DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	1	348
				(2)	WALNUT CORNER-CYPRESS CORNER (S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

WALNUT CORNER-CYPRESS CORNER (S)

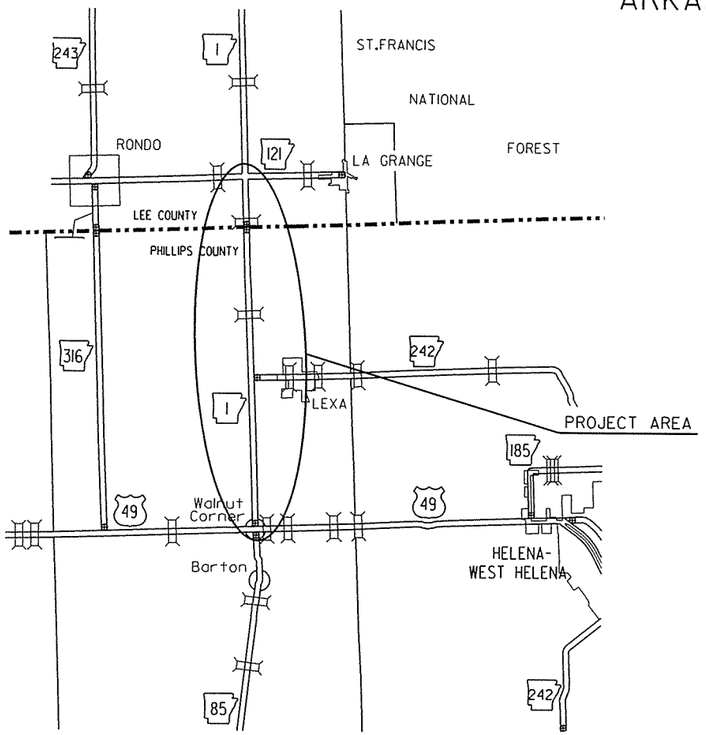
LEE & PHILLIPS COUNTIES

ROUTE 1 SECTIONS 8 & 9

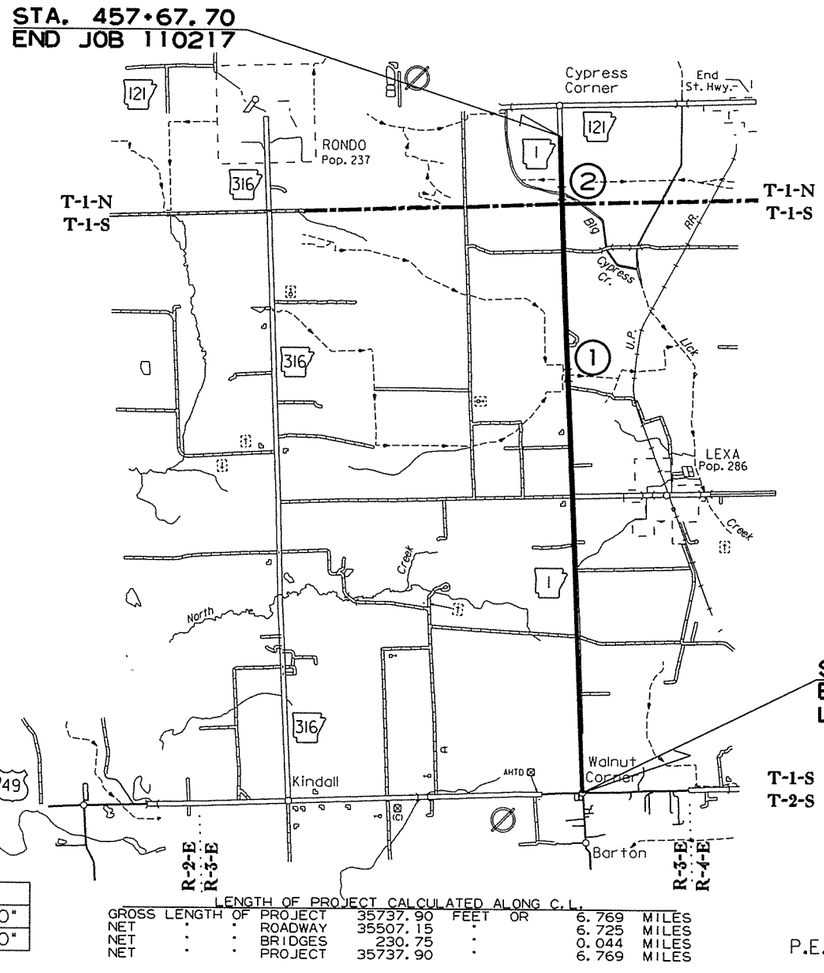
FED. AID PROJ. NHPP-5439(1)

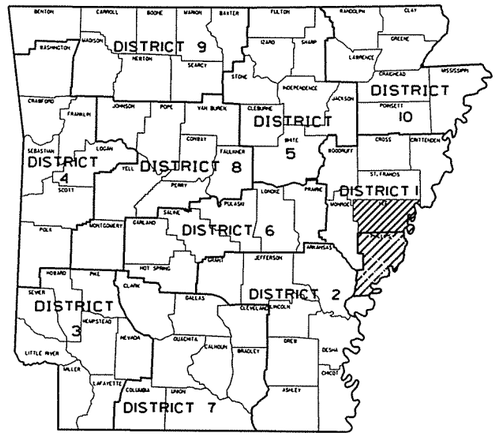
JOB 110217

NOT TO SCALE



VICINITY MAP





ARK. HWY. DIST. NO. 1

DESIGN TRAFFIC DATA

DESIGN YEAR	2035
2015 ADT	3600
2035 ADT	4300
2035 DHV	473
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	18%
DESIGN SPEED	60 MPH

STRUCTURES OVER 20'-0" SPAN

(1) STA. 326+35 CONSTRUCT
QUINT. 8' x 7' x 128 R.C BOX CULVERT
WITH 3:1 WINGS LT. & RT.
Q50= 1800 CFS D.A. = 5.7 SQ. MILES
SPAN = 35.75'

BRIDGE CONSTRUCTION DATA

(2) STA. 423+05.50 - BRIDGE END
BRIDGE NO. 07320
194'-0" INTEGRAL CONTINUOUS
COMPOSITE W-BEAM UNIT (60'-74'-60')
75' CLEAR ROADWAY
195'-0" BRIDGE LENGTH
STA. 425+00.50 - BRIDGE END

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 34°33'19.0"	N 34°36'21.9"	N 34°39'13.0"
LONGITUDE	W 90°46'05.0"	W 90°46'05.6"	W 90°46'04.0"

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF PROJECT		35737.90	FEET OR	6.769	MILES
NET	ROADWAY	35507.15	"	6.725	MILES
NET	BRIDGES	230.75	"	0.044	MILES
NET	PROJECT	35737.90	"	6.769	MILES

APPROVED

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

11-13-15

DEPUTY DIRECTOR
AND CHIEF ENGINEER

P.E. JOB R10069

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	2	348

(2) INDEX OF SHEETS

INDEX OF SHEETS

SHEET NO.		TITLE	BRIDGE NO.	DRWG.NO.	DATE
1		TITLE SHEET			
2		INDEX OF SHEETS			
3		GOVERNING SPECIFICATIONS AND GENERAL NOTES			
4		TYPICAL SECTIONS OF IMPROVEMENT			
5 - 14		SPECIAL DETAILS			
15 - 40		TEMPORARY EROSION CONTROL DETAILS			
41 - 67		MAINTENANCE OF TRAFFIC			
68 - 80		PERMANENT PAVEMENT MARKING DETAILS			
81 - 87		QUANTITIES			
88		SCHEDULE OF BRIDGE QUANTITIES	07320	55872	
89 - 90		SUMMARY OF QUANTITIES AND REVISIONS			
91 - 104		SURVEY CONTROL DETAILS			
105 - 129		PLAN AND PROFILE SHEETS			
130		TRAFFIC SIGNAL QUANTITIES AND NOTES			
131 - 133		SIGNALIZATION PLAN SHEETS			
134		LAYOUT OF BRIDGE OVER BIG CYPRESS CREEK (SHEET 1 OF 2)	07320	55873	
135		LAYOUT OF BRIDGE OVER BIG CYPRESS CREEK (SHEET 2 OF 2)	07320	55874	
136		DETAILS OF STAGE CONSTRUCTION	07320	55875	
137		DETAILS OF BENT 1	07320	55876	
138		DETAILS OF BENTS 2 & 3	07320	55877	
139		DETAILS OF BENT 4	07320	55878	
140		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 1 OF 8)	07320	55879	
141		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 2 OF 8)	07320	55880	
142		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 3 OF 8)	07320	55881	
143		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 4 OF 8)	07320	55882	
144		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 5 OF 8)	07320	55883	
145		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 6 OF 8)	07320	55884	
146		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 7 OF 8)	07320	55885	
147		DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT (SHEET 8 OF 8)	07320	55886	
148		DETAILS OF TYPE SPECIAL APPROACH SLAB	07320	55887	
149		EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		55000	2-27-14
150		STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES		55001	2-27-14
151		STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS		55005	2-27-14
152		STANDARD DETAILS FOR STANDARD TYPE D BRIDGE NAME PLATE		55010	1-14-15
153		STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS		55021	2-27-14
154		STANDARD DETAILS FOR STANDARD TYPE C APPROACH GUTTERS		55030C	2-27-14
155		CONCRETE DITCH PAVING		CDP-1	11-17-10
156		CURBING DETAILS		CG-1	11-29-07
157		FLARED END SECTION		FES-1	10-18-96
158		FLARED END SECTION		FES-2	10-18-96
159		DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)		FPC-9S	7-26-12
160		GUARD RAIL DETAILS		GR-8	7-14-10
161		GUARD RAIL DETAILS		GR-9	4-17-08
162		GUARD RAIL DETAILS		GR-9A	4-17-08
163		GUARD RAIL DETAILS		GR-10	7-14-10
164		GUARD RAIL DETAILS		GR-10A	7-14-10
165		MAILBOX DETAILS		MB-1	11-18-04
166		PRECAST CONCRETE BOX CULVERTS		PBC-1	1-28-15
167		CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	2-27-14
168		METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	2-27-14
169		PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)		PCP-1	2-27-14
170		PLASTIC PIPE CULVERT (PVC F949)		PCP-2	2-27-14
171		PAVEMENT MARKING DETAILS		PM-1	9-12-13
171A		DETAILS OF PIPE UNDERDRAIN		PU-1	4-10-03
172		REINFORCED CONCRETE BOX CULVERT DETAILS		RCB-1	7-26-12
173		EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS		RCB-2	11-20-03
174		METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS		RCB-3	10-12-95
175		LOOP DETECTOR INSTALLATION		SD-4	9-12-13
176		HEAVY DUTY PULL BOX		SD-6	9-02-15
177		SIGNAL HEAD PLACEMENT		SD-8	9-12-13
178		STEEL POLE WITH MAST ARM		SD-11	2-27-14
179		TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10-18-96
180		DETAILS OF SPECIAL ITEMS		SI-1	9-12-13
181		STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	9-02-15
182		STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	9-02-15
183		STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	9-02-15
184		STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-4	2-27-14
185		STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-5	10-15-09
186		TEMPORARY EROSION CONTROL DEVICES		TEC-1	12-15-11
187		TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
188		TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
189		TEMPORARY EROSION CONTROL DEVICES		TEC-4	7-26-12
190		WIRE FENCE TYPE C AND D		WF-4	8-22-02
191		DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		W-X003-1	5-10-66
192		DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		W-X15	6-13-63
193		DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		W-X153-1	5-10-66
194		DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS		R-100X-0	2-08-63
195		DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS		R-115X-0	8-14-63
196		DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS		R-200X-0	2-15-63
197		DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS		R-215X-0	8-23-63
198 - 348		CROSS SECTIONS			

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-1-15

9/4/2015

R110217.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.		110217	3	348
				(2) GOV. SPECS & GEN. NOTES				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-10-15

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 110217
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____	CONTRACTOR'S LICENSE
108-1_____	LIQUIDATED DAMAGES
400-1_____	TACK COATS
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
620-1_____	MULCH COVER
JOB 110217__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 110217__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110217__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 110217__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 110217__	COORDINATION OF WORK
JOB 110217__	CULVERT CLEAN OUT
JOB 110217__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 110217__	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 110217__	ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 110217__	EXTENSION FOR PIPE CULVERTS
JOB 110217__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 110217__	HIGH PERFORMANCE PAVEMENT MARKING
JOB 110217__	LED TRAFFIC SIGNAL HEAD
JOB 110217__	LOOP WIRING REVISION 1.4
JOB 110217__	LUMINAIRE ASSEMBLY (CUTOFF TYPE)
JOB 110217__	MANDATORY ELECTRONIC CONTRACT
JOB 110217__	NESTING SITES OF MIGRATORY BIRDS
JOB 110217__	PARTNERING REQUIREMENTS
JOB 110217__	PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS
JOB 110217__	PLASTIC PIPE
JOB 110217__	PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB 110217__	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT
JOB 110217__	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 110217__	SHORING
JOB 110217__	SHORING FOR CULVERTS
JOB 110217__	SOIL STABILIZATION
JOB 110217__	STORM WATER POLLUTION PREVENTION PLAN
JOB 110217__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110217__	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)
JOB 110217__	UTILITY ADJUSTMENTS
JOB 110217__	VALUE ENGINEERING
JOB 110217__	WARM MIX ASPHALT
JOB 110217__	WELLHEAD PROTECTION

GENERAL NOTES

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

11/6/2015

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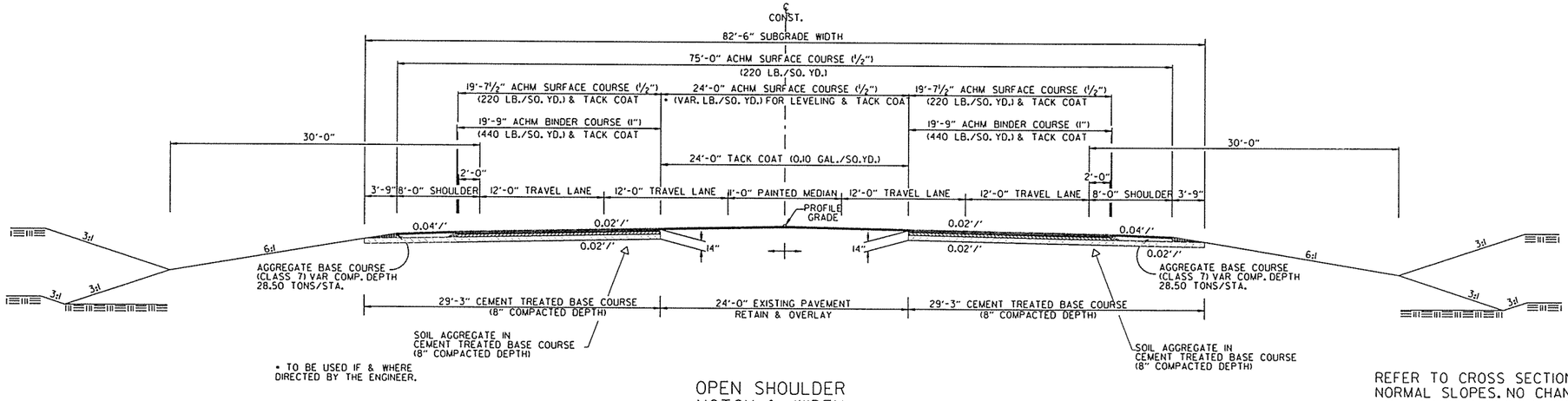
				6	ARK.			
				JOB NO.		110217	4	348

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



OPEN SHOULDER
NOTCH & WIDEN
NOTCH IN MIDDLE
TANGENT SECTION
STA. 100+29.80 - STA. 124+23.00

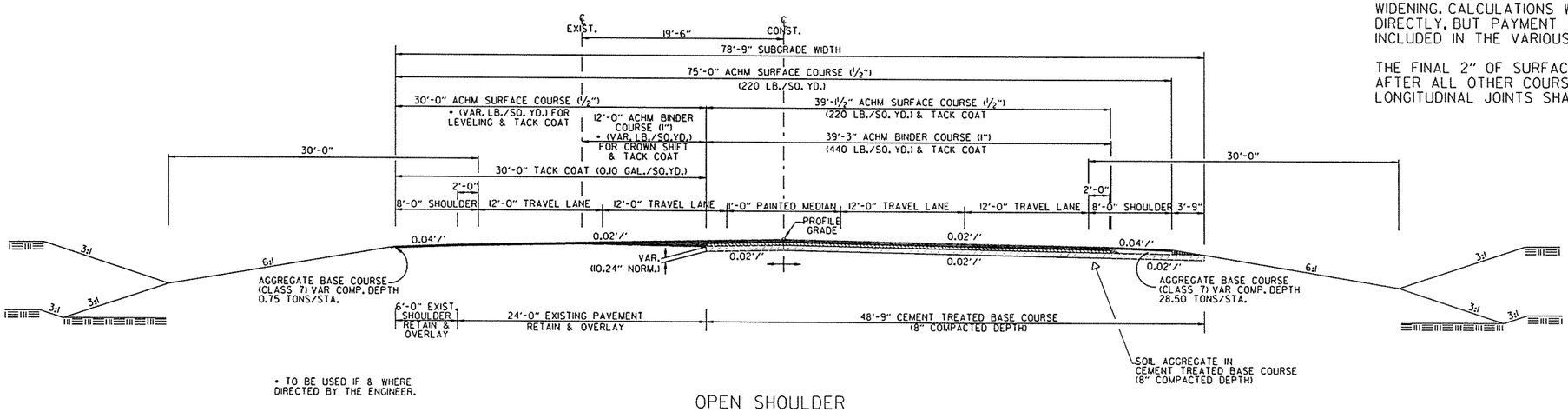
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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.

TRANSITION STA. 124+23 - STA. 133+45
FROM NOTCH & WIDEN
NOTCH IN MIDDLE
TO NOTCH & WIDEN
NOTCH ON LEFT



OPEN SHOULDER
NOTCH & WIDEN
NOTCH ON LEFT
TANGENT SECTION
STA. 133+45.00 - STA. 457+67.70

10/16/2014

R110217.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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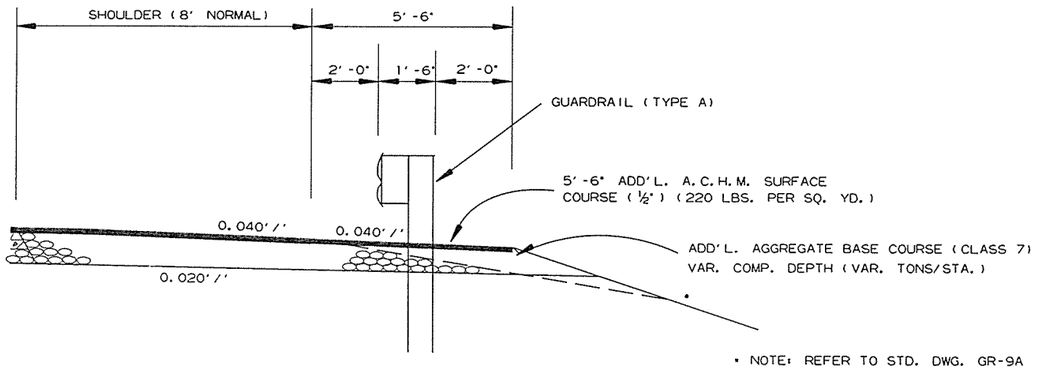
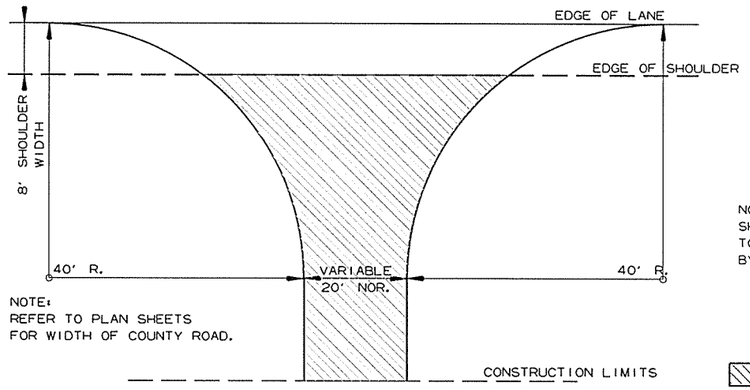
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



WIDENING FOR GUARDRAIL

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

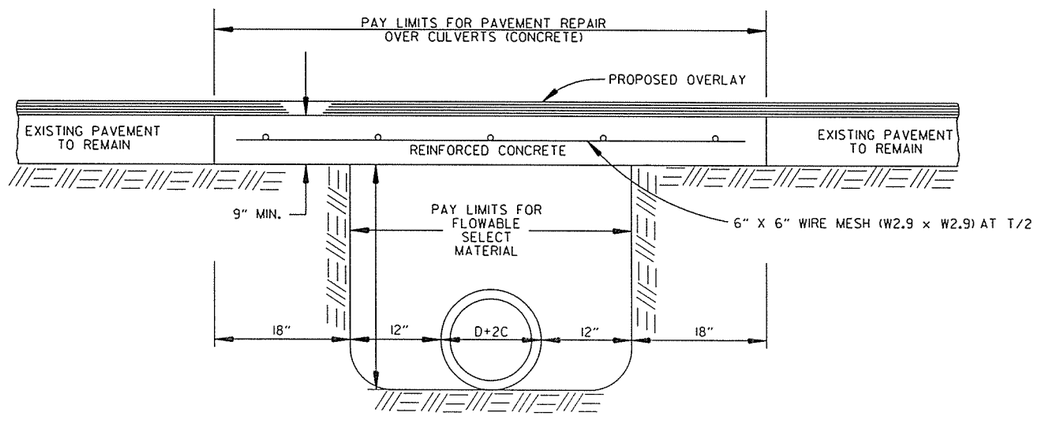


NOTE:
REFER TO PLAN SHEETS FOR WIDTH OF COUNTY ROAD.

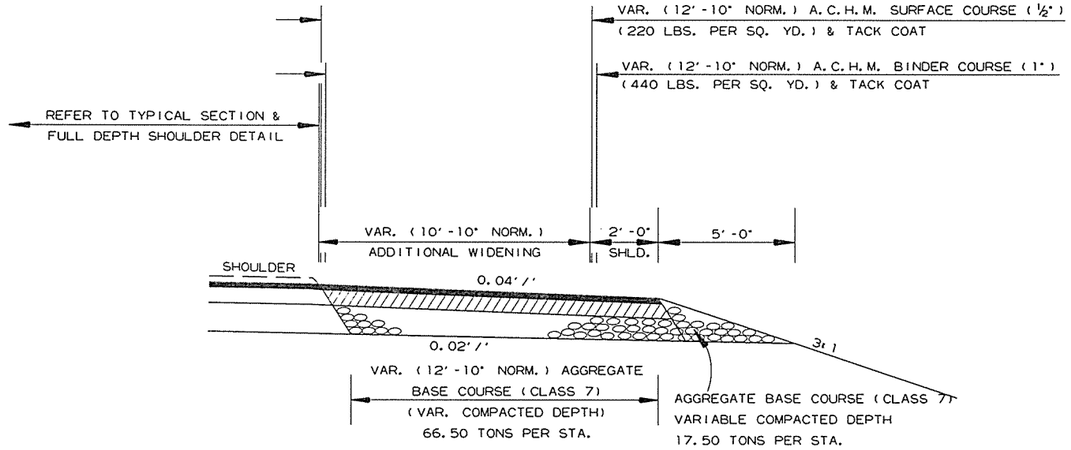
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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

DETAIL FOR COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION

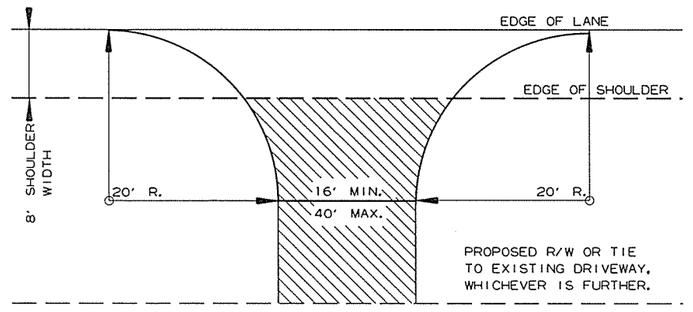


PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



ADDITIONAL WIDENING
FOR MAINTENANCE OF TRAFFIC

STATIONS: 317+73 - 334+96



DETAIL FOR DRIVEWAY TURNOUTS
OPEN SHOULDER SECTION

12/11/2012

R110217.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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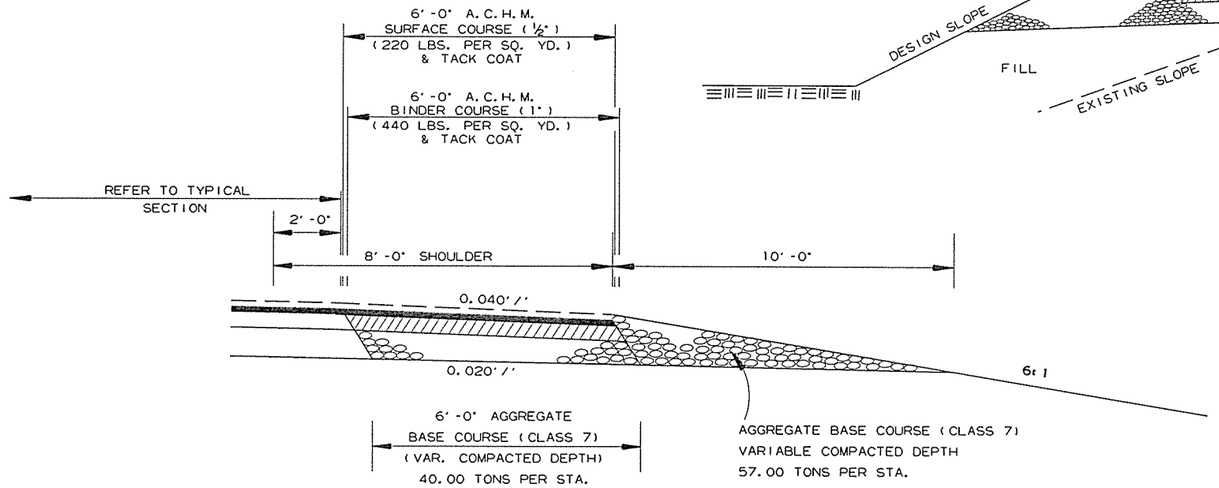
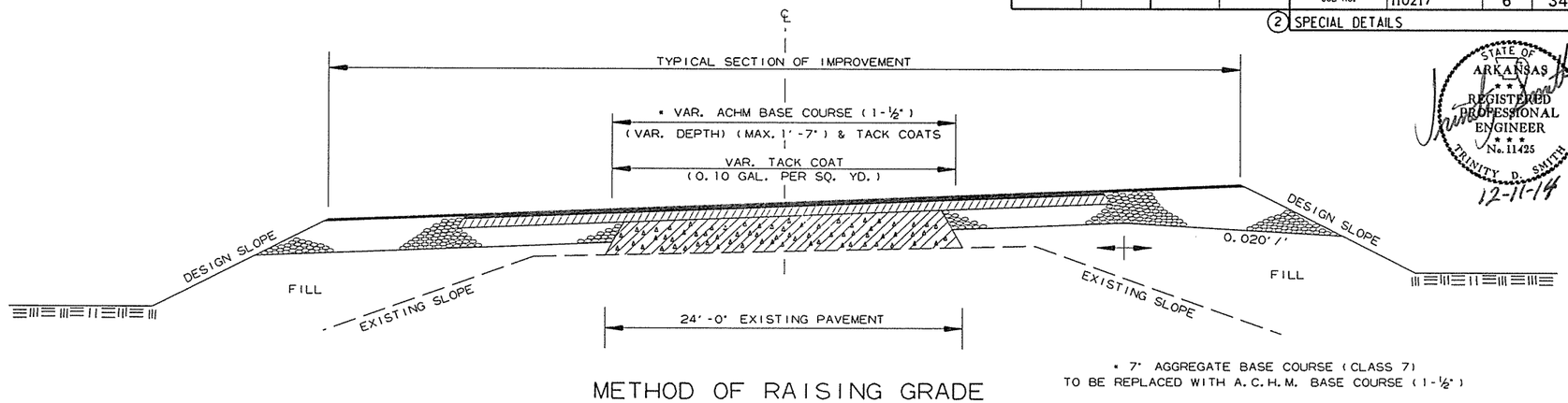
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



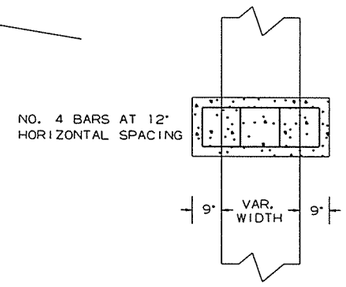
FULL DEPTH SHOULDER
FOR MAINTENANCE OF TRAFFIC

STATIONS: 314+80 - 317+73
334+96 - 337+90
418+25 - 429+80

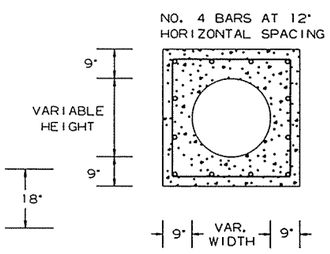


METHOD OF RAISING GRADE

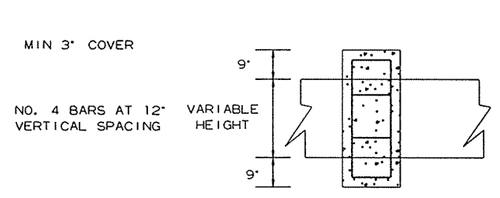
* 7" AGGREGATE BASE COURSE (CLASS 7) TO BE REPLACED WITH A.C.H.M. BASE COURSE (1-½")



TOP VIEW

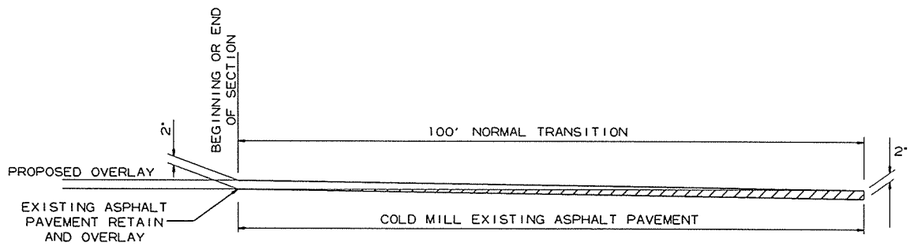


FRONT VIEW

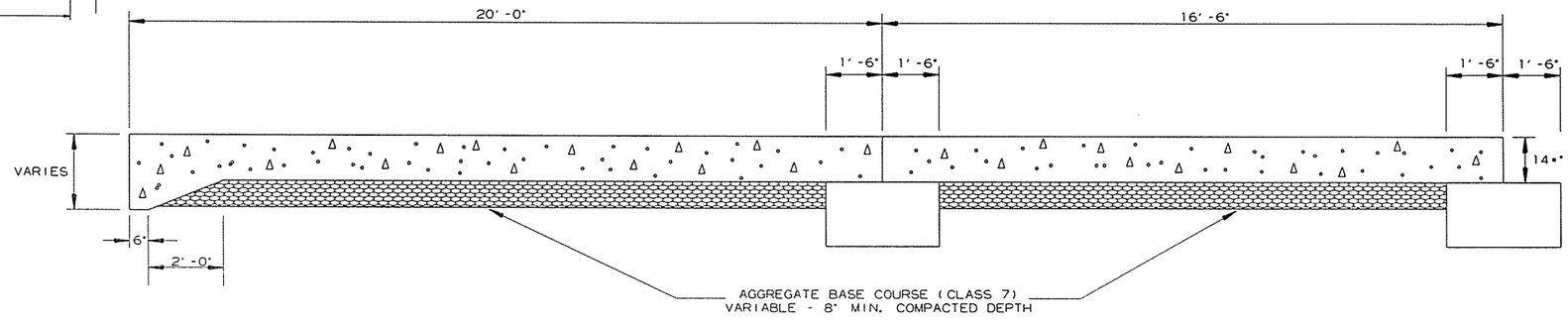


SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL



DETAIL FOR TRANSITIONS



SECTION OF APPROACH SLAB

12/11/2012

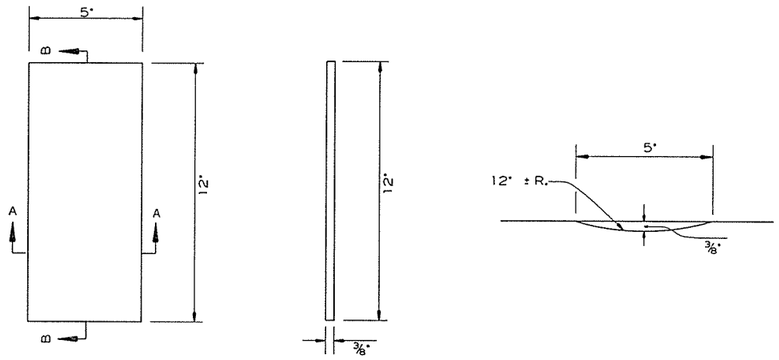
R110217.DGN

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	7	348

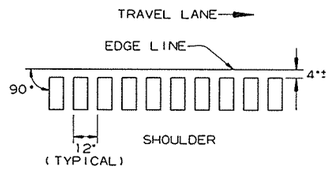
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

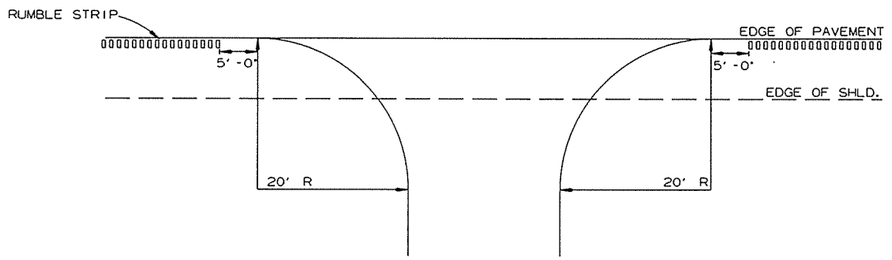


PLAN SECTION B-B SECTION A-A

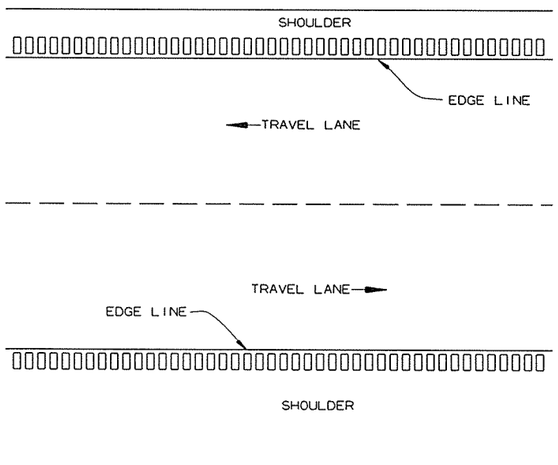
DETAILS OF RUMBLE STRIPS



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



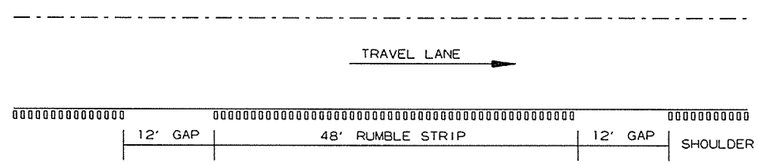
DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

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



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

DETAIL FOR GAP PATTERN RUMBLE STRIP

12/11/2012

R110217.DGN

SPECIAL DETAILS

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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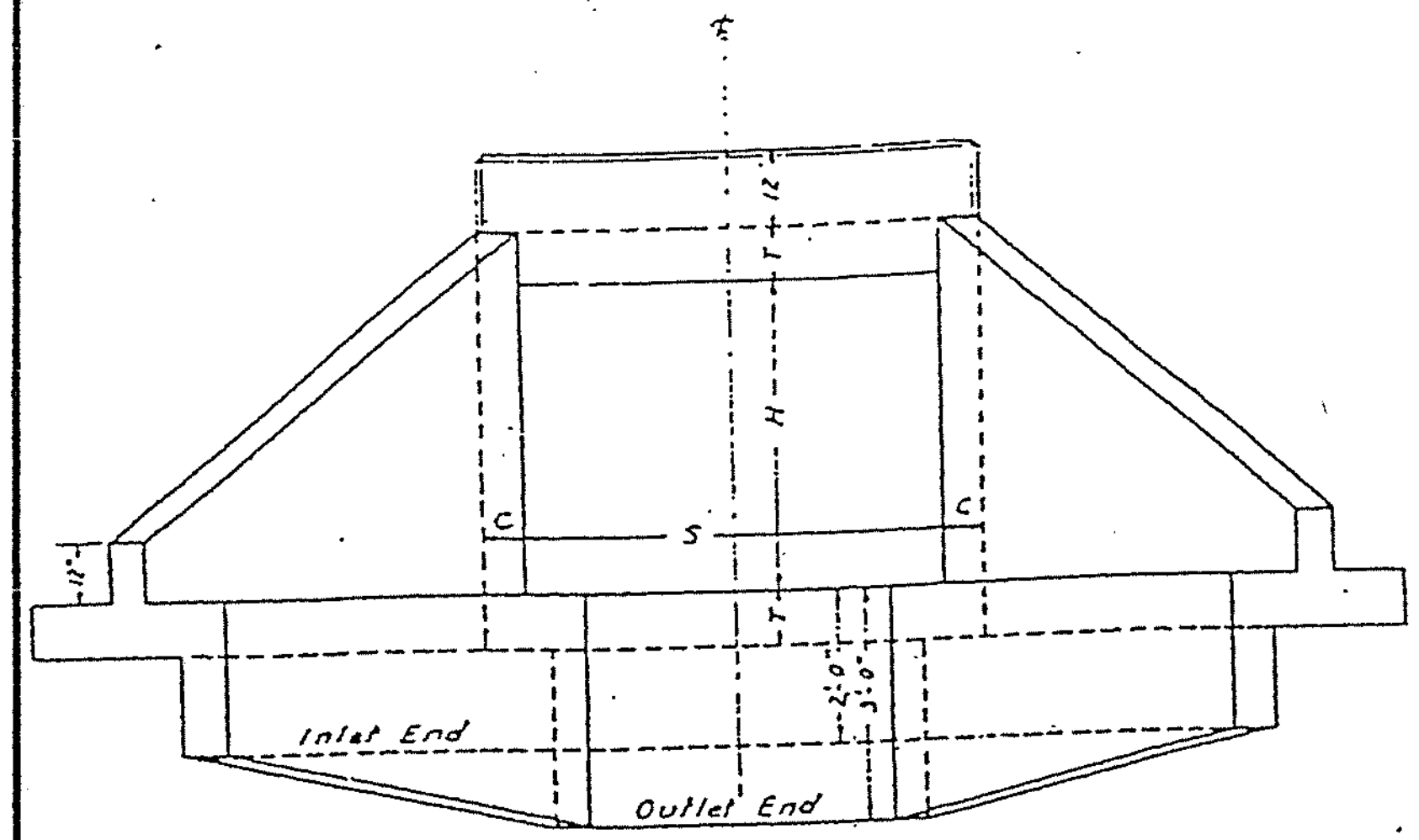
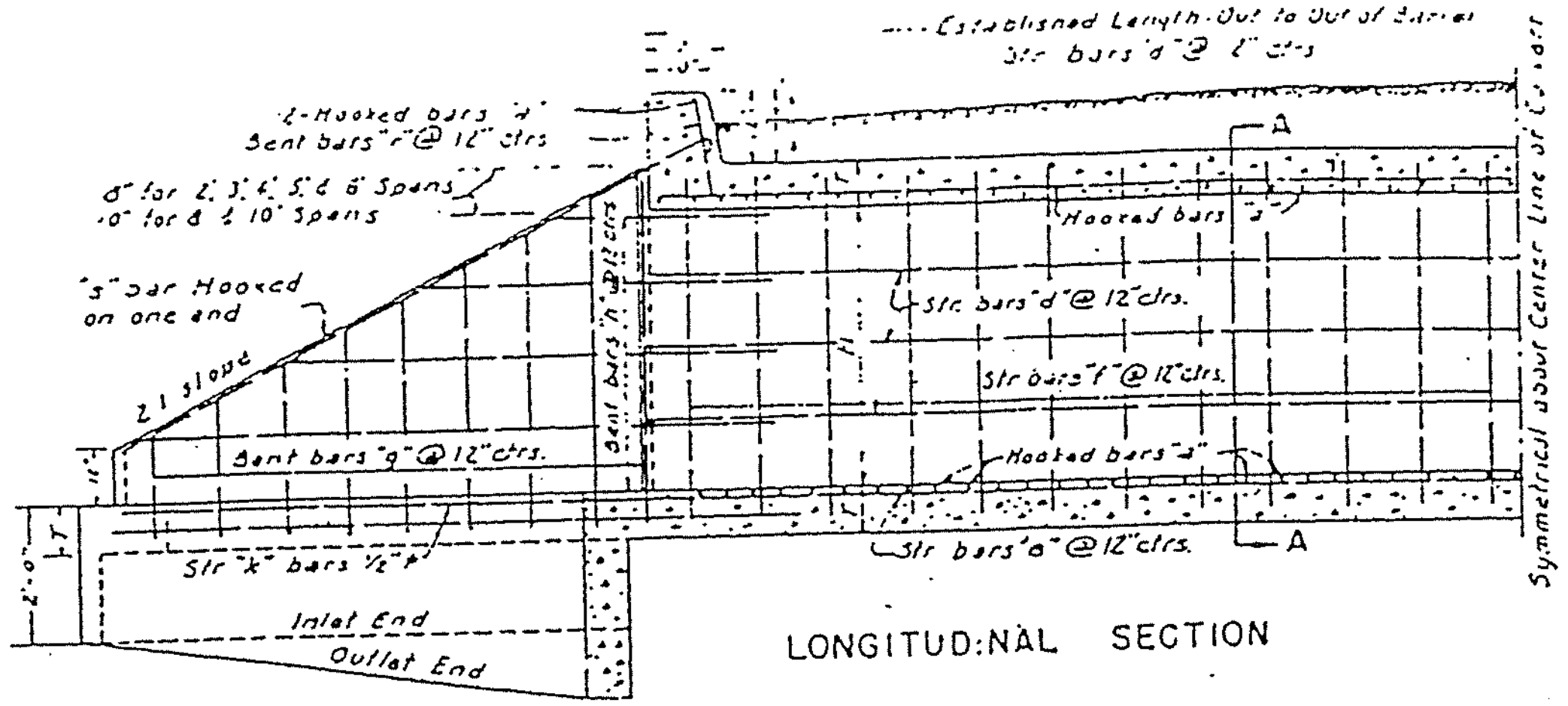
				JOB NO.		110217	8	348

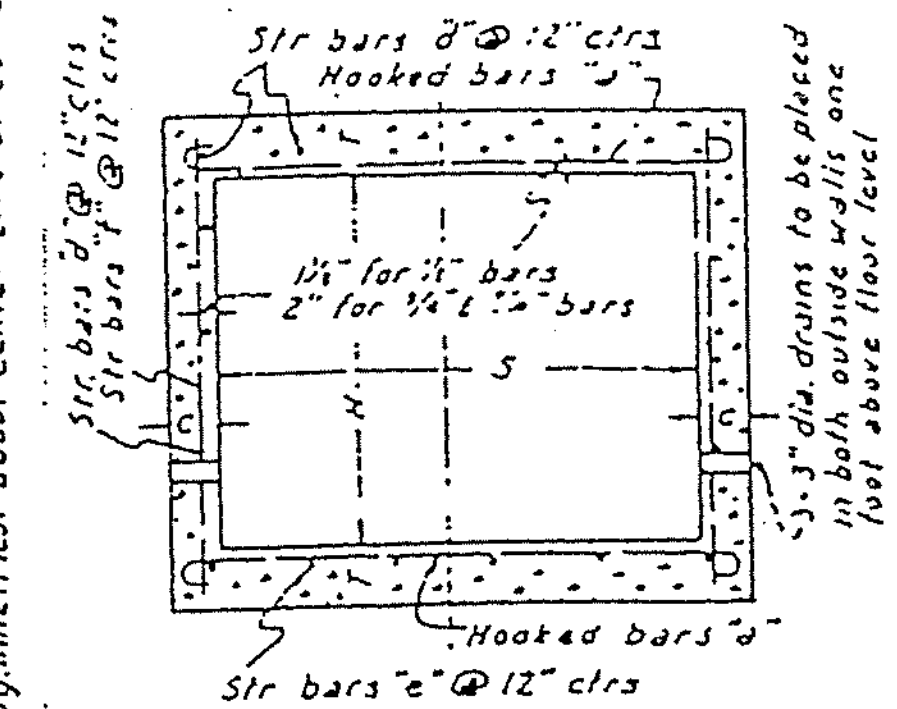
② Special Details



END ELEVATION



LONGITUDINAL SECTION

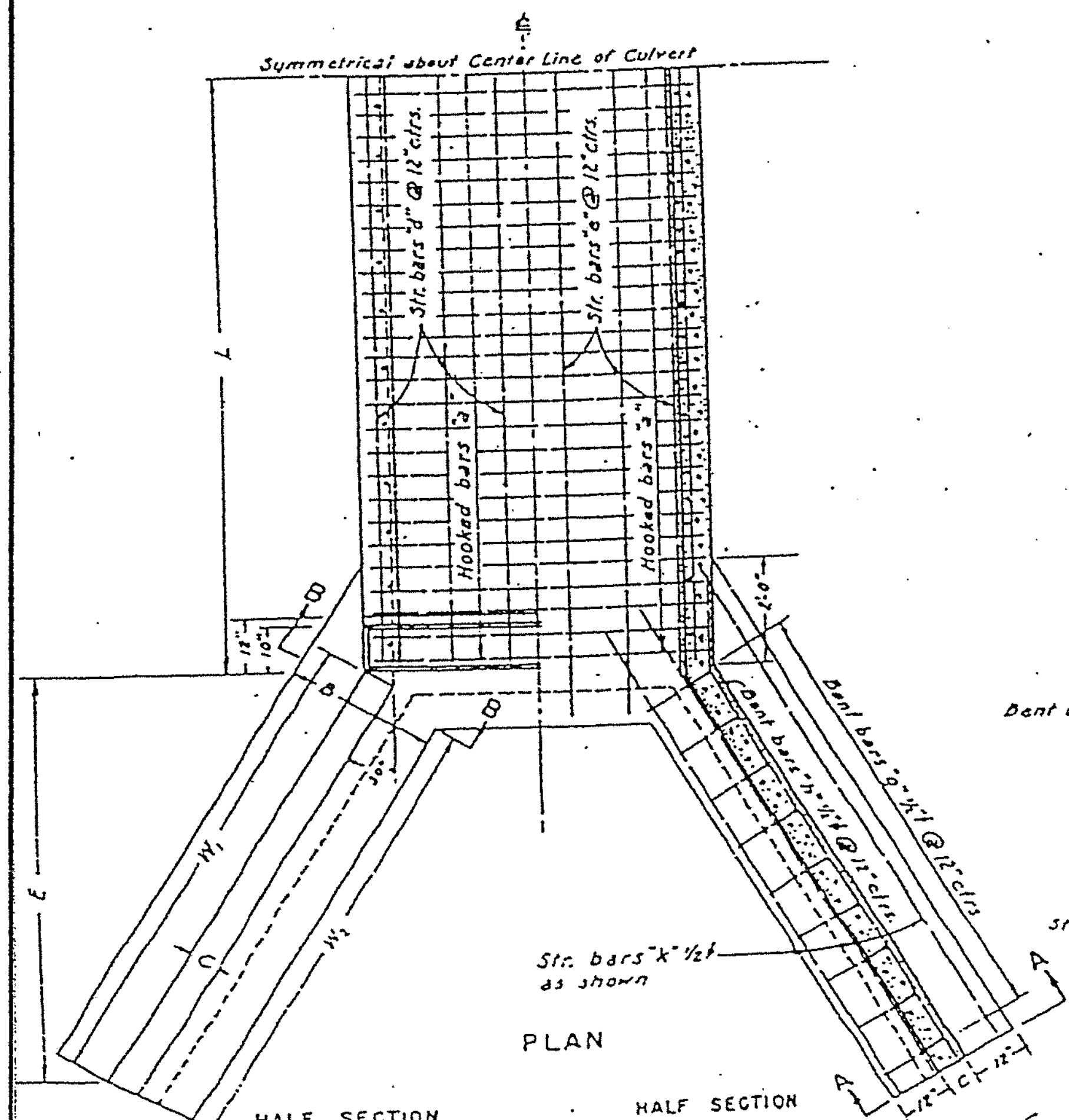


SECTION A-A

DIMENSIONS & QUANTITIES

SPAN	HEIGHT	AREA OF OPENING SQ FT	MAXIMUM DEPTH OF COVER	THICKNESS OF TOP & BOTTOM SLAB	THICKNESS OF SIDE & WING WALLS	WIDTH OF FOOTING	LENGTH OF FOOTING	LENGTH OF WING WALLS	LENGTH OF WINGS FROM BACK OF HEADWALL	CONCRETE CU YD: HEADWALLS WINGWALLS & FOOTING	CONCRETE CU YD: PER LINEAR FT OF BARREL	STEEL LB.: HEADWALLS WINGWALLS & FOOTING	STEEL LB.: PER LINEAR FT OF BARREL	STEEL LB.: ADD STEEL FOR LAPS
S	H	A	D	T	C	B	W_2	W_1	E					
2	2	4	20'-0"	6½"	6"	2'-6"	3'-6¾"	3'-10"	3'-4"	2.34	.194	155	17.91	8.9
3	2	6	20'-0"	7"	6"	2'-6"	3'-6¾"	3'-10"	3'-4"	2.65	.247	164	22.77	11.1
	3	9			6"		5'-10½"	6'-2"	5'-4"	4.10	.284	242	25.43	13.4
4	2	8	16'-0"	7½"	6"	2'-6"	3'-6¾"	3'-10"	3'-4"	2.90	.306	173	28.28	13.4
	3	12			6"		5'-10½"	6'-2"	5'-4"	4.36	.343	251	30.94	13.6
	4	16			6"		8'-2"	8'-5¾"	7'-4"	5.94	.380	332	33.60	17.8
5	2	10	10'-0"	8"	6"	2'-6"	3'-6¾"	3'-10"	3'-4"	3.15	.370	189	34.56	15.6
	3	15			6"		5'-10½"	6'-2"	5'-4"	4.60	.407	267	37.22	17.8
	4	20			6"		8'-2"	8'-5¾"	7'-4"	6.29	.444	370	39.89	20.0
	5	25			7"	2'-9"	10'-8"	10'-9¾"	9'-4"	8.74	.521	478	42.55	22.3
6	3	18	7'-0"	8½"	6"	2'-6"	5'-10½"	6'-2"	5'-4"	4.94	.478	278	41.88	20.0
	4	24			6"		8'-2"	8'-5¾"	7'-4"	6.61	.515	383	44.54	22.3
	5	30			7"	2'-9"	10'-8"	10'-9¾"	9'-4"	9.14	.592	492	47.20	24.5
	6	36			7"	3'-0"	13'-1"	13'-1"	11'-4"	11.58	.635	611	49.36	26.7
8	3	24	5'-0"	10½"	7"	2'-7"	6'-3¾"	6'-6¾"	5'-8"	6.28	.724	334	60.81	24.5
	4	32			7"	2'-7"	8'-7¼"	8'-10¾"	7'-8"	8.25	.767	429	63.47	26.7
	5	40			7"	2'-9"	11'-0¼"	11'-2"	9'-8"	10.52	.810	536	66.13	28.9
	6	48			7"	3'-0"	13'-5¼"	13'-5¼"	11'-8"	13.08	.853	673	68.80	31.2
	7	56			7"	3'-4"	16'-0"	15'-9¾"	13'-8"	16.03	.897	976	71.46	33.4
	8	64			8"	3'-10"	18'-8"	18'-1"	15'-8"	20.69	1.000	1168	74.81	35.6
10	4	40	4'-0"	11½"	7"	2'-7"	8'-7¼"	8'-10¾"	7'-8"	8.91	.983	505	90.62	31.2
	5	50			7"	2'-9"	11'-0¼"	11'-2"	9'-8"	11.33	1.026	611	93.28	33.4
	6	60			7"	3'-0"	13'-5¼"	13'-5¼"	11'-8"	13.99	1.067	749	95.94	35.6
	7	70			7"	3'-4"	16'-0"	15'-9¾"	13'-8"	17.27	1.112	1060	98.60	37.9
	8	80			8"	3'-10"	18'-8"	18'-1"	15'-8"	21.88	1.217	1253	101.26	40.1
	9	90			9"	4'-3"	21'-2"	20'-4¾"	17'-8"	27.55	1.334	1740	111.86	42.3
	10	100			10"	4'-9"	23'-9¾"	22'-8¾"	19'-8"	34.76	1.463	2181	115.27	44.5

LAP NOTE:
In computing quantities of steel from the above table, add one lap for culverts up to 50' in length and one lap for each additional 25' in length.

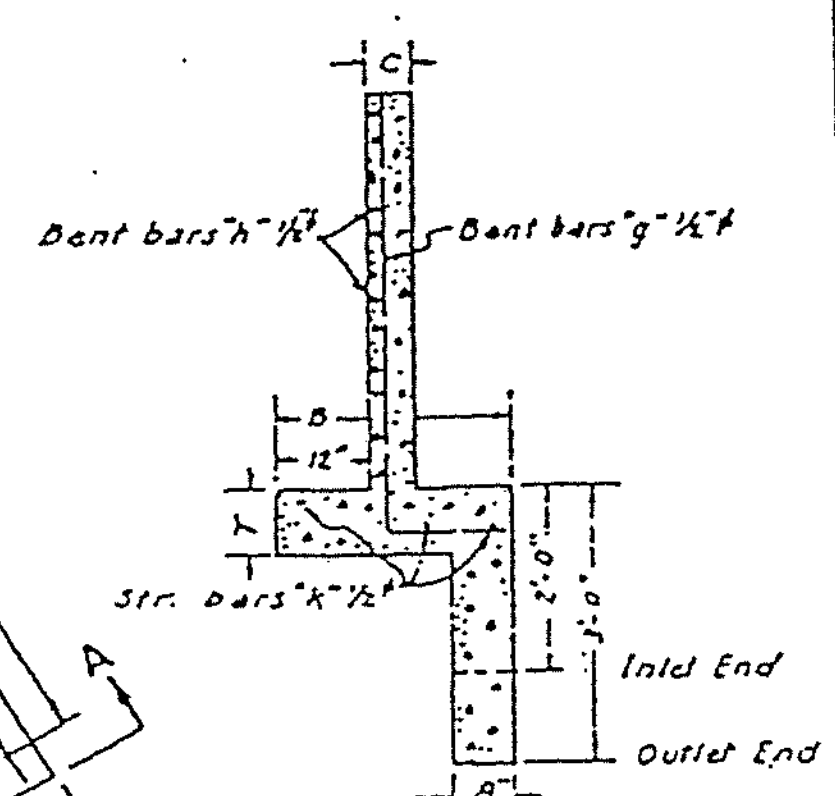


PLAN

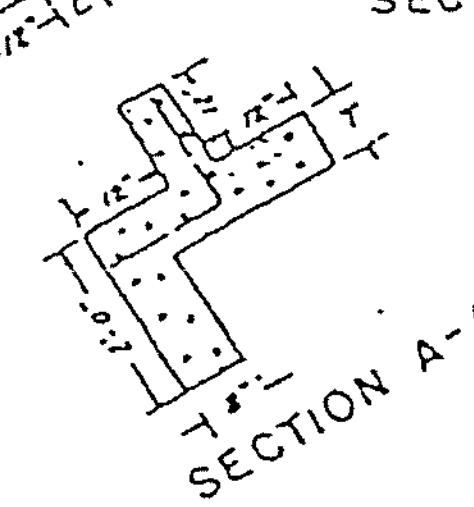
HALF SECTION TOP SLAB

HALF SECTION BOTTOM SLAB & SIDE WALLS

NOTE.-
Angle of Wingwalls may be varied to conform to the natural or proposed inlet or outlet channel.



SECTION B-B



SECTION A-A

STEEL SCHEDULE

For Culvert 32' in Length Out to Out of Barrel

"a" bars: 3" for 2, 3, 4, 5, 6 & 8 Span; 6" for 10' Span. 2 in each headwall, Balance in top and bottom slab of barrel.
"d" bars, "e" bars: ½"φ bars spaced at 12" Centers STRAIGHT. "d": Top slab and Sidewalls; "e": Top of Bottom Slab.
"f" bars: STRAIGHT Vertical bars In Sidewalls.
"g" bars: Vertical bars in Wingwalls.
"h" bars: ½"φ bars @ 12" Ctrs. Horizontal bars In Wingwalls (30°, 20").
"k" bars: ½"φ Bars STRAIGHT Top of Wing Footings.
"r" bars: ½"φ BENT Dowel Bar In Headwall.
"s" bars: ½"φ one in Top of Each Wingwall.

LENGTH OF SPAN S	HEIGHT H	"a" Size	"a" Spacing	"a" Number	"a" Length	"a" X	"d" Number	"d" Length	"e" Number	"e" Length	"f" Size	"f" Spacing	"f" Number	"f" Length	"g" Size	"g" Spacing	"g" Number	"g" Ax Length	"g" X Min.	"g" X Max.	"g" Y Min.	"g" Y Max.	"h" Number	"h" Ax Length	"h" Z Min.	"h" Z Max.	"k" Number	"k" Length	"r" Number	"r" Length	"s" Number	"s" Length
2	2	½"φ	6½"	122	3'-7"	2'-9"	3	31'-9" for 32'-0" Length	3	33'-9" for 32'-0" Length	½"φ	12"	64	2'-10"	½"φ	12"	16	3'-4"	1'-4"	2'-9"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	6	3'-2"	4	5'-3"
3	2	½"φ	6"	132	4'-7"	3'-9"	3		4		½"φ	12"	64	2'-11"	½"φ	12"	16	3'-4½"	1'-4½"	2'-9½"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	8	3'-2"	4	5'-3"
	3			132	4'-7"	3'-9"	3		4				64	3'-11"			24	3'-9½"	1'-6½"	3'-9½"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	8	3'-2"	4	7'-9"
4	2	½"φ	5½"	144	5'-7"	4'-9"	7		5		½"φ	12"	64	3'-5"	½"φ	12"	16	3'-5"	1'-5"	2'-10"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	10	3'-2"	4	5'-3"
	3			144	5'-7"	4'-9"	9		5				64	4'-0"			24	3'-11"	1'-7"	3'-10"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	10	3'-2"	4	7'-9"
	4			144	5'-7"	4'-9"	11		5				64	5'-0"			36	4'-5"	1'-5"	4'-10"	1'-3"	1'-3"	20	7'-2"	1'-4"	8'-4"	12	10'-0"	10	3'-2"	4	10'-3"
5	2	½"φ	5"	158	6'-7"	5'-9"	8		6		½"φ	12"	64	3'-1"	½"φ	12"	16	3'-6"	1'-7"	2'-11"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	14	3'-6"	4	5'-3"
	3			158	6'-7"	5'-9"	10		6				64	4'-1"			24	3'-11"	1'-5"	3'-11"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	14	3'-6"	4	7'-9"
	4			158	6'-7"	5'-9"	12		6				64	5'-1"			36	4'-6"	1'-6"	4'-11"	1'-3"	1'-3"	20	7'-2"	1'-4"	8'-4"	12	10'-0"	14	3'-6"	4	10'-3"
	5			158	6'-7"	5'-9"	14		6				64	6'-1"			44	5'-2"	1'-7"	5'-11"	1'-4"	1'-6"	24	8'-3"	1'-4"	10'-8"	12	12'-4"	14	3'-6"	4	12'-3"
6	3	½"φ	5"	158	7'-7"	6'-9"	11		7		½"φ	12"	64	4'-2"	½"φ	12"	24	4'-1"	1'-5"	4'-3"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	16	3'-6"	4	7'-9"
	4			158	7'-7"	6'-9"	13		7				64	5'-2"			36	4'-8"	1'-6"	5'-3"	1'-3"	1'-3"	20	7'-2"	1'-4"	8'-4"	12	10'-0"	16	3'-6"	4	10'-3"
	5			158	7'-7"	6'-9"	15		7				64	6'-2"			44	5'-4"	1'-7"	6'-3"	1'-4"	1'-6"	24	8'-5"	1'-4"	10'-8"	12	12'-4"	16	3'-6"	4	12'-3"
	6			158	7'-7"	6'-9"	17		7				64	7'-2"			52	5'-11"	1'-5"	7'-3"	1'-4"	1'-9"	28	9'-8"	1'-4"	13'-0"	12	14'-7"	16	3'-6"	4	15'-3"
8	3	⅝"φ	6"	132	9'-8"	8'-10"	13		9		½"φ	12"	64	4'-5"	½"φ	12"	28	4'-4"	1'-8"	4'-4"	1'-4"	1'-4"	16	4'-4"	1'-8"	4'-5"	12	3'-0"	20	3'-6"	4	8'-3"
	4			132	9'-8"	8'-10"	15		9				64	5'-5"			36	4'-11"	1'-9"	5'-4"	1'-6"	1'-4"	20	7'-6"	1'-8"	8'-9"	12	10'-4"	20	3'-6"	4	10'-9"
	5			132	9'-8"	8'-10"	17		9				64	6'-5"			44	5'-5"	1'-8"	6'-4"	1'-4"	1'-6"	24	8'-9"	1'-8"	11'-0"	12	12'-8"	20	3'-6"	4	13'-3"
	6			132	9'-8"	8'-10"	19		9				64	7'-5"			56	6'-0"	1'-7"	7'-4"	1'-6"	1'-9"	28	10'-0"	1'-8"	13'-4"	12	15'-0"	20	3'-6"	4	15'-9"
	7			132	9'-8"	8'-10"	21		9				64	8'-5"	⅝"φ	12"	64	6'-9"	1'-9"	8'-4"	1'-4"	2'-1"	32	11'-2"	1'-8"	15'-8"	12	17'-4"	20	3'-6"	4	18'-3"
	8			132	9'-10"	9'-0"	23		9				64	9'-5"			72	7'-5"	1'-7"	9'-4"	1'-5"	2'-6"	36	12'-5"	1'-8"	17'-11"	12	19'-8"	20	3'-6"	4	20'-3"
10	4	⅞"φ	9½"	86	12'-4"	10'-10"	17		11		½"φ	12"	64	5'-7"	½"φ	12"	36	5'-8"	1'-10"	5'-6"	1'-4"	1'-4"	28	7'-7"	1'-8"	8'-8"	12	10'-4"	24	3'-6"	4	10'-9"
	5			86	12'-4"	10'-10"	19		11				64	6'-7"			44	5'-6"	1'-8"	6'-6"	1'-4"	1'-6"	24	8'-9"	1'-8"	11'-0"	12	12'-8"	24	3'-6"	4	13'-3"
	6			86	12'-4"	10'-10"	21		11				64	7'-7"			56	6'-1"	1'-8"	7'-6"	1'-4"	1'-9"	28	10'-0"	1'-8"	13'-4"	12	15'-0"	24	3'-6"	4	15'-9"
	7			86	12'-4"	10'-10"	23		11				64	8'-7"	⅝"φ	12"	64	6'-11"	1'-10"	8'-6"	1'-4"	2'-1"	32	11'-2"	1'-8"	15'-8"	12	17'-4"	24	3'-6"	4	18'-[illegible]
	8			86	12'-6"	11'-0"	25		11				64	9'-7"			72	7'-7"	1'-8"	9'-6"	1'-5"	2'-6"	36	12'-5"	1'-8"	17'-11"	12	19'-8"	24	3'-6"	4	20'-9"
	9			86	12'-8"	11'-2"	27		11		⅝"φ		64	10'-7"		9"	100	8'-7"	1'-8"	10'-6"	1'-6"	3'-0"	40	13'-7"	1'-8"	20'-2"	12	22'-0"	24	3'-6"	4	23'-3"
	10			86	12'-10"	11'-4"	29		11				64	11'-7"		8"	136	9'-3"	1'-10"	11'-6"	1'-7"	3'-6"	44	14'-9"	1'-8"	22'-6"	12	24'-6"	24	3'-6"	4	25'-9"

NOTE: Lengths given above do not include lap.

SPECIFICATIONS:- Arkansas Standard Road and Bridge Specifications.

REINFORCING STEEL.- To be deformed bars of structural or intermediate grade.

CHAMFER.- All exposed corners to have ¾" Chamfer

CONCRETE:- All Concrete to be Class "S"

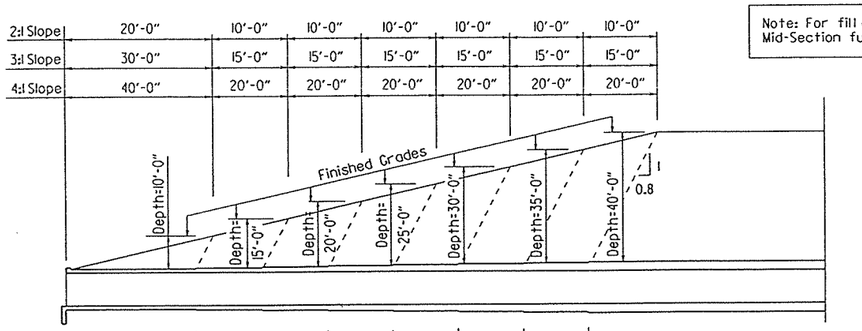
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

12-11-14

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.		110217	9	348

1 SPECIAL DETAILS



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

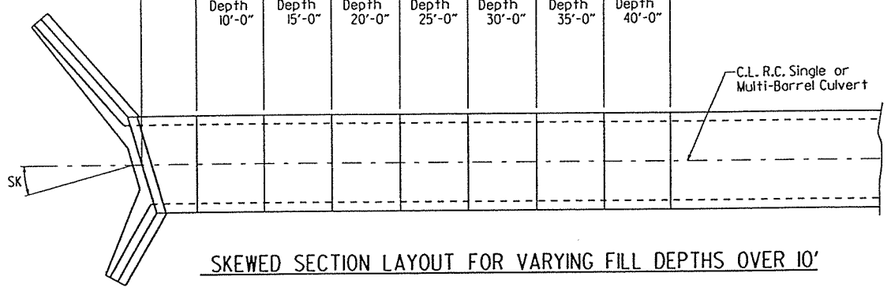
LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

Lengths for Non-Skewed Boxes

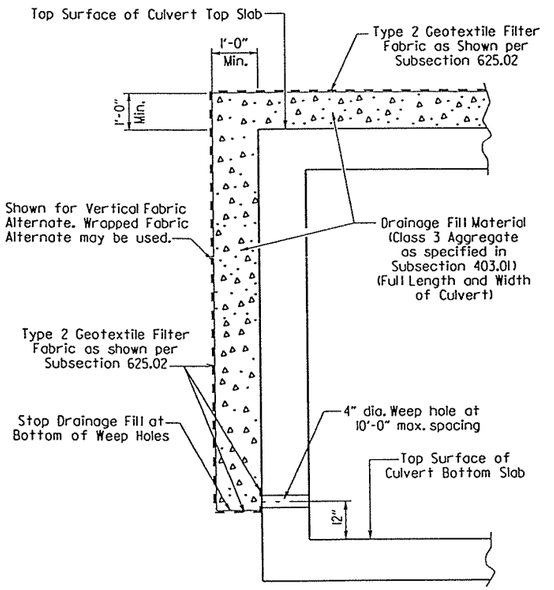
Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

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

Section Length	*LL		C	D	E	F	G	Mid-Section Length - Varies
Section Length	*LL	B	C	D	E	F	G	Mid-Section Length - Varies
Section Length	*LL	A	B	C	D	E	F	G	Mid-Section Length - Varies
		Depth 10'-0"	Depth 15'-0"	Depth 20'-0"	Depth 25'-0"	Depth 30'-0"	Depth 35'-0"	Depth 40'-0"	

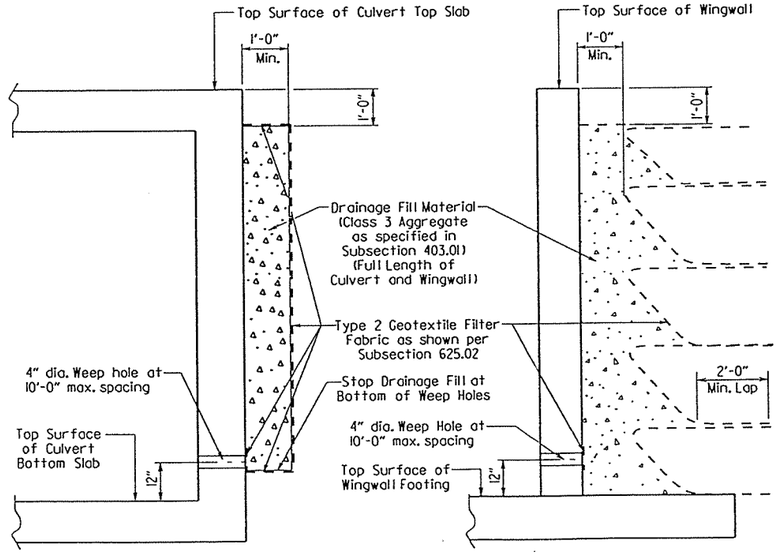


SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'



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 S 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.

STATE OF ARKANSAS
CARL J. FUSILIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/1/14

SHEET 1 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES &
LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS

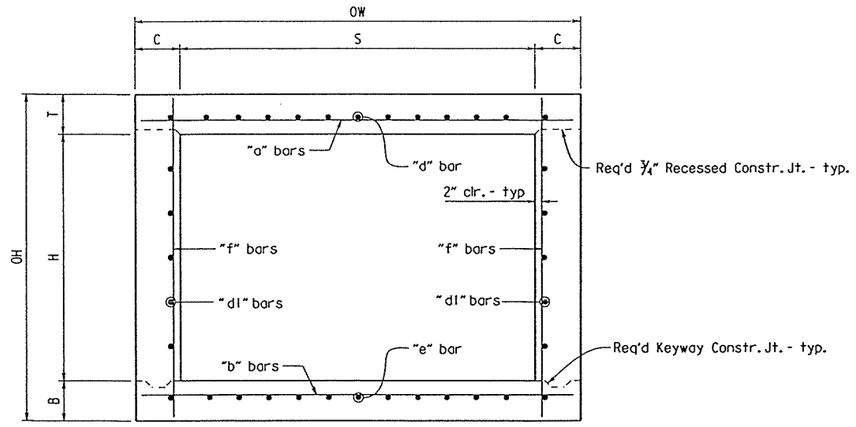
LRFD

' 1.114 Culvert-General.dgn

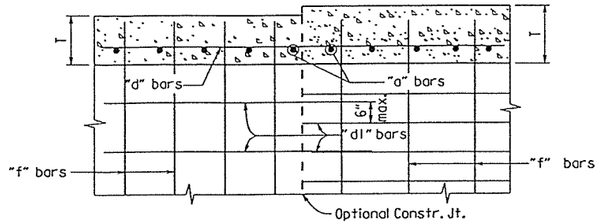
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	10	348

(1) SPECIAL DETAILS

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



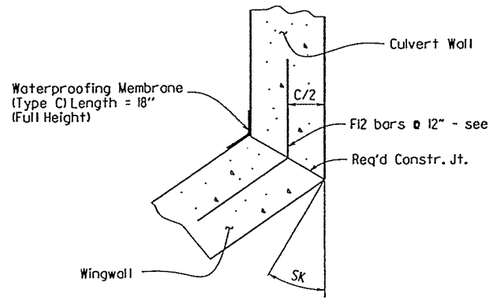
TYPICAL SECTION M-M



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

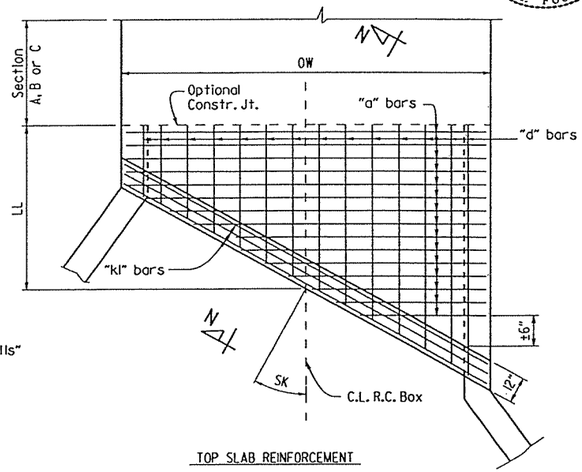
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

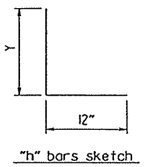


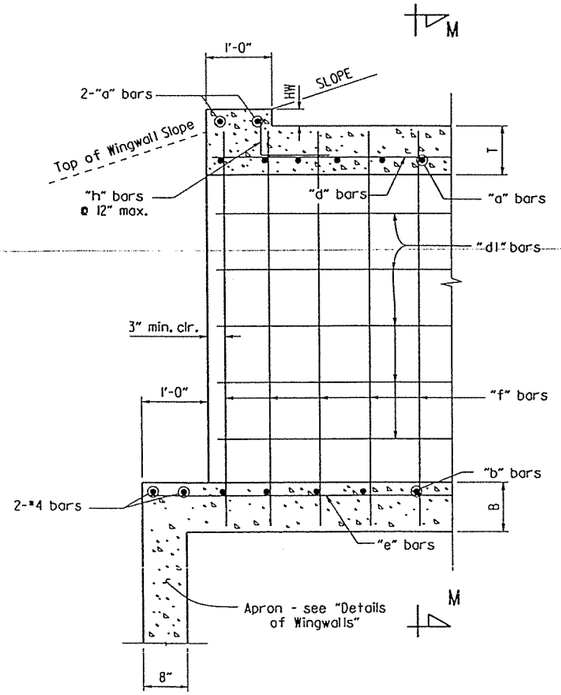
WINGWALL ATTACHMENT

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



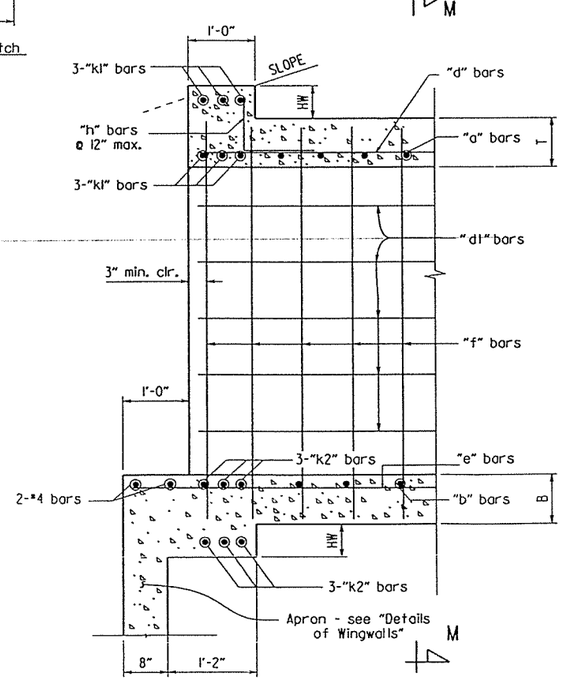
TOP SLAB REINFORCEMENT





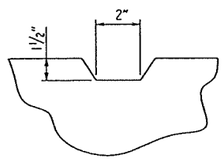
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



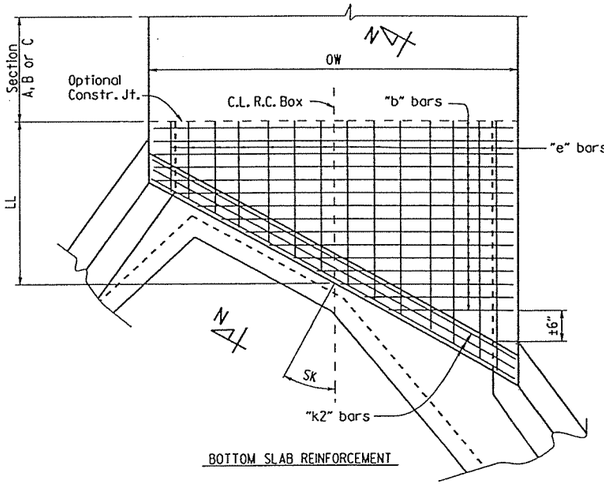
PART LONGITUDINAL SECTION N-N

(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
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
4/14/94

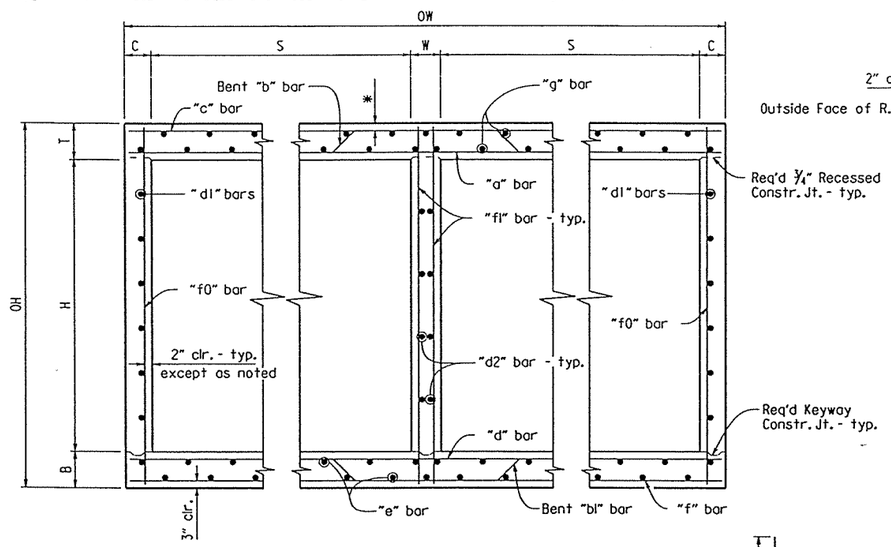
culvert-General.dgn

DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	11	348

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.

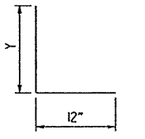
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



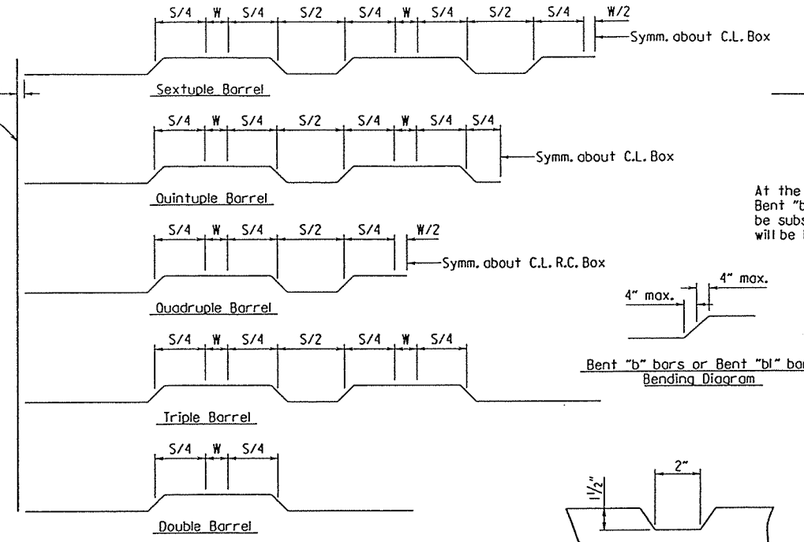
TYPICAL SECTION M-M

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

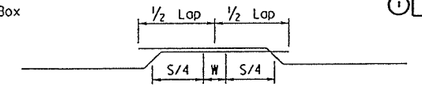
Bottom Slab
Straight "d" bars shall alternate with Bent "b1" bars in top.
Straight "f" bars shall alternate with Bent "b1" bars in bottom.



"h" bars sketch



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



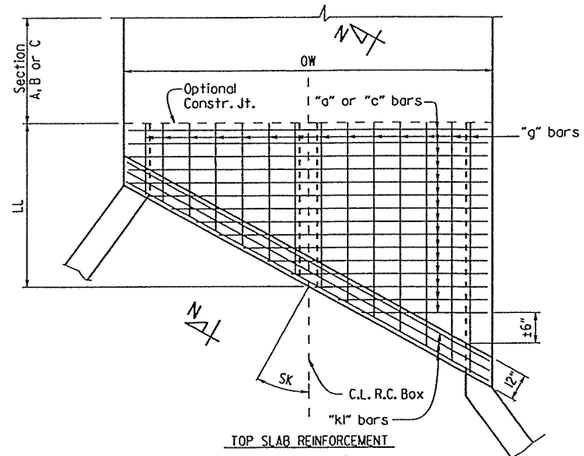
Lap Detail
For Bent "b" bars and Bent "b1" bars

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.

