
FILL AREA 434 SQ.FT.
STAGE 2

CUT AREA 19 SQ.FT.
FILL AREA 231 SQ.FT.
STAGE 3

CUT VOLUME 80 CU.YD.
FILL VOLUME 1659 CU.YD.
STAGE 2

CUT VOLUME 73 CU.YD.
FILL VOLUME 863 CU.YD.
STAGE 3

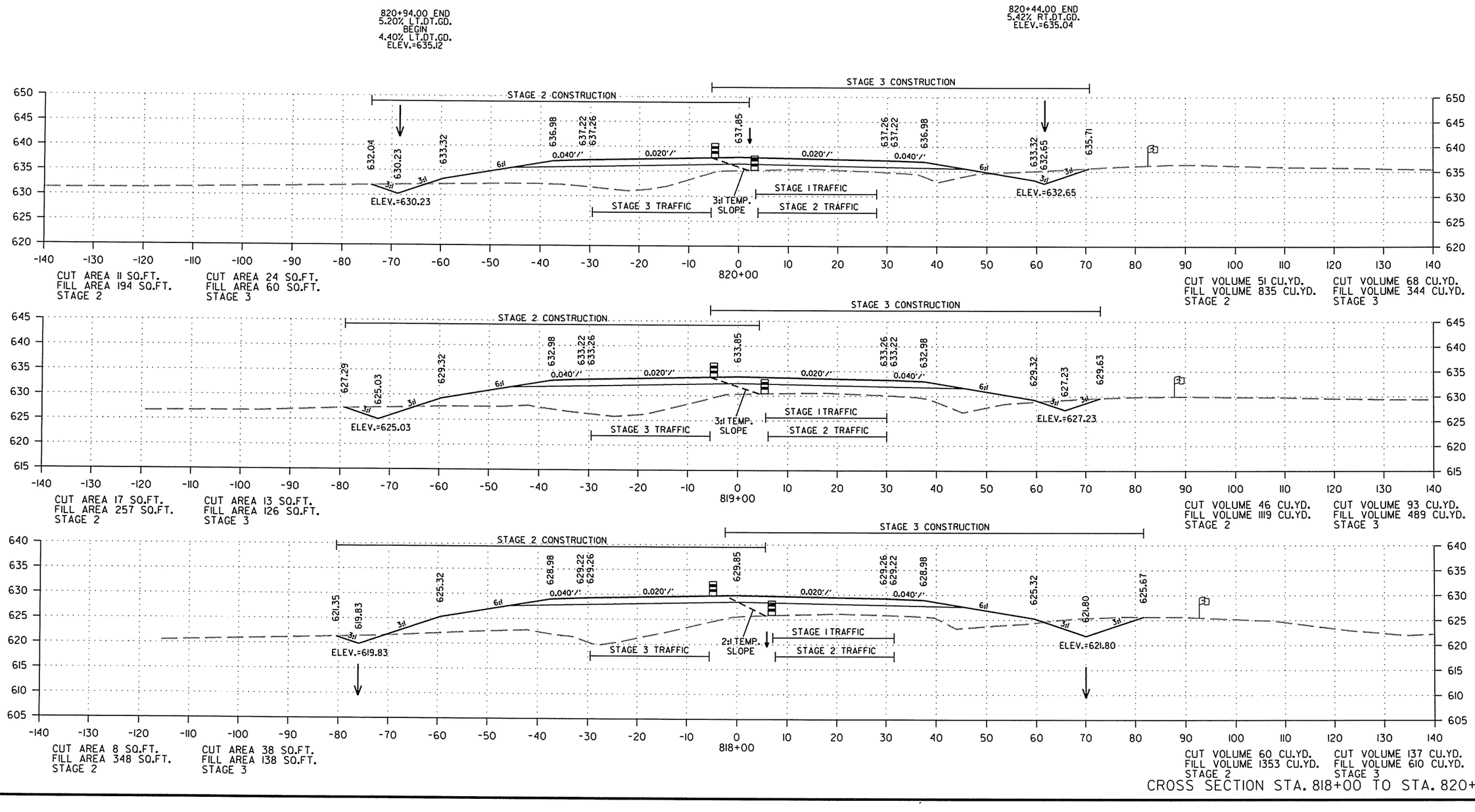
CROSS SECTION STA. 816+00 TO STA. 817+00

8/8/2014

R050214.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.		050214	268	311

(2) CROSS SECTIONS - HWY. 167



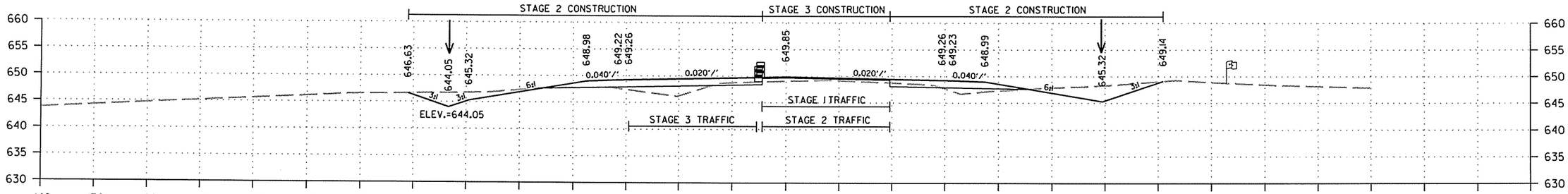
CROSS SECTION STA. 818+00 TO STA. 820+00

8/8/2014

R050214.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.		050214	269	311

(2) CROSS SECTIONS - HWY. 167



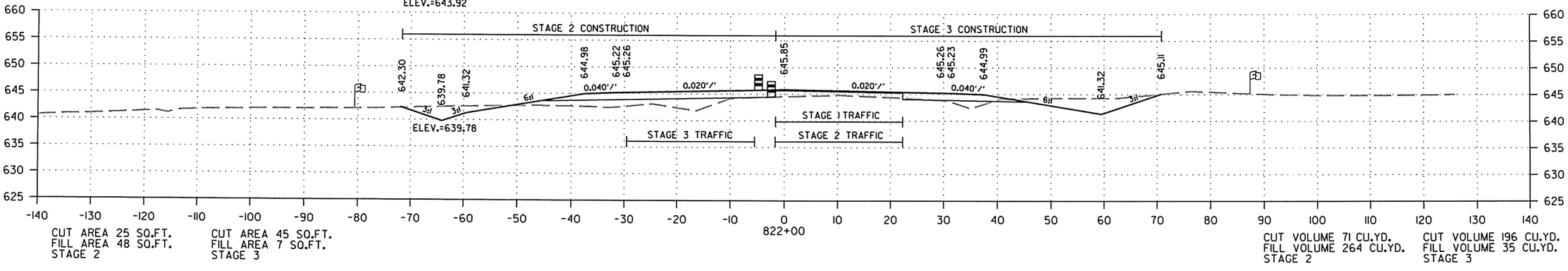
CUT AREA 74 SQ.FT.
FILL AREA 28 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

822+94.00 END
4.40% LT.DT.GD.
BEGIN
2.24% LT.DT.GD.
ELEV.=643.92

CUT VOLUME 183 CU.YD.
FILL VOLUME 140 CU.YD.
STAGE 2

CUT VOLUME 83 CU.YD.
FILL VOLUME 12 CU.YD.
STAGE 3

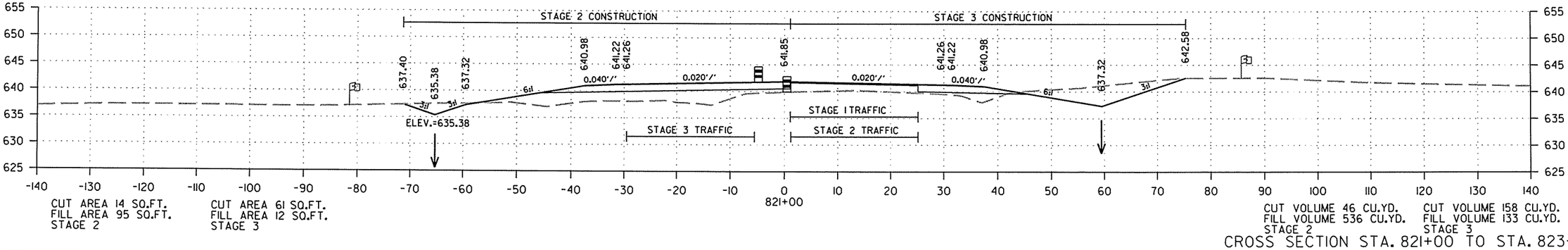


CUT AREA 25 SQ.FT.
FILL AREA 48 SQ.FT.
STAGE 2

CUT AREA 45 SQ.FT.
FILL AREA 7 SQ.FT.
STAGE 3

CUT VOLUME 71 CU.YD.
FILL VOLUME 264 CU.YD.
STAGE 2

CUT VOLUME 196 CU.YD.
FILL VOLUME 35 CU.YD.
STAGE 3



CUT AREA 14 SQ.FT.
FILL AREA 95 SQ.FT.
STAGE 2

CUT AREA 61 SQ.FT.
FILL AREA 12 SQ.FT.
STAGE 3

CUT VOLUME 46 CU.YD.
FILL VOLUME 536 CU.YD.
STAGE 2

CUT VOLUME 158 CU.YD.
FILL VOLUME 133 CU.YD.
STAGE 3

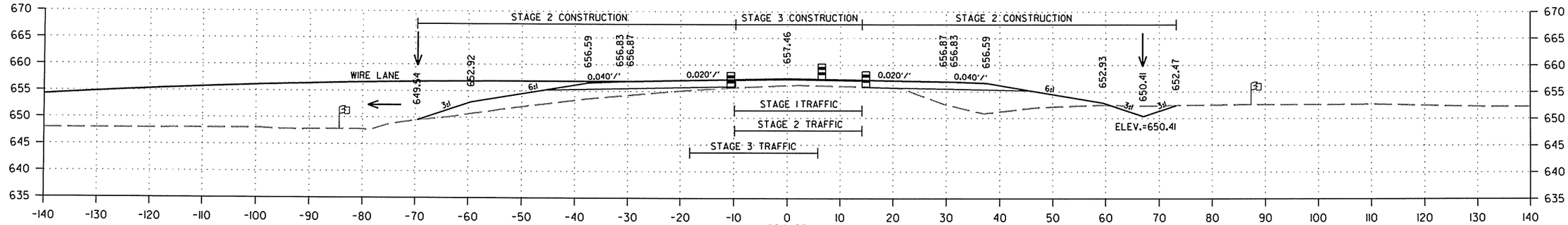
CROSS SECTION STA. 821+00 TO STA. 823+00

8/8/2014

R050214.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.		050214	270	311

(2) CROSS SECTIONS - HWY. 167



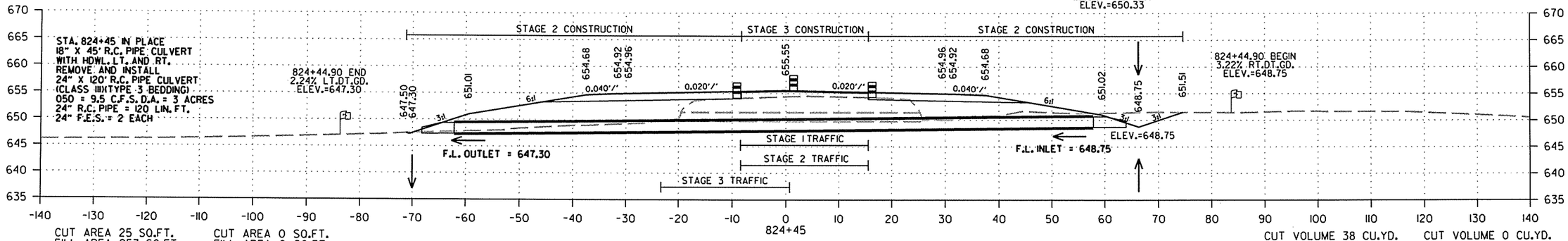
CUT AREA 12 SQ.FT.
FILL AREA 186 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

824+94.00 END
3.22% RT.DT.GD.
BEGIN
2.25% RT.DT.GD.
ELEV.=650.33

CUT VOLUME 36 CU.YD.
FILL VOLUME 435 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

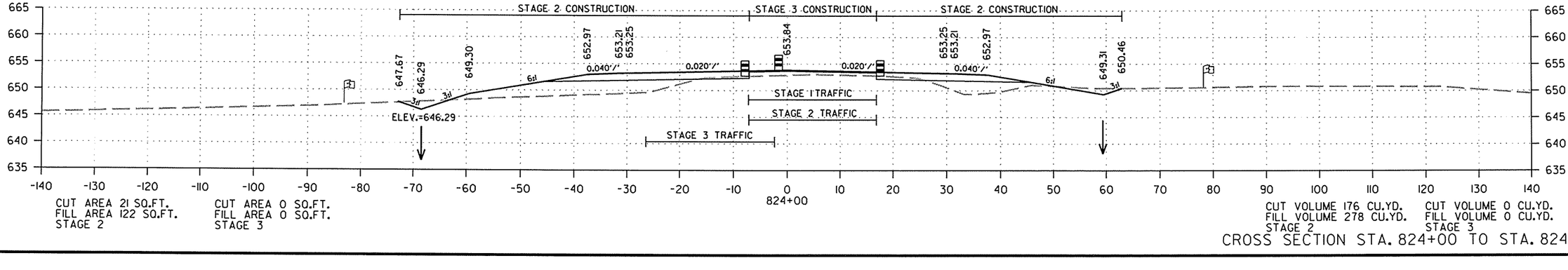


CUT AREA 25 SQ.FT.
FILL AREA 257 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 38 CU.YD.
FILL VOLUME 317 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



CUT AREA 21 SQ.FT.
FILL AREA 122 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 176 CU.YD.
FILL VOLUME 278 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

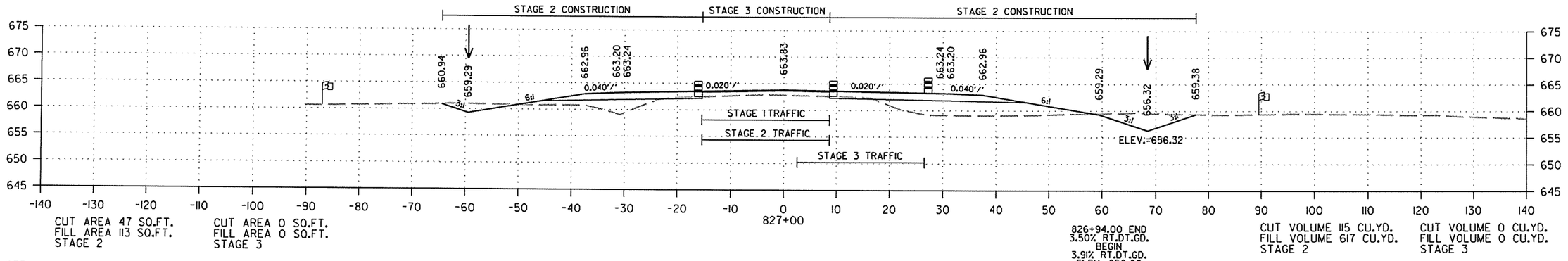
CROSS SECTION STA. 824+00 TO STA. 824+98

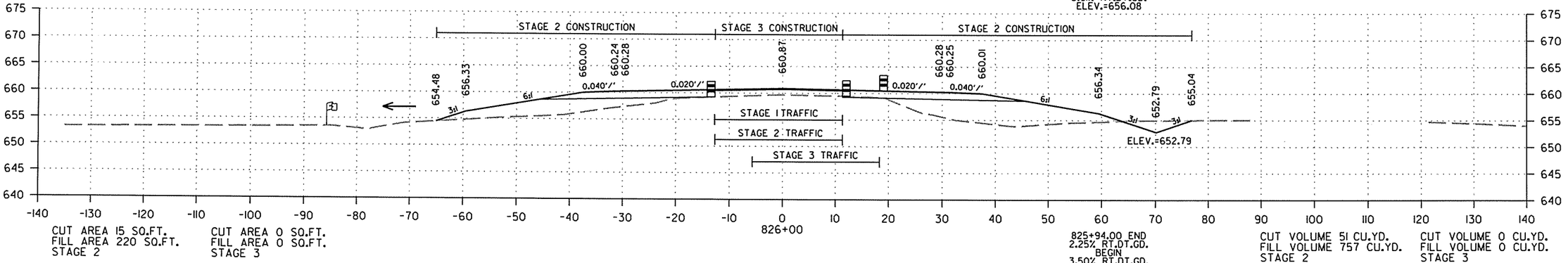
8/8/2014

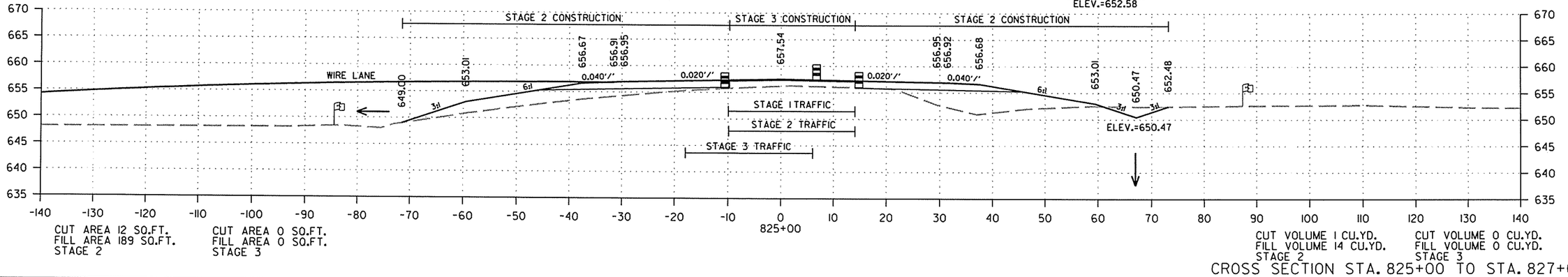
R050214.DGN

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.		050214	271	311

(2) CROSS SECTIONS - HWY. 167







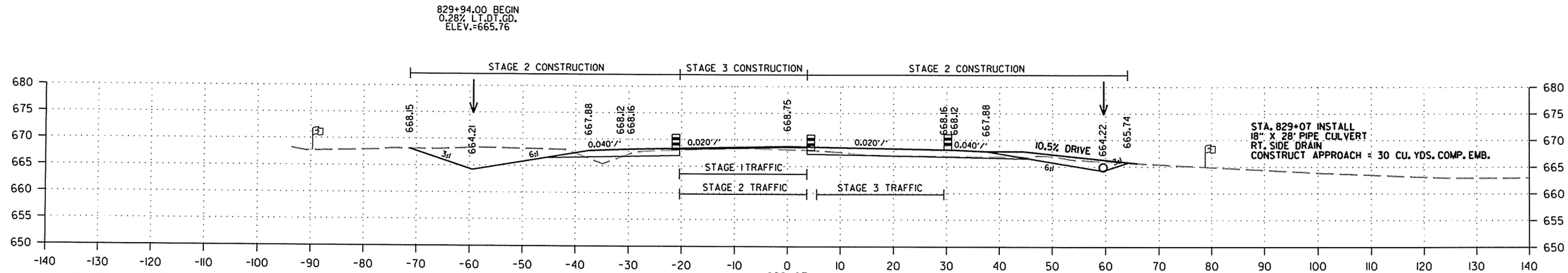
CROSS SECTION STA. 825+00 TO STA. 827+00