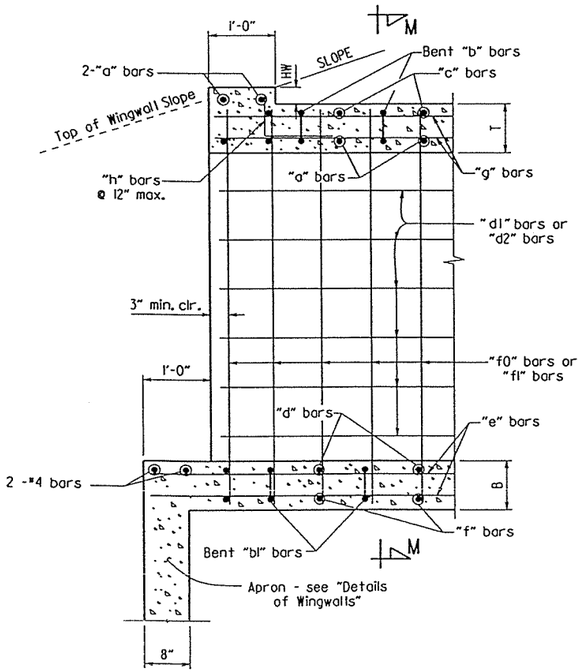
Bent "b" bars or Bent "b1" bars Bending Diagram

TYPICAL KEYWAY DETAIL

(All Construction Joints)

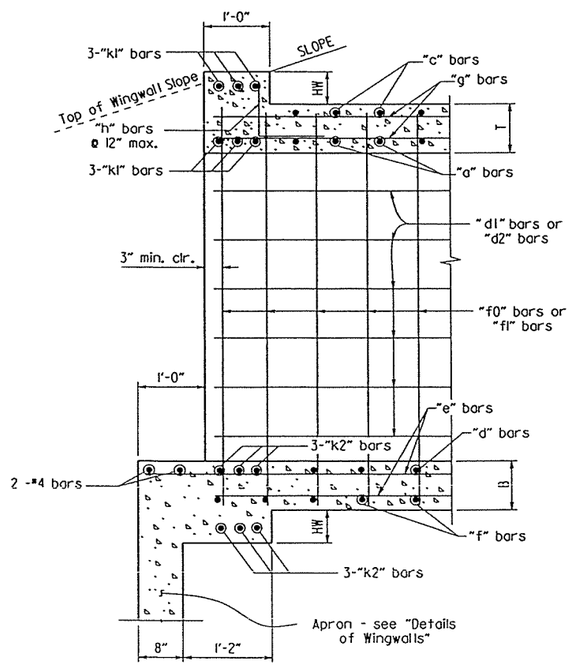


TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



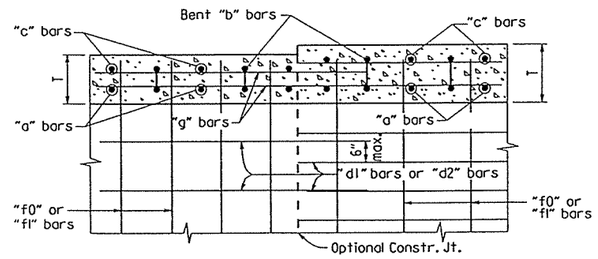
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



PART LONGITUDINAL SECTION N-N

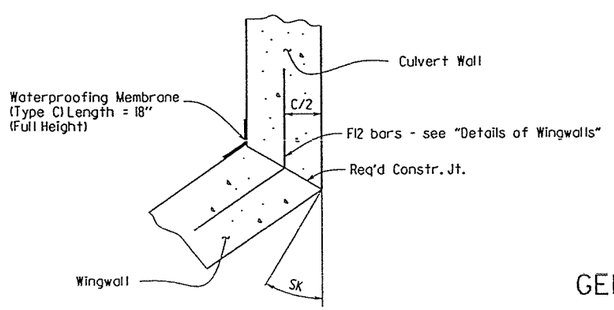
(Skewed Ends)



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

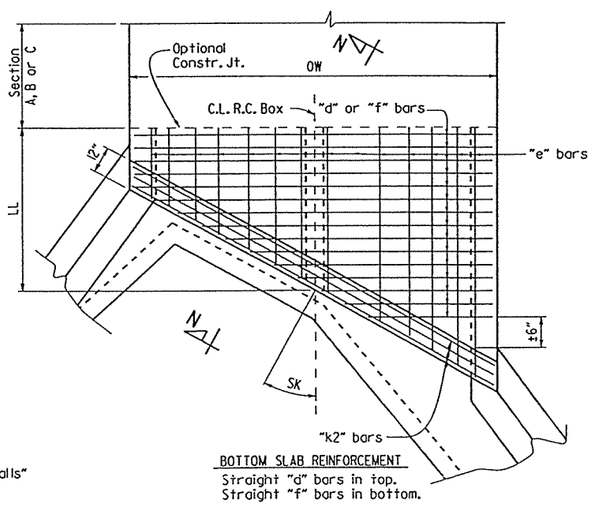
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



WINGWALL ATTACHMENT

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



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

SKEWED END SECTION DETAILS

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

DETAILS OF MULTI-BARREL
R.C. BOX CULVERT

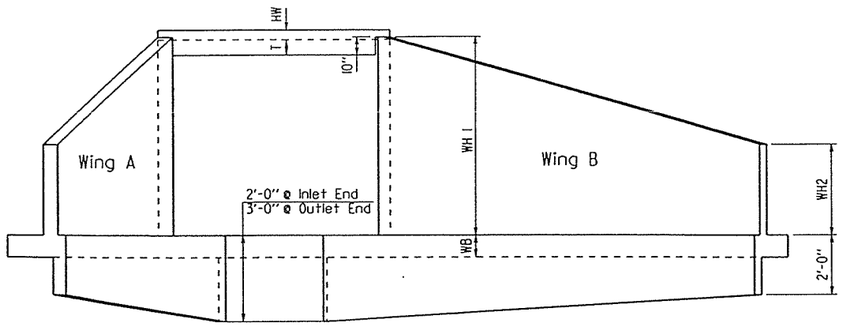
SPECIAL DETAILS

STATE OF ARKANSAS
CARL FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/14/11

Culvert-General.dgn

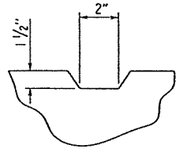
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	12	348

SPECIAL DETAILS



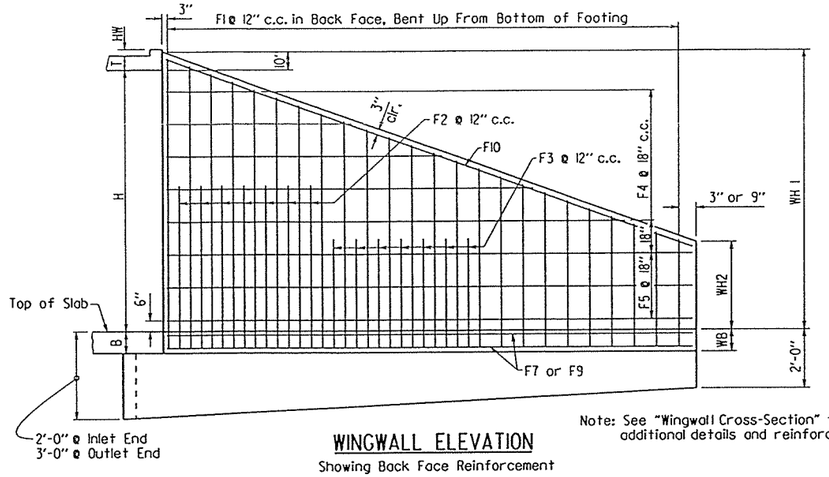
END ELEVATION

Flared Wingwalls Shown



TYPICAL KEYWAY DETAIL

All Construction Joints

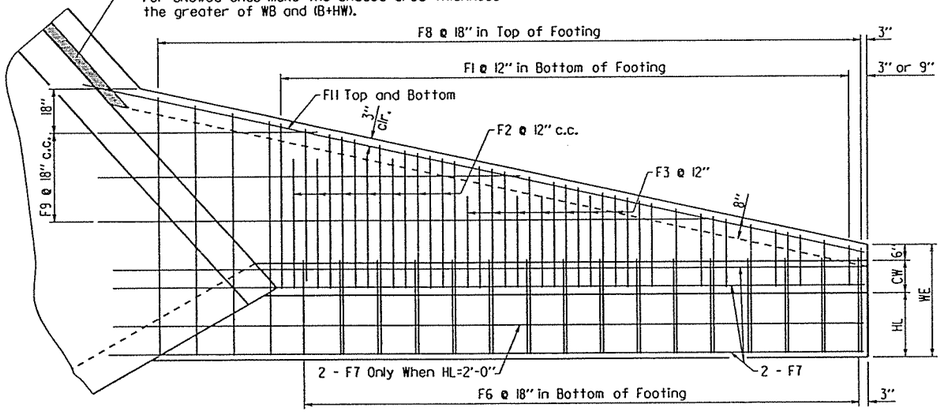


WINGWALL ELEVATION

Showing Back Face Reinforcement

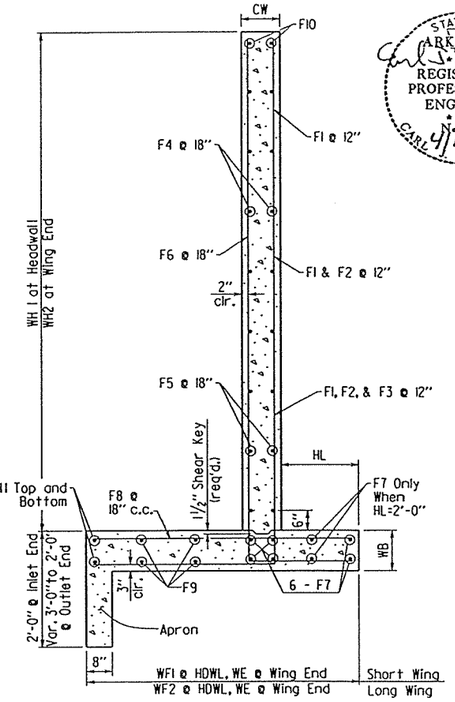
Note: See "Wingwall Cross-Section" for additional details and reinforcing

PART PLAN - FLARED WINGWALLS

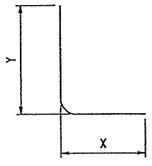


PLAN - FLARED WINGWALLS

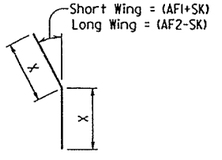
Showing Footing Reinforcement



WINGWALL SECTION P-P

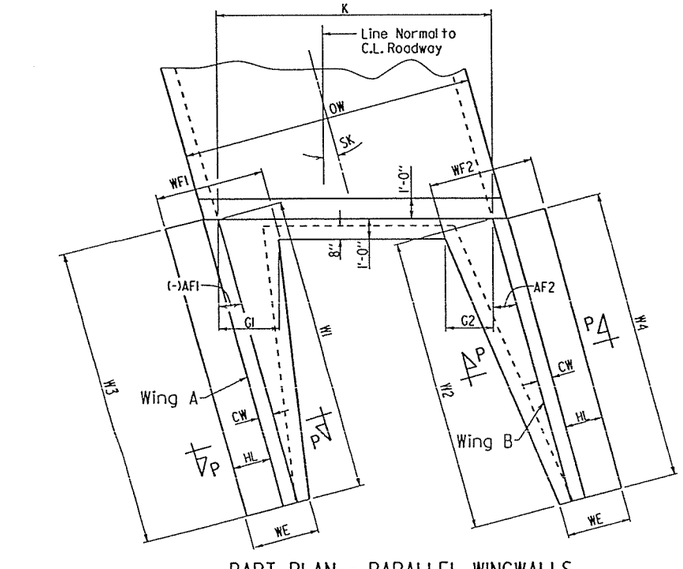


F1, F2, F3, & F6 BARS

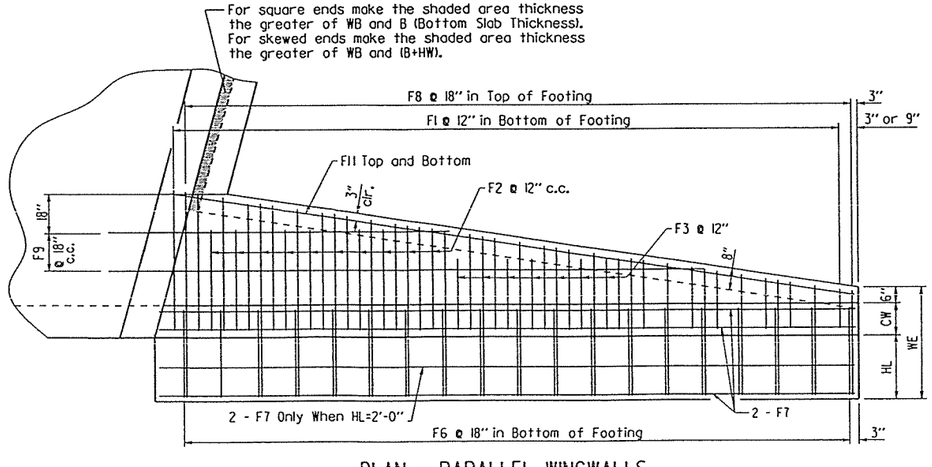


*F12 BAR

*F12 is a straight bar for parallel wingwalls

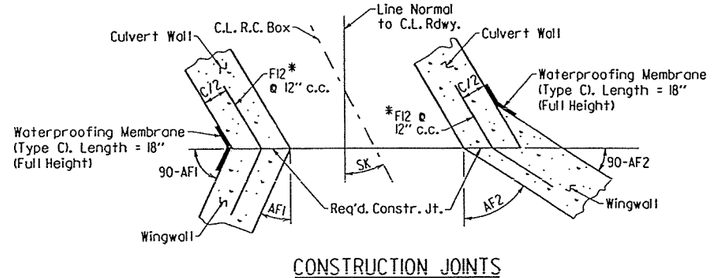


PART PLAN - PARALLEL WINGWALLS



PLAN - PARALLEL WINGWALLS

Showing Footing Reinforcement



CONSTRUCTION JOINTS

Flared Wingwalls Shown

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSSELIER
4/14/14

SHEET 4 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF WINGWALLS

SPECIAL DETAILS

LRFD

Culvert-General.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	13	348

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	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.
44'-0"	7'-0"	0'-9"	0'-8"	0	3.1	42'-6"	2'-0"	7'-10"	2'-4"	30	30	3'-2"	3'-9 3/4"	3'-9 3/4"	0'-9"	0'-9"	19'-0"	19'-0"	22'-3 3/8"	22'-3 3/8"	12.19	1028

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	19	L Min 3'-6" Max 9'-4" X Min 0'-9" Max 1'-5" Y Min 2'-10" Max 8'-0"	4	12	4	L 3'-9" X 1'-4" Y 2'-6"	-	-	-	L - X - Y -	4	18	6	Min 3'-10" Max 14'-3"	4	18	4	18'-8"	4	18	13	L Min 5'-1" Max 10'-3" X Min 2'-4" Max 2'-4" Y Min 2'-10" Max 8'-0"	4	8	23'-1"	4	18	13	Min 2'-8" Max 3'-4"	-	-	-	Min - Max -	4	2	19'-4"	4	2	20'-6"	6	12	7	L 3'-4" X 1'-8"	514
WING B	4	12	19	L Min 3'-6" Max 9'-4" X Min 0'-9" Max 1'-5" Y Min 2'-10" Max 8'-0"	4	12	4	L 3'-9" X 1'-4" Y 2'-6"	-	-	-	L - X - Y -	4	18	6	Min 3'-10" Max 14'-3"	4	18	4	18'-8"	4	18	13	L Min 5'-1" Max 10'-3" X Min 2'-4" Max 2'-4" Y Min 2'-10" Max 8'-0"	4	8	23'-1"	4	18	13	Min 2'-8" Max 3'-4"	-	-	-	Min - Max -	4	2	19'-4"	4	2	20'-6"	6	12	7	L 3'-4" X 1'-8"	514

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

Mn. 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. 7510 CARL J. FUSSLIER 4/14/14

TABULAR DATA BY: JGT DATE: 04/14/2014
CHECKED BY: TMG DATE: 4/14/14

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.	OVERALL WIDTH	OVERALL HEIGHT	TOP SLAB REINF. a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D	BOTTOM SLAB REINF. d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D	SIDE WALL REINF. f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINF. f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINF. g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINF. e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY	SIDE WALL DISTRIBUTION REINF. d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH	INTERIOR WALL DISTRIBUTION REINF. 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				Max													Max				Max				LONG				LONG
															Min				Min				Min				Min													Min				Min				SHORT				MID
																																																				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.

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 REINF. (LENGTH = OW - 4" + BENDS) a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	SPACING	NO. REQ'D	BOTTOM SLAB REINF. (LENGTH = OW - 4" + BENDS) d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	SPACING	NO. REQ'D	SIDE WALL REINF. "f0" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINF. "f1" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. "g" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. "e" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. "d1" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. "d2" (LENGTH = SL) SIZE	SPACING	NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL																																						
	10	8	7																																													

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	② ADTL. REINF. PER LONG. LAP LOCATION LBS.	ADTL. REINF. FOR TRANS. LAP LBS. PER LIN. FT.	ADDITIONAL CONCRETE FOR HDWL CU. YDS	TOTAL ADTL. REINF. FOR HDWL LBS.
				0.41	113

HDWL THK. HW	ADDITIONAL REINF. FOR HDWL LBS.	"h" BARS SIZE	Y	LENGTH	NO. REQ'D
3"	58	4	0'-10"	1'-10"	45

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 REINF. (LENGTH = OW - 4" + BENDS) a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	SPACING	NO. REQ'D	BOTTOM SLAB REINF. (LENGTH = OW - 4" + BENDS) d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	SPACING	NO. REQ'D	SIDE WALL REINF. "f0" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINF. "f1" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. "g" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. "e" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. "d1" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. "d2" (LENGTH = SL) SIZE	SPACING	NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL																																						
A	10	8	7	11	11	8	8	44'-0"	8'-10"	127	4	43'-8"	5	44'-11"	4	43'-8"	16	95	4	43'-8"	4	44'-9"	4	43'-8"	11	138	6	7.5	406	8'-6"	4	12	1016	8'-6"	4	10	109	4	10	109	4	12	14	4	12	56

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	③ ADTL. REINF. PER LONG. LAP LOCATION (S) LBS.	ADTL. REINF. FOR TRANS. LAP LBS. PER LIN. FT.
4.02	454	337	7

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
QUINTUPLE BARREL BOX CULVERT
STA. 326+35
SPECIAL DETAILS

Ver. 1.1.14 b110217_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.		110217	14	348

① SPECIAL DETAILS

STATE OF ARKANSAS
CARL E. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
NO. 7510
4/14/14

TABULAR DATA BY: JGT DATE: 04/14/2014
CHECKED BY: TMG DATE: 4/14/14

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) OUTLET	REINFORCING STEEL (Includes apron and laps if required) OUTLET
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	CU.YD	LBS.
44'-0"	7'-0"	0'-9"	0'-8"	0	3:1	42'-8"	2'-0"	7'-10"	2'-4"	30	30	3'-2"	3'-9 3/4"	3'-9 3/4"	0'-9"	0'-9"	19'-0"	19'-0"	22'-3 3/8"	22'-3 3/8"	13.67	1028

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	19	L	Min	3'-6"	4	12	4	L 3'-9"	-	-	-	L -	4	18	6	Min	4	18	4	18'-8"	4	18	13	L	Min	5'-1"	4	8	23'-1"	4	18	13	Min	-	-	-	Min	4	2	19'-4"	4	2	20'-6"	6	12	7	L	3'-4"	514
					Max	9'-4"												3'-10"									Max	10'-3"																				
				X	Min	0'-9"				X 1'-4"				X -												X	Min	2'-4"																		X	1'-8"	
					Max	1'-5"												Max									Max	2'-4"																				
				Y	Min	2'-10"				Y 2'-6"				Y -												Y	Min	2'-10"																				
					Max	8'-0"												14'-3"									Max	8'-0"																				
WING B	4	12	19	L	Min	3'-6"	4	12	4	L 3'-9"	-	-	-	L -	4	18	6	Min	4	18	4	18'-8"	4	18	13	L	Min	5'-1"	4	8	23'-1"	4	18	13	Min	-	-	-	Min	4	2	19'-4"	4	2	20'-6"	6	12	7	L	3'-4"	514
					Max	9'-4"												3'-10"									Max	10'-3"																				
				X	Min	0'-9"				X 1'-4"				X -												X	Min	2'-4"																		X	1'-8"	
					Max	1'-5"												Max									Max	2'-4"																				
				Y	Min	2'-10"				Y 2'-6"				Y -												Y	Min	2'-10"																				
					Max	8'-0"												14'-3"									Max	8'-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)."

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.	OVERALL WIDTH	OVERALL 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				Max											Max				Max			LONG				LONG
															Min				Min					Min				Min											Min				Min			SHORT				MID
																																																	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) CU. YDS.	① REINFORCING STEEL (GR 60) (Includes HDWL) LBS.

OUTLET SLOPE SECTIONS)

R.C. BOX SECTION D	DESIGN FILL DEPTH (FT.) S	CLEAR SPAN (FT.) H	CLEAR HEIGHT (FT.) T	TOP SLAB THK. B	BOTTOM SLAB THK. C	SIDE WALL THK. W	INTERIOR WALL THK. OW	OVER ALL WIDTH OH	OVER ALL HEIGHT SL	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	c SPACING	c 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	f SPACING	f 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
10	8	7																																															

HDWL THK. HW	ADDITIONAL REINF. FOR HDWL LBS.	"h" BARS SIZE	"h" BARS Y	"h" BARS LENGTH	"h" BARS NO. REQ'D
3"	58	4	0'-10"	1'-10"	45

CLASS 'S' CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	② ADTL. REINF. PER LONG. LAP LOCATION LBS.	ADTL. REINF. FOR TRANS. LAP LBS. PER LIN. FT.	ADDITIONAL CONCRETE FOR HDWL CU. YDS.	TOTAL ADTL. REINF. FOR HDWL LBS.
				0.41	113

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

QUINTUPLE BARREL BOX CULVERT
STA. 326+35

SPECIAL DETAILS

LRFD

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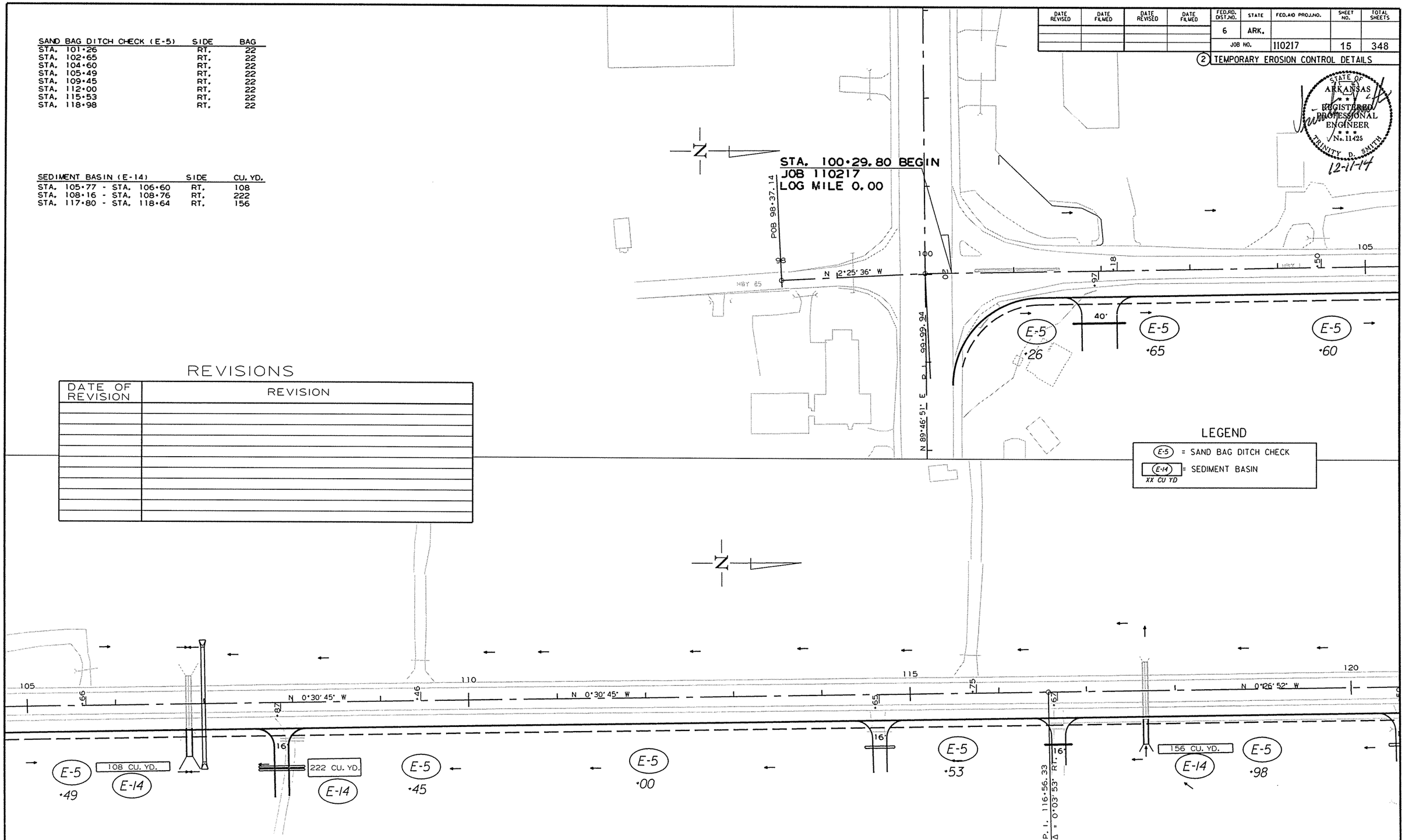
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	15	348

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 101+26	RT.	22
STA. 102+65	RT.	22
STA. 104+60	RT.	22
STA. 105+49	RT.	22
STA. 109+45	RT.	22
STA. 112+00	RT.	22
STA. 115+53	RT.	22
STA. 118+98	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 105+77 - STA. 106+60	RT.	108
STA. 108+16 - STA. 108+76	RT.	222
STA. 117+80 - STA. 118+64	RT.	156



REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

11/12/2014

R110217.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.		110217	16	348

(2) TEMPORARY EROSION CONTROL DETAILS

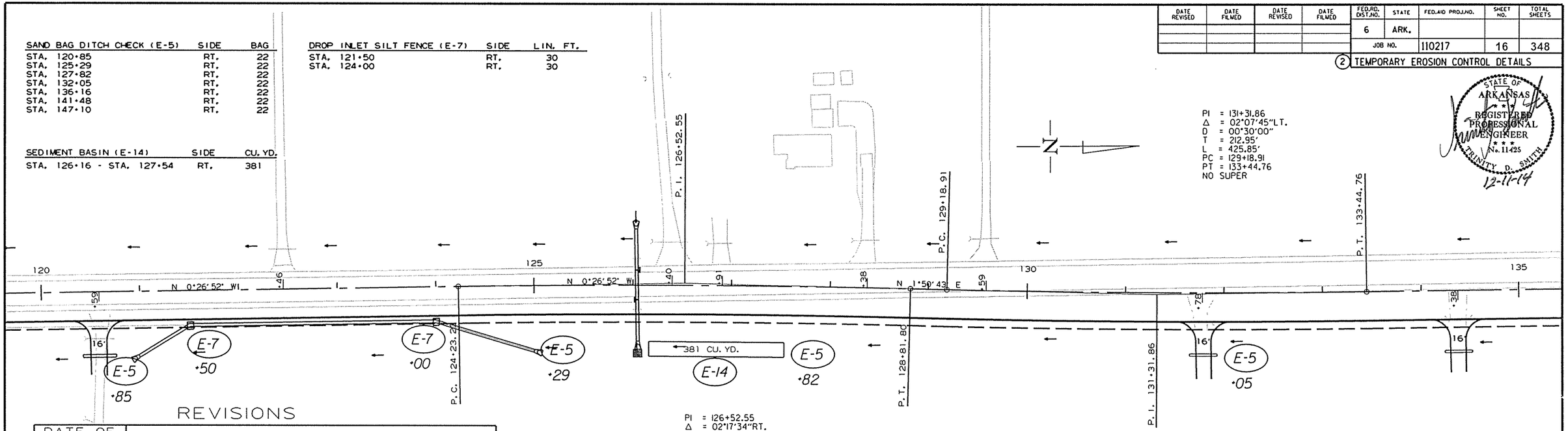
SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 120+85	RT.	22
STA. 125+29	RT.	22
STA. 127+82	RT.	22
STA. 132+05	RT.	22
STA. 136+16	RT.	22
STA. 141+48	RT.	22
STA. 147+10	RT.	22

DROP INLET SILT FENCE (E-7)	SIDE	LIN. FT.
STA. 121+50	RT.	30
STA. 124+00	RT.	30

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 126+16 - STA. 127+54	RT.	381

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

PI = 131+31.86
Δ = 02°07'45"LT.
D = 00°30'00"
T = 212.95'
L = 425.85'
PC = 129+18.91
PT = 133+44.76
NO SUPER



REVISIONS

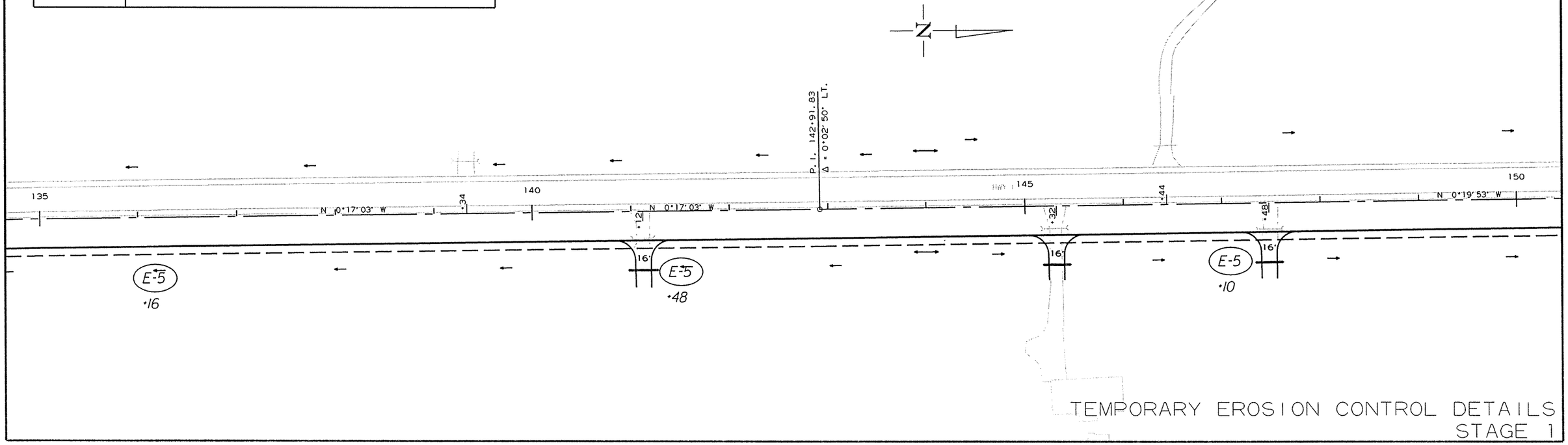
DATE OF REVISION	REVISION

PI = 126+52.55
Δ = 02°17'34"RT.
D = 00°30'00"
T = 229.32'
L = 458.57'
PC = 124+23.23
PT = 128+81.80
NO SUPER

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 XX CU YD = SEDIMENT BASIN



TEMPORARY EROSION CONTROL DETAILS
STAGE 1

11/12/2014

R110217.DGN

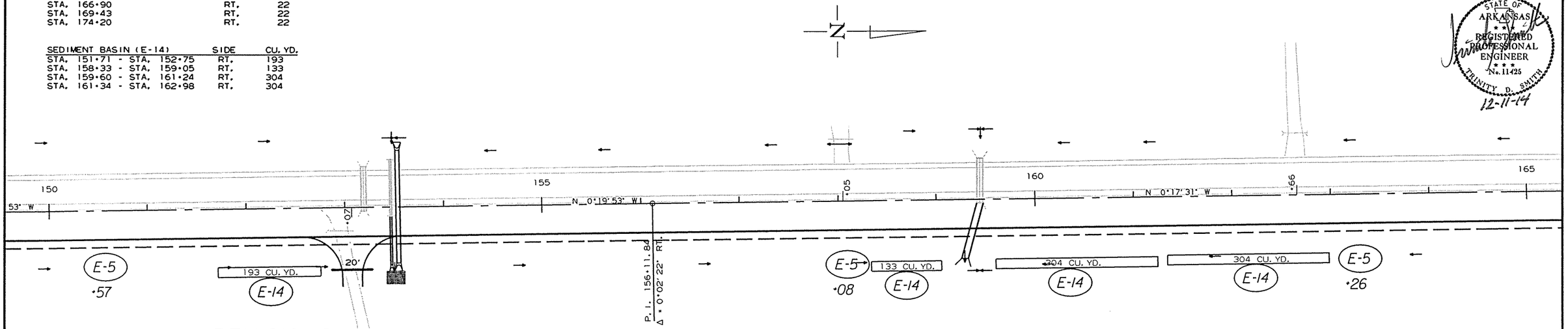
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	17	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 150+57	RT.	22
STA. 158+08	RT.	22
STA. 163+26	RT.	22
STA. 166+90	RT.	22
STA. 169+43	RT.	22
STA. 174+20	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 151+71 - STA. 152+75	RT.	193
STA. 158+33 - STA. 159+05	RT.	133
STA. 159+60 - STA. 161+24	RT.	304
STA. 161+34 - STA. 162+98	RT.	304

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



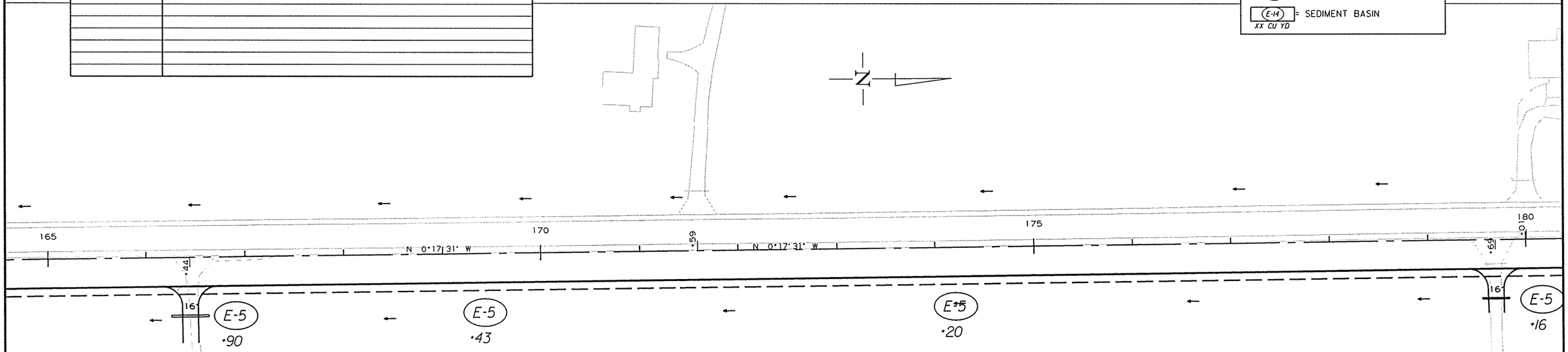
REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-14) XX CU YD = SEDIMENT BASIN



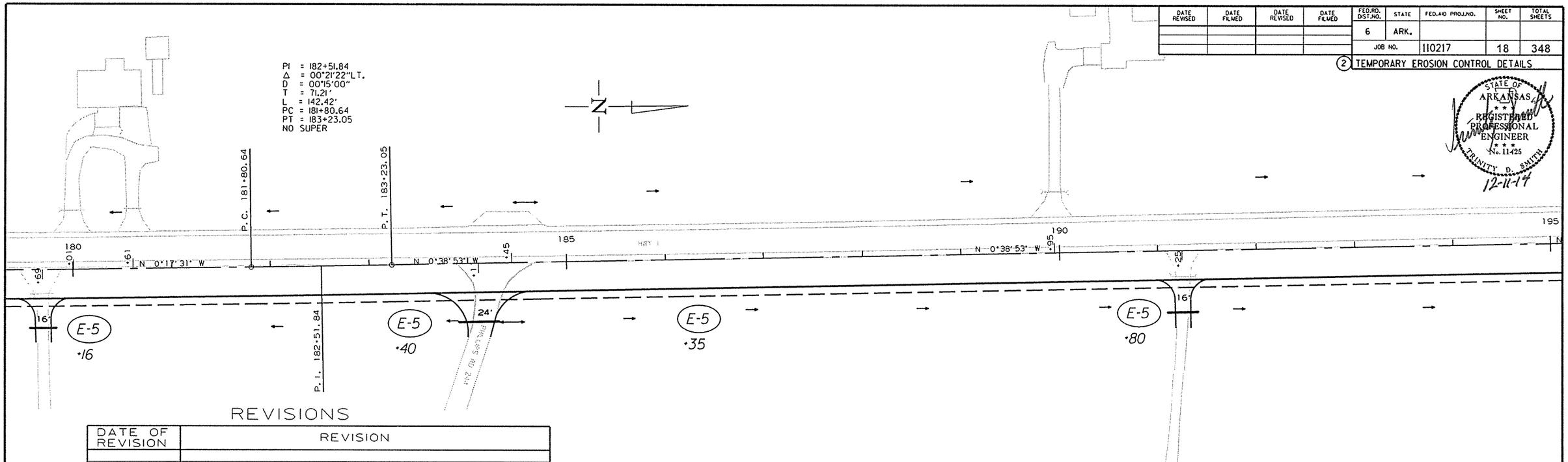
11/12/2014

R110217.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	18	348

(2) TEMPORARY EROSION CONTROL DETAILS



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

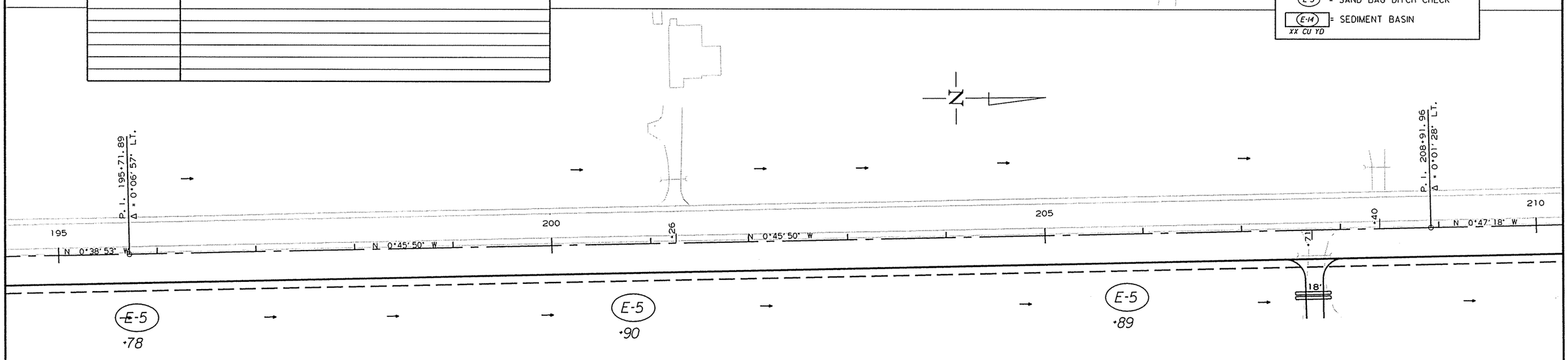
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 (XX CU YD) = SEDIMENT BASIN



SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 180+16	RT.	22
STA. 183+40	RT.	22
STA. 186+35	RT.	22
STA. 190+80	RT.	22
STA. 195+78	RT.	22
STA. 200+90	RT.	22
STA. 205+89	RT.	22

11/12/2014

R110217.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

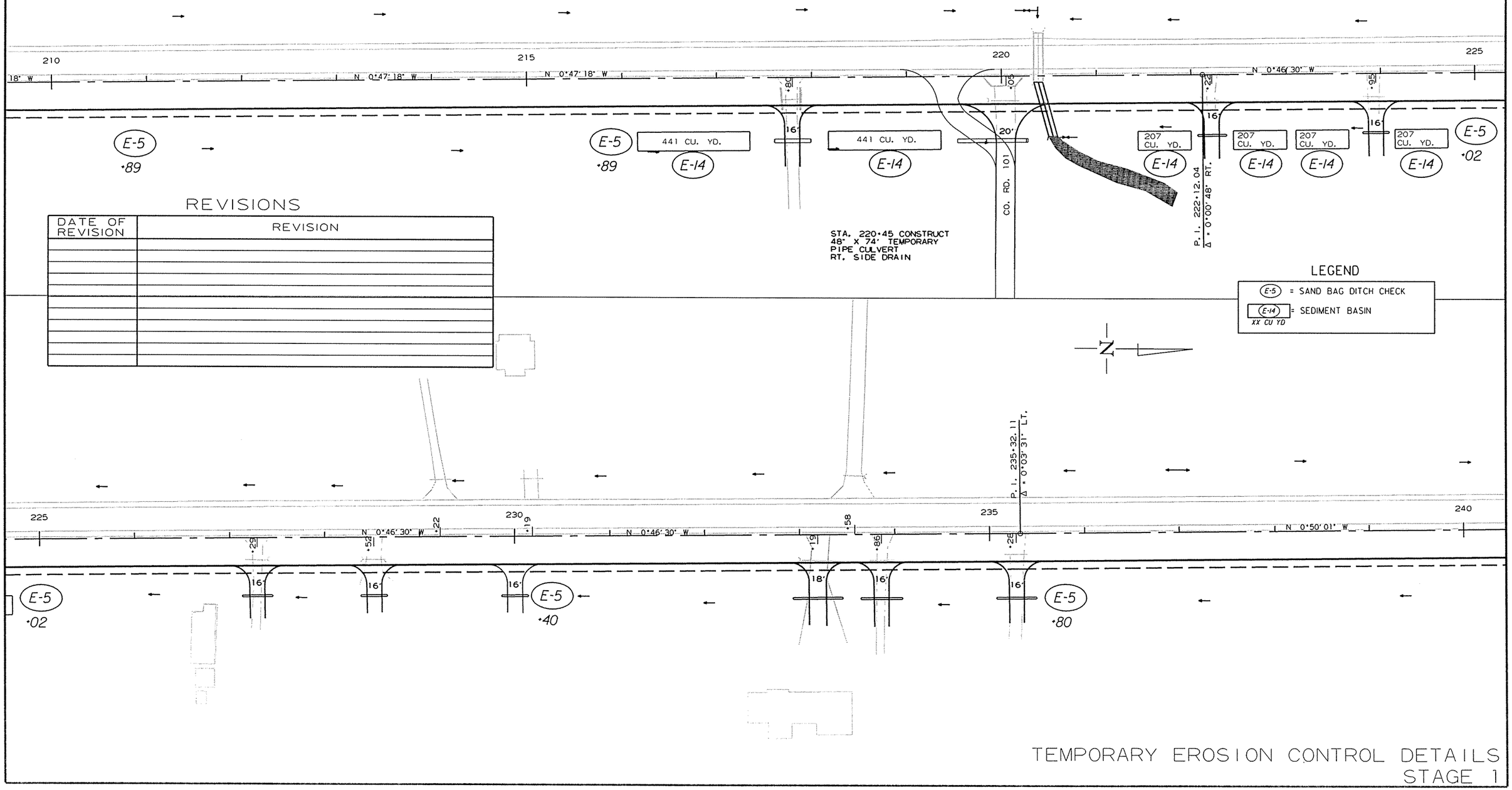
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	19	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 210+89	RT.	22
STA. 215+89	RT.	22
STA. 225+02	RT.	22
STA. 230+40	RT.	22
STA. 235+80	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 216+16 - STA. 217+35	RT.	441
STA. 218+17 - STA. 219+36	RT.	441
STA. 221+44 - STA. 222+00	RT.	207
STA. 222+44 - STA. 223+00	RT.	207
STA. 223+10 - STA. 223+66	RT.	207
STA. 224+15 - STA. 224+71	RT.	207

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-1-14



REVISIONS

DATE OF REVISION	REVISION

11/12/2014

R110217.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

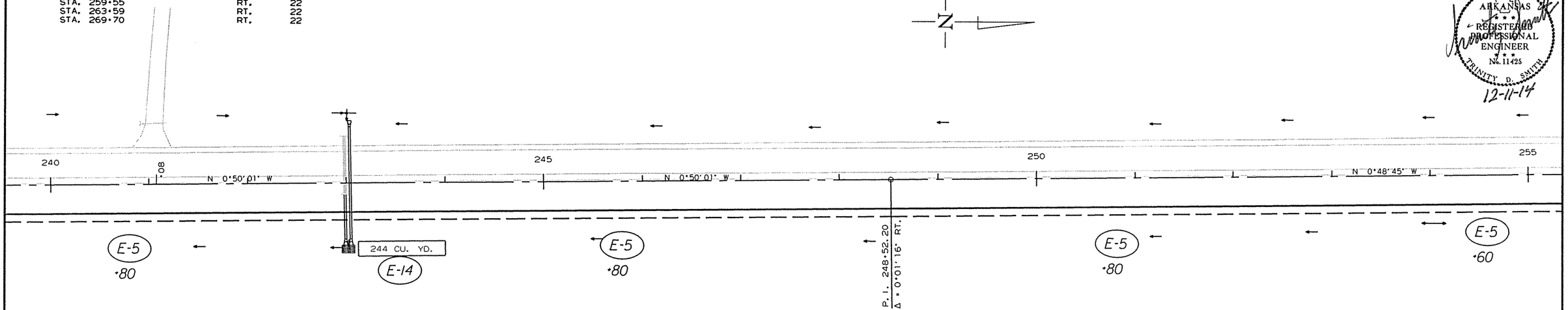
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	20	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 240+80	RT.	22
STA. 245+80	RT.	22
STA. 250+80	RT.	22
STA. 254+60	RT.	22
STA. 259+55	RT.	22
STA. 263+59	RT.	22
STA. 269+70	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 243+12 - STA. 244+00	RT.	244
STA. 260+55 - STA. 261+40	RT.	157
STA. 261+75 - STA. 263+00	RT.	116

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



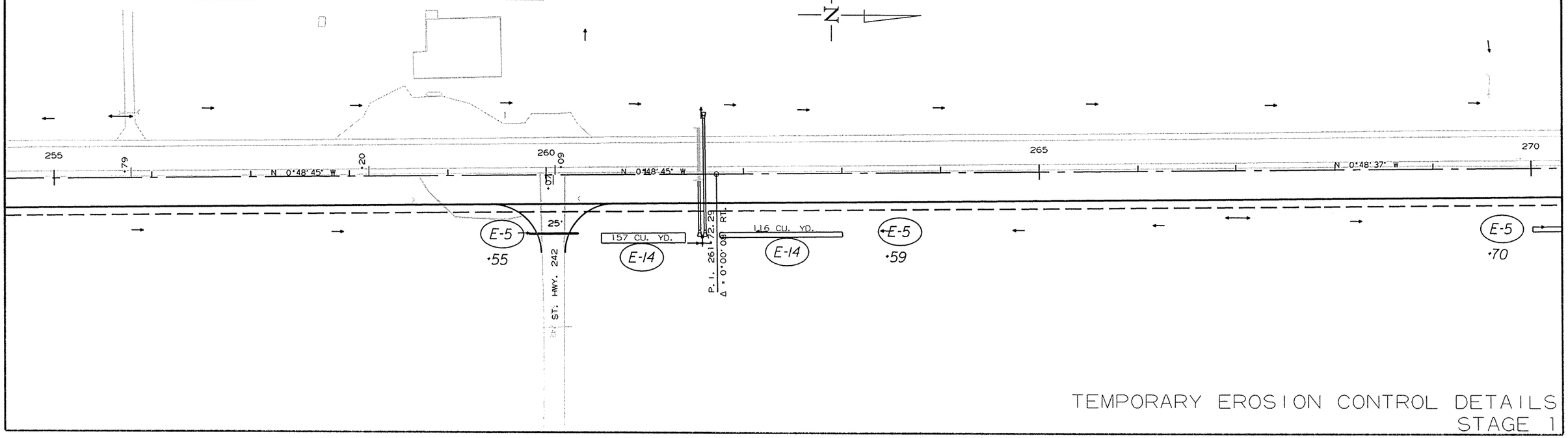
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 (XX CU YD) = SEDIMENT BASIN



11/12/2014

R110217.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

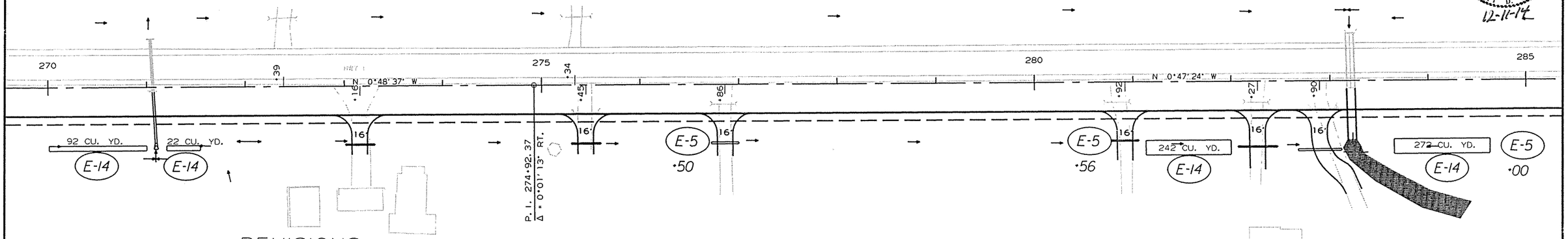
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	21	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 276+50	RT.	22
STA. 280+56	RT.	22
STA. 285+00	RT.	22
STA. 290+00	RT.	22
STA. 294+13	RT.	22
STA. 296+03	RT.	22
STA. 299+50	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 270+01 - STA. 271+00	RT.	92
STA. 271+20 - STA. 271+54	RT.	22
STA. 281+13 - STA. 282+00	RT.	242
STA. 283+65 - STA. 284+63	RT.	272

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



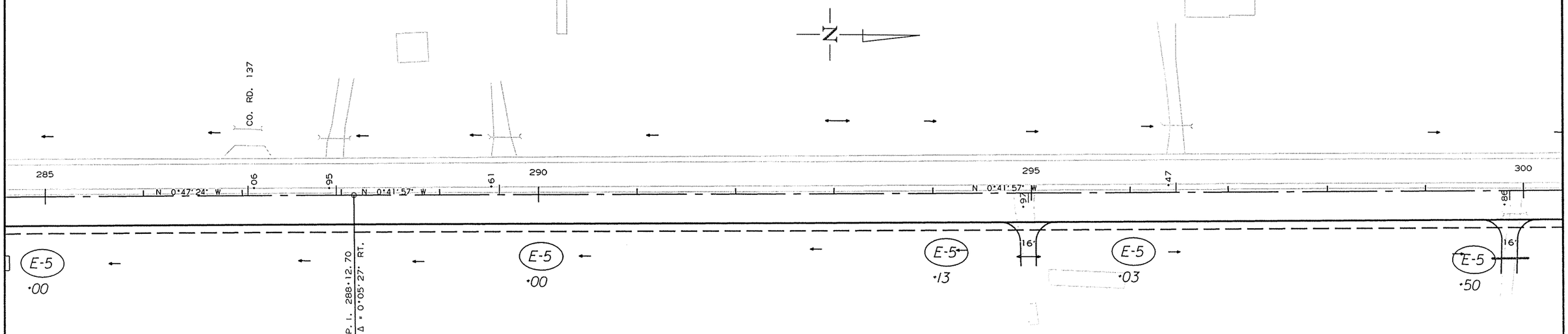
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 XX CU YD = SEDIMENT BASIN



TEMPORARY EROSION CONTROL DETAILS
STAGE 1

11/12/2014

R110217.DGN

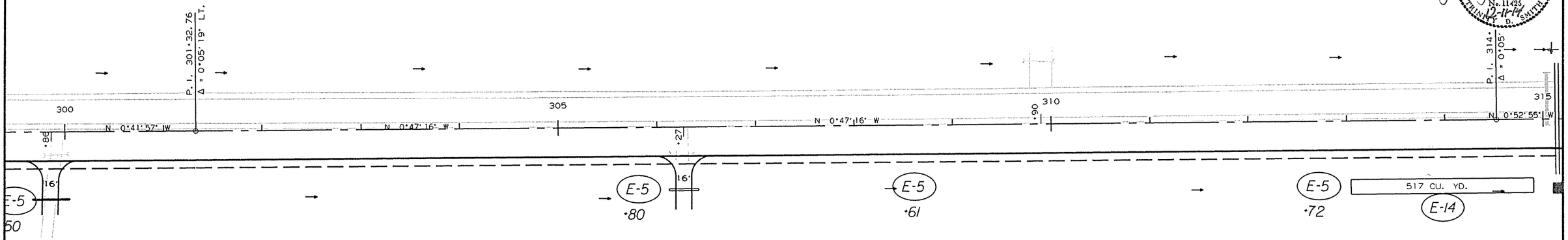
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	22	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 305+80	RT.	22
STA. 303+61	RT.	22
STA. 312+72	RT.	22
STA. 319+70	RT.	22
STA. 323+66	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 313+04 - STA. 314+90	RT.	517
STA. 325+19 - STA. 326+00	RT.	300
STA. 326+70 - STA. 328+38	RT.	467
STA. 328+53 - STA. 330+21	RT.	467

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
12-11-14
TRINKA D. SMITH



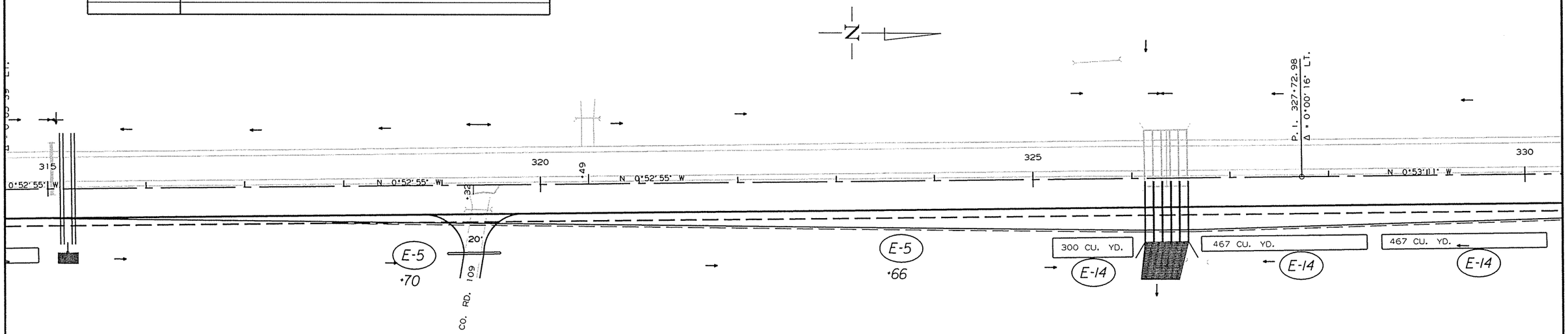
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 XX CU YD = SEDIMENT BASIN



11/12/2014

R110217.DGN

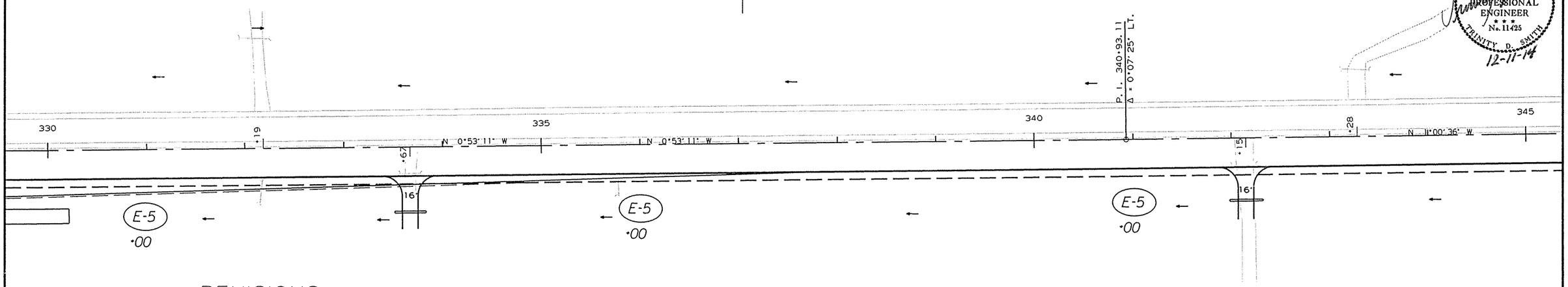
TEMPORARY EROSION CONTROL DETAILS STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	23	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 331+00	RT.	22
STA. 336+00	RT.	22
STA. 341+00	RT.	22
STA. 345+00	RT.	22
STA. 351+00	RT.	22
STA. 356+00	RT.	22

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



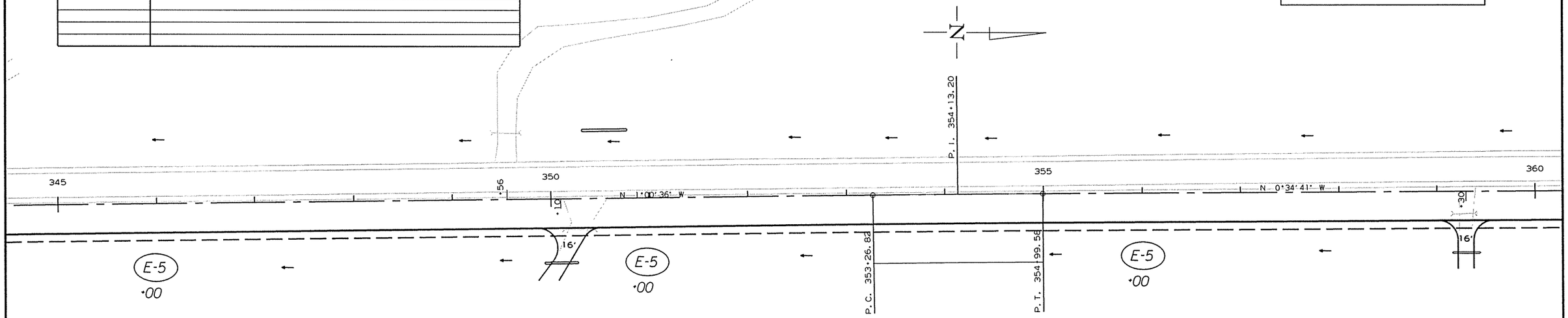
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 / XX CU YD = SEDIMENT BASIN



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D = 00°15'00"
T = 86.38'
L = 172.77'
PC = 353+26.82
PT = 354+99.58
NO SUPER

11/12/2014

R110217.DGN

TEMPORARY EROSION CONTROL DETAILS STAGE 1

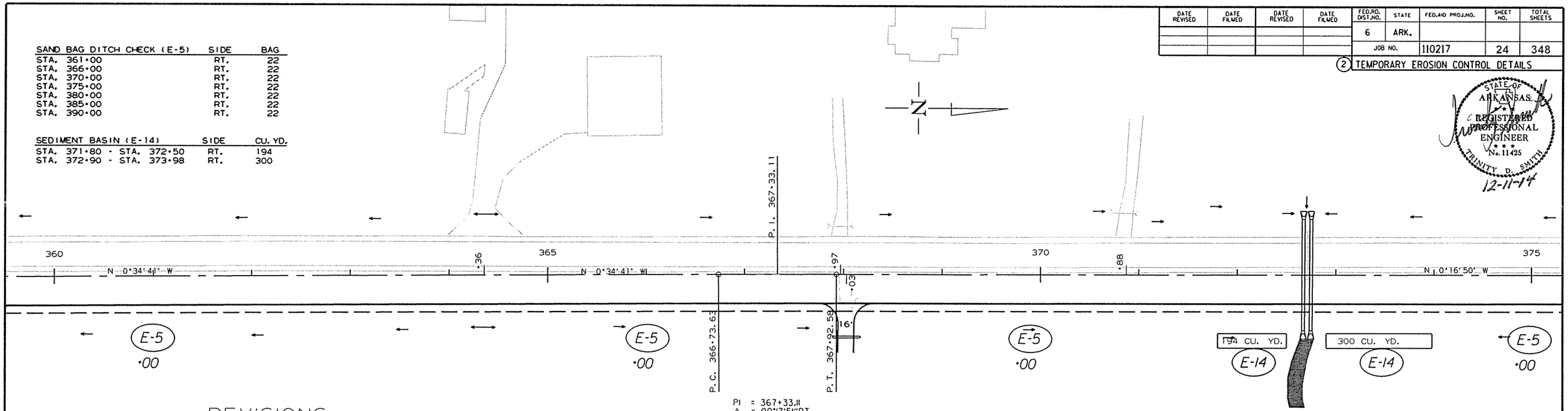
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	24	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 361+00	RT.	22
STA. 366+00	RT.	22
STA. 370+00	RT.	22
STA. 375+00	RT.	22
STA. 380+00	RT.	22
STA. 385+00	RT.	22
STA. 390+00	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 371+80 - STA. 372+50	RT.	194
STA. 372+90 - STA. 373+98	RT.	300

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



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PT = 367+92.58
NO SUPER

REVISIONS

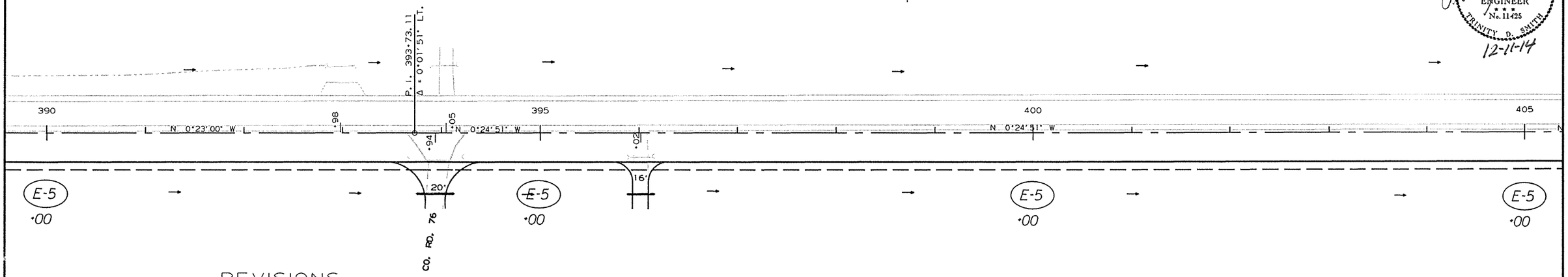
DATE OF REVISION	REVISION

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	25	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 395+00	RT.	22
STA. 400+00	RT.	22
STA. 405+00	RT.	22
STA. 410+00	RT.	22
STA. 415+00	RT.	22

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-1-14



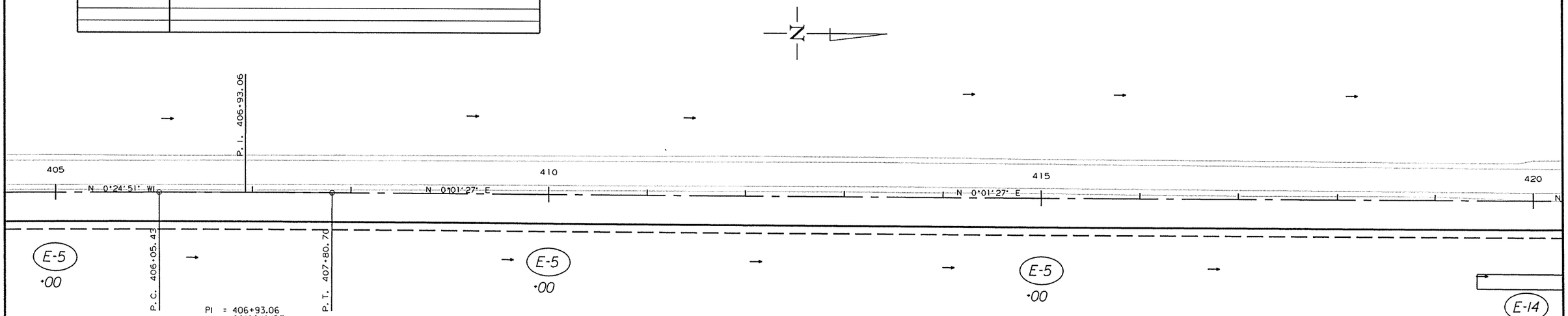
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 (XX CU YD) = SEDIMENT BASIN



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PC = 406+05.43
PT = 407+80.70
NO SUPER

11/12/2014

R110217.DGN

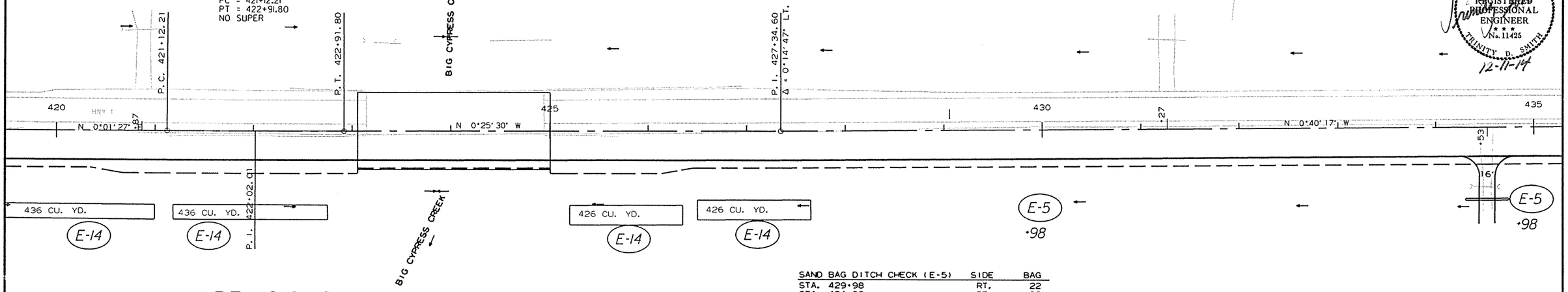
TEMPORARY EROSION CONTROL DETAILS STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	26	348

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

PI = 422+02.01
Δ = 00°26'56"LT.
D = 00°15'00"
T = 89.80'
L = 179.60'
PC = 421+12.21
PT = 422+91.80
NO SUPER



REVISIONS

DATE OF REVISION	REVISION

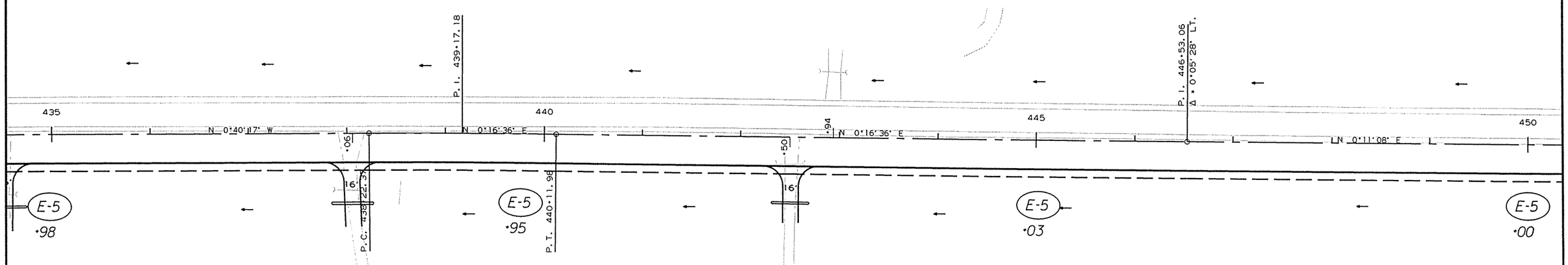
SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 429+98	RT.	22
STA. 434+98	RT.	22
STA. 439+95	RT.	22
STA. 445+03	RT.	22
STA. 450+00	RT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 419+43 - STA. 421+00	RT.	436
STA. 421+19 - STA. 422+75	RT.	436
STA. 425+20 - STA. 426+35	RT.	426
STA. 426+50 - STA. 427+64	RT.	426

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 = SEDIMENT BASIN
XX CU YD



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T = 94.81'
L = 189.61'
PC = 438+22.37
PT = 440+11.98
NO SUPER

11/12/2014

R110217.DGN

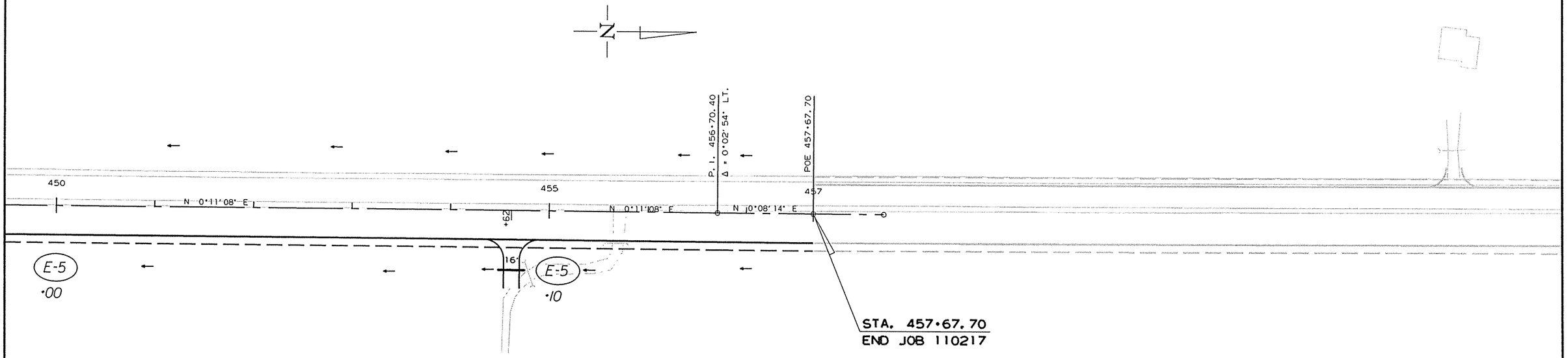
TEMPORARY EROSION CONTROL DETAILS
STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	27	348

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 455+10	RT.	22



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-14) = SEDIMENT BASIN
XX CU YD

11/12/2014

R110217.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	28	348

(2) TEMPORARY EROSION CONTROL DETAILS

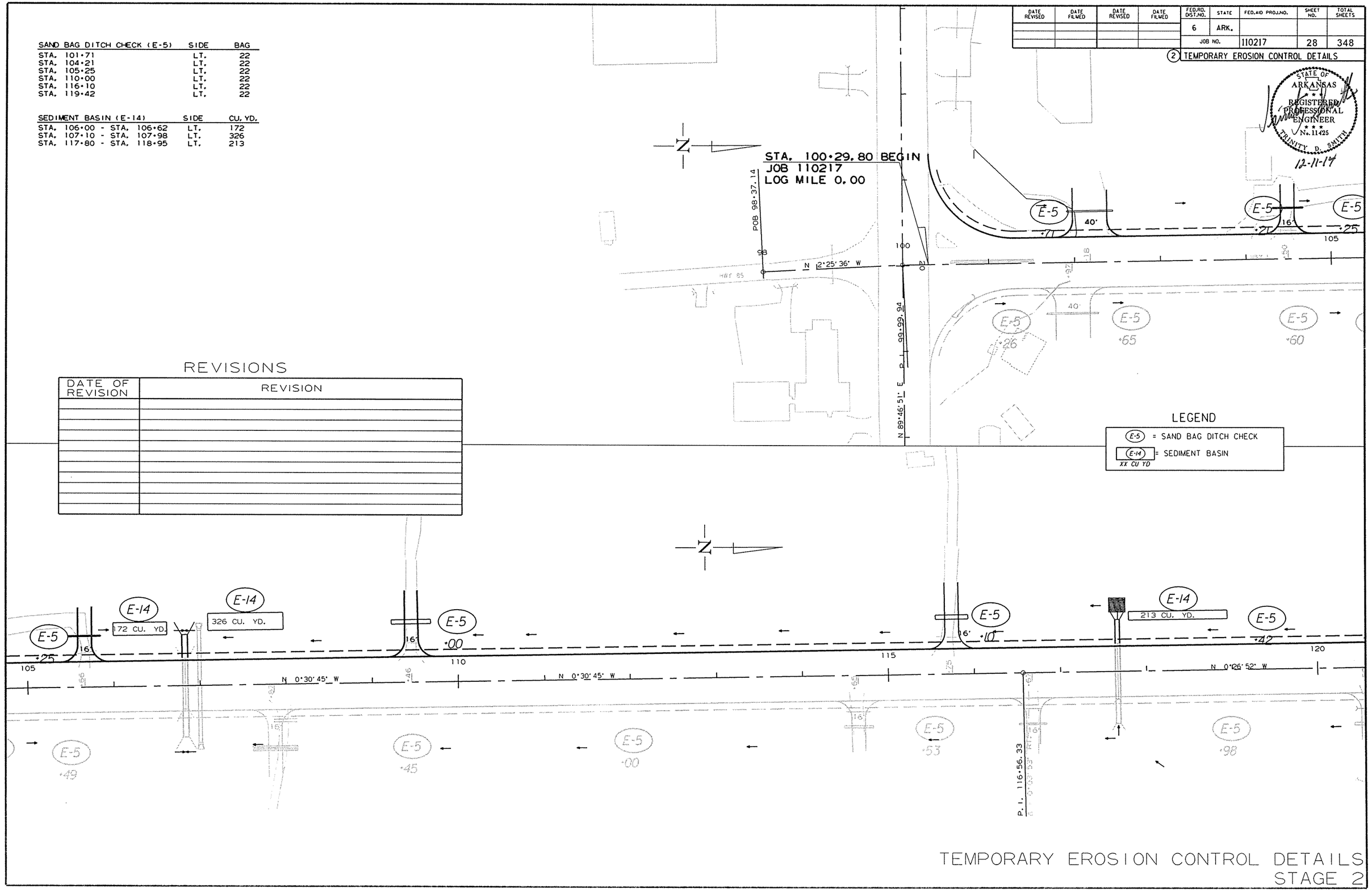
SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 101+71	LT.	22
STA. 104+21	LT.	22
STA. 105+25	LT.	22
STA. 110+00	LT.	22
STA. 116+10	LT.	22
STA. 119+42	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 106+00 - STA. 106+62	LT.	172
STA. 107+10 - STA. 107+98	LT.	326
STA. 117+80 - STA. 118+95	LT.	213

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

REVISIONS

DATE OF REVISION	REVISION



11/12/2014

R110217.DGN

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	29	348

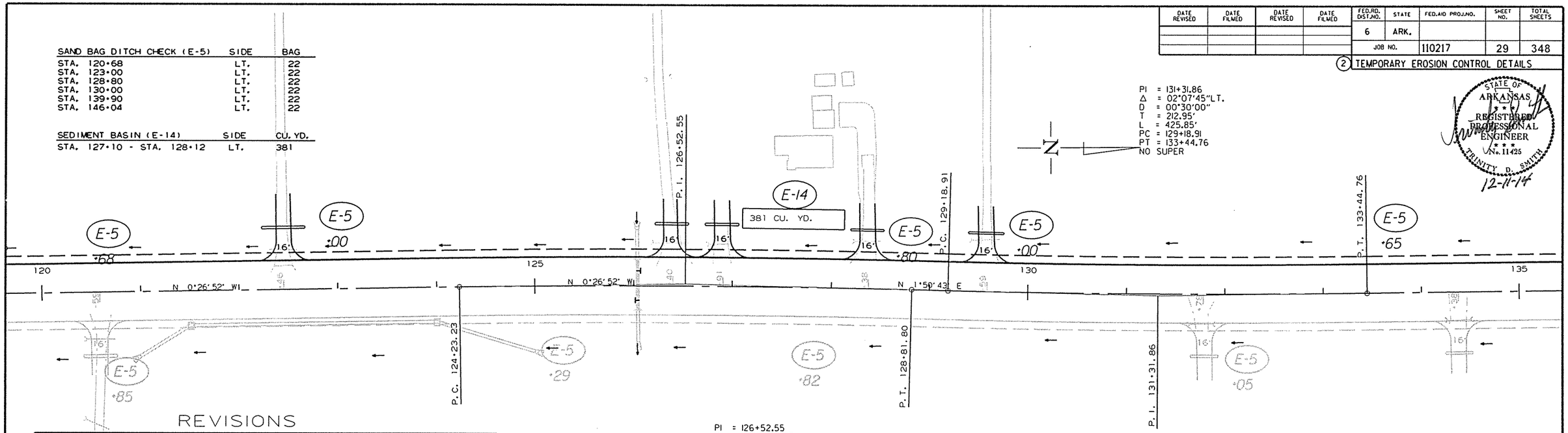
(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 120+68	LT.	22
STA. 123+00	LT.	22
STA. 128+80	LT.	22
STA. 130+00	LT.	22
STA. 139+90	LT.	22
STA. 146+04	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 127+10 - STA. 128+12	LT.	381

PI = 131+31.86
Δ = 02°07'45"LT.
D = 00°30'00"
T = 212.95'
L = 425.85'
PC = 129+18.91
PT = 133+44.76
NO SUPER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



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D = 00°30'00"
T = 229.32'
L = 458.57'
PC = 124+23.23
PT = 128+81.80
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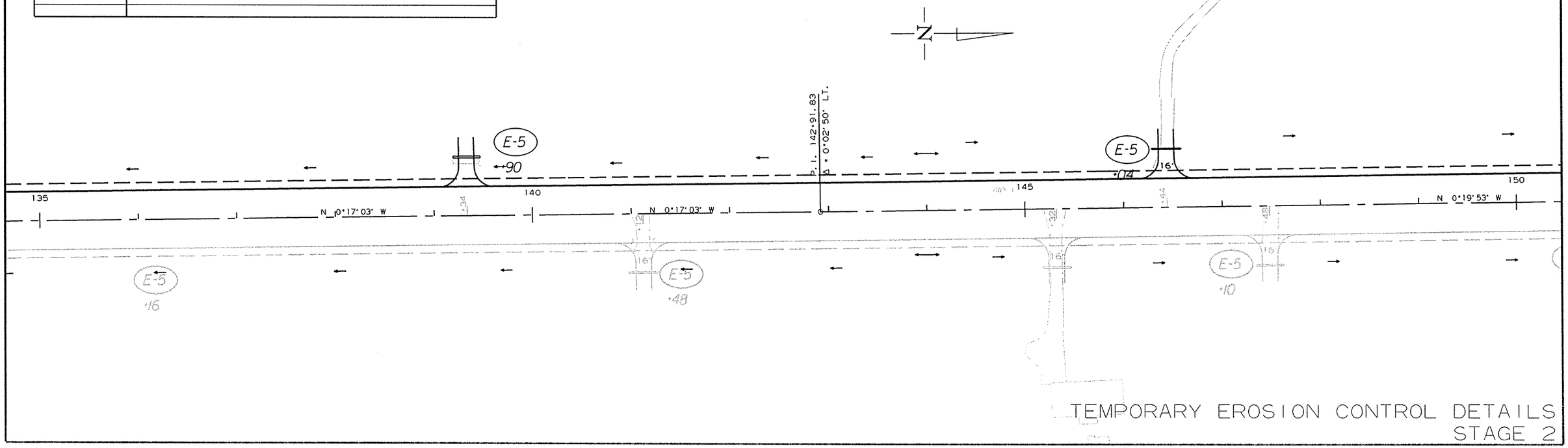
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 XX CU YD = SEDIMENT BASIN



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TEMPORARY EROSION CONTROL DETAILS STAGE 2

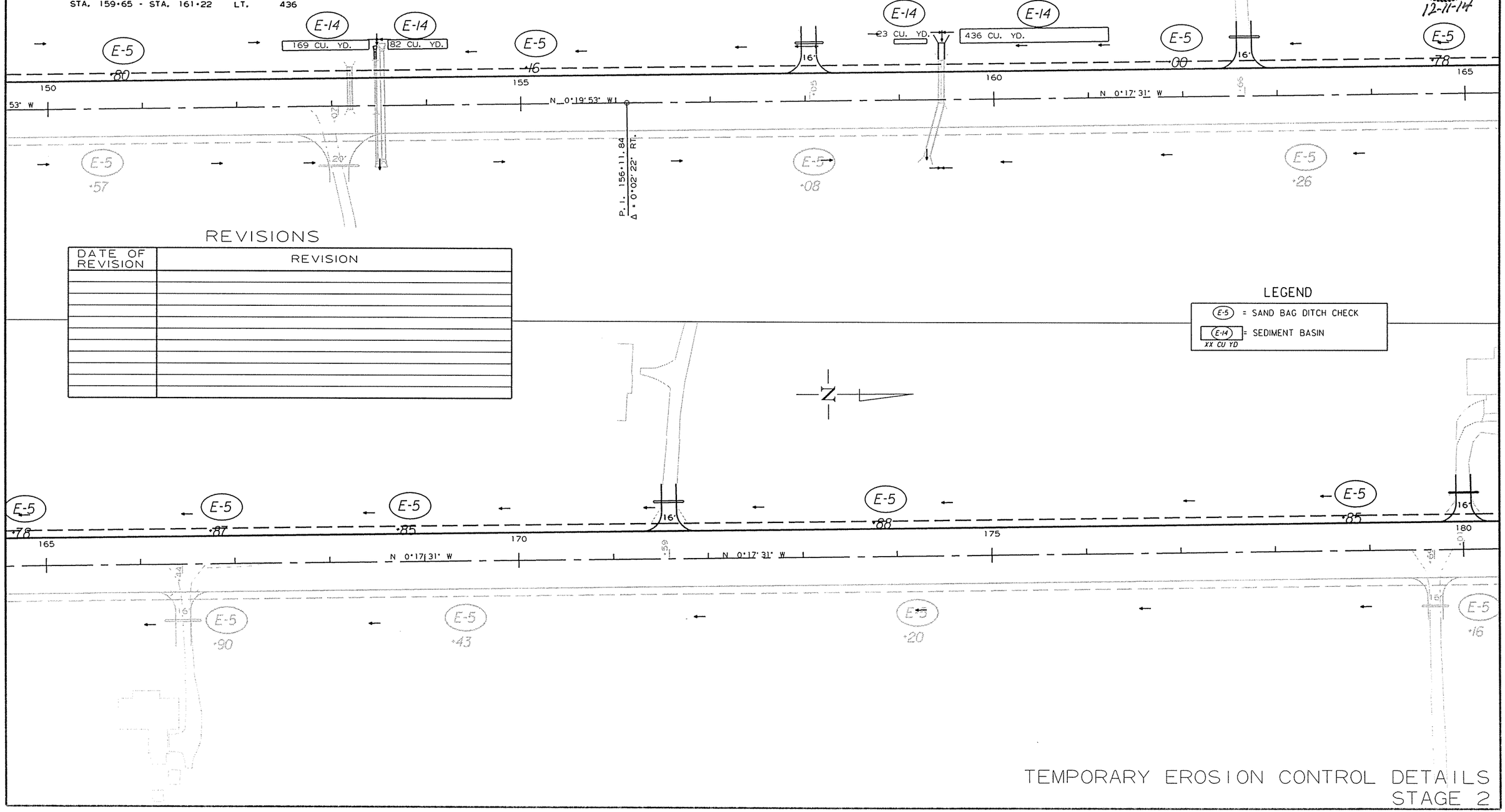
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	30	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 150+80	LT.	22
STA. 155+16	LT.	22
STA. 162+00	LT.	22
STA. 164+78	LT.	22
STA. 166+87	LT.	22
STA. 168+85	LT.	22
STA. 173+88	LT.	22
STA. 178+85	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 152+49 - STA. 153+40	LT.	381
STA. 153+60 - STA. 154+23	LT.	82
STA. 158+95 - STA. 159+30	LT.	23
STA. 159+65 - STA. 161+22	LT.	436

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

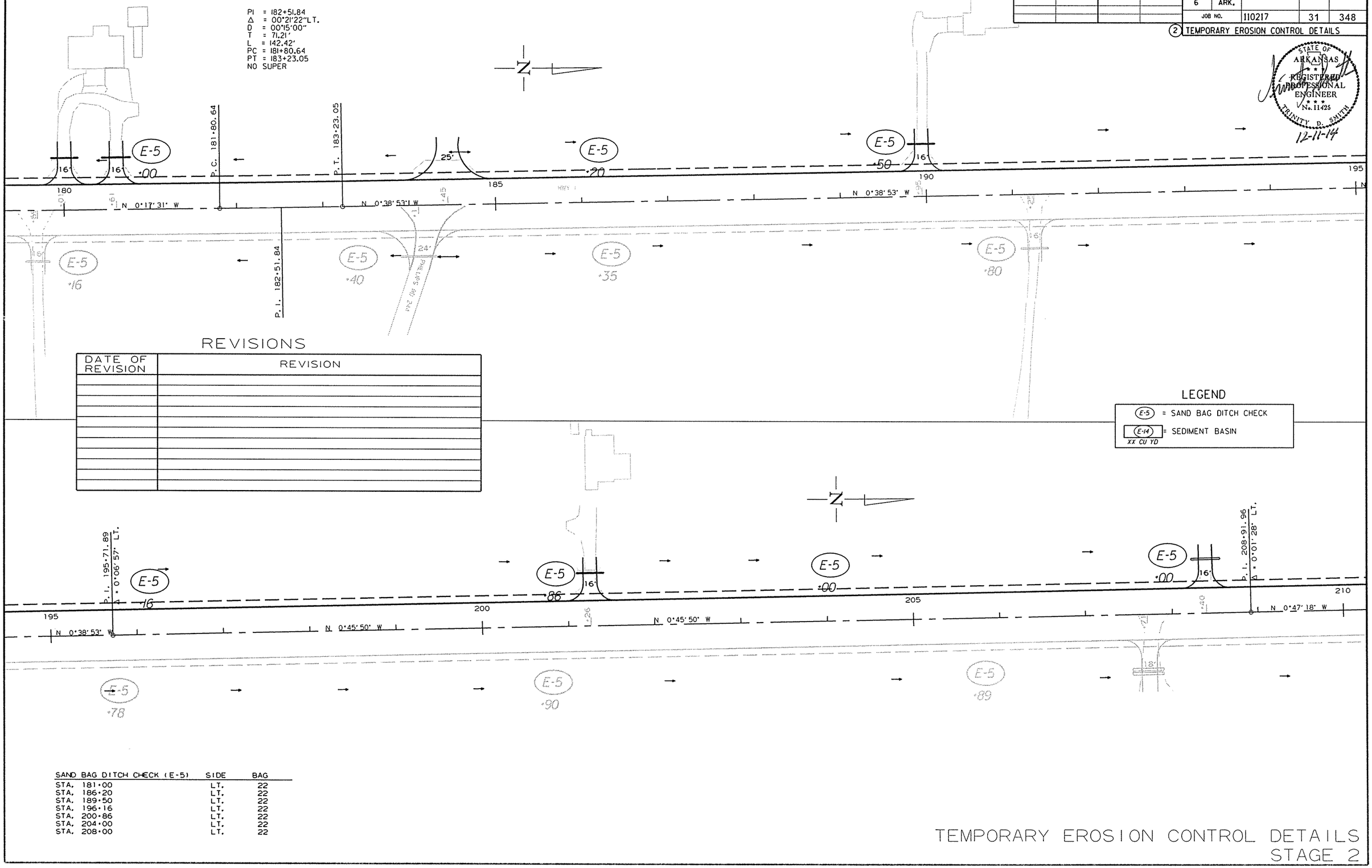

E-14
169 CU. YD.
E-14
82 CU. YD.
E-14
23 CU. YD.
E-14
436 CU. YD.
E-5
E-5
E-5

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	31	348

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

PI = 182+51.84
Δ = 00°21'22" LT.
D = 00°15'00"
T = 71.21'
L = 142.42'
PC = 181+80.64
PT = 183+23.05
NO SUPER



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-14) XX CU YD = SEDIMENT BASIN

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 181+00	LT.	22
STA. 186+20	LT.	22
STA. 189+50	LT.	22
STA. 196+16	LT.	22
STA. 200+86	LT.	22
STA. 204+00	LT.	22
STA. 208+00	LT.	22