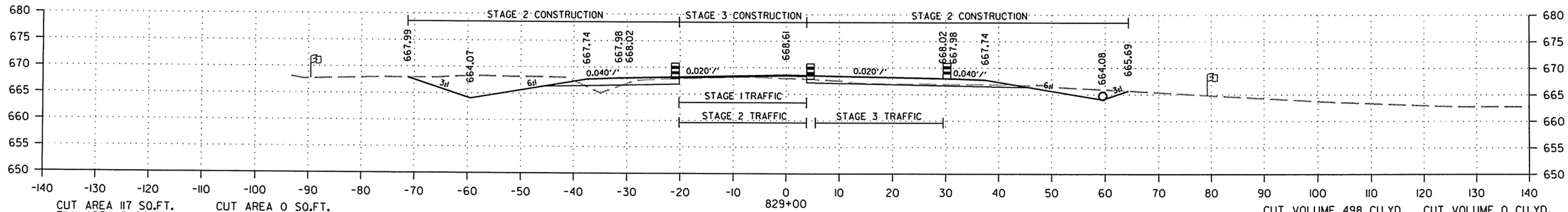
8/8/2014

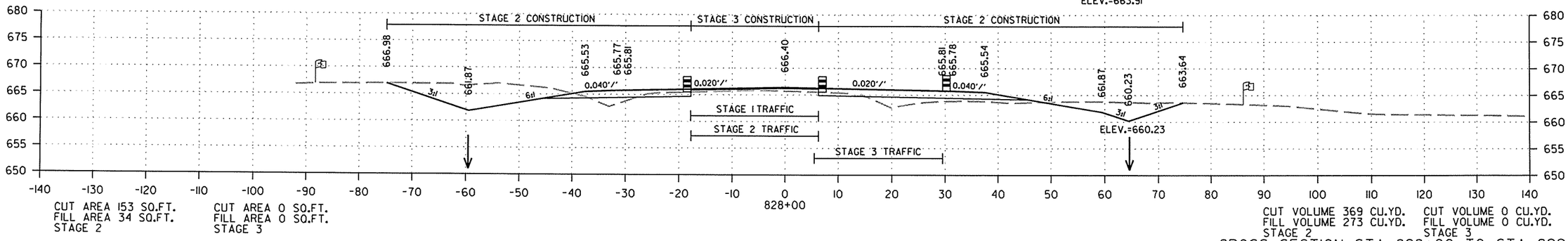
R050214.DGN

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.		050214	272	311

(2) CROSS SECTIONS - HWY. 167







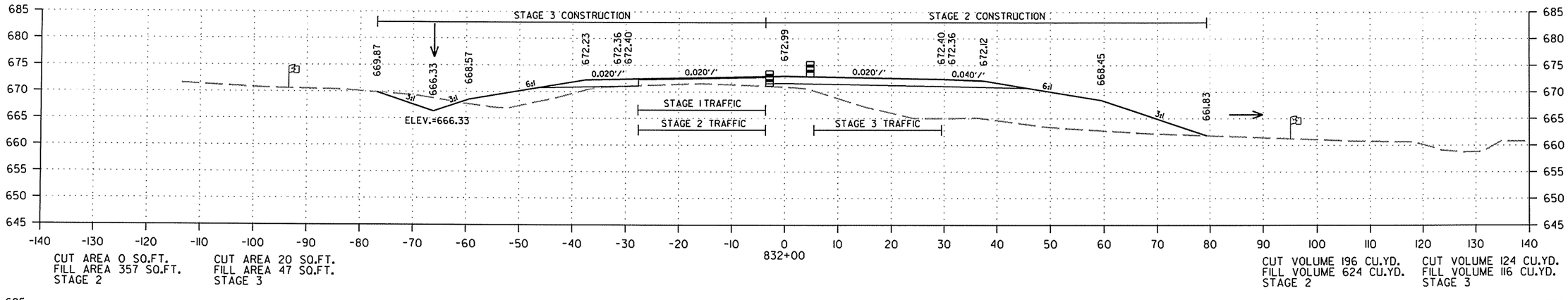
CROSS SECTION STA. 828+00 TO STA. 829+07

8/8/2014

R050214.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.		050214	273	311

(2) CROSS SECTIONS - HWY. 167

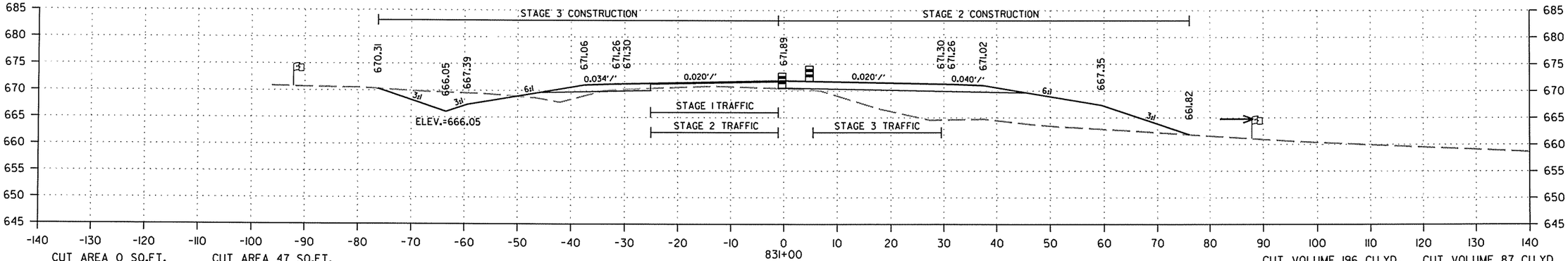


CUT AREA 0 SQ.FT.
FILL AREA 357 SQ.FT.
STAGE 2

CUT AREA 20 SQ.FT.
FILL AREA 47 SQ.FT.
STAGE 3

CUT VOLUME 196 CU.YD.
FILL VOLUME 624 CU.YD.
STAGE 2

CUT VOLUME 124 CU.YD.
FILL VOLUME 116 CU.YD.
STAGE 3

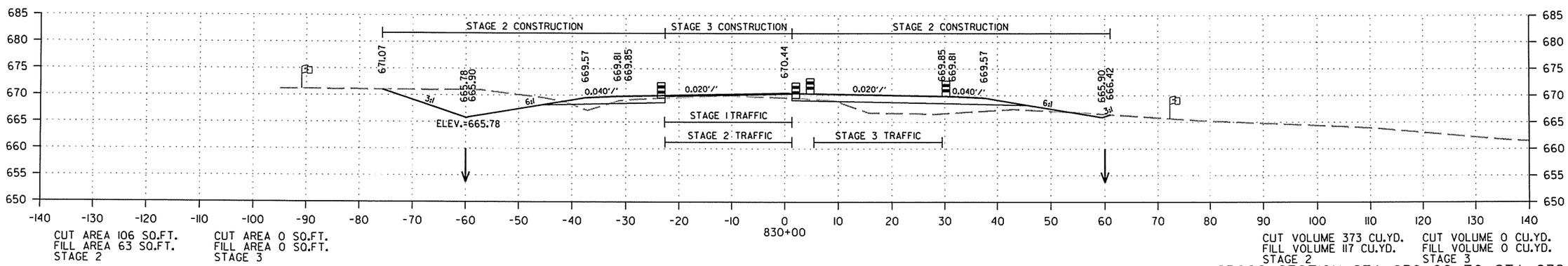


CUT AREA 0 SQ.FT.
FILL AREA 274 SQ.FT.
STAGE 2

CUT AREA 47 SQ.FT.
FILL AREA 16 SQ.FT.
STAGE 3

CUT VOLUME 196 CU.YD.
FILL VOLUME 624 CU.YD.
STAGE 2

CUT VOLUME 87 CU.YD.
FILL VOLUME 29 CU.YD.
STAGE 3



CUT AREA 106 SQ.FT.
FILL AREA 63 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 373 CU.YD.
FILL VOLUME 117 CU.YD.
STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

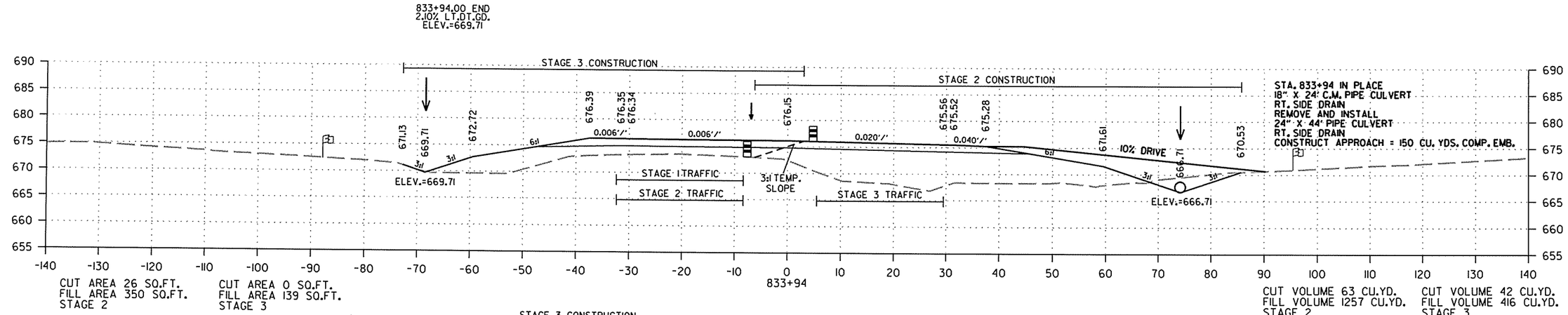
CROSS SECTION STA. 830+00 TO STA. 832+00

8/8/2014

R050214.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.		050214	274	311

(2) CROSS SECTIONS - HWY. 167

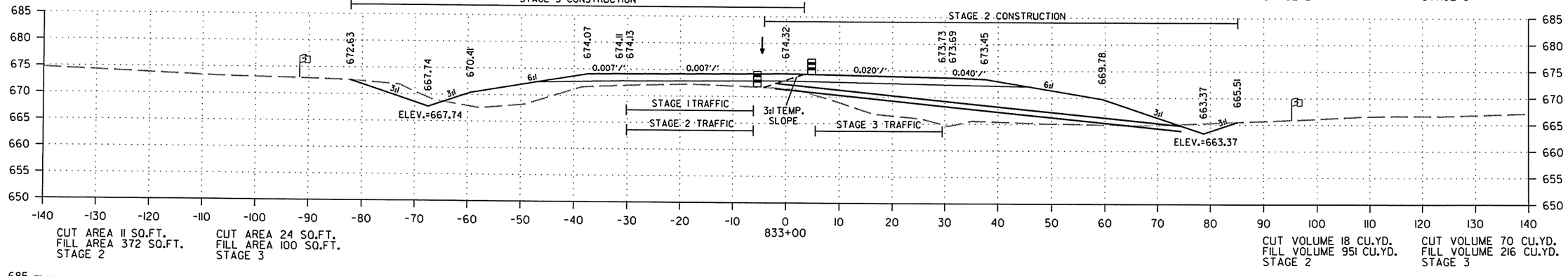


CUT AREA 26 SQ.FT.
FILL AREA 350 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 139 SQ.FT.
STAGE 3

CUT VOLUME 63 CU.YD.
FILL VOLUME 1257 CU.YD.
STAGE 2

CUT VOLUME 42 CU.YD.
FILL VOLUME 416 CU.YD.
STAGE 3

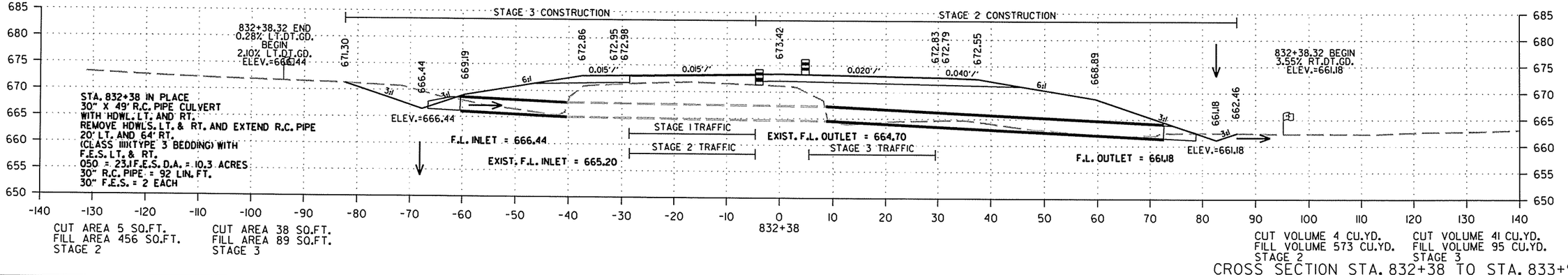


CUT AREA 11 SQ.FT.
FILL AREA 372 SQ.FT.
STAGE 2

CUT AREA 24 SQ.FT.
FILL AREA 100 SQ.FT.
STAGE 3

CUT VOLUME 18 CU.YD.
FILL VOLUME 951 CU.YD.
STAGE 2

CUT VOLUME 70 CU.YD.
FILL VOLUME 216 CU.YD.
STAGE 3



CUT AREA 5 SQ.FT.
FILL AREA 456 SQ.FT.
STAGE 2

CUT AREA 38 SQ.FT.
FILL AREA 89 SQ.FT.
STAGE 3

CUT VOLUME 4 CU.YD.
FILL VOLUME 573 CU.YD.
STAGE 2

CUT VOLUME 41 CU.YD.
FILL VOLUME 95 CU.YD.
STAGE 3

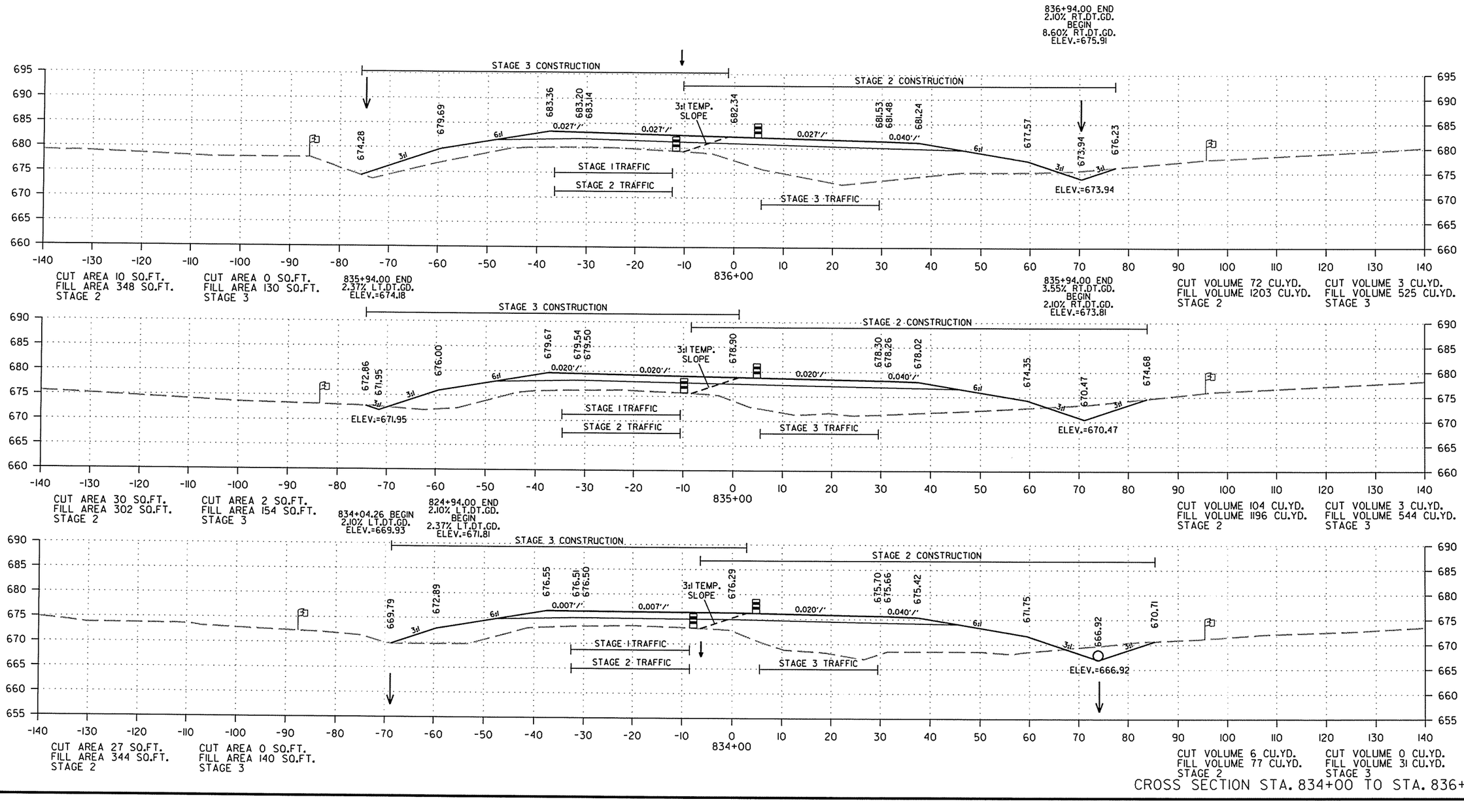
CROSS SECTION STA. 832+38 TO STA. 833+94

8/8/2014

R050214.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.		050214	275	311

(2) CROSS SECTIONS - HWY. 167



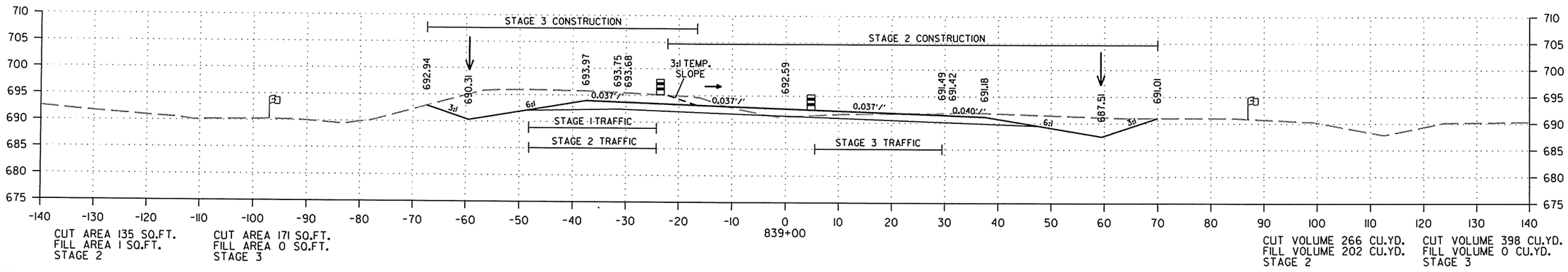
CROSS SECTION STA. 834+00 TO STA. 836+00

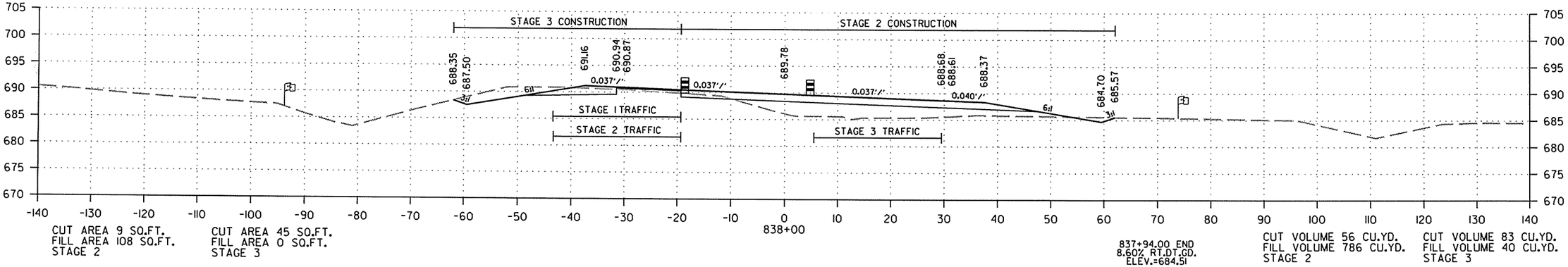
8/8/2014

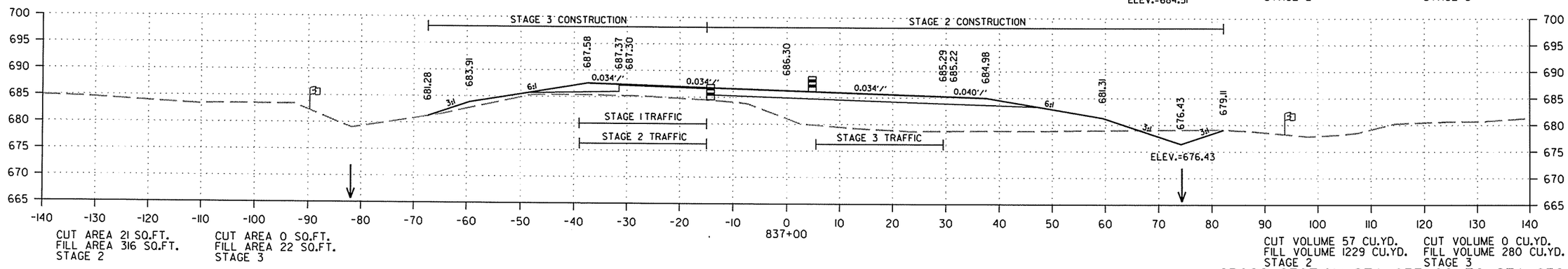
R050214.DGN

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.		050214	276	311

(2) CROSS SECTIONS - HWY. 167







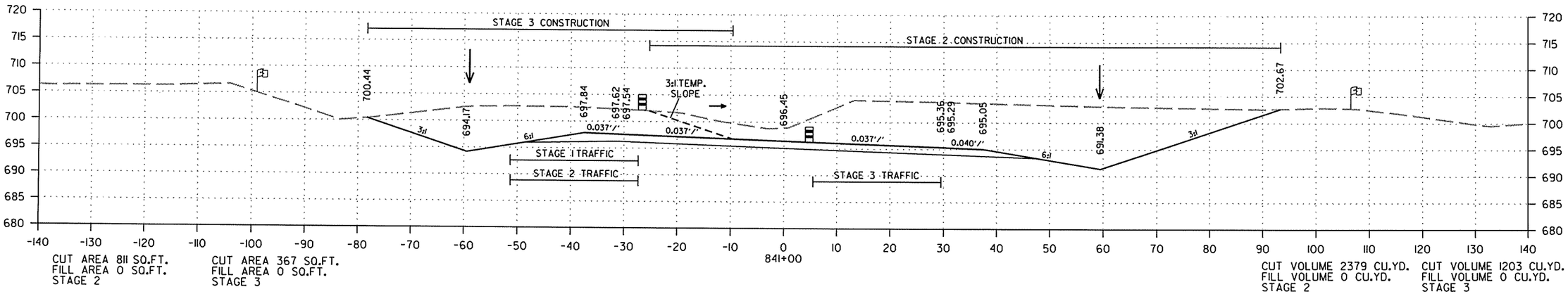
CROSS SECTION STA. 837+00 TO STA. 839+00