TEMPORARY EROSION CONTROL DETAILS STAGE 2

11/12/2014

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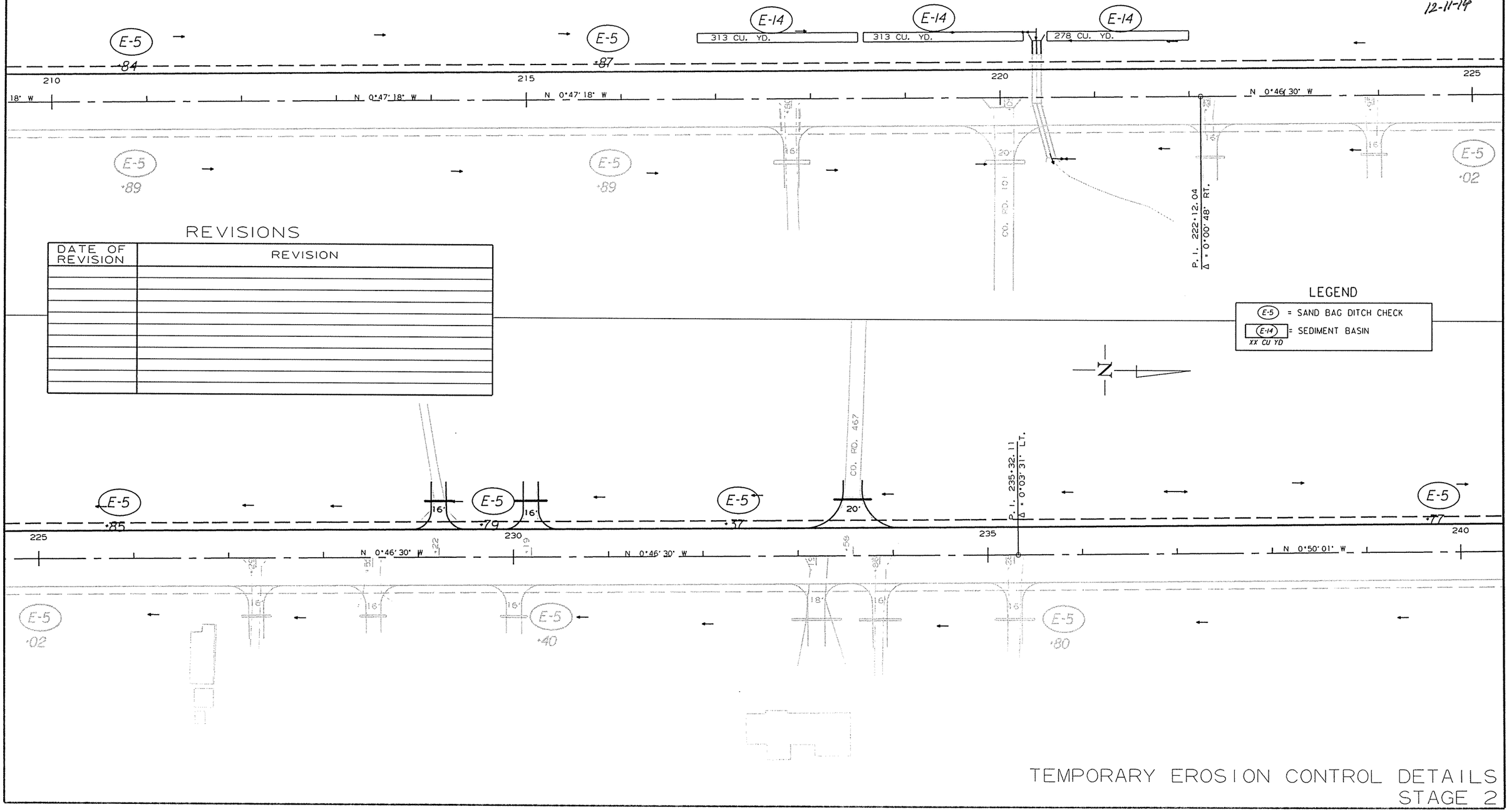
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	32	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 210+84	LT.	22
STA. 215+87	LT.	22
STA. 225+85	LT.	22
STA. 229+79	LT.	22
STA. 232+37	LT.	22
STA. 239+77	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 216+81 - STA. 218+50	LT.	313
STA. 218+56 - STA. 220+25	LT.	313
STA. 220+50 - STA. 222+00	LT.	278

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-14) XX CU YD = SEDIMENT BASIN

11/12/2014

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TEMPORARY EROSION CONTROL DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	33	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 245+00	LT.	22
STA. 250+00	LT.	22
STA. 255+00	LT.	22
STA. 263+50	LT.	22
STA. 268+72	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 241+86 - STA. 242+92	LT.	98
STA. 243+13 - STA. 244+40	LT.	235

STATE OF ARKANSAS
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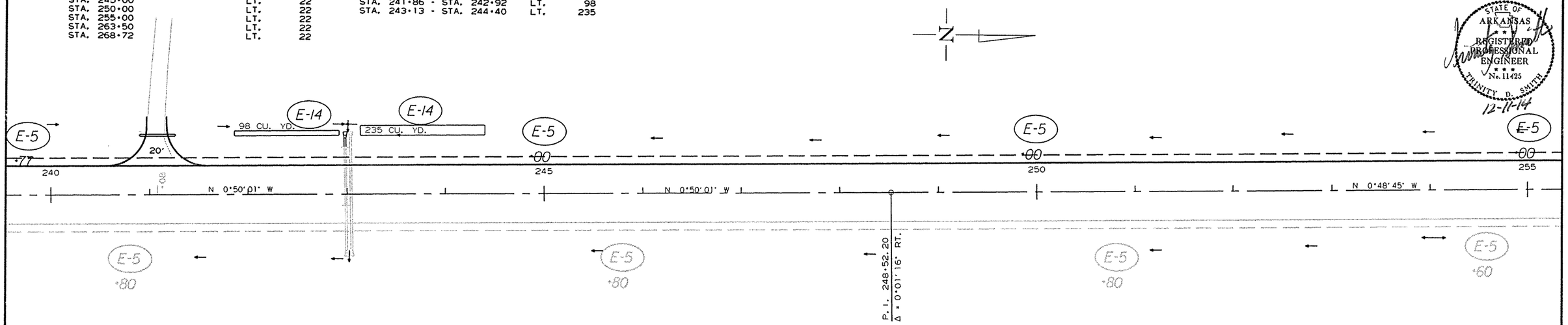
No. 11425
TRINITY D. SMITH
12-11-14



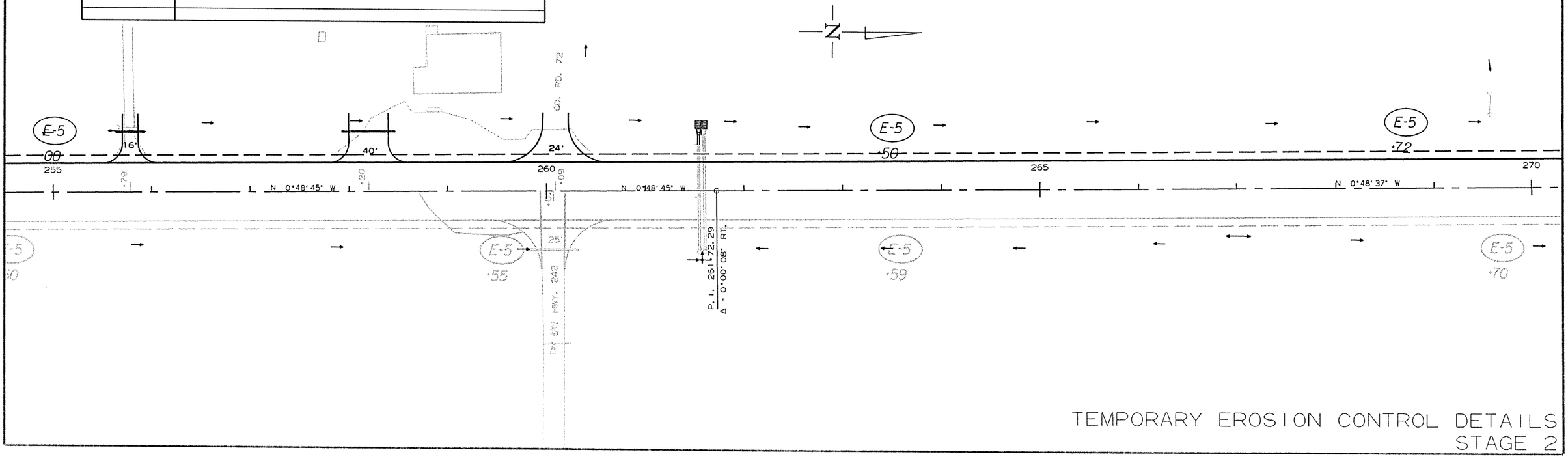
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 = SEDIMENT BASIN
XX CU YD



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TEMPORARY EROSION CONTROL DETAILS STAGE 2

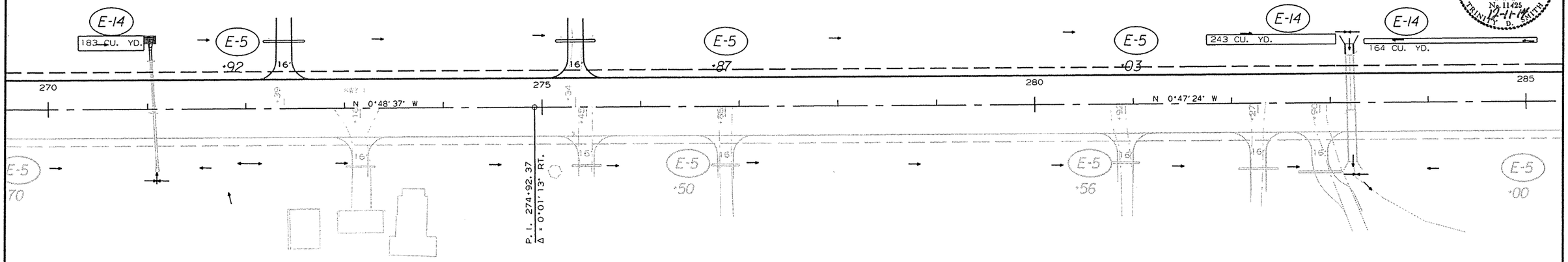
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	34	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 271+92	LT.	22
STA. 276+87	LT.	22
STA. 281+03	LT.	22
STA. 285+45	LT.	22
STA. 290+65	LT.	22
STA. 295+67	LT.	22
STA. 297+34	LT.	22
STA. 299+01	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 270+30 - STA. 270+97	LT.	183
STA. 281+75 - STA. 283+06	LT.	243
STA. 283+35 - STA. 285+12	LT.	164

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



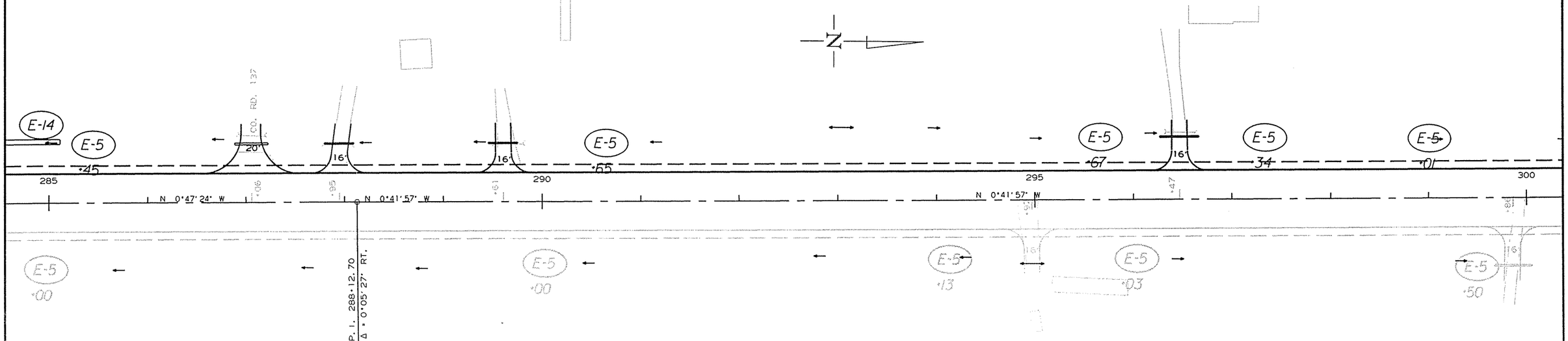
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 = SEDIMENT BASIN
XX CU YD



11/12/2014

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TEMPORARY EROSION CONTROL DETAILS STAGE 2

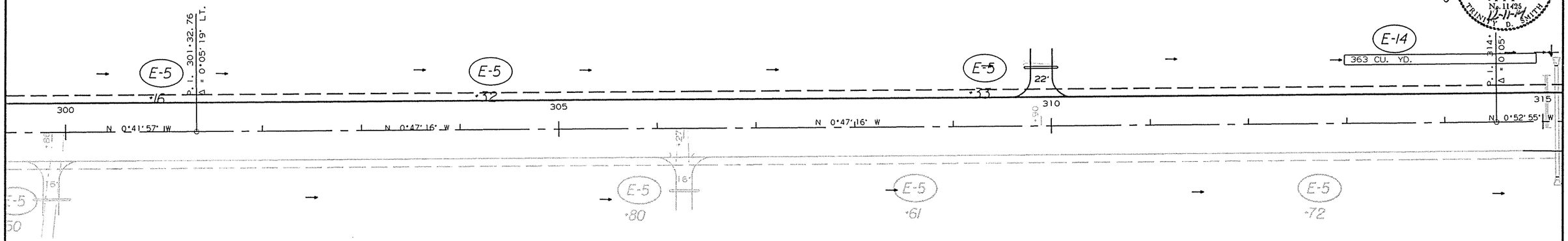
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	35	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 301+16	LT.	22
STA. 304+32	LT.	22
STA. 309+33	LT.	22
STA. 317+68	LT.	22
STA. 320+09	LT.	22
STA. 324+78	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 312+98 - STA. 314+94	LT.	363
STA. 315+38 - STA. 316+22	LT.	78
STA. 325+23 - STA. 325+98	LT.	139
STA. 326+67 - STA. 328+66	LT.	369
STA. 328+77 - STA. 330+76	LT.	369

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
11-11-14
TRINITY D. SMITH



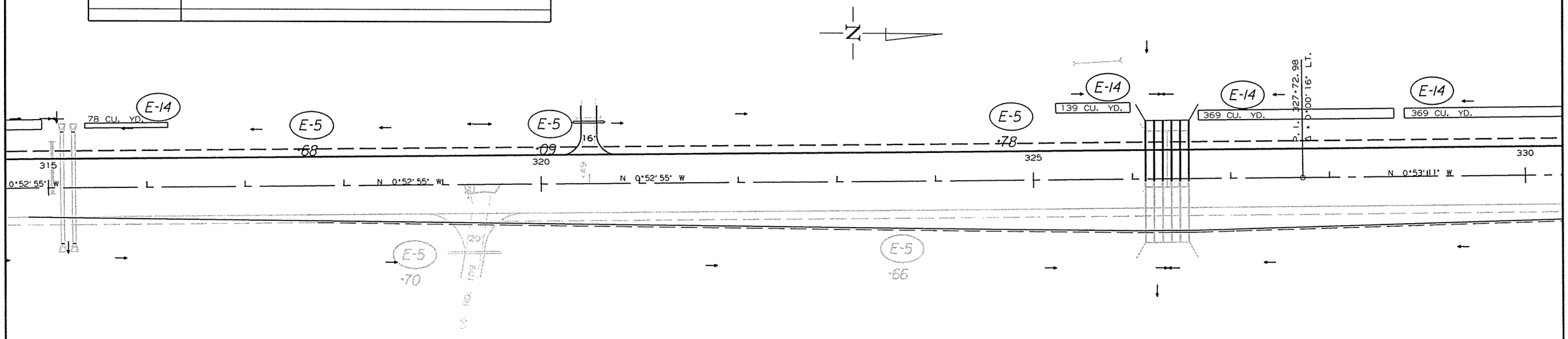
REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 (XX CU YD) = SEDIMENT BASIN



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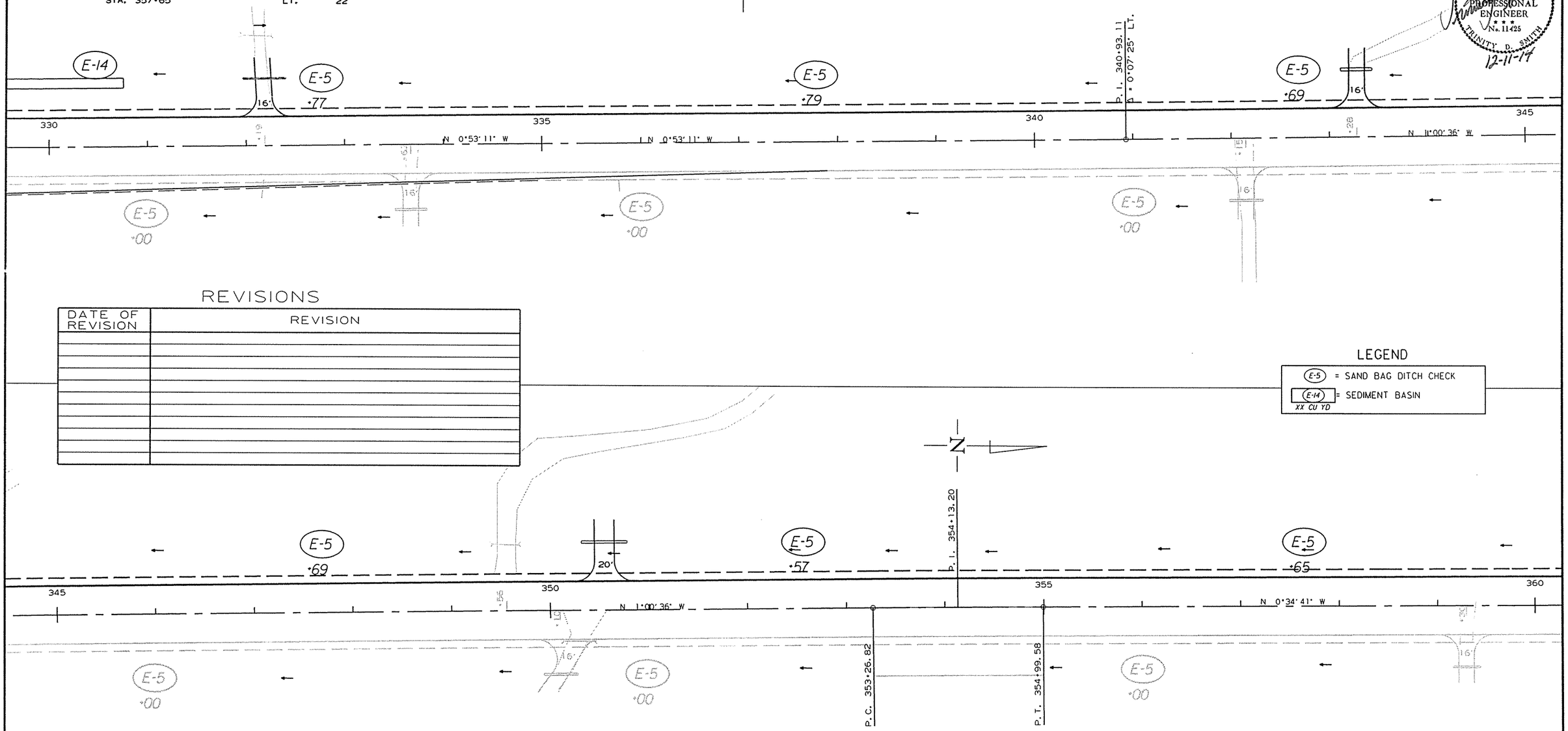
TEMPORARY EROSION CONTROL DETAILS STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	36	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 332+77	LT.	22
STA. 337+79	LT.	22
STA. 342+69	LT.	22
STA. 347+69	LT.	22
STA. 352+57	LT.	22
STA. 357+65	LT.	22

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-14) XX CU YD = SEDIMENT BASIN

PI = 354+13.20
Δ = 00°25'55"RT.
D = 00°15'00"
T = 86.38'
L = 172.77'
PC = 353+26.82
PT = 354+99.58
NO SUPER

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TEMPORARY EROSION CONTROL DETAILS STAGE 2

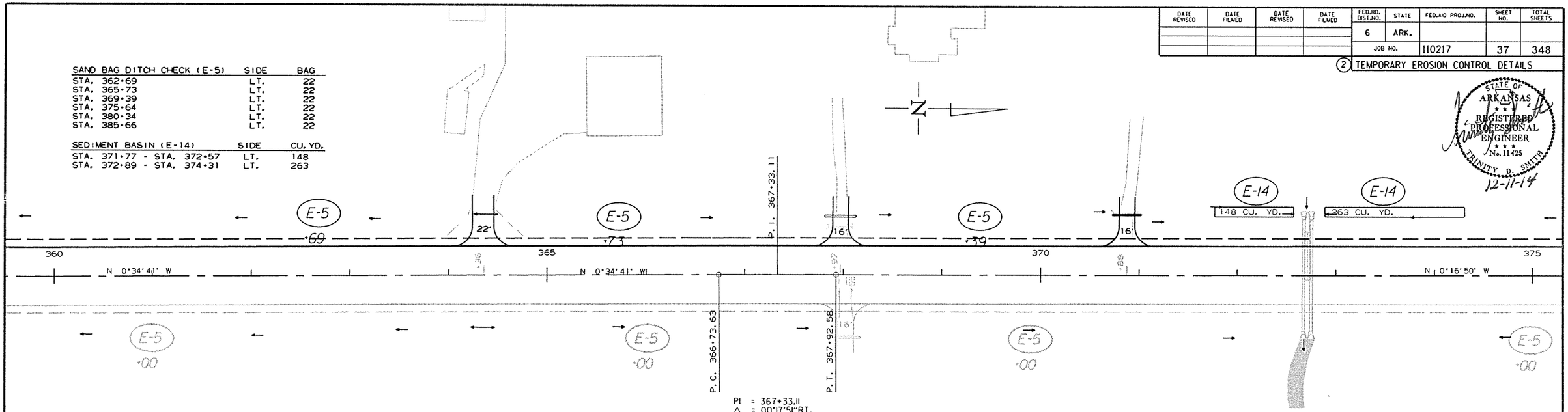
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	37	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 362+69	LT.	22
STA. 365+73	LT.	22
STA. 369+39	LT.	22
STA. 375+64	LT.	22
STA. 380+34	LT.	22
STA. 385+66	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 371+77 - STA. 372+57	LT.	148
STA. 372+89 - STA. 374+31	LT.	263

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



PI = 367+33.11
Δ = 00°17'51"RT.
D = 00°15'00"
T = 59.48'
L = 118.95'
PC = 366+73.63
PT = 367+92.58
NO SUPER

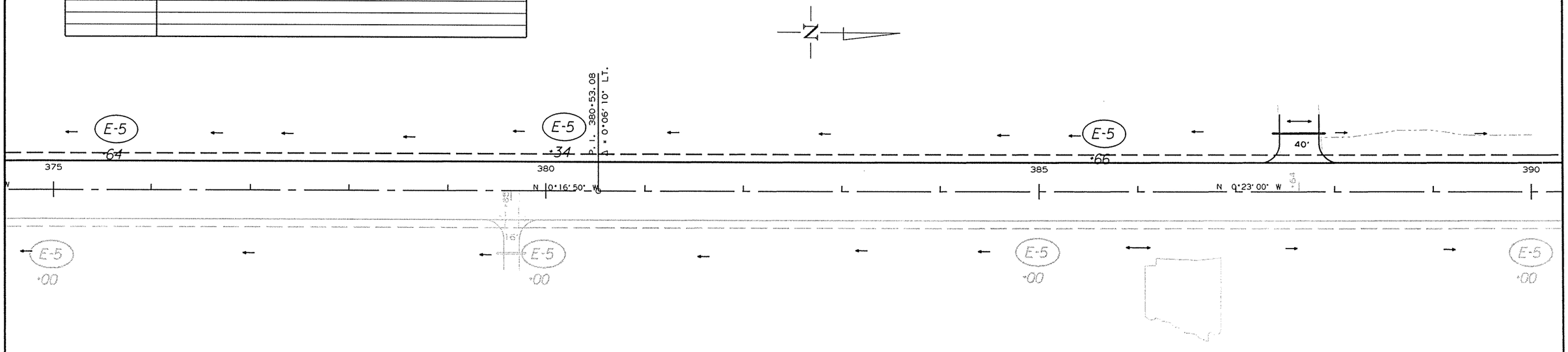
LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 XX CU YD = SEDIMENT BASIN

REVISIONS

DATE OF REVISION	REVISION



11/12/2014

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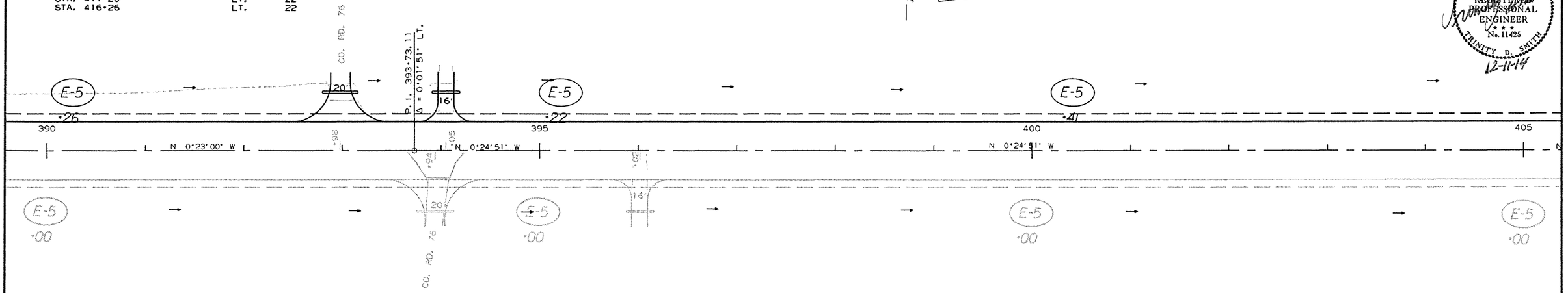
TEMPORARY EROSION CONTROL DETAILS
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	38	348

(2) TEMPORARY EROSION CONTROL DETAILS

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 390+26	LT.	22
STA. 395+22	LT.	22
STA. 400+41	LT.	22
STA. 406+28	LT.	22
STA. 411+20	LT.	22
STA. 416+26	LT.	22

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



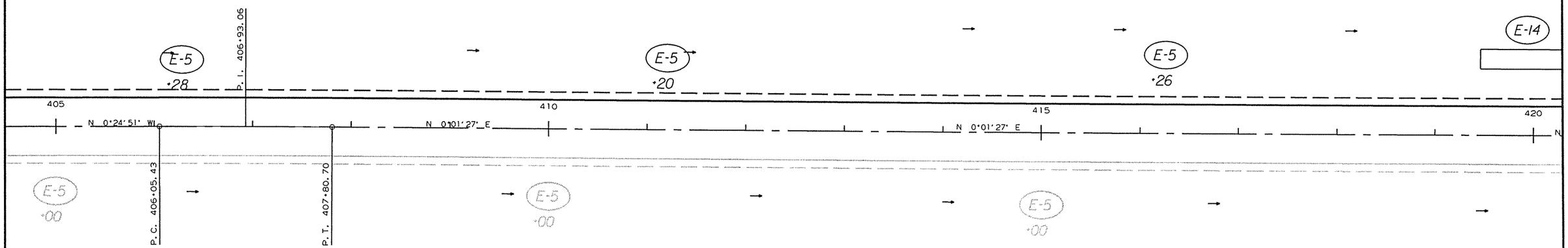
REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-14) = SEDIMENT BASIN
XX CU YD



PI = 406+93.06
Δ = 00°26'18"RT.
D = 00°15'00"
T = 87.64'
L = 178.27'
PC = 406+05.43
PT = 407+80.70
NO SUPER

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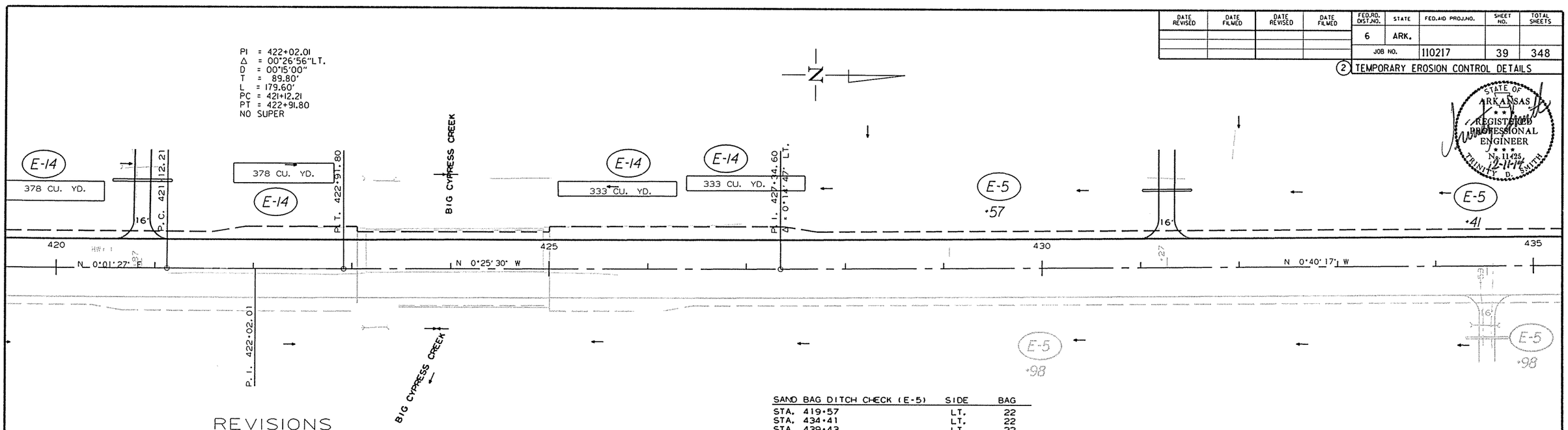
TEMPORARY EROSION CONTROL DETAILS STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	39	348

(2) TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

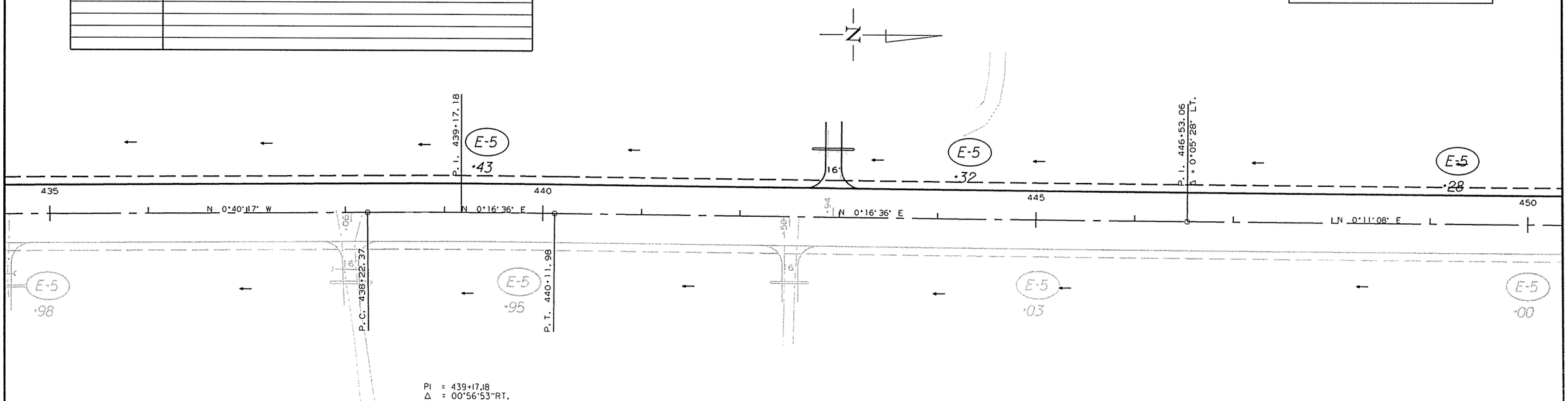
SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 419+57	LT.	22
STA. 434+41	LT.	22
STA. 439+43	LT.	22
STA. 444+32	LT.	22
STA. 449+28	LT.	22

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 419+46 - STA. 420+48	LT.	378
STA. 421+80 - STA. 422+82	LT.	378
STA. 425+09 - STA. 426+29	LT.	333
STA. 426+39 - STA. 427+60	LT.	333

LEGEND

E-5 = SAND BAG DITCH CHECK

E-14 / XX CU YD = SEDIMENT BASIN



TEMPORARY EROSION CONTROL DETAILS
STAGE 2

11/12/2014

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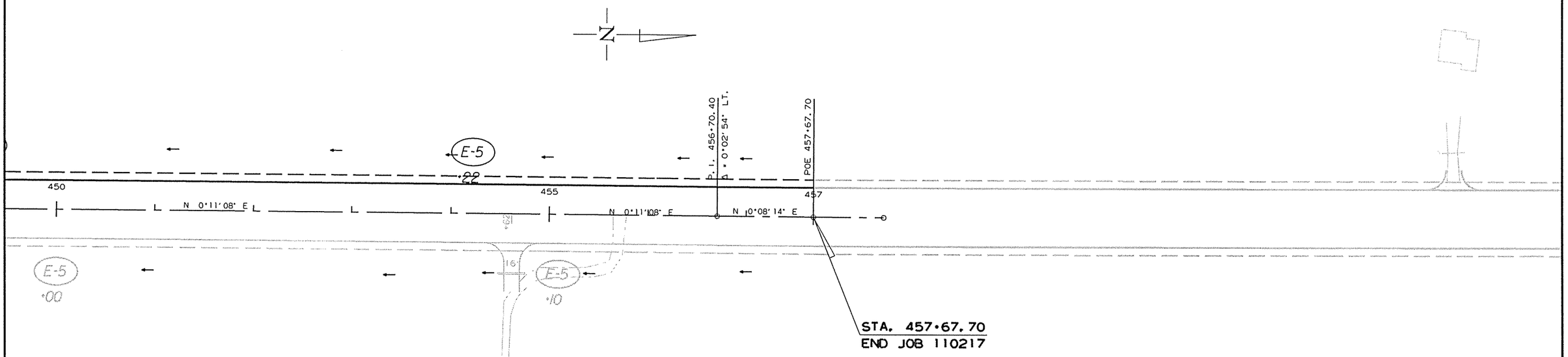
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	40	348

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 454+22	LT.	22



REVISIONS

DATE OF REVISION	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-14) XX CU YD = SEDIMENT BASIN

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TEMPORARY EROSION CONTROL DETAILS STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	41	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

STA. 100+29.80 BEGIN
JOB 110217
LOG MILE 0.00

N 89°46'51" E

(1) G20-2 (48" x 24")
END ROAD WORK

(1) G20-1 (60" x 24")
ROAD WORK NEXT 7 MILES

(1) W20-1 (48" x 48")
ROAD WORK 500 FT

(1) W20-1 (48" x 48")
ROAD WORK 1000 FT

(1) W20-1 (48" x 48")
ROAD WORK 1500 FT

POE 22+24.18
N 89°46'51" E 99.99.94
P.I. 22+24.18
END ROAD WORK
(1) G20-2 (48" x 24")

N 2°25'36" W
POB 98+37.14
END ROAD WORK
(1) G20-2 (48" x 24")

(1) W20-1 (48" x 48")
ROAD WORK 500 FT

(1) W20-1 (48" x 48")
ROAD WORK 1000 FT

(1) W20-1 (48" x 48")
ROAD WORK 1500 FT

DO NOT PASS
(4) R4-1 (24" X 30")
EVERY ½ MILE

LOW SHOULDER
(4) W8-9 (36" X 36")

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

TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

(1) G20-1 (60" X 24")
ROAD WORK NEXT 7 MILES

(1) W20-1 (48" X 48")
ROAD WORK 500 FT

(1) W20-1 (48" X 48")
ROAD WORK 1000 FT

(1) W20-1 (48" X 48")
ROAD WORK 1500 FT

P.I. 456+70.40
Δ = 0°02'54" LT.
POE 457+67.70
N 0°11'08" E
N 0°08'14" E
455
457

STA. 457+67.70
END JOB 110217

END ROAD WORK
(1) G20-2 (48" x 24")

P.C. 181+80.64
P.T. 183+23.05
N 0°17'31" W
N 0°38'53" W
180
185

(1) W20-1 (48" x 48")
ROAD WORK AHEAD

END ROAD WORK
(1) G20-2 (48" x 24")

PLACE AT ALL COUNTY ROADS
(11 LOCATIONS)

P.I. 182+51.84
END ROAD WORK
(1) G20-2 (48" x 24")

(1) W20-1 (48" x 48")
ROAD WORK AHEAD

16'
24'

10/16/2014
R110217.DGN

MAINTENANCE OF TRAFFIC ALL STAGES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	42	348

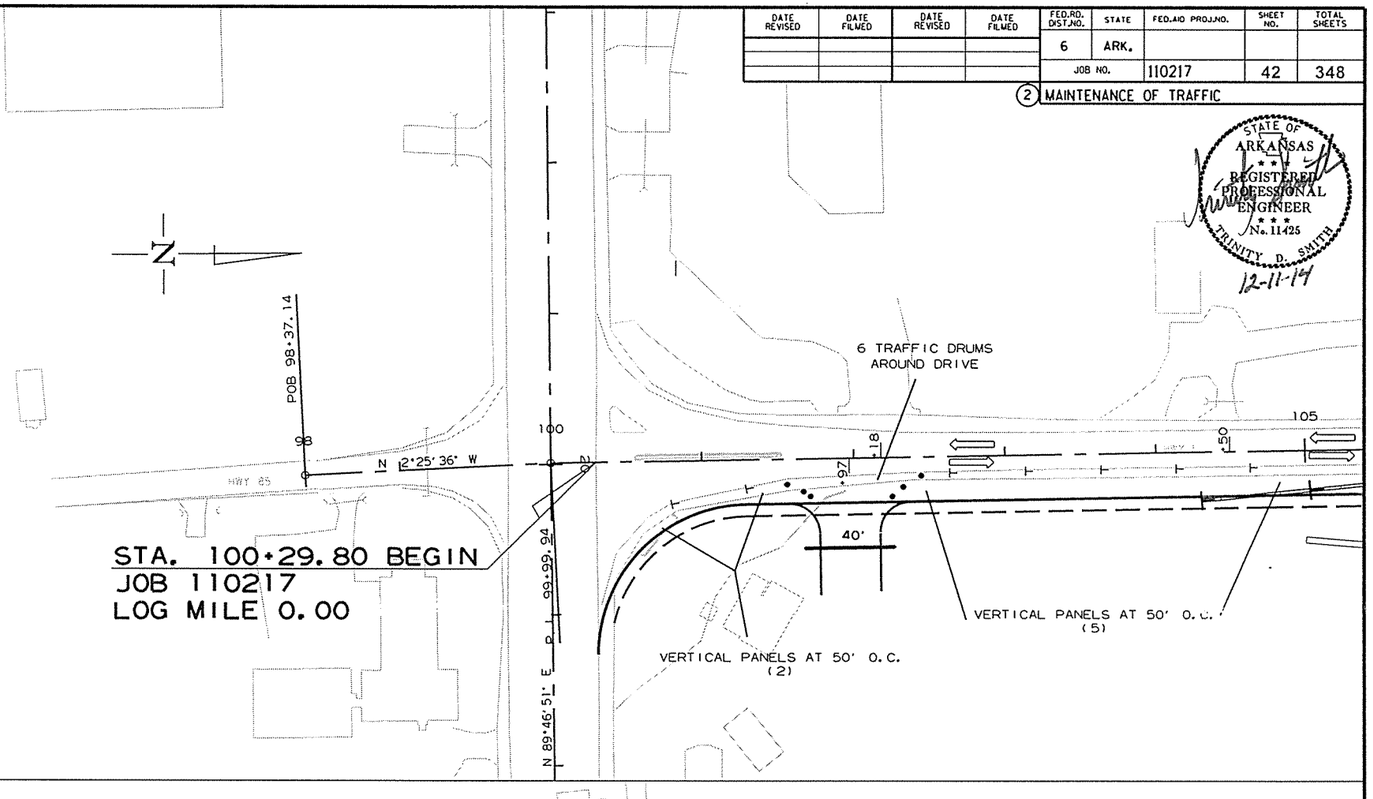
(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION

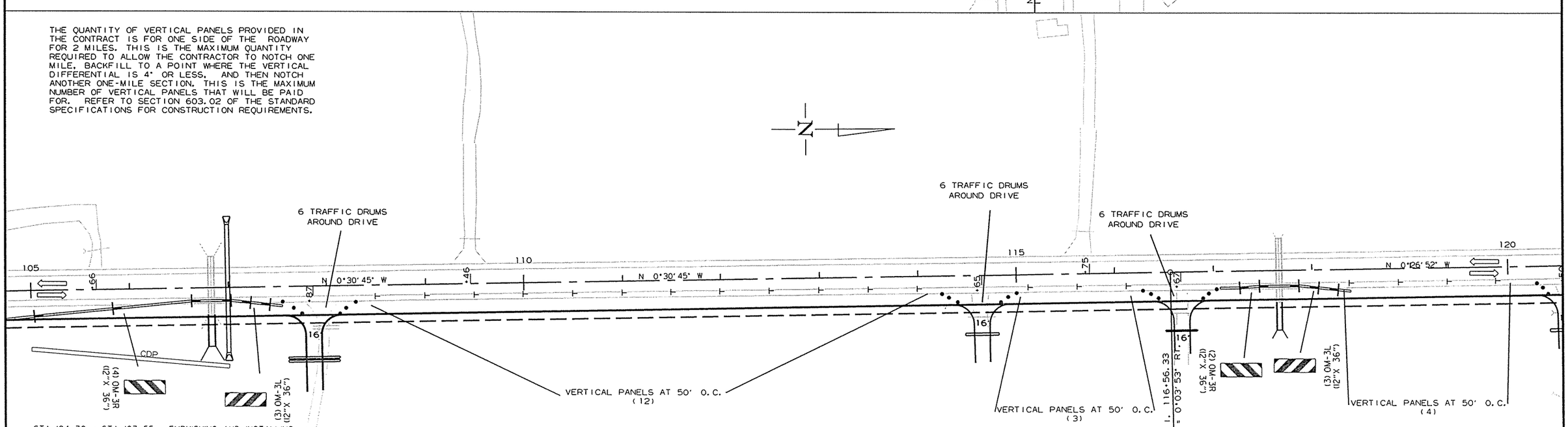
STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

MAINTENANCE OF TRAFFIC - STAGE 1 QUANTITIES
SIGNS = 873 SQ.FT.
TYPE III BARRICADES LT. = 48 LIN. FT.
TYPE III BARRICADES RT. = 128 LIN. FT.
TRAFFIC DRUMS = 376 EACH
VERTICAL PANELS = 190 EACH
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 1863 LIN. FT.
CONSTRUCTION PAVEMENT MARKING = 142952 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 2 EACH
48" TEMPORARY PIPE = 74 LIN. FT.



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.



STA. 104+30 - STA. 107+55 - FURNISHING AND INSTALLING TEMPORARY PRECAST CONCRETE BARRIER WITH TWO (13') SPECIAL END UNITS = 326 LIN. FT.

STA. 117+27 - STA. 118+39 - FURNISHING AND INSTALLING TEMPORARY PRECAST CONCRETE BARRIER WITH ONE (13') SPECIAL END UNIT = 113 LIN. FT. WITH ONE TEMPORARY IMPACT ATTENUATION BARRIER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

MAINTENANCE OF TRAFFIC STAGE 1

10/16/2014

R110217.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.		110217	43	348

(2) MAINTENANCE OF TRAFFIC



MAINTENANCE OF TRAFFIC
STAGE 1

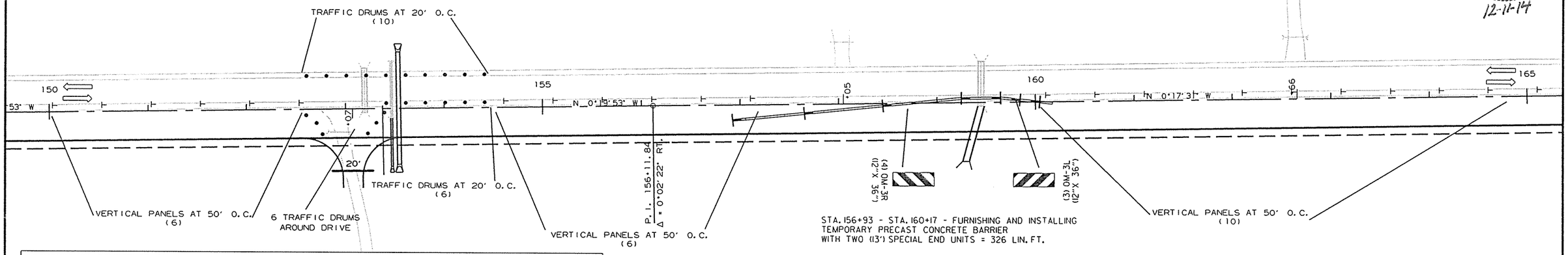
10/16/2014

R110217.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.		110217	44	348

(2) MAINTENANCE OF TRAFFIC

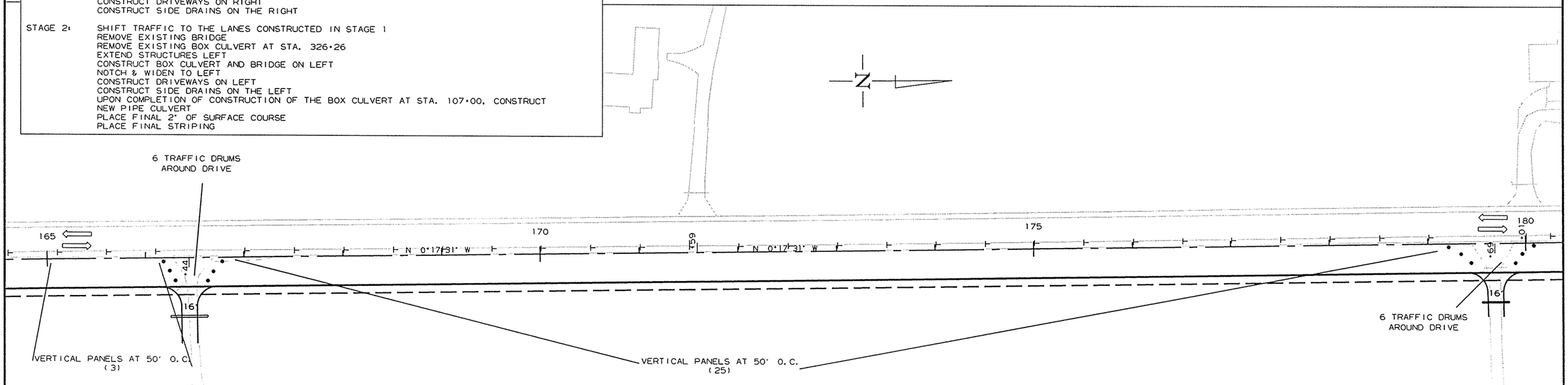
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



10/16/2014

R110217.DGN

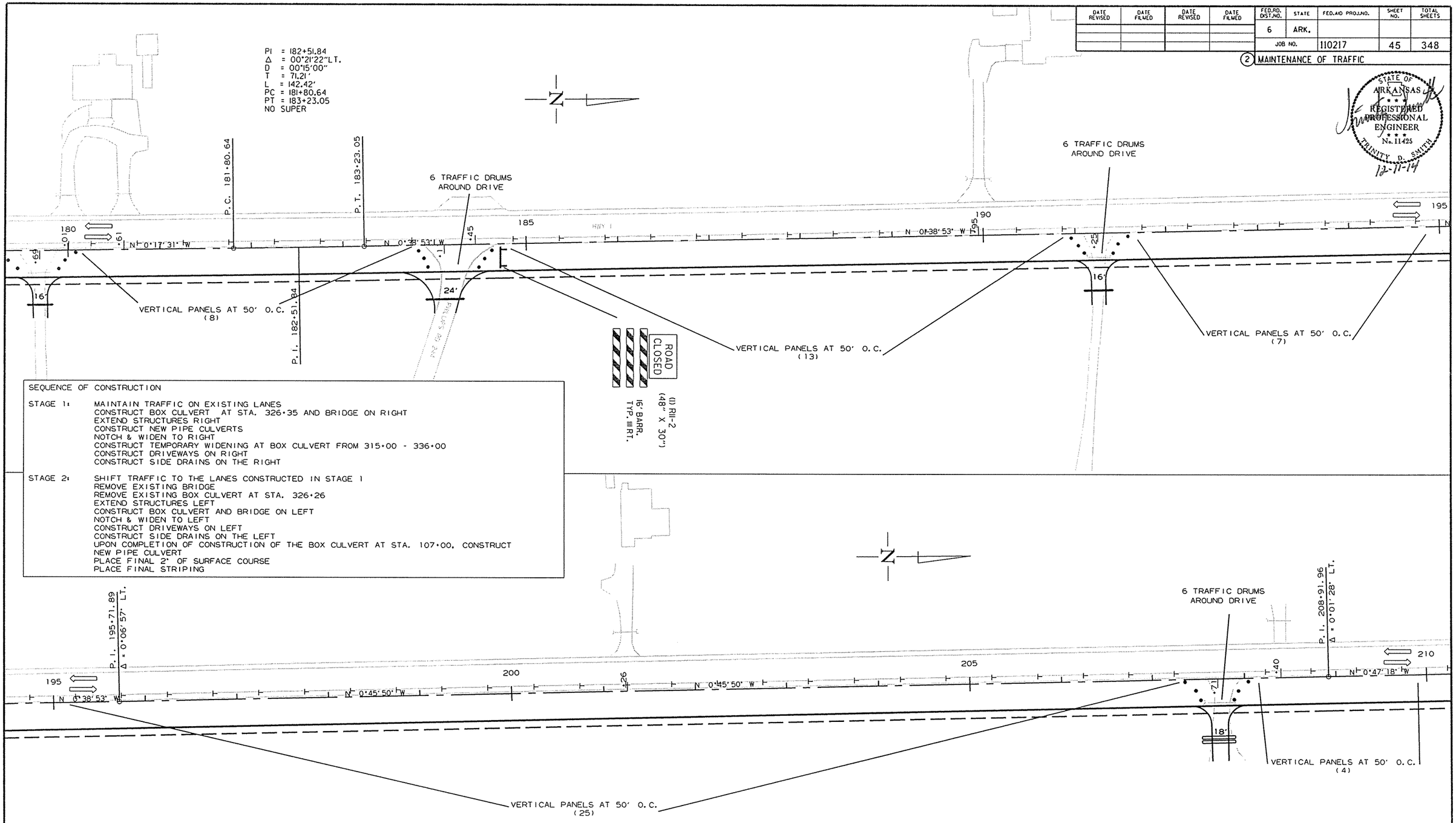
MAINTENANCE OF TRAFFIC STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	45	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

PI = 182+51.84
Δ = 00°21'22"LT.
D = 00°15'00"
T = 71.21'
L = 142.42'
PC = 181+80.64
PT = 183+23.05
NO SUPER



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

10/16/2014

R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	46	348

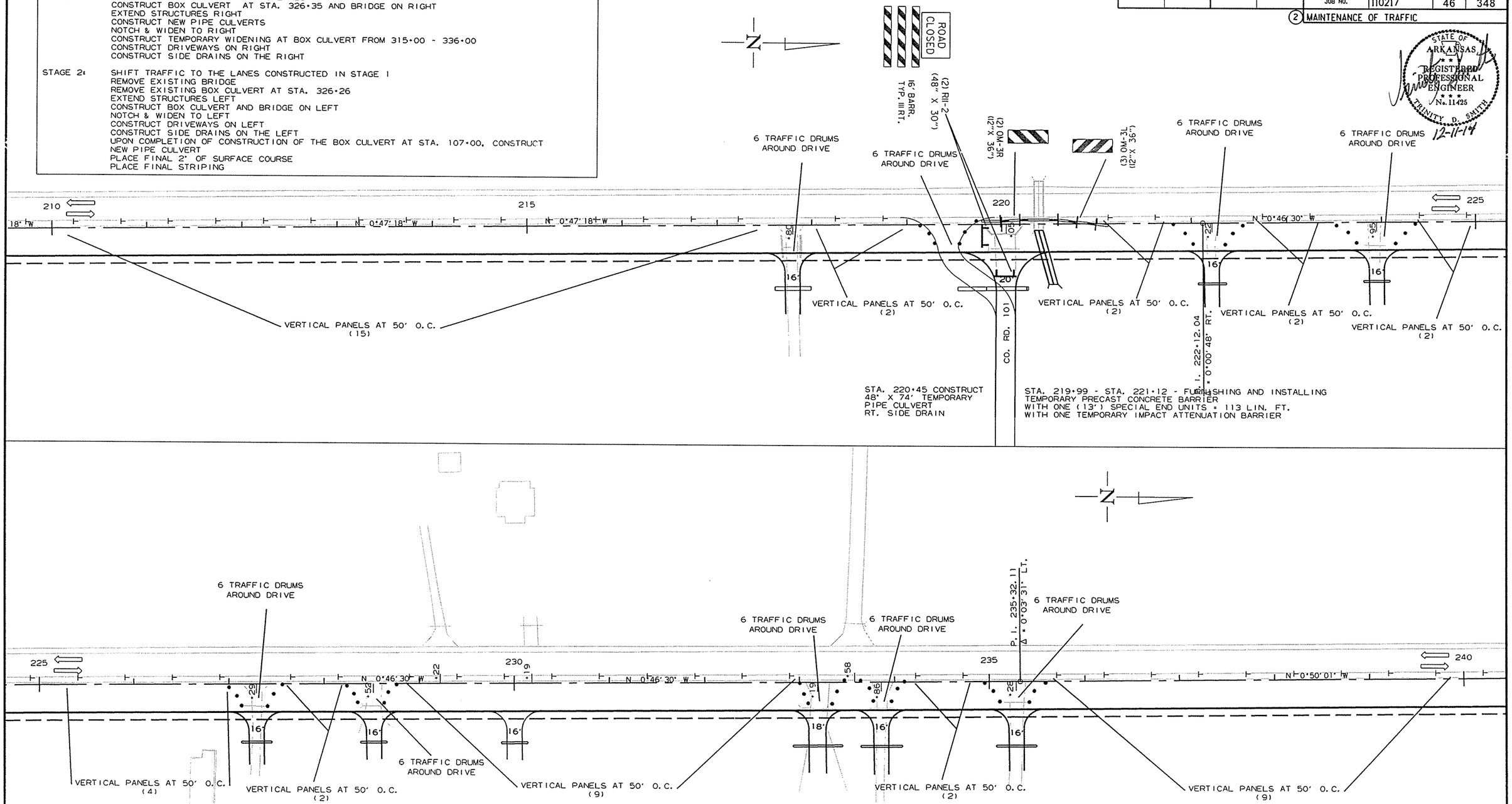
(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



MAINTENANCE OF TRAFFIC
STAGE 1

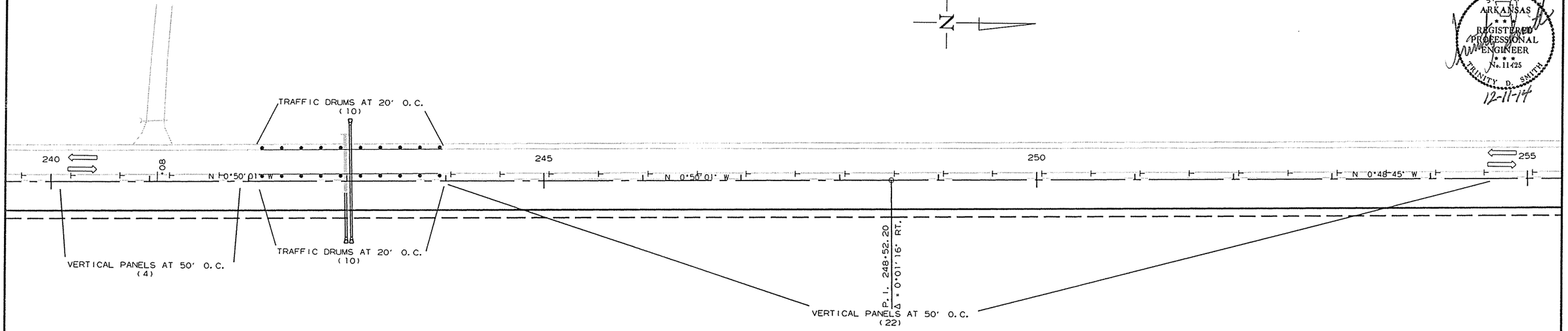
10/16/2014

R110217.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.		110217	47	348

(2) MAINTENANCE OF TRAFFIC

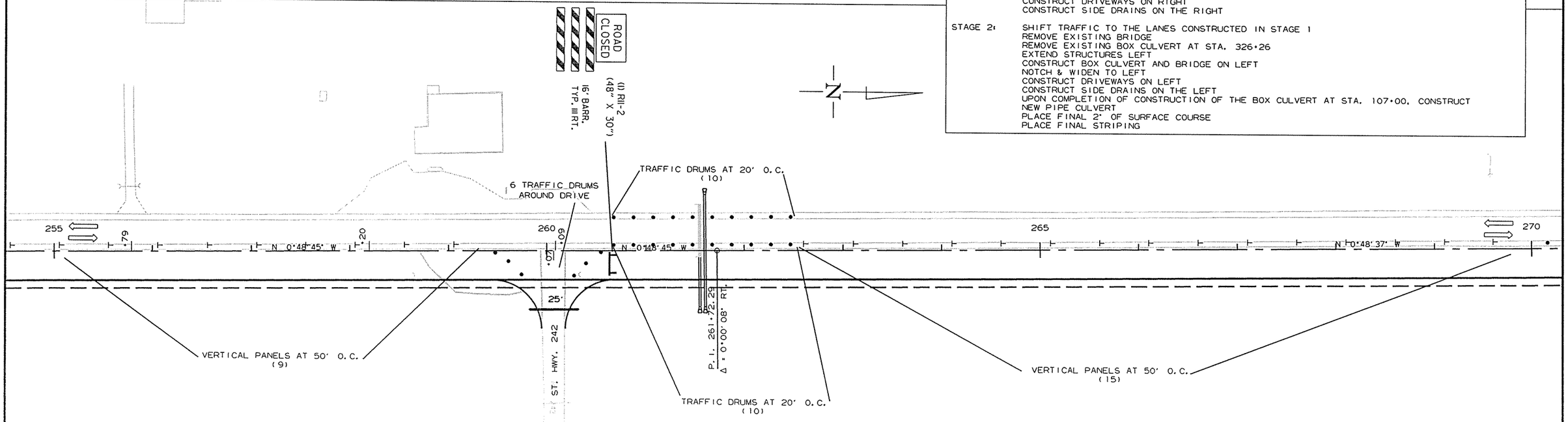
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



10/16/2014

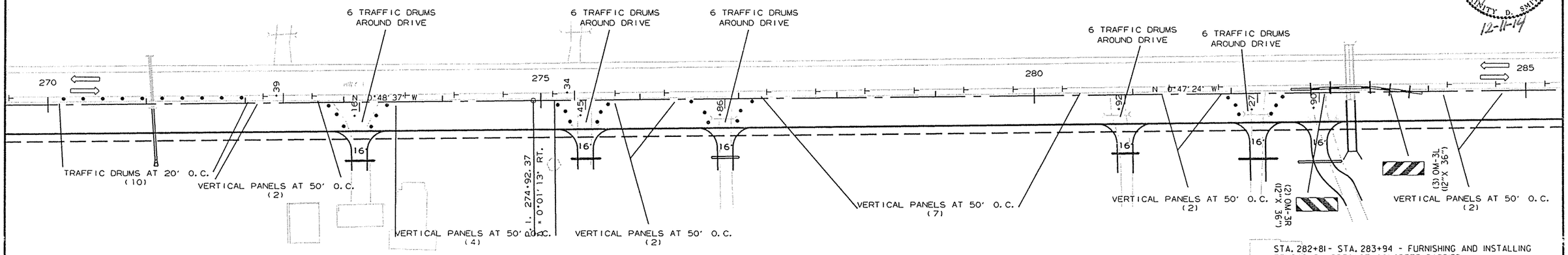
R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	48	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

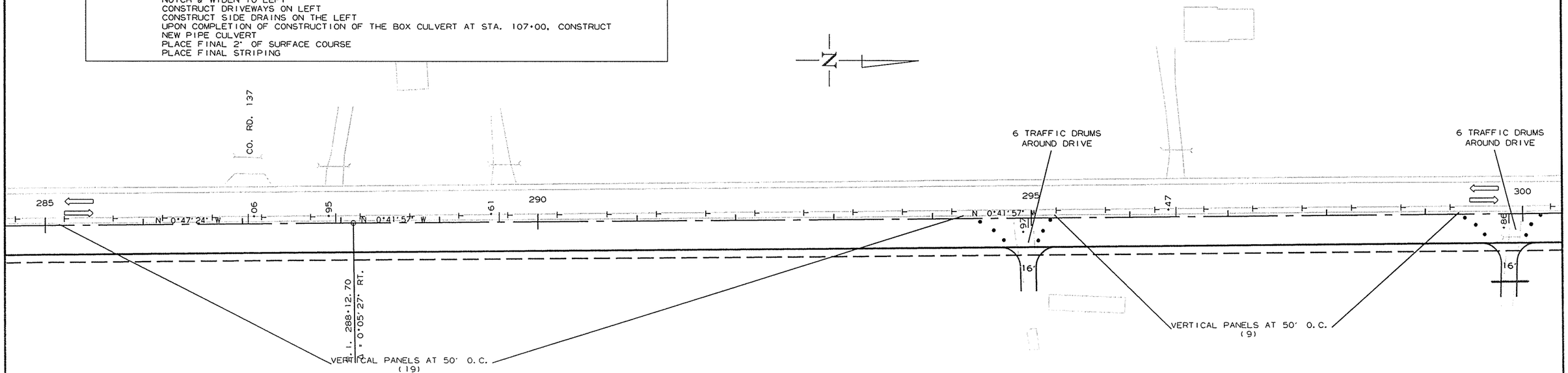


STA. 282+81 - STA. 283+94 - FURNISHING AND INSTALLING TEMPORARY PRECAST CONCRETE BARRIER WITH ONE (13') SPECIAL END UNITS = 113 LIN. FT. WITH ONE TEMPORARY IMPACT ATTENUATION BARRIER

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



10/16/2014

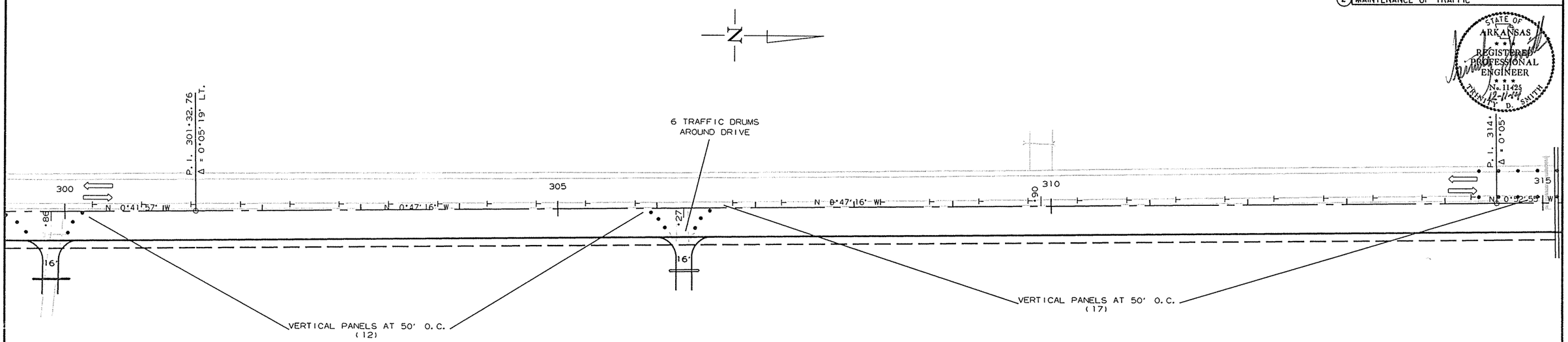
R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	49	348

(2) MAINTENANCE OF TRAFFIC

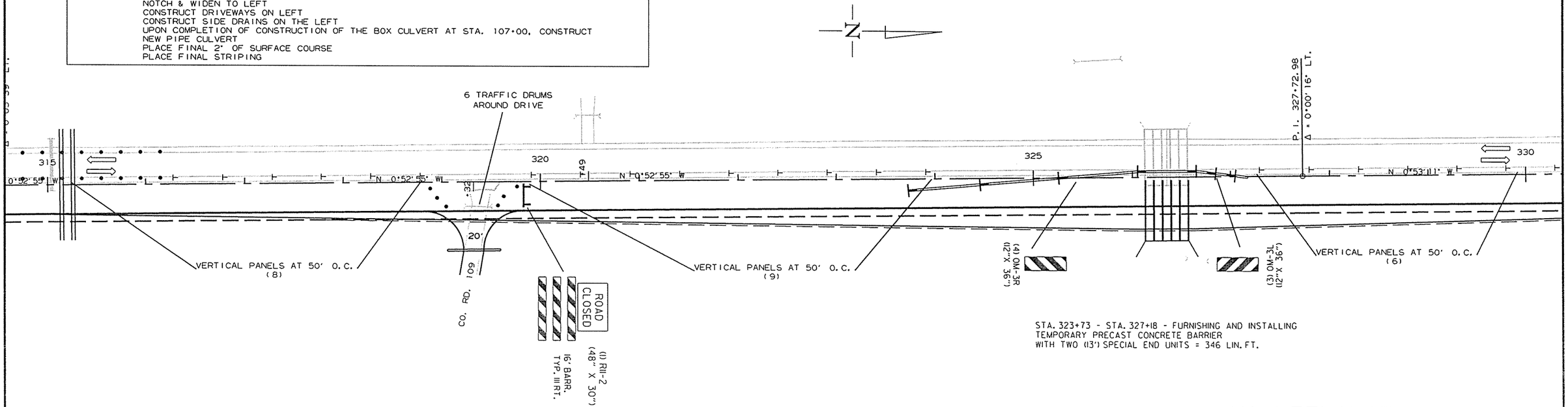
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
12-11-14
TERRY D. SMITH



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



STA. 323+73 - STA. 327+18 - FURNISHING AND INSTALLING TEMPORARY PRECAST CONCRETE BARRIER WITH TWO (13') SPECIAL END UNITS = 346 LIN. FT.

10/16/2014

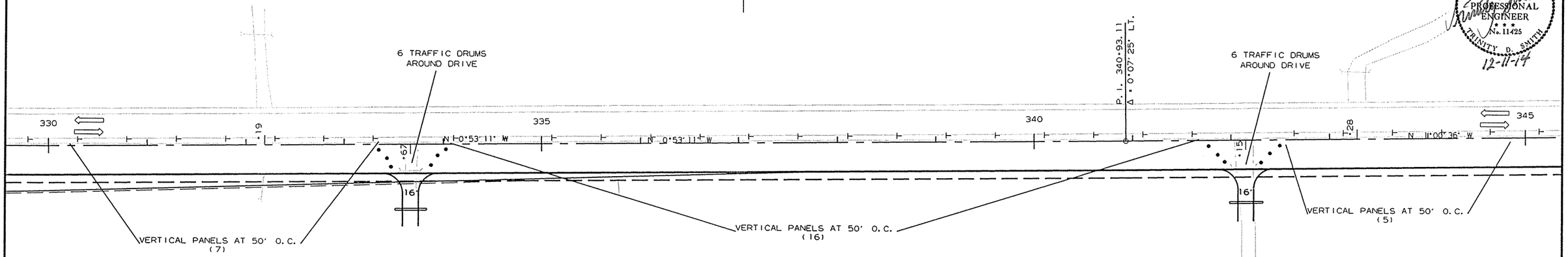
R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	50	348

(2) MAINTENANCE OF TRAFFIC

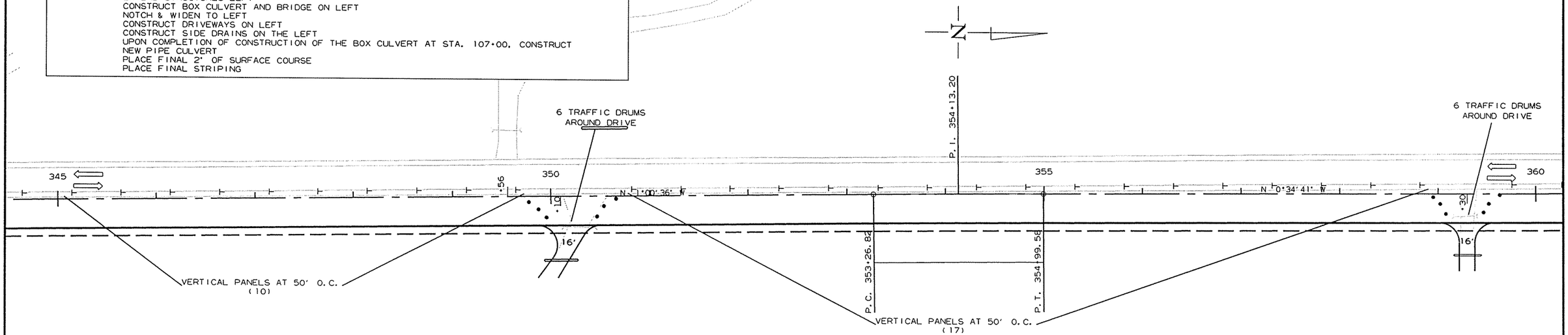
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



PI = 354+13.20
Δ = 00°25'55"RT.
D = 00°15'00"
T = 86.38'
L = 172.77'
PC = 353+26.82
PT = 354+99.58
NO SUPER

MAINTENANCE OF TRAFFIC
STAGE 1

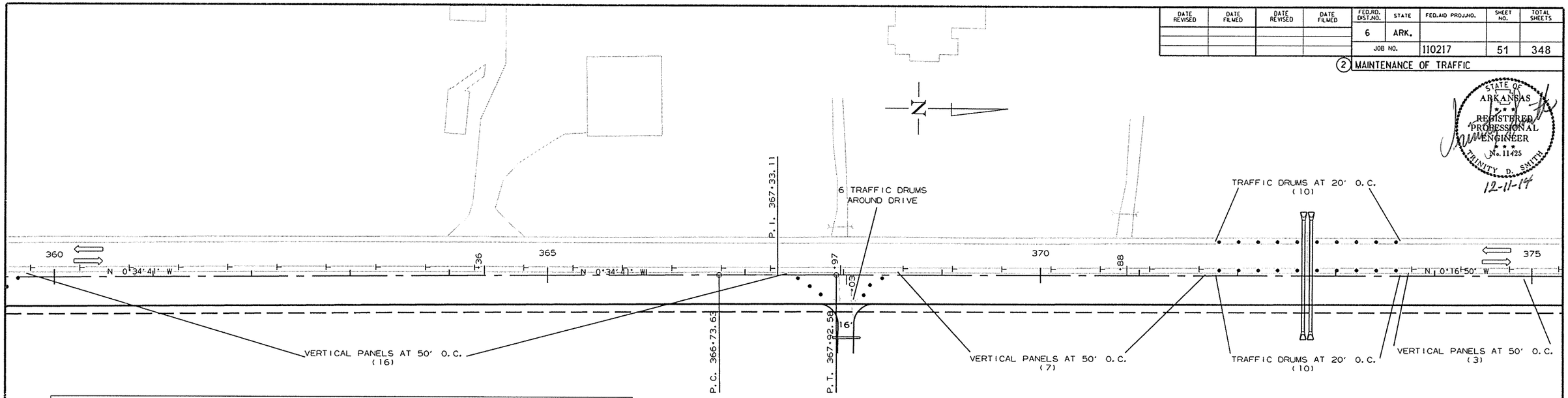
10/16/2014

R110217.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.		110217	51	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

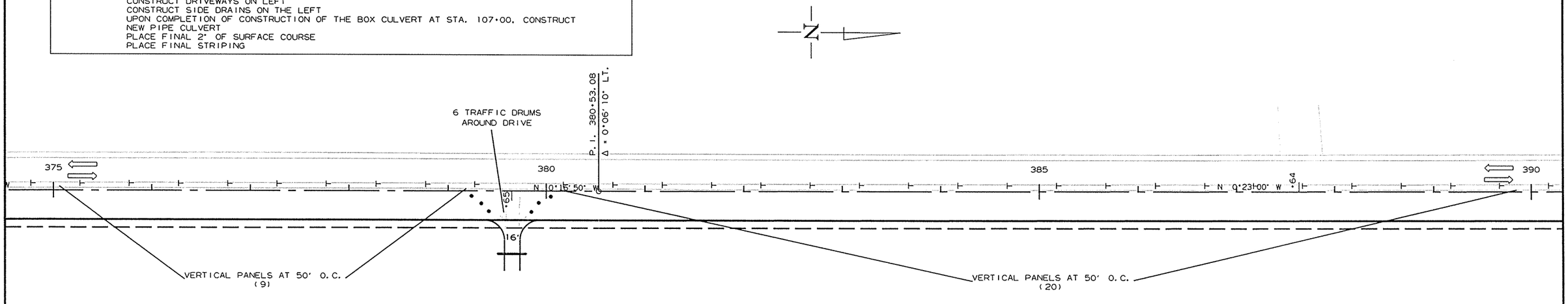


PI = 367+33.11
Δ = 00°17'51"RT.
D = 00°15'00"
T = 59.48'
L = 118.95'
PC = 366+73.63
PT = 367+92.58
NO SUPER

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



10/16/2014

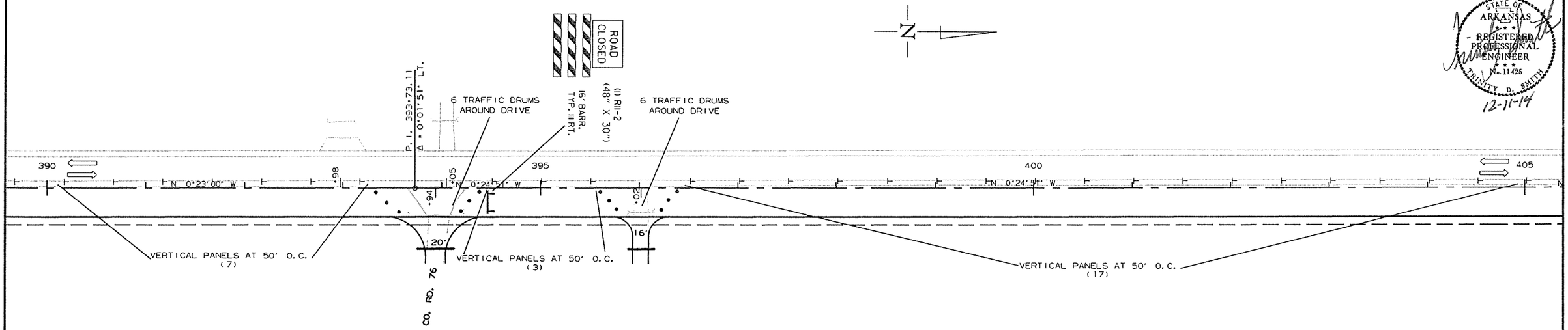
R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	52	348

(2) MAINTENANCE OF TRAFFIC

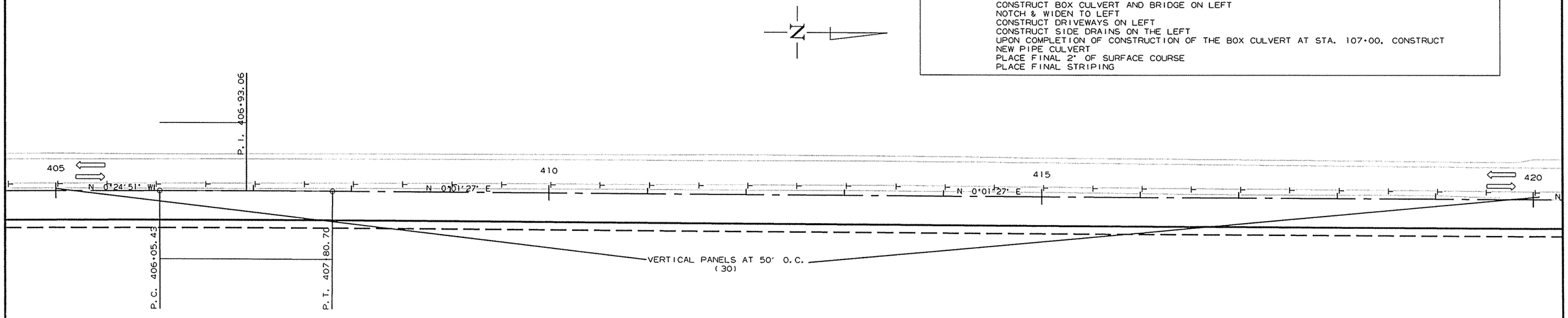
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-1-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



PI = 406+93.06
Δ = 00°26'18"RT.
D = 00°15'00"
T = 87.64'
L = 178.27'
PC = 406+05.43
PT = 407+80.70
NO SUPER

10/16/2014

R110217.DGN

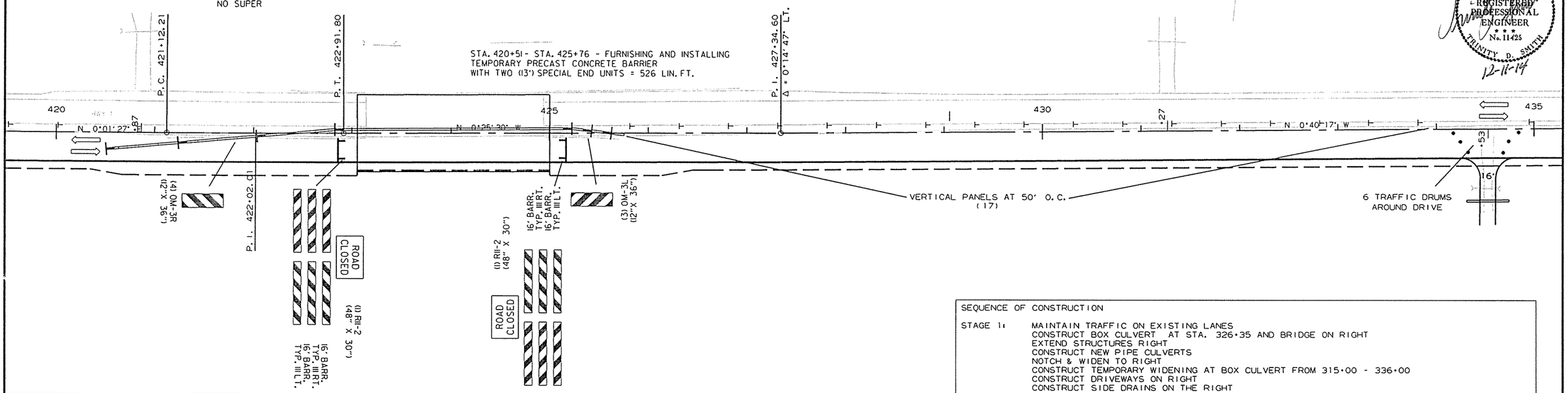
MAINTENANCE OF TRAFFIC STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	53	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

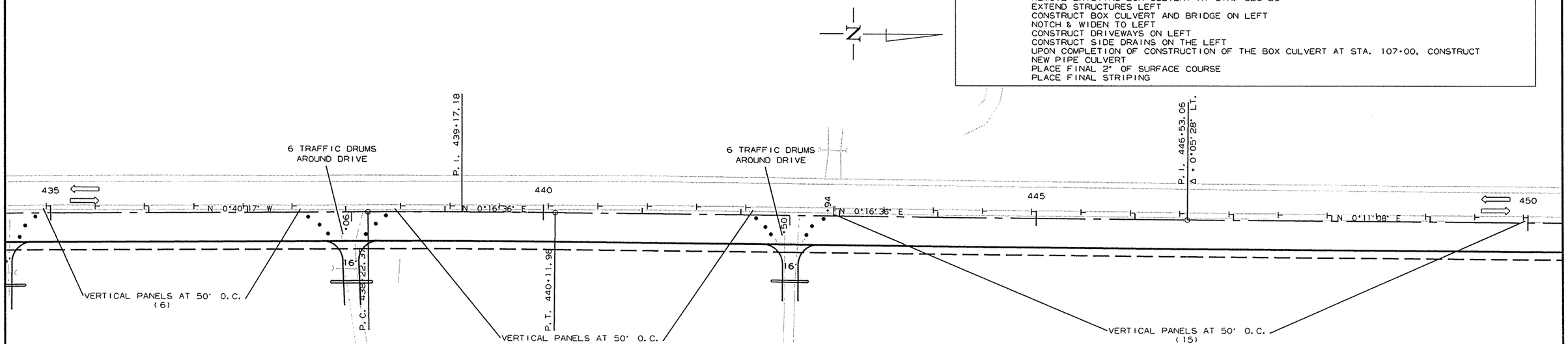
PI = 422+02.01
Δ = 00°26'56"LT.
D = 00°15'00"
T = 89.80'
L = 179.60'
PC = 421+12.21
PT = 422+91.80
NO SUPER



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



PI = 439+17.18
Δ = 00°56'53"RT.
D = 00°30'00"
T = 94.81'
L = 189.61'
PC = 438+22.37
PT = 440+11.98
NO SUPER

10/16/2014

R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 1

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.		110217	54	348

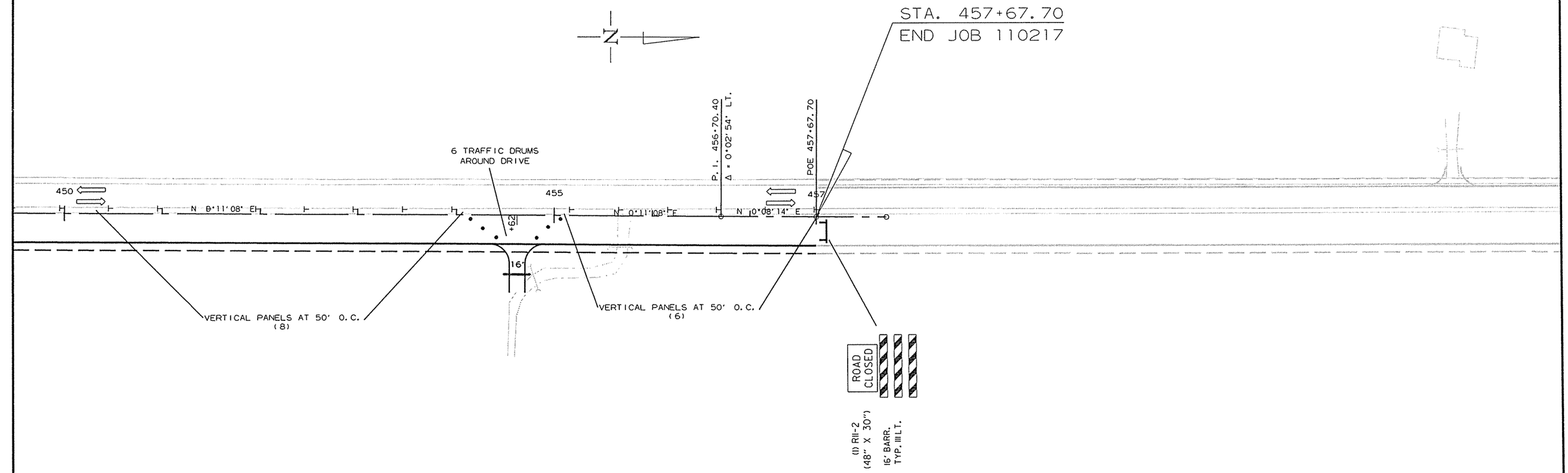
(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



MAINTENANCE OF TRAFFIC
STAGE 1

10/16/2014

R110217.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.		110217	55	348

(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

MAINTENANCE OF TRAFFIC - STAGE 2 QUANTITIES

SIGNS = 891 SQ.FT.
TYPE III BARRICADES LT. = 32 LIN. FT.
TYPE III BARRICADES RT. = 128 LIN. FT.
TRAFFIC DRUMS = 415 EACH
VERTICAL PANELS = 24 EACH
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 1863 LIN. FT.
CONSTRUCTION PAVEMENT MARKING = 142952 LIN. FT.

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.

STATE OF ARKANSAS
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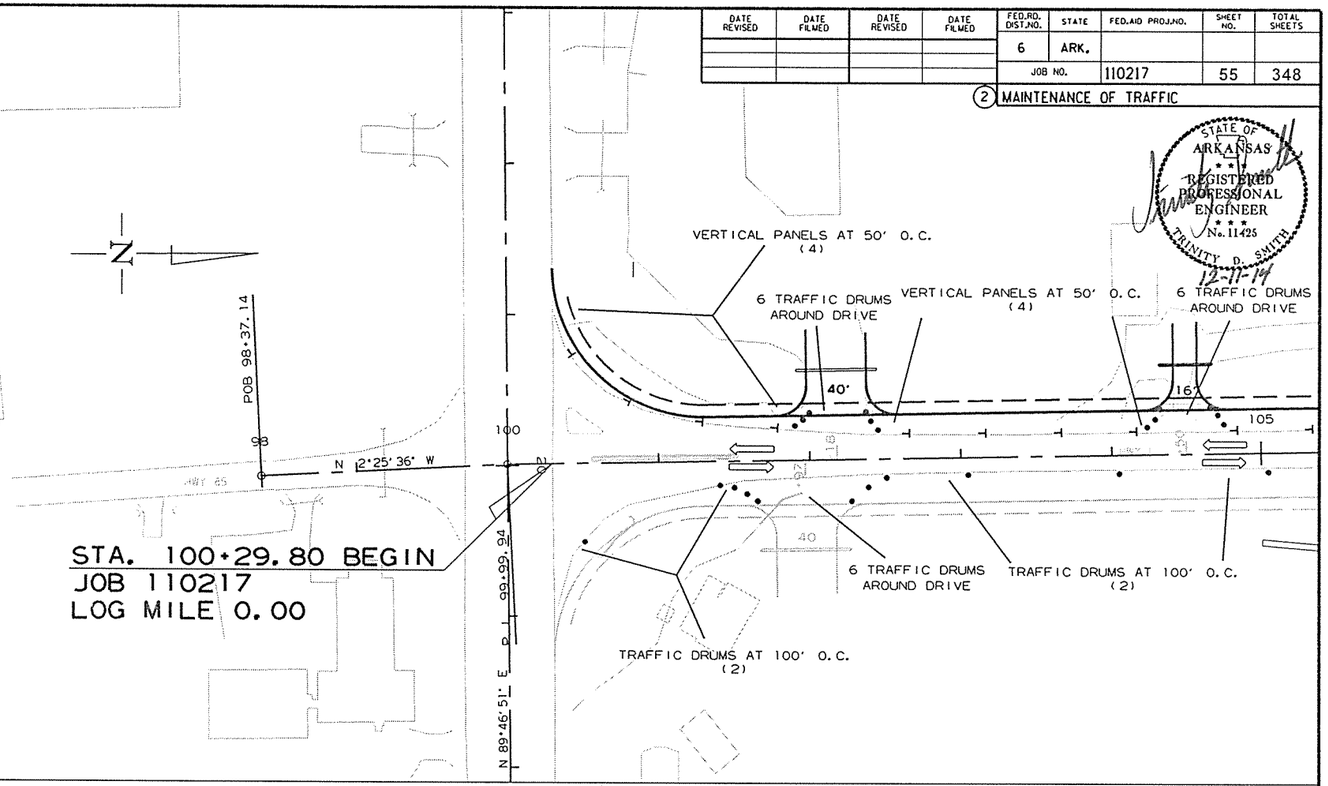
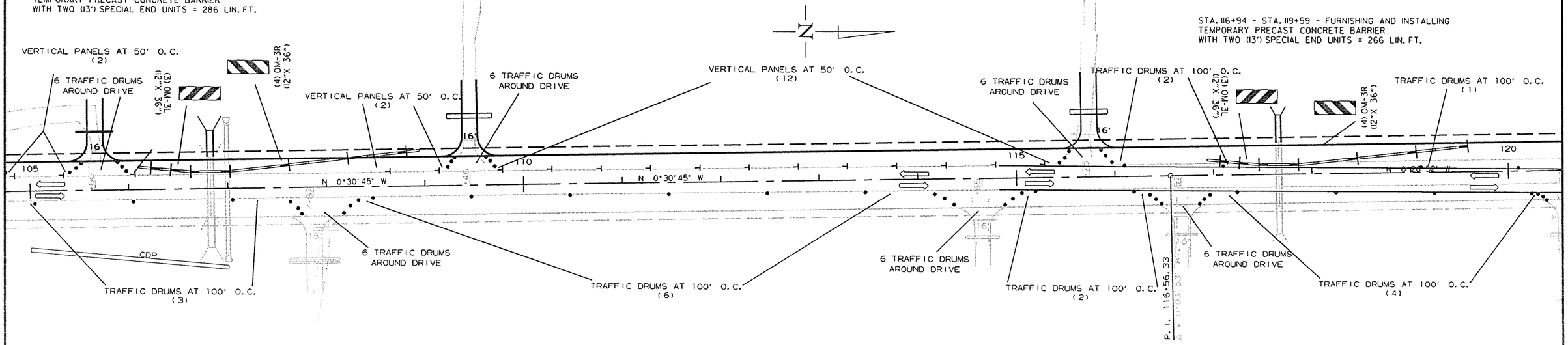


STA. 106+10 - STA. 108+95 - RELOCATING TEMPORARY PRECAST CONCRETE BARRIER WITH TWO (13') SPECIAL END UNITS = 286 LIN. FT.

STA. 116+94 - STA. 119+59 - FURNISHING AND INSTALLING TEMPORARY PRECAST CONCRETE BARRIER WITH TWO (13') SPECIAL END UNITS = 266 LIN. FT.



10/16/2014

R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	56	348

(2) MAINTENANCE OF TRAFFIC



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

MAINTENANCE OF TRAFFIC
STAGE 2

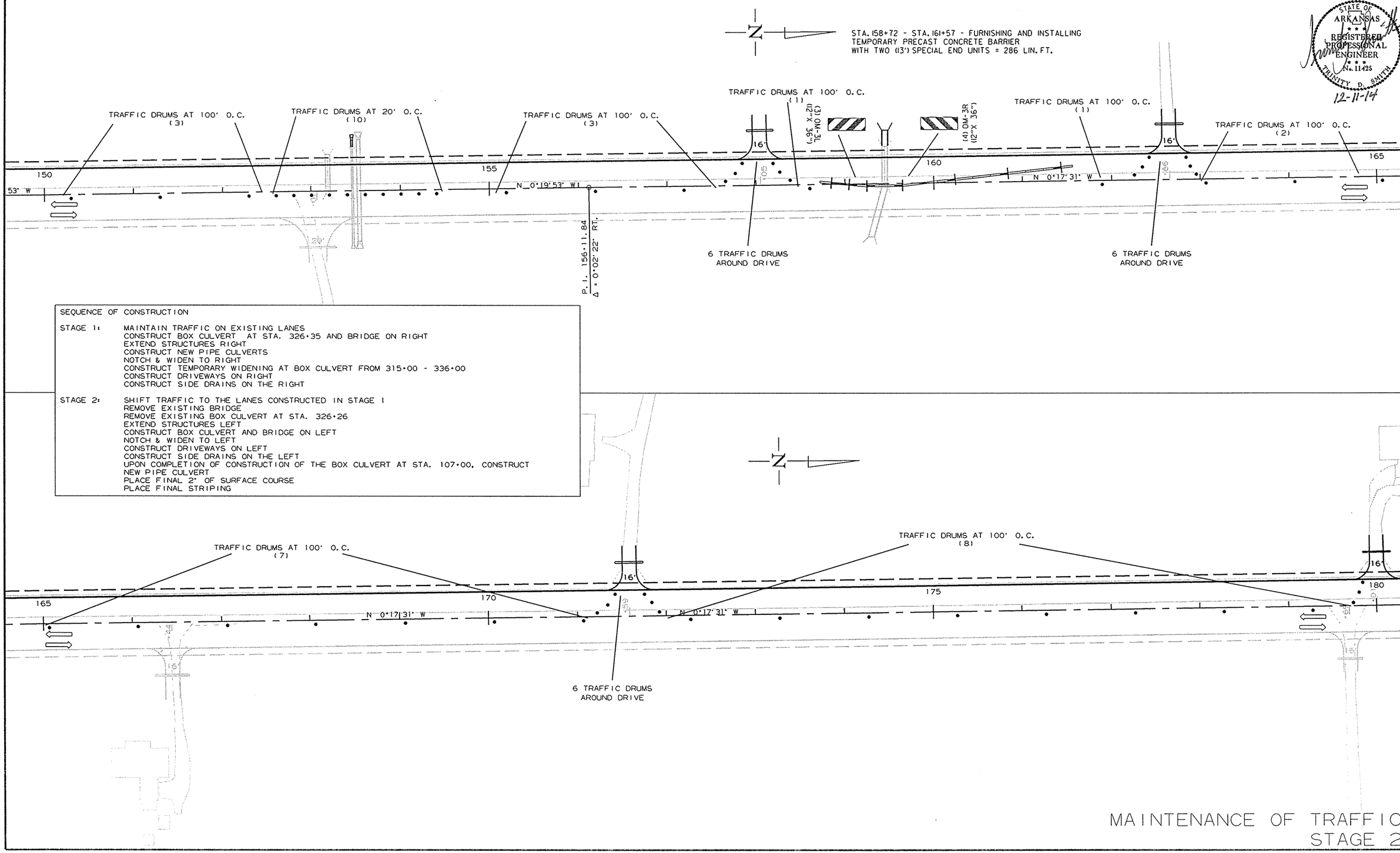
10/16/2014

R110217.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.		110217	57	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
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NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

MAINTENANCE OF TRAFFIC
STAGE 2

10/16/2014
R110217.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.		110217	58	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

PI = 182+51.84
Δ = 00°21'22"LT.
D = 00°15'00"
T = 71.21'
L = 142.42'
PC = 181+80.64
PT = 183+23.05
NO SUPER

(1) RII-2 (48" X 30")
16' BARR. TYP. IIIRT.
ROAD CLOSED

TRAFFIC DRUMS AT 100' O.C. (3)
TRAFFIC DRUMS AT 100' O.C. (5)
TRAFFIC DRUMS AT 100' O.C. (5)

P.C. 181+80.64
P.T. 183+23.05
P.I. 182+51.84

N 0°17'31" W
N 0°38'53" W
N 0°38'53" W

6 TRAFFIC DRUMS AROUND DRIVES
6 TRAFFIC DRUMS AROUND DRIVE
6 TRAFFIC DRUMS AROUND DRIVE

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

TRAFFIC DRUMS AT 100' O.C. (6)
TRAFFIC DRUMS AT 100' O.C. (7)
TRAFFIC DRUMS AT 100' O.C. (1)

P.I. 195+71.89
Δ = 0°06'57" LT.
P.I. 208+91.96
Δ = 0°01'28" LT.

N 0°25'53" W
N 0°45'50" W
N 0°45'50" W
N 0°47'18" W

6 TRAFFIC DRUMS AROUND DRIVE
6 TRAFFIC DRUMS AROUND DRIVE

10/16/2014
R110217.DGN

MAINTENANCE OF TRAFFIC STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	59	348

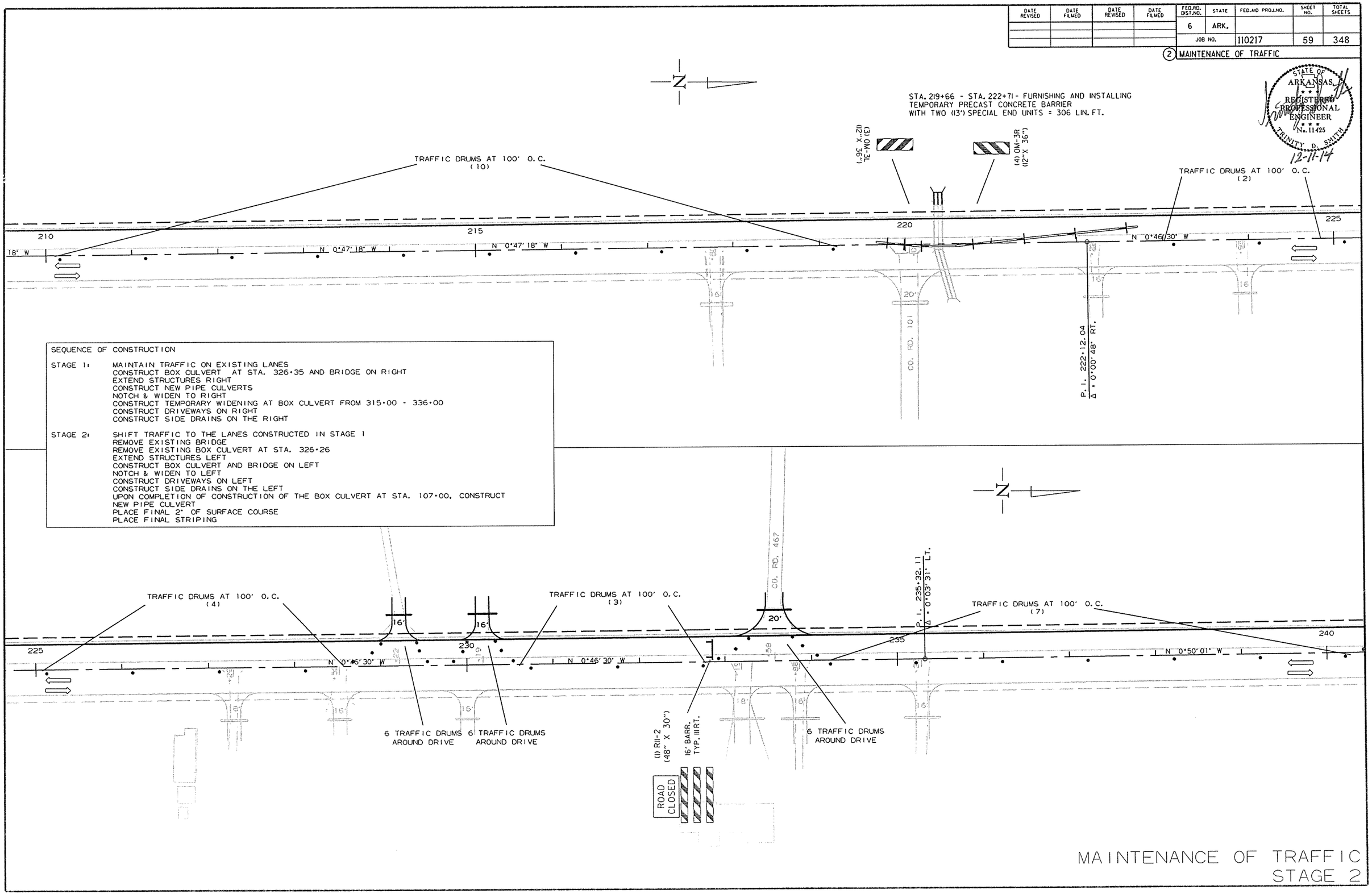
(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



MAINTENANCE OF TRAFFIC
STAGE 2

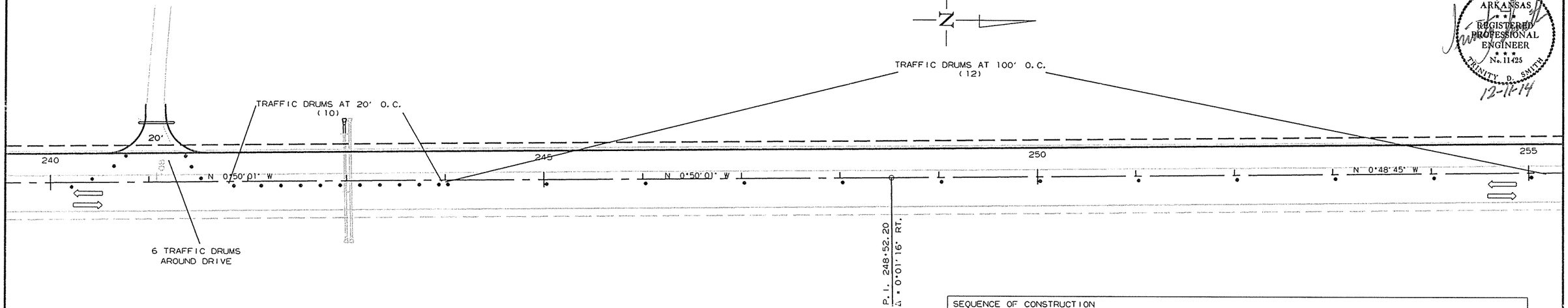
10/16/2014

R110217.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.		110217	60	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-1-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
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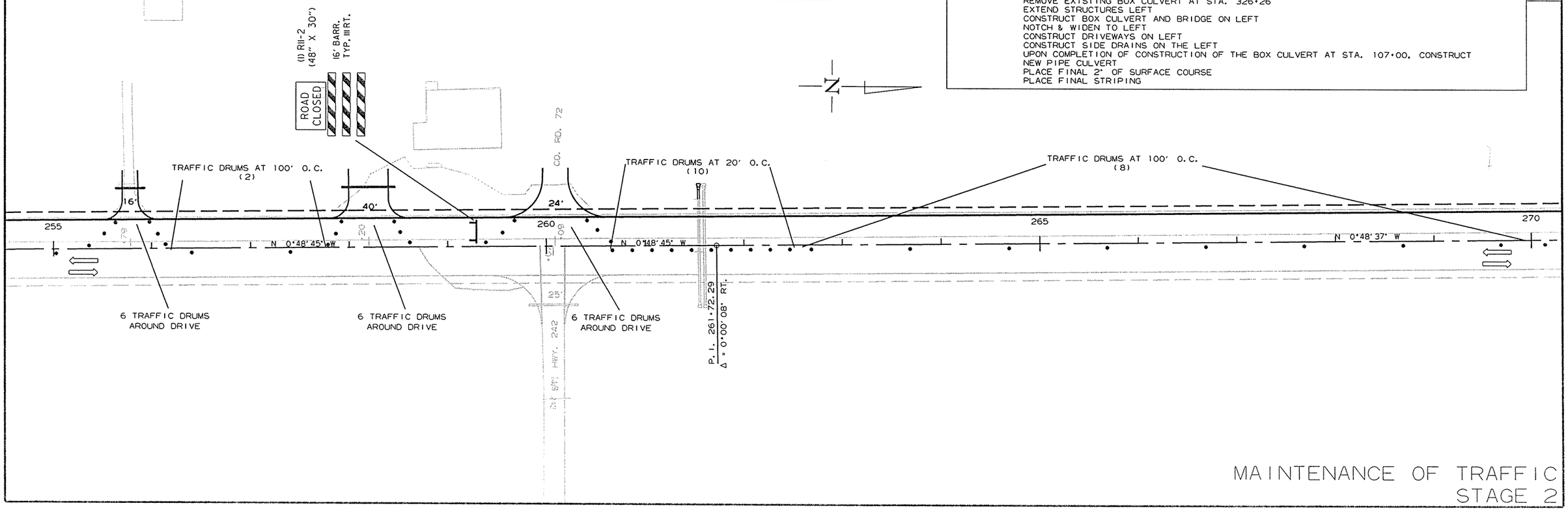
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



MAINTENANCE OF TRAFFIC
STAGE 2

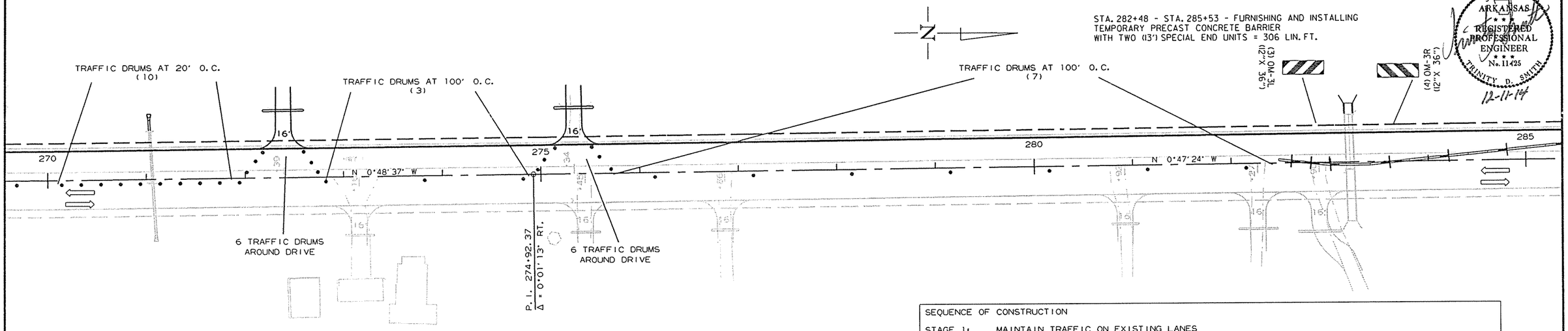
10/16/2014

R110217.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.		110217	61	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
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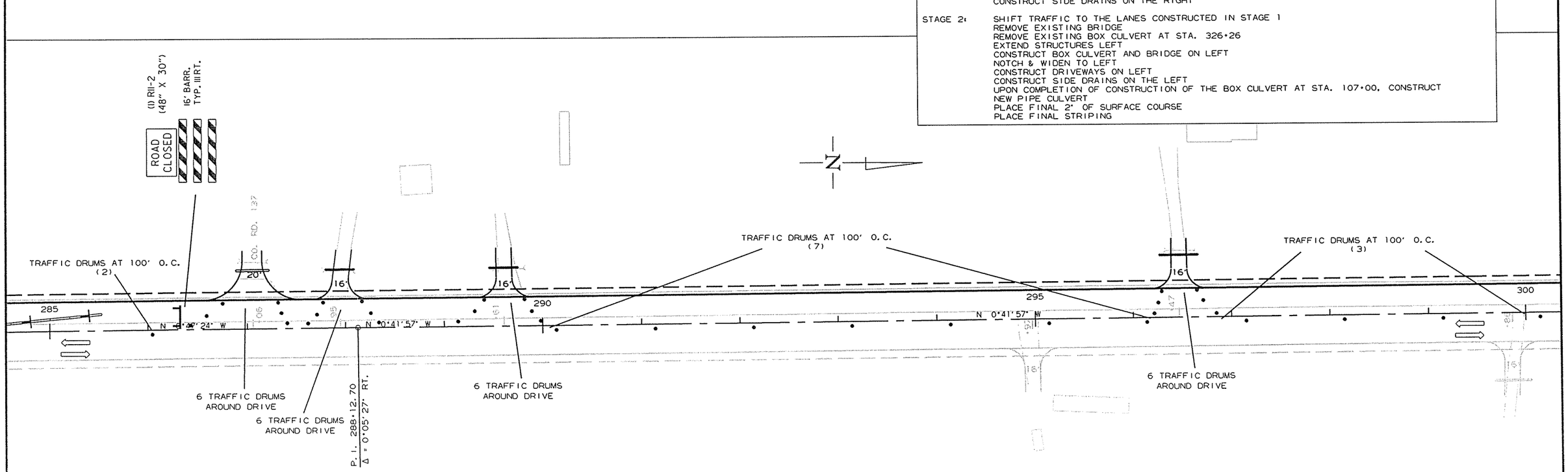
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



MAINTENANCE OF TRAFFIC
STAGE 2

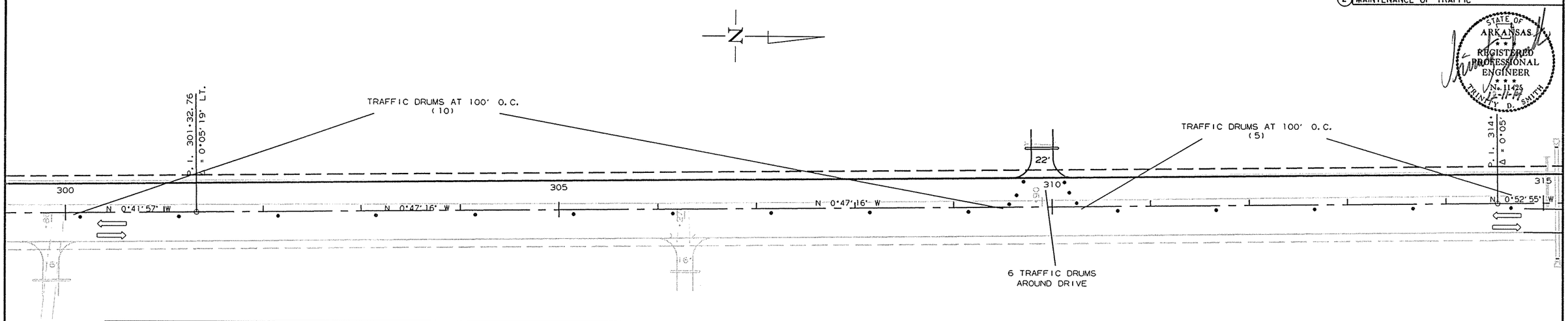
10/16/2014

R110217.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.		110217	62	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRUMEY D. SMITH
12-11-14

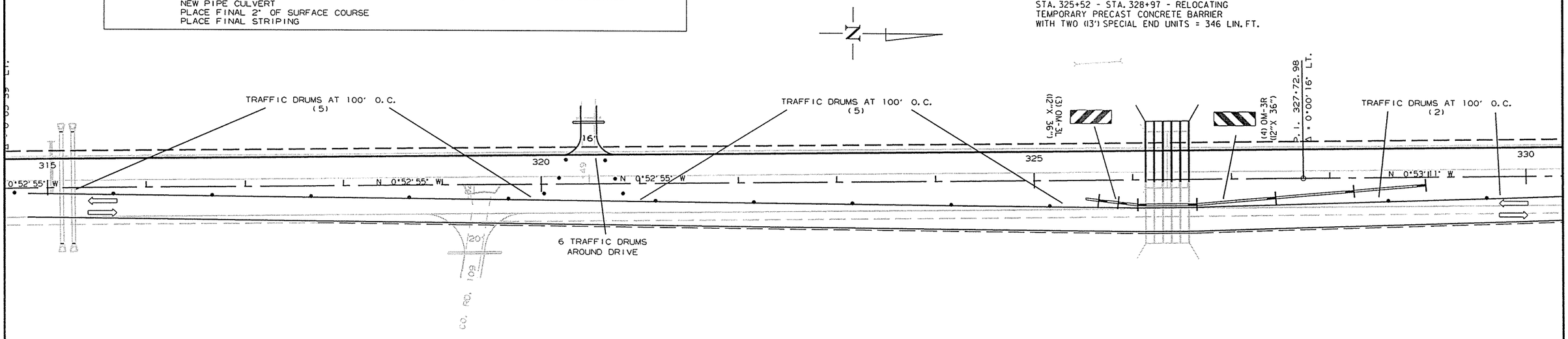


SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT
NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

STA. 325+52 - STA. 328+97 - RELOCATING
TEMPORARY PRECAST CONCRETE BARRIER
WITH TWO (13') SPECIAL END UNITS = 346 LIN. FT.



MAINTENANCE OF TRAFFIC
STAGE 2

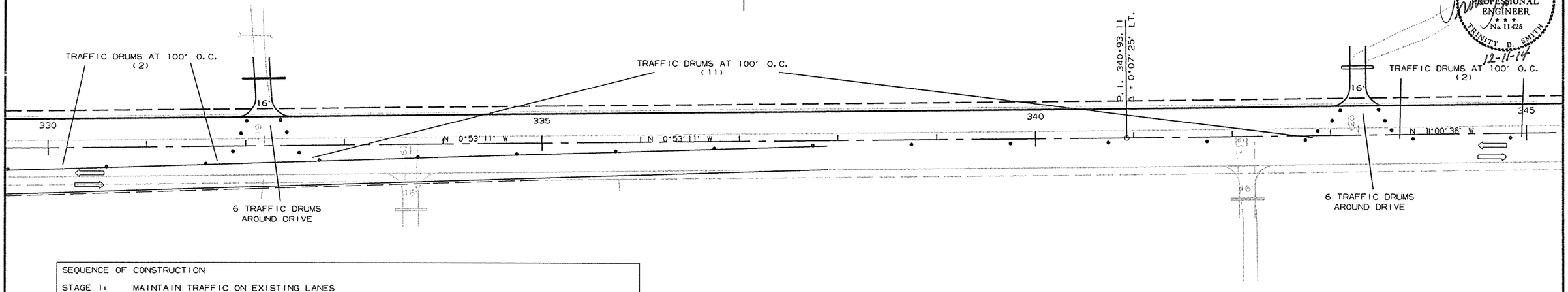
10/16/2014

R110217.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.		110217	63	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
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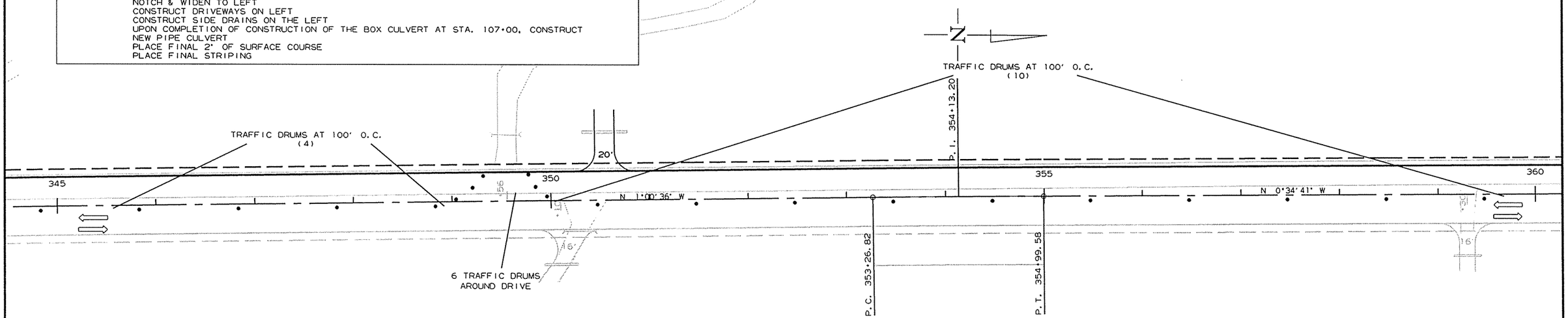
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



PI = 354+13.20
Δ = 00°25'55"RT.
D = 00°15'00"
T = 86.38'
L = 172.77'
PC = 353+26.82
PT = 354+99.58
NO SUPER

MAINTENANCE OF TRAFFIC
STAGE 2

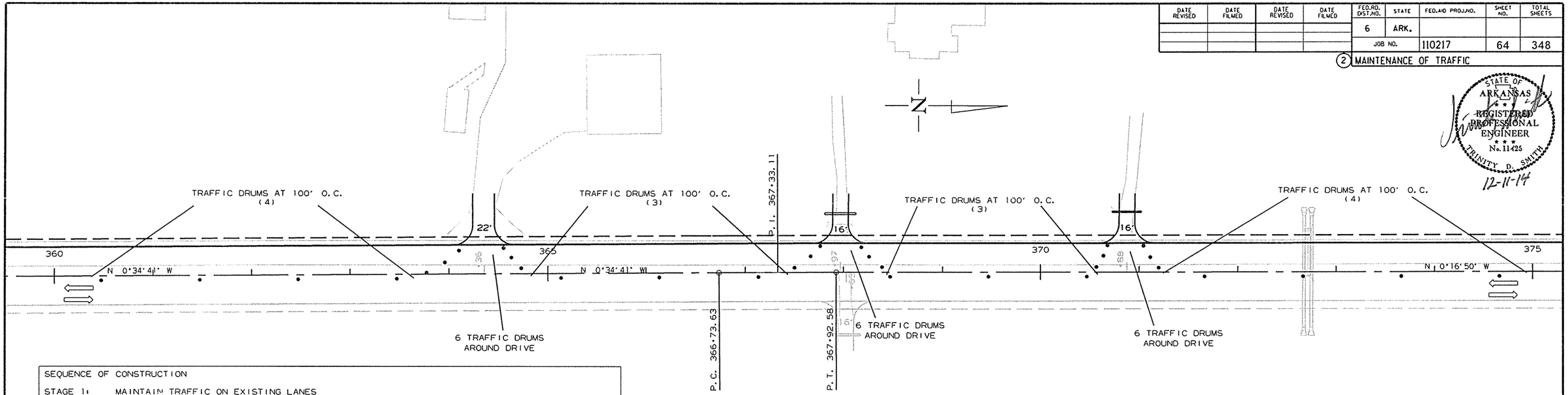
10/16/2014

R110217.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.		110217	64	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
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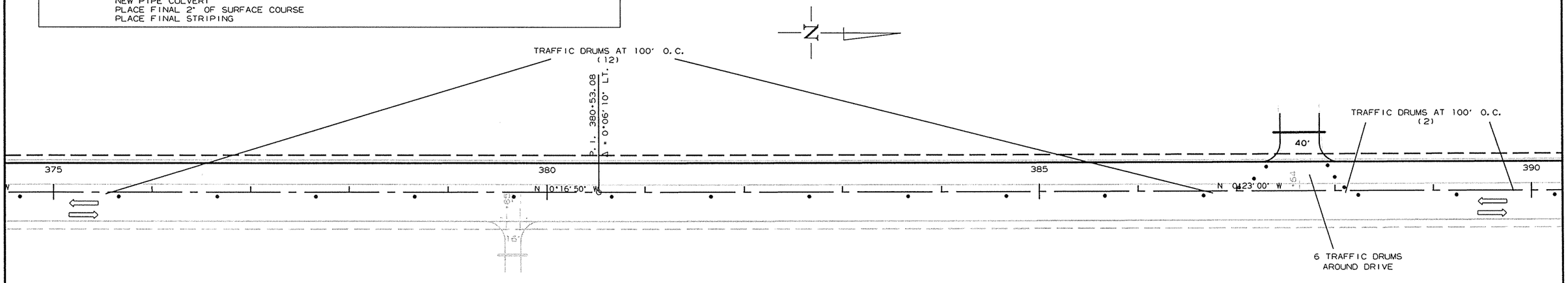
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

PI = 367+33.11
Δ = 00°17'51"RT.
D = 00°15'00"
T = 59.48'
L = 118.95'
PC = 366+73.63
PT = 367+92.58
NO SUPER



10/16/2014

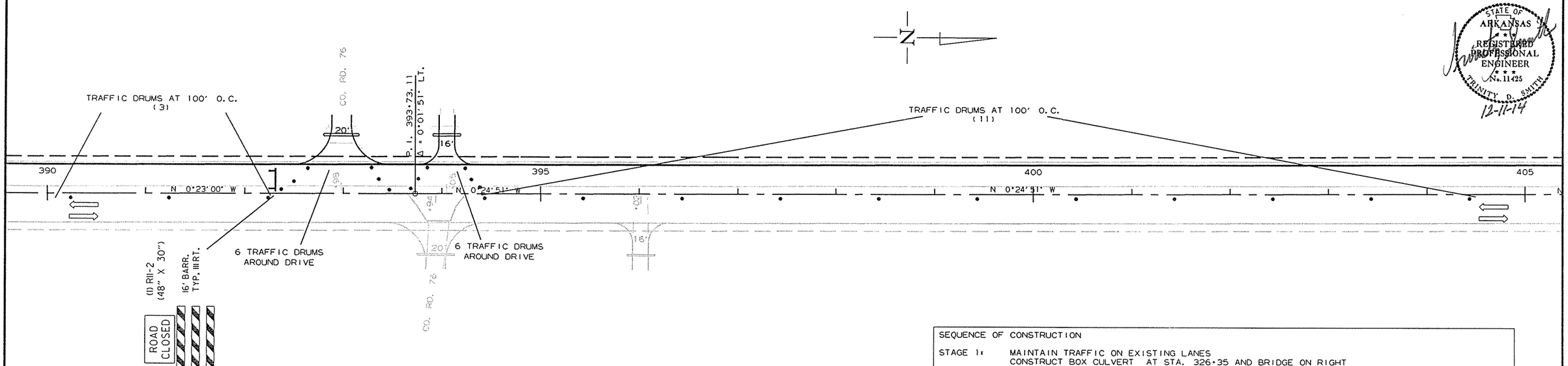
R110217.DGN

MAINTENANCE OF TRAFFIC
STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	65	348

(2) MAINTENANCE OF TRAFFIC

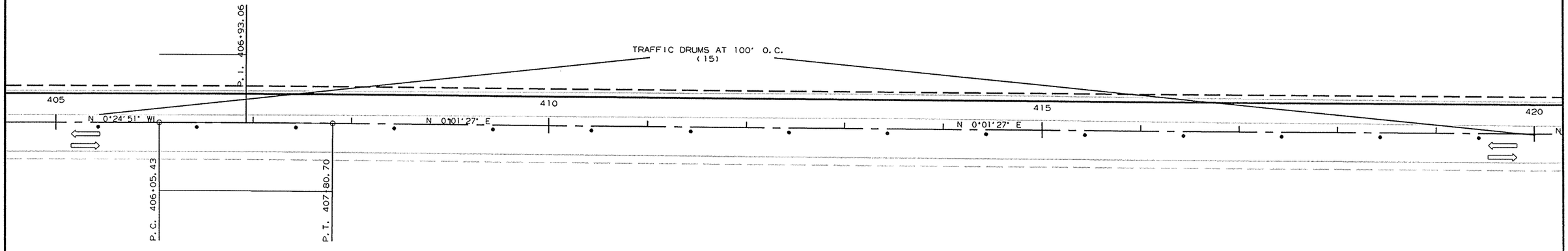
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



PI = 406+93.06
Δ = 00°26'18"RT.
D = 00°15'00"
T = 87.64'
L = 178.27'
PC = 406+05.43
PT = 407+80.70
NO SUPER

10/16/2014

R110217.DGN

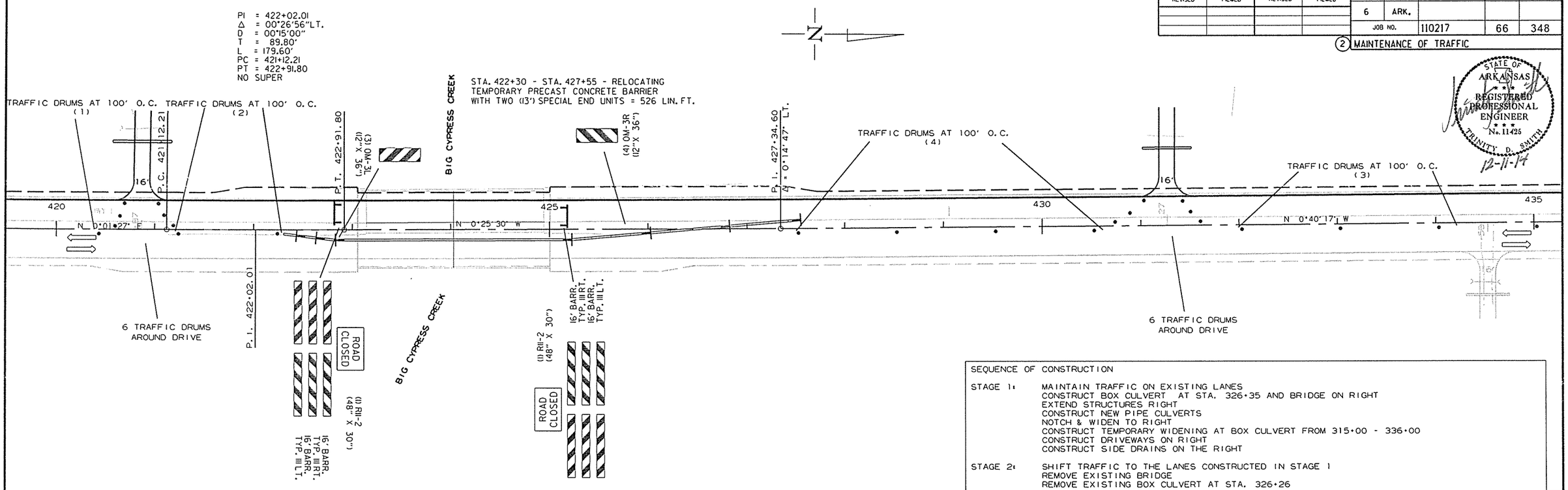
MAINTENANCE OF TRAFFIC STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	66	348

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

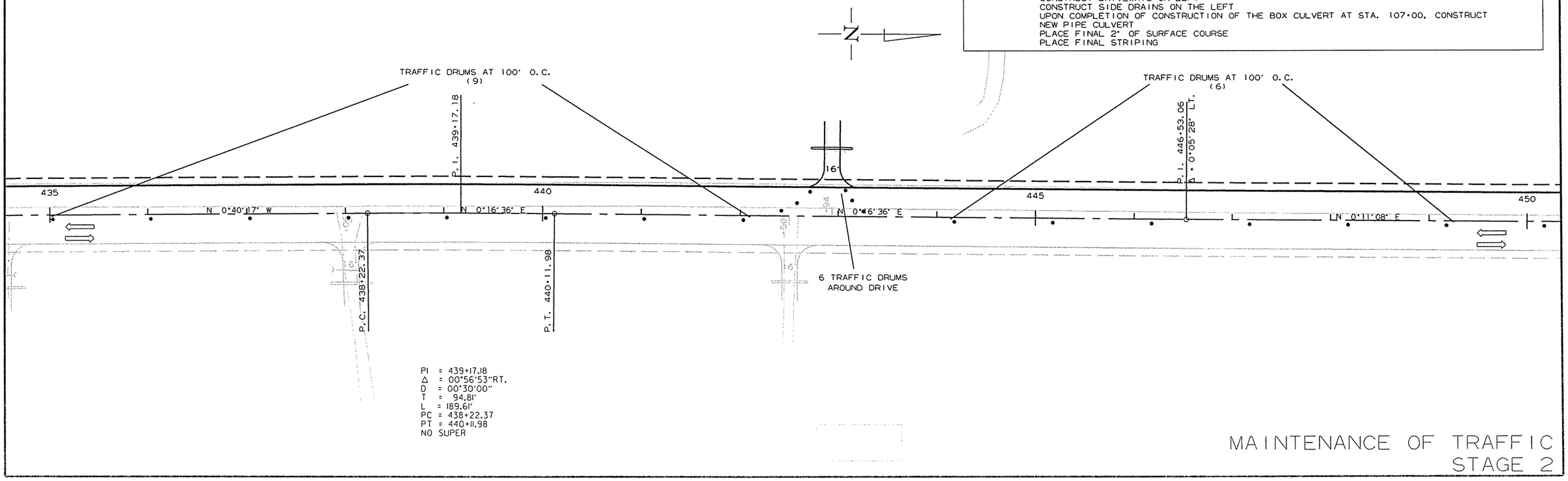
PI = 422+02.01
Δ = 00°26'56"LT.
D = 00°15'00"
T = 89.80'
L = 179.60'
PC = 421+12.21
PT = 422+91.80
NO SUPER



SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING



PI = 439+17.18
Δ = 00°56'53"RT.
D = 00°30'00"
T = 94.81'
L = 189.61'
PC = 438+22.37
PT = 440+11.98
NO SUPER

10/16/2014

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MAINTENANCE OF TRAFFIC STAGE 2

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.		110217	67	348

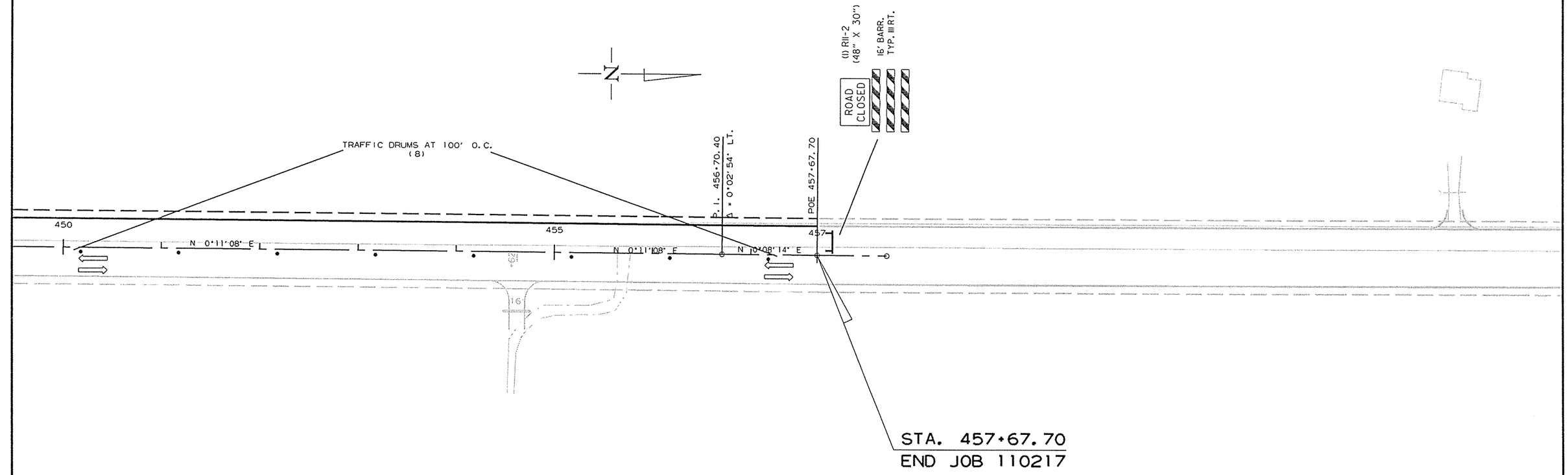
(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING LANES
CONSTRUCT BOX CULVERT AT STA. 326+35 AND BRIDGE ON RIGHT
EXTEND STRUCTURES RIGHT
CONSTRUCT NEW PIPE CULVERTS
NOTCH & WIDEN TO RIGHT
CONSTRUCT TEMPORARY WIDENING AT BOX CULVERT FROM 315+00 - 336+00
CONSTRUCT DRIVEWAYS ON RIGHT
CONSTRUCT SIDE DRAINS ON THE RIGHT

STAGE 2: SHIFT TRAFFIC TO THE LANES CONSTRUCTED IN STAGE 1
REMOVE EXISTING BRIDGE
REMOVE EXISTING BOX CULVERT AT STA. 326+26
EXTEND STRUCTURES LEFT
CONSTRUCT BOX CULVERT AND BRIDGE ON LEFT
NOTCH & WIDEN TO LEFT
CONSTRUCT DRIVEWAYS ON LEFT
CONSTRUCT SIDE DRAINS ON THE LEFT
UPON COMPLETION OF CONSTRUCTION OF THE BOX CULVERT AT STA. 107+00, CONSTRUCT NEW PIPE CULVERT
PLACE FINAL 2" OF SURFACE COURSE
PLACE FINAL STRIPING

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



MAINTENANCE OF TRAFFIC
STAGE 2

10/16/2014

R110217.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.		110217	68	348

(2) PERMANENT PAVEMENT MARKING DETAILS

FINAL STRIPING:

THERMOPLASTIC PAVEMENT MARKING 4" (YELLOW)

DOUBLE YELLOW
STATIONS 100+57-102+57 - 400 LIN. FT.
STATIONS 469+12-471+12 - 400 LIN. FT.
HWY. 49
STATIONS 18+70-19+20 - 100 LIN. FT.
STATIONS 20+65-21+27 - 124 LIN. FT.

SOLID YELLOW
STATIONS 102+57-108+10 - 1,106 LIN. FT.
STATIONS 184+57-219+90 - 3,533 LIN. FT.
STATIONS 220+20-233+37 - 2,634 LIN. FT.
STATIONS 233+77-259+82 - 5,210 LIN. FT.
STATIONS 260+35-286+84 - 5,298 LIN. FT.
STATIONS 287+32-319+16 - 6,368 LIN. FT.
STATIONS 319+61-392+72 - 14,622 LIN. FT.
STATIONS 393+25-393+78 - 106 LIN. FT.
STATIONS 394+21-423+01 - 5,760 LIN. FT.
STATIONS 425+06-457+68 - 6,524 LIN. FT.
STATIONS 457+68-469+12 - 2,288 LIN. FT.

YELLOW SKIP
STATIONS 102+57-108+10 - 277 LIN. FT.
STATIONS 184+57-219+90 - 1,767 LIN. FT.
STATIONS 220+20-233+37 - 659 LIN. FT.
STATIONS 233+77-259+82 - 1,303 LIN. FT.
STATIONS 260+35-286+84 - 1,325 LIN. FT.
STATIONS 287+32-319+16 - 1,592 LIN. FT.
STATIONS 319+61-392+72 - 3,656 LIN. FT.
STATIONS 393+25-393+78 - 27 LIN. FT.
STATIONS 394+21-423+06 - 1,443 LIN. FT.
STATIONS 425+01-457+68 - 1,634 LIN. FT.
STATIONS 457+68-469+12 - 572 LIN. FT.

RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)

STATIONS 100+57-102+57 - 3 EACH
STATIONS 102+57-108+10 - 14 EACH
STATIONS 184+57-219+90 - 88 EACH
STATIONS 220+20-233+37 - 33 EACH
STATIONS 233+77-259+82 - 65 EACH
STATIONS 260+35-286+84 - 66 EACH
STATIONS 287+32-319+16 - 80 EACH
STATIONS 319+61-392+72 - 183 EACH
STATIONS 393+25-393+78 - 1 EACH
STATIONS 394+21-457+68 - 159 EACH
STATIONS 457+68-469+12 - 29 EACH

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING 4" (WHITE)

WHITE SKIP
STATIONS 423+05-425+00 LT. - 49 LIN. FT.
STATIONS 423+05-425+00 RT. - 49 LIN. FT.

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING 4" (YELLOW)

SOLID YELLOW
STATIONS 423+05-425+00 - 390 LIN. FT.

YELLOW SKIP
STATIONS 423+05-425+00 - 98 LIN. FT.

THERMOPLASTIC PAVEMENT MARKING 4" (WHITE)

WHITE EDGE
STATIONS 100+43-101+50 LT. - 107 LIN. FT.
STATIONS 100+57-101+57 MID. - 100 LIN. FT.
STATIONS 101+28-457+68 LT. - 35,640 LIN. FT.
STATIONS 101+30-457+68 RT. - 35,638 LIN. FT.
STATIONS 457+68-470+68 RT. - 1300 LIN. FT.
STATIONS 470+12-471+12 RT. - 100 LIN. FT.
HWY. 49
STATIONS 18+70-19+20 - 50 LIN. FT.
STATIONS 20+65-21+27 - 62 LIN. FT.

WHITE DASHED
STATIONS 101+50-105+00 LT. - 117 LIN. FT.

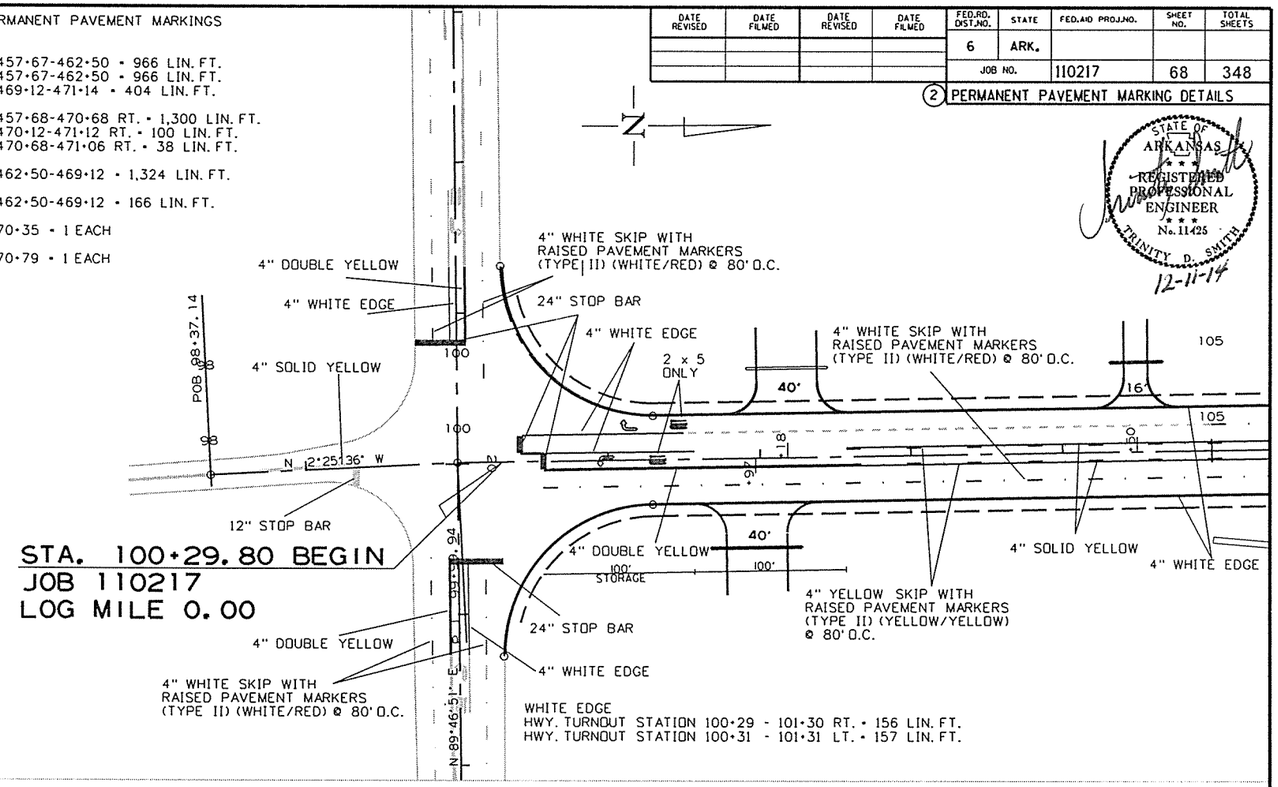
WHITE SKIP
STATIONS 105+00-184+12 LT. - 1,978 LIN. FT.
STATIONS 100+56-184+07 RT. - 2,088 LIN. FT.
STATIONS 184+54-219+90 RT. - 884 LIN. FT.
STATIONS 184+62-233+37 LT. - 1,219 LIN. FT.
STATIONS 220+20-259+82 RT. - 991 LIN. FT.
STATIONS 233+77-259+82 LT. - 651 LIN. FT.
STATIONS 260+35-286+84 LT. - 662 LIN. FT.
STATIONS 260+35-319+16 RT. - 1,470 LIN. FT.
STATIONS 287+32-392+72 LT. - 2,635 LIN. FT.
STATIONS 319+61-393+78 RT. - 1,854 LIN. FT.
STATIONS 393+25-423+01 LT. - 744 LIN. FT.
STATIONS 394+21-423+01 RT. - 720 LIN. FT.
STATIONS 425+01-457+68 LT. - 817 LIN. FT.
STATIONS 425+01-457+68 RT. - 817 LIN. FT.
STATIONS 457+68-471+12 LT. - 336 LIN. FT.
STATIONS 457+68-471+12 RT. - 336 LIN. FT.
STATIONS 471+30-479+75 LT. - 211 LIN. FT.
HWY. 49
STATIONS 18+70-19+20 RT. - 13 LIN. FT.
STATIONS 18+70-19+44 LT. - 19 LIN. FT.
STATIONS 20+55-21+27 RT. - 18 LIN. FT.
STATIONS 20+65-21+27 LT. - 16 LIN. FT.

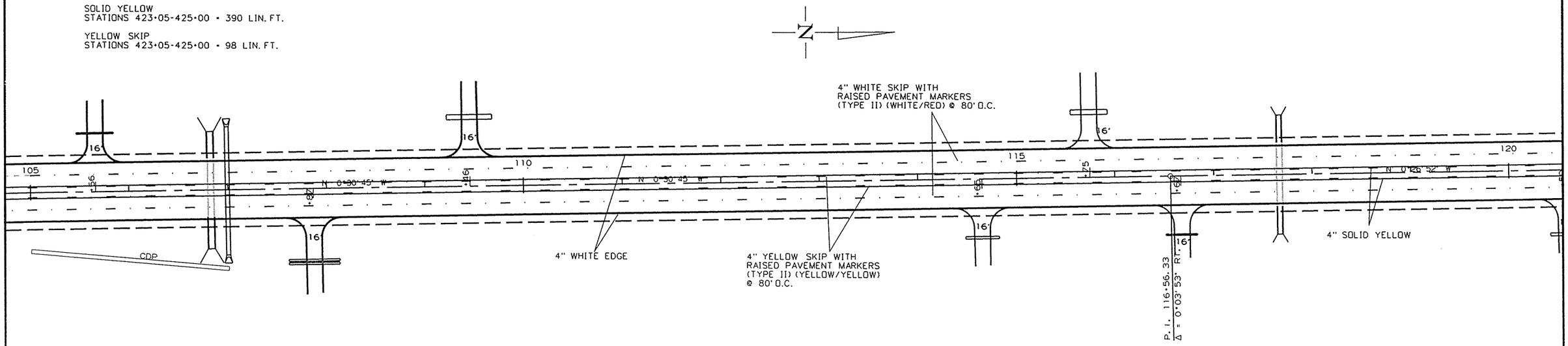
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)

STATIONS 105+00-184+12 LT. - 99 EACH
STATIONS 100+56-184+07 RT. - 104 EACH
STATIONS 184+54-219+90 RT. - 44 EACH
STATIONS 184+62-233+37 LT. - 61 EACH
STATIONS 220+20-259+82 RT. - 50 EACH
STATIONS 233+77-259+82 LT. - 33 EACH
STATIONS 260+35-319+16 RT. - 74 EACH
STATIONS 287+32-392+72 LT. - 132 EACH
STATIONS 319+61-393+78 RT. - 93 EACH
STATIONS 393+25-457+68 LT. - 81 EACH
STATIONS 394+21-457+68 RT. - 79 EACH
STATIONS 457+68-471+12 LT. - 17 EACH
STATIONS 457+68-471+12 RT. - 17 EACH
STATIONS 472+30-479+75 LT. - 9 EACH
HWY. 49
STATIONS 18+70-19+20 RT. - 1 EACH
STATIONS 18+70-19+44 LT. - 1 EACH
STATIONS 20+55-21+27 RT. - 1 EACH
STATIONS 20+65-21+27 LT. - 1 EACH

REMOVAL OF PERMANENT PAVEMENT MARKINGS

DBL. YELLOW
STATIONS 457+67-462+50 - 966 LIN. FT.
STATIONS 457+67-462+50 - 966 LIN. FT.
STATIONS 469+12-471+14 - 404 LIN. FT.
WHITE EDGE
STATIONS 457+68-470+68 RT. - 1,300 LIN. FT.
STATIONS 470+12-471+12 RT. - 100 LIN. FT.
STATIONS 470+68-471+06 RT. - 38 LIN. FT.
SOLID YELLOW
STATIONS 462+50-469+12 - 1,324 LIN. FT.
YELLOW SKIP
STATIONS 462+50-469+12 - 166 LIN. FT.
WORDS
STATION 470+35 - 1 EACH
ARROW
STATION 470+79 - 1 EACH





10/16/2014

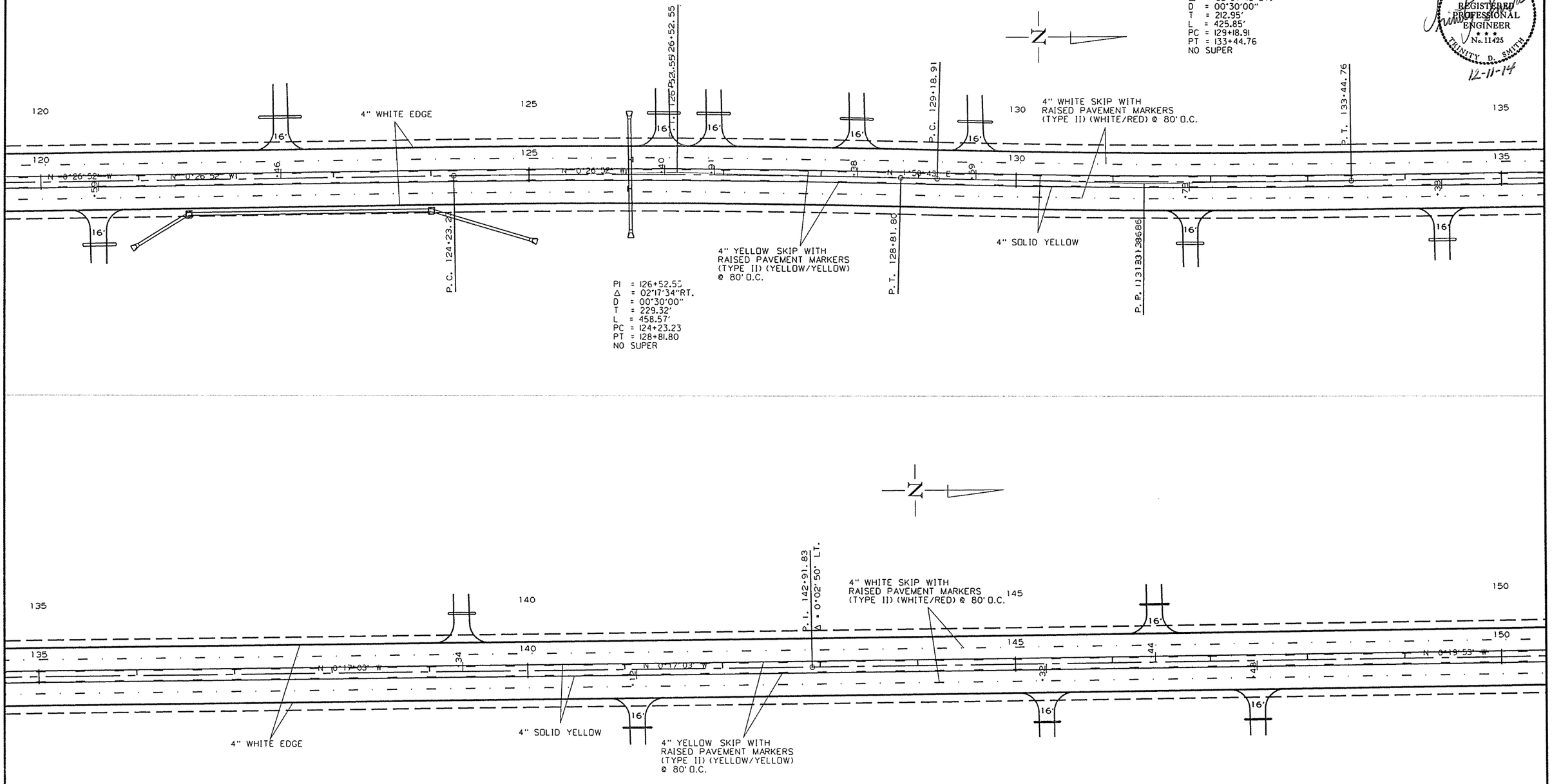
R110217.DGN

PERMANENT PAVEMENT MARKING DETAILS

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.		110217	69	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



10/16/2014

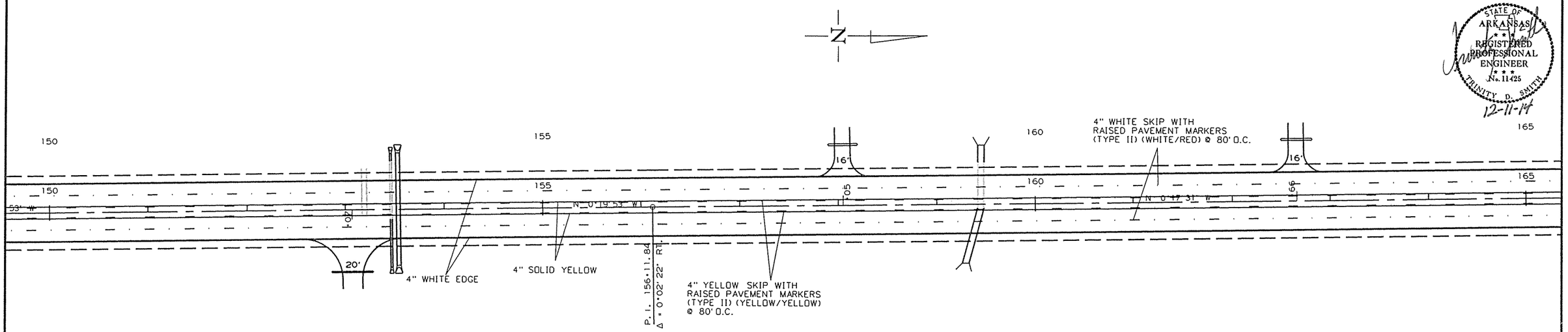
R110217.DGN

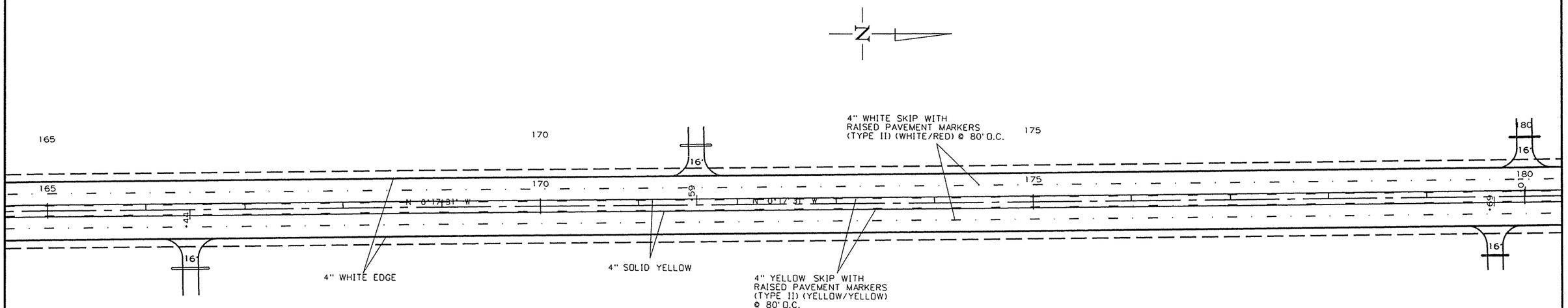
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	70	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14





10/16/2014

R110217.DGN

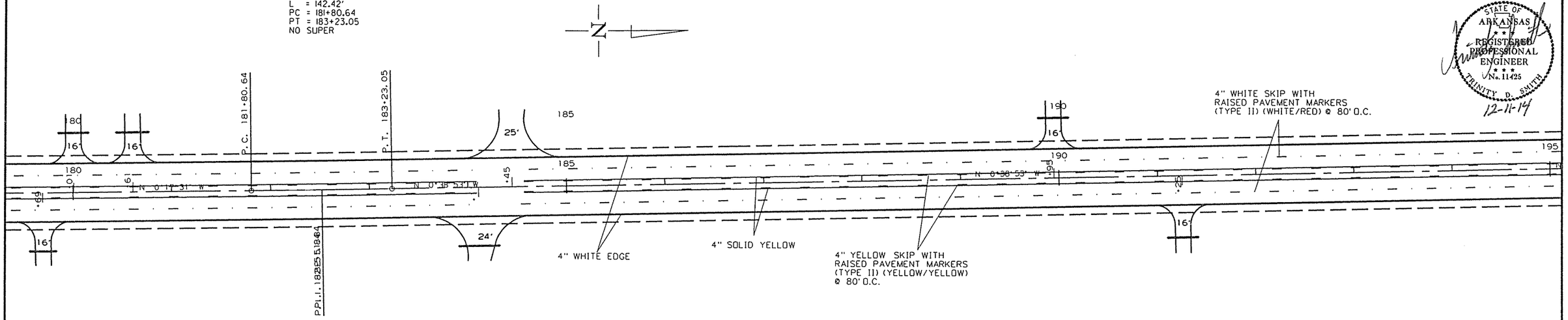
PERMANENT PAVEMENT MARKING DETAILS

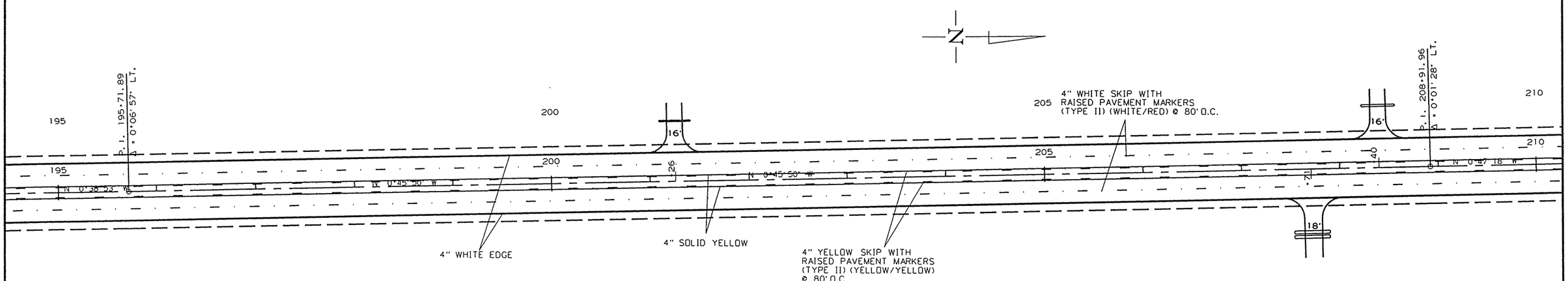
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	71	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

PI = 182+51.84
Δ = 00°21'22"LT.
D = 00°15'00"
T = 71.21'
L = 142.42'
PC = 181+80.64
PT = 183+23.05
NO SUPER





10/16/2014

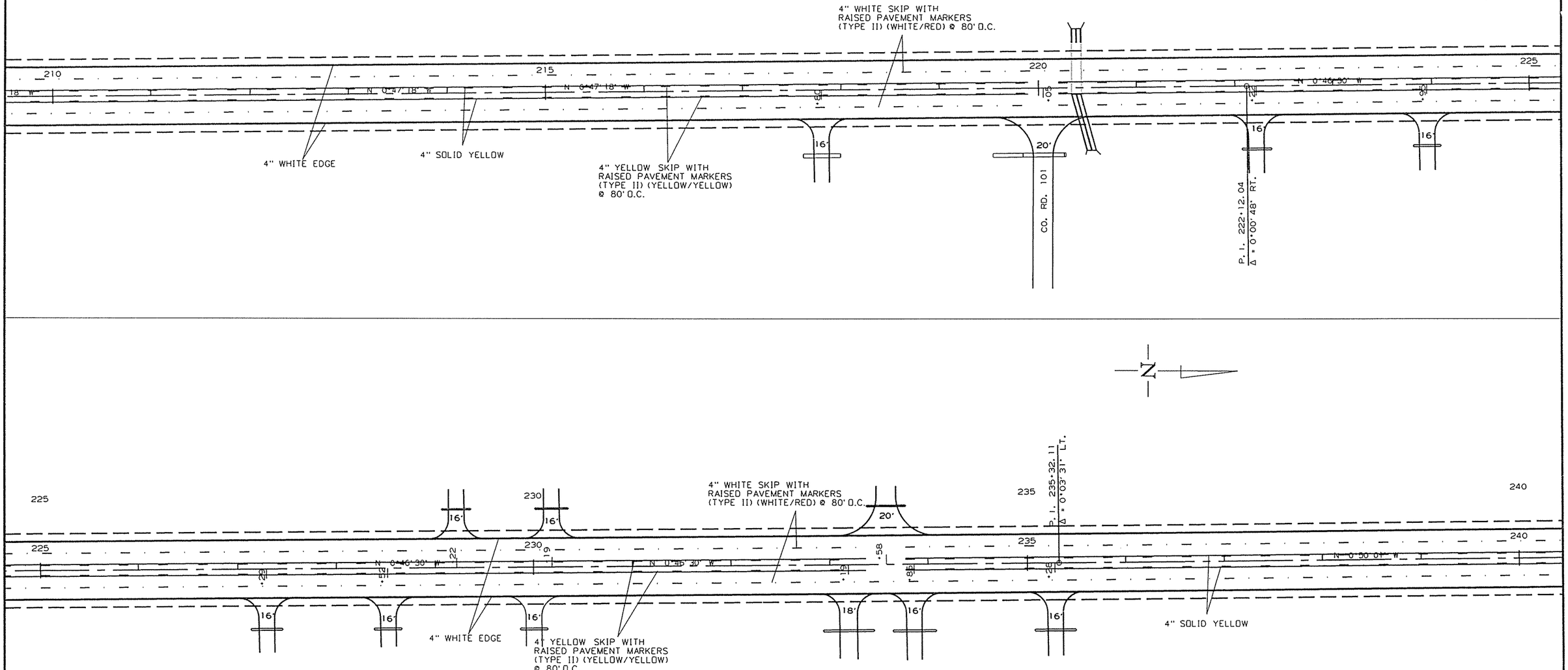
R110217.DGN

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	72	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



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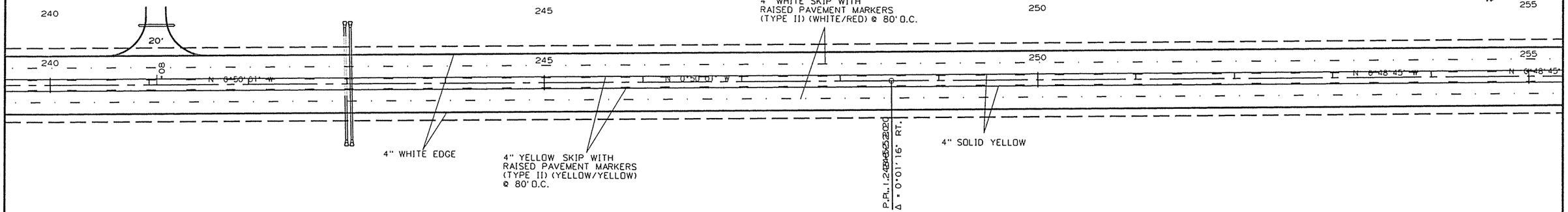
R110217.DGN

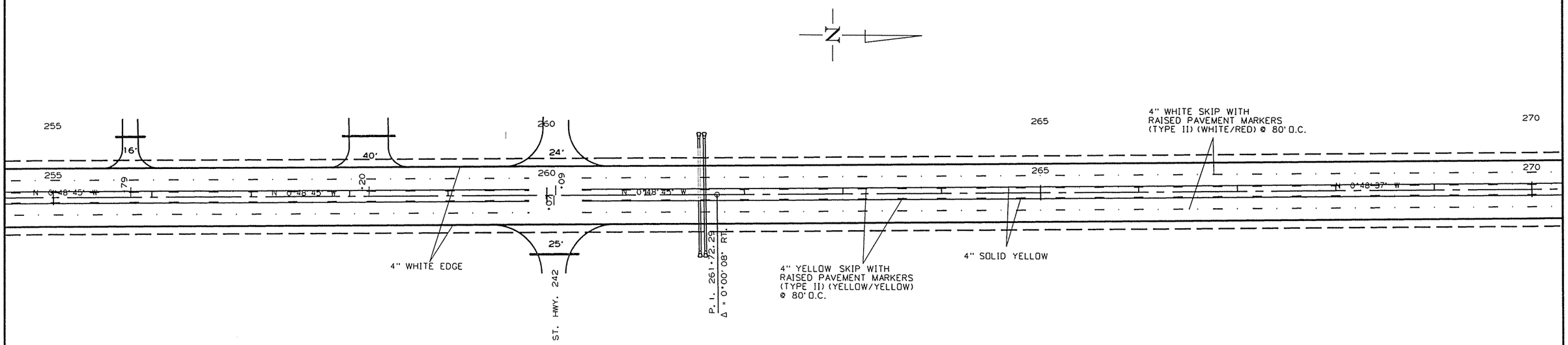
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	73	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14





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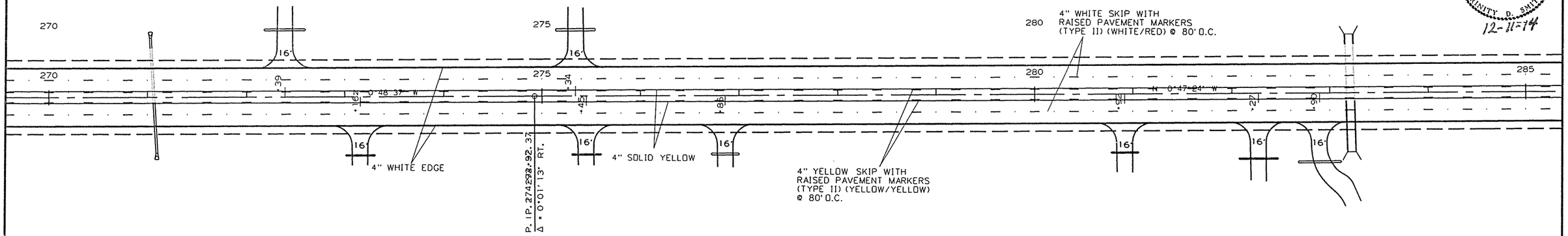
R110217.DGN

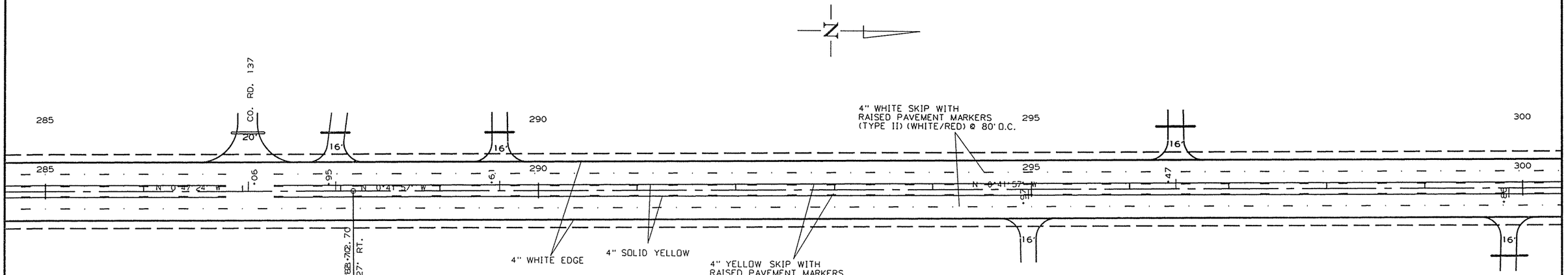
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	74	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14





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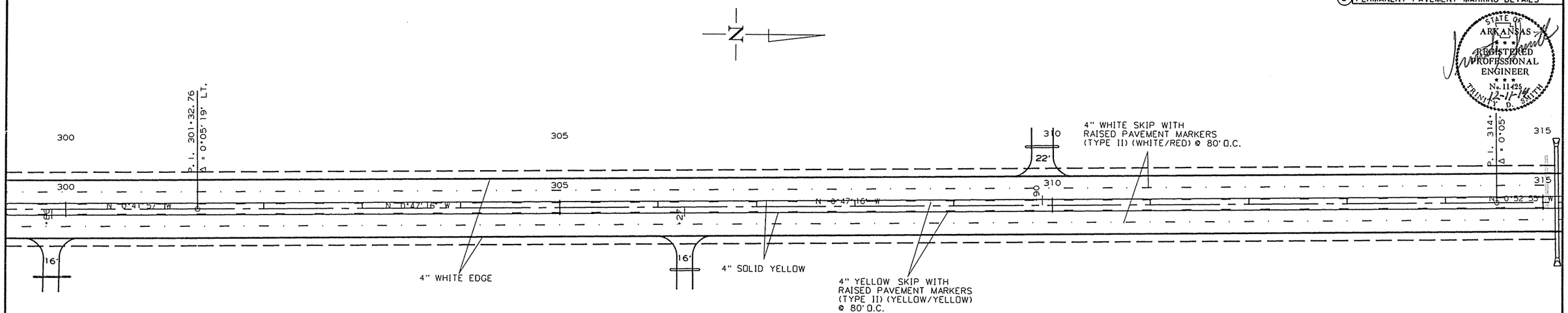
R110217.DGN

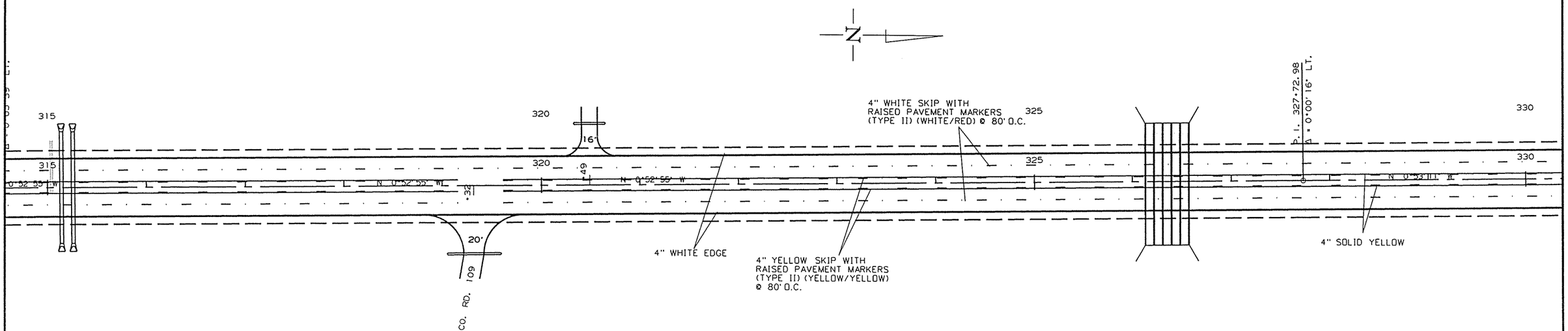
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	75	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
12-11-14
TRINITY D. SMITH





10/16/2014

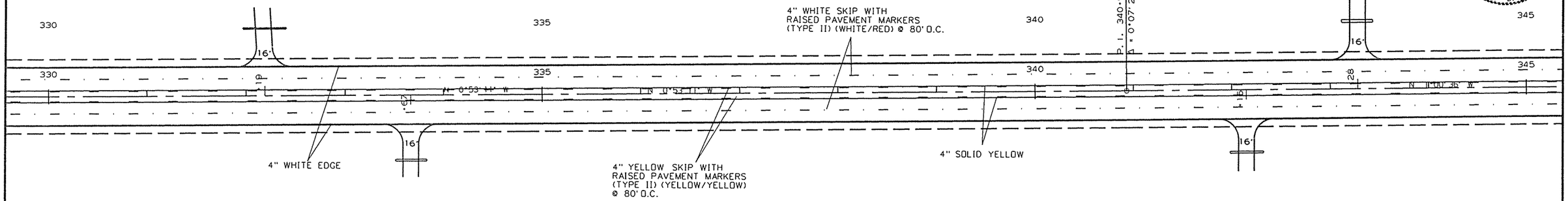
R110217.DGN

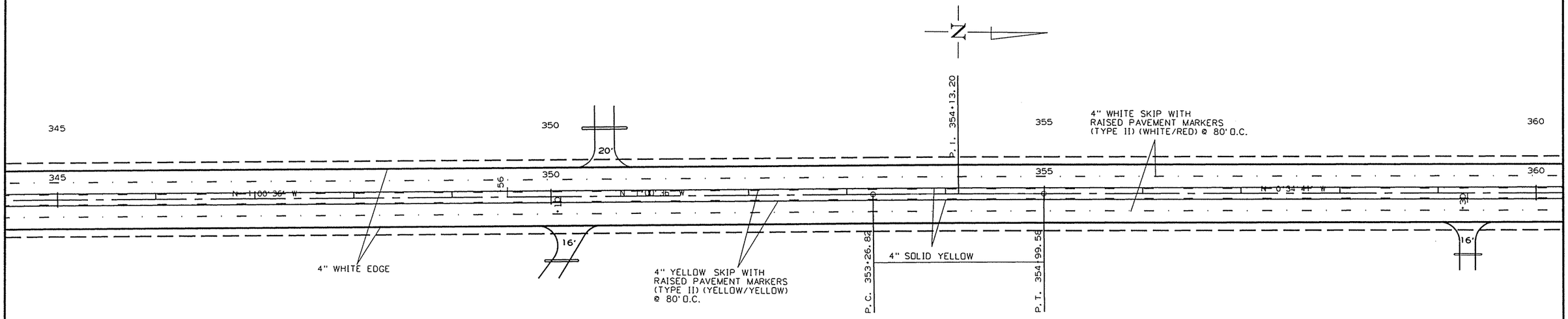
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	76	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
12-11-14
TRINITY D. SMITH





PI = 354+13.20
Δ = 00°25'55"RT.
D = 00°15'00"
T = 86.38'
L = 172.77'
PC = 353+26.82
PT = 354+99.58
NO SUPER

10/16/2014

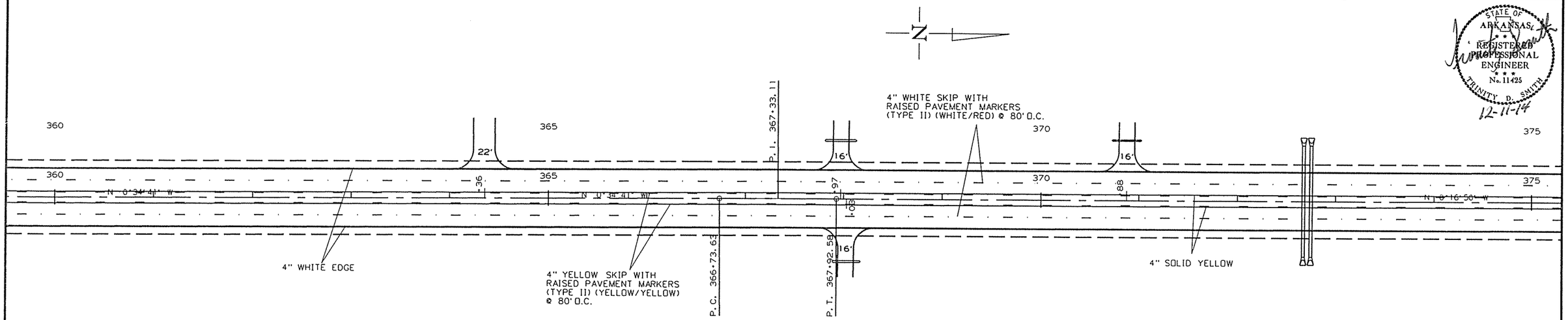
R110217.DGN

PERMANENT PAVEMENT MARKING DETAILS

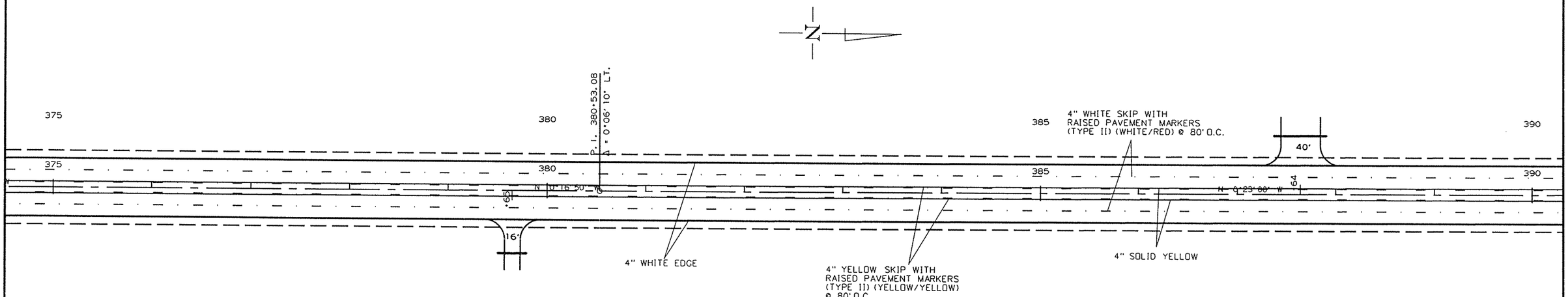
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	77	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