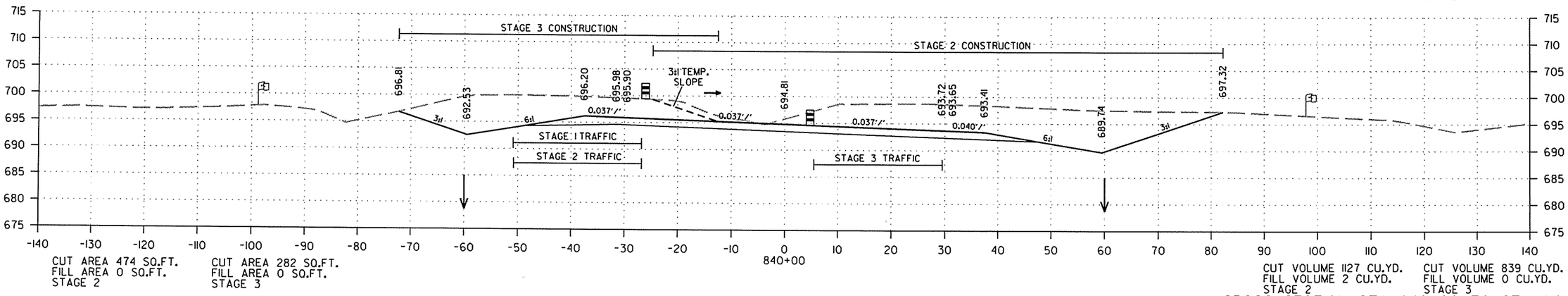
8/8/2014

R050214.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.		050214	277	311

(2) CROSS SECTIONS - HWY. 167





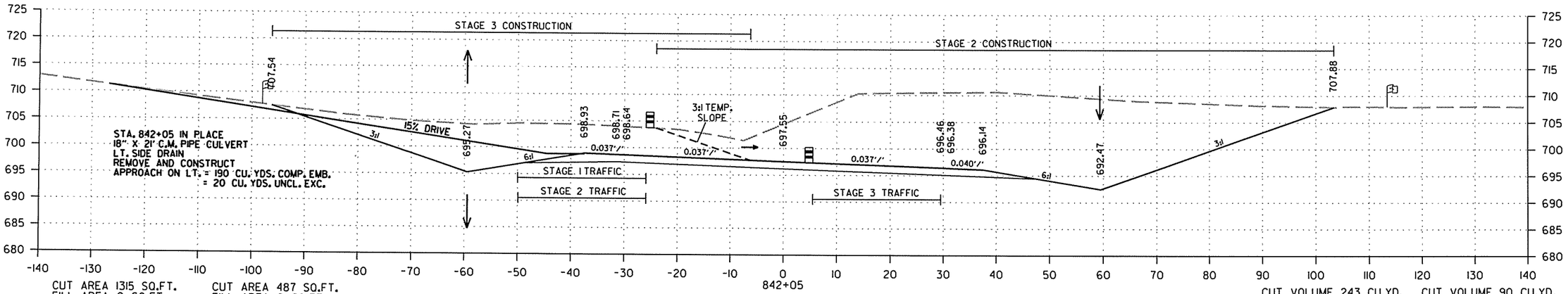
CROSS SECTION STA. 840+00 TO STA. 841+00

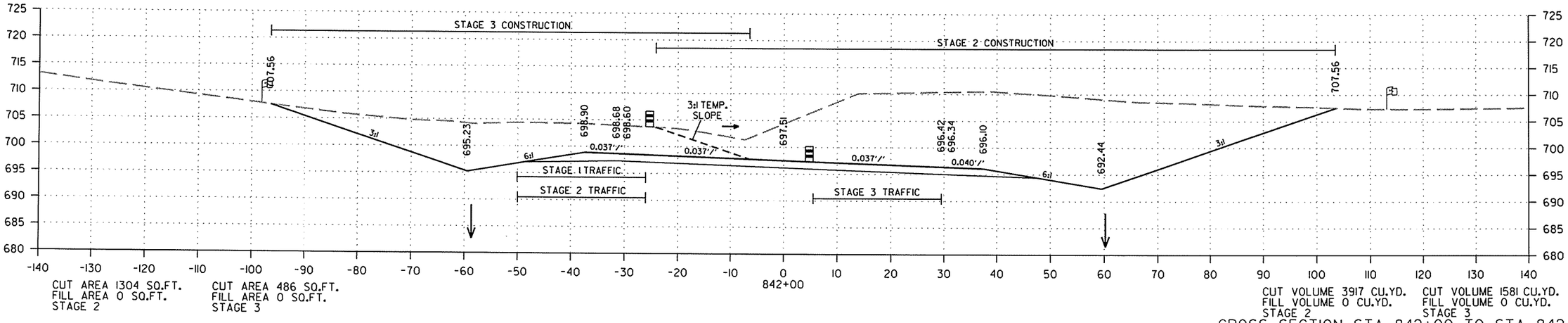
8/8/2014

R050214.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.		050214	278	311

(2) CROSS SECTIONS - HWY. 167





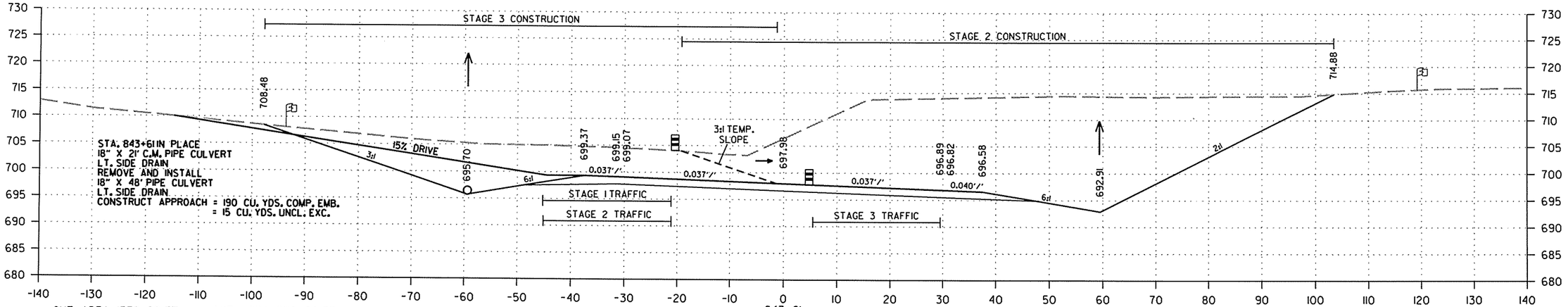
CROSS SECTION STA. 842+00 TO STA. 842+05

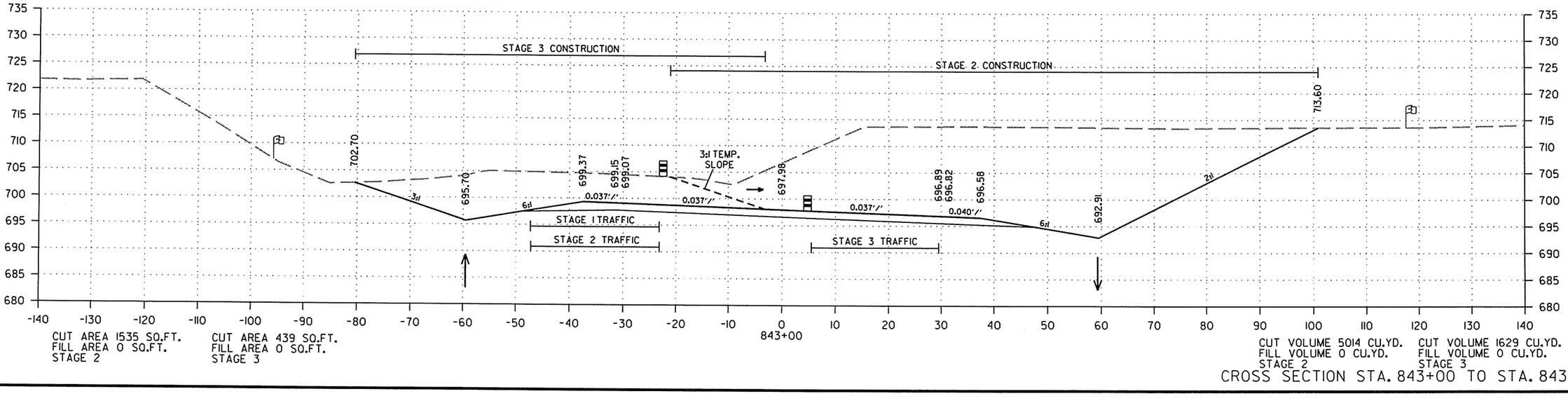
8/8/2014

R050214.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.		050214	279	311

(2) CROSS SECTIONS - HWY. 167





CROSS SECTION STA. 843+00 TO STA. 843+61

8/8/2014

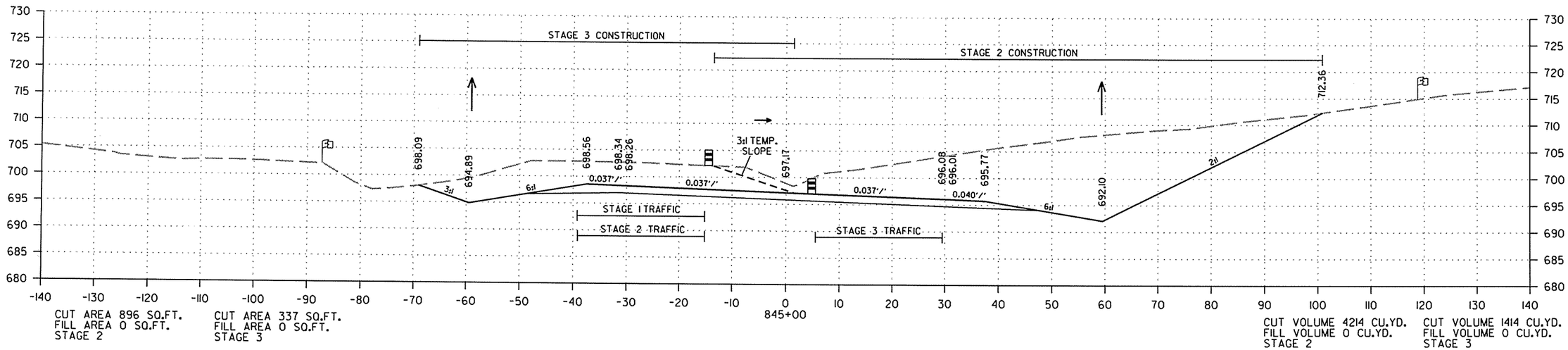
R050214.DGN

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.		050214	280	311

(2) CROSS SECTIONS - HWY. 167

845+74.00 BEGIN
-3.00% LT.DT.GD.
ELEV.=694.00

845+94.00 BEGIN
-8.80% RT.DT.GD.
ELEV.=680.90

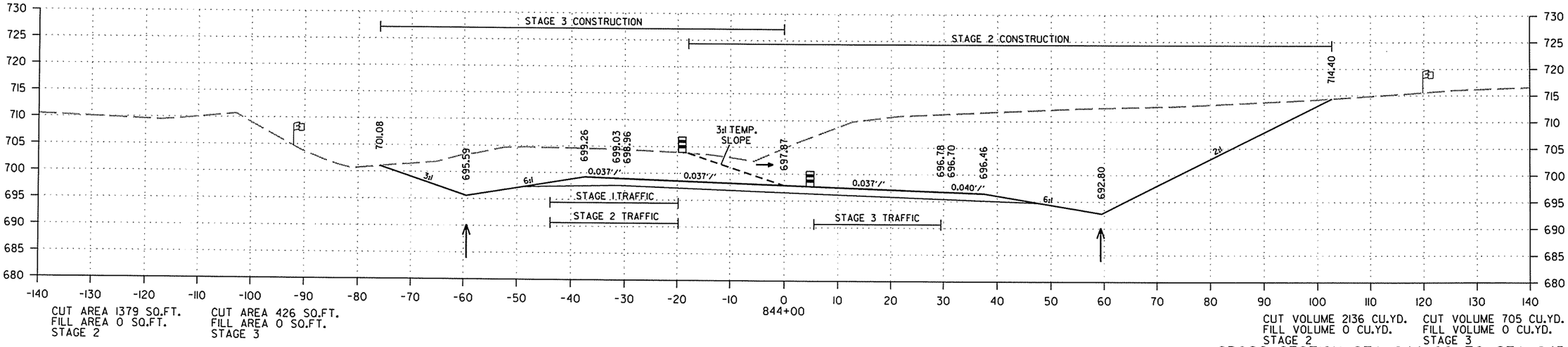


CUT AREA 896 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 2

CUT AREA 337 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 4214 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 2

CUT VOLUME 1414 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3



CUT AREA 1379 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 2

CUT AREA 426 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

CUT VOLUME 2136 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 2

CUT VOLUME 705 CU.YD.
FILL VOLUME 0 CU.YD.
STAGE 3

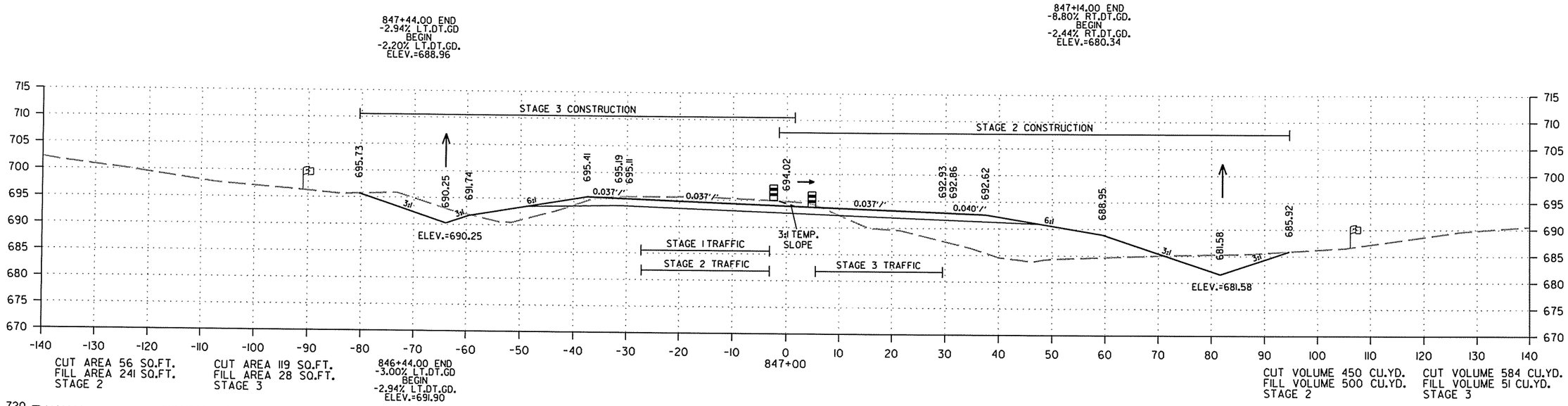
CROSS SECTION STA. 844+00 TO STA. 845+00

8/8/2014

R050214.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.		050214	281	311

(2) CROSS SECTIONS - HWY. 167



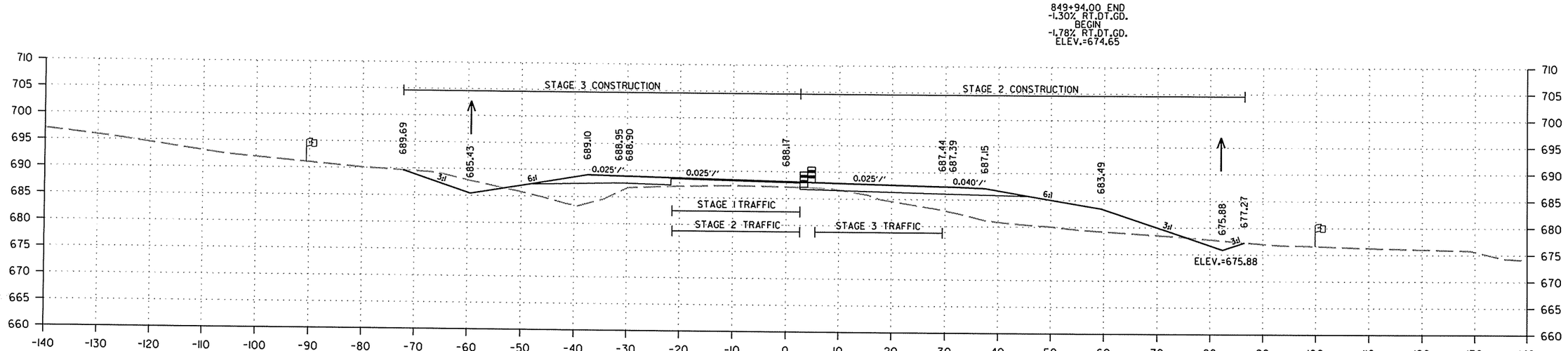
CROSS SECTION STA. 846+00 TO STA. 847+00

8/8/2014

R050214.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.		050214	282	311

(2) CROSS SECTIONS - HWY. 167



CROSS SECTION STA. 848+00 TO STA. 849+00

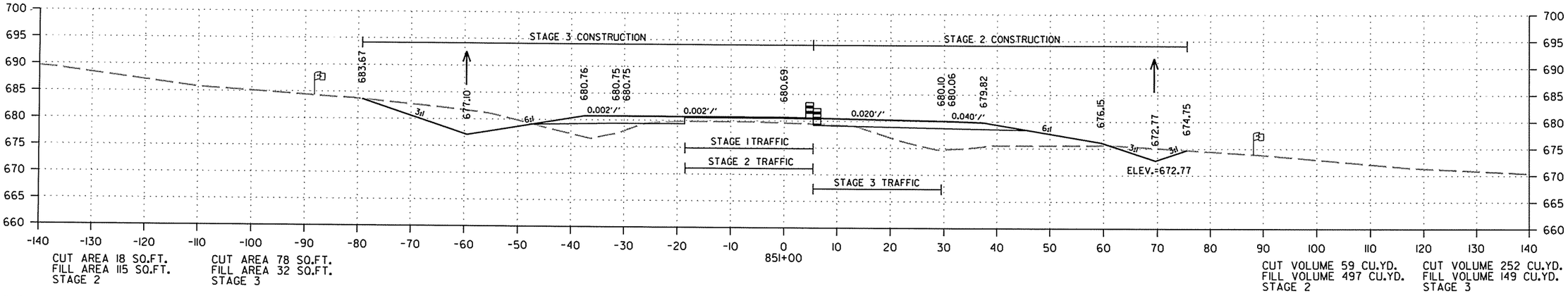
8/8/2014

R050214.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.		050214	283	311

(2) CROSS SECTIONS - HWY. 167

851+94.00 END
-1.78% RT.DT.GD.
BEGIN
-2.85% RT.DT.GD.
ELEV.=671.10

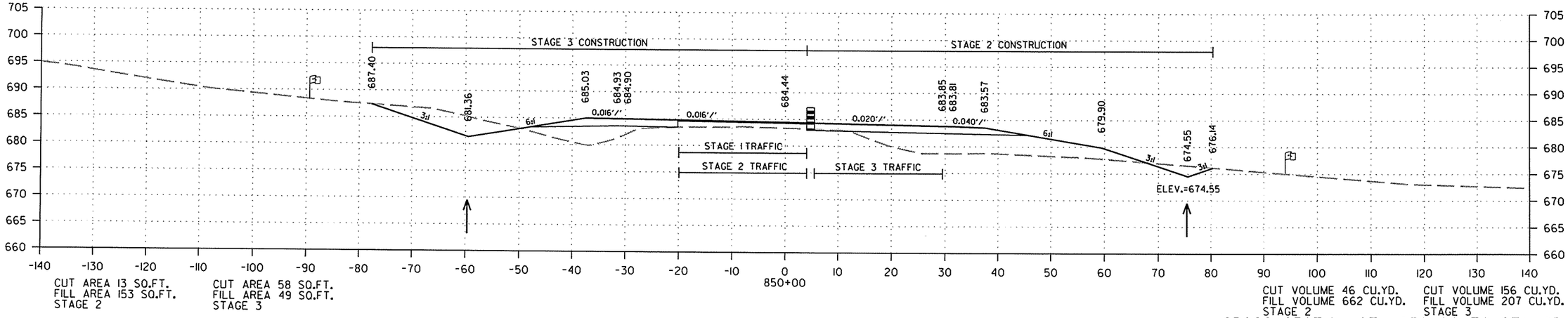


CUT AREA 18 SQ.FT.
FILL AREA 115 SQ.FT.
STAGE 2

CUT AREA 78 SQ.FT.
FILL AREA 32 SQ.FT.
STAGE 3

CUT VOLUME 59 CU.YD.
FILL VOLUME 497 CU.YD.
STAGE 2

CUT VOLUME 252 CU.YD.
FILL VOLUME 149 CU.YD.
STAGE 3



CUT AREA 13 SQ.FT.
FILL AREA 153 SQ.FT.
STAGE 2

CUT AREA 58 SQ.FT.
FILL AREA 49 SQ.FT.
STAGE 3

CUT VOLUME 46 CU.YD.
FILL VOLUME 662 CU.YD.
STAGE 2

CUT VOLUME 156 CU.YD.
FILL VOLUME 207 CU.YD.
STAGE 3

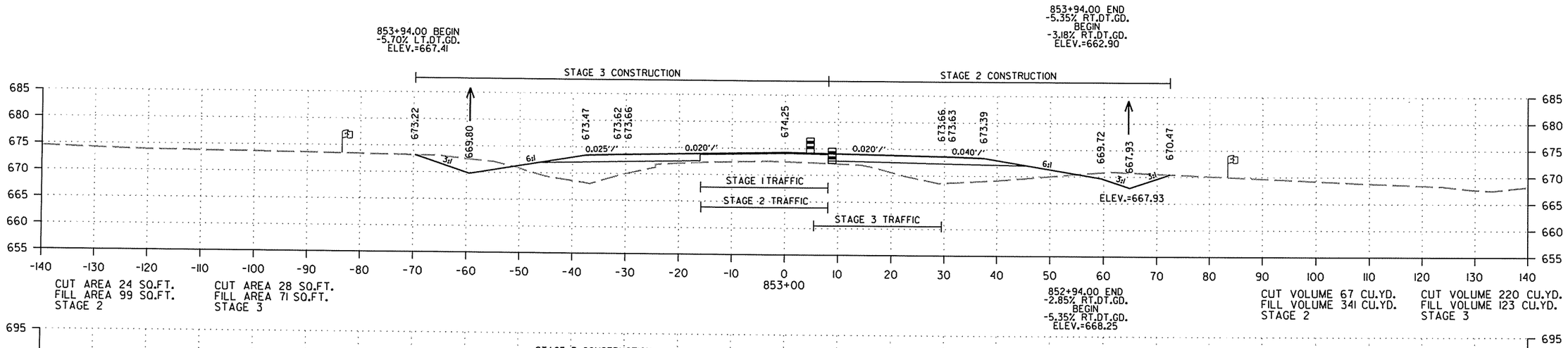
CROSS SECTION STA. 850+00 TO STA. 851+00