PI = 367+33.11
Δ = 00°17'51"RT.
D = 00°15'00"
T = 59.48'
L = 118.95'
PC = 366+73.63
PT = 367+92.58
NO SUPER



10/16/2014

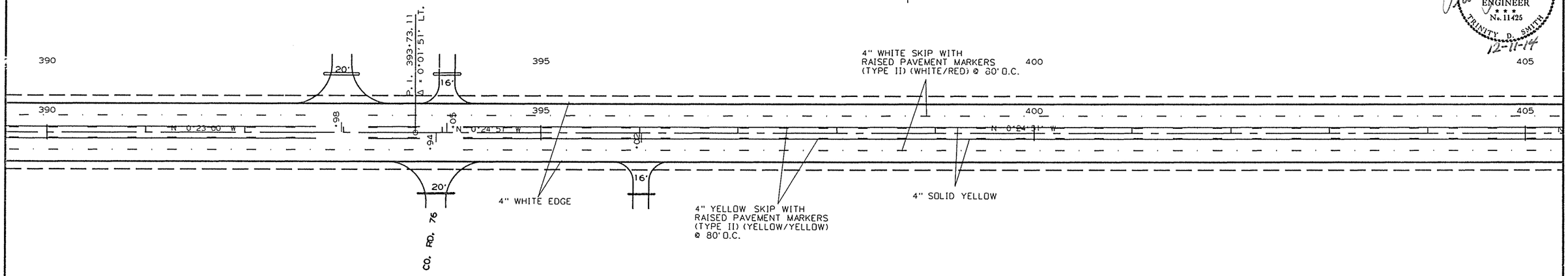
R110217.DGN

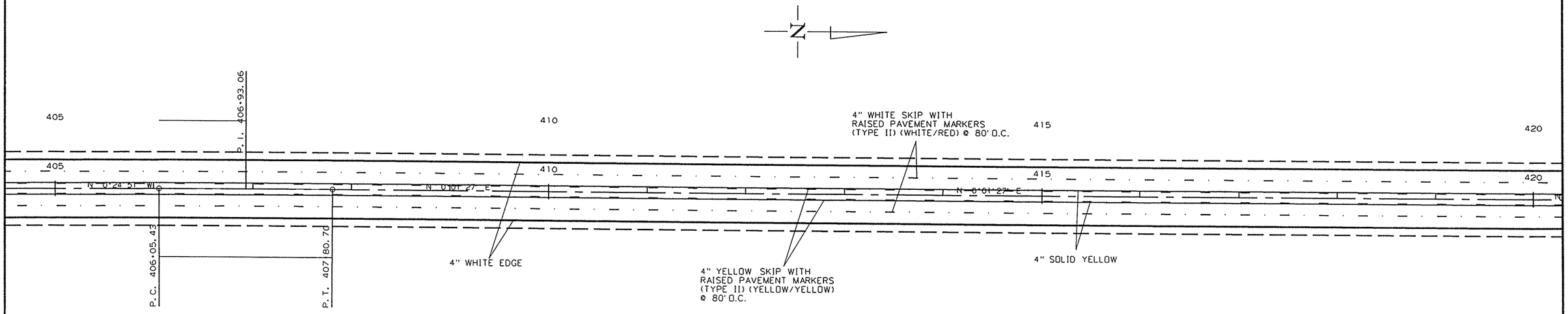
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	78	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14





PI = 406+93.06
Δ = 00°26'18"RT.
D = 00°15'00"
T = 87.64'
L = 178.27'
PC = 406+05.43
PT = 407+80.70
NO SUPER

10/16/2014

R110217.DGN

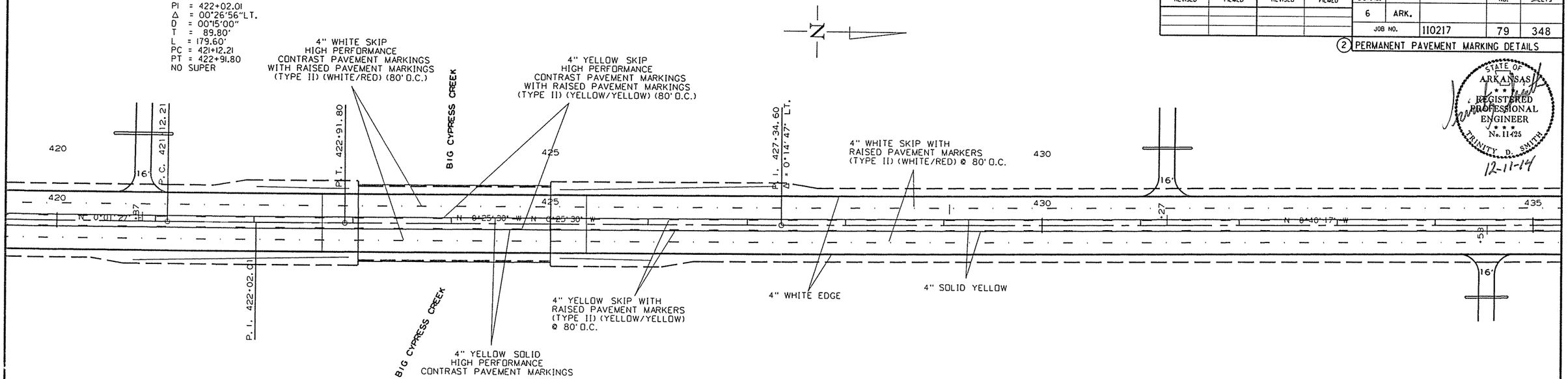
PERMANENT PAVEMENT MARKING DETAILS

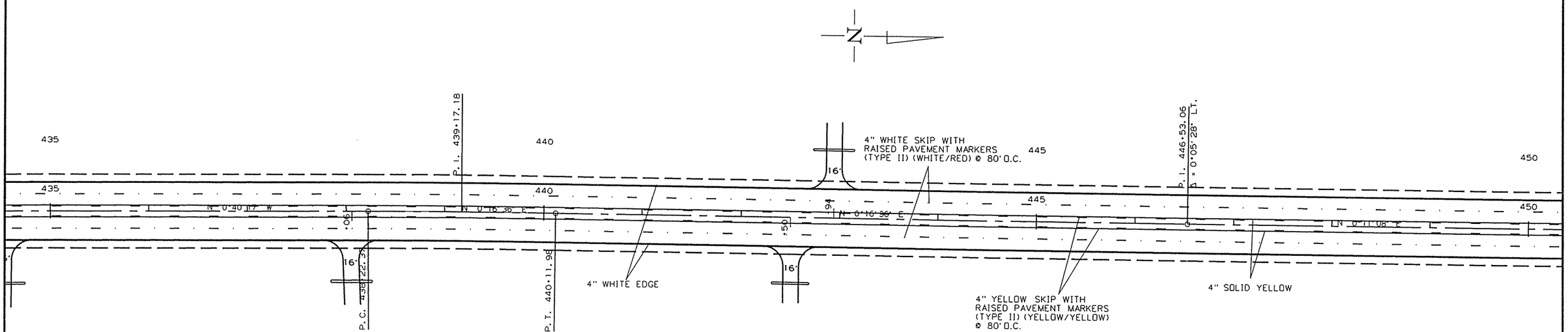
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	79	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

PI = 422+02.01
Δ = 00°26'56"LT.
D = 00°15'00"
T = 89.80'
L = 179.60'
PC = 421+12.21
PT = 422+91.80
NO SUPER





PI = 439+17.18
Δ = 00°56'53"RT.
D = 00°30'00"
T = 94.81'
L = 189.61'
PC = 438+22.37
PT = 440+11.98
NO SUPER

10/16/2014

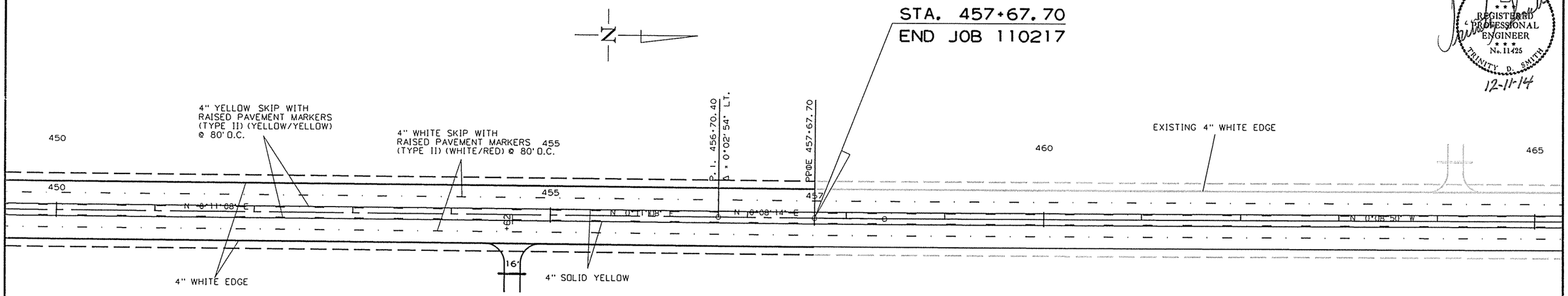
R110217.DGN

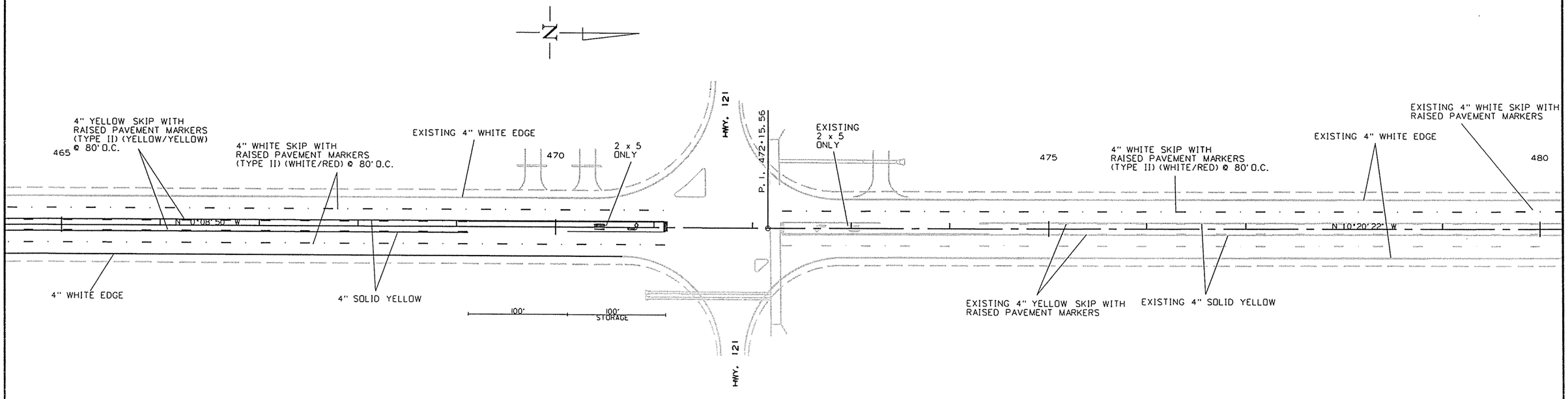
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	80	348

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14





10/16/2014

R110217.DGN

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	81	348

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKINGS						HIGH PERFORMANCE CONTRAST PAVEMENT MARKING	
						TYPE II (WHITE)	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	12" WHITE	24" WHITE	WORDS	ARROWS	4" WHITE	4" YELLOW
	LIN. FT. - EACH			LIN. FT.		EACH		LIN. FT.				EACH		LIN. FT.	
REMOVAL OF PERMANENT PAVEMENT MARKINGS			5264	5264											
CONSTRUCTION PAVEMENT MARKINGS	142952	142952			285904										
RAISED PAVEMENT MARKERS TYPE II (WHITE)			899			899									
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			721				721								
THERMOPLASTIC PAVEMENT MARKING WHITE (4")			91593					91593							
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")			68728						68728						
THERMOPLASTIC PAVEMENT MARKING WHITE (12")			16							16					
THERMOPLASTIC PAVEMENT MARKING WHITE (24")			105								105				
THERMOPLASTIC PAVEMENT MARKING WORDS			5									5			
THERMOPLASTIC PAVEMENT MARKING ARROWS			5										5		
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4")			98											98	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")			488												488
TOTALS:				5264	285904	899	721	91593	68728	16	105	5	5	98	488

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

NOTE: THERMOPLASTIC PAVEMENT MARKINGS MAY BE SUBSTITUTED FOR INVERTED PROFILE PAVEMENT MARKINGS AT INTERSECTIONS, ISLANDS, TURNOUTS, AND OTHER SIMILAR LOCATIONS AS DIRECTED BY THE ENGINEER.

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)
										RIGHT	LEFT				
			LIN. FT. - EACH			NO.	SQ. FT.	EACH				LIN. FT.		EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	4	4	4	4	64.0								
W20-1	ROAD WORK 1000 FT.	48"x48"	4	4	4	4	64.0								
W20-1	ROAD WORK 500 FT.	48"x48"	4	4	4	4	64.0								
W20-1	ROAD WORK AHEAD	48"x48"	11	11	11	11	176.0								
G20-2	END ROAD WORK	48"x24"	15	15	15	15	120.0								
G20-1	ROAD WORK NEXT xx MILES	60"x24"	2	2	2	2	20.0								
R11-2	ROAD CLOSED	48"x30"	8	8	8	8	80.0								
OM-3L	OBJECT MARKER	12"x36"	21	21	21	21	63.0								
OM-3R	OBJECT MARKER	12"x36"	22	28	28	28	84.0								
R4-1	DO NOT PASS	24"x30"	20	20	20	20	100.0								
RSP-1	SHOULDER CLOSED	48"x30"	2	2	2	2	20.0								
W8-9	LOW SHOULDER	36"X36"	4	4	4	4	36.0								
	VERTICAL PANELS		185	24	185			185							
	TRAFFIC DRUMS		587	415	587				587						
	TYPE III BARRICADE-RT. (16')		8	8	8					128					
	TYPE III BARRICADE-LT. (16')		3	2	3						48				
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		1863	159	2022							2022			
	RELOCATING PRECAST CONCRETE BARRIER			1863	1863								1863		
	TEMPORARY IMPACT ATTENUATION BARRIER		3		3									3	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		3		3										3
TOTALS:							891.0	185	587	128	48	2022	1863	3	3

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.

12/5/2014

R110217.DGN

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CURB	CONCRETE PAVEMENT	CONCRETE ISLANDS	CONCRETE DRIVEWAYS	SIGN FOUNDATIONS	GUARDRAIL	BUILDINGS	SIGNS
			LIN. FT.	SQ. YD.	SQ. YD.	SQ. YD.	EACH	LIN. FT.	EACH	EACH
100+40	100+63	MAIN LANES			28					
100+41	100+77	LT. OF HWY. 1	159							
100+72		LT. OF HWY. 1								1
101+20		RT. OF HWY. 1							1	
101+40	101+97	LT. OF HWY. 1	100							
101+58		LT. OF HWY. 1					1			
101+72		LT. OF HWY. 1					2			1
102+38	102+44	LT. OF HWY. 1	36							
102+58		LT. OF HWY. 1								1
103+12		RT. OF HWY. 1								1
104+77		LT. OF HWY. 1								1
107+73		LT. OF HWY. 1								1
111+05		LT. OF HWY. 1								1
115+00		RT. OF HWY. 1								1
115+02		LT. OF HWY. 1								1
119+55		LT. OF HWY. 1								1
119+95		RT. OF HWY. 1								1
122+36	122+55	LT. OF HWY. 1				88				
122+67		LT. OF HWY. 1								1
126+00		RT. OF HWY. 1								1
126+08		LT. OF HWY. 1								1
126+50		LT. OF HWY. 1								1
126+98		LT. OF HWY. 1								1
128+69		LT. OF HWY. 1								1
153+21		LT. OF HWY. 1								1
153+41		RT. OF HWY. 1								1
153+50		LT. OF HWY. 1								1
153+68		RT. OF HWY. 1								1
159+41		RT. OF HWY. 1								1
159+50		LT. OF HWY. 1								1
164+38		LT. OF HWY. 1					2			1
170+54		RT. OF HWY. 1								1
179+46		RT. OF HWY. 1								1
179+79		RT. OF HWY. 1								1
183+61		RT. OF HWY. 1								1
183+88		RT. OF HWY. 1								3
184+23		LT. OF HWY. 1								2
184+53		RT. OF HWY. 1								1
185+06		LT. OF HWY. 1								1
188+18		RT. OF HWY. 1								1
191+72		RT. OF HWY. 1								1
206+71		RT. OF HWY. 1								1
207+26		RT. OF HWY. 1								1
212+56		RT. OF HWY. 1								1
218+44		RT. OF HWY. 1								1
219+49		RT. OF HWY. 1								1
220+23		RT. OF HWY. 1								1
220+34		RT. OF HWY. 1								1
220+46		LT. OF HWY. 1								1
220+76		LT. OF HWY. 1								1
220+76		RT. OF HWY. 1								1
221+08		RT. OF HWY. 1								1
226+62		RT. OF HWY. 1							1	
227+98		RT. OF HWY. 1								1
230+49		RT. OF HWY. 1								1
232+25		RT. OF HWY. 1								1
233+05	233+32	RT. OF HWY. 1				263				
233+10		RT. OF HWY. 1	27							
233+30		RT. OF HWY. 1	26							
233+42		LT. OF HWY. 1								3
233+68		RT. OF HWY. 1								1
234+10		LT. OF HWY. 1								1
252+46		RT. OF HWY. 1								1
257+18		LT. OF HWY. 1								1
258+31		RT. OF HWY. 1								1
258+52		RT. OF HWY. 1								1
258+64		RT. OF HWY. 1								1
258+82		RT. OF HWY. 1								1
259+91		LT. OF HWY. 1								1
260+28		RT. OF HWY. 1								1
260+46		RT. OF HWY. 1					2			1
260+55		LT. OF HWY. 1								1
260+72		LT. OF HWY. 1								1
261+24		RT. OF HWY. 1								1
261+51		RT. OF HWY. 1								1
261+59		LT. OF HWY. 1								1
263+02		LT. OF HWY. 1								1
263+20		RT. OF HWY. 1								1
265+97		LT. OF HWY. 1								1
271+02		RT. OF HWY. 1								1
271+09		LT. OF HWY. 1								1
272+20		LT. OF HWY. 1								1
273+72		RT. OF HWY. 1					2			1
275+18		RT. OF HWY. 1		25						
280+76		RT. OF HWY. 1					1			1
283+16		RT. OF HWY. 1								1
283+28		LT. OF HWY. 1								1
286+48		RT. OF HWY. 1								1
286+89		LT. OF HWY. 1								1
287+75		RT. OF HWY. 1								1
287+66		LT. OF HWY. 1								1
318+64		RT. OF HWY. 1								1
319+49		RT. OF HWY. 1								1
320+09		LT. OF HWY. 1								1
325+88		LT. OF HWY. 1								1
326+08		RT. OF HWY. 1								1
326+11		LT. OF HWY. 1								1
326+37		LT. OF HWY. 1								1
326+61		RT. OF HWY. 1								1
332+56		LT. OF HWY. 1								1
341+51		LT. OF HWY. 1								1
341+86		RT. OF HWY. 1								1
350+58		RT. OF HWY. 1								1
370+76		LT. OF HWY. 1								1
372+68		RT. OF HWY. 1								1
372+76		LT. OF HWY. 1								1
392+50		RT. OF HWY. 1								1
392+79		LT. OF HWY. 1								1
393+52		LT. OF HWY. 1								1
394+19		RT. OF HWY. 1								1
416+68		RT. OF HWY. 1								1
418+32		LT. OF HWY. 1								1
418+36		RT. OF HWY. 1								1
421+13	423+14	RT. OF HWY. 1						201		
422+38	423+14	LT. OF HWY. 1						75		
422+36		RT. OF HWY. 1								1
423+06		RT. OF HWY. 1								2
423+07		LT. OF HWY. 1								1
424+95	425+70	RT. OF HWY. 1						75		
424+95	426+95	LT. OF HWY. 1						200		
424+99		RT. OF HWY. 1								1
424+99		LT. OF HWY. 1								2
TOTALS:			348	25	28	351	10	551	2	113

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	BOX CULVERTS
		EACH	EACH
104+48	18" X 24' PIPE CULVERT ON LT.	1	
105+68	18" X 24' PIPE CULVERT ON LT.	1	
108+00	DBL. 24" X 27' PIPE CULVERT ON RT.	2	
109+45	60" X 48" X 21" ARCH PIPE CULVERT ON LT.	1	
114+65	30" X 28' PIPE CULVERT ON RT.	1	
115+68	60" X 48" X 25' ARCH PIPE CULVERT ON LT.	1	
116+67	18" X 21' PIPE CULVERT ON RT.	1	
120+60	30" X 29' PIPE CULVERT ON RT.	1	
122+46	30" X 29' PIPE CULVERT ON LT.	1	
126+04	24" X 53' PIPE CULVERT	1	
126+40	30" X 35' PIPE CULVERT ON LT.	1	
126+90	30" X 24' PIPE CULVERT ON LT.	1	
128+39	24" X 27' PIPE CULVERT ON LT.	1	
129+59	24" X 28' PIPE CULVERT ON LT.	1	
131+75	30" X 24' PIPE CULVERT ON RT.	1	
134+38	30" X 24' PIPE CULVERT ON RT.	1	
139+34	24" X 23' PIPE CULVERT ON LT.	1	
141+12	18" X 19' PIPE CULVERT ON RT.	1	
145+31	18" X 24' PIPE CULVERT ON RT.	1	
146+44	18" X 24' PIPE CULVERT ON LT.	1	
147+49	18" X 24' PIPE CULVERT ON RT.	1	
152+96	18" X 25' PIPE CULVERT ON RT.	1	
158+04	24" X 26' PIPE CULVERT ON LT.	1	
162+65	24" X 26' PIPE CULVERT ON LT.	1	
166+47	24" X 26' PIPE CULVERT ON RT.	1	
171+59	24" X 26' PIPE CULVERT ON LT.	1	
179+68	18" X 19' PIPE CULVERT ON RT.	1	
180+01	18" X 24' PIPE CULVERT ON LT.	1	
180+61	18" X 18' PIPE CULVERT ON LT.	1	
189+97	18" X 24' PIPE CULVERT ON LT.	1	
191+26	18" X 24' PIPE CULVERT ON RT.	1	
201+25	18" X 24' PIPE CULVERT ON LT.	1	
207+75	30" X 30", 36" X 36' PIPE CULVERTS ON RT.	2	
208+40	24" X 24' PIPE CULVERT ON LT.	1	
217+79	48" X 21' PIPE CULVERT ON RT.	1	
220+04	38" X 30' X 30' ARCH PIPE CULVERT ON RT.	1	
222+22	18" X 16' PIPE CULVERT ON RT.	1	
223+93	18" X 24' PIPE CULVERT ON RT.	1	
227+27	18" X 24' PIPE CULVERT ON RT.	1	
228+52	18" X 24' PIPE CULVERT ON RT.	1	
229+23	18" X 24' PIPE CULVERT ON LT.	1	
230+19	18" X 24' PIPE CULVERT ON LT.	1	
233+19	18" X 36' PIPE CULVERT ON RT.	1	
233+58	18" X 24' PIPE CULVERT ON LT.	1	
233+86	18" X 26' PIPE CULVERT ON RT.	1	
235+27	18" X 24' PIPE CULVERT ON RT.	1	
241+06	24" X 26' PIPE CULVERT ON LT.	1	
255+78	18" X 20' PIPE CULVERT ON LT.	1	
260+08	18" X 171' PIPE CULVERT ON RT.	1	
272+39	24" X 26' PIPE CULVERT ON LT.	1	
275+38	30" X 26' PIPE CULVERT ON LT.	1	
275+45	18" X 24' PIPE CULVERT ON RT.	1	
276+86	24" X 24' PIPE CULVERT ON RT.	1	
280+85	18" X 24' PIPE CULVERT ON RT.	1	
282+27	18" X 23' PIPE CULVERT ON RT.	1	
282+94	24" X 26' PIPE CULVERT ON RT.	1	
287+07	24" X 28' PIPE CULVERT ON LT.	1	
287+94	18" X 30' PIPE CUVLERT ON LT.	1	
289+68	18" X 30' PIPE CUVLERT ON LT.	1	
296+49	18" X 29' PIPE CULVERT ON LT.	1	
299+94	18" X 22' PIPE CULVERT ON RT.	1	
306+26	24" X 24' PIPE CULVERT ON RT.	1	
309+89	24" X 29' PIPE CULVERT ON LT.	1	
319+38	24" X 26' PIPE CULVERT ON RT.	1	
320+49	24" X 26' PIPE CULVERT ON LT.	1	
326+35	QUINT. 8' X 4' X 56' BOX CULVERT		1
332+16	18" X 30' PIPE CUVLERT ON RT.	1	
333+68	24" X 20' PIPE CULVERT ON RT.	1	
335+77	18" X 13' PIPE CULVERT ON RT.	1	
342+14	24" X 26' PIPE CULVERT ON RT.	1	
343+28	36" X 28' PIPE CULVERT ON LT.	1	
349+57	30" X 28' PIPE CULVERT ON LT.	1	
350+30	24" X 32' PIPE CULVERT ON RT.	1	
359+29	18" X 24' PIPE CULVERT ON RT.	1	
367+98	24" X 24' PIPE CULVERT ON LT.	1	
368+01	24" X 26' PIPE CULVERT ON RT.	1	
370+86	18" X 24' PIPE CULVERT ON LT.	1	
372+71	5' X 2' X 49' BOX CULVERT		1
379+67	18" X 23' PIPE CULVERT ON RT.	1	
392+99	30" X 28' PIPE CULVERT ON LT.	1	
393+94	18" X 58' PIPE CUVLERT ON RT.	1	
394+04	30" X 25' PIPE CULVERT ON LT.	1	
396+03	18" X 24' PIPE CULVERT ON RT.	1	
420+89	30" X 28' PIPE CULVERT ON LT.	1	
421+67	24" X 24' PIPE CULVERT ON RT.	1	
423+22	18" X 27' PIPE CULVERT ON RT.	1	
423+34	42" X 28' PIPE CULVERT ON LT.	1	
424+71	30" X 63' PIPE CULVERT ON LT.	1	
431+26	24" X 39' PIPE CULVERT ON LT.	1	
434+52	24" X 25' PIPE CULVERT ON RT.	1	
438+04	30" X 27' PIPE CULVERT ON RT.	1	
438+53	18" X 25' PIPE CULVERT ON RT.	1	
442+51	24" X 25' PIPE CULVERT ON RT.	1	
442+95	24" X 25' PIPE CULVERT ON LT.	1	
454+80	18" X 25' PIPE CULVERT ON RT.	1	
455+70	24" X 23' PIPE CULVERT ON RT.	1	
TOTALS:		96	2

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

QUANTITIES

DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	R110217	82	348

JOB NO.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11435 HUNTER D. SMITH

12-11-14

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1/6/16				6	ARK.			
				JOB NO.		110217	83	348

(2) QUANTITIES

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	32543	148678	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	26993	12625	
ENTIRE	PROJECT	APPROACHES	50	9290	
220+49	221+86	CHANNEL CHANGE	2523		
283+13	284+44	CHANNEL CHANGE	3010		
372+51	372+78	CHANNEL CHANGE	205		
ENTIRE	PROJECT	BRIDGE EXCAVATION	131		
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			500
		DIRECTED BY THE ENGINEER			
TOTALS:			65455	170593	500

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

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.
105+00	107+00	RT. OF HWY. 1	200.00	4	88.89	88.89	1.12
325+00	326+35	LT. OF HWY. 1	135.00	4	60.00	60.00	0.76
TOTALS:					148.89	148.89	1.88

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

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
103+00	105+00	LT. OF HWY. 1	200.0	177.8
103+00	105+00	RT. OF HWY. 1	200.0	177.8
281+00	283+00	RT. OF HWY. 1	200.0	177.8
297+00	299+00	RT. OF HWY. 1	200.0	177.8
TOTAL:				711.2

NOTE: AVERAGE WIDTH = 8'-0"

CONCRETE CURB

STATION	STATION	LOCATION	TYPE B (9")
			LIN. FT.
121+50	124+00	RT. OF HWY. 1	250
TOTAL:			250

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS	
		(SINGLE)	(DOUBLE)
	EACH		
ENTIRE PROJECT	31	29	1
TOTALS:	31	29	1

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE C)	* 16'-0" GATES
			LIN. FT.	EACH
104+50		LT. OF HWY. 1		1
107+95	116+41	RT. OF HWY. 1	832	
115+75		LT. OF HWY. 1		1
121+68	125+40	RT. OF HWY. 1	372	
122+45		LT. OF HWY. 1		1
233+20		RT. OF HWY. 1		1
233+86		RT. OF HWY. 1		1
TOTALS:			1204	5

* DENOTES ALTERNATE BID ITEM.

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
420+77.35	422+77.35	RT. OF HWY. 1	200	1	1
422+02.35	422+77.35	LT. OF HWY. 1	75	1	1
425+28.65	426+03.65	RT. OF HWY. 1	75	1	1
425+28.65	427+28.65	LT. OF HWY. 1	200	1	1
TOTALS:			550	4	4

CULVERT CLEAN OUT

STATION	LOCATION	EACH
153+47	HWY. 1	1
242+99	HWY. 1	1
261+55	HWY. 1	1
271+05	HWY. 1	1
315+04	HWY. 1	1
TOTAL:		5

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-7-16

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YDS.	SQ. YDS.
117+67	OUTLET OF PIPE CULVERT	18	36
126+04	OUTLET OF PIPE CULVERT	4	8
153+51	OUTLET OF PIPE CULVERT	14	27
220+20	CHANNEL CHANGE	120	240
261+57	OUTLET OF PIPE CULVERT	6	12
271+14	OUTLET OF PIPE CULVERT	6	11
283+22	CHANNEL CHANGE	145	290
315+20	OUTLET OF PIPE CULVERT	7	13
326+41	OUTLET OF PIPE CULVERT	89	178
372+71	CHANNEL CHANGE	53	106
	TO BE USED IF AND WHERE		
	DIRECTED BY THE ENGINEER		
TOTALS:		462	921

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

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

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL								
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	SEDIMENT BASIN (E-13)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	LIN. FT.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1	28.30	56.60	28.30	2886.6	28.30	28.30	28.30	577.3	1716	60		8625		8705
ENTIRE	PROJECT	STAGE 2	27.36	54.72	27.36	2790.7	27.36	27.36	27.36	558.1	1716			6882	15507	6960
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.													2000			74
TOTALS:			55.66	111.32	55.66	5677.3	55.66	55.66	55.66	1135.4	3432	60	2000	15507	15507	15739

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION

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

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

1/6/2016

R110217.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.		110217	84	348

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE C)	APPROACH SLABS (TYPE SPECIAL)	REINFORCING STEEL ROADWAY (GR 60)	AGGREGATE BASE COURSE (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
422+69.00	423+05.50	APPROACH SLAB		120.25	14255.00	66.00
425+00.50	425+37.00	APPROACH SLAB		120.25	14255.00	66.00
422+69.00	423+05.50	LT. SIDE	14.80		810.00	
422+69.00	423+05.50	RT. SIDE	14.80		810.00	
425+00.50	425+37.00	LT. SIDE	14.80		810.00	
425+00.50	425+37.00	RT. SIDE	14.80		810.00	
TOTALS:			59.20	240.50	31750.00	132.00

NOTE: USE T =16" FOR 8' SHOULDER.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	400
AND WHERE DIRECTED BY THE	
ENGINEER	
TOTAL:	400

NOTE: QUANTITY 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	170	340
DIRECTED BY THE ENGINEER		
TOTALS:	170	340

NOTE: QUANTITIES 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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
106+83	LT. OF MAIN LANES	1
117+67	RT. OF MAIN LANES	1
159+45	LT. OF MAIN LANES	1
220+39	RT. OF MAIN LANES	1
283+21	LT. OF MAIN LANES	1
326+35	RT. OF MAIN LANES	1
TOTAL:		6

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

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.	FLOWABLE SELECT MATERIAL
		FEET			CU. YD.
107+00	HWY. 1	10.83	130	47.8	49
126+04	HWY. 1	9.67	114	44.2	20
153+54	HWY. 1	10.83	115	42.3	20
243+04	HWY. 1	8.50	114	32.9	17
261+60	HWY. 1	8.50	114	32.9	14
315+20	HWY. 1	18.50	113	71.0	75
372+71	HWY. 1	17.33	113	72.5	81
TOTALS:				343.6	276

AVG. DEPTH = 11"

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
100+96	457+67	LT. OF HWY. 1	32142
100+96	457+67	RT. OF HWY. 1	32108
TOTAL:			64250

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
100+96	457+67	HWY. 1	357	357
TOTALS:			357	357

REMOVAL AND DISPOSAL OF FENCE & GATES

STATION	STATION	LOCATION	FENCE	GATES
			LIN. FT.	EACH
103+68	104+56	LT. OF HWY. 1	120	
107+90	116+41	RT. OF HWY. 1	882	
115+69		LT. OF HWY. 1		1
121+68	125+40	RT. OF HWY. 1	750	
122+45		LT. OF HWY. 1		1
207+75		RT. OF HWY. 1		1
232+17	232+18	RT. OF HWY. 1	52	
233+19		RT. OF HWY. 1		1
233+76	233+94	RT. OF HWY. 1	82	
272+95		RT. OF HWY. 1	20	
TOTALS:			1906	4

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	100
DIRECTED BY THE ENGINEER	
TOTAL:	100

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.
100+30	101+30	HWY. 1	90	1000.00
18+70	21+27	HWY. 49	65	1856.11
TOTAL:				2856.11

NOTE: AVERAGE MILLING DEPTH 4".

12/9/2014

RI10217.DGN

QUANTITIES

SOIL LOG

STATION	LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
102+00	40'RT	0-5	34	13	A-6(12)	BROWN
102+00	15'RT	0-5	33	12	A-6(11)	BROWN
102+00	5'RT	0-5	33	11	A-6(11)	BR/GR
106+00	37'RT	0-5	28	6	A-4(5)	BROWN
110+00	15'LT	0-5	26	7	A-4(5)	BR/GR
110+00	5'LT	0-5	32	11	A-6(11)	BR/GR
110+00	25'LT	0-5	29	7	A-4(5)	BR/GR
114+00	32'RT	0-5	34	13	A-6(13)	BR/GR
118+00	5'RT	0-5	31	11	A-6(9)	GRAY
118+00	30'RT	0-5	20	3	A-4(0)	BR/GR
118+00	15'RT	0-5	24	6	A-4(2)	GRAY
122+00	33'RT	0-5	29	7	A-4(7)	BROWN
126+00	30'LT	0-5	24	5	A-4(3)	BR/GR
126+00	17'LT	0-5	23	5	A-4(1)	GRAY
126+00	7'LT	0-5	24	4	A-4(1)	GRAY
130+00	38'RT	0-5	32	11	A-6(11)	BROWN
134+00	34'RT	0-5	34	15	A-6(14)	BR/GR
134+00	15'RT	0-5	31	13	A-6(11)	BR/GR
134+00	5'RT	0-5	29	9	A-4(7)	BR/GR
138+00	33'RT	0-5	37	17	A-6(14)	BR/GR
144+00	28'LT	0-5	32	11	A-6(10)	BR/GR
144+00	15'LT	0-5	31	11	A-6(9)	BR/GR
144+00	5'LT	0-5	25	5	A-4(3)	BR/GR
144+00	28LT	0-5	32	12	A-6 11)	BR/GR
146+00	38'RT	0-5	34	12	A-6(12)	BROWN
150+00	30'RT	0-5	34	14	A-6(13)	BROWN
150+00	15'RT	0-5	31	15	A-6(12)	BR/GR
150+00	5'RT	0-5	32	11	A-6(10)	BR/GR
154+00	38'RT	0-5	39	19	A-6(19)	BROWN
158+00	15'LT	0-5	29	10	A-4(8)	BROWN
158+00	5'LT	0-5	26	8	A-4(4)	BROWN
158+00	30'LT	0-5	31	9	A-4(7)	BROWN
162+00	38'RT	0-5	25	7	A-4(4)	BR/GR
166+00	5'RT	0-5	29	8	A-4(7)	BROWN
166+00	30'RT	0-5	34	11	A-6(12)	BR/GR
166+00	15'RT	0-5	26	4	A-4(0)	BR/GR
172+00	38'RT	0-5	31	11	A-6(10)	BROWN
176+00	30'LT	0-5	31	9	A-4(9)	BR/GR
176+00	15'LT	0-5	29	9	A-4(7)	BR/GR
176+00	6'LT	0-5	29	10	A-4(9)	GRAY
180+00	38'RT	0-5	37	15	A-6(16)	BROWN
185+00	15'RT	0-5	27	9	A-4(6)	BROWN
185+00	5'RT	0-5	28	11	A-6(8)	BROWN
185+00	30'RT	0-5	35	15	A-6(15)	BROWN
188+00	38'RT	0-5	35	13	A-6(14)	BROWN
192+00	30'LT	0-5	26	6	A-4(4)	BROWN
192+00	15'LT	0-5	29	8	A-4(7)	BROWN
192+00	5'LT	0-5	21	3	A-4(0)	GRAY
196+00	34'RT	0-5	36	15	A-6(15)	GRAY
200+00	30'RT	0-5	23	7	A-4(3)	GRAY
200+00	15'RT	0-5	ND	NP	A-4(0)	GRAY
200+00	5'RT	0-5	ND	NP	A-4(0)	GRAY
204+00	38'RT	0-5	31	9	A-4(9)	GRAY
208+00	15'LT	0-5	31	12	A-6(10)	BR/GR
208+00	5'LT	0-5	27	9	A-4(6)	GRAY
208+00	30'LT	0-5	32	10	A-4(10)	BR/GR
208+00	30LT	0-5	33	12	A-6 (8)	BR/GR
212+00	36'LT	0-5	32	11	A-6(10)	GRAY
216+00	28'RT	0-5	33	11	A-6(10)	BR/GR
216+00	15'RT	0-5	29	9	A-4(7)	BR/GR
216+00	5'RT	0-5	25	6	A-4(3)	BR/GR
221+00	39'RT	0-5	31	10	A-4(9)	GRAY
224+00	28'LT	0-5	29	8	A-4(7)	GRAY
224+00	15'LT	0-5	32	12	A-6(11)	BR/GR
224+00	5'RT	0-5	31	11	A-6 (9)	BR/GR
228+00	41'RT	0-5	31	10	A-4 (9)	GRAY
232+00	30'RT	0-5	33	10	A-4 (10)	GRAY
232+00	15'RT	0-5	28	10	A-4 (7)	BR/GR
232+00	5'RT	0-5	30	12	A-6(10)	BR/GR
236+00	38'RT	0-5	35	11	A-6(12)	BROWN
240+00	5'LT	0-5	30	10	A-4 (9)	BROWN
240+00	28'LT	0-5	30	10	A-4 (9)	BR/GR
240+00	15'LT	0-5	31	10	A-4 (9)	GRAY
244+00	38'RT	0-5	29	5	A-4 (5)	GRAY
248+00	27'RT	0-5	36	12	A-6 (13)	BROWN
248+00	15'RT	0-5	25	6	A-4 (3)	BROWN
248+00	5'RT	0-5	31	11	A-6 (8)	GRAY
248+00	27'RT	0-5	36	14	A-6 (14)	BROWN
252+00	35'RT	0-5	36	12	A-6 (13)	BROWN
256+00	30'LT	0-5	35	12	A-6 (12)	BROWN
256+00	15'LT	0-5	29	8	A-4 (6)	BR/GR
256+00	5'LT	0-5	30	10	A-4 (3)	BR/GR
261+00	30'RT	0-5	33	13	A-6 (13)	BROWN
264+00	5'RT	0-5	28	9	A-4 (6)	BR/GR
264+00	28'RT	0-5	37	14	A-6 (14)	BROWN
264+00	15'RT	0-5	28	8	A-4 (5)	BR/GR
268+00	36'RT	0-5	37	14	A-6 (15)	BROWN
272+00	28'LT	0-5	23	3	A-4 (1)	BR/GR
272+00	15'LT	0-5	23	4	A-4 (1)	BR/GR
272+00	5'LT	0-5	24	4	A-4 (2)	BR/GR
276+00	34'RT	0-5	31	11	A-6 (10)	BR/GR
280+00	15'RT	0-5	24	5	A-4 (2)	BR/GR
280+00	5'RT	0-5	27	7	A-4 (5)	BR/GR
280+00	34'RT	0-5	26	5	A-4(3)	BR/GR
284+00	40'RT	0-5	26	5	A-4 (3)	BR/GR
288+00	5'LT	0-5	31	11	A-6 (10)	BROWN
288+00	28'LT	0-5	25	4	A-4 (2)	BR/GR
288+00	15'LT	0-5	33	13	A-6 (12)	BR/GR
292+00	38'RT	0-5	29	8	A-4 (7)	BROWN
296+00	27'RT	0-5	32	10	A-4 (10)	BR/GR
296+00	15'RT	0-5	25	7	A-4 (1)	BR/GR
296+00	5'RT	0-5	28	8	A-4 (7)	BR/GR
300+00	40'RT	0-5	30	10	A-4 (9)	BR/GR
304+00	30'LT	0-5	ND	NP	A-4 (0)	BR/GR
304+00	15'LT	0-5	ND	NP	A-2-4 (0)	BROWN
304+00	5'LT	0-5	ND	NP	A-2-4 (0)	BROWN
308+00	30'RT	0-5	31	12	A-6 (10)	BROWN
312+00	5'RT	0-5	24	6	A-4 (3)	BR/GR
312+00	30'RT	0-5	27	5	A-4 (4)	BR/GR
312+00	15'RT	0-5	22	5	A-4 (1)	BR/GR
312+00	30RT	0-5	28	11	A-6 (10)	BR/GR
316+00	39'RT	0-5	30	8	A-4 (8)	BROWN
320+00	30'LT	0-5	33	10	A-4 (10)	BR/GR
320+00	15'LT	0-5	25	8	A-4 (4)	BR/GR
320+00	5'LT	0-5	26	6	A-4 (4)	BR/GR
324+00	39'RT	0-5	37	17	A-6 (16)	BR/GR
328+00	30RT	0-5	30	19	A-6(15)	BROWN
328+00	15'RT	0-5	28	12	A-6 (7)	BR/GR
328+00	5'RT	0-5	24	9	A-4 (3)	BR/GR
332+00	40RT	0-5	35	16	A-6(15)	BROWN
336+00	30LT	0-5	33	13	A-6(11)	BROWN
336+00	15LT	0-5	27	9	A-4(5)	BR/GR
336+00	5LT	0-5	27	11	A-6(5)	BR/GR
340+00	38RT	0-5	32	10	A-4(9)	BR/GR
344+00	30RT	0-5	32	9	A-4(9)	BR/GR
344+00	15LT	0-5	29	8	A-4(7)	BR/GR
344+00	5RT	0-5	29	9	A-4(7)	BR/GR
348+00	45RT	0-5	40	22	A-6(23)	GRAY
352+00	15LT	0-5	28	7	A-4(6)	BR/GR
352+00	5LT	0-5	25	6	A-4(4)	GRAY
352+00	30LT	0-5	31	9	A-4(9)	BR/GR
356+00	39RT	0-5	31	11	A-6(9)	BR/GR
360+00	5RT	0-5	26	7	A-4(4)	BR/GR
360+00	30RT	0-5	27	8	A-4(6)	BR/GR
360+00	15RT	0-5	31	9	A-4(7)	BROWN
364+00	40RT	0-5	33	11	A-6(12)	BR/GR
368+00	26LT	0-5	36	14	A-6(12)	BR/GR
368+00	15LT	0-5	28	10	A-4(8)	BR/GR
368+00	5LT	0-5	27	8	A-4(6)	GRAY
372+00	40RT	0-5	ND	NP	A-4(0)	BR/GR
376+00	15RT	0-5	ND	NP	A-4(0)	BR/GR
376+00	5RT	0-5	16	3	A-4(0)	BR/GR
376+00	30RT	0-5	ND	NP	A-4 (0)	BR/GR
376+00	30RT	0-5	ND	NP	A-4(0)	BR/GR
380+00	40RT	0-5	24	8	A-4(4)	BR/GR
384+00	30LT	0-5	25	8	A-4(4)	BR/GR
384+00	15LT	0-5	25	10	A-4(5)	BR/GR
384+00	5LT	0-5	18	2	A-4 (0)	GRAY
388+00	36RT	0-5	31	13	A-6 (10)	BR/GR
392+00	30RT	0-5	ND	NP	A-4 (0)	BR/GR
392+00	15RT	0-5	ND	NP	A-4 (0)	BROWN
392+00	5RT	0-5	ND	NP	A-4(0)	GRAY
396+00	40RT	0-5	21	6	A-4(1)	BR/GR
400+00	15LT	0-5	ND	NP	A-4 (0)	BR/GR
400+00	5LT	0-5	ND	NP	A-4 (0)	GRAY
400+00	28LT	0-5	18	2	A-4(0)	BR/GR

STATION	LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
404+00	37RT	0-5	24	7	A-4 (3)	BR/GR
408+00	5RT	0-5	18	4	A-4 (0)	GRAY
408+00	30RT	0-5	23	4	A-4 (1)	BR/GR
408+00	15RT	0-5	22	4	A-4(1)	GRAY
412+00	5LT	0-5	24	7	A-4(4)	GRAY
412+00	28LT	0-5	30	11	A-6 (8)	BR/GR
412+00	15LT	0-5	26	7	A-4 (5)	GRAY
416+00	50RT	0-5	20	3	A-4(0)	BR/GR
420+00	35RT	0-5	32	13	A-6 (10)	BR/GR
420+00	15RT	0-5	30	11	A-6 (8)	GRAY
420+00	5RT	0-5	31	12	A-6 (10)	GRAY
420+95	4'RT	*	35	12	A-6(13)	GRAY
420+95	4'RT	9.4-10.9	34	12	A-6(12)	GRAY
420+95	4'RT	4.4-5.9	36	14	A-6(14)	BROWN
420+95	4'RT	*3	ND	NP	A-4(0)	GRAY
420+95	4'RT	*2	30	5	A-4(6)	GRAY
420+95	4'RT	*1	30	5	A-4(5)	BR/GR
420+95	4'RT	*6	37	12	A-6(13)	GRAY
420+95	4'RT	*5	ND	NP	A-4(0)	GRAY
420+95	4'RT	*4	29	6	A-4(6)	GRAY
420+95	4'RT	*9	ND	NP	A-3(0)	GRAY
420+95	4'RT	*8	ND	NP	A-2-4(0)	GRAY
420+95	4'RT	*7	ND	NP	A-4(0)	GRAY
420+95	4'RT	*12	ND	NP	A-3(0)	GRAY
420+95	4'RT	*11	ND	NP	A-3(0)	GRAY
420+95	4'RT	*10	ND	NP	A-3(0)	GRAY
420+95	4'RT	*15	ND	NP	A-1-B(0)	GRAY
420+95	4'RT	*14	ND	NP	A-2-4(0)	GRAY
420+95	4'RT	*13	ND	NP	A-3(0)	GRAY
420+95	4'RT	*17	ND	NP	A-3(0)	GRAY
420+95	4'RT	*16	ND	NP	A-3(0)	GRAY
428+00	50RT	0-5	31	11	A-6 (9)	BR/GR
432+00	30LT	0-5	23	6	A-6 (1)	BR/GR
432+00	30LT	0-5	23	6	A-4 (3)	BR/GR
432+00	15LT	0-5	32	13	A-6 (11)	BR/GR
432+00	5LT	0-5	34	14	A-6(10)	BR/GR
436+00	50RT	0-5	27	5	A-4 (3)	BR/GR
440+00	5RT	0-5	26	6	A-4 (5)	BR/GR
440+00	30RT	0-5	29	8	A-4 (7)	BR/GR
440+00	15RT	0-5	23	7	A-4 (0)	BR/GR
444+00	38RT	0-5	37	17	A-6 (16)	GRAY
448+00	30LT	0-5	29	9	A-4 (8)	BR/GR
448+00	15LT	0-5	23	5	A-4 (3)	BR/GR
448+00	5LT	0-5	21	5	A-4 (2)	BR/GR
452+00	42RT	0-5	39	22	A-6 (22)	BR/GR
456+00	30RT	0-5	31	10	A-4 (9)	BR/GR
456+00	15RT	0-5	17	4	A-4 (0)	GRAY
456+00	5RT	0-5	27	8	A-4 (6)	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

QUANTITIES

2 QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

JOB NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
110217	ARK.		85	348

FED.RD. DIST.NO. 6

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11,425 TIMOTHY D. SMITH 12-11-14

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	PORTLAND CEMENT CONCRETE DRIVEWAY	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"	36"	48"	54"	60"	29"X18"	36"X23"	
			FEET	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.									
101+97	RT.	HWY. 1	40		240.8	26.5	98.3	60									PCC-1, PCM-1, PCP-1, PCP-2
102+18	LT.	HWY. 1	40	247.60				54									PCC-1, PCM-1, PCP-1, PCP-2
104+50	LT.	HWY. 1	16		124.4	13.7	50.8	36									PCC-1, PCM-1, PCP-1, PCP-2
105+66	LT.	HWY. 1	16		151.2	16.6	61.7	38									PCC-1, PCM-1, PCP-1, PCP-2
107+87	RT.	HWY. 1	16		128.7	14.2	52.6		104								PCC-1, PCM-1, PCP-1, PCP-2
109+46	LT.	HWY. 1	16		126.6	13.9	51.7						46				PCC-1, PCM-1, PCP-1, PCP-2
114+65	RT.	HWY. 1	16		114.0	12.5	46.6			34							PCC-1, PCM-1, PCP-1, PCP-2
115+75	LT.	HWY. 1	16		127.6	14.0	52.1							38			PCC-1, PCM-1, PCP-1, PCP-2
116+67	RT.	HWY. 1	16		106.9	11.8	43.7	32									PCC-1, PCM-1, PCP-1, PCP-2
120+59	RT.	HWY. 1	16		149.9	16.5	61.2				34						PCC-1, PCM-1, PCP-1, PCP-2
122+46	LT.	HWY. 1	16	107.20						44							PCC-1, PCM-1, PCP-1, PCP-2
126+40	LT.	HWY. 1	16		95.0	10.5	38.8			34							PCC-1, PCM-1, PCP-1, PCP-2
126+91	LT.	HWY. 1	16		93.2	10.3	38.1			34							PCC-1, PCM-1, PCP-1, PCP-2
128+38	LT.	HWY. 1	16		91.7	10.1	37.4		34								PCC-1, PCM-1, PCP-1, PCP-2
129+59	LT.	HWY. 1	16		92.8	10.2	37.9		34								PCC-1, PCM-1, PCP-1, PCP-2
131+78	RT.	HWY. 1	16		93.5	10.3	38.2			36							PCC-1, PCM-1, PCP-1, PCP-2
134+38	RT.	HWY. 1	16		85.4	9.4	34.9			32							PCC-1, PCM-1, PCP-1, PCP-2
139+34	LT.	HWY. 1	16		81.9	9.0	33.4		28								PCC-1, PCM-1, PCP-1, PCP-2
141+12	RT.	HWY. 1	16		79.3	8.7	32.4	30									PCC-1, PCM-1, PCP-1, PCP-2
145+32	RT.	HWY. 1	16		87.7	9.6	35.8	28									PCC-1, PCM-1, PCP-1, PCP-2
146+44	LT.	HWY. 1	16		79.6	8.8	32.5	30									PCC-1, PCM-1, PCP-1, PCP-2
147+48	RT.	HWY. 1	16		88.6	9.7	36.2	28									PCC-1, PCM-1, PCP-1, PCP-2
153+07	RT.	INMAN RD.	20		146.1	16.1	59.7	42									PCC-1, PCM-1, PCP-1, PCP-2
158+05	LT.	HWY. 1	16		89.9	9.9	36.7		30								PCC-1, PCM-1, PCP-1, PCP-2
162+66	LT.	HWY. 1	16		78.6	8.6	32.1		32								PCC-1, PCM-1, PCP-1, PCP-2
166+44	RT.	HWY. 1	16		94.9	10.4	38.8		36								PCC-1, PCM-1, PCP-1, PCP-2
171+59	LT.	HWY. 1	16		81.7	9.0	33.4		32								PCC-1, PCM-1, PCP-1, PCP-2
179+69	RT.	HWY. 1	16		87.1	9.6	35.6	28									PCC-1, PCM-1, PCP-1, PCP-2
180+01	LT.	HWY. 1	16		78.9	8.7	32.2	32									PCC-1, PCM-1, PCP-1, PCP-2
180+61	LT.	HWY. 1	16		78.8	8.7	32.2	34									PCC-1, PCM-1, PCP-1, PCP-2
184+11	RT.	PHILLIPS RD. 244	24		161.4	17.8	65.9	42									PCC-1, PCM-1, PCP-1, PCP-2
184+45	LT.	PHILLIPS RD. 256	25		148.3	16.3	60.6										
189+95	LT.	HWY. 1	16		77.0	8.5	31.4	32									PCC-1, PCM-1, PCP-1, PCP-2
191+25	RT.	HWY. 1	16		89.3	9.8	36.5	32									PCC-1, PCM-1, PCP-1, PCP-2
201+26	LT.	HWY. 1	16	79.30				32									PCC-1, PCM-1, PCP-1, PCP-2
207+70	RT.	HWY. 1	18		114.2	12.6	46.6				72						PCC-1, PCM-1, PCP-1, PCP-2
208+40	LT.	HWY. 1	16		82.3	9.1	33.6		34								PCC-1, PCM-1, PCP-1, PCP-2
217+80	RT.	HWY. 1	16		111.2	12.2	45.4					42					PCC-1, PCM-1, PCP-1, PCP-2
220+05	RT.	CO. RD. 246	20		159.4	17.5	65.1					46					PCC-1, PCM-1, PCP-1, PCP-2
222+22	RT	HWY. 1	16		95.8	10.5	39.1		30								PCC-1, PCM-1, PCP-1, PCP-2
223+95	RT.	HWY. 1	16		93.1	10.2	38.0		28								PCC-1, PCM-1, PCP-1, PCP-2
227+29	RT.	HWY. 1	16		88.3	9.7	36.1		32								PCC-1, PCM-1, PCP-1, PCP-2
228+52	RT.	HWY. 1	16		79.3	8.7	32.4		28								PCC-1, PCM-1, PCP-1, PCP-2
229+22	LT.	HWY. 1	16		79.8	8.8	32.6	30									PCC-1, PCM-1, PCP-1, PCP-2
230+00	RT.	HWY. 1	16		79.7	8.8	32.5		28								PCC-1, PCM-1, PCP-1, PCP-2
230+19	LT.	HWY. 1	16		81.5	9.0	33.3	34									PCC-1, PCM-1, PCP-1, PCP-2
233+19	RT.	HWY. 1	18	119.90					50								PCC-1, PCM-1, PCP-1, PCP-2
233+58	LT.	CO. RD. 467	20		138.5	15.2	56.6	40									PCC-1, PCM-1, PCP-1, PCP-2
233+86	RT.	HWY. 1	16		111.0	12.2	45.3		44								PCC-1, PCM-1, PCP-1, PCP-2
235+28	RT.	HWY. 1	16		109.8	12.1	44.8		42								PCC-1, PCM-1, PCP-1, PCP-2
241+08	LT.	PHILLIPS RD. 254	20		134.1	14.8	54.8		36								PCC-1, PCM-1, PCP-1, PCP-2
255+79	LT.	HWY. 1	16		79.5	8.7	32.5	30									PCC-1, PCM-1, PCP-1, PCP-2
258+20	LT.	HWY. 1	40		134.1	14.8	54.8	54									PCC-1, PCM-1, PCP-1, PCP-2
260+07	RT.	HWY. 242	33		224.9	24.7	91.8	50									PCC-1, PCM-1, PCP-1, PCP-2
260+09	LT.	PHILLIPS RD. 258	24		149.6	16.5	61.1										
272+39	LT.	HWY. 1	16		109.1	12.0	44.5		42								PCC-1, PCM-1, PCP-1, PCP-2
273+16	RT.	HWY. 1	16		84.6	9.3	34.5	30									PCC-1, PCM-1, PCP-1, PCP-2
275+34	LT.	HWY. 1	16		111.3	12.2	45.4			40							PCC-1, PCM-1, PCP-1, PCP-2
275+45	RT.	HWY. 1	16		85.7	9.4	35.0	32									PCC-1, PCM-1, PCP-1, PCP-2
276+86	RT.	HWY. 1	16		86.3	9.5	35.2								28		PCC-1, PCM-1, PCP-1, PCP-2
280+92	RT.	HWY. 1	16		87.8	9.7	35.9	28									PCC-1, PCM-1, PCP-1, PCP-2
282+27	RT.	HWY. 1	16		100.0	11.0	40.8	40									PCC-1, PCM-1, PCP-1, PCP-2
282+90	RT.	HWY. 1	16		158.4	17.4	64.7		44								PCC-1, PCM-1, PCP-1, PCP-2
287+06	LT.	PHILLIPS RD. 252	20		149.9	16.5	61.2								36		PCC-1, PCM-1, PCP-1, PCP-2
287+95	LT.	HWY. 1	16		97.1	10.7	39.6	30									PCC-1, PCM-1, PCP-1, PCP-2
289+61	LT.	HWY. 1	16		96.7	10.6	39.5	30									PCC-1, PCM-1, PCP-1, PCP-2
294+97	RT.	HWY. 1	16		84.8	9.3	34.6										
296+47	LT.	HWY. 1	16		94.3	10.4	38.5	40									PCC-1, PCM-1, PCP-1, PCP-2
299+86	RT.	HWY. 1	16		99.9	11.0	40.8	38									PCC-1, PCM-1, PCP-1, PCP-2
306+27	RT.	HWY. 1	16		106.8	11.7	43.6		30								PCC-1, PCM-1, PCP-1, PCP-2
309+90	LT.	HWY. 1	22		115.1	12.7	47.0								36		PCC-1, PCM-1, PCP-1, PCP-2
319+32	RT.	CO. RD. 250	20		189.3	20.8	77.3		54								PCC-1, PCM-1, PCP-1, PCP-2
320+49	LT	HWY. 1	16		82.6	9.1	33.7		32								PCC-1, PCM-1, PCP-1, PCP-2
332+19	LT.	HWY. 1	16		136.6	15.0	55.8	44									PCC-1, PCM-1, PCP-1, PCP-2
333+67	RT.	HWY. 1	16		123.4	13.6	50.4		32								PCC-1, PCM-1, PCP-1, PCP-2
342+15	RT.	HWY. 1	16		89.6	9.9	36.6		34								PCC-1, PCM-1, PCP-1, PCP-2
343+28	LT.	HWY. 1	16		114.2	12.6	46.6				32						PCC-1, PCM-1, PCP-1, PCP-2
350+55	LT	HWY. 1	20		124.9	13.7	51.0			46							PCC-1, PCM-1, PCP-1, PCP-2
350+18	RT.	HWY. 1	16		98.7	10.9	40.3		34								PCC-1, PCM-1, PCP-1, PCP-2
359+30	RT.	HWY. 1	16		79.3	8.7	32.4	28									PCC-1, PCM-1, PCP-1, PCP-2
364+36	LT.	HWY. 1	22		111.2	12.2	45.4										
367+97	LT.	HWY. 1	16		80.8	8.9	33.0		32								PCC-1, PCM-1, PCP-1, PCP-2
368+03	RT.	HWY. 1	16		81.9	9.0	33.4		28								PCC-1, PCM-1, PCP-1, PCP-2
370+68	LT.	HWY. 1	16		82.2	9.0	33.6	30									PCC-1, PCM-1, PCP-1, PCP-2
379+65	RT.	HWY. 1	16		83.4	9.2	34.1	30									PCC-1, PCM-1, PCP-1, PCP-2
387+64	LT.	HWY. 1	40		191.6	21.1	78.2	54									PCC-1, PCM-1, PCP-1, PCP-2
392+98	LT.	PHILLIPS RD. 248	20		127.7	14.0	52.1									38	PCC-1, PCM-1, PCP-1, PCP-2
393+94	RT.	PHILLIPS RD. 240	20		122.0	13.4	49.8	38									PCC-1, PCM-1, PCP-1, PCP-2
394+05	LT.	HWY. 1	16		79.2	8.7	32.3									28	PCC-1, PCM-1, PCP-1, PCP-2
396+02	RT.	HWY. 1	16		77.6	8.5	31.7	28									PCC-1, PCM-1, PCP-1, PCP-2
420+87	LT.	HWY. 1	16		168.6	18.5	68.8			60							PCC-1, PCM-1, PCP-1, PCP-2
431+27	LT.	HWY. 1	16		148.0	16.3	60.4		50								PCC-1, PCM-1, PCP-1, PCP-2
434+53	RT.	HWY. 1	16		113.9	12.5	46.5		44								PCC-1, PCM-1, PCP-1, PCP-2
438+06	RT.	HWY. 1	16		109.7	12.1	44.8			42							PCC-1, PCM-1, PCP-1, PCP-2
442+50	RT.	HWY. 1	16		102.3	11.3	41.8		40								PCC-1, PCM-1, PCP-1, PCP-2
442+94	LT.	HWY. 1	16		132.4	14.6	54.1		42								PCC-1, PCM-1, PCP-1, PCP-2
454+62	RT.	HWY. 1	16		77.6	8.5	31.7	28									PCC-1, PCM-1, PCP-1, PCP-2
* ENTIRE PROJECT TEMPORARY DRIVES							3000.0										
TOTALS:				554.00	10193.4	1121.3	7162.4	1396	1220	402	138	88	46	38	100	66	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

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

STATE OF ARKANSAS TIMOTHY D. SMITH REGISTERED PROFESSIONAL ENGINEER NO. 11,485 12-11-14

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		86	348

(2) QUANTITIES

JOB NO. 110217

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1/6/16				6	ARK.			
				JOB NO.		110217	87	348

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-7-16

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		CEMENT TREATED BASE COURSE				TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	TOTAL WIDTH	PROCESS. (8" U.T.)	CEMENT	SOIL AGGR. (8" COMP. DEPTH.)	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22	PG 76-22
			FEET			FEET	SQ YD.	TON	SQ. YD.	FEET				FEET			TON	FEET			TON	FEET			TON	FEET			TON	TON	TON
MAIN LANES																														
100+30.00	124+23.00	NOTCH & WIDEN (MIDDLE)	2393.00	57.00	1364.01	58.50	15554.50	526.36	15554.50	78.75	20938.75	0.03	628.16					39.50	10502.61	440.00	2310.57	39.25	10436.14	220.00	1147.98	75.00	19941.67	220.00	2193.58	3341.56	
124+23.00	133+45.00	NOTCH & WIDEN (VARIABLE)	922.00	57.00	525.54	53.63	5494.10	185.92	5494.10	78.57	8049.06	0.03	241.47					39.38	4034.26	440.00	887.54	39.19	4014.80	220.00	441.63	75.00	7683.33	220.00	845.17	1286.80	
133+45.00	422+77.92	NOTCH & WIDEN (LEFT)	28932.92	29.25	8462.88	48.75	156719.98	5303.40	156719.98	78.38	251973.59	0.03	7559.21					39.25	126179.68	440.00	27759.53	39.13	125793.91	220.00	13837.33	75.00	241107.67	220.00	26521.84	40359.17	
425+30.92	457+68.00	NOTCH & WIDEN (LEFT)	3237.08	29.25	946.85	48.75	17534.18	593.36	17534.18	78.38	28191.37	0.03	845.74					39.25	14117.27	440.00	3105.80	39.13	14074.10	220.00	1548.15	75.00	26975.67	220.00	2967.32	4515.47	
ADDITIONAL FOR LEVELING																														
101+00.00	422+69.00	MAIN LANES	32169.00							24.00	85784.00	0.10	8578.40													24.00	85784.00	440.00	18872.48	18872.48	
425+37.00	457+68.00	MAIN LANES	3231.00							24.00	8616.00	0.10	861.60													24.00	8616.00	440.00	1895.52	1895.52	
ADDITIONAL FOR GRADE RAISE																														
416+00.00	422+69.00	MAIN LANES	669.00							24.00	1784.00	0.10	178.40	30.00	2230.00	1320.00	1471.80	24.00	1784.00	440.00	392.48									
425+37.00	430+00.00	MAIN LANES	463.00							24.00	1234.67	0.10	123.47	30.00	1543.33	1320.00	1018.60	24.00	1234.67	440.00	271.63									
INTERSECTION																														
100+30.00	101+30.00	HWY. 1	100.00																							110.00	1222.22	440.00			268.89
18+70.00	21+27.00	HWY. 49	257.00																							65.00	1856.11	440.00			408.34
TOTALS:					11299.28		195302.76	6609.04	195302.76		406571.44		19016.45		3773.33		2490.40		157852.49		34727.55		154318.95		16975.09		393186.67		53295.91	70271.00	677.23

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.1% MIN. AGGR.....3.9% ASPHALT BINDER
CEMENT IN CEMENT TREATED BASE COURSE IS 12% OF TOTAL VOLUME (67.68 LBS. PER SQ. YD.)
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE (CLASS III)				FLARED END SECTIONS FOR R.C. PIPE CULVERTS				TEMPORARY CULVERTS	DROP INLETS TYPE ST	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINFORCED STEEL-ROADWAY (GRADE 60)	UNCLASSIFED EXCAVATION FOR STRUCTURE - ROADWAY	SOLID SODDING	WATER	STANDARD DRAWING NUMBERS
		24"	36"	42"	48"	24"	36"	42"	48"	48"										
		LIN. FT.				EACH				LIN. FT.	EACH	LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL	
106+83	EXTEND BOX CULVERT 28' LT. & 34' RT.											6	6	66	54.71	5764	32	19	0.24	W-X003-1, R-100X-0, PBC-1, RCB-1, RCB-2, RCB-3
107+00	CONST. 48" X 130' PIPE CULVERT				130				2									58	0.73	PCC-1, PCM-1, FES-1, FES-2
117+67	EXTEND BOX CULVERT 28' LT. & 28' RT.											5	3	61	29.27	3643	20	12	0.15	W-X003-1, R-100X-0, PBC-1, RCB-1, RCB-2, RCB-3
121+50	CONST. DI ON RT. & 36" X 60' PIPE OUTLET		60				1				1							17	0.21	FES-1, FES-2, FPC-9S
124+00	CONST. DI ON RT. & 36" X 105' PIPE INLET & 36" X 250' PIPE OUTLET		355				1				1							17	0.21	FES-1, FES-2, FPC-9S
126+04	CONST. 36" X 114' PIPE CULVERT		114				2											34	0.43	PCC-1, PCM-1, FES-1, FES-2
153+47	EXTEND PIPE CULVERT 8' LT. & 50' RT.	62				2												16	0.20	PCC-1, PCM-1, FES-1, FES-2
153+54	CONST. 48" X 116' PIPE CULVERT				116				2									58	0.73	PCC-1, PCM-1, FES-1, FES-2
159+45	EXTEND BOX CULVERT 18' LT. & 60' RT. 15° LT. FWD. SKEW											6	3	82	43.46	5892	27	19	0.24	W-X003-1, W-X15, W-X153-1, R-100X-0, R-115X-0, PBC-1, RCB-1, RCB-2, RCB-3
220+05	TEMPORARY PIPE CULVERT									74										
220+39	EXTEND DBL. BOX CULVERT 16' LT. & 60' RT. 15° RT. FWD. SKEW											4	2	80	45.30	7534	20	10	0.13	W-X003-1, W-X15, W-X153-1, R-200X-0, R-215X-0, PBC-1, RCB-1, RCB-2, RCB-3
242+99	EXTEND PIPE CULVERT 10' LT. & 46' RT.	60				2												16	0.20	PCC-1, PCM-1, FES-1, FES-2
243+04	CONST. 24" X 114' PIPE CULVERT	114				2												16	0.20	PCC-1, PCM-1, FES-1, FES-2
261+55	EXTEND PIPE CULVERT 10' LT. & 50' RT.	64				2												16	0.20	PCC-1, PCM-1, FES-1, FES-2
261+60	CONST. 24" X 114' PIPE CULVERT	114				2												16	0.20	PCC-1, PCM-1, FES-1, FES-2
271+05	EXTEND PIPE CULVERT 12' LT. & 52' RT.	68				2												16	0.20	PCC-1, PCM-1, FES-1, FES-2
283+21	EXTEND BOX CULVERT 12' LT. & 52' RT.											8	3	68	54.79	4482	34	11	0.14	PBC-1, RCB-1, RCB-2, RCB-3, SPECIAL DETAIL
315+13	CONST. DBL. 42" X 114' PIPE CULVERT			228					2									50	0.63	PCC-1, PCM-1, FES-1, FES-2
372+71	CONST. DBL. 36" X 114' PIPE CULVERT		228					2										36	0.45	PCC-1, PCM-1, FES-1, FES-2
SUBTOTALS:		482	757	228	246	12	4	2	6	74	2				227.53	27315	133	437	5.49	
STRUCTURES OVER 20' - 0" SPAN																				
326+35	CONST. QUINT 8' X 7' X 128' BOX CULVERT											8	7	128	537.22	61840	192	37	0.47	SPECIAL DETAIL
SUBTOTALS:															537.22	61840	192	37	0.47	
TOTALS:		482	757	228	246	12	4	2	6	74	2				764.75	89155	325	474	5.96	

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.

1/6/2016

R110217.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.		110217	58	348
				①	07320	- QUANTITIES -	55872	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 110217

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	804	804	805	805	805	805	807	812	816	816
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	① STEEL SHELL PILING (16'' DIA.)	① STEEL SHELL PILING (24'' DIA.)	① PILE ENCASEMENT	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
		UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	EACH	SQ. YD.	CU. YD.
07320 / X071 / BIG CYPRESS CREEK	BENT NO. 1			50	30.50			2,910	593	700			100			140	80
	BENT NO. 2				39.40			3,795	377		700	120					
	BENT NO. 3				39.40			3,795	377		700	100					
	BENT NO. 4			50	30.50			2,910	593	700			100			160	90
	194'-0'' INTEGRAL W-BEAM UNIT					487.70	35.3		103,620					320,600	1		
EXIST. BR. NO. 06069 (SITE NO. 2)		②	1														
TOTALS FOR JOB NO. 110217				100	139.80	487.70	35.3	13,410	105,560	1,400	1,400	220	200	320,600	1	300	170

② Existing Bridge No. 06069 (Site No. 2) is 47' wide and 180' long and consists of six concrete slab spans supported by concrete trestle pile bents. The removal of exposed remnant piling and foundations from previous bridges shall be included in this item.

① Piles and pile encasement shall conform to Std. Dwg. No. 55021.

JIM TRIBO
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
WALNUT CORNER - CYPRESS CORNER (S)
LEE COUNTY

ROUTE 1 SEC. 9

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JGT DATE: 05-15-14 FILENAME: bl10217_qi.dgn
CHECKED BY: LJB DATE: 8/28/14 SCALE: NONE
DESIGNED BY: -- DATE:

BRIDGE NO. 07320 DRAWING NO. 55872

PRINT DATE: 11/18/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1/6/16				6	ARK.			
				JOB NO.		110217	89	348

(2) SUMMARY OF QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-7-16

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	357	STATION
201	GRUBBING	357	STATION
202	REMOVAL AND DISPOSAL OF CURB	348	LIN. FT.
202	REMOVAL AND DISPOSAL OF FENCE	1906	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES	4	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE PAVEMENT	25	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE ISLANDS	28	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS	351	SQ. YD.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS	10	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	96	EACH
202	REMOVAL AND DISPOSAL OF BOX CULVERTS	2	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	551	LIN. FT.
202	REMOVAL AND DISPOSAL OF BUILDINGS	2	EACH
202	REMOVAL AND DISPOSAL OF SIGNS	113	EACH
206	FLOWABLE SELECT MATERIAL	276	CU. YD.
210	UNCLASSIFIED EXCAVATION	65455	CU. YD.
210	COMPACTED EMBANKMENT	170593	CU. YD.
SP & 210	SOIL STABILIZATION	500	TON
303	AGGREGATE BASE COURSE (CLASS 7)	18594	TON
307	PROCESSING CEMENT TREATED BASE COURSE (8" UNIFORM THICKNESS)	195303	SQ. YD.
307	CEMENT IN TREATED BASE COURSE	6609	TON
307	SOIL AGGREGATE IN CEMENT TREATED BASE COURSE (8" COMPACTED DEPTH)	195303	SQ. YD.
SS & 401	TACK COAT	19356	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	2393	TON
SP & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")	97	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	33200	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	1528	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	68322	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	3712	TON
SP, SS, & 407	ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2")	35	TON
412	COLD MILLING ASPHALT PAVEMENT	2856	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	170	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY	100	TON
504	APPROACH SLABS	240.50	CU. YD.
504	APPROACH GUTTERS	59.20	CU. YD.
505	PORTLAND CEMENT CONCRETE DRIVEWAY	554.00	SQ. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	48" TEMPORARY CULVERT	74	LIN. FT.
SS & 604	SIGNS	891	SQ. FT.
SS & 604	BARRICADES	176	LIN. FT.
SS & 604	TRAFFIC DRUMS	587	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	2022	LIN. FT.
604	RELOCATING PRECAST CONCRETE BARRIER	1863	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	285904	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	5264	LIN. FT.
SS & 604	VERTICAL PANELS	185	EACH
605	CONCRETE DITCH PAVING (TYPE B)	149	SQ. YD.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	482	LIN. FT.
606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	757	LIN. FT.
606	42" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	228	LIN. FT.
606	48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	246	LIN. FT.
SP, SS, & 606	18" SIDE DRAIN	1396	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN	1220	LIN. FT.
SP, SS, & 606	30" SIDE DRAIN	402	LIN. FT.
SP, SS, & 606	36" SIDE DRAIN	138	LIN. FT.
SP, SS, & 606	48" SIDE DRAIN	88	LIN. FT.
SS & 606	54" SIDE DRAIN	46	LIN. FT.
SS & 606	60" SIDE DRAIN	38	LIN. FT.
SS & 606	29" X 18" SIDE DRAIN	100	LIN. FT.
SS & 606	36" X 23" SIDE DRAIN	66	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	12	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
606	42" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
606	48" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	6	EACH
606	SELECTED PIPE BEDDING	400	CU. YD.
609	DROP INLETS (TYPE ST)	2	EACH
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)	343.6	CU. YD.
617	GUARDRAIL (TYPE A)	550	LIN. FT.
617	GUARDRAIL TERMINAL (TYPE 2)	4	EACH
617	THRIE BEAM GUARDRAIL TERMINAL	4	EACH
619	WIRE FENCE (TYPE C)	1204	LIN. FT.
* 619	16' STEEL GATES (ALTERNATE NO. 1)	5	EACH
* 619	16' ALUMINUM GATES (ALTERNATE NO. 2)	5	EACH
620	LIME	111	TON
620	SEEDING	55.66	ACRE
SS & 620	MULCH COVER	111.32	ACRE
620	WATER	6820.5	M.GAL.
621	TEMPORARY SEEDING	55.66	ACRE
621	SILT FENCE	2000	LIN. FT.
621	SAND BAG DITCH CHECKS	3432	BAG
621	DROP INLET SILT FENCE	60	LIN. FT.
621	SEDIMENT BASIN	15507	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	15507	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

1/6/2016

R110217.DGN

SUMMARY OF QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
12/21/15				6	ARK.			
1/6/16				JOB NO.		110217	90	348
				(2) SUMMARY OF QUANTITIES & REVISIONS				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-7-16

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM		QUANTITY	UNIT
621	SEDIMENT REMOVAL AND DISPOSAL		15739	CU. YD.
623	SECOND SEEDING APPLICATION		55.66	ACRE
624	SOLID SODDING		623	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)		711	SQ. YD.
634	CONCRETE CURB (TYPE B)		250	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
637	MAILBOXES		31	EACH
637	MAILBOX SUPPORTS (SINGLE)		29	EACH
637	MAILBOX SUPPORTS (DOUBLE)		1	EACH
642	RUMBLE STRIPS IN ASPHALT SHOULDERS		64250	LIN. FT.
704	FEEDER WIRE		3130	LIN. FT.
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)		8	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)		2	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)		220	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)		73	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)		404	LIN. FT.
710	NON-METALLIC CONDUIT (1")		144	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")		48	LIN. FT.
710	NON-METALLIC CONDUIT (2")		210	LIN. FT.
710	NON-METALLIC CONDUIT (3")		240	LIN. FT.
711	CONCRETE PULL BOX (TYPE 1 HD)		2	EACH
711	CONCRETE PULL BOX (TYPE 2 HD)		2	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (52')		1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')		1	EACH
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		91593	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")		16	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (24")		105	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		68728	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING (WORDS)		5	EACH
719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)		5	EACH
* SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4")	(ALTERNATE NO. 1)	98	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4")	(ALTERNATE NO. 2)	98	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	488	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	488	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		1620	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER		3	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		3	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		133	CU. YD.
802	CLASS S CONCRETE-ROADWAY		227.53	CU. YD.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		59065	POUND
816	FILTER BLANKET		921	SQ. YD.
816	DUMPED RIPRAP		462	CU. YD.
SP	CULVERT CLEAN OUT		5	EACH
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES		504	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)		431	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)		90	LIN. FT.
SP	LOOP WIRING CLASS III (1C/16 A.W.G.)		2064	LIN. FT.
SP	LUMINAIRE ASSEMBLY		2	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT		1.00	LUMP SUM
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)		1	EACH
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)		1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		100	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		192	CU. YD.
802	CLASS S CONCRETE-ROADWAY		537.22	CU. YD.
802	CLASS S CONCRETE-BRIDGE		139.80	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		487.70	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		35.3	GAL.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		61840	POUND
804	REINFORCING STEEL-BRIDGE (GRADE 60)		13410	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		105560	POUND
805	STEEL SHELL PILING (16" DIAMETER)		1400	LIN. FT.
805	STEEL SHELL PILING (24" DIAMETER)		1400	LIN. FT.
805	PREBORING		200	LIN. FT.
805	PILE ENCASEMENT		220	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		320600	POUND
812	BRIDGE NAME PLATE (TYPE D)		1	EACH
816	FILTER BLANKET		300	SQ. YD.
816	DUMPED RIPRAP		170	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
12/21/2015	REVISED HIGH PERFORMANCE PAVEMENT MARKING SPECIAL PROVISION	90
1/8/2016	REVISED QUANTITIES FOR MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2") AND ASPHALT BINDER (64-22) IN ACHM SURFACE COURSE. RELABELED THE EARTHWORK QUANTITIES TO SHOW STAGE 1 AND STAGE 2 CORRECTLY.	83,87,89, 90, 198-348

1/6/2016

R110217.DGN

SUMMARY OF QUANTITIES & REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	91	348

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES

Project Name: s110217
Date: 4/23/2012
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
27	2037977.0034	1682912.8853	200.905	CTL	24" X5/8" REBA2.0" ALUM CAP
28	2037149.4913	1682909.7202	199.834	CTL	24" X5/8" REBA2.0" ALUM CAP
29	2036353.7575	1682910.3352	201.113	CTL	24" X5/8" REBA2.0" ALUM CAP
30	2035560.9449	1682909.7012	201.784	CTL	24" X5/8" REBA2.0" ALUM CAP
31	2034746.9154	1682961.6474	202.725	CTL	24" X5/8" REBA2.0" ALUM CAP
32	2033943.3383	1682921.2657	204.416	CTL	24" X5/8" REBA2.0" ALUM CAP
33	2033145.8455	1682925.0578	203.105	CTL	24" X5/8" REBA2.0" ALUM CAP
34	2032363.6013	1682967.0996	202.577	CTL	24" X5/8" REBA2.0" ALUM CAP
35	2031591.3226	1682932.3762	202.884	CTL	24" X5/8" REBA2.0" ALUM CAP
36	2030788.8805	1682979.7132	203.651	CTL	24" X5/8" REBA2.0" ALUM CAP
37	2029991.7847	1682937.9144	203.865	CTL	24" X5/8" REBA2.0" ALUM CAP
38	2029187.9646	1682946.4357	203.361	CTL	24" X5/8" REBA2.0" ALUM CAP
39	2028389.6448	1682951.8660	205.807	CTL	24" X5/8" REBA2.0" ALUM CAP
40	2027595.2171	1682999.4120	204.822	CTL	24" X5/8" REBA2.0" ALUM CAP
41	2026803.3845	1682970.3148	204.631	CTL	24" X5/8" REBA2.0" ALUM CAP
42	2025994.1132	1682985.5084	203.424	CTL	24" X5/8" REBA2.0" ALUM CAP
43	2025193.6222	1682999.3760	203.082	CTL	24" X5/8" REBA2.0" ALUM CAP
44	2024407.2229	1683053.1313	202.299	CTL	24" X5/8" REBA2.0" ALUM CAP
45	2023600.1847	1683022.0920	203.280	CTL	24" X5/8" REBA2.0" ALUM CAP
46	2022792.4854	1683034.8045	204.315	CTL	24" X5/8" REBA2.0" ALUM CAP
47	2021997.0707	1683043.2879	207.481	CTL	24" X5/8" REBA2.0" ALUM CAP
48	2021197.6618	1683096.6331	216.560	CTL	24" X5/8" REBA2.0" ALUM CAP
49	2020392.2006	1683065.8418	215.534	CTL	24" X5/8" REBA2.0" ALUM CAP
50	2019591.2957	1683076.2873	218.034	CTL	24" X5/8" REBA2.0" ALUM CAP
51	2018778.5932	1683087.6807	220.390	CTL	24" X5/8" REBA2.0" ALUM CAP
52	2017996.3850	1683098.5432	220.509	CTL	24" X5/8" REBA2.0" ALUM CAP
53	2017188.4448	1683152.8425	221.872	CTL	24" X5/8" REBA2.0" ALUM CAP
54	2016393.8131	1683121.4472	220.829	CTL	24" X5/8" REBA2.0" ALUM CAP
55	2015583.6987	1683175.4745	220.018	CTL	24" X5/8" REBA2.0" ALUM CAP
56	2014780.1906	1683143.3041	215.732	CTL	24" X5/8" REBA2.0" ALUM CAP
57	2013982.1808	1683155.0866	213.792	CTL	24" X5/8" REBA2.0" ALUM CAP
58	2013189.5602	1683165.4570	213.533	CTL	24" X5/8" REBA2.0" ALUM CAP
59	2012379.1728	1683177.8546	214.474	CTL	24" X5/8" REBA2.0" ALUM CAP
60	2011579.2119	1683187.8180	217.678	CTL	24" X5/8" REBA2.0" ALUM CAP
61	2010790.1924	1683240.6432	219.636	CTL	24" X5/8" REBA2.0" ALUM CAP
62	2010166.4120	1683204.0017	220.195	CTL	24" X5/8" REBA2.0" ALUM CAP
63	2009363.7529	1683252.6467	219.373	CTL	24" X5/8" REBA2.0" ALUM CAP
64	2008573.0144	1683212.7880	216.192	CTL	24" X5/8" REBA2.0" ALUM CAP
65	2007791.7612	1683259.1990	212.303	CTL	24" X5/8" REBA2.0" ALUM CAP
66	2006959.7950	1683222.5995	212.523	CTL	24" X5/8" REBA2.0" ALUM CAP
67	2006166.7873	1683226.6896	214.062	CTL	24" X5/8" REBA2.0" ALUM CAP
68	2005380.1330	1683272.6536	213.146	CTL	24" X5/8" REBA2.0" ALUM CAP
69	2004498.9626	1683235.9220	210.328	CTL	24" X5/8" REBA2.0" ALUM CAP
70	2003784.0283	1683285.3321	204.548	CTL	24" X5/8" REBA2.0" ALUM CAP
71	2002973.7629	1683247.6055	199.841	CTL	24" X5/8" REBA2.0" ALUM CAP
72	2002146.6298	1683252.0597	205.696	CTL	24" X5/8" REBA2.0" ALUM CAP
100	2038962.7432	1683023.1750	201.669	GPS	AHTD GPS 390006
101	2031126.5095	1685402.2374	198.496	GPS	AHTD GPS 540009
102	2031275.9246	1686885.5316	199.871	GPS	AHTD GPS 540009A
103	2017802.9858	1683253.1918	219.662	GPS	AHTD GPS 540010
104	2017791.3443	1684599.4603	219.906	GPS	AHTD GPS 540010A
105	2001689.0984	1680898.3829	209.802	GPS	AHTD GPS 540011
106	2001890.2585	1678845.8323	209.173	GPS	AHTD GPS 540011A
107	2008510.3386	1683269.5246	214.432	GPS	AHTD GPS 540012
108	2010199.5364	1683276.4777	218.409	GPS	AHTD GPS 540012A
901	2039049.1419	1682954.4041	202.886	TBM	
913	2034136.1175	1682973.4429	205.504	TBM	3" AHTD CAP
914	2031176.0720	1683034.9995	202.421	TBM	CH SQ IN CONC BASE OF
915	2024455.1519	1683058.5375	200.891	TBM	CH SQ CENTER OF HEADWALL
916	2023326.5961	1683074.1962	201.322	TBM	CH SQ CENTER HW. 26' E CL HWY 1
917	2020142.2760	1683061.9856	213.705	TBM	24" X5/8" REBA2.0" ALUM CAP
918	2018925.7254	1683078.1033	218.490	TBM	CH SQ CENTER HEADWALL
919	2017977.3372	1683146.4242	219.714	TBM	CH SQ CENTER HEADWALL
920	2016121.1645	1683177.8776	218.535	TBM	CH SQ CENTER HEADWALL
921	2013861.5597	1683152.5385	212.647	TBM	CH SQ CENTER HEADWALL
922	2007768.2582	1683261.8461	211.865	TBM	CH SQ CENTER HEADWALL
923	2004427.3606	1683232.2169	209.523	TBM	CH SQ CENTER HEADWALL
924	2003590.5631	1683297.2896	200.893	TBM	CH SQ CENTER HEADWALL, 32'E CL HWY 1
925	2002505.9851	1683242.3803	197.580	TBM	CH SQ CENTER HEADWALL
926	2001776.2821	1683230.6218	209.357	TBM	CH SQ IN CONC BASE SW PT
927	2029092.8486	1682992.6157	202.765	TBM	CH SQ CENTER HEADWALL
990	2039002.5619	1683055.4434	202.900	BM	NGS BM Z 171 RESET
991	2017503.7911	1688499.2522	206.120	BM	NGS BM U 171
992	1998957.0816	1682450.0627	212.890	BM	NGS BM T 224