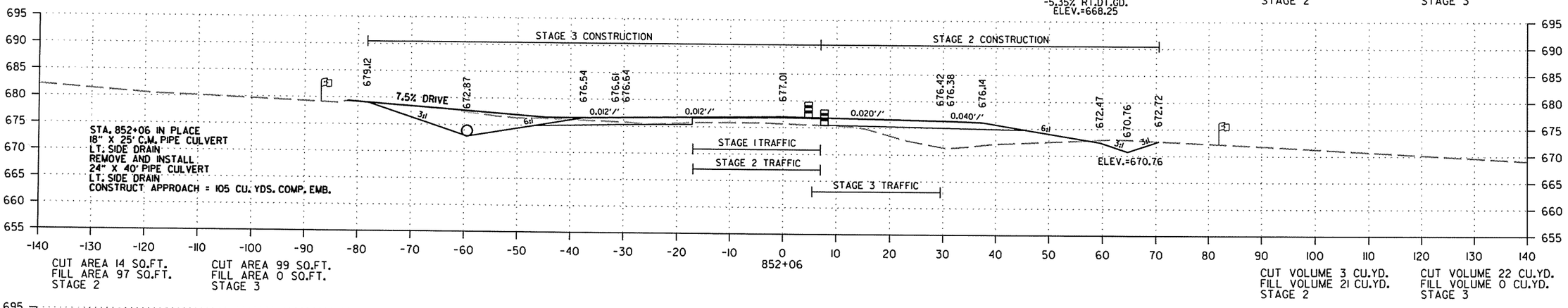
8/8/2014

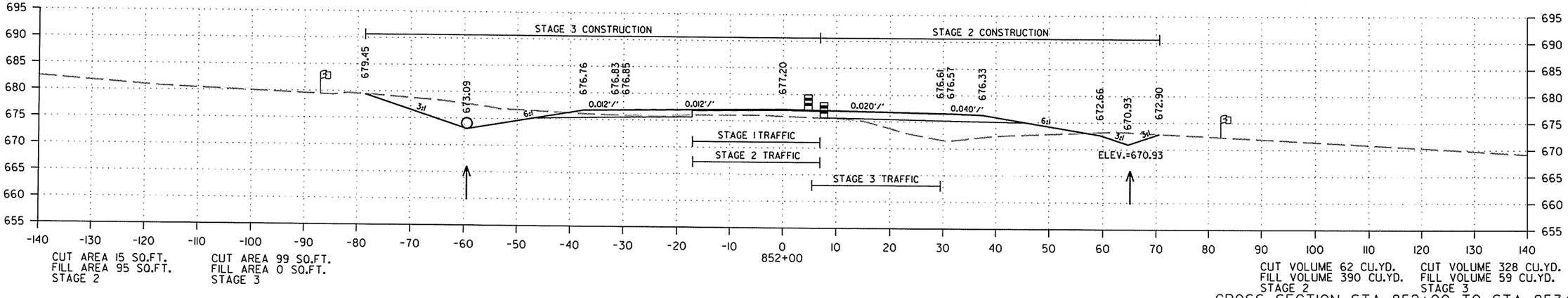
R050214.DGN

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.		050214	284	311

(2) CROSS SECTIONS - HWY. 167







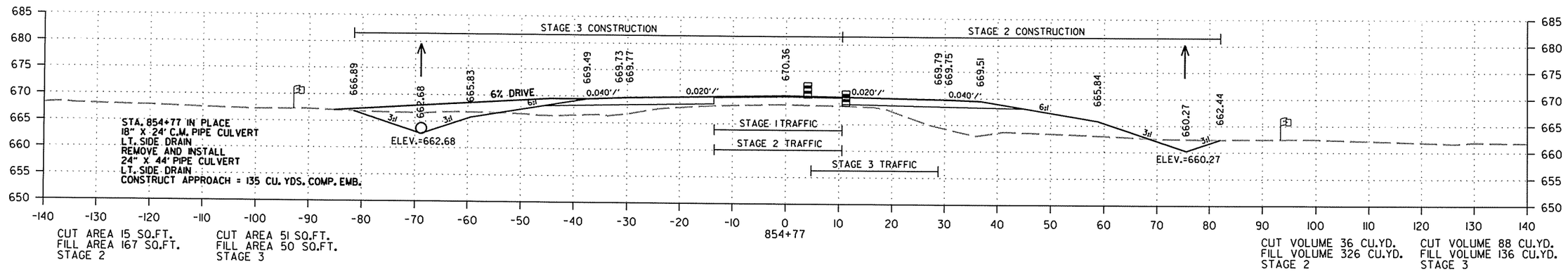
CROSS SECTION STA. 852+00 TO STA. 853+00

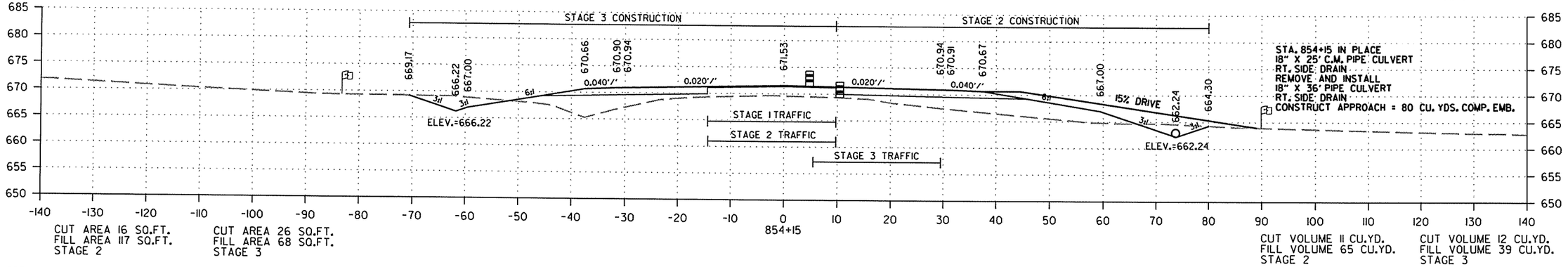
8/8/2014

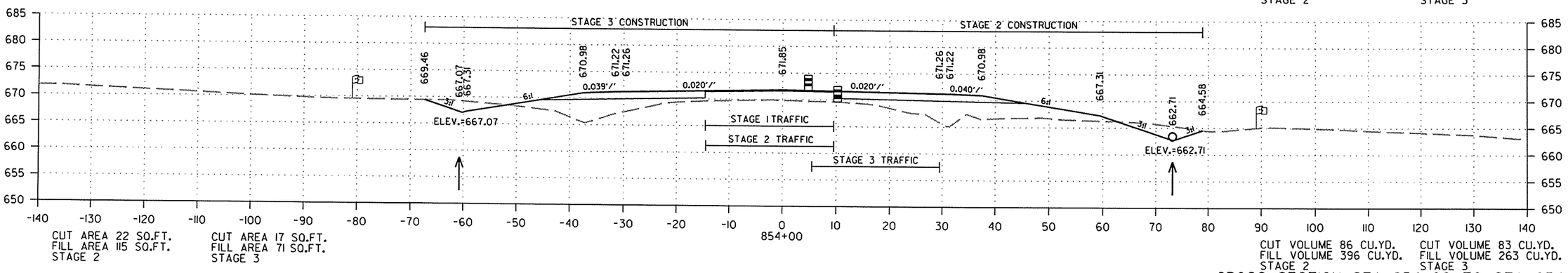
R050214.DGN

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.		050214	285	311

(2) CROSS SECTIONS - HWY. 167







CROSS SECTION STA. 854+00 TO STA. 854+77

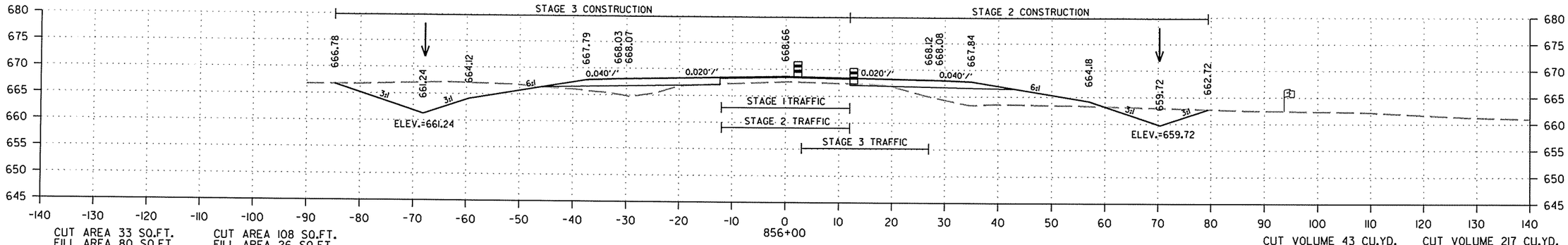
8/8/2014

R050214.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.		050214	286	311

(2) CROSS SECTIONS - HWY. 167

856+94.00 END
2.23% LT.DT.GD.
ELEV.=663.33



CUT AREA 33 SQ.FT.
FILL AREA 80 SQ.FT.
STAGE 2

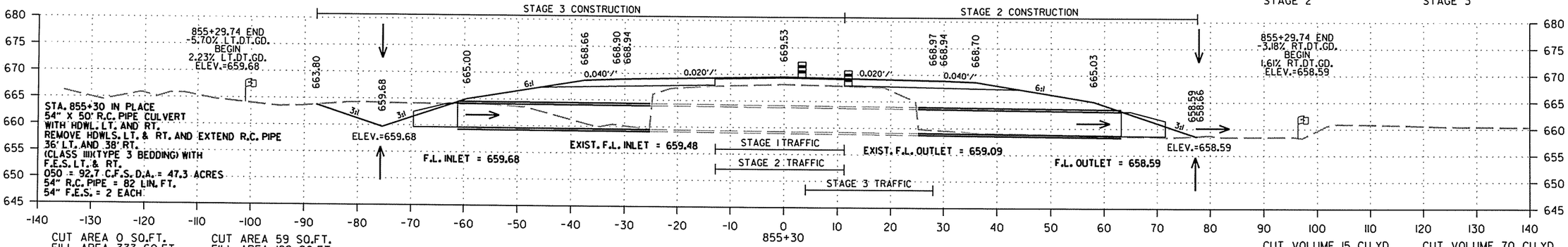
CUT AREA 108 SQ.FT.
FILL AREA 26 SQ.FT.
STAGE 3

CUT VOLUME 43 CU.YD.
FILL VOLUME 535 CU.YD.
STAGE 2

CUT VOLUME 217 CU.YD.
FILL VOLUME 270 CU.YD.
STAGE 3

855+29.74 END
-5.70% LT.DT.GD.
BEGIN
2.23% LT.DT.GD.
ELEV.=659.68

STA. 855+30 IN PLACE
54" X 50' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
36' LT. AND 38' RT.
(CLASS III)(TYPE 3 BEDDING) WITH
F.E.S. LT. & RT.
Q50 = 92.7 C.F.S. D.A. = 47.3 ACRES
54" R.C. PIPE = 82 LIN. FT.
54" F.E.S. = 2 EACH



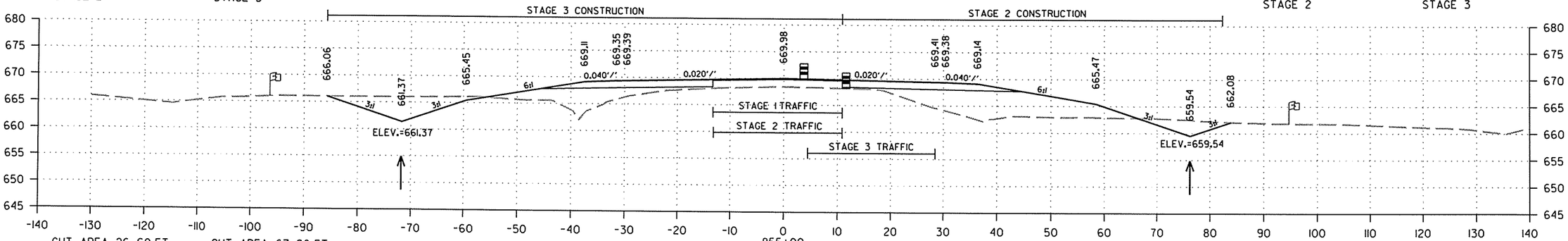
CUT AREA 0 SQ.FT.
FILL AREA 333 SQ.FT.
STAGE 2

CUT AREA 59 SQ.FT.
FILL AREA 182 SQ.FT.
STAGE 3

CUT VOLUME 15 CU.YD.
FILL VOLUME 274 CU.YD.
STAGE 2

CUT VOLUME 70 CU.YD.
FILL VOLUME 142 CU.YD.
STAGE 3

855+29.74 END
-3.18% RT.DT.GD.
BEGIN
1.61% RT.DT.GD.
ELEV.=658.59



CUT AREA 26 SQ.FT.
FILL AREA 160 SQ.FT.
STAGE 2

CUT AREA 67 SQ.FT.
FILL AREA 75 SQ.FT.
STAGE 3

CUT VOLUME 17 CU.YD.
FILL VOLUME 139 CU.YD.
STAGE 2

CUT VOLUME 50 CU.YD.
FILL VOLUME 53 CU.YD.
STAGE 3

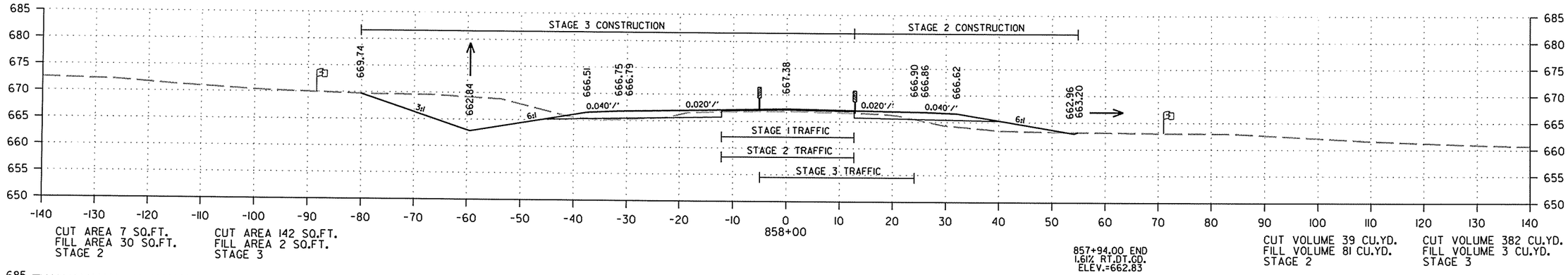
CROSS SECTION STA. 855+00 TO STA. 856+00

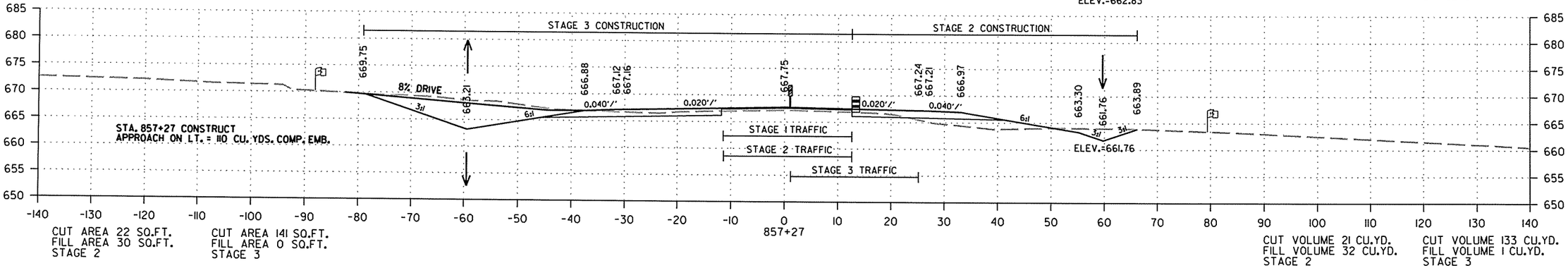
8/8/2014

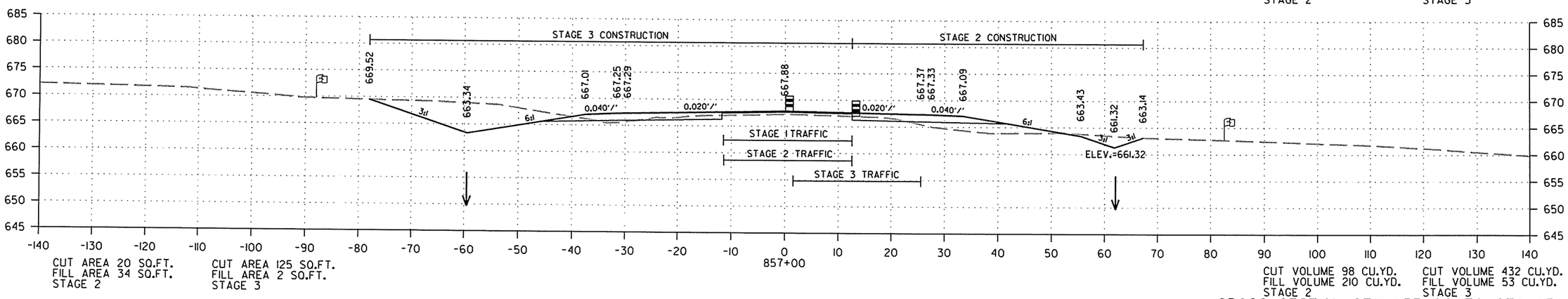
R050214.DGN

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.		050214	287	311

(2) CROSS SECTIONS - HWY. 167







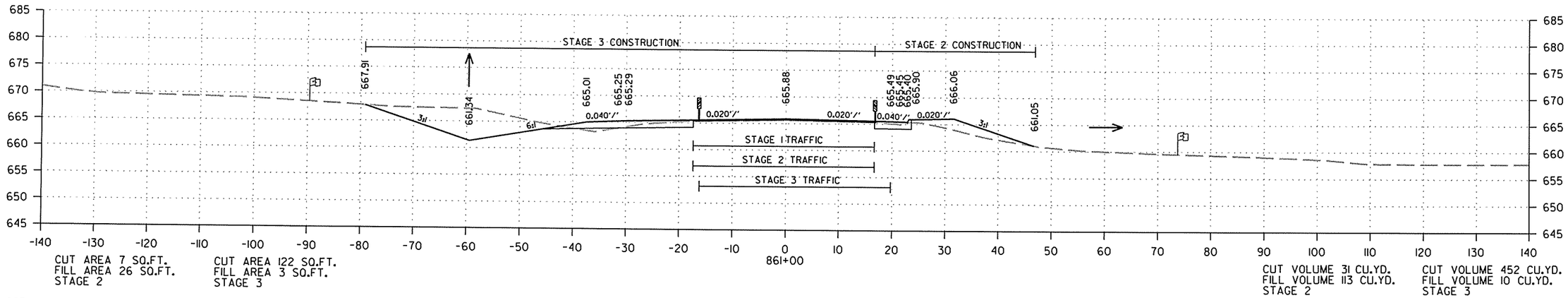
CROSS SECTION STA. 857+00 TO STA. 858+00