HWY. 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	98+37.14	2001660.9339	1683287.1816
8001	PI	99+99.94	2001823.5816	1683280.2888
8002	PI	116+56.33	2003479.9044	1683265.4724
8003	PC	124+23.23	2004246.7854	1683259.4803
8005	PT	128+81.80	2004705.2927	1683265.0723
8006	PC	129+18.91	2004742.3803	1683266.2671
8008	PT	133+44.76	2005168.1701	1683272.0681
8009	PI	142+91.83	2006115.2283	1683267.3724
8010	PI	156+11.84	2007435.2117	1683259.7374
8011	PC	181+80.64	2010003.9768	1683246.6472
8013	PT	183+23.05	2010146.3868	1683245.4790
8014	PI	195+71.89	2011395.1456	1683231.3551
8015	PI	208+91.96	2012715.0997	1683213.7584
8016	PI	222+12.04	2014035.0523	1683195.5989
8017	PI	235+32.11	2015355.0056	1683177.7421
8018	PI	248+52.20	2016674.9551	1683158.5361
8019	PI	261+72.29	2017994.9060	1683139.8179
8020	PI	274+92.37	2019314.8570	1683121.1515
8021	PI	288+12.70	2020635.0628	1683102.9479
8022	PI	301+32.76	2021955.0209	1683086.8411
8023	PI	314+52.87	2023275.0045	1683068.6915
8024	PI	327+72.98	2024594.9667	1683048.3743
8025	PI	340+93.11	2025914.9352	1683027.9552
8026	PC	353+26.82	2027148.4495	1683006.2100
8028	PT	354+99.58	2027321.2002	1683003.8159
8029	PC	366+73.63	2028495.1904	1682991.9718
8031	PT	367+92.58	2028614.1377	1682991.0804
8032	PI	380+53.08	2029874.6165	1682984.9062
8033	PI	393+73.11	2031194.6190	1682976.0762
8034	PC	406+05.43	2032426.9029	1682967.1690
8036	PT	407+80.70	2032602.1709	1682966.5723
8037	PC	421+12.21	2033933.6838	1682967.1309
8039	PT	422+91.80	2034113.2776	1682966.5026
8040	PI	427+34.60	2034556.0580	1682963.2185
8041	PC	438+22.37	2035643.7552	1682950.4739
8043	PT	440+11.98	2035833.3637	1682949.8210
8044	PI	446+53.06	2036474.4332	1682952.9176
8045	PI	456+70.40	2037491.7711	1682956.2122
8046	POE	457+67.70	2037589.0654	1682956.4450

HWY. 49

POINT NO.	TYPE	STATION	NORTHING	EASTING
9000	POB	10+00.00	2001819.7581	1682281.1664
9001	POE	22+24.18	2001824.4429	1683505.3378

•Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
•(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999575906 HAS BEEN USED TO COMPUTE THE GROUND COORDINATES LISTED ABOVE.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME. s110217gi.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 540009 - 540009A, 540010 - 540010A, 540011 - 540011A, 540012 - 540012A, 390006
CONVERGENCE ANGLE: 00-41-22 RIGHT AT LT: 34-36-14 LG: 090-46-05.5
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

10/15/2014

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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.		110217	92	348

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
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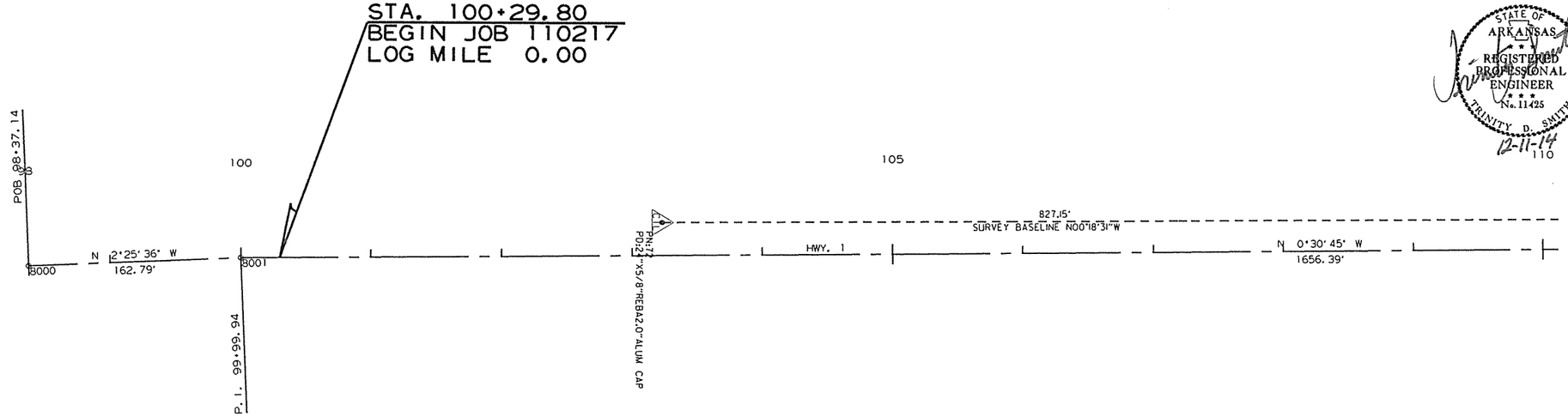

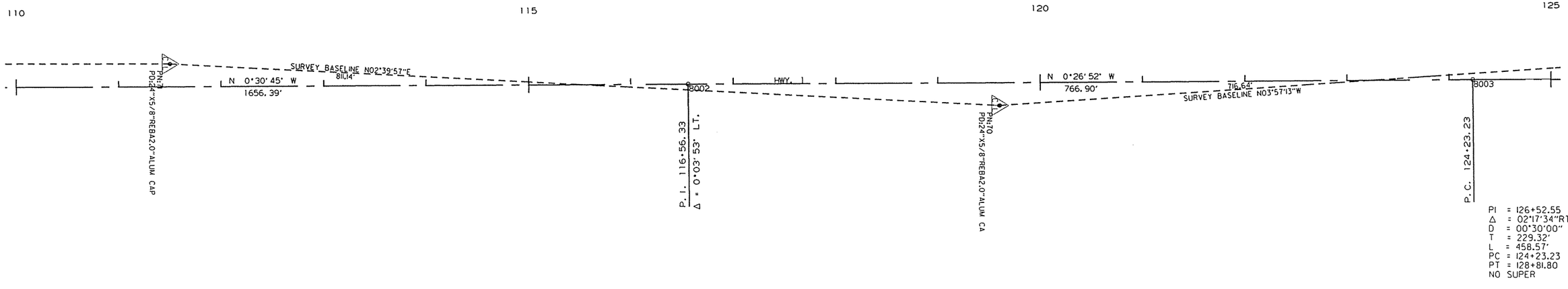

PI = 126+52.55
Δ = 02°17'34"RT.
D = 00°30'00"
T = 229.32'
L = 458.57'
PC = 124+23.23
PT = 128+81.80
NO SUPER

SURVEY CONTROL DETAILS

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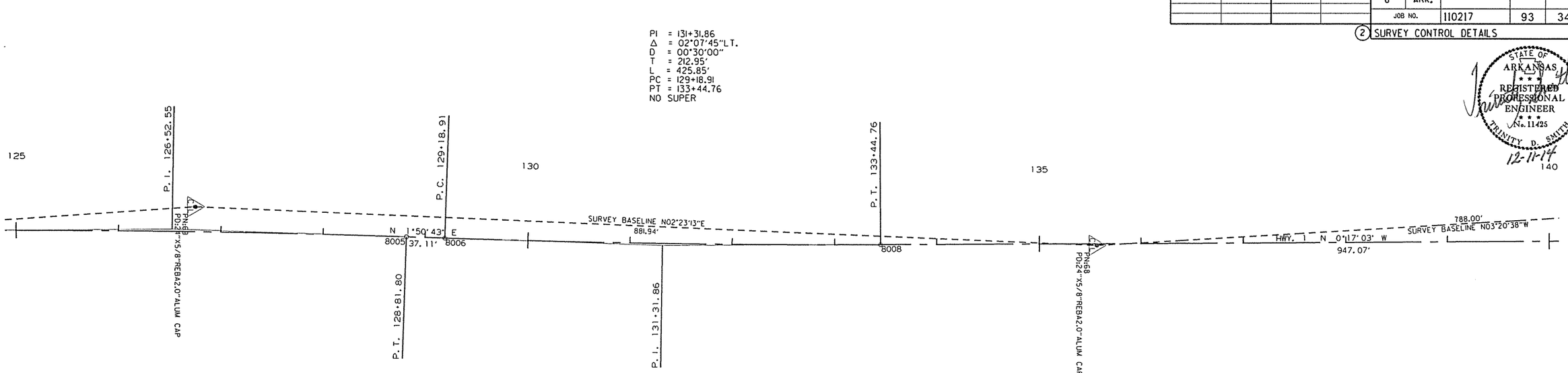

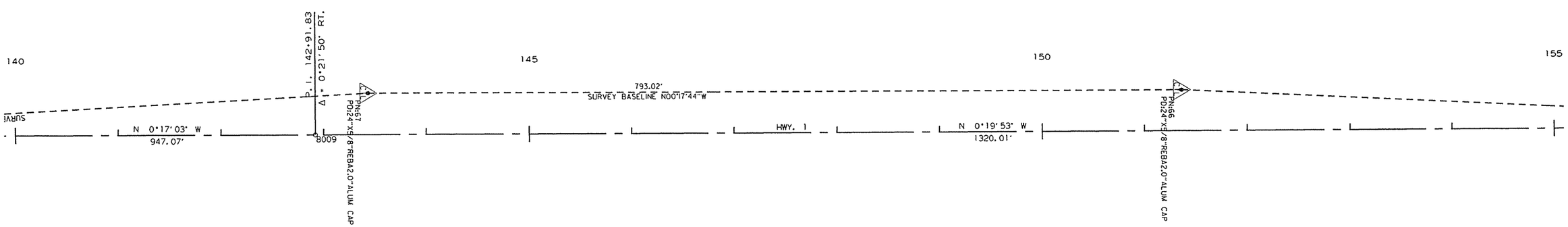

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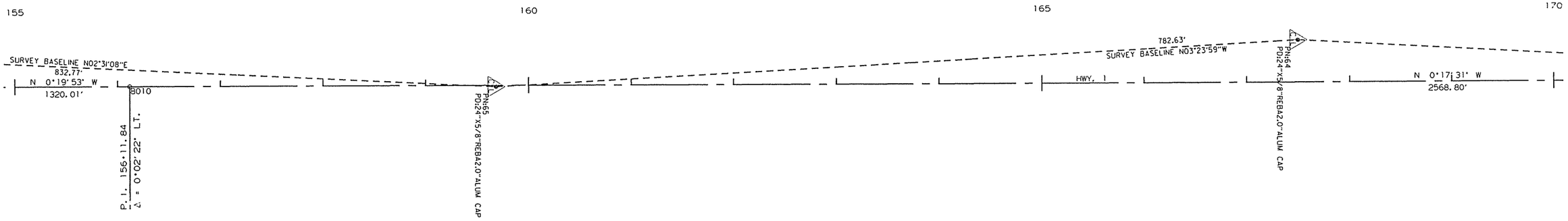

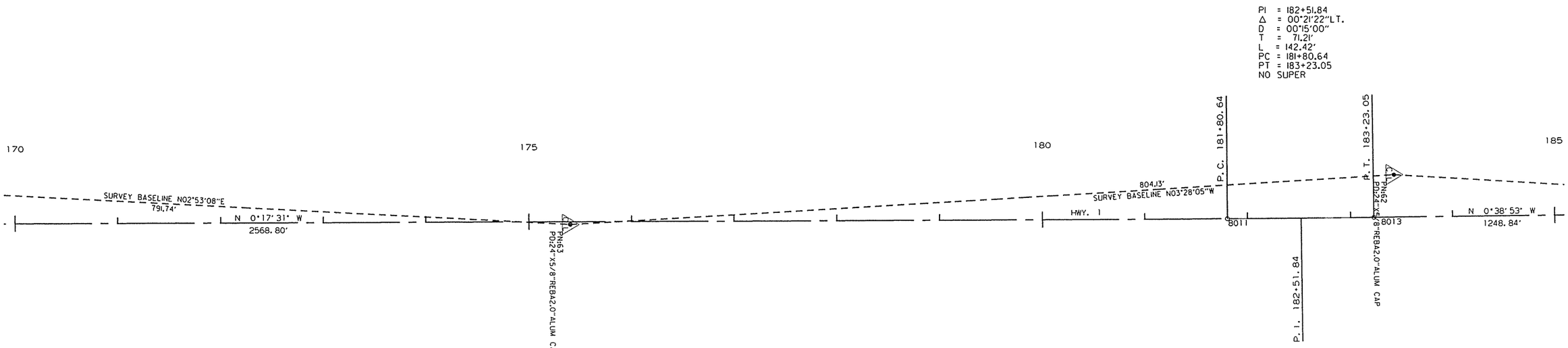

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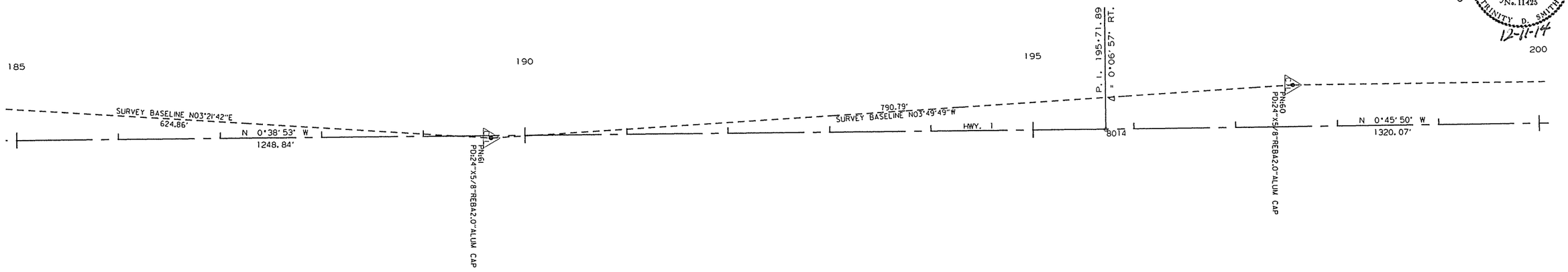

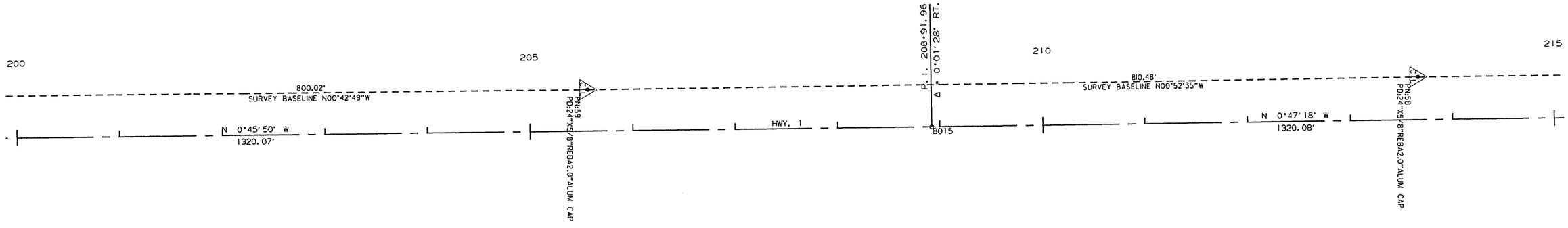

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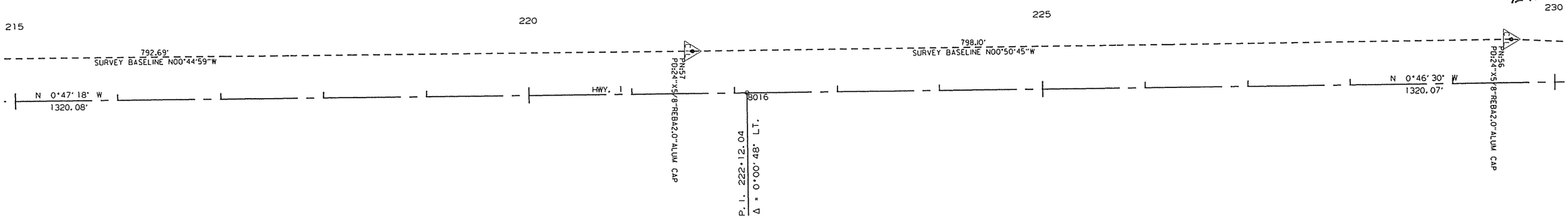

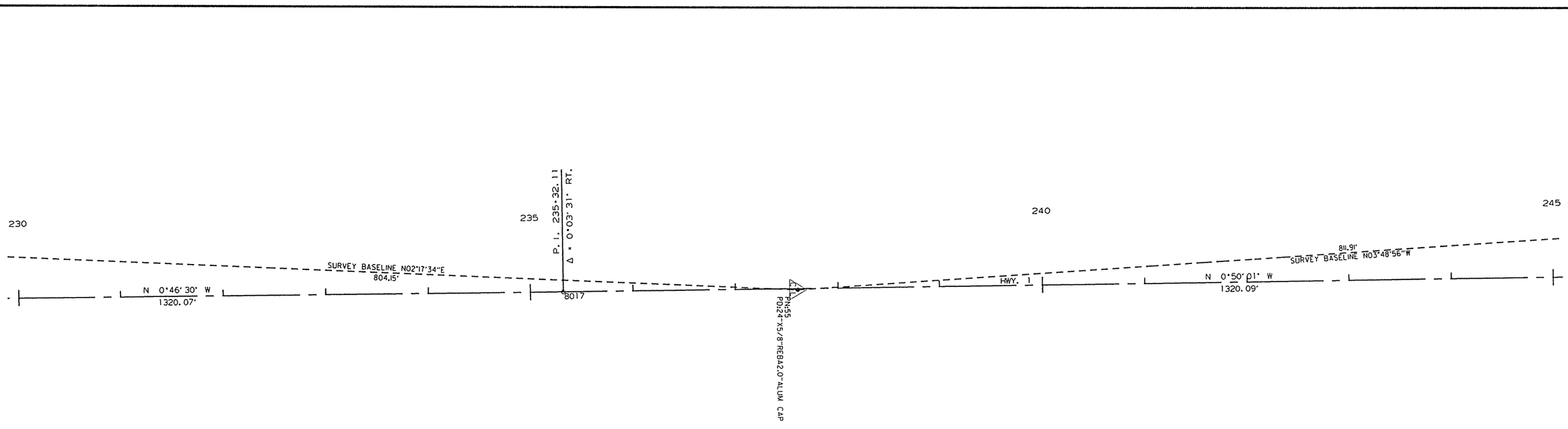

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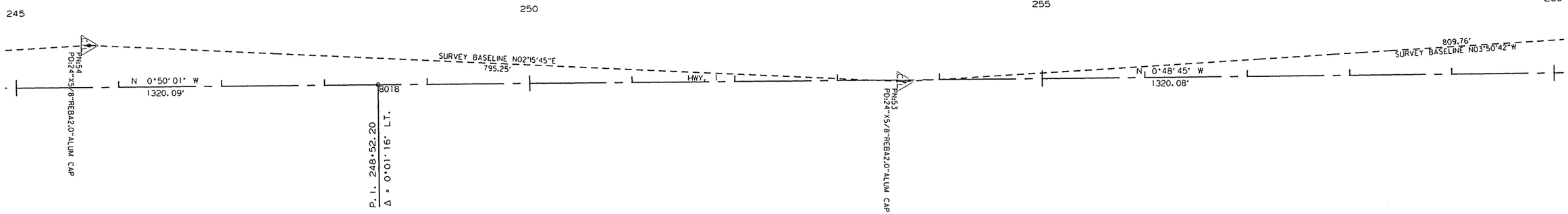

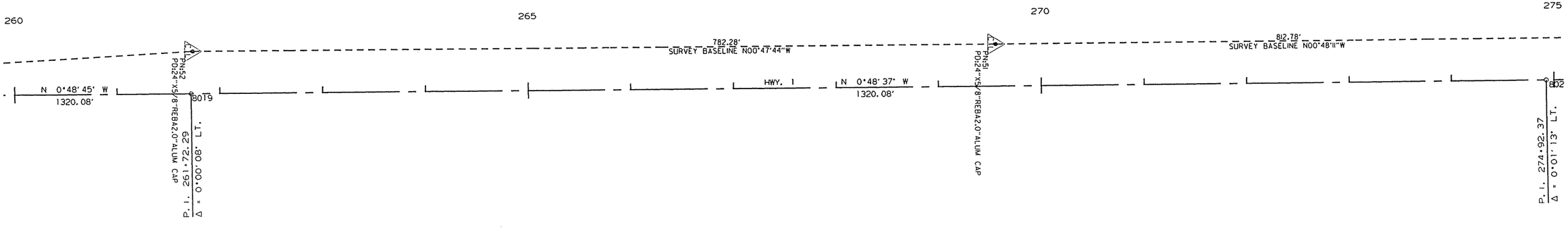

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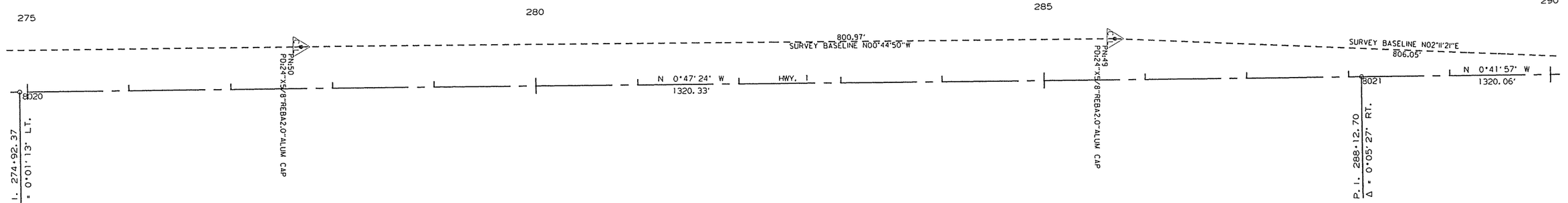
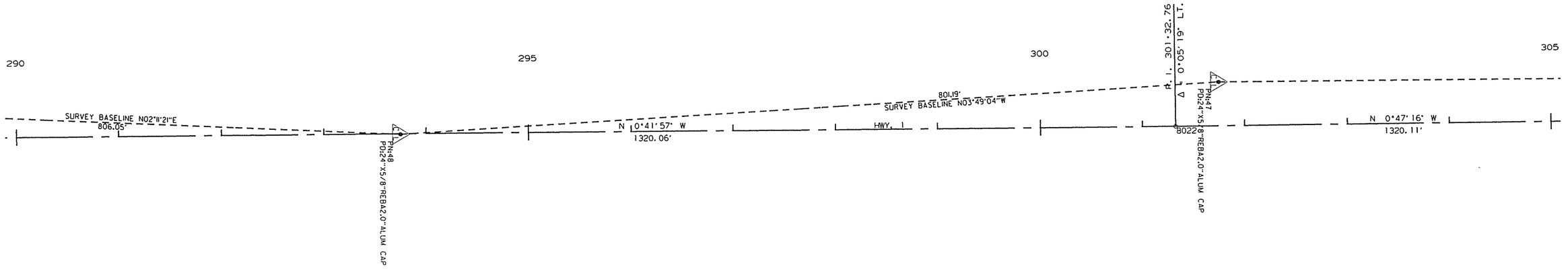
12-11-14





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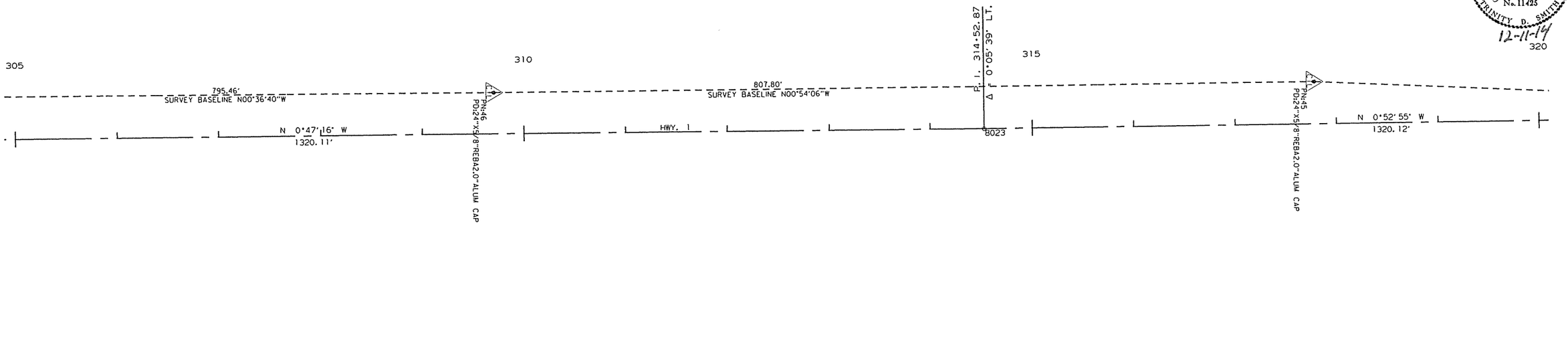
R110217.DGN

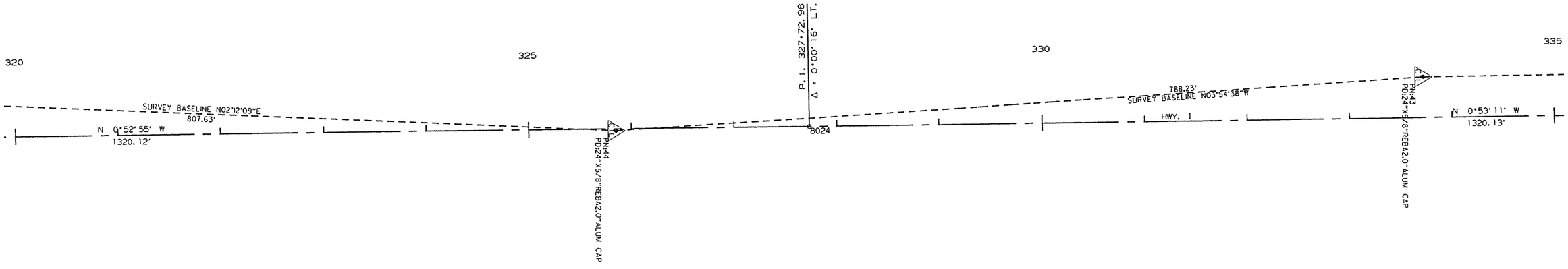
SURVEY CONTROL DETAILS

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.		110217	99	348

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14





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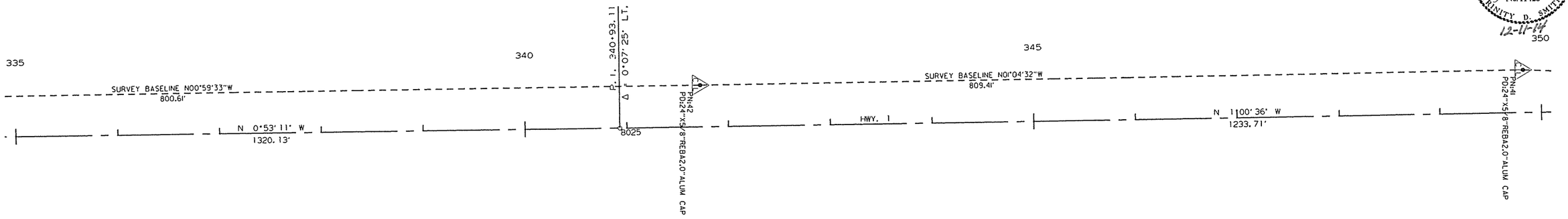
R110217.DGN

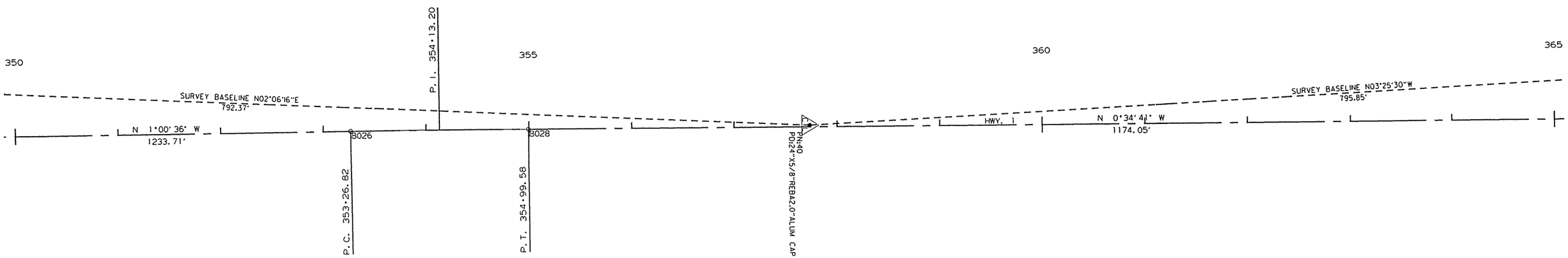
SURVEY CONTROL DETAILS

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.		110217	100	348

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14





PI = 354+13.20
Δ = 00°25'55"RT.
D = 00°15'00"
T = 86.38'
L = 172.77'
PC = 353+26.82
PT = 354+99.58
NO SUPER

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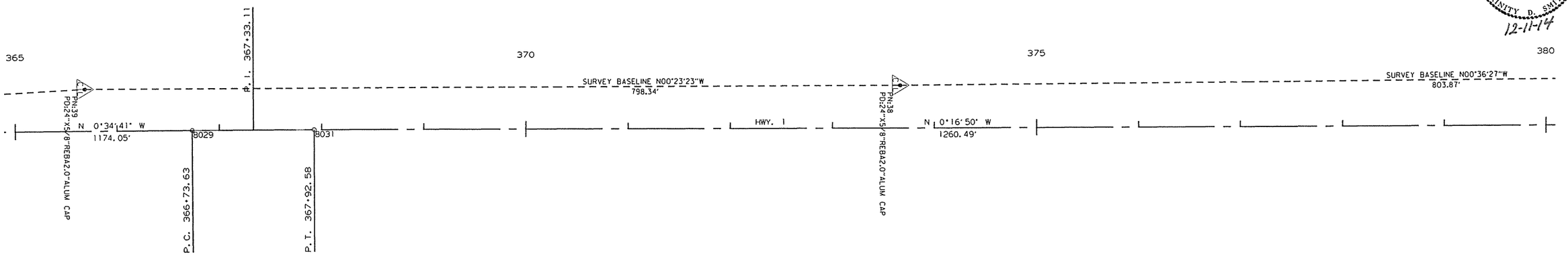
SURVEY CONTROL DETAILS

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.		110217	101	348

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



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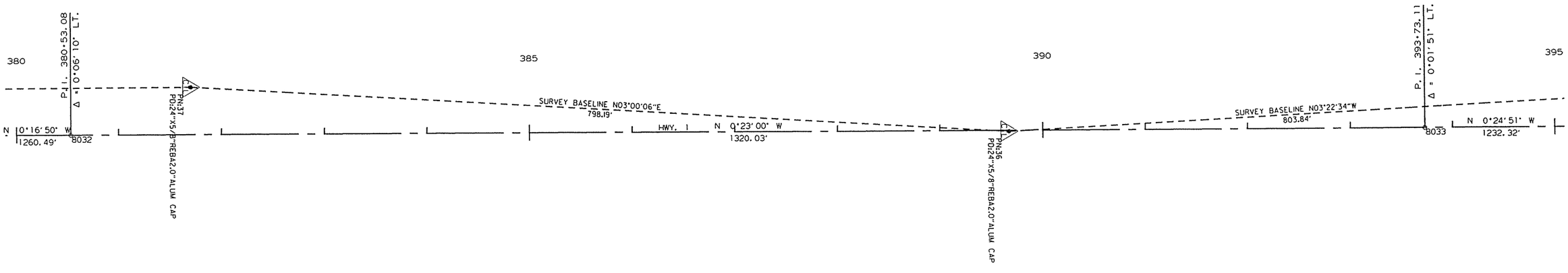
T = 59.48'
L = 118.95'
PC = 366+73.63
PT = 367+92.58
NO SUPER



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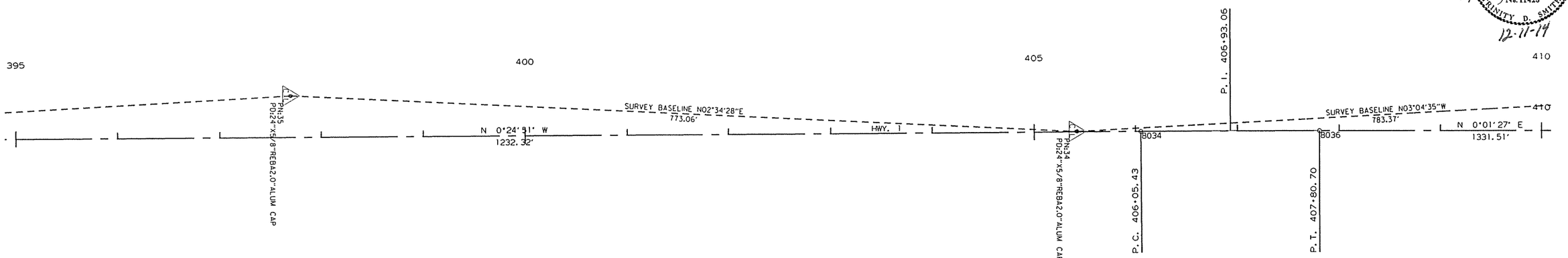
SURVEY CONTROL DETAILS

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.		110217	102	348

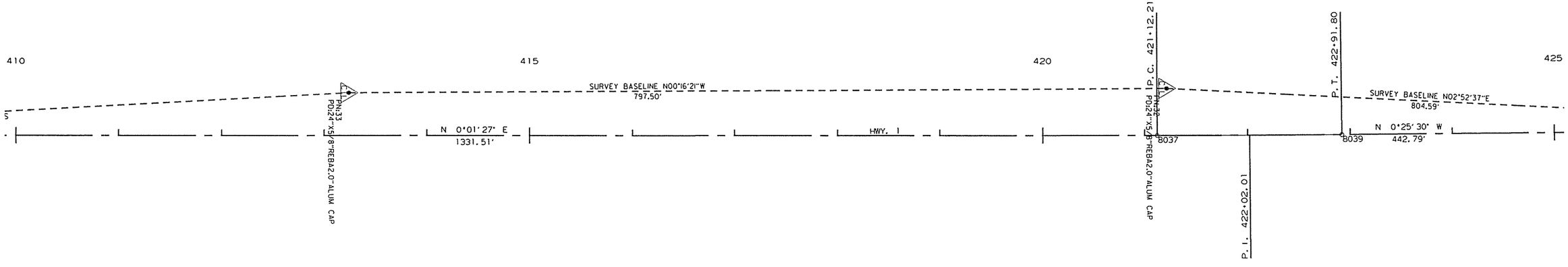
(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



PI = 406+93.06
Δ = 00°26'18"RT.
D = 00°15'00"
T = 87.64'
L = 175.27'
PC = 406+05.43
PT = 407+80.70
NO SUPER

PI = 422+02.01
Δ = 00°26'56"LT.
D = 00°15'00"
T = 89.80'
L = 179.60'
PC = 421+12.21
PT = 422+91.80
NO SUPER



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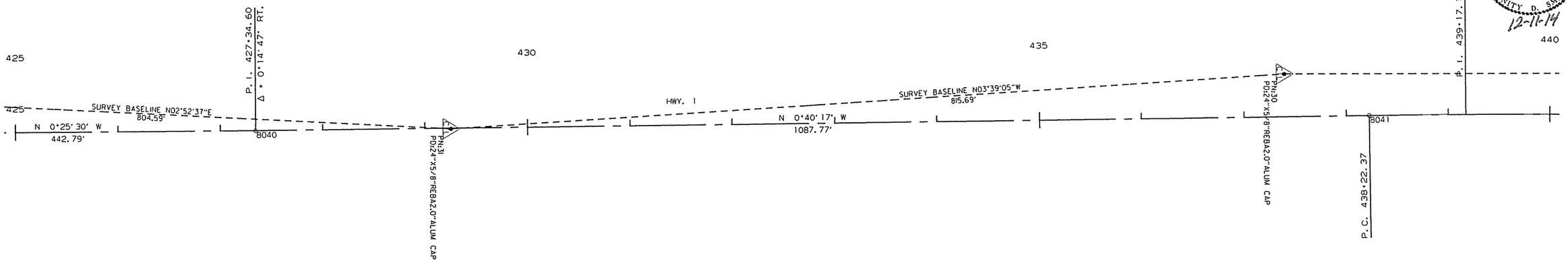
SURVEY CONTROL DETAILS

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.		110217	103	348

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



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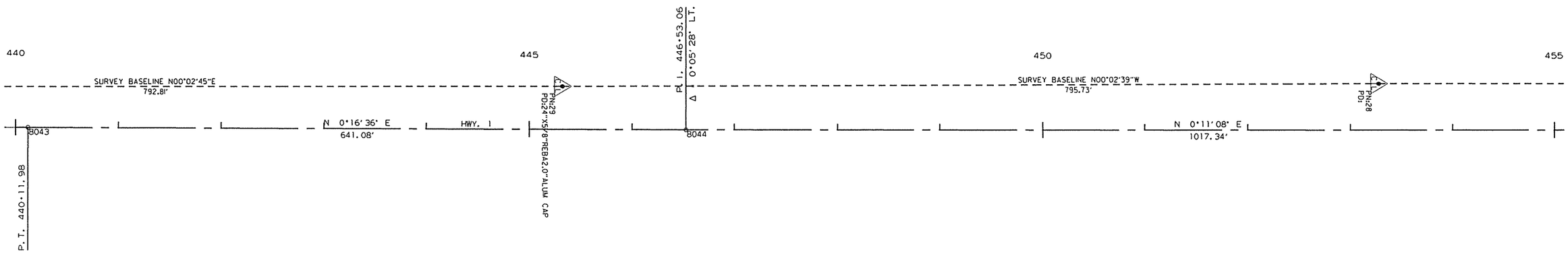
D = 00°30'00"
T = 94.81'
L = 189.61'
PC = 438+22.37
PT = 440+11.98
NO SUPER



PI = 439+17.18
Δ = 00°56'53"RT.
D = 00°30'00"
T = 94.81'
L = 189.61'
PC = 438+22.37
PT = 440+11.98
NO SUPER

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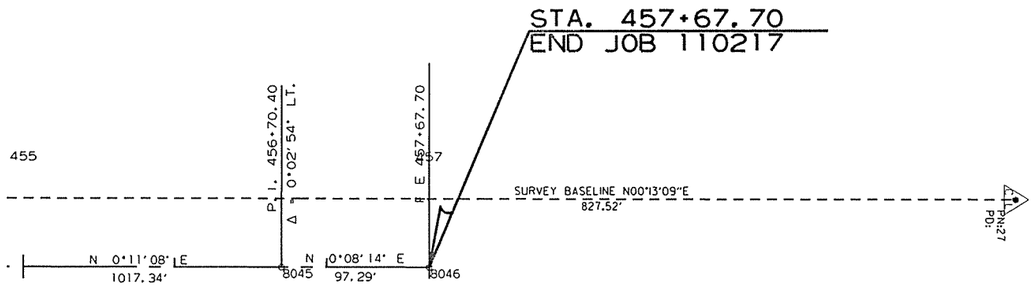
SURVEY CONTROL DETAILS

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.		110217	104	348

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14



11/8/2011

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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.		110217	105	348

(2) PLAN AND PROFILE SHEETS

STA. 102+18 - INSTALL
18' X 54' PIPE CULVERT
LT. SIDE DRAIN
APPROACH ON LT. = 90 CU. YDS.

STA. 104+48 - IN PLACE
18' X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +50
18' X 36' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 140 CU. YDS.

STA. 105+68 - IN PLACE
18' X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +66
18' X 38' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 260 CU. YDS.

STA. 109+45 - IN PLACE
60" X 48" X 21' C.M. ARCH PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +46
60" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH = 270 CU. YDS.

FENCE

STA.	SIDE	16' GATE
104+50	LT.	1

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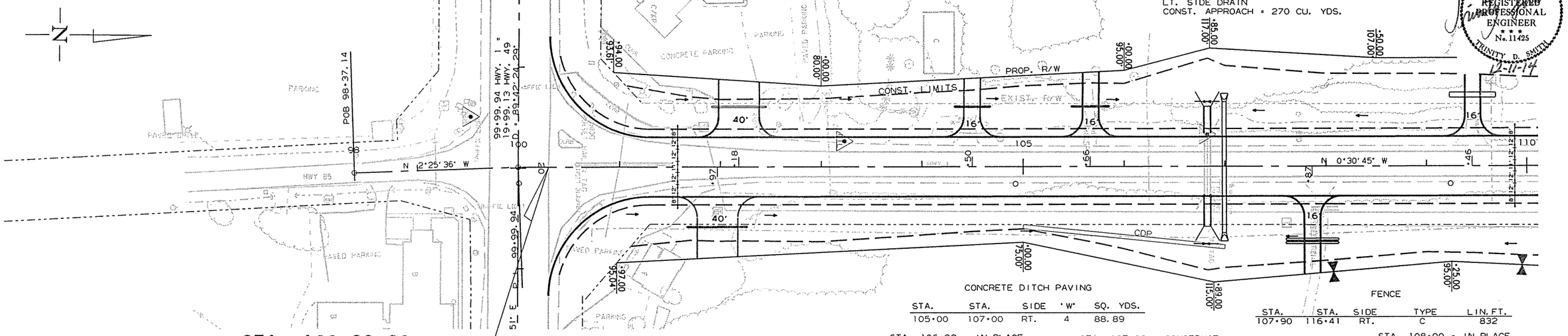


STA.	STA.	SIDE	'W'	SQ. YDS.
105+00	107+00	RT.	4	88.89

STA.	STA.	SIDE	TYPE	LIN. FT.
107+90	116+41	RT.	C	832

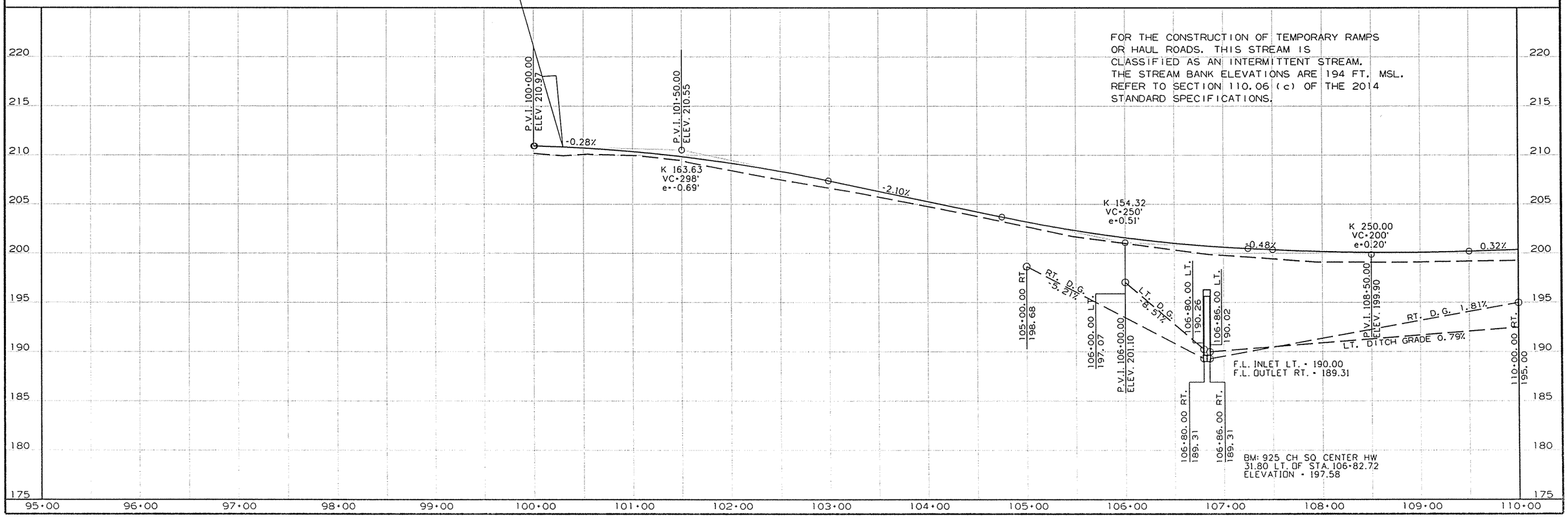
STA. 100+29.80
BEGIN JOB 110217
LOG MILE 0.00

STA. 101+97 - INSTALL
18' X 60' PIPE CULVERT
RT. SIDE DRAIN
APPROACH ON RT. = 120 CU. YDS.

STA. 106+83 - IN PLACE
6' X 6' X 60' R.C. BOX CULVERT
W/3:1 WINGS LT. & RT.
EXTEND 28' LT. AND 34' RT.
TO A COMPLETED LENGTH OF 122'
Q50 = 377 CFS D.A. = 420 ACRES

STA. 107+00 - CONSTRUCT
48" X 130' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 377 CFS D.A. = 420 ACRES
48" R.C. PIPE CULVERT (CLASS III) = 130 LIN. FT.
48" FLARED END SECTION = 2 EACH

STA. 108+00 - IN PLACE
DBL. 24" X 27' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ 107+87
DBL. 24" X 52' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH = 260 CU. YDS.



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(2) PLAN AND PROFILE SHEETS

STA. 115+68 - IN PLACE
60" X 48" X 25' C.M. ARCH PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +75
60" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH = 225 CU. YDS.

STA. 117+67 - IN PLACE
5' X 3' X 66' R.C. BOX CULVERT
W/3:1 WINGS LT. & RT.
EXTEND 28' LT. AND 28' RT.
TO A COMPLETED LENGTH OF 122'
Q50 = 148 CFS D.A. = 110 ACRES

FENCE

STA.	SIDE	16' GATE
115+75	LT.	1
122+45	LT.	1

STA. 122+46 - IN PLACE
30" X 29' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 44' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 145 CU. YDS.

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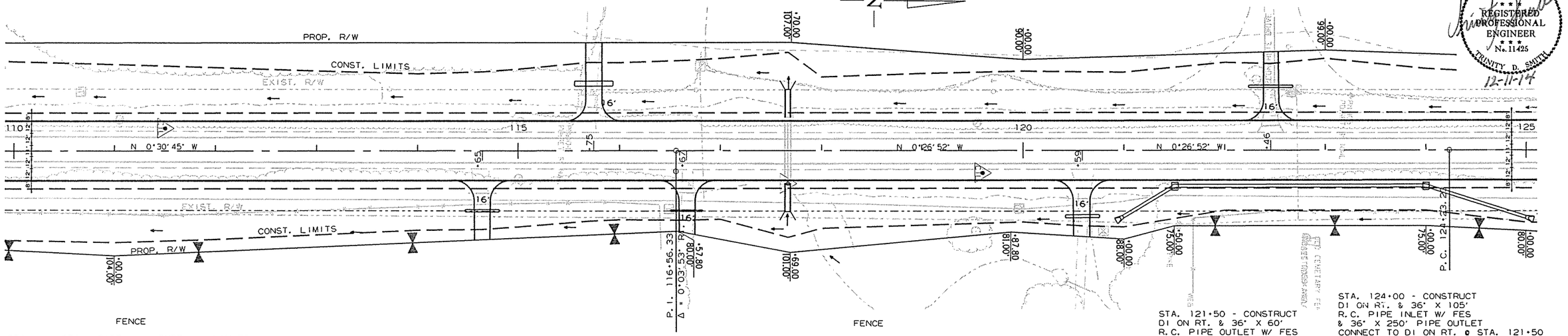


FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
107+90	116+41	RT.	C	832

STA. 114+65 - IN PLACE
30" X 28' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
30" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 135 CU. YDS.

STA. 116+67 - IN PLACE
18" X 21' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 100 CU. YDS.

FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
121+68	125+40	RT.	C	372

STA. 120+55 - IN PLACE
48" X 25' C.M. PIPE CULVERT 242' RT.
RT. SIDE DRAIN
RETAIN

STA. 120+60 - IN PLACE
30" X 29' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +59
36" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 80 CU. YDS.

STA. 121+50 - CONSTRUCT
DI ON RT. & 36" X 60'
R.C. PIPE OUTLET W/ FES
TYPE ST = 6'-6" X 6'-6"
H = 6'-4"

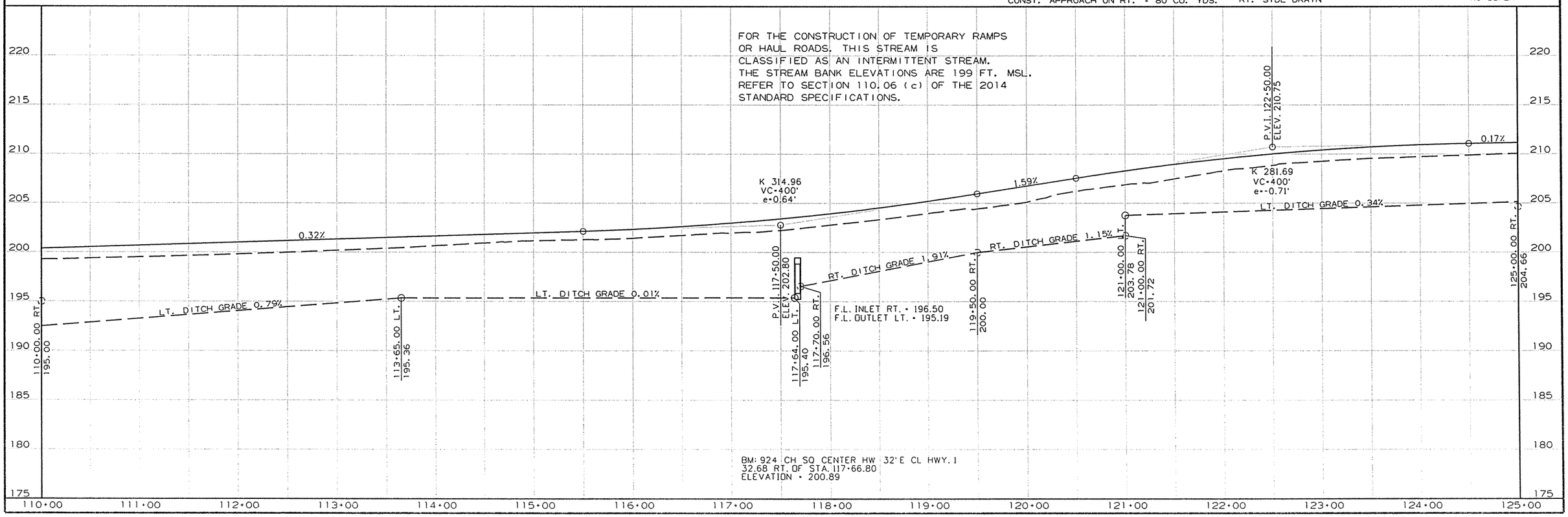
STA. 124+00 - CONSTRUCT
DI ON RT. & 36" X 105'
R.C. PIPE INLET W/ FES
& 36" X 250' PIPE OUTLET
CONNECT TO DI ON RT. @ STA. 121+50
TYPE ST = 6'-0" X 6'-0"
H = 5'-6"

+50 250' TYPE B CURB +00

STA. 123+00 - INSTALL
36" X 414' PIPE CULVERT W/ FES
RT. SIDE DRAIN

PI = 126+52.55
Δ = 02°17'34"RT.
D = 00°30'00"
T = 229.32'
L = 458.57'
PC = 124+23.23
PT = 128+81.80
NO SUPER

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 199 FT. MSL. REFER TO SECTION 110.06 (c) OF THE 2014 STANDARD SPECIFICATIONS.



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				6	ARK.			
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(2) PLAN AND PROFILE SHEETS

STA. 126+40 - IN PLACE
30" X 35' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
30" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 70 CU. YDS.

STA. 126+90 - IN PLACE
30" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +91
30" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 70 CU. YDS.

PI = 131+31.86
Δ = 02°07'45"LT.
D = 00°30'00"
T = 212.95'
L = 425.85'
PC = 129+18.91
PT = 133+44.76
NO SUPER

STA. 128+39 - IN PLACE
24" X 27' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +38
24" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 60 CU. YDS.

STA. 129+59 - IN PLACE
24" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 70 CU. YDS.

STA. 139+34 - IN PLACE
24" X 23' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 40 CU. YDS.

STATE OF ARKANSAS
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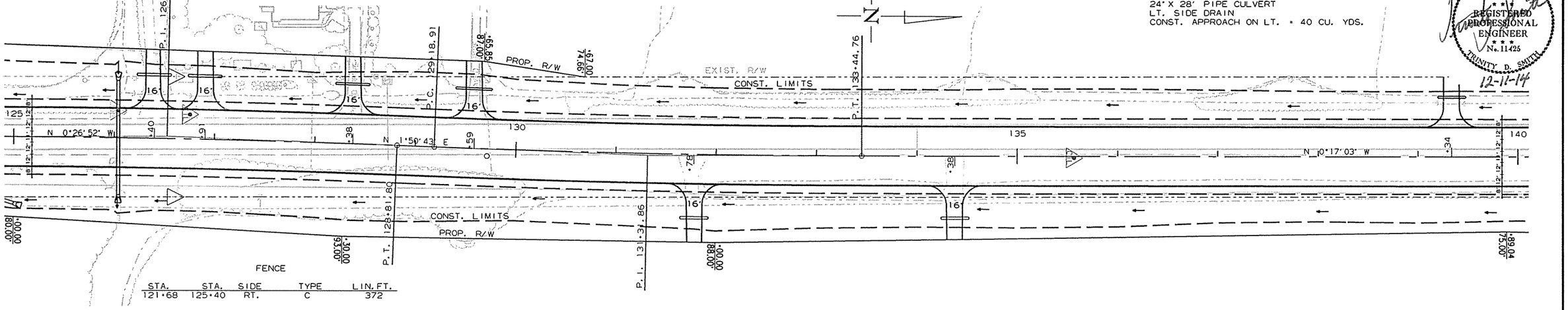
TRINITY D. SMITH
12-11-14



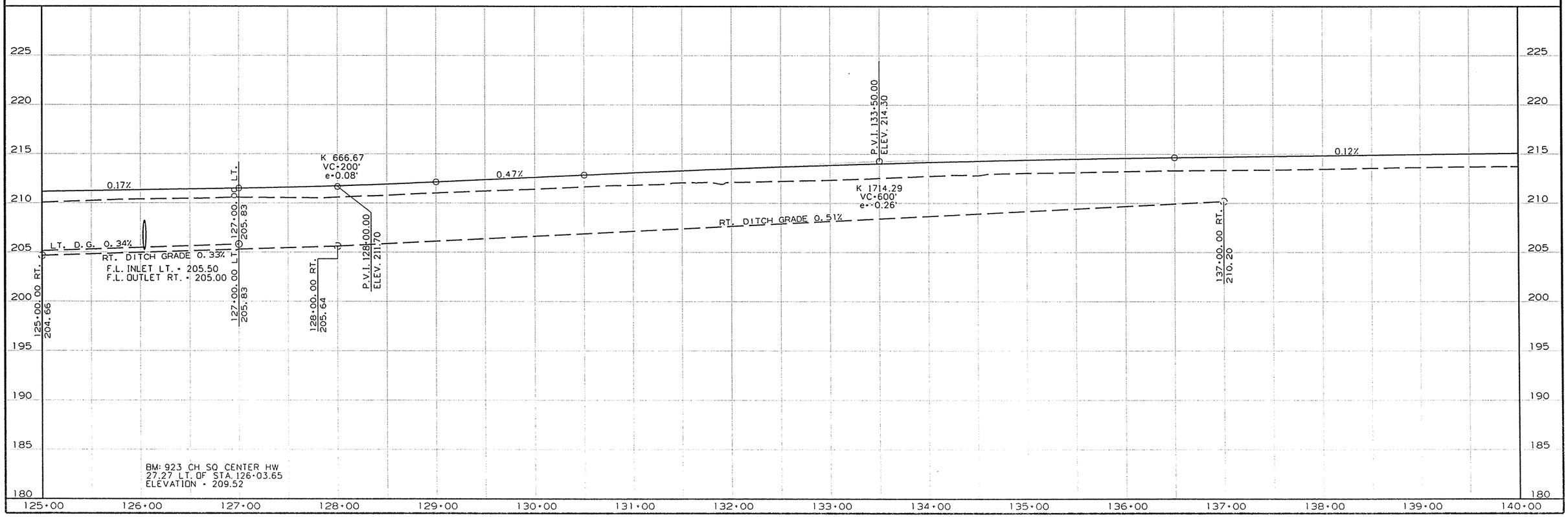
PI = 126+52.55
Δ = 02°17'34"RT.
D = 00°30'00"
T = 229.32'
L = 458.57'
PC = 124+23.23
PT = 128+81.80
NO SUPER

STA. 126+04 - IN PLACE
24" X 53' R.C. PIPE CULVERT
W/HDWLS LT. & RT.
REMOVE

STA. 126+04 - CONSTRUCT
36" X 114' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES ON LT. & RT.
Q50 = 53 CFS D.A. = 40 ACRES
36" R.C. PIPE CULVERT (CLASS III) = 114 LIN. FT.
36" FES = 2 EACH

STA. 131+75 - IN PLACE
30" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +78
30" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 60 CU. YDS.

STA. 134+38 - IN PLACE
30" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
30" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 45 CU. YDS.



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				JOB NO.		110217	108	348

(2) PLAN AND PROFILE SHEETS

STA. 146+44 - IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 45 CU. YDS.

STA. 153+19 - IN PLACE
5' X 3' x 46' R.C. BOX CULVERT
PLUG AND ABANDON

STA. 153+54 - CONSTRUCT
48" X 116' R.C. PIPE CULVERT
(CLASS IV) (TYPE 3 BEDDING)
W/ FES LT. & RT.
Q50 = 24 CFS D.A. = 70 ACRES
48" R.C. PIPE CULVERT (CLASS III) = 116 LIN. FT.
48" FLARED END SECTION = 2 EACH

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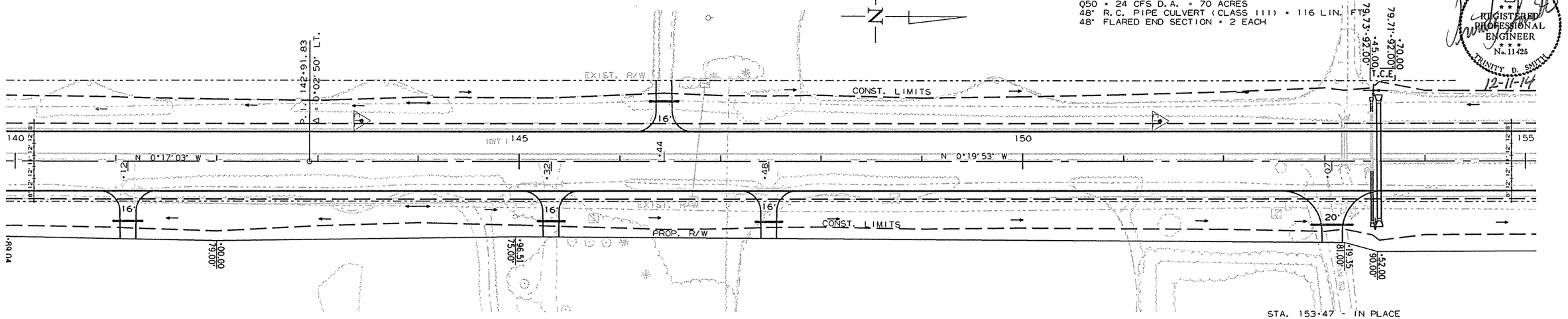


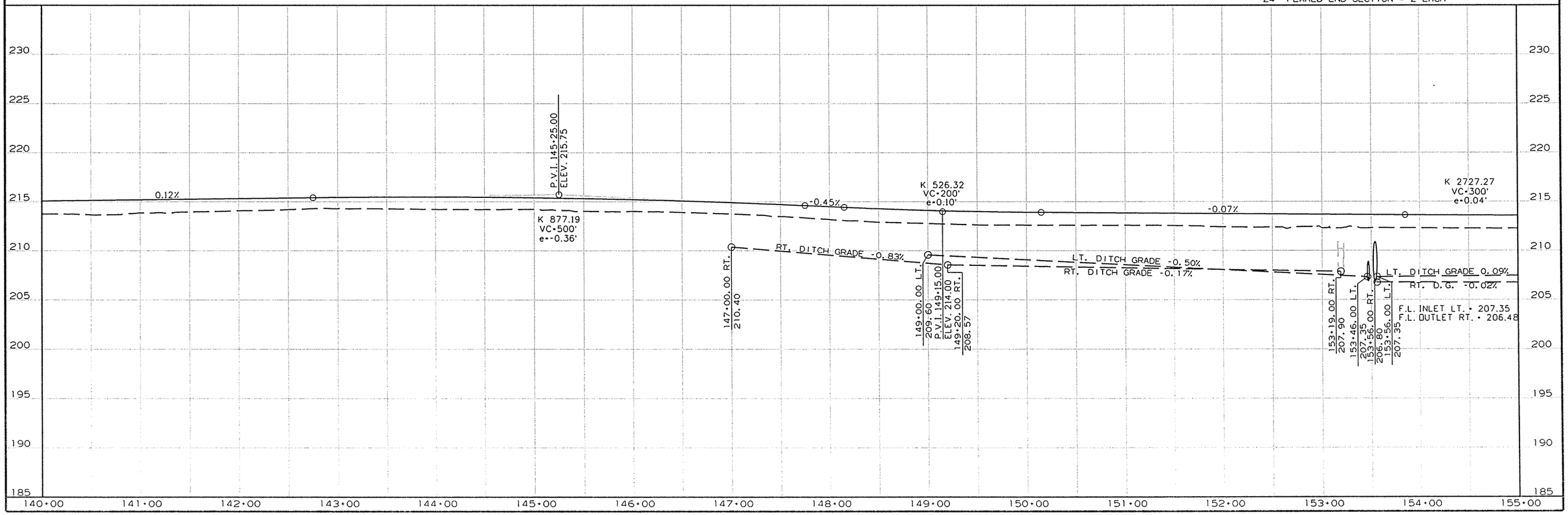
STA. 141+12 - IN PLACE
18" X 19' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 45 CU. YDS.

STA. 145+31 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ø +32
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 40 CU. YDS.

STA. 147+49 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ø +48
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 45 CU. YDS.

STA. 152+96 - IN PLACE
18" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ø 153+07
18" X 42' PIPE CULVERT
RT. SIDE DRAIN
CONST. TURNOUT ON RT. = 75 CU. YDS.

STA. 153+47 - IN PLACE
24" X 58' R.C. PIPE CULVERT
W/ HDWLS LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
8' LT. AND 50' RT.
TO A COMPLETED LENGTH OF 116'
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 24 CFS D.A. = 70 ACRES
CULVERT CLEAN OUT = 1 EACH
24" R.C. PIPE CULVERT (CLASS III) = 62 LIN. FT.
24" FLARED END SECTION = 2 EACH



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(2) PLAN AND PROFILE SHEETS

STA. 158+04 - IN PLACE
24' X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL ℄ +05
24' X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 50 CU. YDS.

STA. 159+45 - IN PLACE
6' X 3' x 46' R.C. BOX CULVERT
W/3:1 WINGS LT. & RT.
EXTEND 18' LT. AND
60' RT. 15° LT. FWD. SKEW
TO A COMPLETED LENGTH OF 124'
Q50 = 34 CFS D.A. = 17 ACRES
CULVERT CLEAN OUT = 1 EACH

STA. 162+65 - IN PLACE
24' X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL ℄ +66
24' X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 50 CU. YDS.

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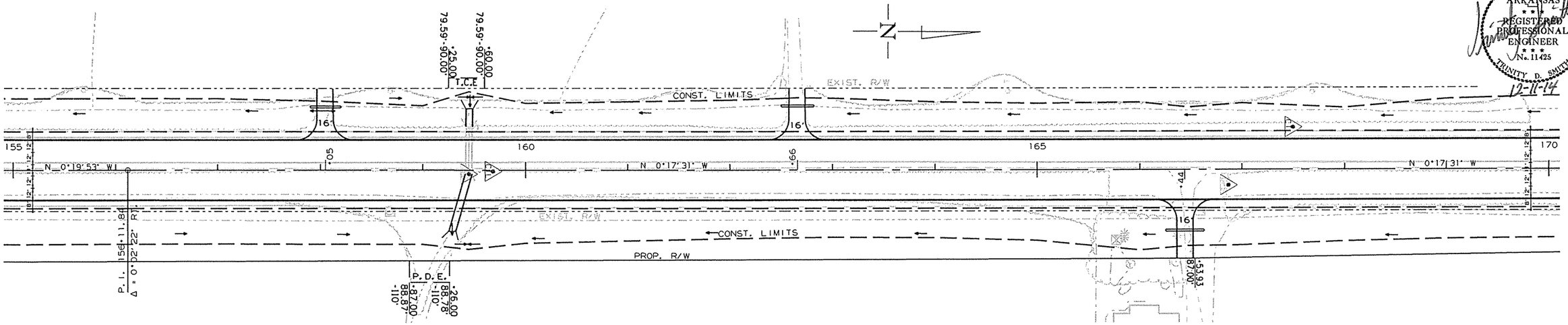
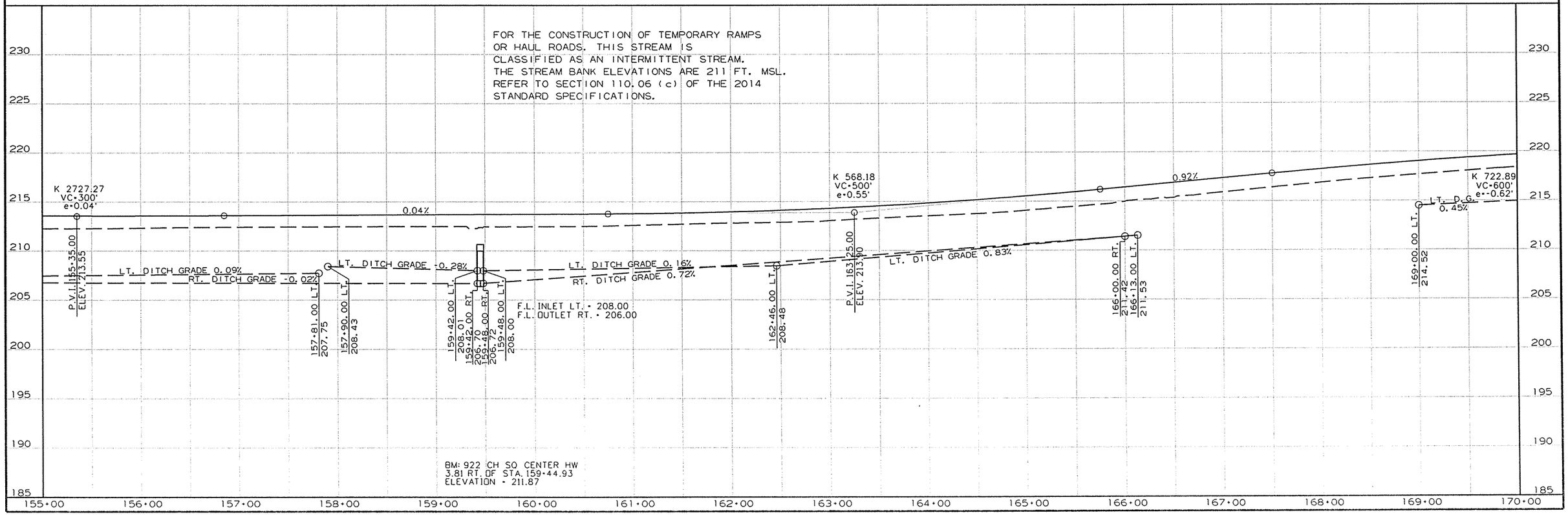


STA. 166+47 - IN PLACE
24' X 26' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ℄ +44
24' X 36' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 70 CU. YDS.

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 211 FT. MSL. REFER TO SECTION 110.06 (c) OF THE 2014 STANDARD SPECIFICATIONS.



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(2) PLAN AND PROFILE SHEETS

STA. 171+59 - IN PLACE
24' X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24' X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 60 CU. YDS.

STA. 180+01 - IN PLACE
18' X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18' X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT = 50 CU. YDS.

STA. 180+61 - IN PLACE
18' X 18' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18' X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 55 CU. YDS.

STA. 184+45 CONSTRUCT
TURNOUT ON LT. = 55 CU. YDS.

PI = 182+51.84
Δ = 00°21'22"LT.
D = 00°15'00"
T = 71.21'
L = 142.42'
PC = 181+80.64
PT = 183+23.05
NO SUPER

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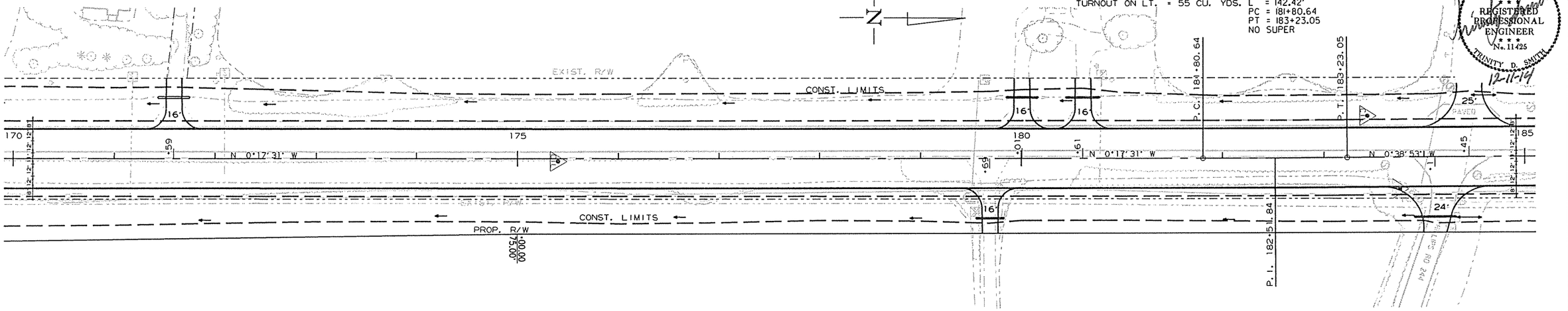
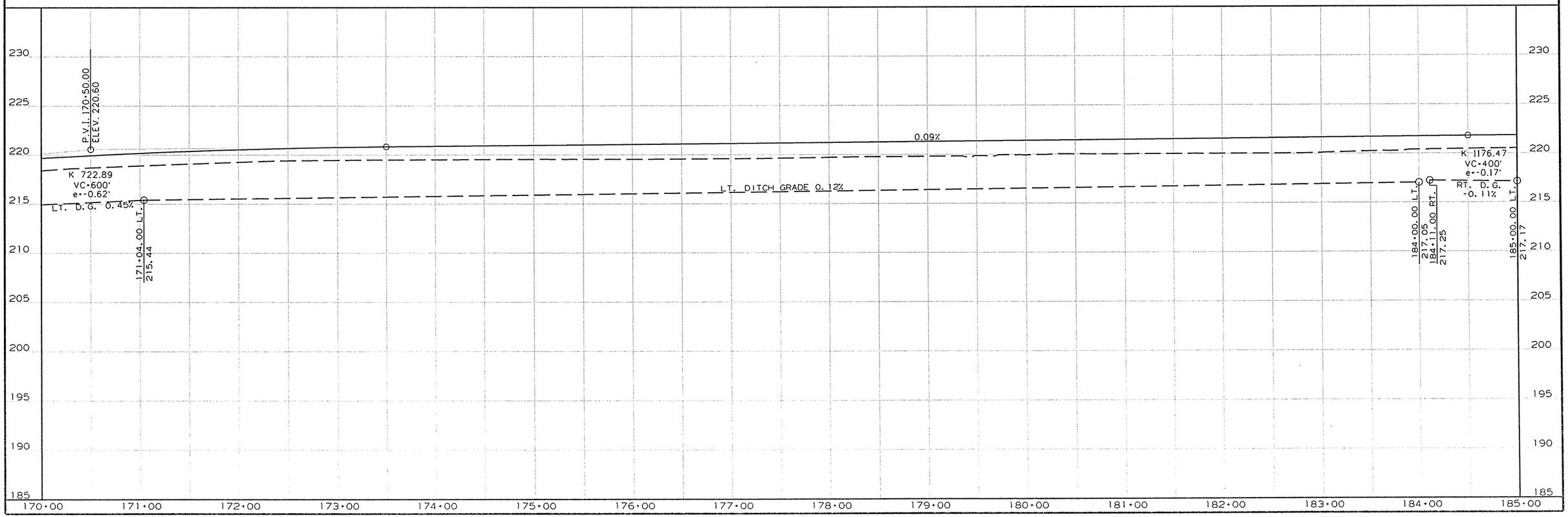


STA. 179+68 - IN PLACE
18' X 19' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ø+69
18' X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 40 CU. YDS.

STA. 184+11 INSTALL
18' X 42' PIPE CULVERT
RT. SIDE DRAIN
TURNOUT ON RT. = 60 CU. YDS.



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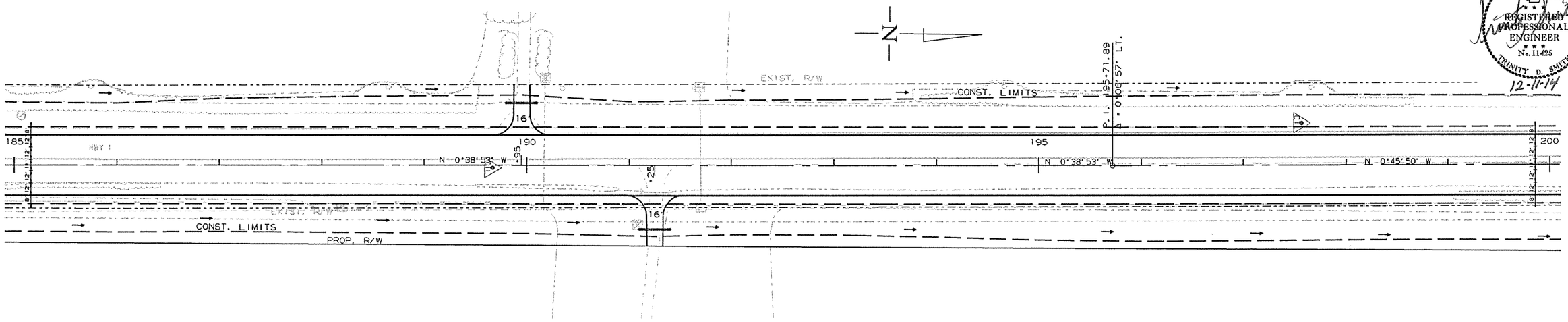
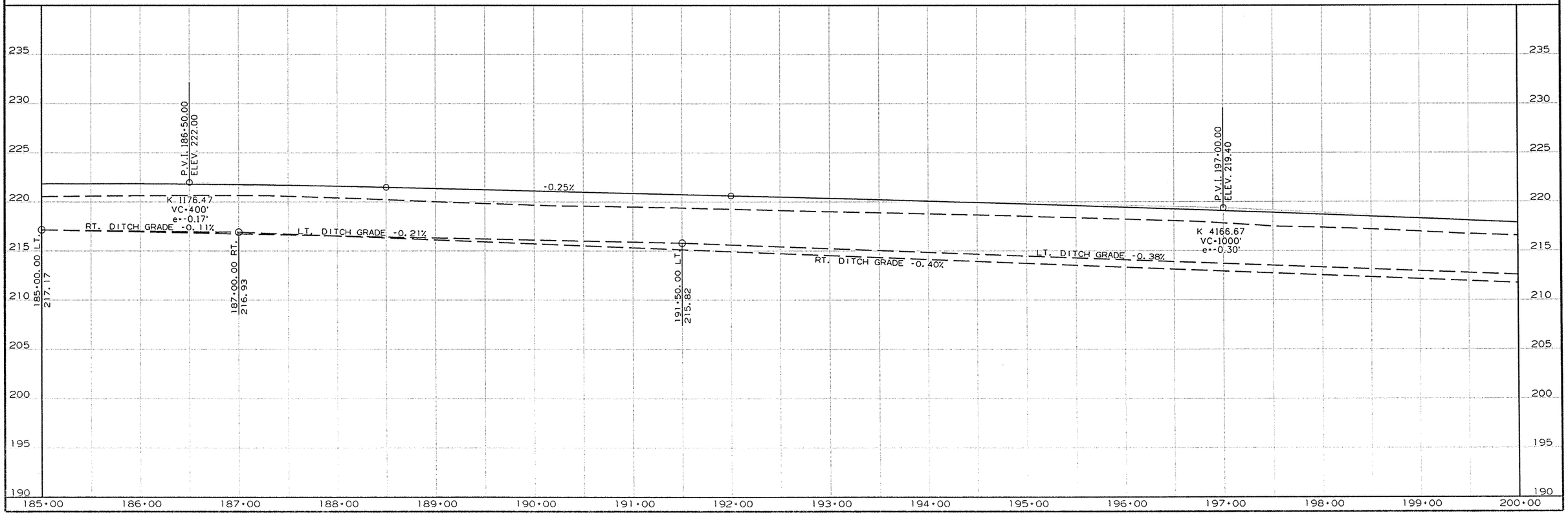
STA. 189+97 - IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +95
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 50 CU. YDS.



STA. 191+26 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +25
18" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 55 CU. YDS.



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(2) PLAN AND PROFILE SHEETS

STA. 201+25 - IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +26
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 50 CU. YDS.

STA. 208+40 - IN PLACE
24" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 60 CU. YDS.

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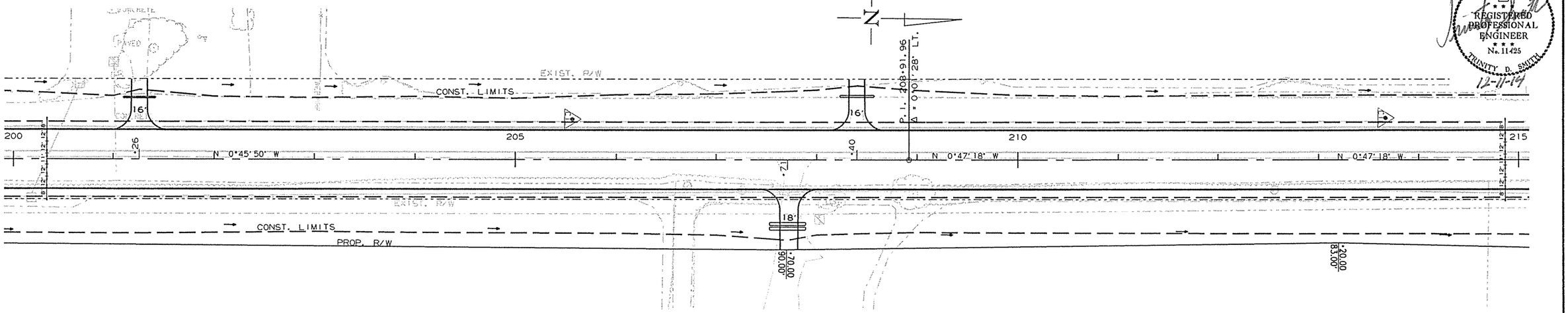
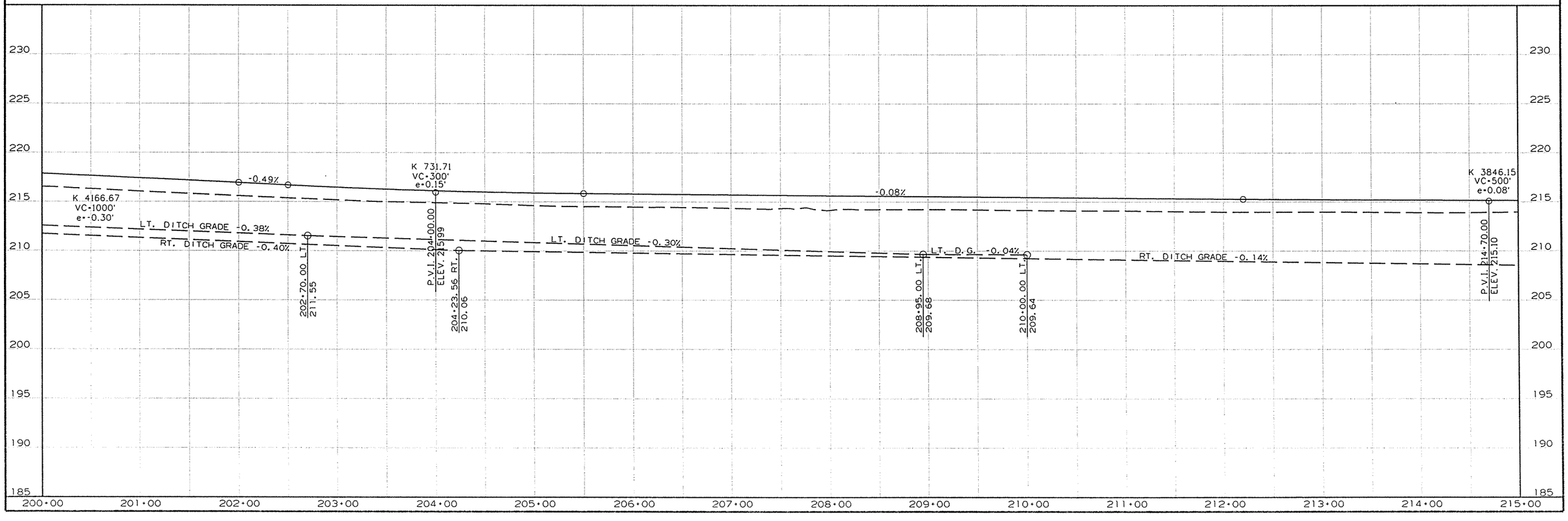


STA. 207+75 - IN PLACE
30" X 30' C.M. PIPE CULVERT
36" X 31' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +71
DBL. 36" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 105 CU. YDS.



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(2) PLAN AND PROFILE SHEETS

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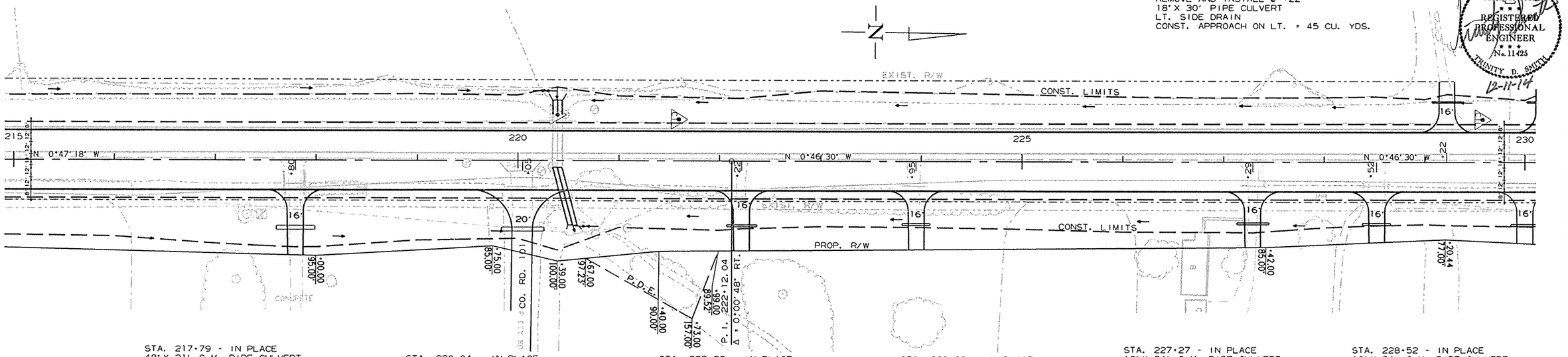
STA. 220+39 - IN PLACE
DBL. 4' X 2' x 52' R.C. BOX CULVERT
W/3:1 WINGS LT. & RT.
RETAIN & EXTEND 16' LT. AND
60' RT. ON 15° RT. FWD. SKEW
TO A COMPLETED LENGTH OF 128'
Q50 = 72 CFS D.A. = 60 ACRES

STA. 229+23 - IN PLACE
18' X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +22
18' X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 45 CU. YDS.



STA. 217+79 - IN PLACE
48' X 21' C.M. PIPE CULVERT
W/RETAINING WALLS LT. & RT.
RT. SIDE DRAIN
REMOVE AND INSTALL @ +80
48' X 42' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 145 CU. YDS.

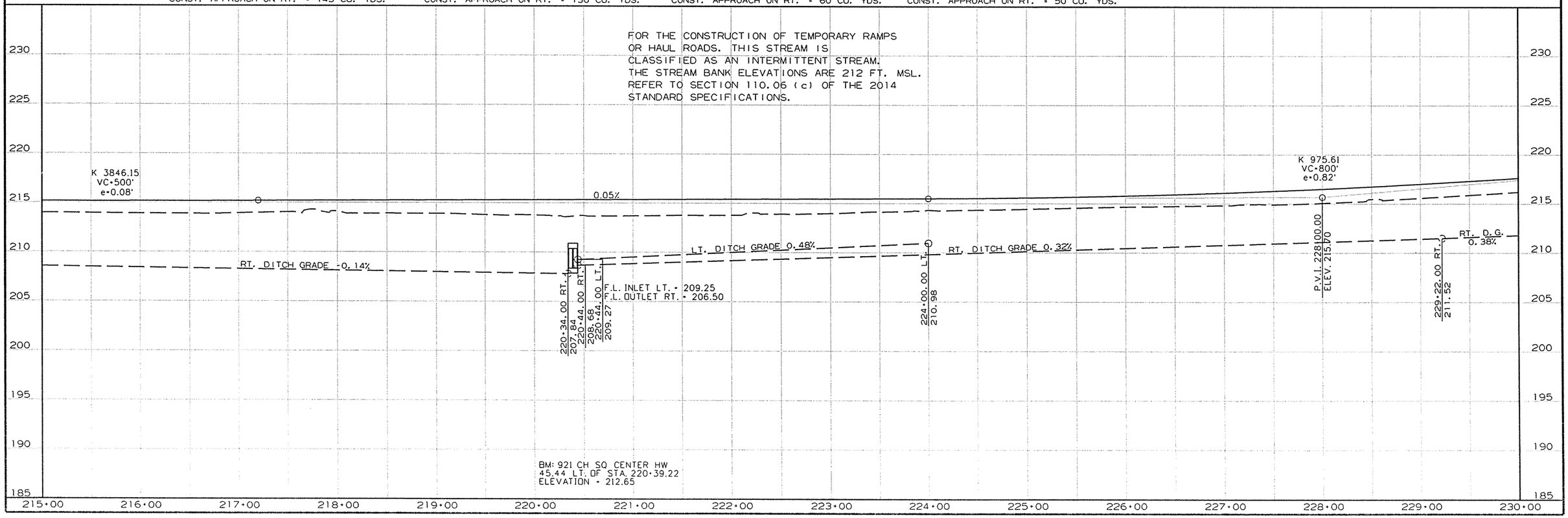
STA. 220+04 - IN PLACE
36' X 30' X 30' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +05
48' X 46' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 130 CU. YDS.

STA. 222+22 - IN PLACE
18' X 16' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24' X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 60 CU. YDS.

STA. 223+93 - IN PLACE
18' X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +95
24' X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 50 CU. YDS.

STA. 227+27 - IN PLACE
18' X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +29
24' X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 55 CU. YDS.

STA. 228+52 - IN PLACE
18' X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24' X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 30 CU. YDS.



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(2) PLAN AND PROFILE SHEETS

STA. 230+19 - IN PLACE
18" X 24' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 55 CU. YDS.

STA. 233+58 - IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 60 CU. YDS.

STA. 241+06 - IN PLACE
24" X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +08
24" X 36' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 55 CU. YDS.

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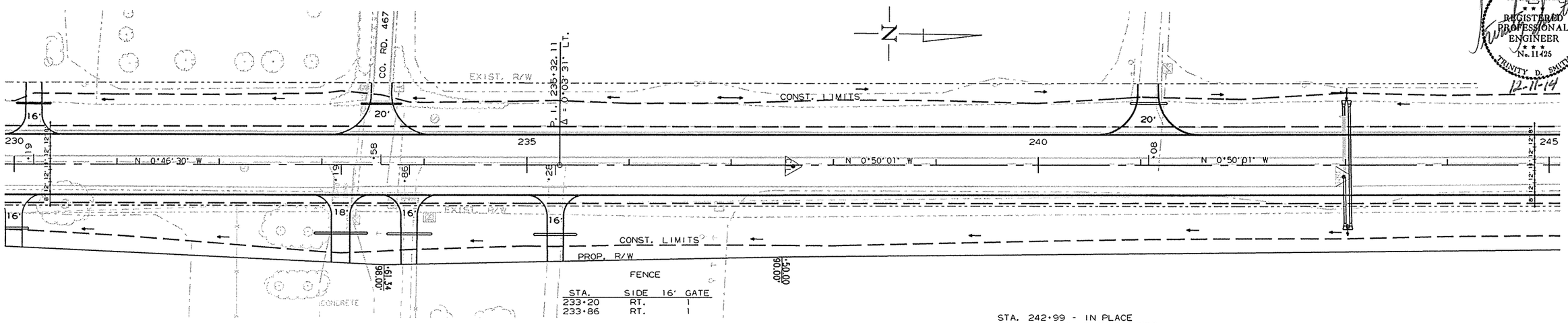


STA. 230+00 - CONSTRUCT
24" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 40 CU. YDS.

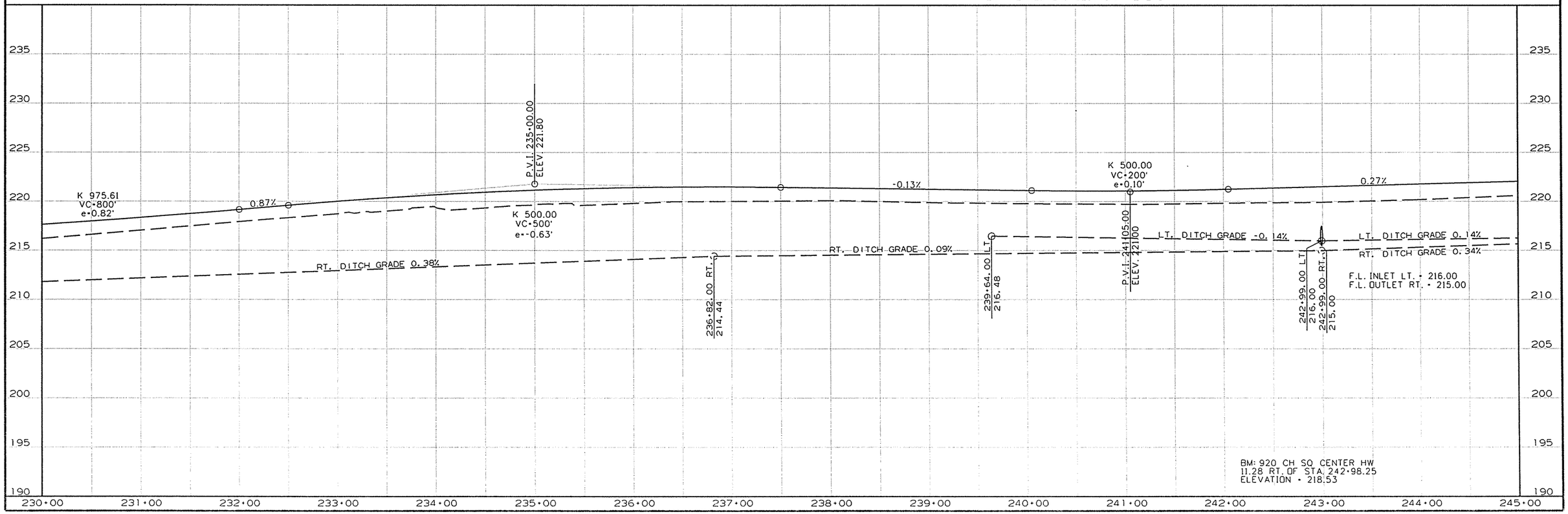
STA. 233+19 - IN PLACE
18" X 36' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 50' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 175 CU. YDS.

STA. 233+86 - IN PLACE
18" X 26' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 140 CU. YDS.

STA. 235+27 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +28
24" X 42' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 125 CU. YDS.

STA. 242+99 - IN PLACE
24" x 60' R.C. PIPE CULVERT
W/HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
10' LT. AND 46' RT.
TO A COMPLETED LENGTH OF 116'
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 58 CFS D.A. = 42 ACRES
CULVERT CLEAN OUT = 1 EACH
24" R.C. PIPE CULVERT (CLASS III) = 60 LIN. FT.
24" FLARED END SECTION = 2 EACH

STA. 243+04 - CONSTRUCT
24" X 114' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 58 CFS D.A. = 42 ACRES
24" R.C. PIPE CULVERT (CLASS III) = 114 LIN. FT.
24" FLARED END SECTION = 2 EACH



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(2) PLAN AND PROFILE SHEETS

STA. 255+78 - IN PLACE
18" X 20' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +79
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 45 CU. YDS.

STA. 258+20 INSTALL
18" X 54' PIPE CULVERT
LT. SIDE DRAIN
APPROACH ON LT. = 95 CU. YDS.

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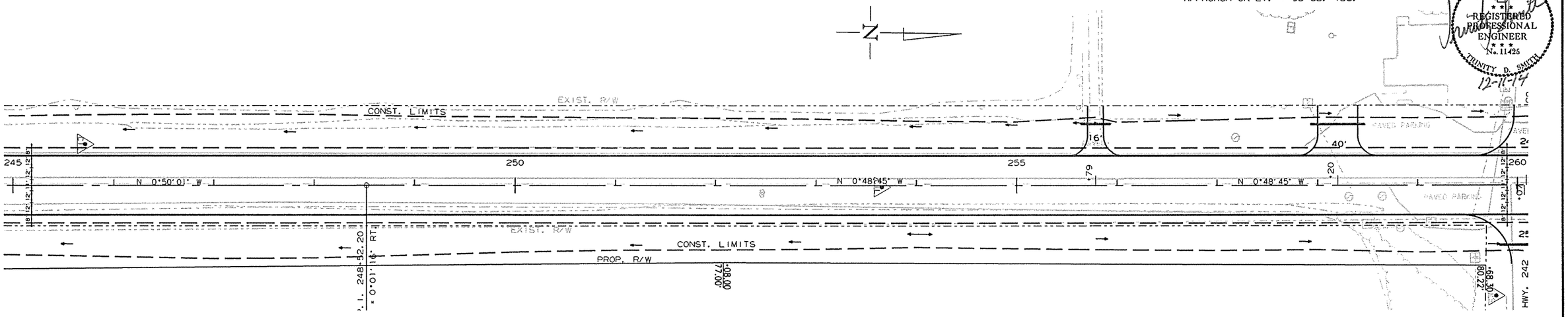

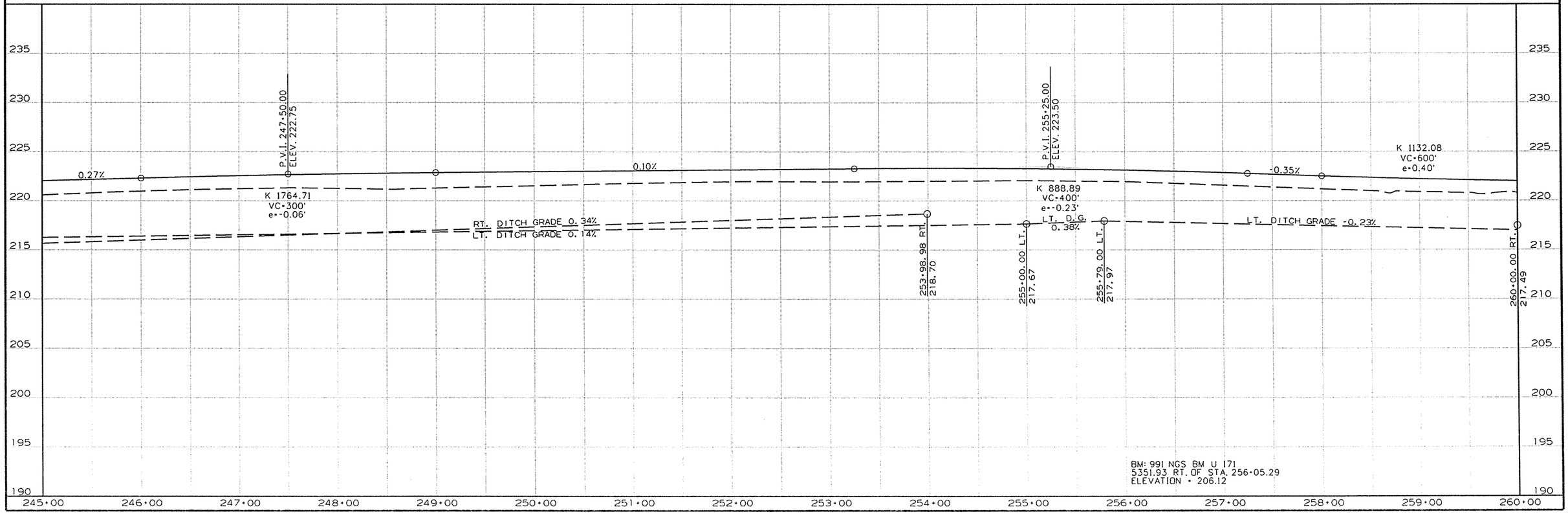

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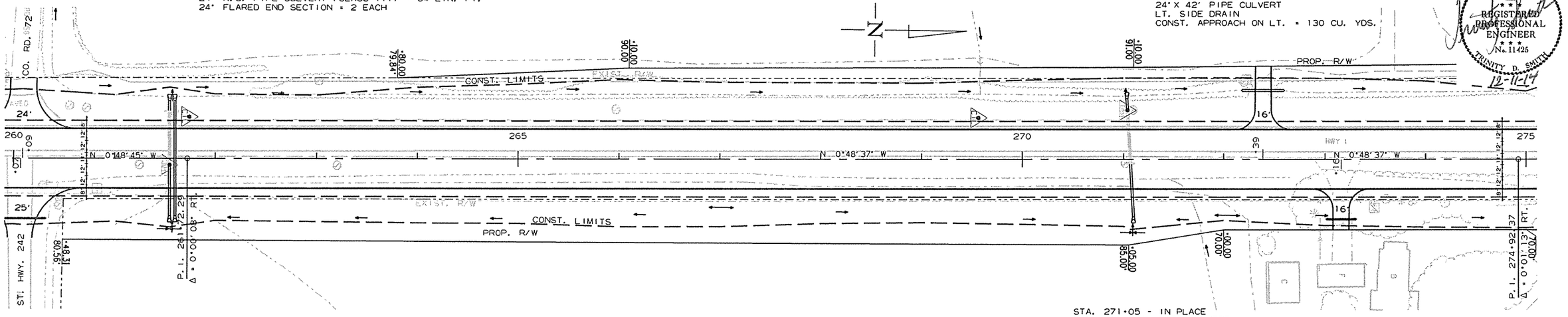
STA. 260+09 CONSTRUCT
TURNOUT ON LT. = 70 CU. YDS.

STA. 261+55 - IN PLACE
24" x 54' R.C. PIPE CULVERT
W/HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
10' LT. AND 50' RT.
TO A COMPLETED LENGTH OF 114'
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 24 CFS D.A. = 30 ACRES
CULVERT CLEAN OUT = 1 EACH
24" R.C. PIPE CULVERT (CLASS III) = 64 LIN. FT.
24" FLARED END SECTION = 2 EACH

STA. 269+58 - IN PLACE
18" X 21' C.P. PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 272+39 - IN PLACE
24" X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 130 CU. YDS.

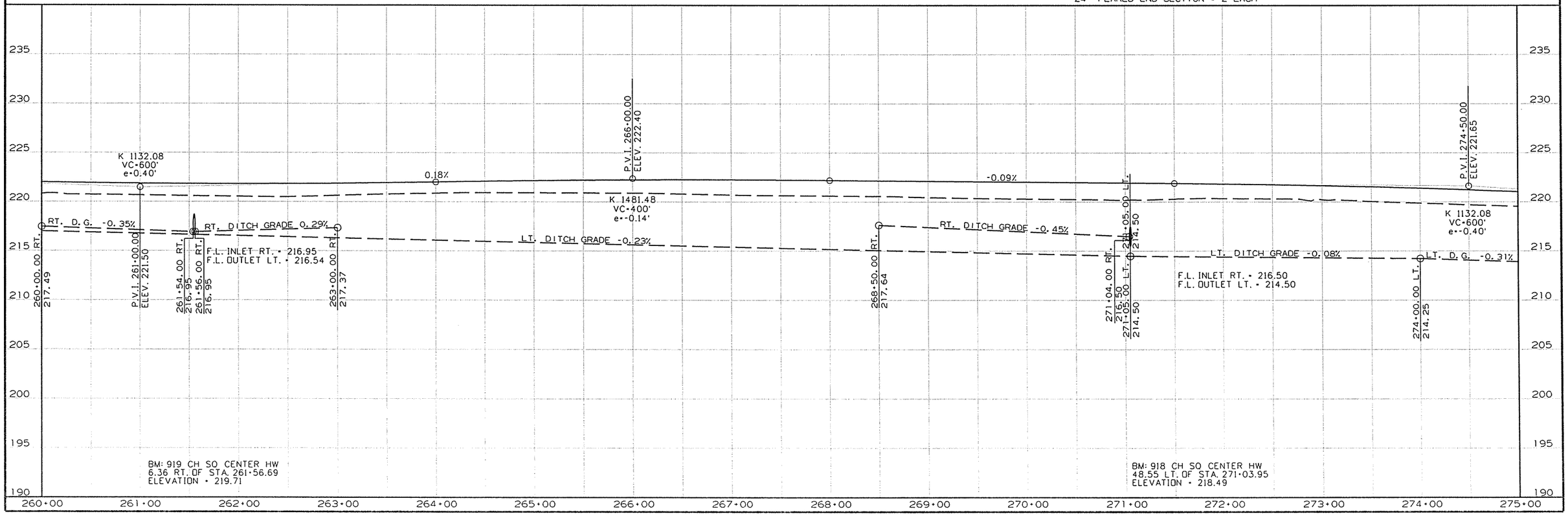


STA. 260+08 - IN PLACE
18" X 166' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +07
18" X 50' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 80 CU. YDS.

STA. 261+60 - CONSTRUCT
24" X 114' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 24 CFS D.A. = 30 ACRES
24" R.C. PIPE CULVERT (CLASS III) = 114 LIN. FT.
24" FLARED END SECTION = 2 EACH

STA. 271+05 - IN PLACE
24" x 54' R.C. PIPE CULVERT
W/HDWLS. LT. & RT.
REMOVE HDWLS LT. AND RT. AND EXTEND R.C. PIPE
12' LT. AND 52' RT.
TO A COMPLETED LENGTH OF 118'
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 13 CFS D.A. = 16 ACRES
CULVERT CLEAN OUT = 1 EACH
24" R.C. PIPE CULVERT (CLASS III) = 68 LIN. FT.
24" FLARED END SECTION = 2 EACH

STA. 273+16 INSTALL
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
APPROACH ON RT. = 40 CU. YDS.



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STA. 275+38 - IN PLACE
30" X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +34
30" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 145 CU. YDS.

STA. 283+21 - IN PLACE
8' X 3' x 57' R.C. BOX CULVERT
W/3: 1 WINGS LT. & RT.
RETAIN & EXTEND 12' LT. AND 52' RT.
TO A COMPLETED LENGTH OF 121'
Q50 = 168 CFS D.A. = 147 ACRES
CULVERT CLEAN OUT = 1 EACH

STA. 287+07 - IN PLACE
24" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +06
29" X 18" X 36' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 90 CU. YDS.

STA. 287+94 - IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +95
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 75 CU. YDS.

STA. 289+68 - IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +61
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 65 CU. YDS.

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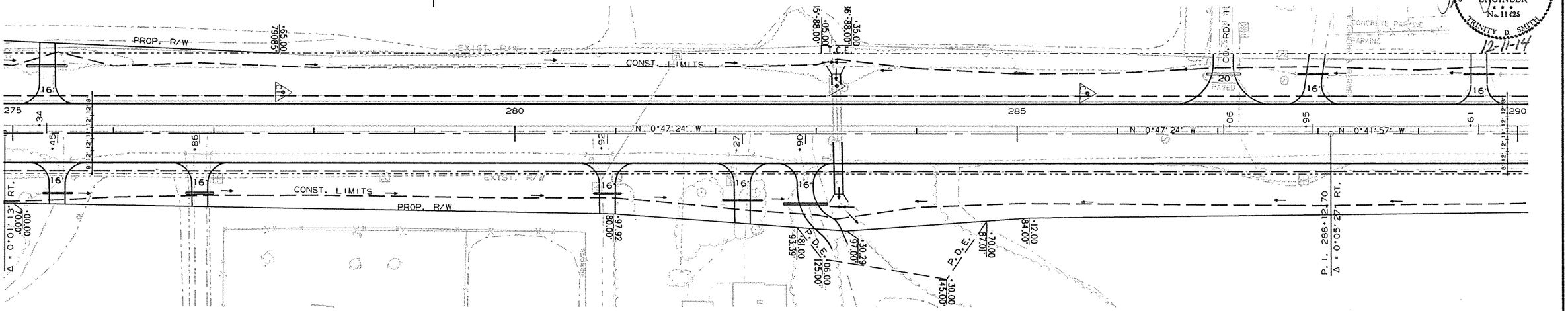


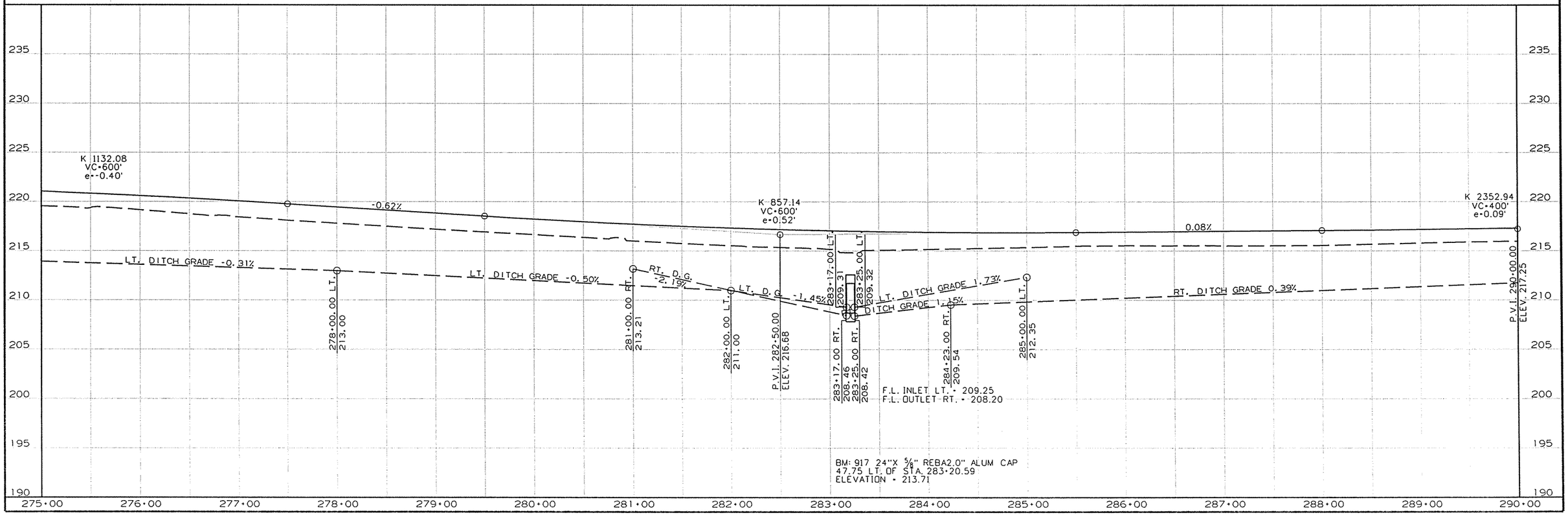
STA. 275+45 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 45 CU. YDS.

STA. 276+86 - IN PLACE
24" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
29" X 18" X 28' ARCH PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 40 CU. YDS.

STA. 280+85 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +92
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 35 CU. YDS.

STA. 282+27 - IN PLACE
18" X 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 40' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 90 CU. YDS.

STA. 282+94 - IN PLACE
24" X 26' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +90
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 170 CU. YDS.



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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.		110217	118	348

(2) PLAN AND PROFILE SHEETS

STA. 296+49 - IN PLACE
18" X 29' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +47
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 90 CU. YDS.

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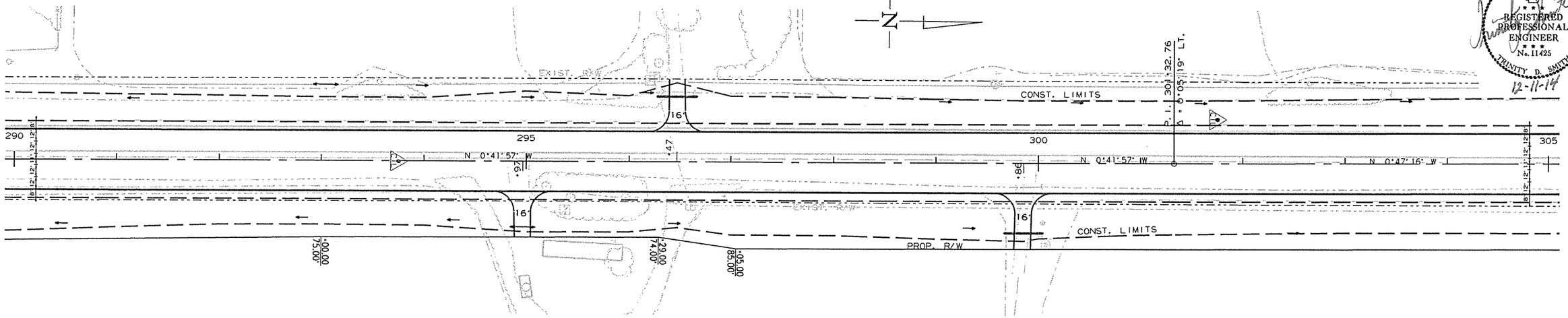
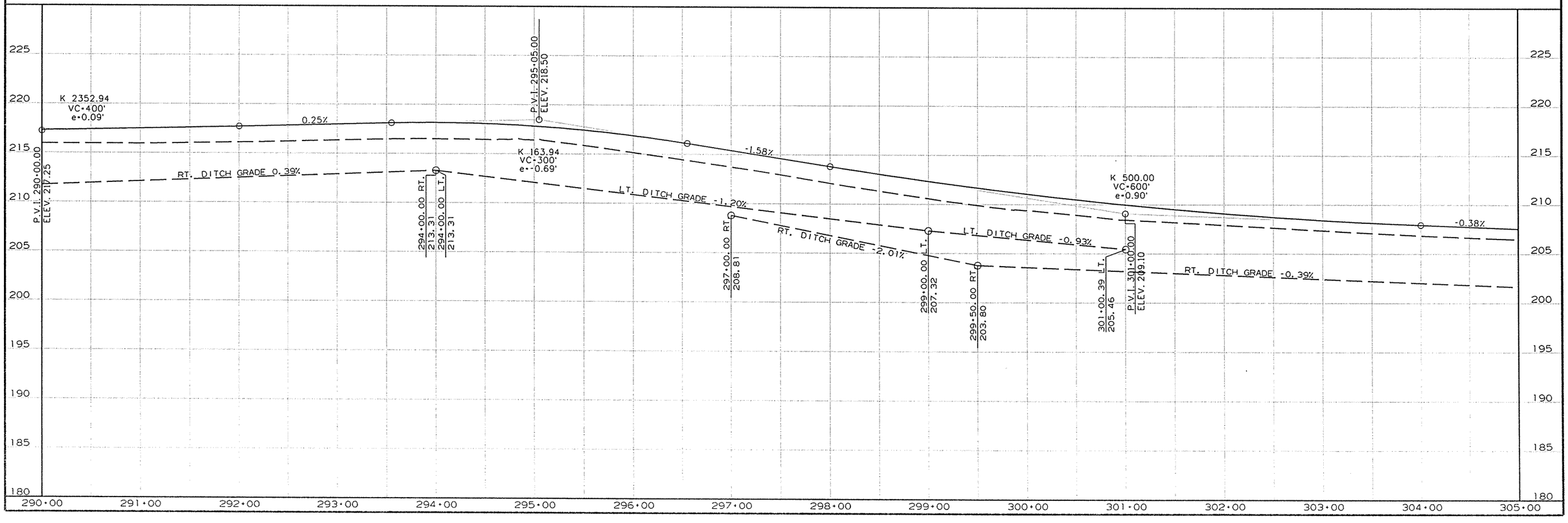


STA. 294+97 CONSTRUCT
APPROACH ON RT. = 55 CU. YDS.

STA. 299+94 - IN PLACE
18" X 22' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +86
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 90 CU. YDS.



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				6	ARK.			
				JOB NO.		110217	119	348
				(2) PLAN AND PROFILE SHEETS				

STA. 309+89 - IN PLACE
24' X 29' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +90
29' X 18' X 36' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 50 CU. YDS.

STA. 315+04 - IN PLACE
24' X 54' R.C. PIPE CULVERT
W/HDWLS. LT. & RT.
PLUG AND ABANDON

STA. 315+20 - CONSTRUCT
DBL. 42" X 114' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 45 CFS D.A. = 33 ACRES
24" R.C. PIPE CULVERT (CLASS III) = 228 LIN. FT.
24" FLARED END SECTION = 4 EACH

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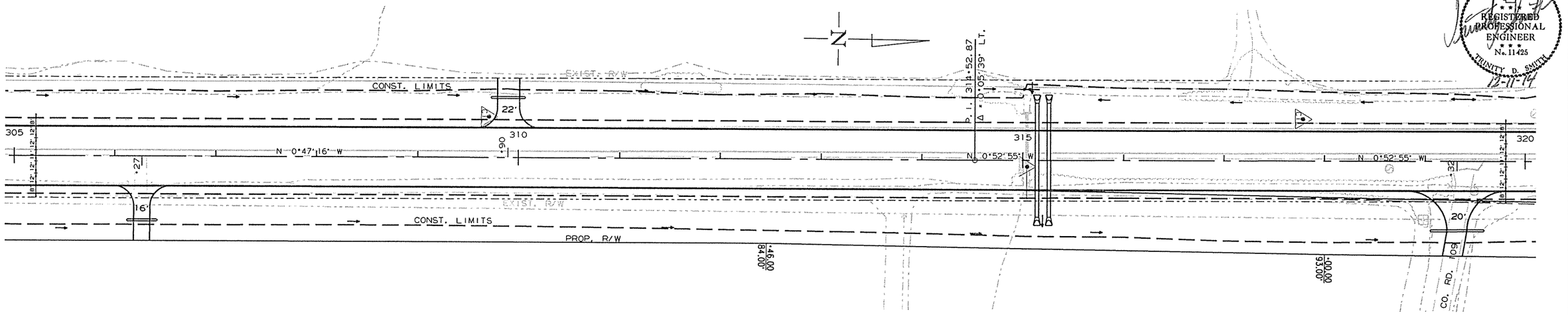
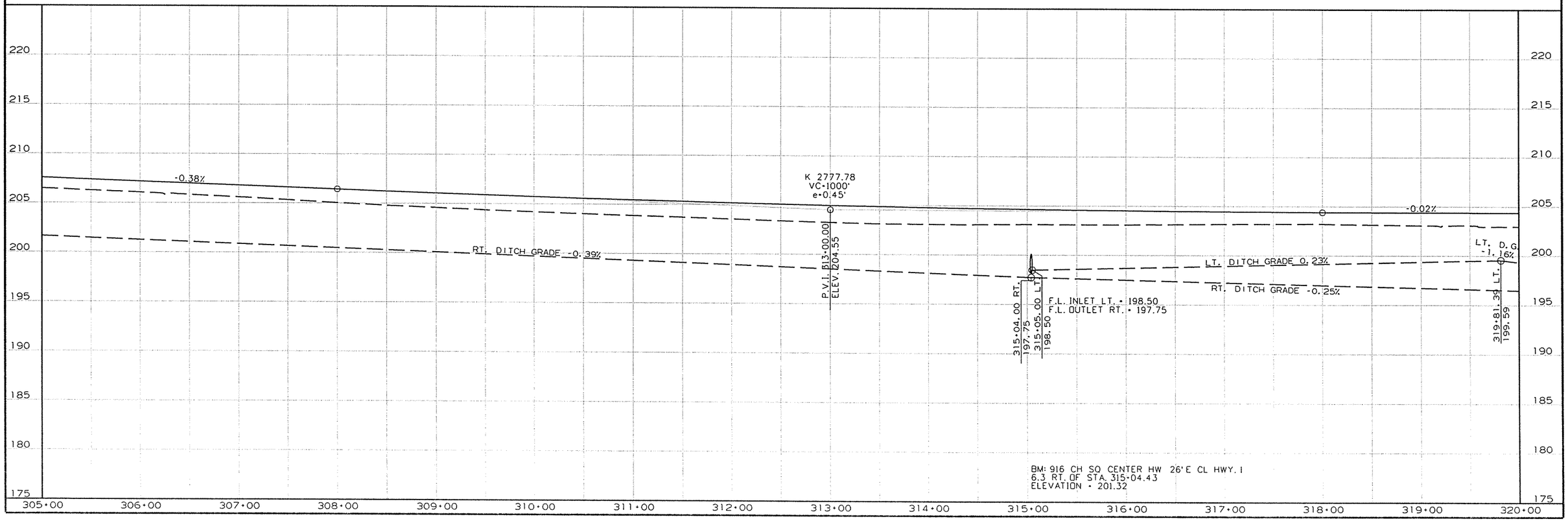


STA. 306+26 - IN PLACE
24' X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +27
24' X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 70 CU. YDS.

STA. 319+38 - IN PLACE
24' X 26' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +32
24' X 54' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 255 CU. YDS.



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				6	ARK.			
				JOB NO.		110217	120	348
				(2) PLAN AND PROFILE SHEETS				

STA. 320+49 - IN PLACE
24' X 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24' X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 60 CU. YDS.

STA. 325+66 - IN PLACE
24' X 46' C.M. PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 332+12 - IN PLACE
36' X 24' C.M. PIPE CULVERT 226' LT.
LT. SIDE DRAIN
RETAIN

STA. 332+19 - INSTALL
18' X 44' PIPE CULVERT
LT. SIDE DRAIN
APPROACH ON LT. = 290 CU. YDS.

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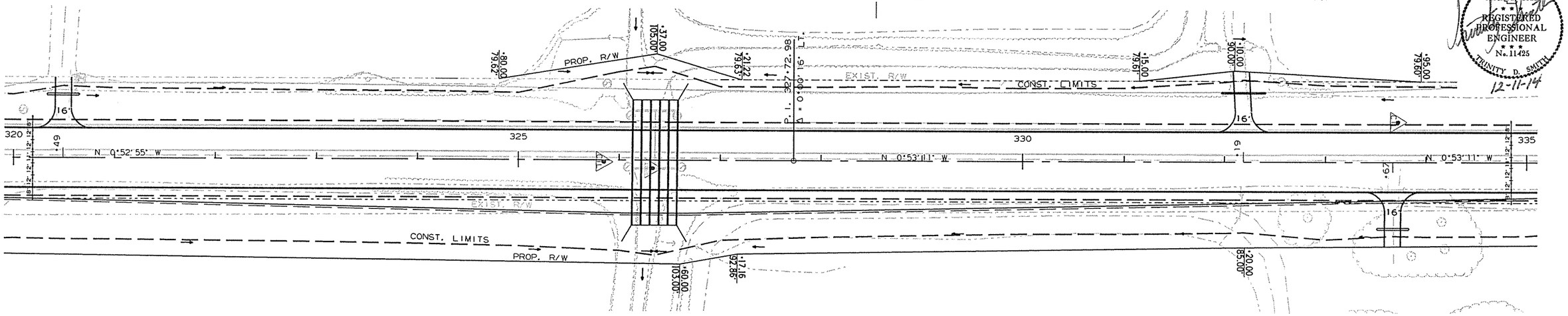


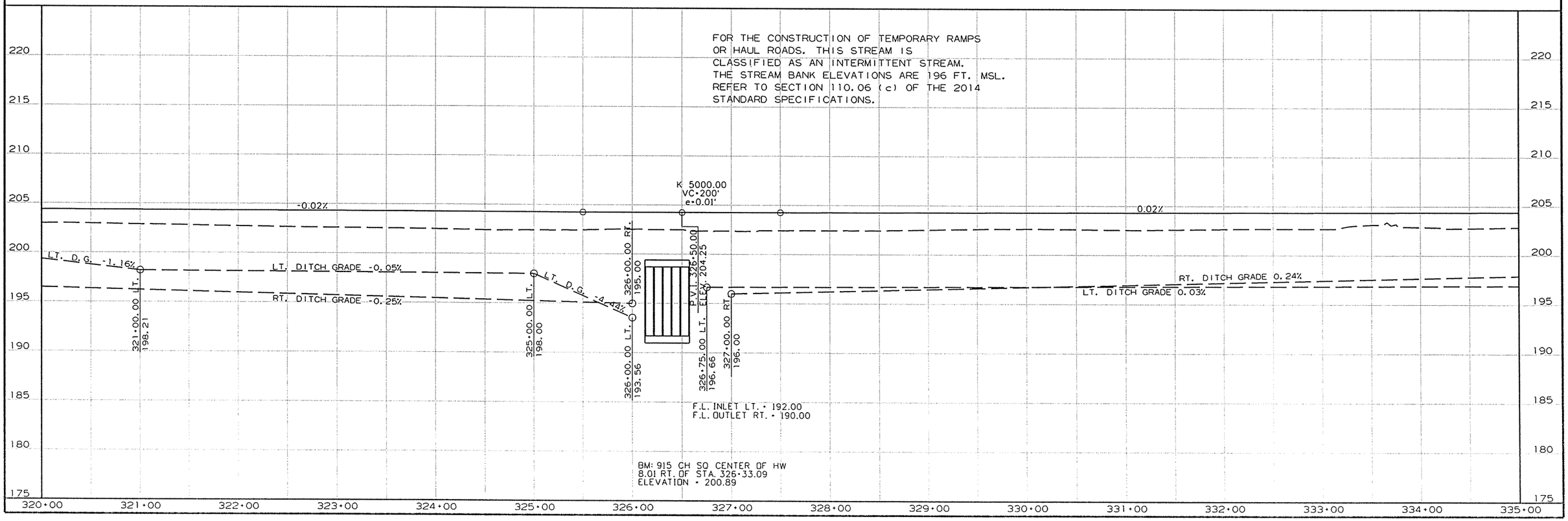
STA. 326+35 CONSTRUCT
QUINT. 8' X 7' X 128' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
Q50 = 1800 CFS D.A. = 5.7 SQ. MILES
SPAN = 35.75'

STA. 326+35 IN PLACE
QUINT. 8' X 4' X 56' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
REMOVE

STA. 332+16 - IN PLACE
18' X 30' STEEL PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 333+68 - IN PLACE
24' X 20' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +67
24' X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 135 CU. YDS.

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 196 FT. MSL. REFER TO SECTION 110.06 (c) OF THE 2014 STANDARD SPECIFICATIONS.



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				(2) PLAN AND PROFILE SHEETS				

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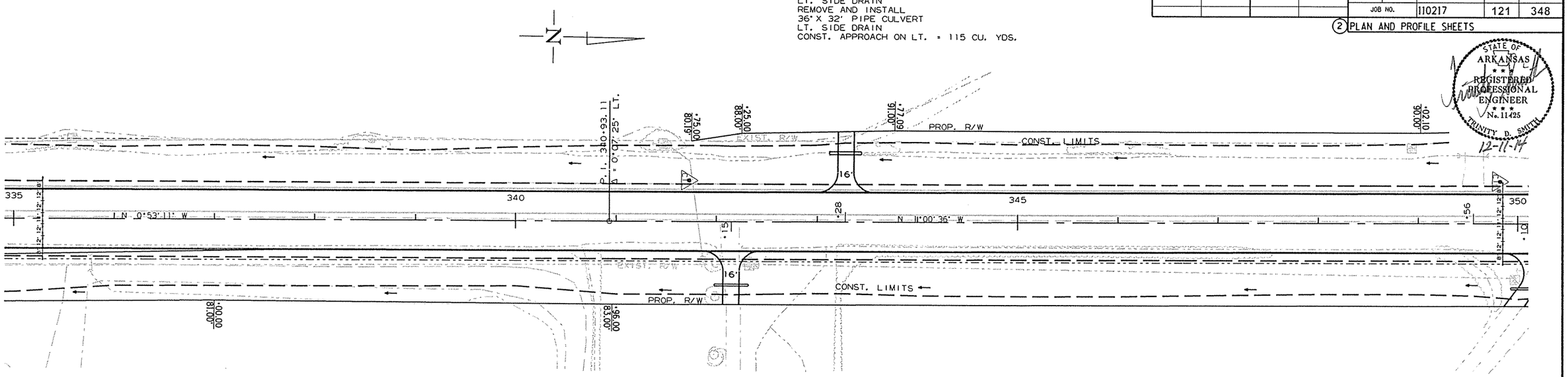
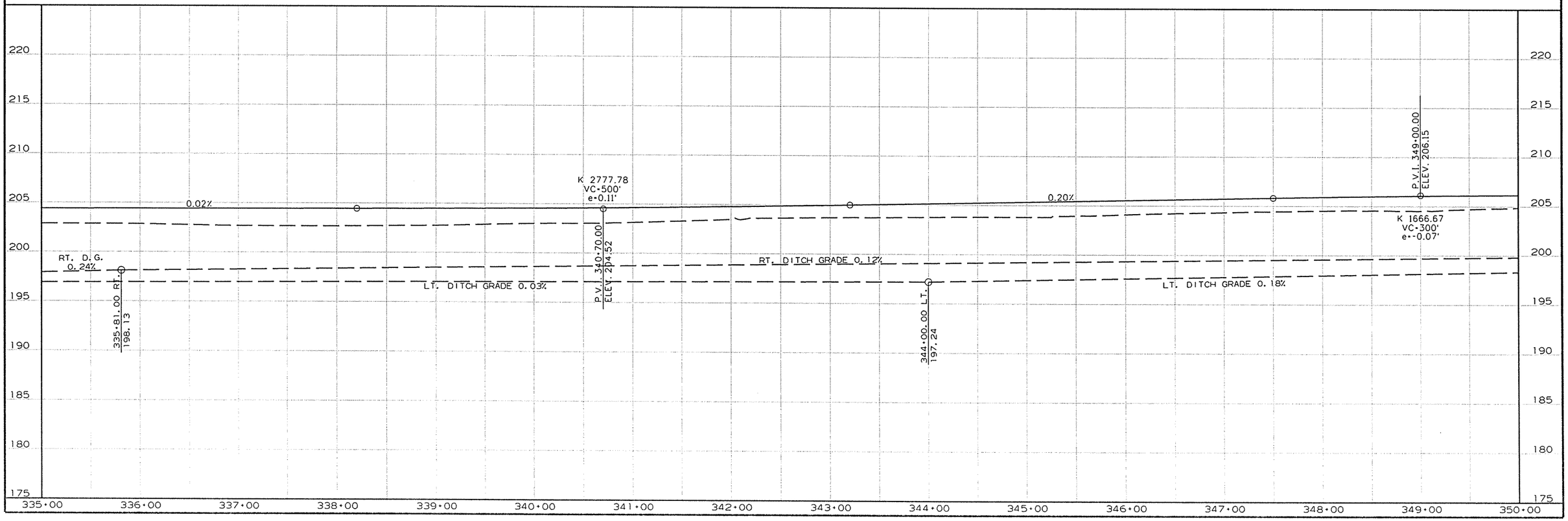
STA. 343+28 - IN PLACE
36" X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
36" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 115 CU. YDS.

STA. 335+77 - IN PLACE
18" X 13' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 342+14 - IN PLACE
24" X 26' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ℄ +15
24" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 70 CU. YDS.





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				JOB NO.		110217	122	348

(2) PLAN AND PROFILE SHEETS

STA. 349+57 - IN PLACE
30' X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL ⌀350+55
30' X 46' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 145 CU. YDS.

STA. 364+36 - CONSTRUCT
APPROACH ON LT. = 80 CU. YDS.

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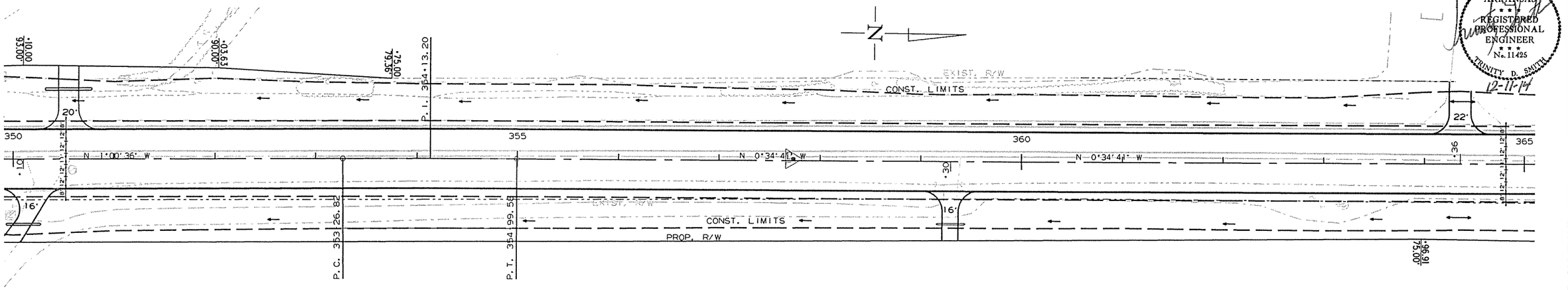
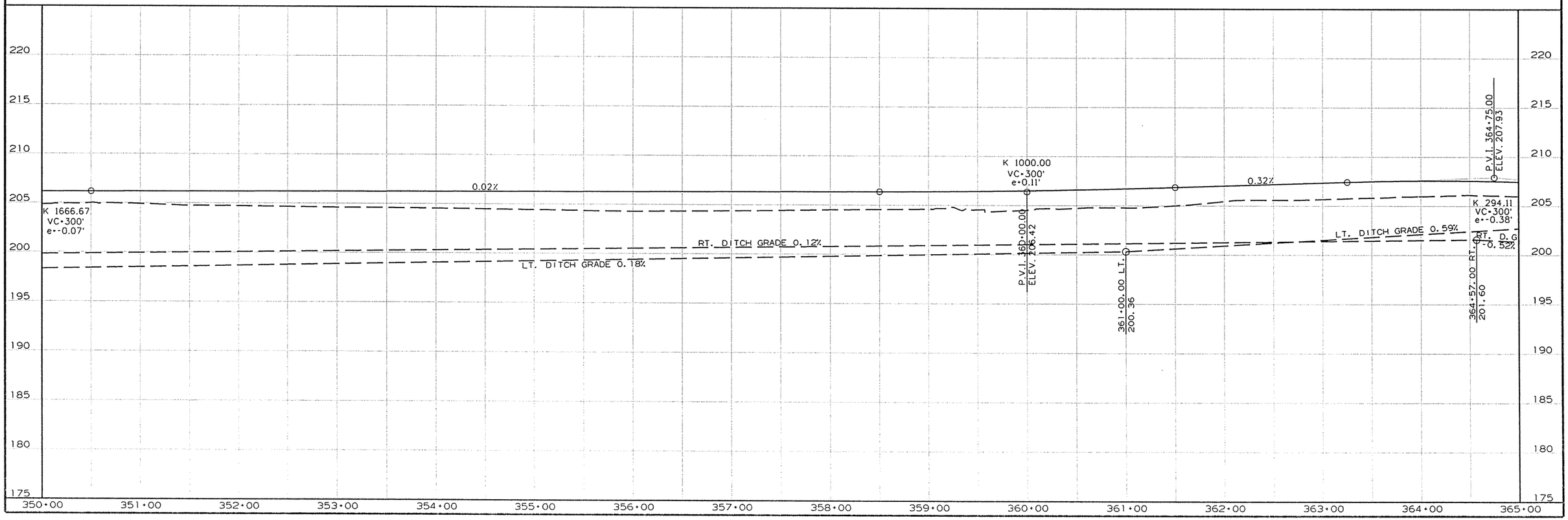


STA. 350+30 - IN PLACE
24' X 32' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ⌀ +10
24' X 34' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 60 CU. YDS.

PI = 354+13.20
Δ = 00°25'55"RT.
D = 00°15'00"
T = 86.38'
L = 172.77'
PC = 353+26.82
PT = 354+99.58
NO SUPER

STA. 359+29 - IN PLACE
18' X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL ⌀ +30
18' X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 40 CU. YDS.



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(2) PLAN AND PROFILE SHEETS

STA. 367+98 - IN PLACE
24" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +97
24" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON RT. = 50 CU. YDS.

STA. 370+86 - IN PLACE
18" X 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +88
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 45 CU. YDS.

STA. 372+71 - IN PLACE
5' X 2' x 49' R.C. BOX CULVERT
W/3:1 WINGS LT. & RT.
REMOVE

STA. 372+71 - CONSTRUCT
DBL. 36" X 114' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 131 CFS D.A. = 100 ACRES
36" R.C. PIPE CULVERT (CLASS III) = 228 LIN. FT.
36" FLARED END SECTION = 4 EACH

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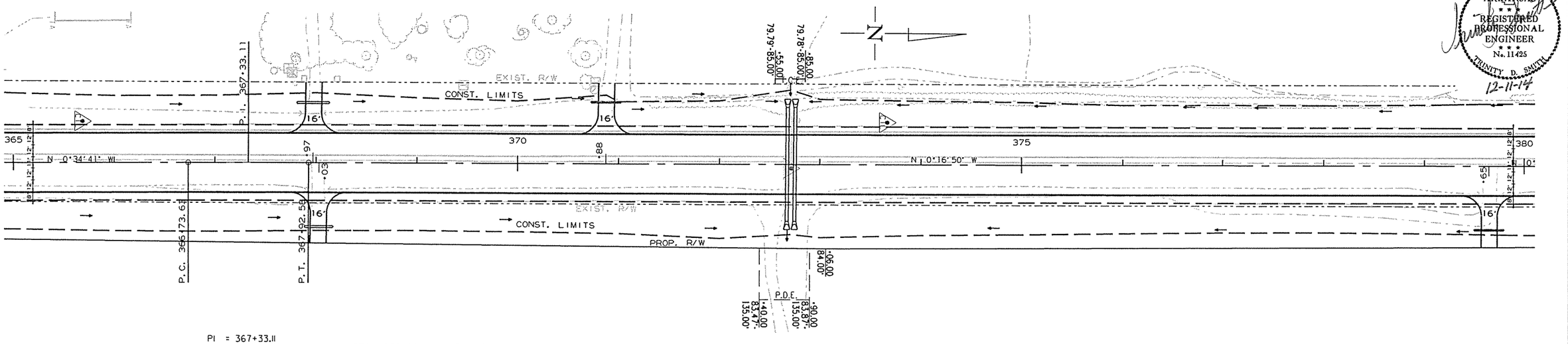
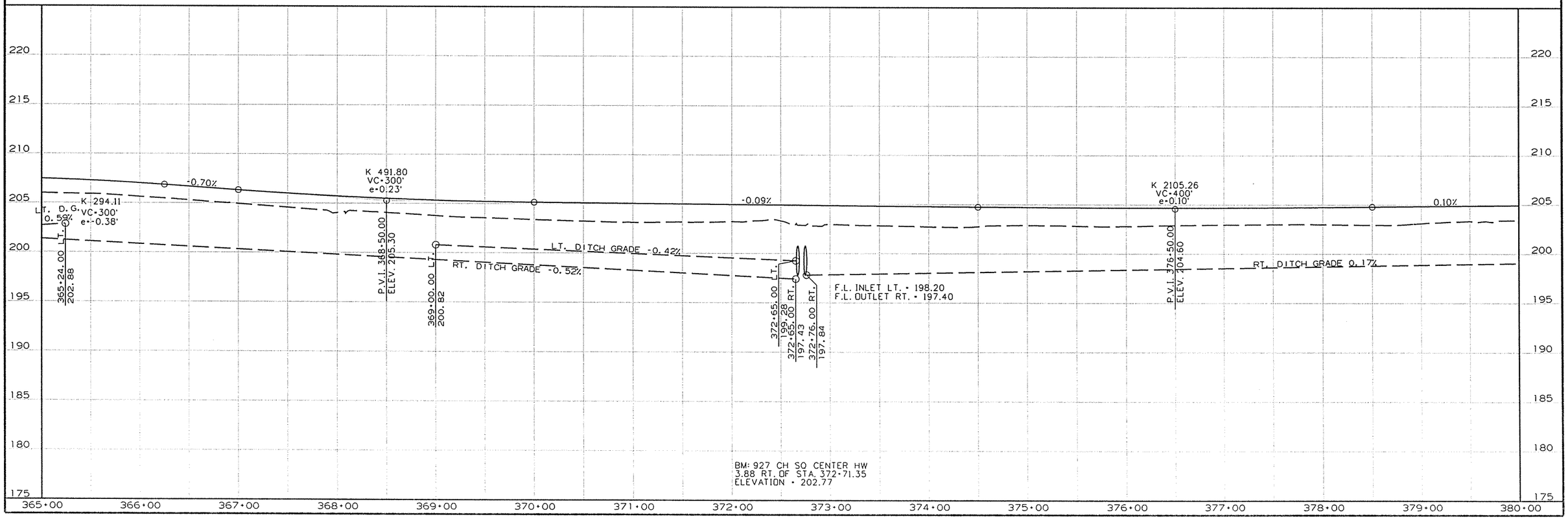


PI = 367+33.11
Δ = 00°17'51"RT.
D = 00°15'00"
T = 59.48'
L = 118.95'
PC = 366+73.63
PT = 367+92.58
NO SUPER

STA. 368+01 - IN PLACE
24" X 26' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +03
24" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 40 CU. YDS.

STA. 379+67 - IN PLACE
18" X 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +65
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 50 CU. YDS.



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				6	ARK.			
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(2) PLAN AND PROFILE SHEETS

STA. 387+64 - INSTALL
18' X 54' PIPE CULVERT
LT. SIDE DRAIN
APPROACH ON LT. = 85 CU. YDS.

STA. 392+99 - IN PLACE
30' X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +98
36' X 23' X 38' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 60 CU. YDS.

STA. 394+04 - IN PLACE
30' X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +05
36' X 23' X 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 40 CU. YDS.

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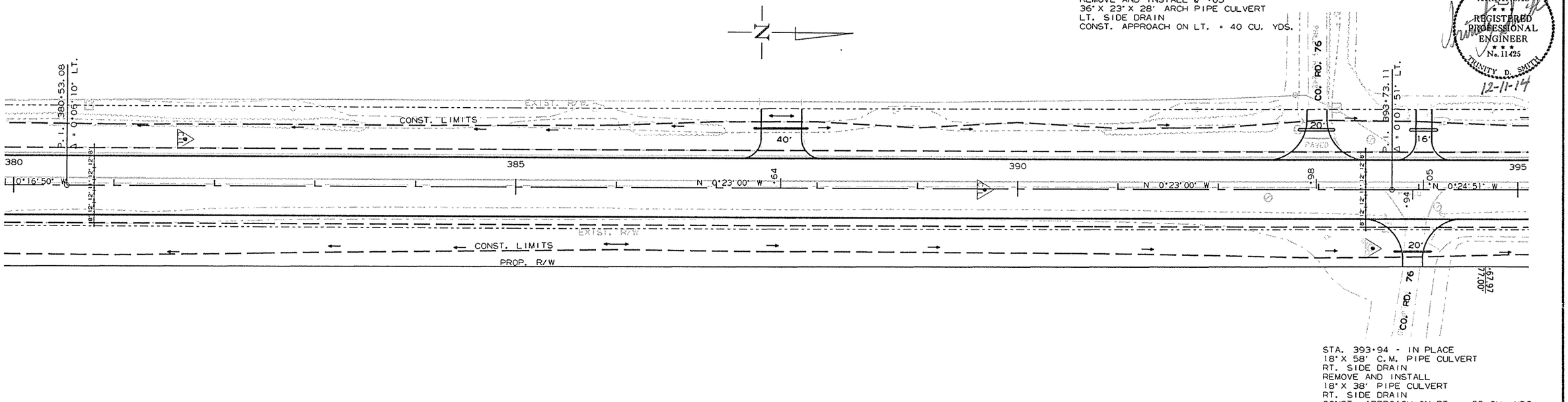
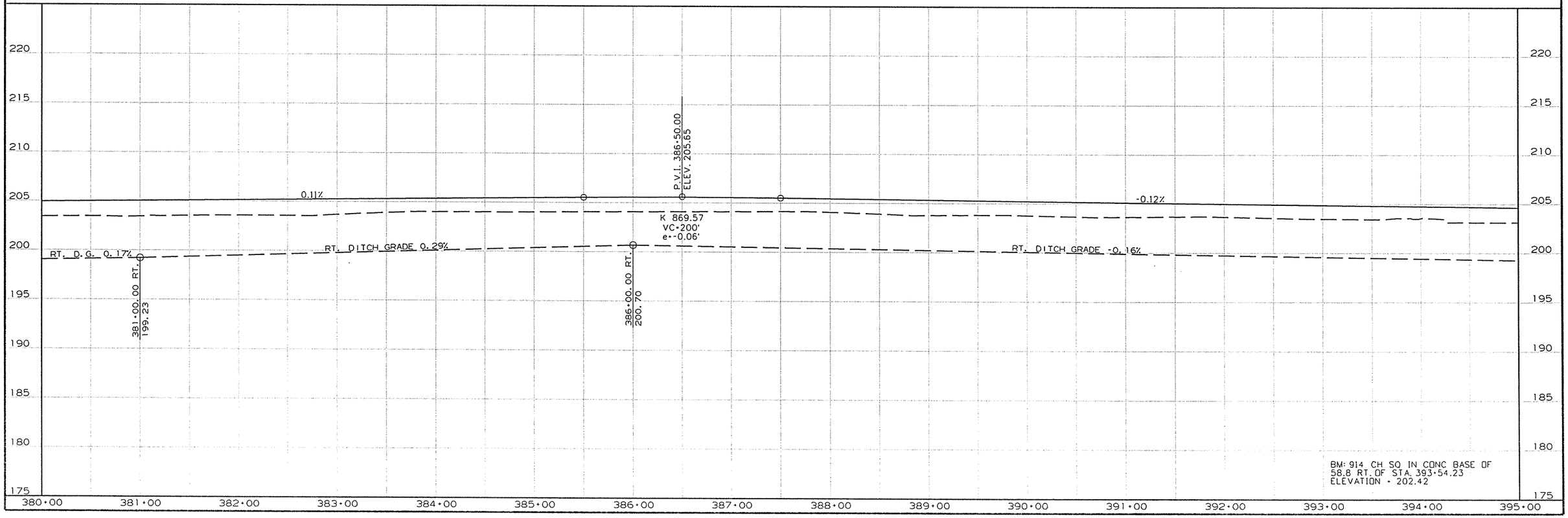


STA. 393+94 - IN PLACE
18' X 58' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18' X 38' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 55 CU. YDS.



BM: 914 CH SQ IN CONC BASE OF
58.8 RT. OF STA. 393+54.23
ELEVATION = 202.42

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				6	ARK.			
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(2) PLAN AND PROFILE SHEETS

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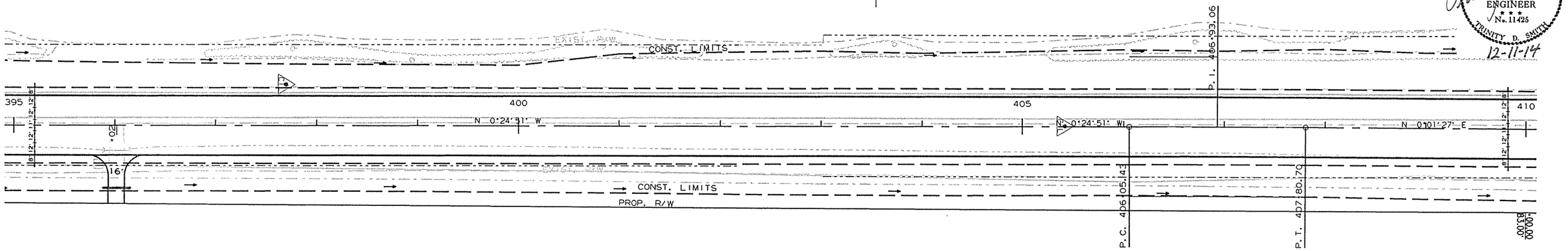
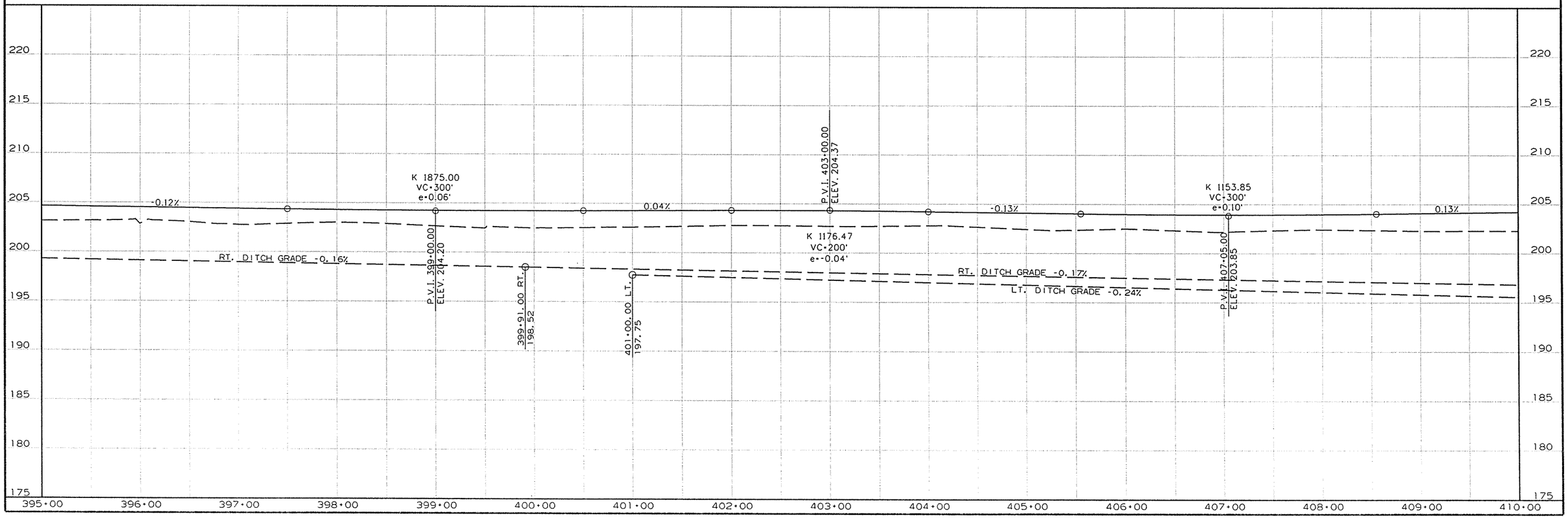


STA. 396+03 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ .02
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 35 CU. YDS.

PI = 406+93.06
Δ = 00°26'18"RT.
D = 00°15'00"
T = 87.64'
L = 178.27'
PC = 406+05.43
PT = 407+80.70
NO SUPER



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				6	ARK.			
				JOB NO.		110217	126	348

(2) PLAN AND PROFILE SHEETS

STA. 420+89 - IN PLACE
30' X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL ø +87
30' X 60' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 555 CU. YDS.

STA. 423+34 - IN PLACE
42' X 28' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 424+71 - IN PLACE
30' X 63' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

PI = 422+02.01
Δ = 00°26'56"LT.
D = 00°15'00"
T = 89.80'
L = 179.60'
PC = 421+12.21
PT = 422+91.80
NO SUPER

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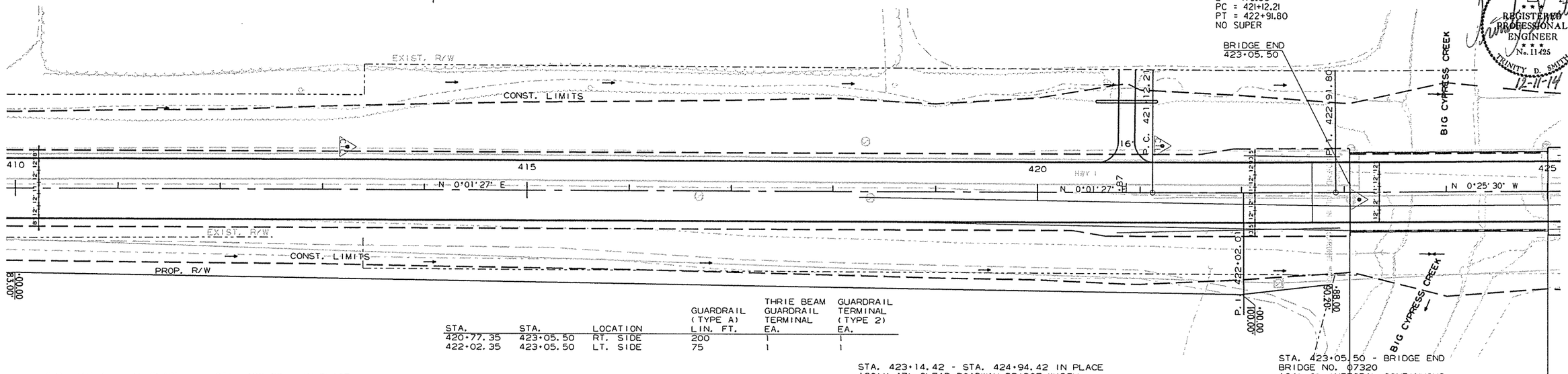


STA.	STA.	LOCATION	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EA.	GUARDRAIL TERMINAL (TYPE 2) EA.
420+77.35	423+05.50	RT. SIDE	200	1	1
422+02.35	423+05.50	LT. SIDE	75	1	1

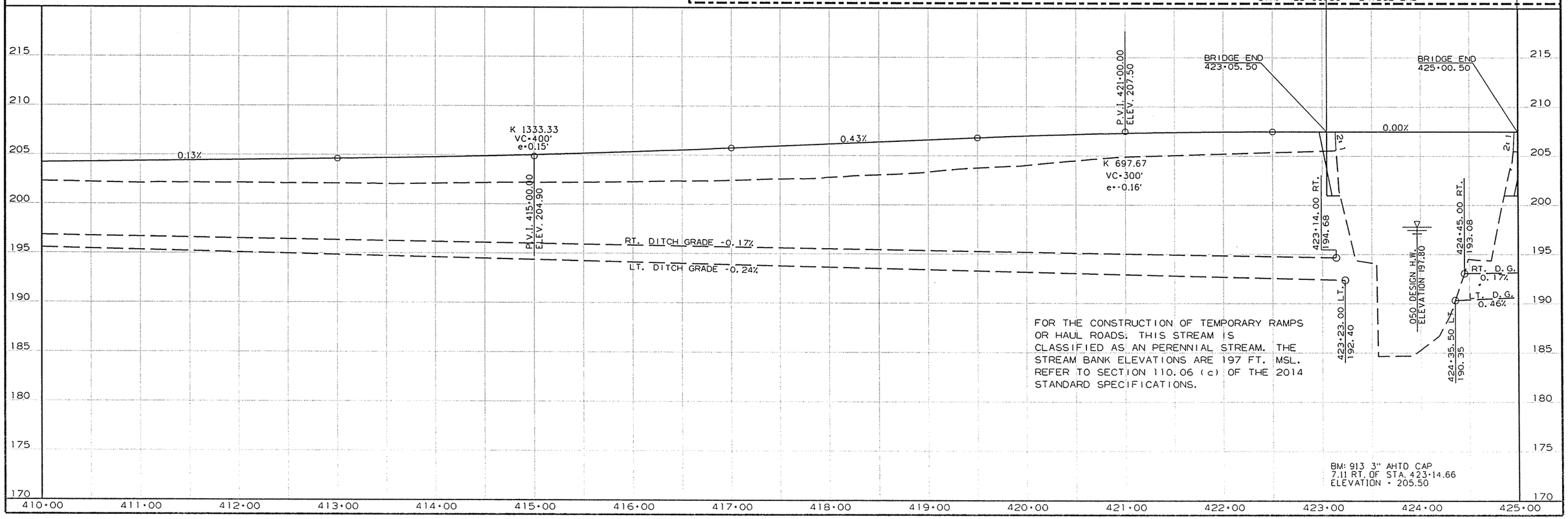
STA. 421+67 - IN PLACE
24' X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 423+22 - IN PLACE
18' X 27' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

FLOOD HAZARD AREA

STA. 423+14.42 - STA. 424+94.42 IN PLACE
180' X 47' CLEAR ROADWAY BRIDGE WIDTH
BRIDGE CONSISTING OF R.C. SLAB SPANS WITH CONCRETE PILE BENTS
BR. NO. 06069
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM

STA. 423+05.50 - BRIDGE END
BRIDGE NO. 07320
194'-0" INTEGRAL CONTINUOUS
COMPOSITE W-BEAM UNIT (60'-74'-60')
75' CLEAR ROADWAY
195'-0" BRIDGE LENGTH
STA. 425+00.50 - BRIDGE END



FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS AN PERENNIAL STREAM. THE STREAM BANK ELEVATIONS ARE 197 FT. MSL. REFER TO SECTION 110.06 (c) OF THE 2014 STANDARD SPECIFICATIONS.

BM: 913 3" AHTD CAP
7.11 RT. OF STA. 423+14.66
ELEVATION = 205.50

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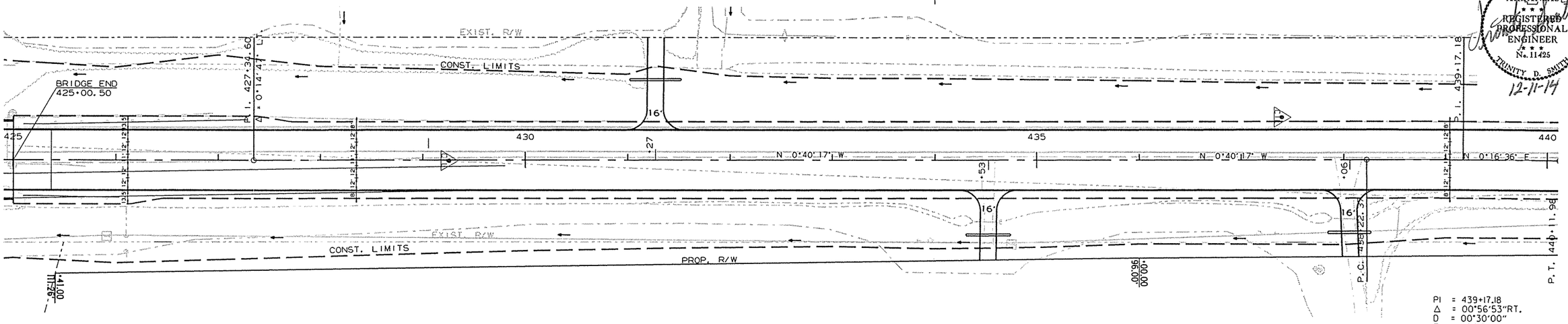
STA.	STA.	LOCATION	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EA.	GUARDRAIL TERMINAL (TYPE 2) EA.
425+00.50	426+03.65	RT. SIDE	75	1	1
425+00.50	427+28.65	LT. SIDE	200	1	1

STA. 431+26 - IN PLACE
24" X 39' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +27
24" X 50' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 335 CU. YDS.

STA. 431+94 - IN PLACE
24" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
RETAIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	127	348

(2) PLAN AND PROFILE SHEETS



PI = 439+17.18
Δ = 00°56'53"RT.
D = 00°30'00"
T = 94.81'
L = 189.61'
PC = 438+22.37
PT = 440+11.98
NO SUPER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

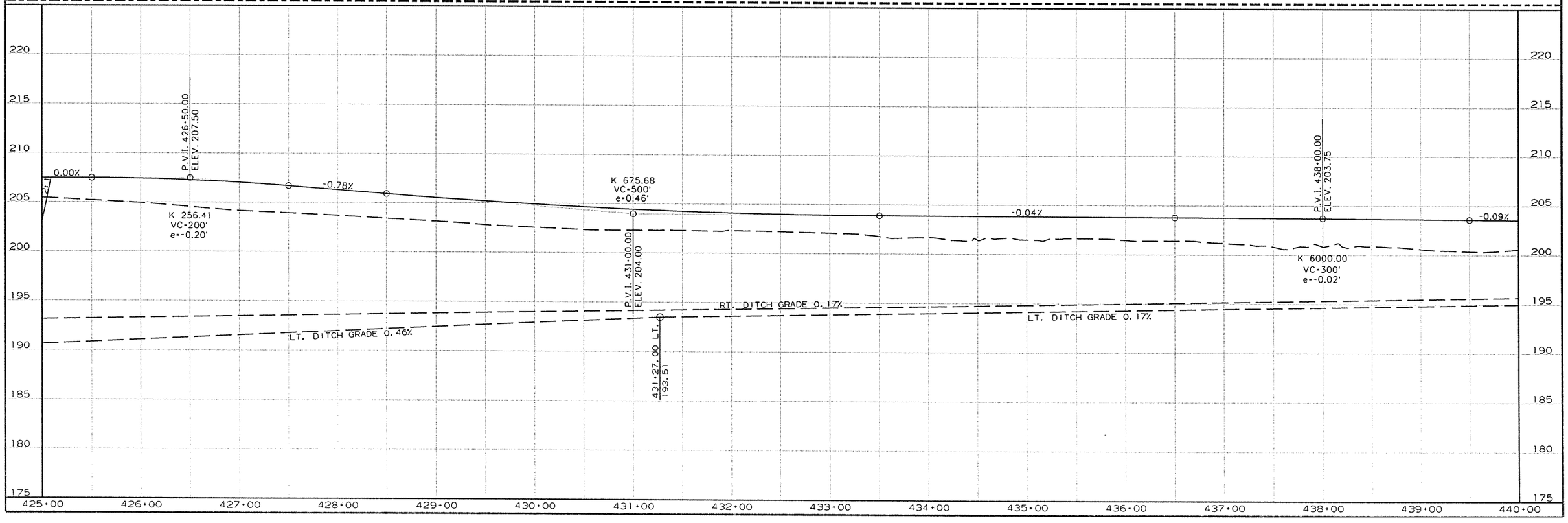
STA. 426+10 - IN PLACE
18" X 12' C.M. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 434+52 - IN PLACE
24" X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +53
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 145 CU. YDS.

STA. 438+04 - IN PLACE
30" X 27' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +06
30" X 42' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 135 CU. YDS.

STA. 438+53 - IN PLACE
18" X 25' STEEL PIPE CULVERT
RT. SIDE DRAIN
REMOVE

FLOOD HAZARD AREA



10/15/2014

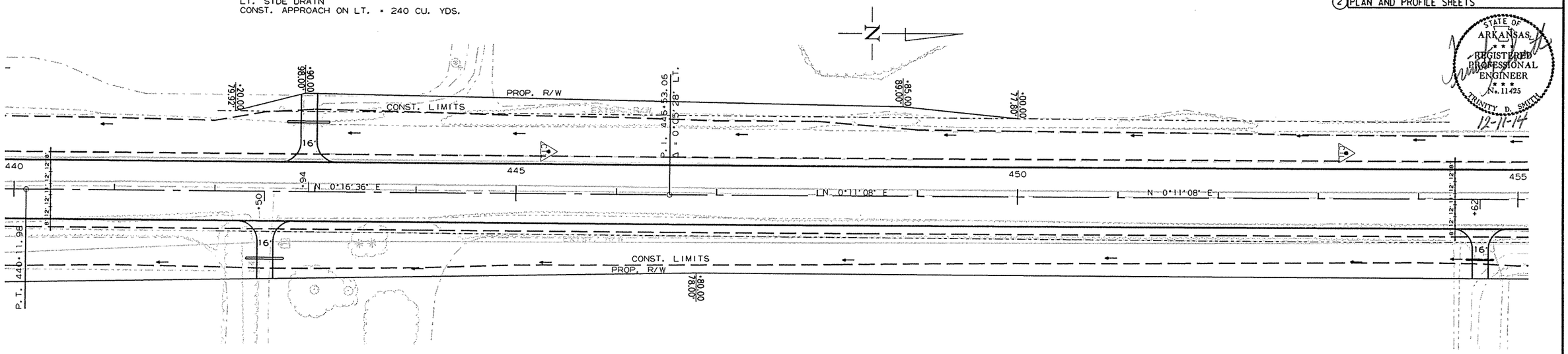
R110217.DGN

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.		110217	128	348

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

STA. 442+95 - IN PLACE
24' X 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +94
24' X 42' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPROACH ON LT. = 240 CU. YDS.

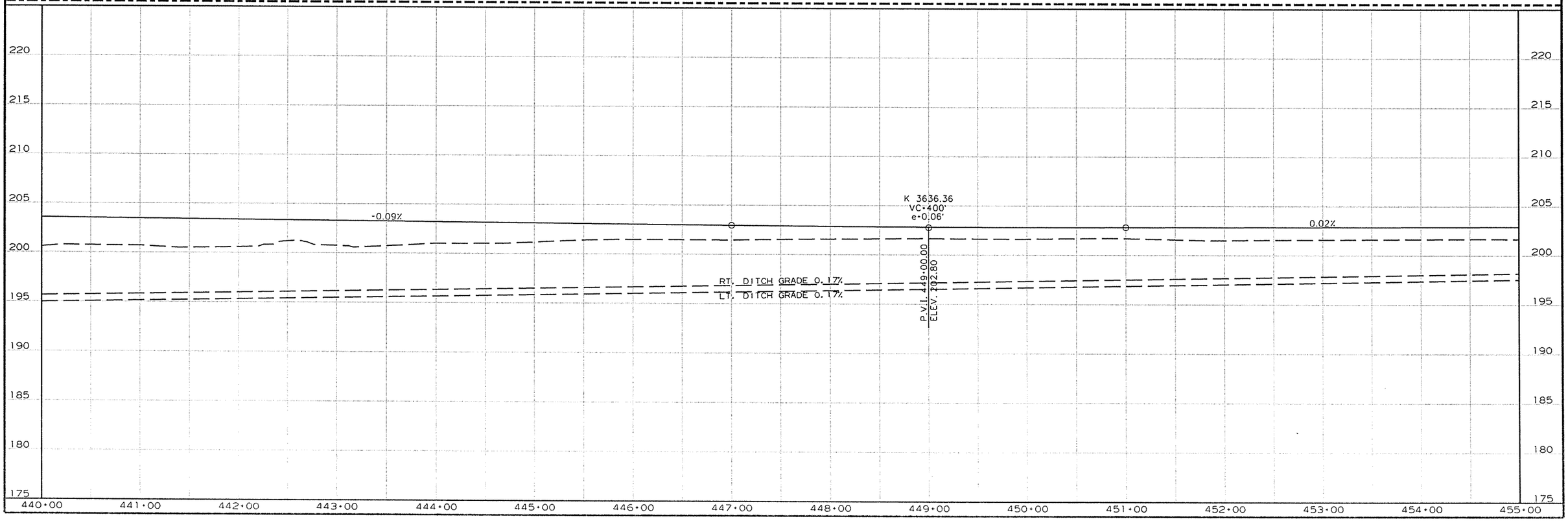


STA. 442+51 - IN PLACE
24' X 25' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +50
24' X 40' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 100 CU. YDS.

STA. 454+62 - INSTALL
18' X 28' PIPE CULVERT
RT. SIDE DRAIN
APPROACH ON RT. = 35 CU. YDS.