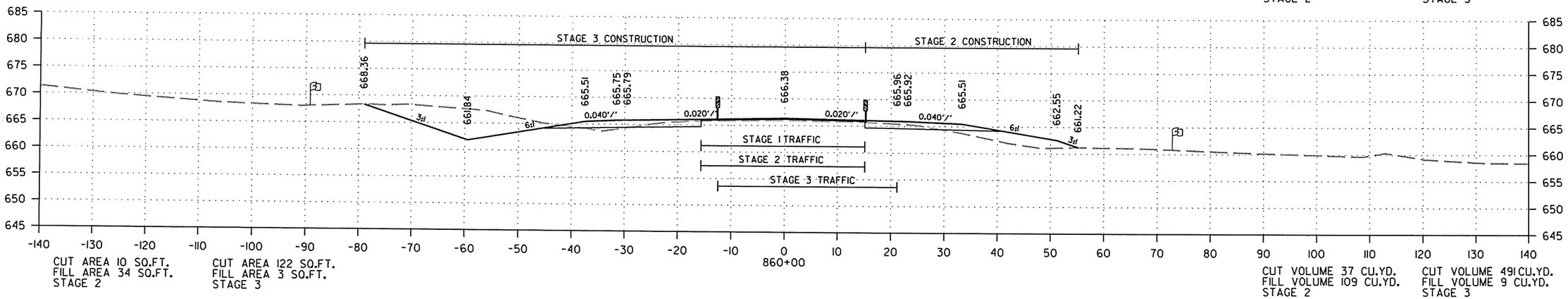
8/8/2014

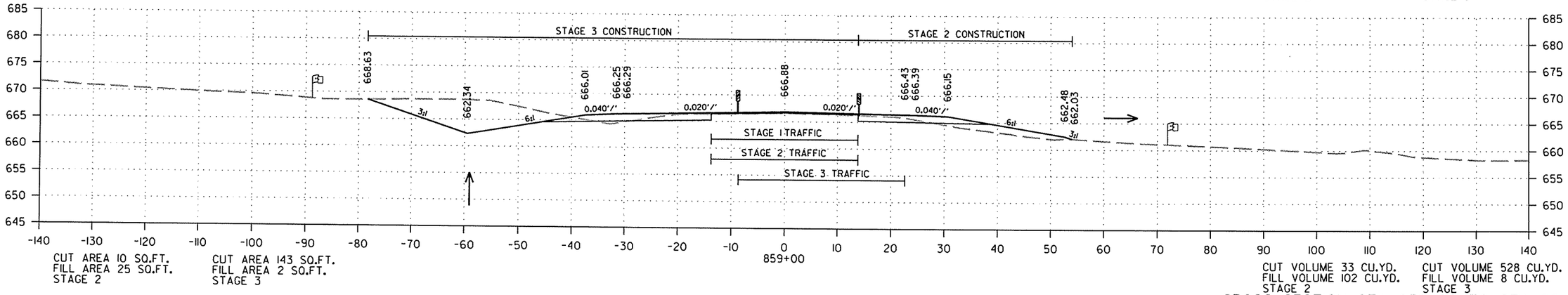
R050214.DGN

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.		050214	288	311

(2) CROSS SECTIONS - HWY. 167







CROSS SECTION STA. 859+00 TO STA. 861+00

8/8/2014

R050214.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.		050214	289	311

(2) CROSS SECTIONS - HWY. 167

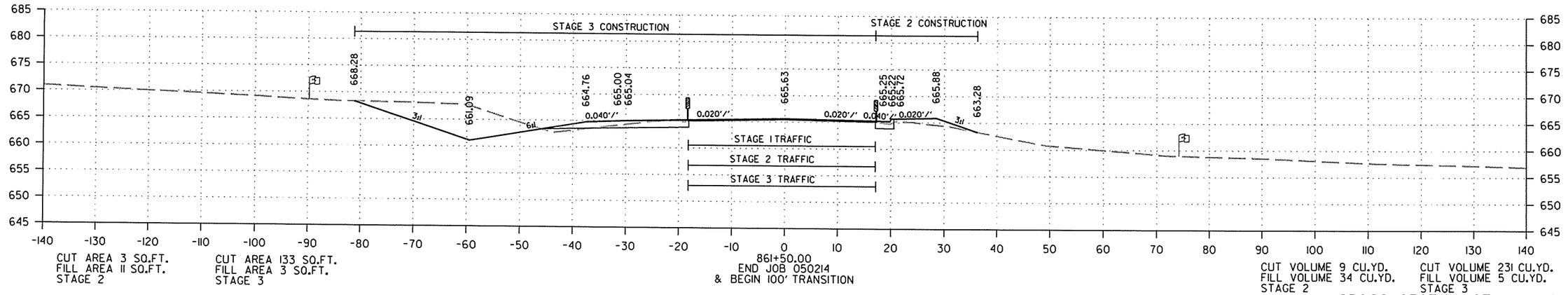
CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 2

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.
STAGE 3

862+50.00
END 100' TRANSITION

CUT VOLUME 6 CU.YD.
FILL VOLUME 21 CU.YD.
STAGE 2

CUT VOLUME 246 CU.YD.
FILL VOLUME 6 CU.YD.
STAGE 3



CUT AREA 3 SQ.FT.
FILL AREA 11 SQ.FT.
STAGE 2

CUT AREA 133 SQ.FT.
FILL AREA 3 SQ.FT.
STAGE 3

861+50.00
END JOB 050214
& BEGIN 100' TRANSITION

CUT VOLUME 9 CU.YD.
FILL VOLUME 34 CU.YD.
STAGE 2

CUT VOLUME 231 CU.YD.
FILL VOLUME 5 CU.YD.
STAGE 3

CROSS SECTION STA. 861+50.00

8/8/2014

R050214.DGN

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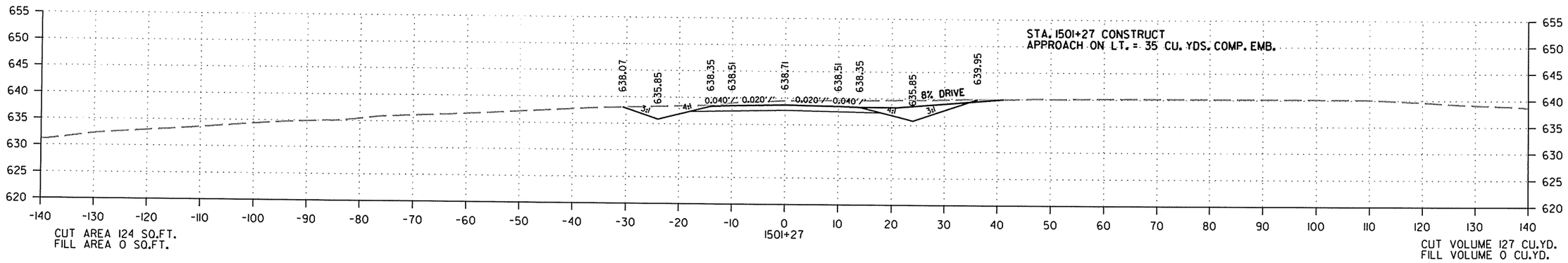
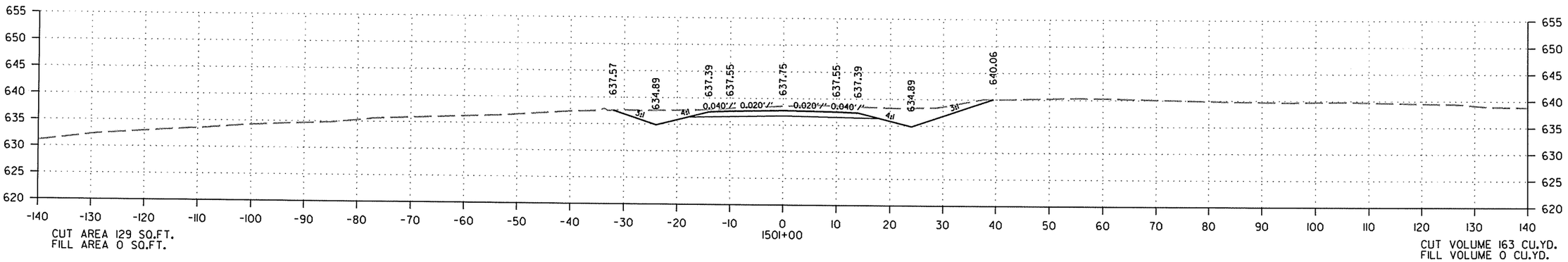
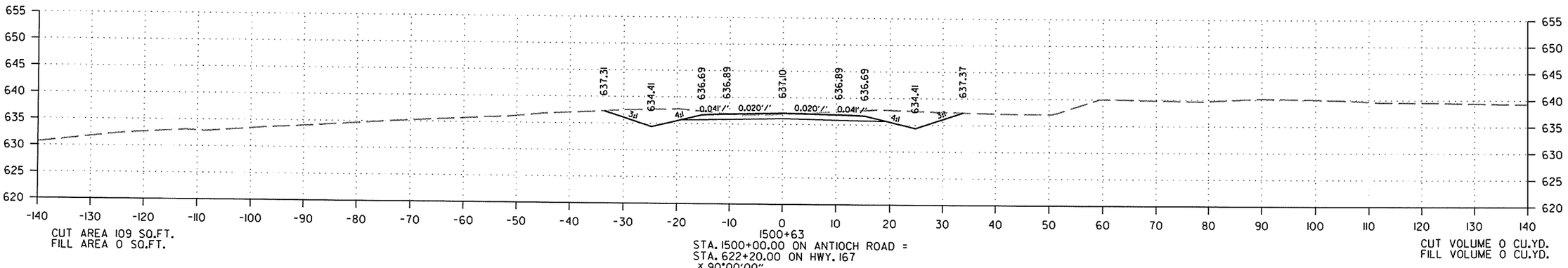
				6	ARK.			
				JOB NO.		050214	290	311

(2) CROSS SECTIONS - ANTIOCH ROAD







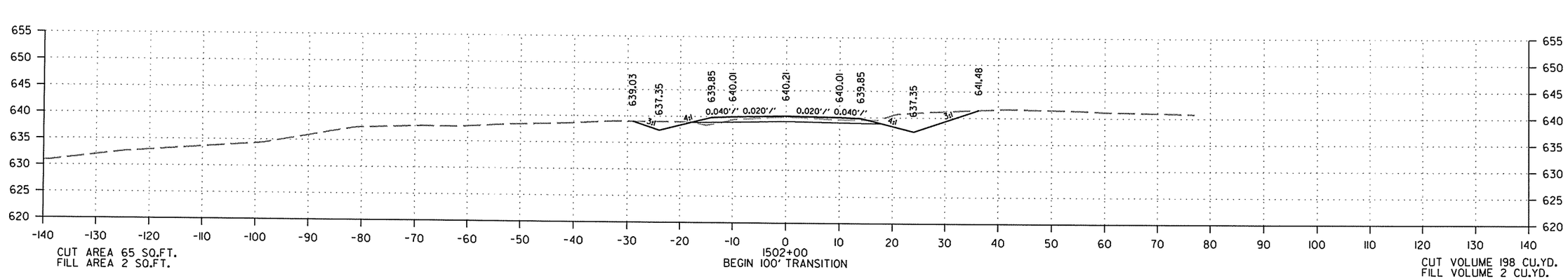
CROSS SECTION STA. 1500+63 TO STA. 1501+27

8/8/2014

R050214.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.		050214	291	311

(2) CROSS SECTIONS - ANTIOCH ROAD



CROSS SECTION STA. 1501+40 TO STA. 1502+00

8/8/2014

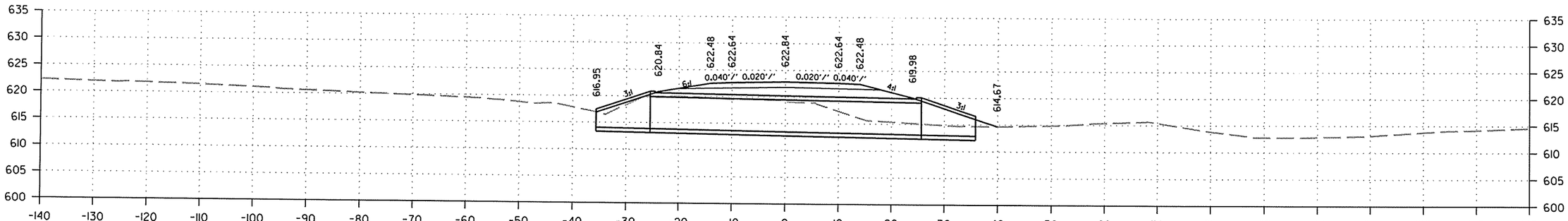
R050214.DGN

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.		050214	292	311

(2) CROSS SECTIONS - MISTY LANE

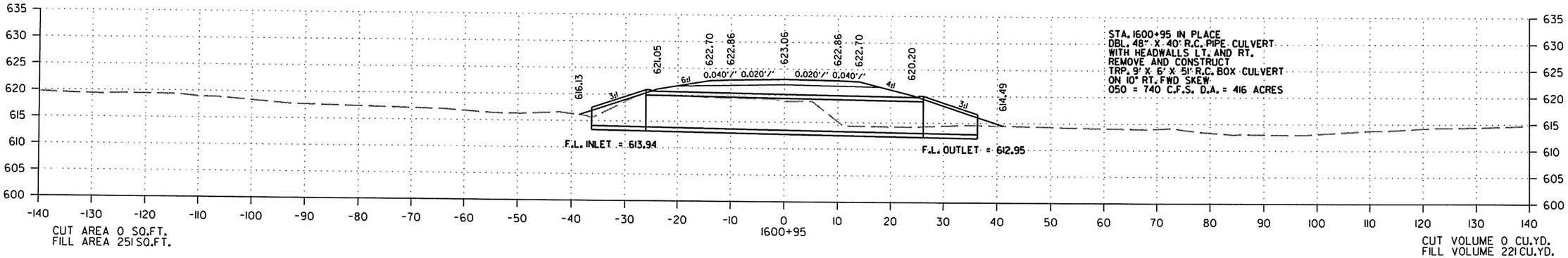
1601+09.80 BEGIN
1.19% LT.DT.GD.
ELEV.=618.07

1601+09.80 BEGIN
1.19% RT.DT.GD.
ELEV.=618.07



CUT AREA 0 SQ.FT.
FILL AREA 196 SQ.FT.

CUT VOLUME 0 CU.YD.
FILL VOLUME 41 CU.YD.



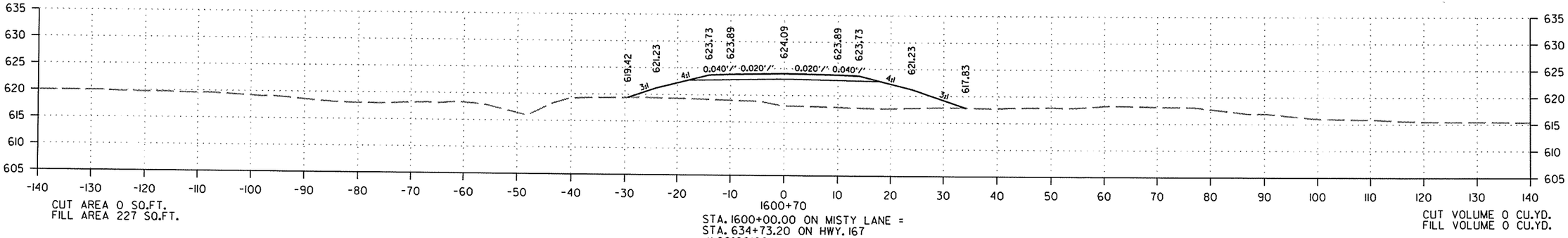
F.L. INLET = 613.94

F.L. OUTLET = 612.95

STA. 1600+95 IN PLACE
DBL. 48" X 40' R.C. PIPE CULVERT
WITH HEADWALLS LT. AND RT.
REMOVE AND CONSTRUCT
TRP. 9' X 6' X 51' R.C. BOX CULVERT
ON 10° RT. FWD SKEW
050 = 740 C.F.S. D.A. = 416 ACRES

CUT AREA 0 SQ.FT.
FILL AREA 251 SQ.FT.

CUT VOLUME 0 CU.YD.
FILL VOLUME 221 CU.YD.



CUT AREA 0 SQ.FT.
FILL AREA 227 SQ.FT.

STA. 1600+00.00 ON MISTY LANE =
STA. 634+73.20 ON HWY. 167
∡ 90°00'00"

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.

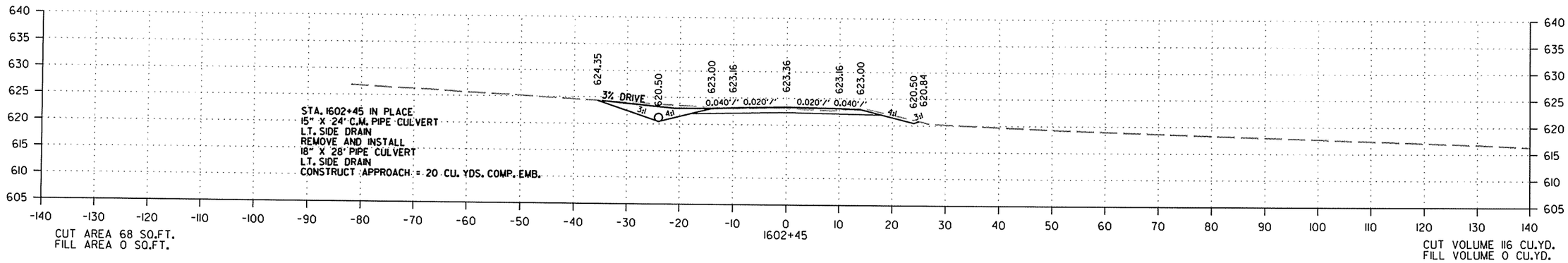
CROSS SECTION STA. 1600+70 TO STA. 1601+00

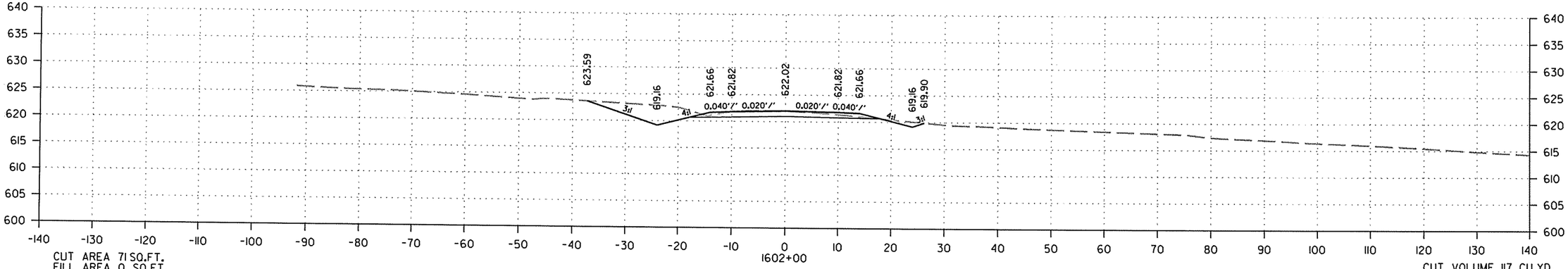
8/8/2014

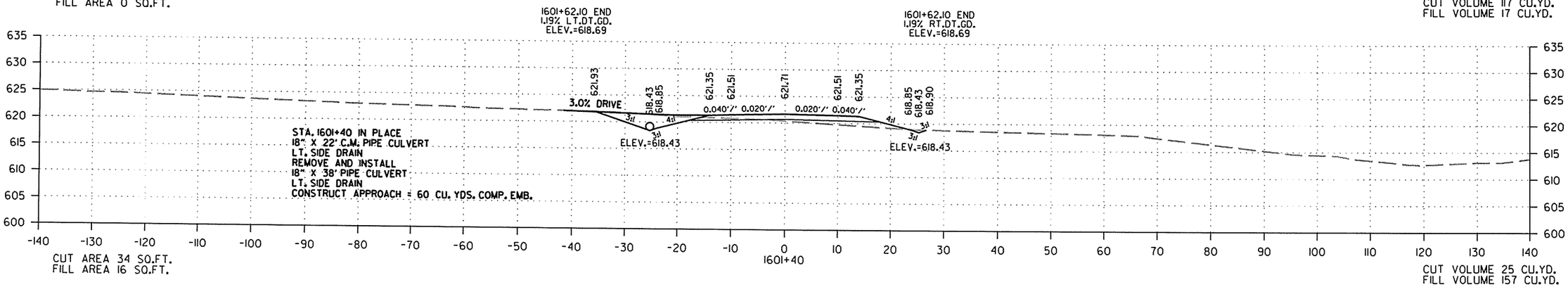
R050214.DGN

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.		050214	293	311

(2) CROSS SECTIONS - MISTY LANE







CROSS SECTION STA. 1601+40 TO STA. 1602+45

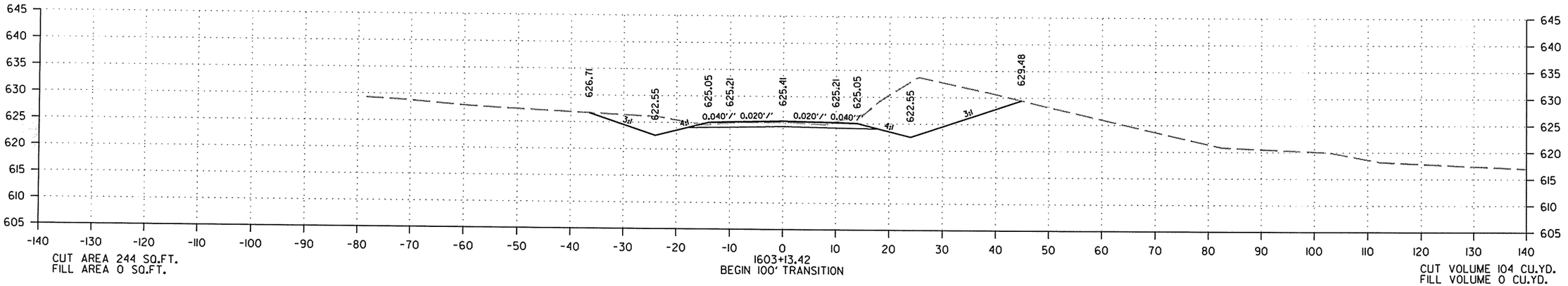
8/8/2014

R050214.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.		050214	294	311

(2) CROSS SECTIONS - MISTY LANE

1604+13.42
END 100' TRANSITION



CROSS SECTION STA. 1603+00 TO STA. 1603+13.42

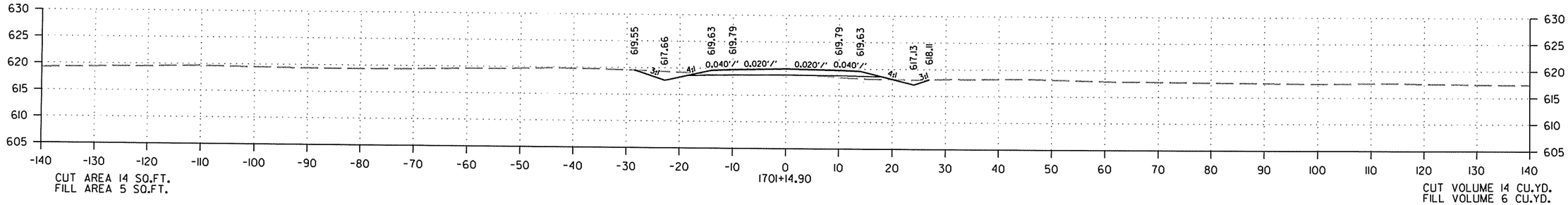
8/8/2014

R050214.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.		050214	295	311

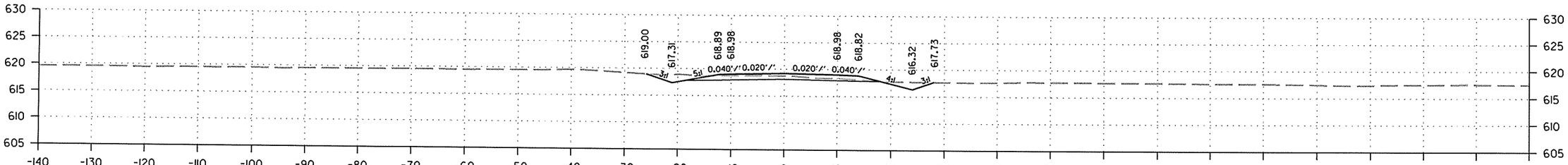
(2) CROSS SECTIONS - BELLER LAKE LANE

STA. 1702+84.40 ON BELLER LAKE LANE =
STA. 637+07.20 ON HWY. 167
∡ 90°00'00"



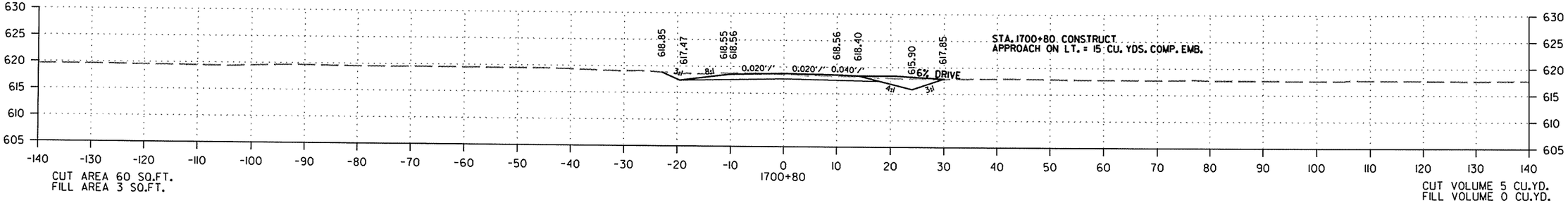
CUT AREA 14 SQ.FT.
FILL AREA 5 SQ.FT.

CUT VOLUME 14 CU.YD.
FILL VOLUME 6 CU.YD.



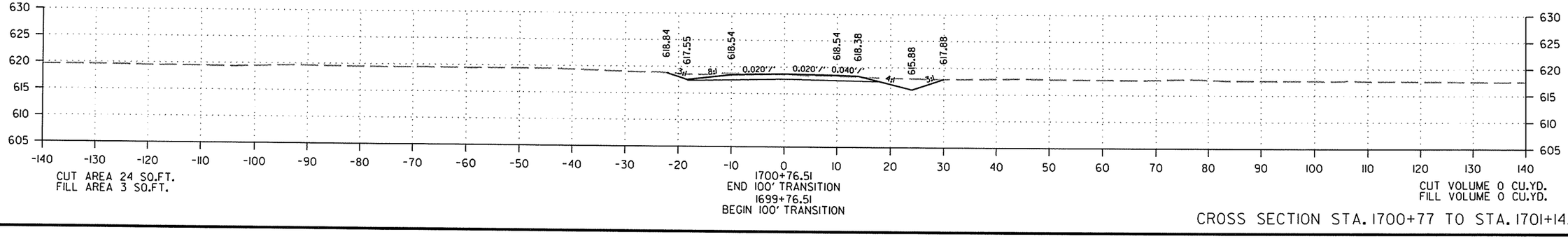
CUT AREA 36 SQ.FT.
FILL AREA 15 SQ.FT.

CUT VOLUME 36 CU.YD.
FILL VOLUME 7 CU.YD.



CUT AREA 60 SQ.FT.
FILL AREA 3 SQ.FT.

CUT VOLUME 5 CU.YD.
FILL VOLUME 0 CU.YD.



CUT AREA 24 SQ.FT.
FILL AREA 3 SQ.FT.

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.

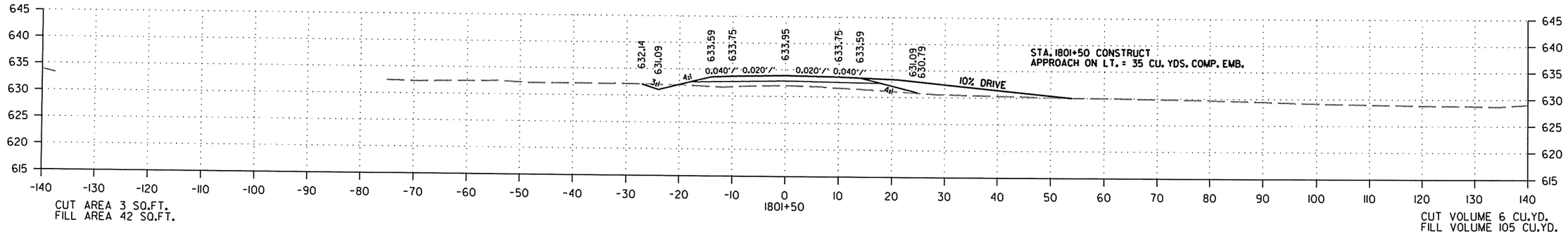
CROSS SECTION STA. 1700+77 TO STA. 1701+14.90

8/8/2014

R050214.DGN

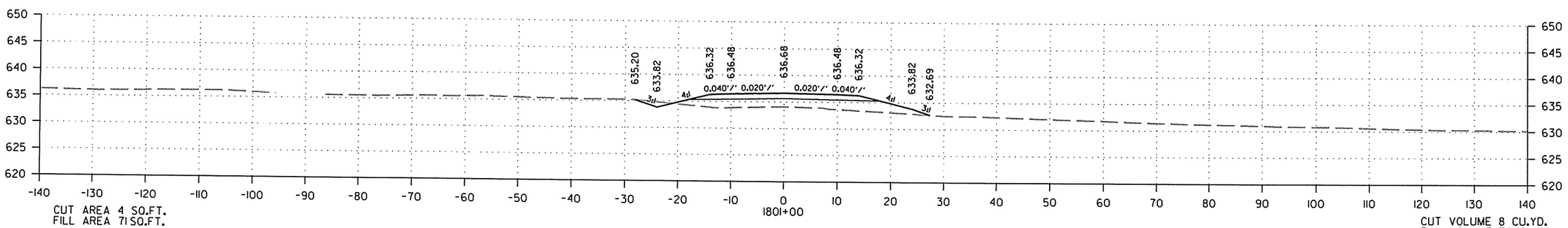
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	296	311

(2) CROSS SECTIONS - COOTS LANE



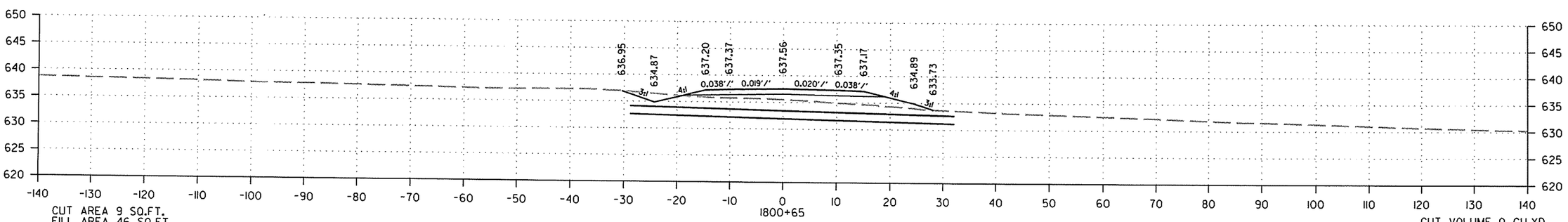
CUT AREA 3 SQ.FT.
FILL AREA 42 SQ.FT.

CUT VOLUME 6 CU.YD.
FILL VOLUME 105 CU.YD.



CUT AREA 4 SQ.FT.
FILL AREA 71 SQ.FT.

CUT VOLUME 8 CU.YD.
FILL VOLUME 76 CU.YD.



CUT AREA 9 SQ.FT.
FILL AREA 46 SQ.FT.

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.

STA. 1800+00.00 ON COOTS LANE =
STA. 650+55.00 ON HWY. 167
∡ 90°00'00"

CROSS SECTION STA. 1800+65 TO STA. 1801+50

8/8/2014

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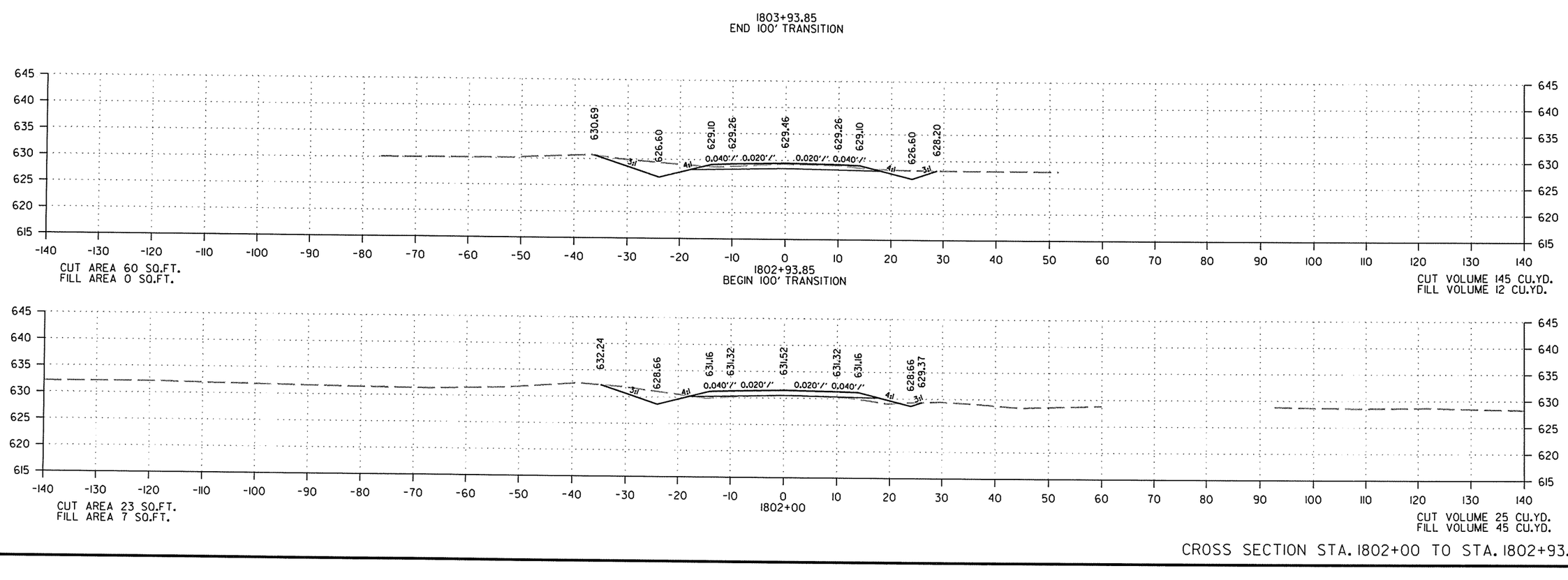
				6	ARK.			
				JOB NO.		050214	297	311

(2) CROSS SECTIONS - COOTS LANE



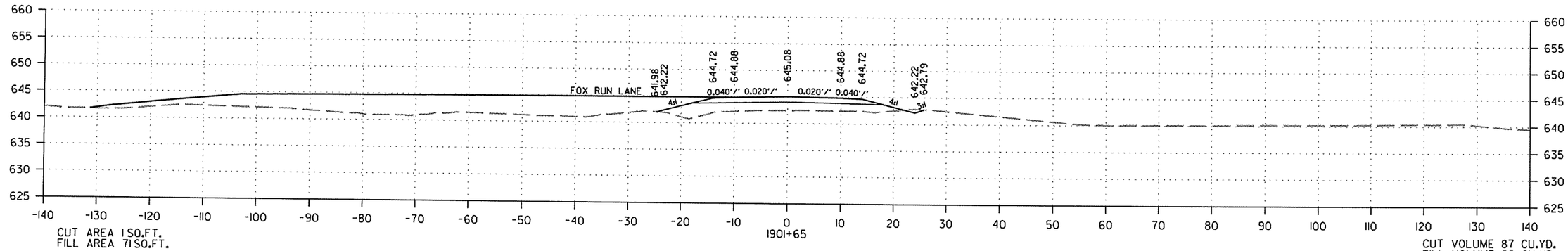
CROSS SECTION STA. 1802+00 TO STA. 1802+93.85

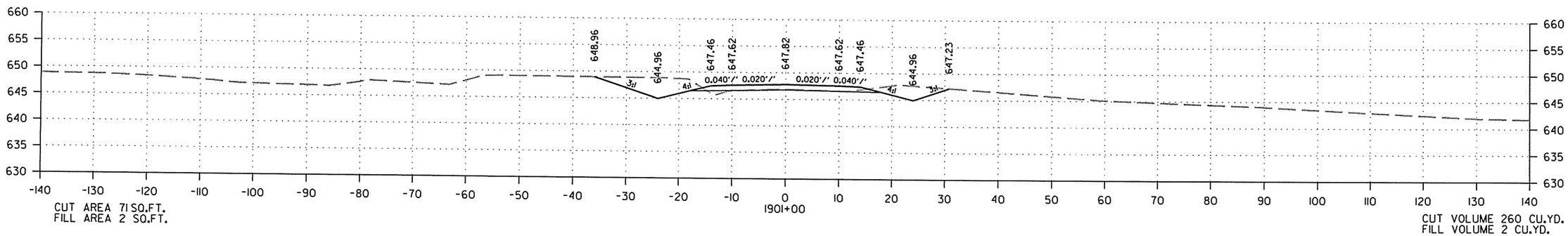
8/8/2014

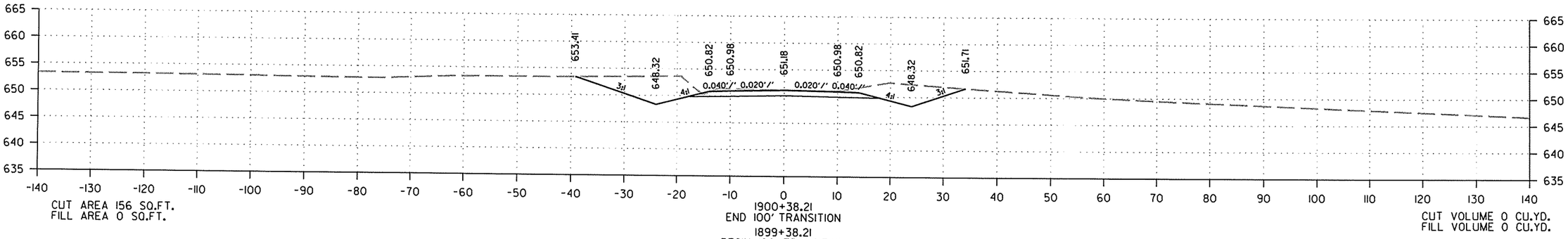
R050214.DGN

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.		050214	298	311

(2) CROSS SECTIONS - RIM ROCK ROAD







CROSS SECTION STA. 1900+38.21 TO STA. 1901+65

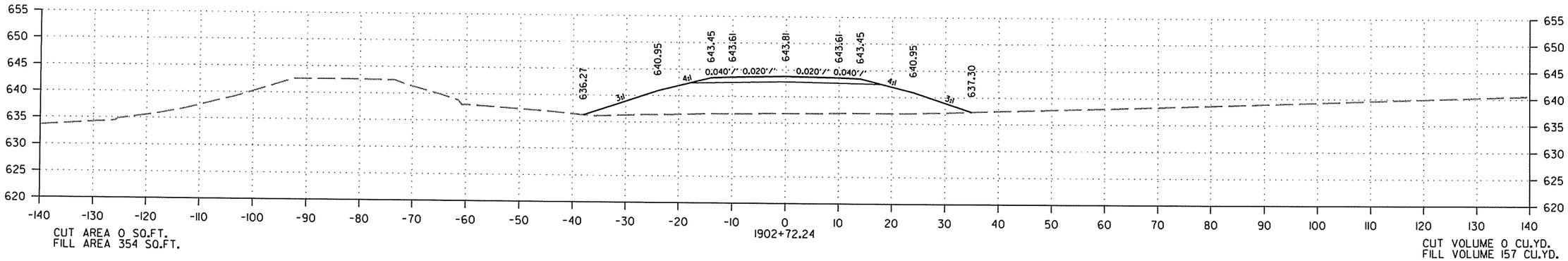
8/8/2014

R050214.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.		050214	299	311

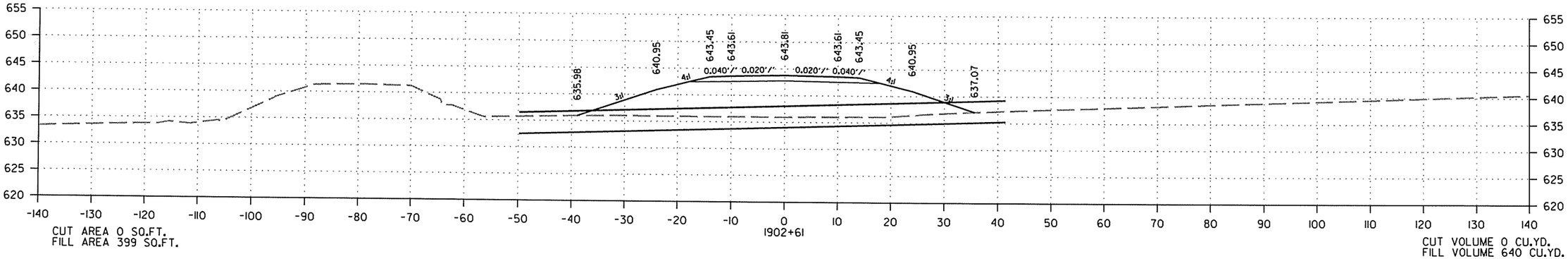
(2) CROSS SECTIONS - RIM ROCK ROAD

STA. 1903+43.60 ON RIM ROCK ROAD =
STA. 697+95.00 ON HWY. 167
Δ 90°00'00"



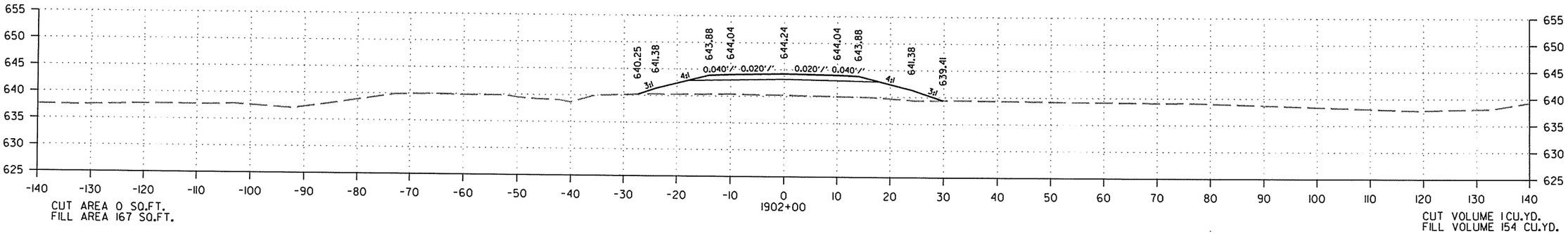
CUT AREA 0 SQ.FT.
FILL AREA 354 SQ.FT.

CUT VOLUME 0 CU.YD.
FILL VOLUME 157 CU.YD.



CUT AREA 0 SQ.FT.
FILL AREA 399 SQ.FT.

CUT VOLUME 0 CU.YD.
FILL VOLUME 640 CU.YD.



CUT AREA 0 SQ.FT.
FILL AREA 167 SQ.FT.

CUT VOLUME 1 CU.YD.
FILL VOLUME 154 CU.YD.

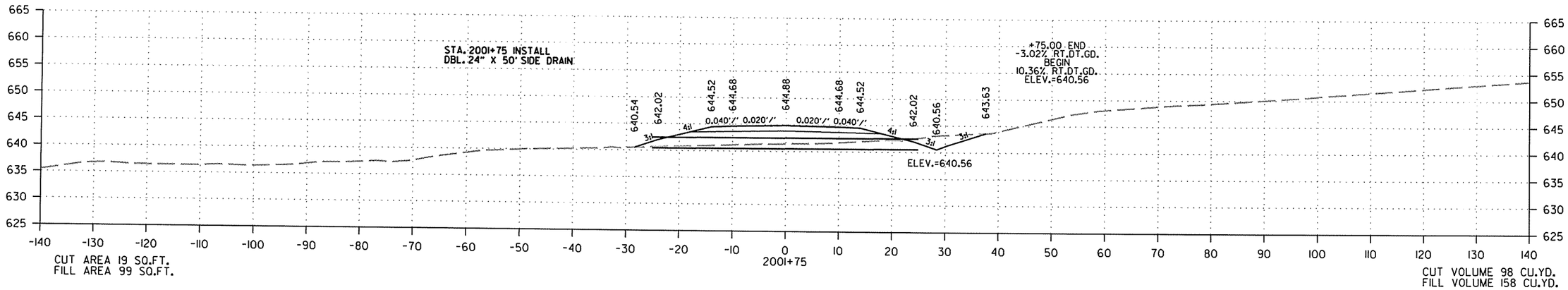
CROSS SECTION STA. 1902+00 TO STA. 1902+72.24

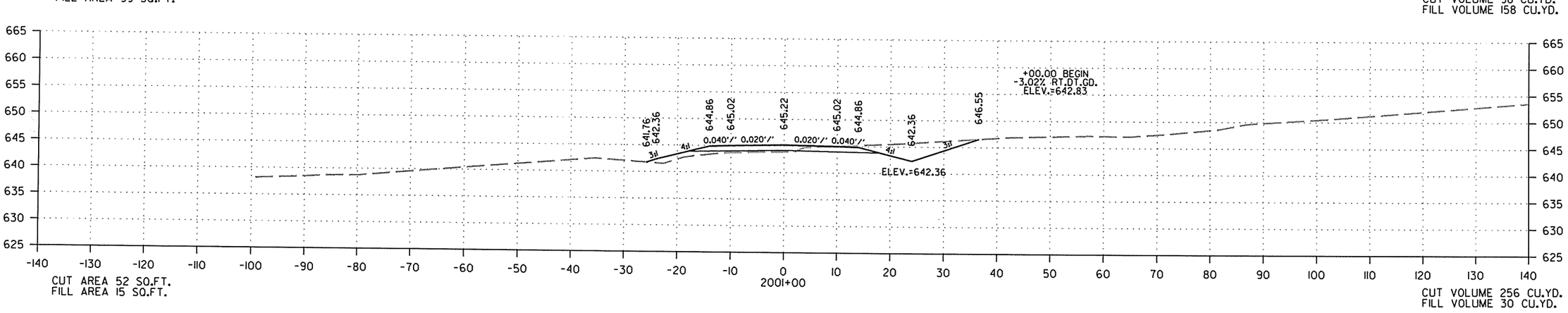
8/8/2014

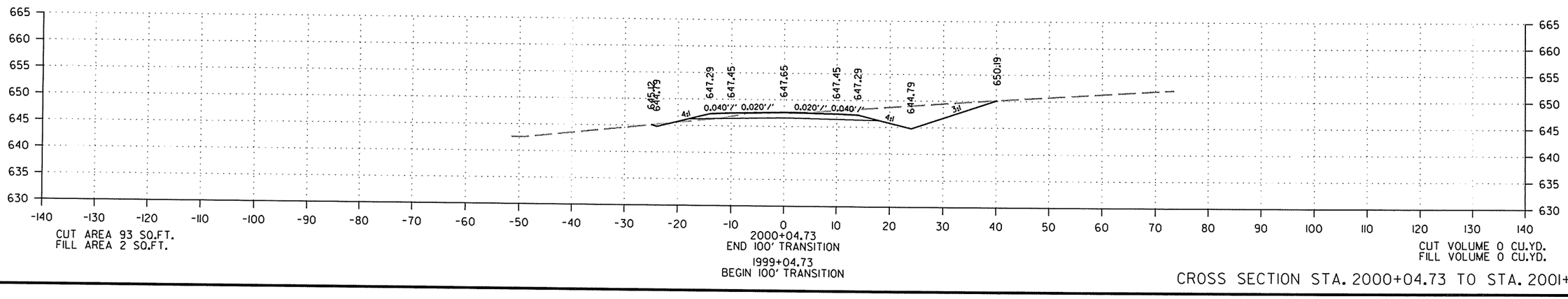
R050214.DGN

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.		050214	300	311

(2) CROSS SECTIONS - FOX RUN LANE







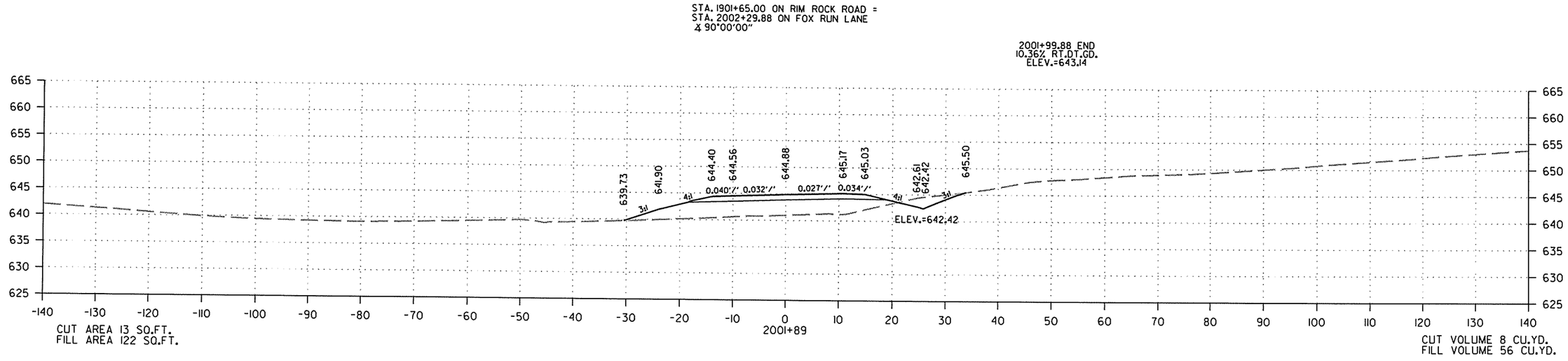
CROSS SECTION STA. 2000+04.73 TO STA. 2001+75

8/8/2014

R050214.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.		050214	301	311

(2) CROSS SECTIONS - FOX RUN LANE



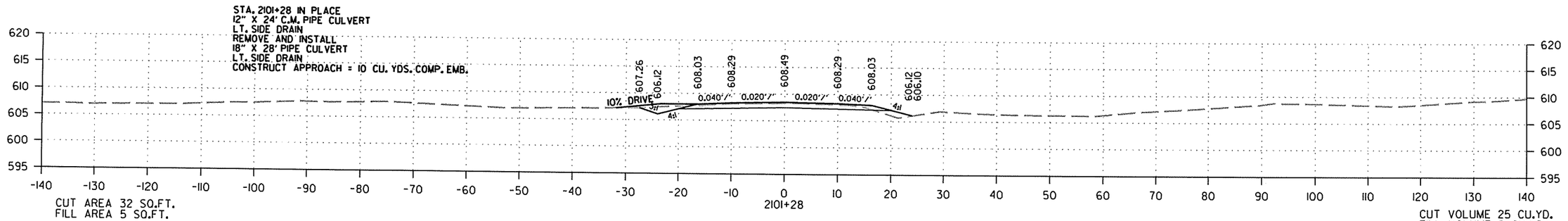
CROSS SECTION STA. 2001+89 TO STA. 2001+89

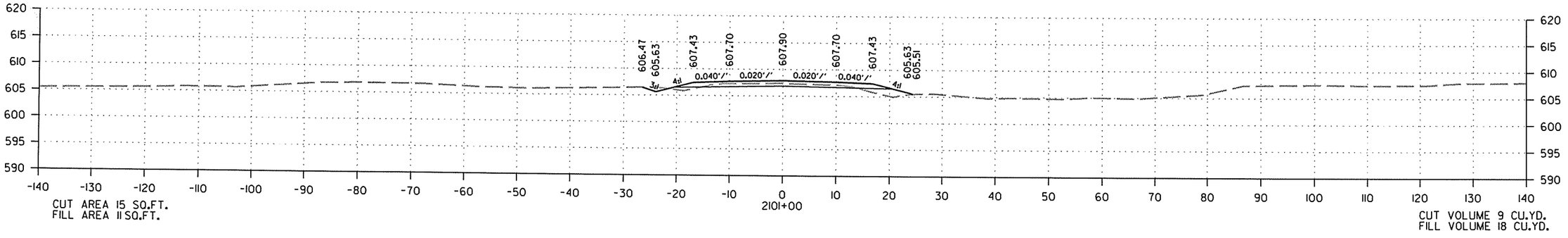
8/8/2014

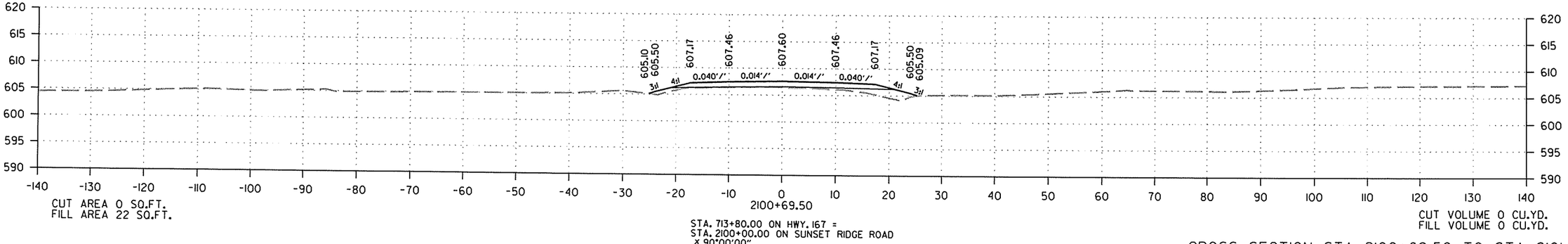
R050214.DGN

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.		050214	302	311

(2) CROSS SECTIONS - SUNSET RIDGE ROAD







STA. 713+80.00 ON HWY. 167 =
STA. 2100+00.00 ON SUNSET RIDGE ROAD
∡ 90°00'00"

CROSS SECTION STA. 2100+69.50 TO STA. 2101+28

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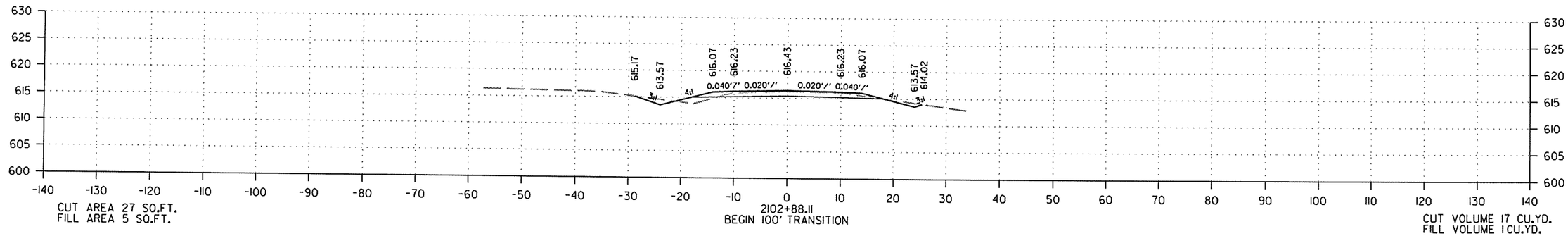
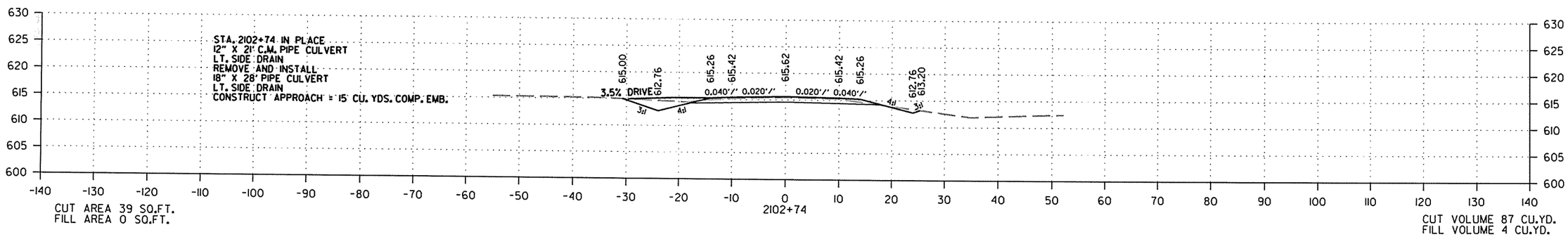
R050214.DGN

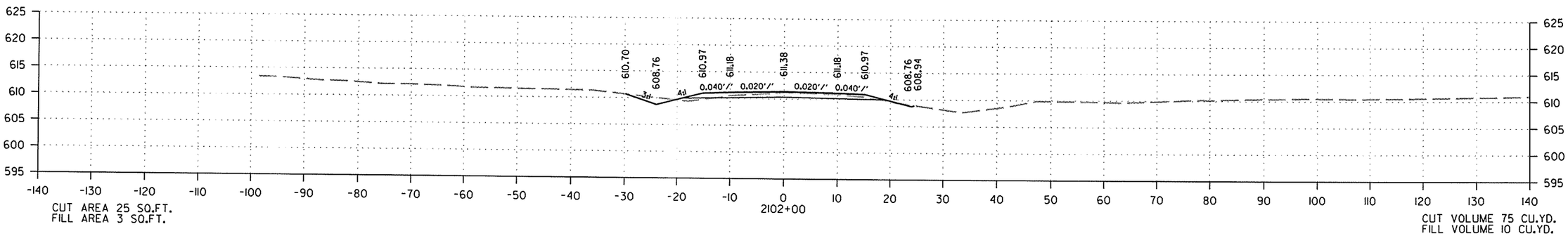
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	303	311

(2) CROSS SECTIONS - SUNSET RIDGE ROAD

2103+88.11
END 100' TRANSITION







CROSS SECTION STA. 2102+00 TO STA. 2102+88.11

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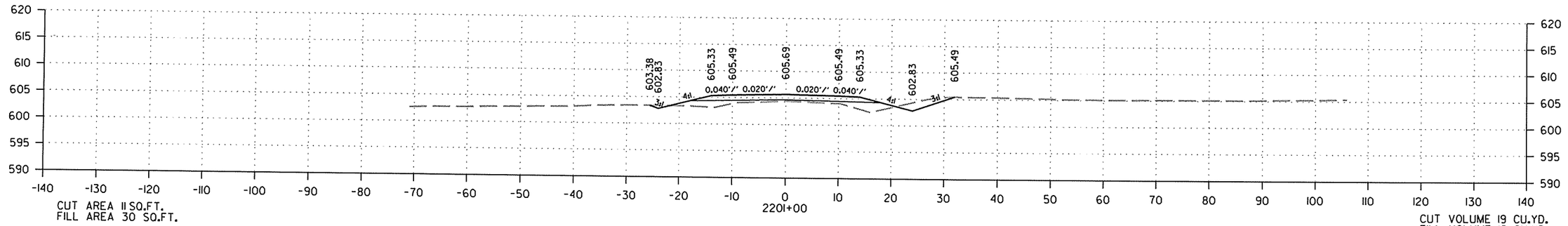
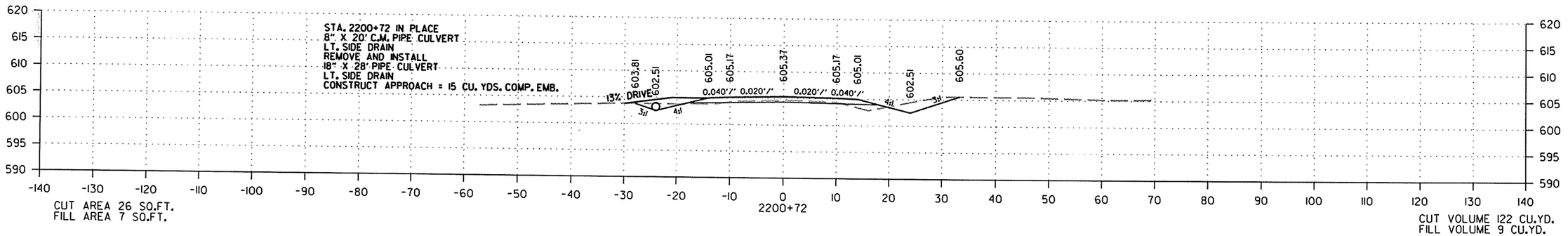
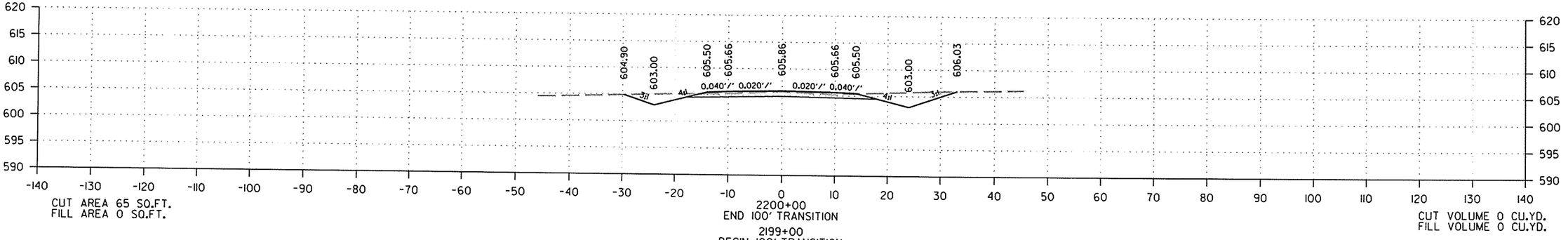
R050214.DGN

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.		050214	304	311

(2) CROSS SECTIONS - SANDTOWN ROAD







CROSS SECTION STA.2200+00 TO STA. 2201+00

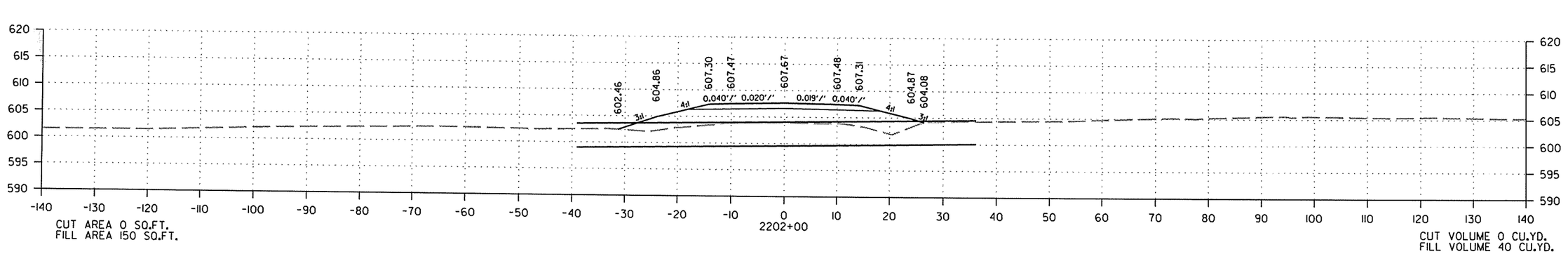
8/8/2014

R050214.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.		050214	305	311

(2) CROSS SECTIONS - SANDTOWN ROAD

STA. 2202+68.02 ON SANDTOWN ROAD =
STA. 714+91.75 ON HWY. 167
Δ 90°00'00.00"



CROSS SECTION STA.2201+93 TO STA. 2202+68

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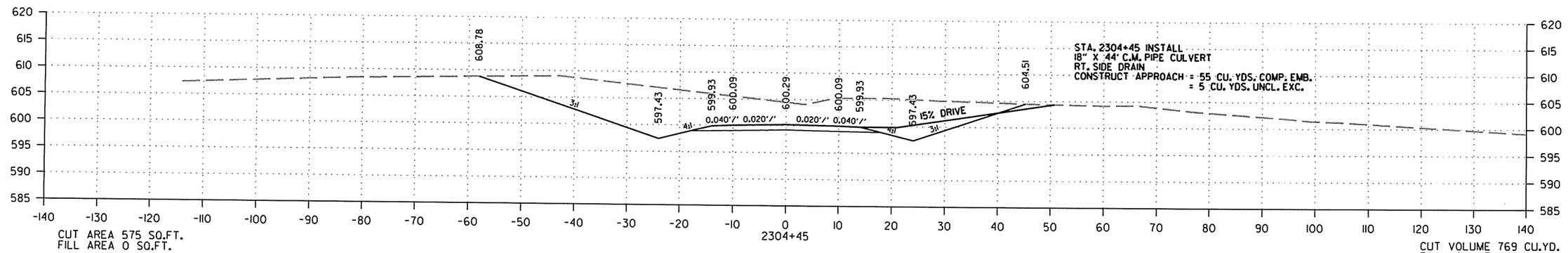
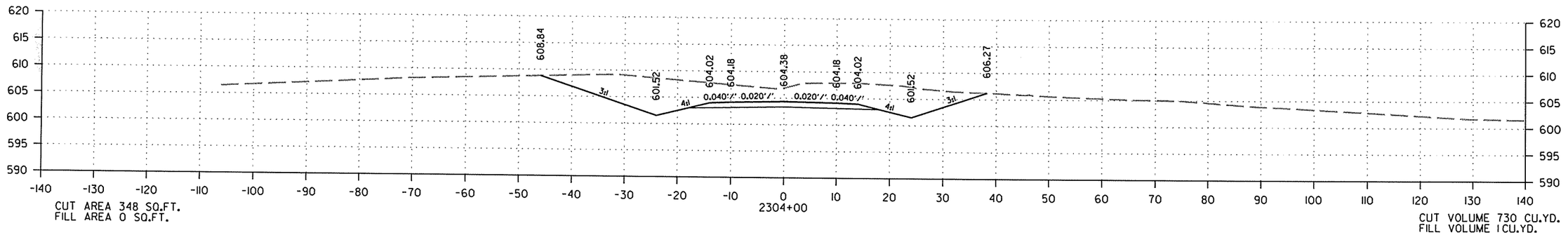
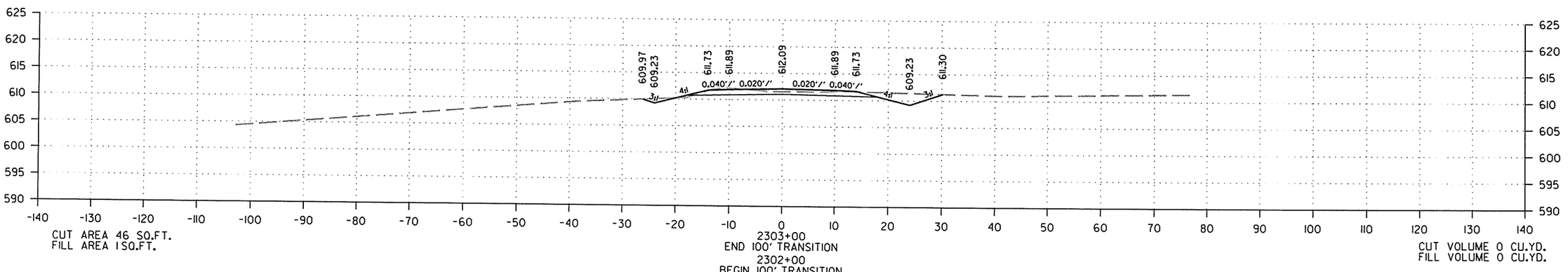
R050214.DGN

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.		050214	306	311

(2) CROSS SECTIONS - ARROWHEAD LANE







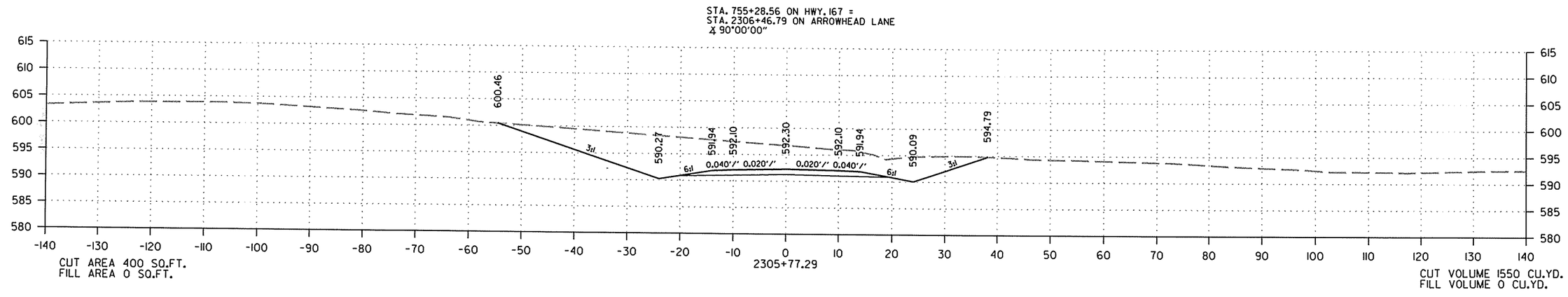
CROSS SECTION STA. 2303+00 TO STA. 2304+45

8/8/2014

R050214.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.		050214	307	311

(2) CROSS SECTIONS - ARROWHEAD LANE



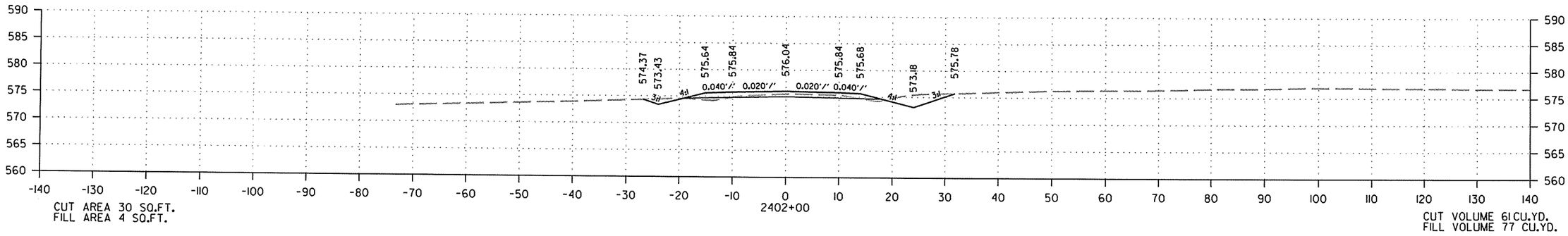
CROSS SECTION STA. 2305+00 TO STA. 2305+77.29

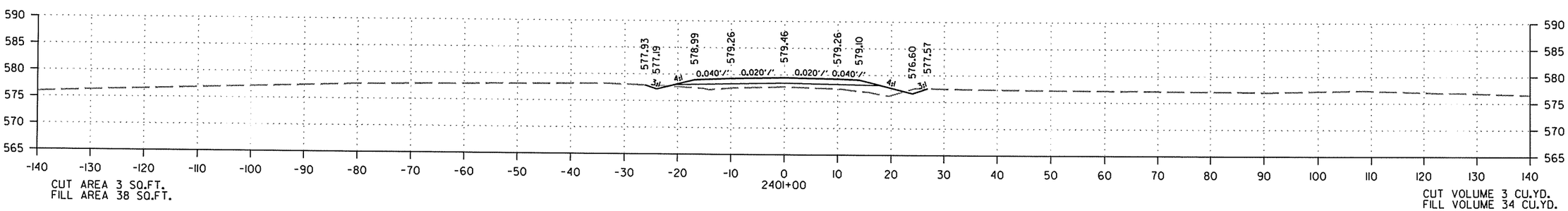
8/8/2014

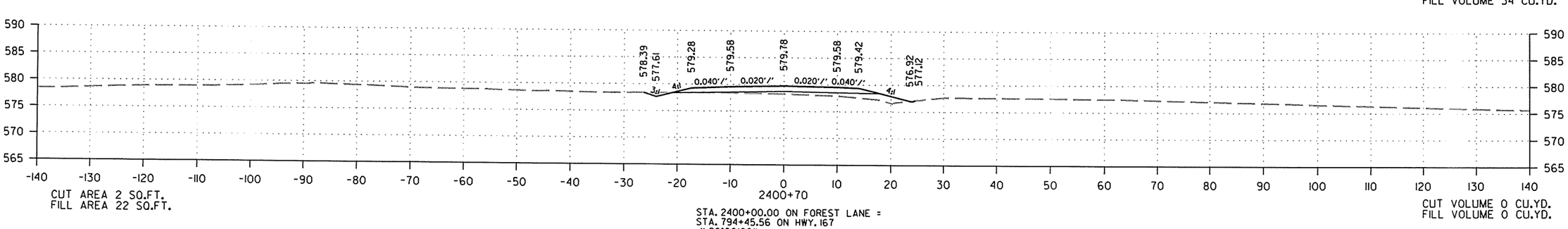
R050214.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	308	311

(2) CROSS SECTIONS - FOREST LANE







STA. 2400+00.00 ON FOREST LANE =
STA. 794+45.56 ON HWY. 167
∡ 90°00'00"

CROSS SECTION STA. 2400+70 TO STA. 2402+00

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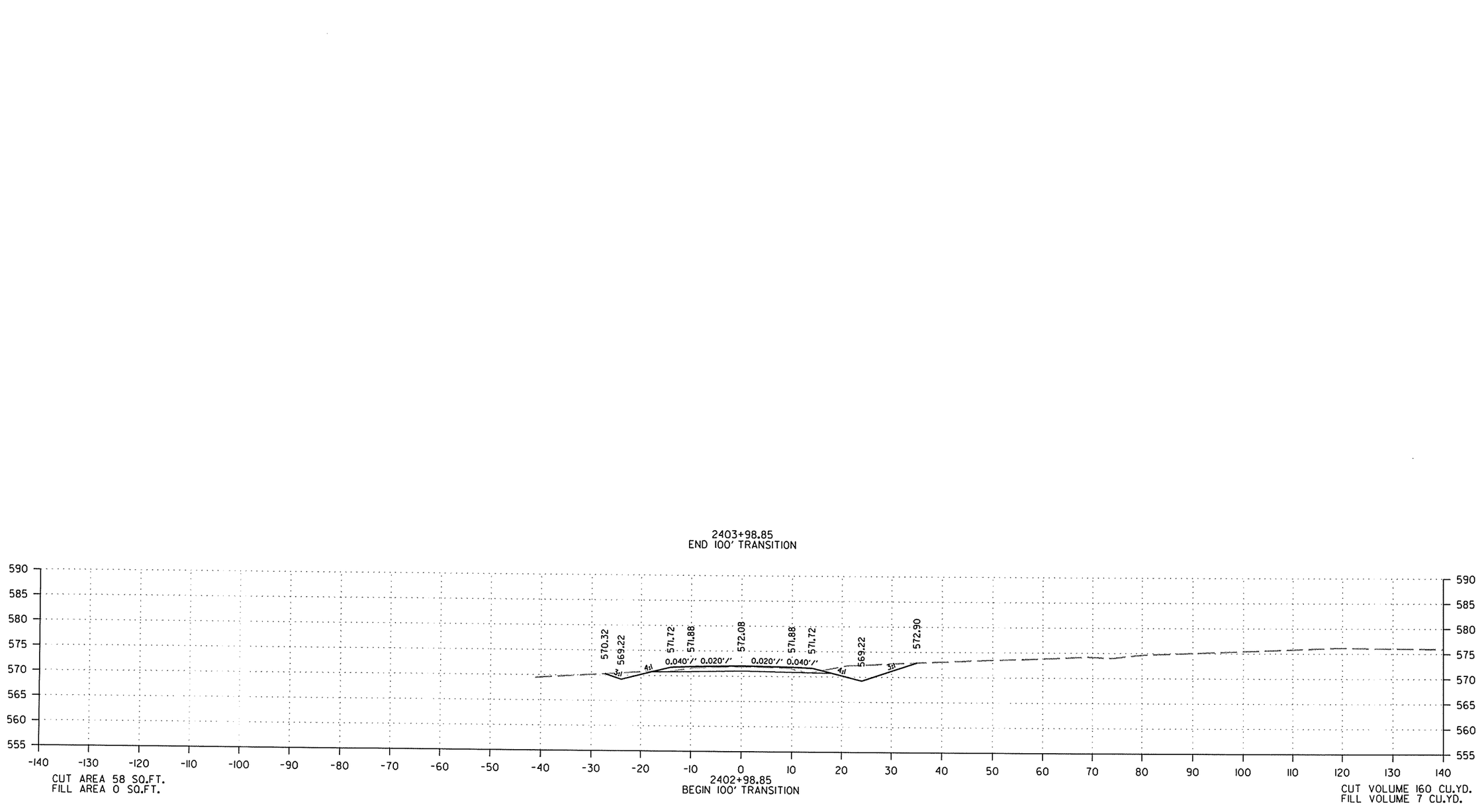
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	309	311

(2) CROSS SECTIONS - FOREST LANE



CROSS SECTION STA. 2402+99 TO STA. 2402+98.85

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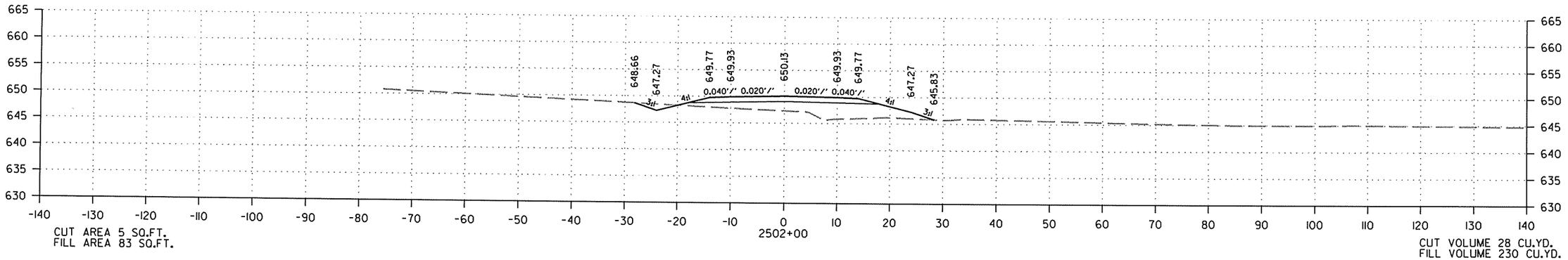
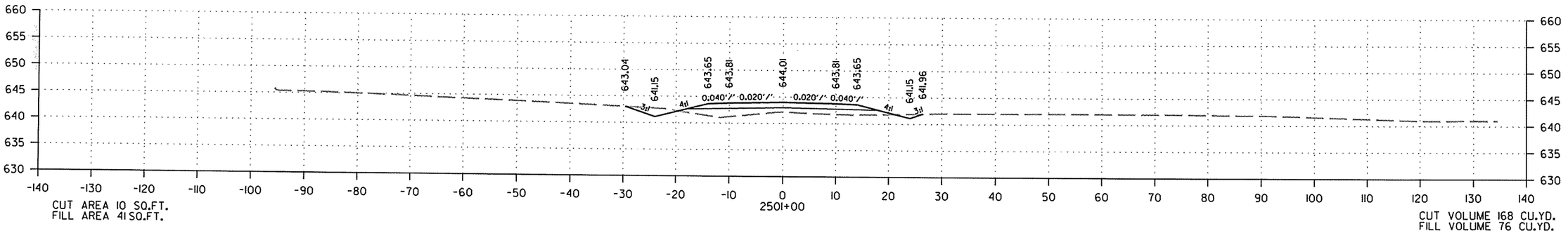
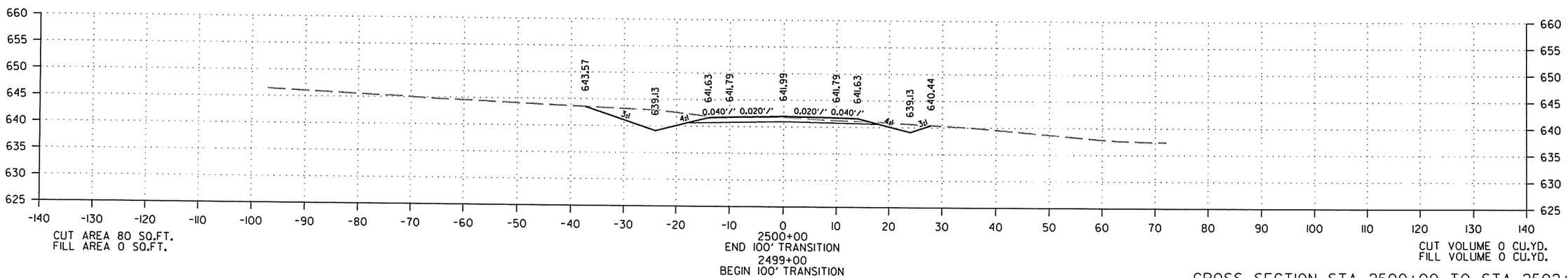
R050214.DGN

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.		050214	310	311

(2) CROSS SECTIONS - WIRE LANE







CROSS SECTION STA. 2500+00 TO STA. 2502+00

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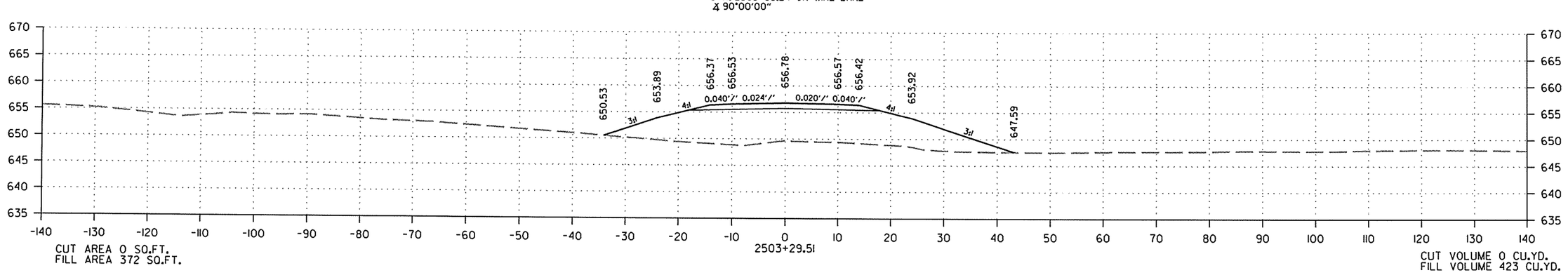
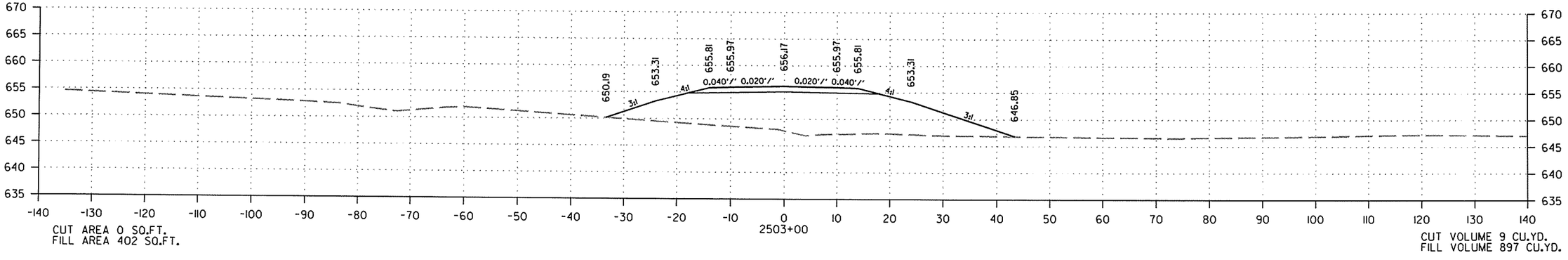
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		050214	311	311

(2) CROSS SECTIONS - WIRE LANE

STA. 825+97.66 ON HWY. 167 =
STA. 2503+98.24 ON WIRE LANE
Δ 90°00'00"





CROSS SECTION STA. 2503+00 TO STA. 2503+29.51

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