STA. 454+80 - IN PLACE
18' X 25' STEEL PIPE CULVERT
RT. SIDE DRAIN
REMOVE

FLOOD HAZARD AREA



10/15/2014

R110217.DGN

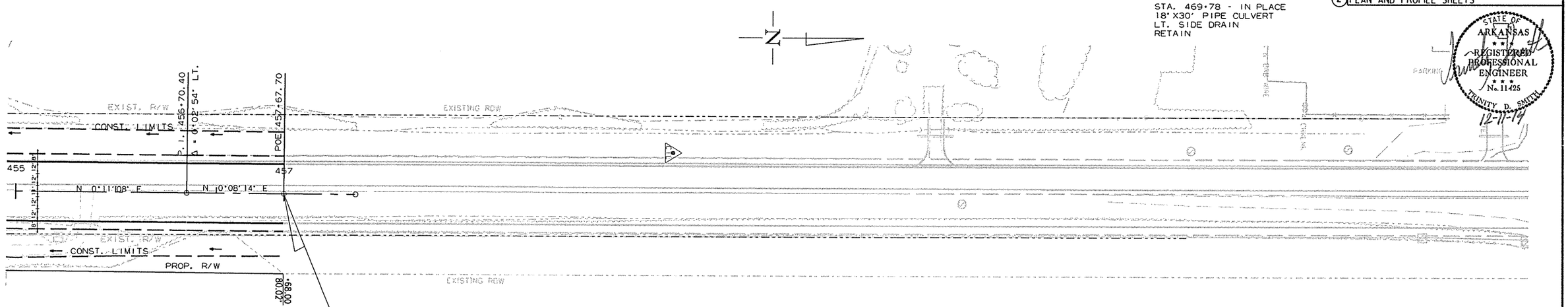
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	129	348

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

STA. 464+17 - IN PLACE
18" X 36' PIPE CULVERT
LT. SIDE DRAIN
RETAIN

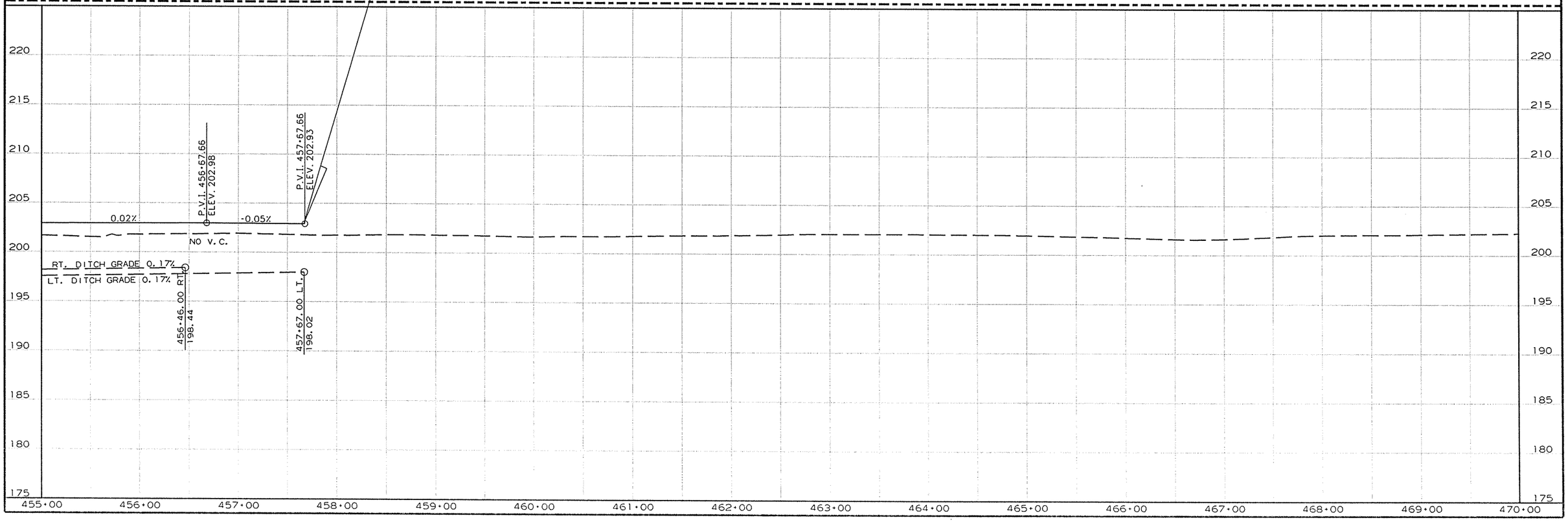
STA. 469+78 - IN PLACE
18" X30' PIPE CULVERT
LT. SIDE DRAIN
RETAIN



STA. 455+70 - IN PLACE
24" X 23' CMP CULVERT
RT. SIDE DRAIN
REMOVE

FLOOD HAZARD AREA

STA. 457+67.70 END JOB 110217 =
STA. 115+00.00 BEGIN JOB 110502
ELEV. 202.93



10/15/2014

R110217.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.		110217	130	348

(2) TRAFFIC SIGNAL QUANTITIES & NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-25-15

TRAFFIC SIGNAL NOTES:

1. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (2002) NATIONAL ELECTRICAL CODE, NFPA 101(2000) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.
2. EXTEND GREEN EQUIPMENT GROUNDING CONDUCTOR (EGC) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLIDLY BOND EGC TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXISTS IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.
3. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER), GALVANIZED STEEL SERVICE RISER, METER LOOP (IF REQUIRED), AND WEATHERHEAD AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. IF THE SERVICE POINT IS OVER 10 FEET FROM THE CONTROLLER, THE CONTRACTOR SHALL PROVIDE AND INSTALL A SEPARATE TWO CIRCUIT EXTERNAL BREAKER (SECONDARY BREAKER) ON OR NEAR THE TRAFFIC SIGNAL CONTROLLER CABINET AND SHALL INSTALL CONDUIT, ELECTRICAL SERVICE WIRE (2c/#6 USE RATED, WITH GROUND TYPICAL), AND PERFORM WIRING TO TAP INTO THE CITY'S MAIN BREAKER AS PART OF THIS CONTRACT. CONDUIT IS PAID FOR AS A SEPARATE ITEM OF THIS CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2c/#12 AWG UF RATED, TYPICAL) SHALL BE KEPT FROM THE CIRCUIT SERVING THE TRAFFIC SIGNAL CONTROL EQUIPMENT FROM THE POINT OF TIE-IN AT THE SECONDARY BREAKER PROVIDED BY THE CONTRACTOR.
4. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.
5. TRAFFIC CONTROLLER CABINET SHALL HAVE 16 LOAD BAYS AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO THE CONTROLLER.
6. CONTROLLER CABINET SHALL BE WIRED SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS.
7. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARDS AND DETAILS, AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITIONS.
8. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHODS. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD MAY BE USED.
9. TRAFFIC SIGNAL POLES SHALL BE GALVANIZED. BACKPLATES SHALL BE SUPPLIED FOR ALL SIGNAL HEADS.
10. PAVEMENT MARKING SHOWN FOR REFERENCE ONLY. SEE PAVEMENT MARKING PLAN SHEETS.
11. FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON SPECIAL DETAILS). PAYMENT WILL BE INCLUDED IN SECTION 714, AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
12. ALL BOXES SHALL BE (TYPE 2 HD) UNLESS OTHERWISE INDICATED. ALL CONDUIT SHALL BE 3" DIAMETER UNLESS SPECIFIED ON PLANS.
13. CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.
14. LUMINAIRE ASSEMBLIES SHALL BE OF THE FULL CUTOFF TYPE.
15. HARDWARE INPUTS MAY BE DETERMINED BY SUPPLIER. EACH DETECTOR OUTPUT SHALL INPUT THE CONTROLLER THROUGH A SEPARATE INPUT UNLESS OTHERWISE NOTED AND BE PROGRAMMED TO ACTUATE THE ASSOCIATED PHASE. COMBINATION (COMB.) DETECTORS SHALL ALSO BE PROGRAMMED TO PROVIDE VEHICLE COUNT/OCCUPANCY DATA.
16. TO DETERMINE UTILITY CLEARANCES ABOVE THE TRAFFIC SIGNAL POLE, REFER TO THE POLE SCHEDULE FOR VERTICAL SHAFT HEIGHT. WHERE THE POLE SCHEDULE INDICATES THAT A LUMINAIRE ARM WILL BE USED, 38 FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE LUMINAIRE ARM. WHERE THE POLE SCHEDULE INDICATES A TRAFFIC SIGNAL POLE WITHOUT A LUMINAIRE ARM, A HEIGHT OF 21' SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL 6 FEET SHOULD BE USED DIRECTLY ABOVE "VIDEO DETECTOR" AT LOCATIONS SHOWN ON THE SIGNAL PLANS.
17. THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS 6 FEET. REFER TO TRAFFIC SIGNAL PLANS FOR SPECIFIC LOCATION OF POLES, CONTROLLER AND ANY OTHER NON-BREAKAWAY OBSTRUCTIONS. REFER TO "DESIGN PARAMETERS, MINIMUM CLEAR ZONE DISTANCE" FOR MINIMUM DISTANCE FROM THE EDGE OF TRAVELED WAY TO THE FACE OF A NON-BREAKAWAY POLE OR OBSTRUCTION. TRAFFIC SIGNAL POLES OR ANY OTHER NON-BREAKAWAY OBSTRUCTION SHALL NOT BE INSTALLED WITHIN THE CLEAR ZONE.
18. AS DETERMINED BY THE ENGINEER, FOUNDATION EMBEDMENT MAY BE DECREASED BY A MAXIMUM OF TWO FEET IF COMPETENT ROCK IS ENCOUNTERED PRIOR TO ACHIEVING PLAN EMBEDMENT AND AT LEAST HALF OF THE REMAINING PLAN EMBEDMENT LENGTH IS KEYED INTO COMPETENT ROCK.
19. CONNECTION OF TRAFFIC SIGNAL DISPLAY TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP BEHIND HAND-HOLE COVER AT BASE OF POLE. TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT POLE COVER IS MISSING. PAYMENT FOR TERMINAL STRIPS SHALL BE INCLUDED IN ITEM 714-TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION.
20. CONTROLLER CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO ISMA STANDARDS.
21. TRAFFIC SIGNAL CONTRACTOR MUST NOTIFY RESIDENT ENGINEER OR ASSIGNED DEPARTMENT PROJECT INSPECTOR EACH DAY PRIOR TO SIGNAL RELATED WORK. NO WORK ON TRAFFIC SIGNALS WILL BE ALLOWED OR APPROVED WITHOUT THIS PRIOR NOTIFICATION.
22. ALL STEEL POLES SHALL BE DESIGNED TO MEET THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
704	FEEDER WIRE	3130	LIN. FT.
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	2	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	220	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	73	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	404	LIN. FT.
710	NON-METALLIC CONDUIT (1")	144	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	48	LIN. FT.
710	NON-METALLIC CONDUIT (2")	210	LIN. FT.
710	NON-METALLIC CONDUIT (3")	240	LIN. FT.
711	CONCRETE PULL BOX (TYPE 1 HD)	2	EACH
711	CONCRETE PULL BOX (TYPE 2 HD)	2	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (52')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')	1	EACH
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	504	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	431	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	90	LIN. FT.
SP	LOOP WIRING CLASS III (1c/16 A.W.G.)	2064	LIN. FT.
SP	LUMINAIRE ASSEMBLY	2	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1.00	LUMP SUM
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	1	EACH

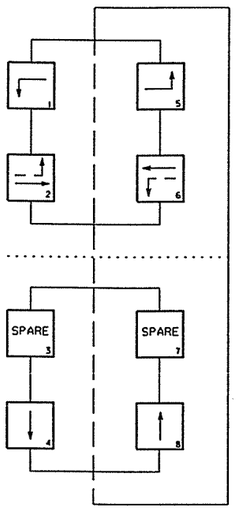
DATE: 09-21-15 FILE NAME: t110217.dgn

LOCATION: HWY. 1/HWYS. 49 & 85
CITY:
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	131	348

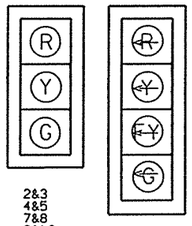
(2) SIGNALIZATION PLAN SHEET

EXISTING PHASING DIAGRAM



SIGNAL FACES

12" LENSES



NOTE:
ALL SIGNAL HEADS SHALL HAVE BACKPLATES.

HWY. I/HWYS. 49 & 85 POLE DIMENSIONS

POLE	MAST ARM	•MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	•LUM. ANGLE
A	N/A	N/A	N/A	N/A	N/A
B	52'	180°	35'	15'	180°
C	54'	270°	35'	15'	270°
D	N/A	N/A	N/A	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.
NOTE: POLES "A" AND "D" ARE EXISTING.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

DETECTOR SPACING CHART

AHTD HWY. 1 MAIN LANE LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
45 MPH	260'	115'
AHTD HWY. 49 MAIN LANE LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
50 MPH	365'/230'	100'
AHTD HWY. 85 MAIN LANE LOOPS		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
35 MPH	250'	85'

NOTE TO CONTRACTOR:
ONLY THE TRAFFIC SIGNAL EQUIPMENT NOTED SHALL BE REMOVED. ALL OTHER TRAFFIC SIGNAL EQUIPMENT SHALL BE RETAINED. TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES. IT IS RECOMMENDED THAT THE EXISTING TRAFFIC SIGNAL BE LEFT IN OPERATION UNTIL THE NEW TRAFFIC SIGNAL EQUIPMENT HAS BEEN INSTALLED AND CONVERSION TO FULL OPERATION CAN BE MADE.

SCALE IN FEET
0 30 60 120

DATE: 12-04-14 FILE NAME: t110217.dgn

LOCATION: HWY. 1/HWYS. 49 & 85
CITY:
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=60' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	132	348

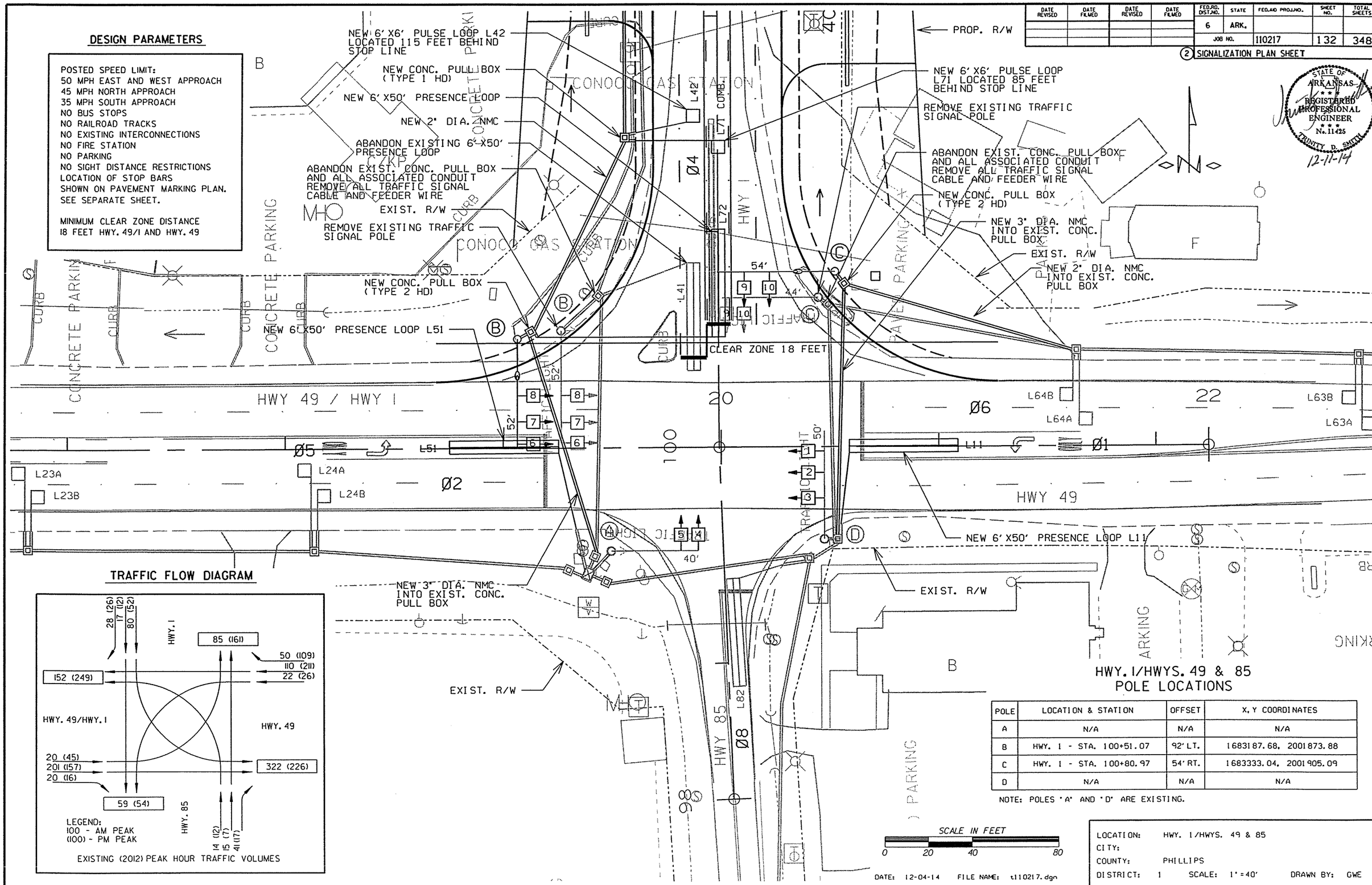
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 12-11-14

DESIGN PARAMETERS

POSTED SPEED LIMIT:
50 MPH EAST AND WEST APPROACH
45 MPH NORTH APPROACH
35 MPH SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS
LOCATION OF STOP BARS
SHOWN ON PAVEMENT MARKING PLAN.
SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE
18 FEET HWY. 49/1 AND HWY. 49



TRAFFIC FLOW DIAGRAM

EXISTING (2012) PEAK HOUR TRAFFIC VOLUMES

HWY. 1/HWYS. 49 & 85 POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	N/A	N/A	N/A
B	HWY. 1 - STA. 100+51.07	92' LT.	1683187.68, 2001873.88
C	HWY. 1 - STA. 100+80.97	54' RT.	1683333.04, 2001905.09
D	N/A	N/A	N/A

NOTE: POLES "A" AND "D" ARE EXISTING.

SCALE IN FEET
0 20 40 80

DATE: 12-04-14 FILE NAME: t110217.dgn

LOCATION: HWY. 1/HWYS. 49 & 85
CITY:
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	133	348

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-11-14

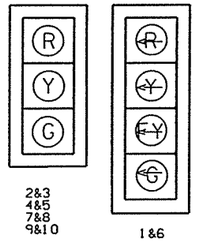
SYSTEM DESCRIPTION: JOB 110217										
PHILLIPS CO. - HWY. 1/HWY. 49 & HWY. 85 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *		
L1I	EB LEFT TURN	LOCAL	1			V1	1			
L2I	EB FAR INSIDE	COMB.	2			D1	2	1		
L22	EB FAR OUTSIDE	COMB.	3			D2	2			
L23a&b	EB MIDDLE	LOCAL	4			V2	2	2		
L24a&b	EB NEAR	LOCAL	5			V2	2			
L8I	NB FAR	COMB.	6			D8	8	8		
L82	NB NEAR	LOCAL	7			V3	8			
L4I	SB FAR	COMB.	8			D4	4	4		
L42	SB NEAR	LOCAL	9			V7	4			
L5I	WB LEFT TURN	LOCAL	10			V5	5			
L6I	WB FAR INSIDE	COMB.	11			D5	6	5		
L62	WB FAR OUTSIDE	COMB.	12			D6	6	6		
L63a&b	WB MIDDLE	LOCAL	13			V6	6			
L64a&b	WB NEAR	LOCAL	14			V6	6			
L7I	SB FAR	COMB.	15			D7	7	7		
L72	SB LEFT TURN	LOCAL	16			V7	7			

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

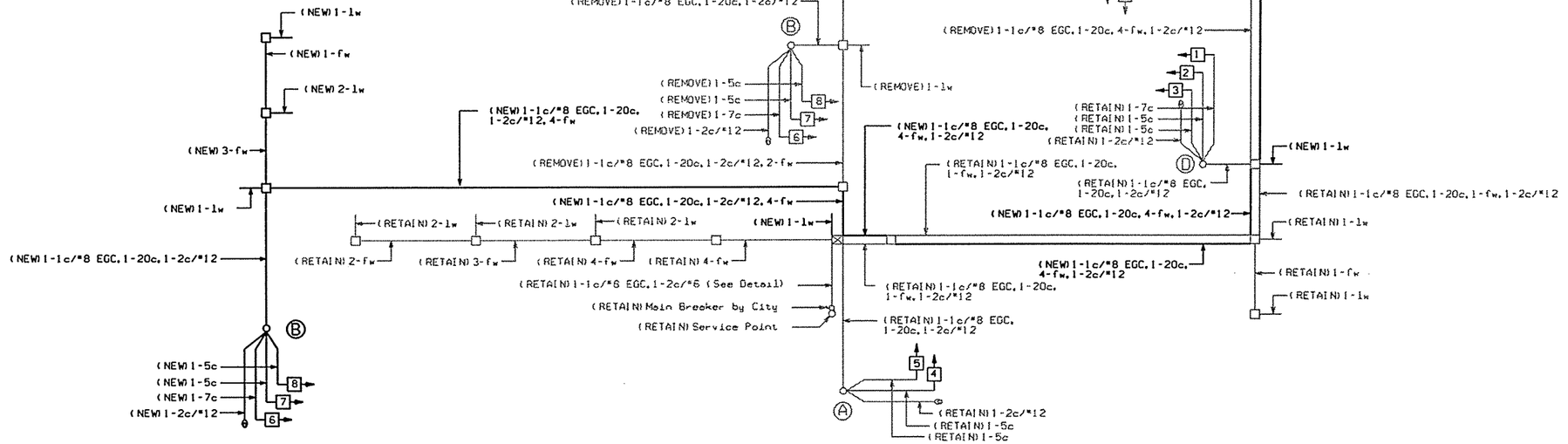
NOTE: *AMP CHN=* REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9=SYSTEM DETECTOR 1, V10=SYSTEM DETECTOR 2

SIGNAL FACES

12" LENSES

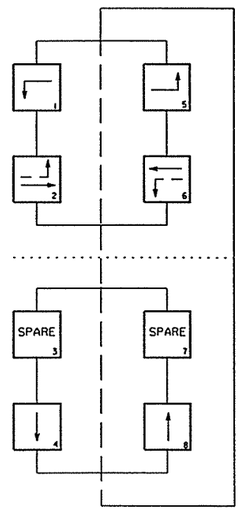


NOTE:
ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



WIRING DIAGRAM

PHASING DIAGRAM



INTERVAL CHART

SIGNAL FACES	HWY. 1/HWYS. 49 & 85											FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+8	CLR.		
1	R/G	R/••	R	R	G/G	•/••	G	•	R	R		R
2&3	R	R	R	R	G	•	G	•	R	R		R
4&5	R	R	R	R	R	R	R	R	G	Y		R
6	R/G	R/••	G/G	•/••	R	R	G	••	R	R		R
7&8	R	R	G	•	R	R	G	•	R	R		R
9&10	R	R	R	R	R	R	R	R	G	Y		R

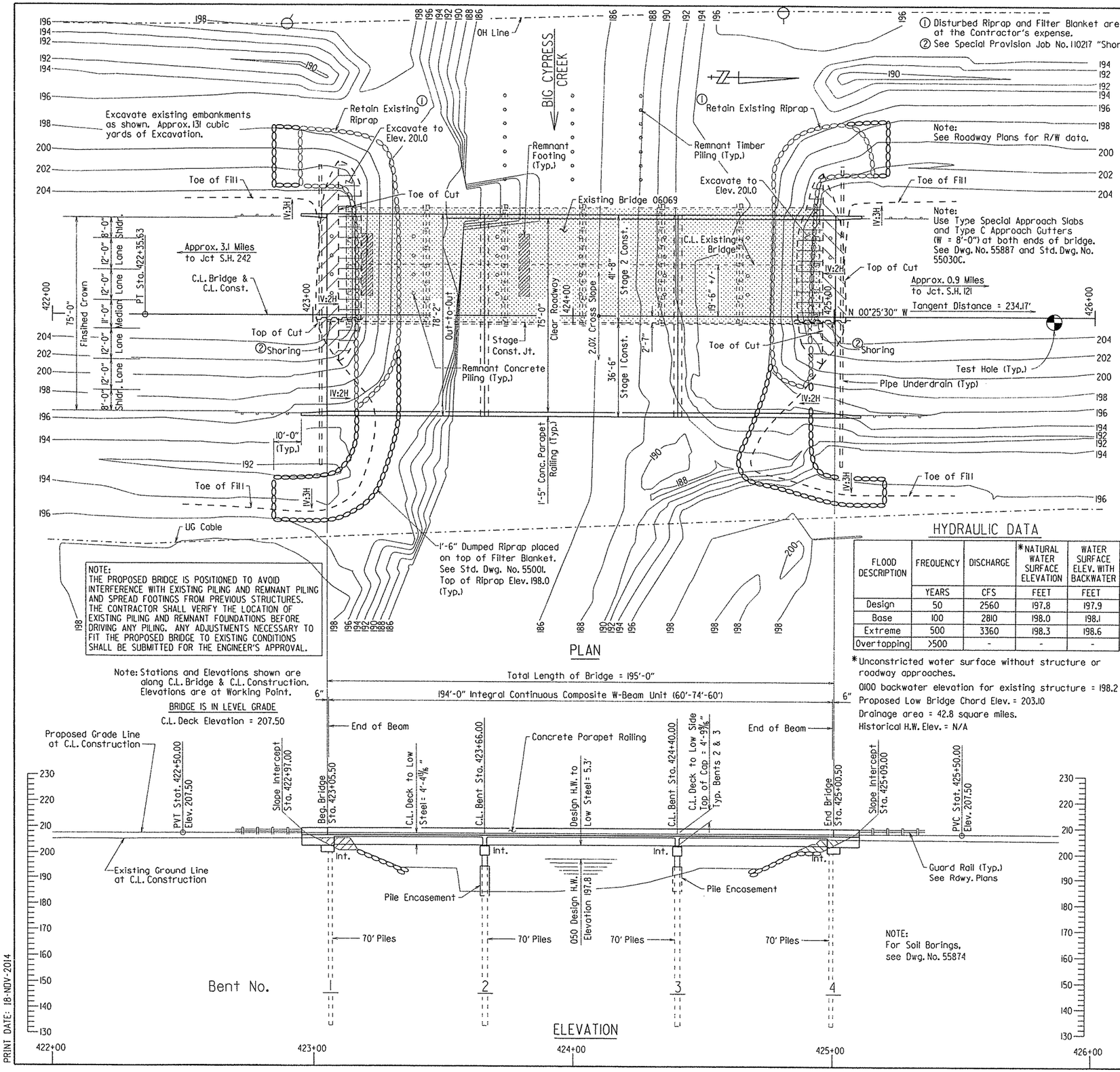
• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

DATE: 12-04-14 FILE NAME: t110217.dgn

LOCATION: HWY. 1/HWYS. 49 & 85
CITY:
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	134	3435
				(1) 07320	-	LAYOUT	-	55873

① Disturbed Riprap and Filter Blanket are to be replaced at the Contractor's expense.
② See Special Provision Job No. 110217 "Shoring".



PLAN

Note: Stations and Elevations shown are along C.L. Bridge & C.L. Construction. Elevations are at Working Point.

BRIDGE IS IN LEVEL GRADE

C.L. Deck Elevation = 207.50

ELEVATION

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	2560	197.8	197.9
Base	100	2810	198.0	198.1
Extreme	500	3360	198.3	198.6
Overtopping	>500	-	-	-

*Unconstricted water surface without structure or roadway approaches.

0100 backwater elevation for existing structure = 198.2
Proposed Low Bridge Chord Elev. = 203.10
Drainage area = 42.8 square miles.
Historical H.W. Elev. = N/A

NOTE:
For Soil Borings, see Dwg. No. 55874

GENERAL NOTES

BENCH MARK: See Survey Control Details for Benchmark information.

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

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

LIVE LOADING: HL-93

SEISMIC ZONE: 3

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f 'c = 4,000 psi
Class S Concrete (substructure)	f 'c = 3,500 psi
Reinforcing Steel (Grade 60,AASHTO M31 or M322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

PILING: Piling for Bents 1 & 4 shall be 16" diameter concrete filled steel shells and shall be driven to an ultimate bearing capacity of 150 tons per pile. Piling for Bents 2 & 3 shall be 24" diameter concrete filled steel shells and shall be driven to an ultimate bearing capacity of 275 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Drive piling in Bents 1 & 4 after embankment to bottom of cap is in place. All piling shall have a tip elevation of 133.0 or lower. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g). No piles will be paid for as Test Piles. There will be no additional payment for cut-off or build-up of piles.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b), "Method B-Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" piles will be 40,000 foot pounds per blow and on 24" piles shall be 75,000 foot pounds per blow.

PILE ENCASEMENT: Pile encasements are required for Bents 2 & 3 and shall extend 3' below channel bottom and to an elevation of 195.0. See Std. Dwg. No. 55021 for additional details. Corrugated metal pipe will not be allowed.

PREBORING: Preboring is required on all piling in Bents 1 and 4 to a depth of 10' below bottom of cap. Prebored holes shall be a minimum of 6" greater than the diameter of the pile cross-section and shall be back-filled with sand or pea gravel after piles are in place. This required preboring will be paid for at the unit price bid for "Preboring". The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casings or other methods. Temporary casings, if required, shall not be paid for directly but shall be considered subsidiary to Preboring.

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

PIPE UNDERDRAIN: One Pipe Underdrain with Outlet Protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Underdrains and Outlet Protectors will not be paid for directly but will be considered subsidiary to Unclassified Excavation.

DETAIL DRAWINGS:	DRAWING NO.
Details of Bents 1 & 4	55876 & 55878
Details of Bents 2 & 3	55877
Concrete Filled Steel Shell Piles	55021
194'-0" Integral Cont. Comp. W-Beam Unit	55879 - 55886
Type Special Approach Slabs	55887
Type C Approach Gutters	55030C

EXISTING BRIDGE: Existing Bridge No. 06069, LM 0.08, is 180' in length, 47' wide and is comprised of 6-reinforced concrete slab spans supported by concrete pile bents.

REMOVAL AND SALVAGE: After Stage 1 of the new bridge is open to traffic, existing Bridge No. 06069 (Site No. 2) shall be removed in accordance with Section 205. In addition, any exposed remnant of footings or piling shall be removed in accordance with Section 205 and included in this item. See Dwg. No. 55875 for partial demolition of existing bridge required for Stage 1 Construction. All material from the existing bridge, exposed remnant piling and foundation shall become property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-14
CHARLES R. ELLIS
BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER BIG CYPRESS CREEK
WALNUT CORNER - CYPRESS CORNER (S)
LEE COUNTY
ROUTE 1 SEC. 9

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 10/12/12
CHECKED BY: TAG DATE: 11/18/14
DESIGNED BY: LJB DATE: 10/12
FILENAME: bll0217x2_11.dgn
SCALE: 1"=20'-0"

BRIDGE NO. 07320 DRAWING NO. 55873

PRINT DATE: 18-NOV-2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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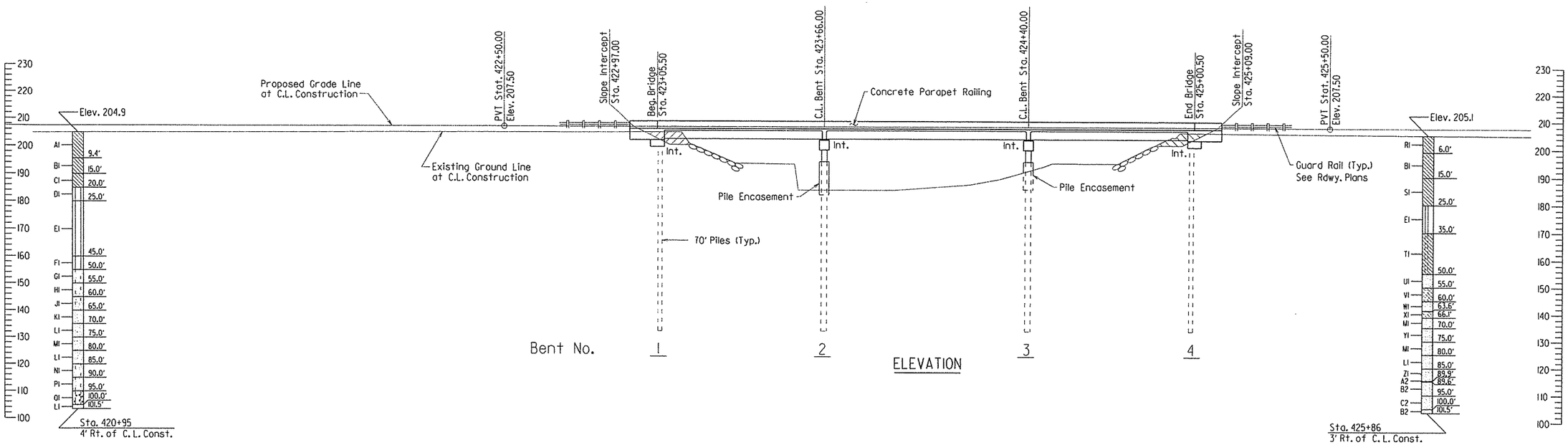
				JOB NO.		110217	135	346
				(1) 07320	-	LAYOUT	-	55874



BORING LEGEND

A1-Moist, Medium Stiff, Brown Clay with some Iron Nodules
B1-Moist, Medium Stiff, Gray Clay
C1-Wet, Soft, Gray Clay
D1-Wet, Loose, Brown and Gray Silt with some Iron Nodules
E1-Wet, Very Loose, Gray Silt
F1-Wet, Loose, Gray Silt
G1-Wet, Loose, Gray Silty Sand
H1-Wet, Medium Dense, Gray Silty Sand
J1-Wet, Dense, Gray Sand with Silt
K1-Wet, Medium Dense, Gray Sand with Trace of Gravel
L1-Wet, Dense, Gray Sand
M1-Wet, Medium Dense, Gray Sand
N1-Wet, Medium Dense, Gray Silty Sand with some Gravel
P1-Wet, Very Dense, Gray Sand with Slit and some Gravel
O1-Wet, Dense, Gray Sand with Silt and Gravel
R1-Moist, Medium Stiff, Gray Clay with some Iron Nodules and Asphalt Fragments
S1-Wet, Soft, Brown and Gray Clay with some Iron Nodules
T1-Wet, Soft, Gray Silty Clay
U1-Wet, Loose, Gray Sand with Trace of Clay
V1-Wet, Dense, Gray Clayey Sand
W1-Wet, Dense, Gray and Brown Sand with some Gravel
X1-Wet, Medium Dense, Gray Sand with Clay
Y1-Wet, Very Dense, Gray Sand
Z1-Wet, Dense, Gray and Brown Sand with Trace of Clay
A2-Gravel (89.6' to 89.9')
B2-Wet, Dense, Gray and Brown Sand
C2-Wet, Medium Dense, Gray and Brown Sand with Trace of Gravel and Clay

"N" VALUES

Sta. 420+95 - 4' Right of C.L. of Construction	Sta. 425+86 - 3' Right of C.L. of Construction
4.9- 5.9, N=8	5.0- 6.0, N=7
9.9- 10.9, N=5	10.0- 11.0, N=7
15.5- 16.5, N=2	15.5- 16.5, N=3
20.5- 21.5, N=5	20.5- 21.5, N=3
25.5- 26.5, N=0	25.5- 26.5, N=0
30.5- 31.5, N=2	30.5- 31.5, N=0
35.5- 36.5, N=3	35.5- 36.5, N=2
40.5- 41.5, N=3	40.5- 41.5, N=4
45.5- 46.5, N=5	45.5- 46.5, N=3
50.5- 51.5, N=7	50.5- 51.5, N=10
55.5- 56.5, N=24	55.5- 56.5, N=48
60.5- 61.5, N=33	60.5- 61.5, N=31
65.5- 66.5, N=20	65.5- 66.5, N=25
70.5- 71.5, N=42	70.5- 71.5, N=74
75.5- 76.5, N=26	75.5- 76.5, N=28
80.5- 81.5, N=46	80.5- 81.5, N=44
85.5- 86.5, N=25	85.5- 86.5, N=38
90.5- 91.5, N=52	90.5- 91.5, N=56
95.5- 96.5, N=31	95.5- 96.5, N=29
100.5-101.5, N=39	100.5-101.5, N=46

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SOIL BORINGS
BRIDGE OVER BIG CYPRESS CREEK
WALNUT CORNER - CYPRESS CORNER (S)
LEE COUNTY
ROUTE 1 SEC. 9
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

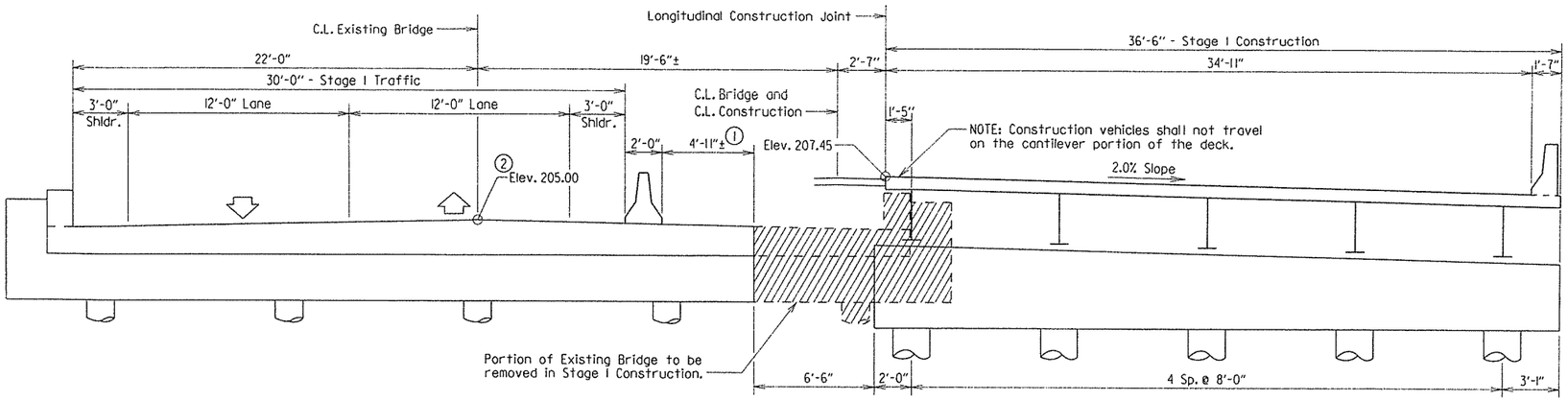
DRAWN BY: MRE DATE: 06/20/13 FILENAME: bl10217x2_11.dgn
CHECKED BY: TAG DATE: 11/18/14 SCALE: 1" = 20'-0"
DESIGNED BY: LJB DATE: 10/13

BRIDGE NO. 07320 DRAWING NO. 55874

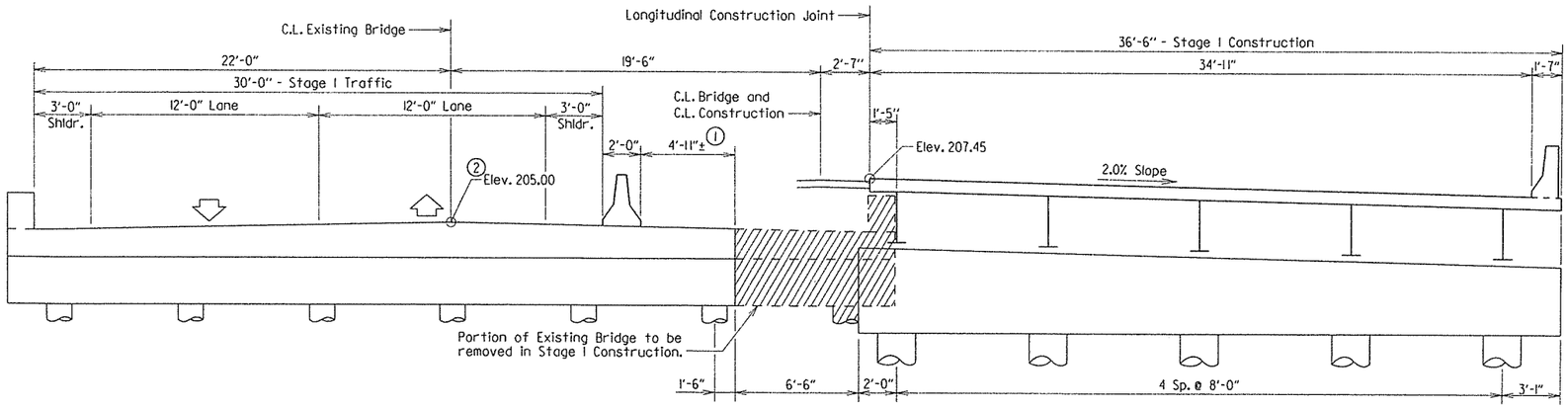
PRINT DATE: 11/18/2014

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.		110217	136	348

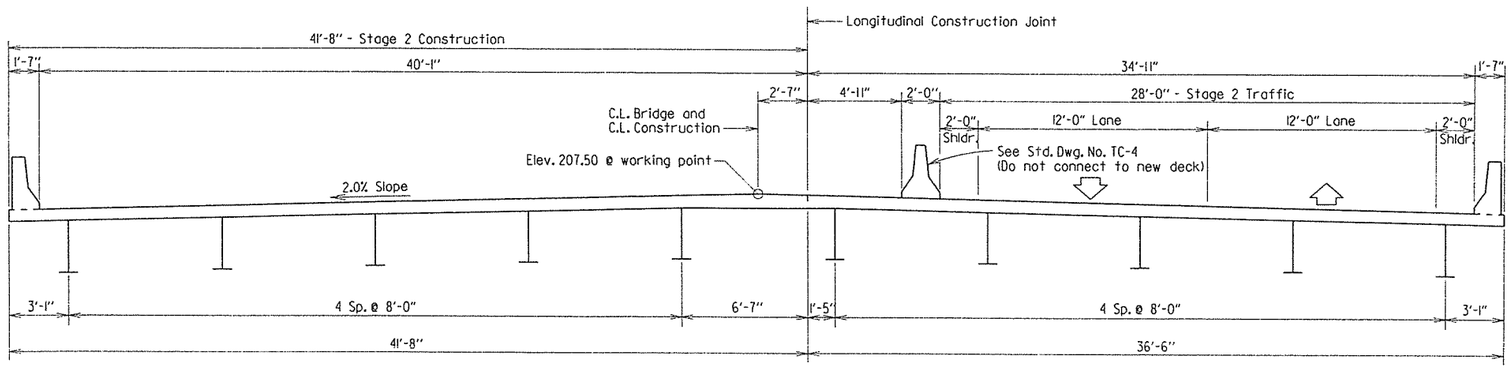
(1) 07320 - STAGE CONSTRUCTION - 55875



STAGE 1
Looking Ahead
(Shown at beginning of existing bridge)



STAGE 1
Looking Ahead
(Shown at existing Intermediate Bent 2)



NOTE: Details which relate to maintenance of traffic are shown on the bridge plans for information only.

For Details of Temporary Barrier, see Std. Dwg. TC - 4.

STAGE 2
Looking Ahead

NOTES:

Remove remainder of existing structure after Stage 1 Construction has been opened to traffic.

See Roadway Plans for additional details of Stage Construction and Maintenance of Traffic.

(1) Or as necessary to provide a minimum of 6" cover for existing pile.

(2) Elevation based on existing bridge plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF STAGE CONSTRUCTION
BIG CYPRESS CREEK

ROUTE 1 SEC. 9

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 08/10/12
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 10/12

FILENAME: b110217_sc.dgn
SCALE: 1/4" = 1'-0"

BRIDGE NO. 07320

DRAWING NO. 55875

PRINT DATE: 18-NOV-2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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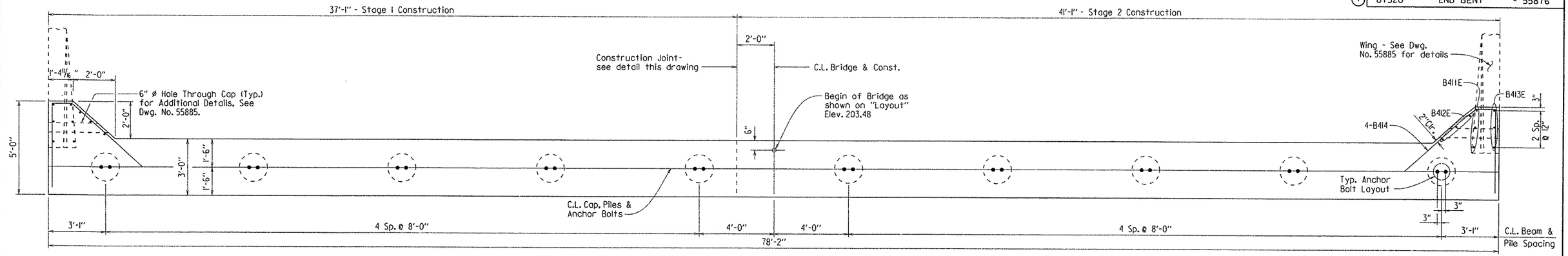
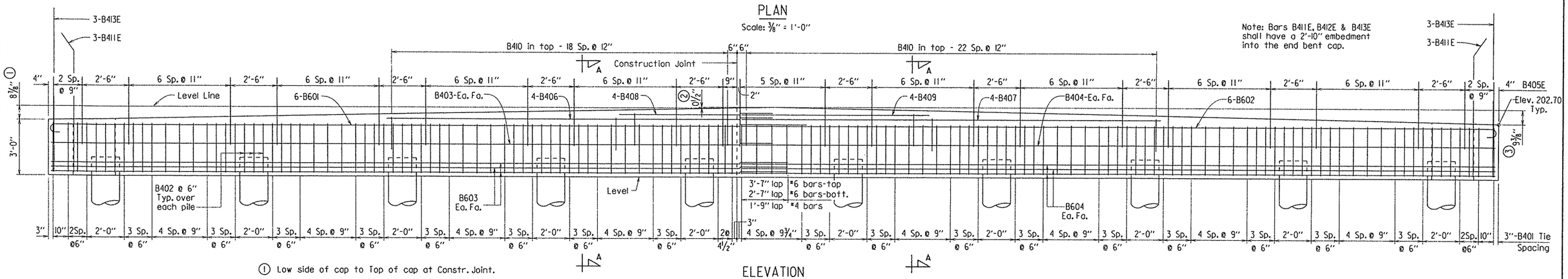
				JOB NO.		110217	137	348
				(1) 07320 -		END BENT		- 55876



PLAN

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



(1) Low side of cap to Top of cap at Constr. Joint.

(2) Top of cap at Constr. Joint to Top of cap at C.L. Bridge.

(3) Low side of cap to Top of cap at C.L. Bridge.

ELEVATION

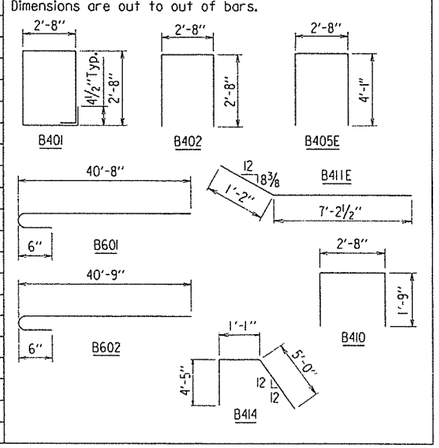
Looking Back
Scale: 3/8" = 1'-0"

BAR LIST

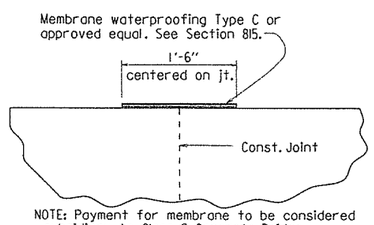
MARK	NO. REQ'D.	LENGTH	P.D.
B401	107	11'-0"	2"
B402	30	7'-10"	2"
B403	2	38'-10"	Str.
B404	2	40'-9"	Str.
B405E	70	10'-8"	2"
B406	4	20'-9"	Str.
B407	4	22'-8"	Str.
B408	4	8'-3"	Str.
B409	4	10'-2"	Str.
B410	42	6'-0"	2"
B411E	6	8'-5"	2"
B412E	6	5'-6"	Str.
B413E	6	9'-6"	Str.
B414	8	10'-5"	2"
B601	6	41'-4"	4 1/2"
B602	6	41'-5"	4 1/2"
B603	6	39'-8"	Str.
B604	6	40'-9"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



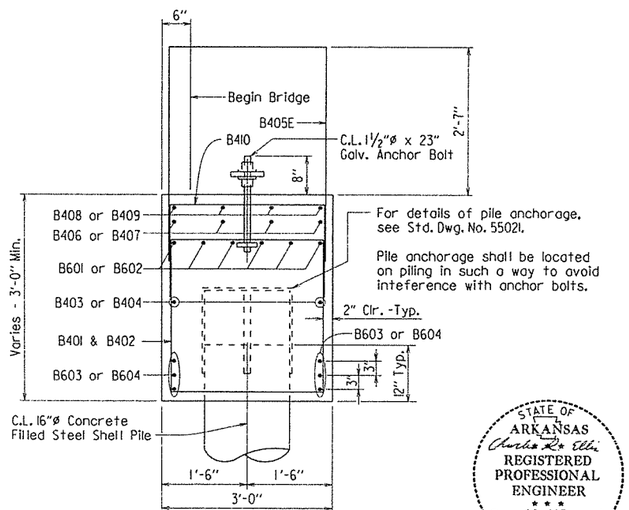
NOTE: Bars with an "E" Suffix to be Epoxy Coated.



NOTE: Payment for membrane to be considered subsidiary to Class S Concrete-Bridge.

CONSTRUCTION JOINT DETAIL

No Scale



SECTION A-A

Scale: 3/4" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-17-14
CHARLES R. ELLIS

BRIDGE ENGINEER

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28-day compressive strength f'c=3,500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi), conforming to AASHTO M31 or M322, Type A, with mill test reports. Granular backfill and pipe underdrain required behind cap. See Dwg. No. 55885.

For details of steel shell piles, see Std. Dwg. No. 55021.

For details of anchor bolts, see Dwg. No. 55886.

For additional information, see Layout.

DETAILS OF BENT 1
BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

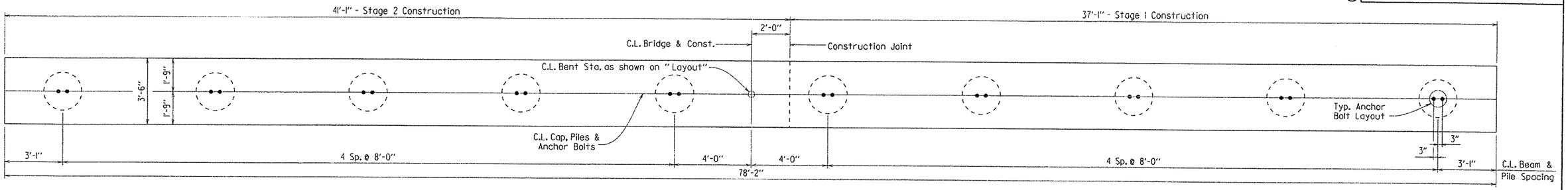
DRAWN BY: JGT DATE: 5-12-14
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 5/14

FILENAME: b110217x2_b1.dgn
SCALE: AS NOTED

BRIDGE NO. 07320 DRAWING NO. 55876

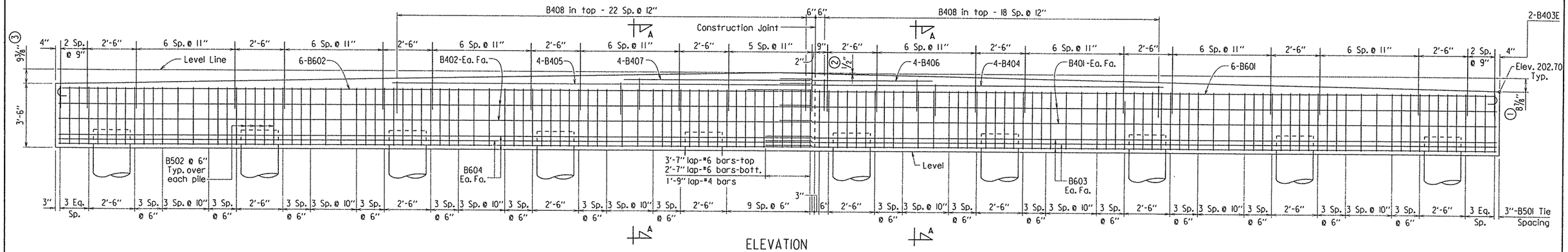
PRINT DATE: 11/18/2014

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.		110217	138	348
				(1) 07320 -		INT. BENTS	- 55877	



PLAN

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



ELEVATION

Looking Ahead

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

① Low side of cap to Top of cap at Const. Joint.

② Top of cap at Const. Joint to Top of cap at C.L. Bridge.

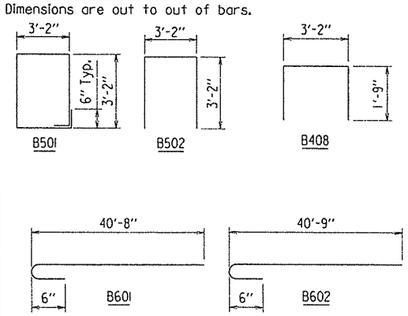
③ Low side of cap to Top of cap at C.L. Bridge.

BAR LIST - PER BENT

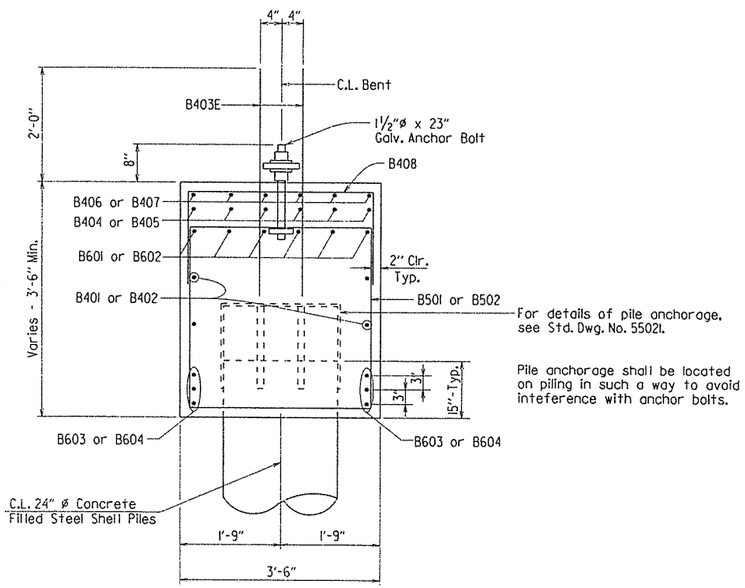
MARK	NO. REQ'D.	LENGTH	P.D.
B401	4	38'-10"	Str.
B402	4	40'-9"	Str.
B403E	138	4'-1"	Str.
B404	4	20'-9"	Str.
B405	4	22'-8"	Str.
B406	4	8'-3"	Str.
B407	4	10'-2"	Str.
B408	42	6'-6"	2"
B501	100	13'-2"	2 1/2"
B502	40	9'-4"	2 1/2"
B601	6	41'-4"	4 1/2"
B602	6	41'-5"	4 1/2"
B603	6	39'-8"	Str.
B604	6	40'-9"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



Note: Bars with an "E" Suffix to be Epoxy Coated.



SECTION A-A

Scale: 3/4" = 1'-0"

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28-day compressive strength f'c=3,500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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

For details of steel shell piles, see Std. Dwg. No. 55021.

For details of anchor bolts, see Dwg. No. 55886.

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENTS 2 & 3
BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JGT DATE: 5-12-14 FILENAME: b110217x2_b2.dgn

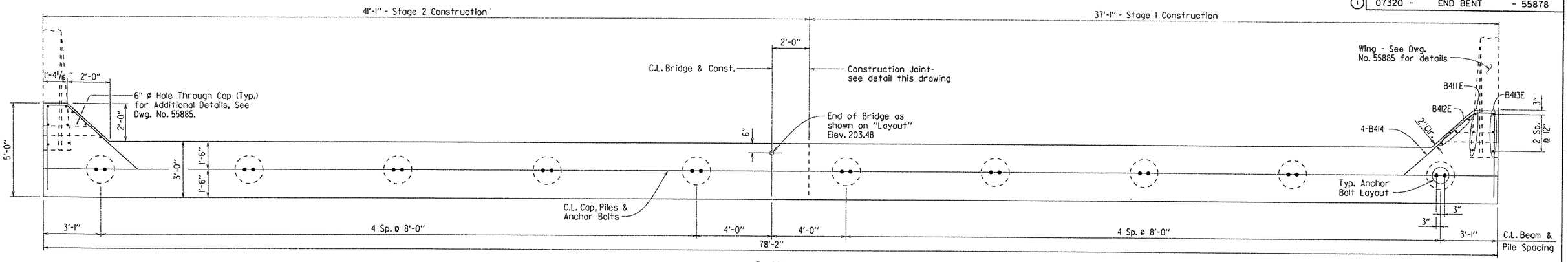
CHECKED BY: TMG DATE: 11/13/14 SCALE: AS NOTED

DESIGNED BY: LJB DATE: 5/14

BRIDGE NO. 07320 DRAWING NO. 55877

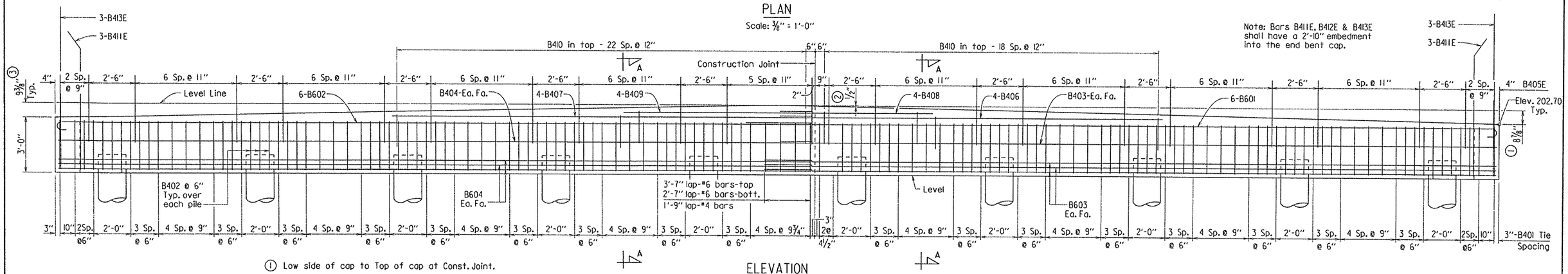
PRINT DATE: 11/18/2014

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.		110217	139	346
				(1) 07320 -		END BENT		- 55878



PLAN

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



(1) Low side of cap to Top of cap at Const. Joint.

(2) Top of cap at Const. Joint to Top of cap at C.L. Bridge.

(3) Low side of cap to Top of cap at ℄ C.L. Bridge.

ELEVATION

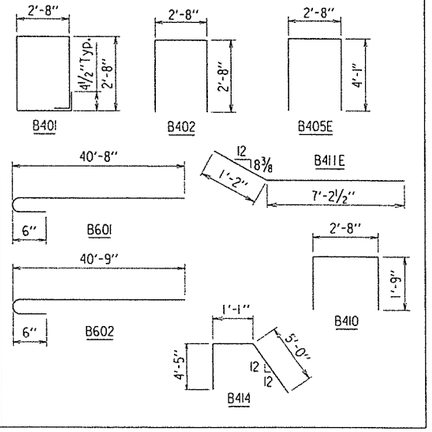
Looking Ahead
Scale: 3/8" = 1'-0"

BAR LIST

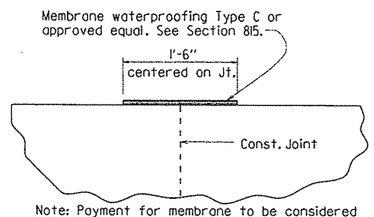
MARK	NO. REQ'D.	LENGTH	P.D.
B401	107	11'-0"	2"
B402	30	7'-10"	2"
B403	2	38'-10"	Str.
B404	2	40'-9"	Str.
B405E	70	10'-5"	2"
B406	4	20'-9"	Str.
B407	4	22'-8"	Str.
B408	4	8'-3"	Str.
B409	4	10'-2"	Str.
B410	42	6'-0"	2"
B411E	6	8'-5"	2"
B412E	6	5'-6"	Str.
B413E	6	9'-6"	Str.
B414	8	10'-5"	2"
B601	6	41'-4"	4 1/2"
B602	6	41'-5"	4 1/2"
B603	6	39'-8"	Str.
B604	6	40'-9"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



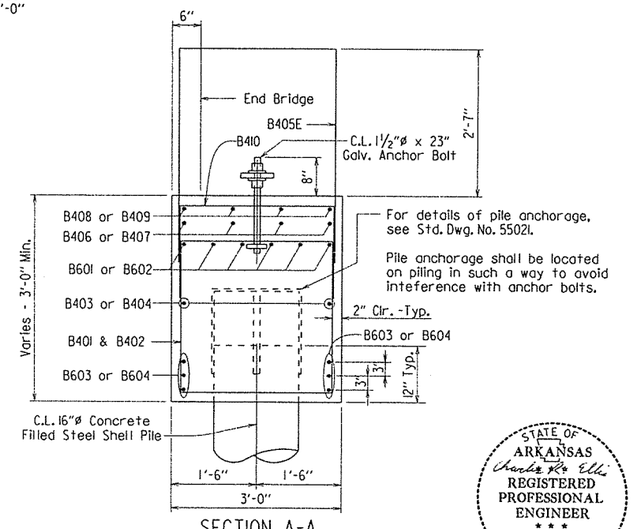
Note: Bars with an "E" Suffix to be Epoxy Coated.



Note: Payment for membrane to be considered subsidiary to Class S Concrete-Bridge.

CONSTRUCTION JOINT DETAIL

No Scale



SECTION A-A

Scale: 3/4" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-14
CHARLES R. ELLIS

BRIDGE ENGINEER

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28-day compressive strength f'c=3,500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi). conforming to AASHTO M31 or M322, Type A, with mill test reports. Granular backfill and pipe underdrain required behind cap. See Dwg. No. 55885.

For details of steel shell piles, see Std. Dwg. No. 55021.

For details of anchor bolts, see Dwg. No. 55886.

For additional information, see Layout.

DETAILS OF BENT 4
BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JGT DATE: 5-12-14
CHECKED BY: TMG DATE: 11/19/14
DESIGNED BY: LJG DATE: 5/14

FILENAME: b110217x2_b4.dgn
SCALE: AS NOTED

BRIDGE NO. 07320 DRAWING NO. 55878

PRINT DATE: 11/18/2014

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.		110217	140	348
				(1) 07320 - SPAN DETAILS -				55879

Slab Reinforcing:

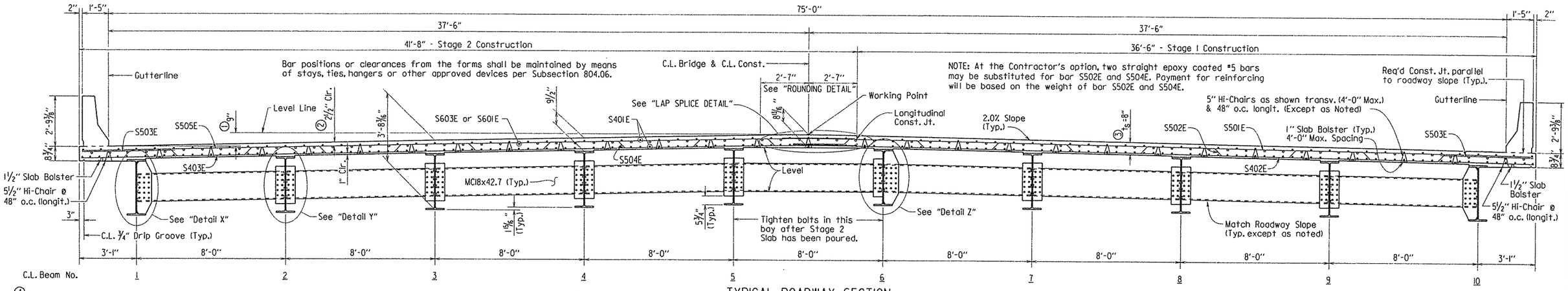
Longitudinal: S401E as shown
S601E as shown over int. supports, see "Reinforcing Plan", Dwg. No. 55882.
S603E at Bridge Ends

Transverse: S502E & S504E @ 12" o.c. bent up over beams — Alternate
S501E & S505E @ 12" o.c. in top, S402E & S403E @ 12" o.c. in bottom — Alternate
S503E @ 6" in top of overhangs (bundled with top transverse bars)

(1) Working point to gutter line.

(2) Tolerance: Minus = 1/4"
Plus = The amount of slab thickening used to meet slab thickness tolerance - see "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".

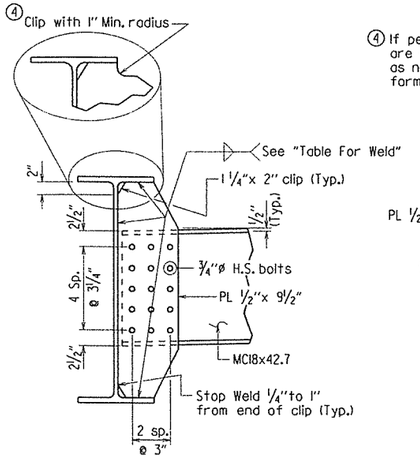
(3) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".



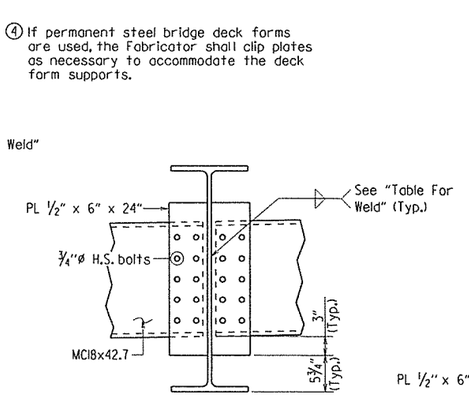
TYPICAL ROADWAY SECTION

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

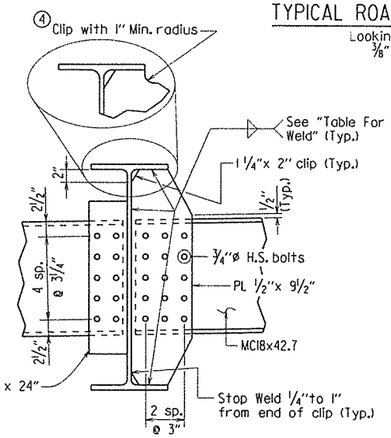
(4) If permanent steel bridge deck forms are used, the Fabricator shall clip plates as necessary to accommodate the deck form supports.



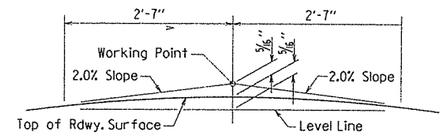
DETAIL X
1" = 1'-0"



DETAIL Y
1" = 1'-0"



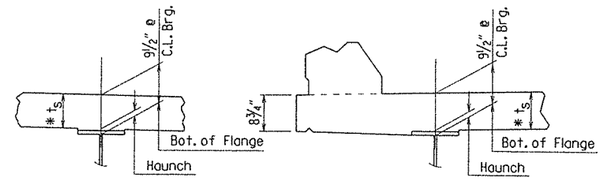
DETAIL Z
1" = 1'-0"



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL
No Scale

t_s = slab thickness as shown in "TYPICAL ROADWAY SECTION"

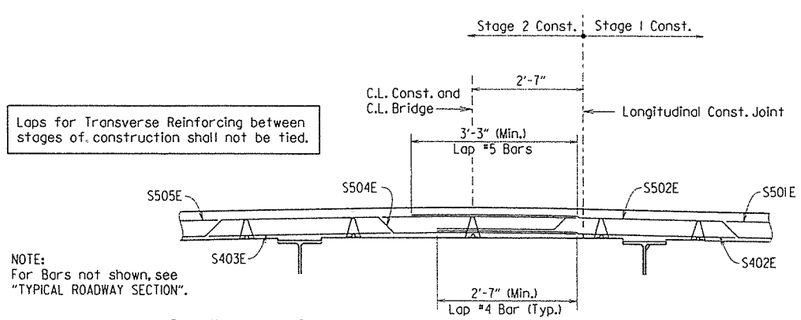


*Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
No Scale

NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

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



LAP SPLICE DETAIL
No Scale

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
11-19-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT
BIG CYPRESS CREEK
ROUTE SEC.

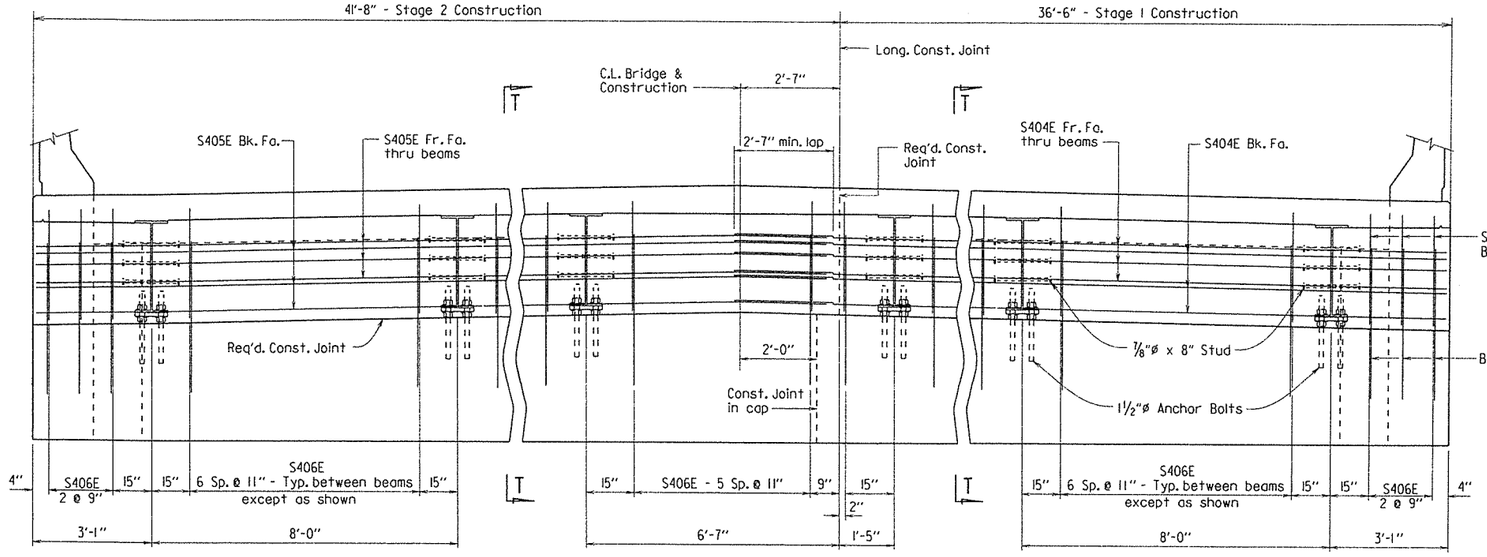
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/23/13
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 12/12
FILENAME: b110217x2_sl.dgn
SCALE: 3/8"= 1'-0" or as shown

BRIDGE NO. 07320 DRAWING NO. 55879

PRINT DATE: 18-NOV-2014

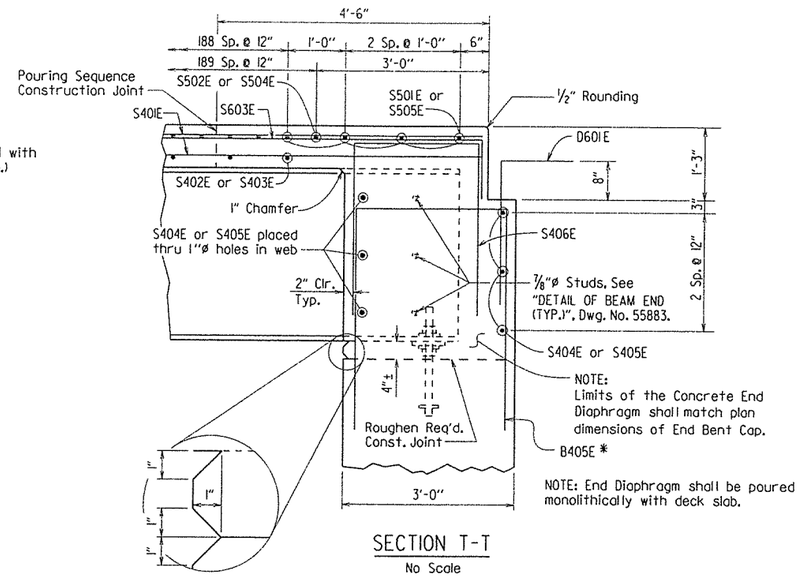
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	141	348
				①		07320 - SPAN DETAILS - 55880		



VIEW N-N

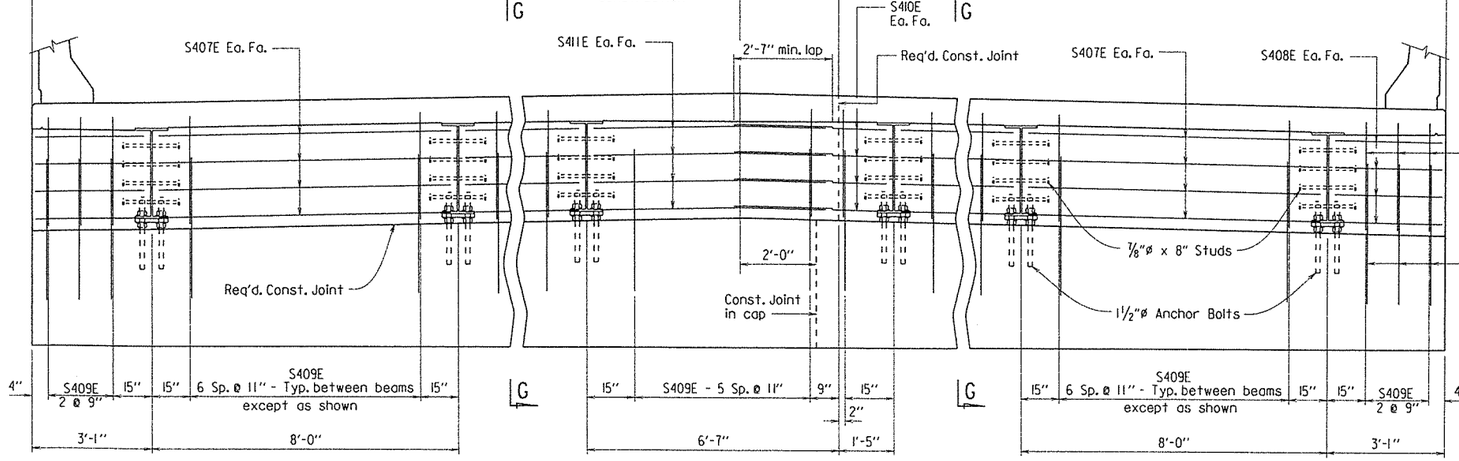
Looking Ahead - Bent 4
Bent 1 Similar
No Scale

* NOTE: See End Bent Details on Dwg. Nos. 55876 & 55878 for reinforcing and additional details.



SECTION T-T

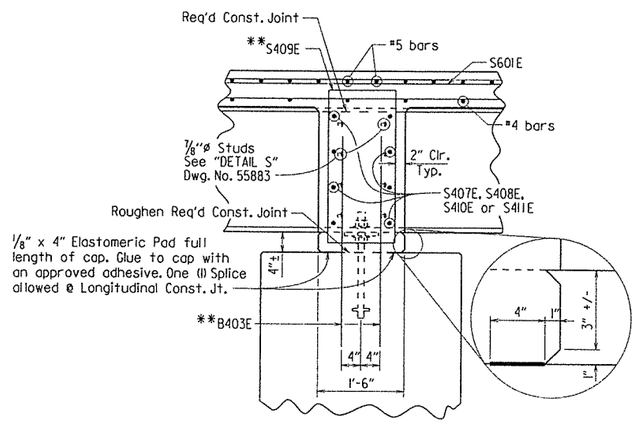
No Scale



VIEW P-P

Looking Ahead at
Bents 2 & 3
No Scale

** NOTE: See Details of Bents 2 & 3 on Dwg. No. 55877 for Reinforcing and additional details.



SECTION G-G

No Scale

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

BRIDGE ENGINEER

SHEET 2 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT
BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

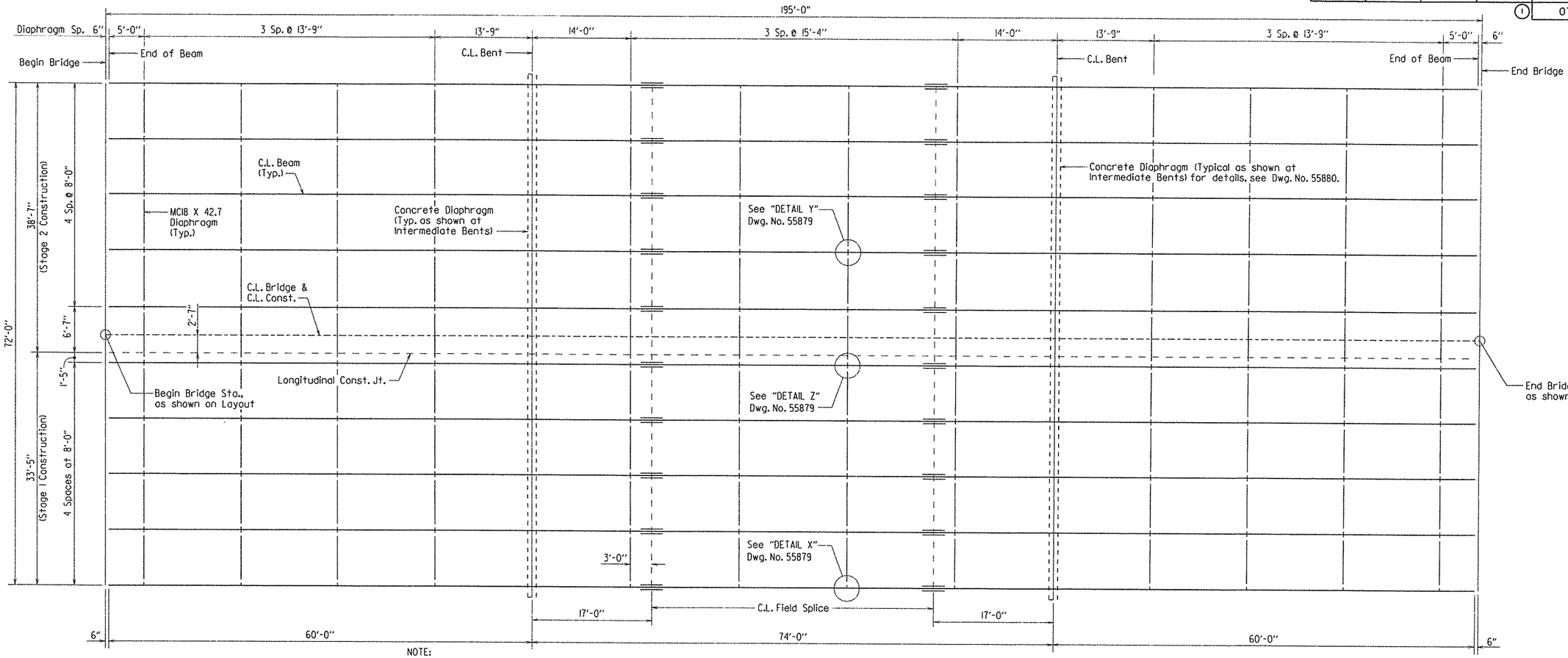
DRAWN BY: MRE DATE: 06/16/14
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 12/12
FILENAME: bll0217x2_sl.dgn
SCALE: No Scale

BRIDGE NO. 07320 DRAWING NO. 55880

PRINT DATE: 11/18/2014

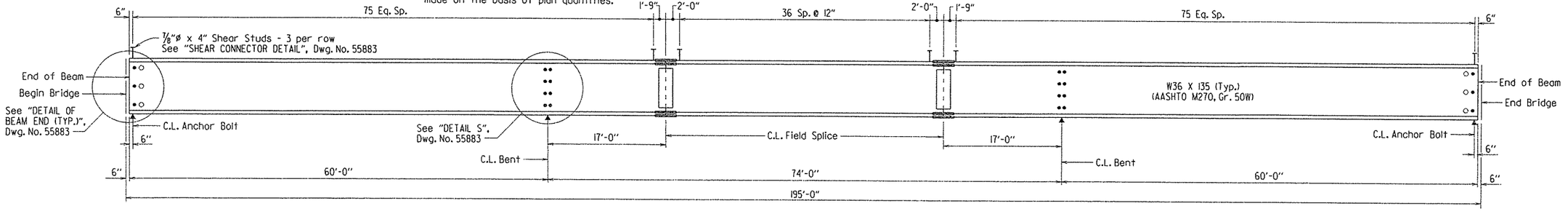
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	142	348

(1) 07320 - SPAN DETAILS - 55881



NOTE:
Bolted Field Splices may be eliminated or Shop Welded Splices substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.

FRAMING PLAN



BEAM ELEVATION

No Scale

NOTE: See Dwg. No. 55883 for "FIELD SPLICE DETAILS".

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT
BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/25/13
CHECKED BY: TMG DATE: 11/18/19
DESIGNED BY: LJB DATE: 12/12

FILENAME: bll0217x2_sl.dgn
SCALE: 1/8" = 1'-0"

BRIDGE NO. 07320 DRAWING NO. 55881

PRINT DATE: 18-NOV-2014

NOTE: For each stage of construction, pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence shown.
Concrete diaphragms at intermediate bents shall be poured a minimum of 48 hours before the slab is poured. Diaphragms at end bents shall not be poured before all Pours 1 and Pours 2 are completed.

NOTES:

Rails and wings above required construction joint are included in span construction and are included in span quantities.

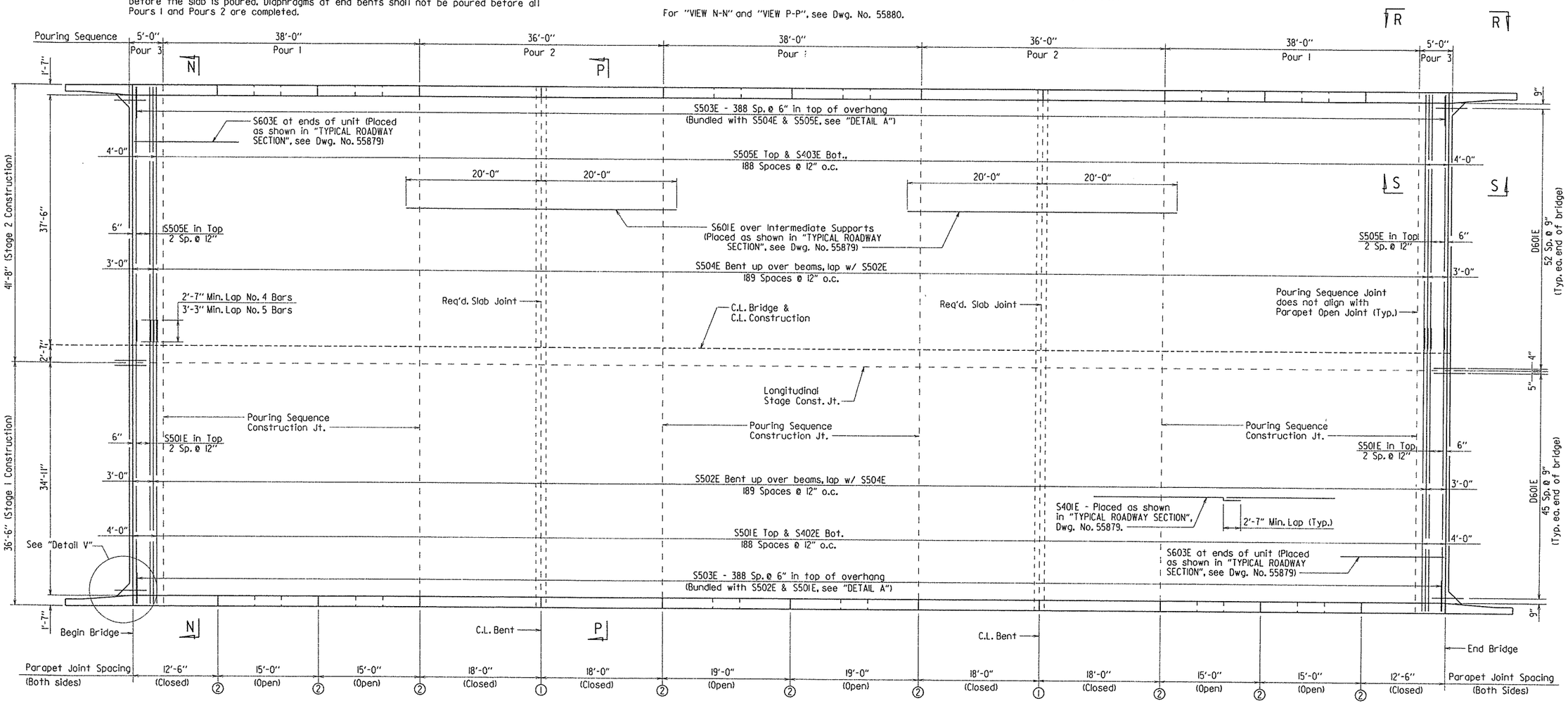
Unless otherwise noted, required slab joints and pouring sequence contruction joints shall align with parapet open joints at the gutterline.

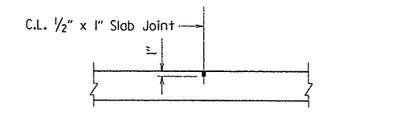
For "VIEW N-N" and "VIEW P-P", see Dwg. No. 55880.

① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) Stop 1'-2" from top of slab.

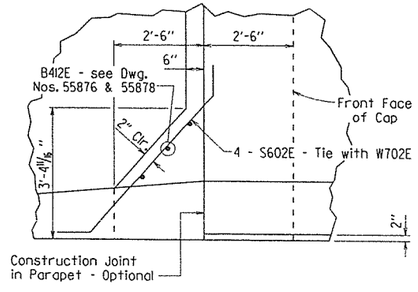
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110217	143	346
				①	07320 - SPAN DETAILS - 55882			





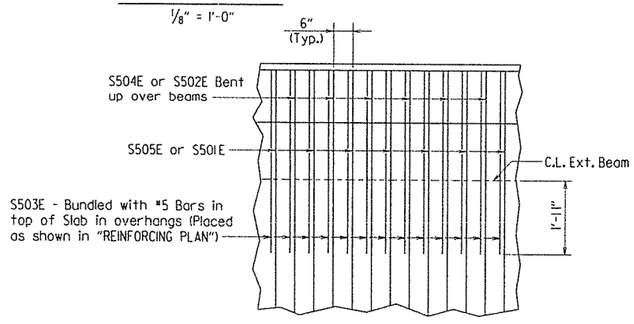
Use 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer rod shall not be installed. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

SLAB JOINT DETAIL
No Scale

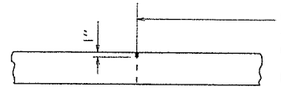


DETAIL V
No Scale

REINFORCING PLAN
1/8" = 1'-0"



DETAIL A
No Scale



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

LONGITUDINAL CONSTRUCTION JOINT
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
11-19-14
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BRIDGE ENGINEER

SHEET 4 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT
BIG CYPRESS CREEK
ROUTE SEC.

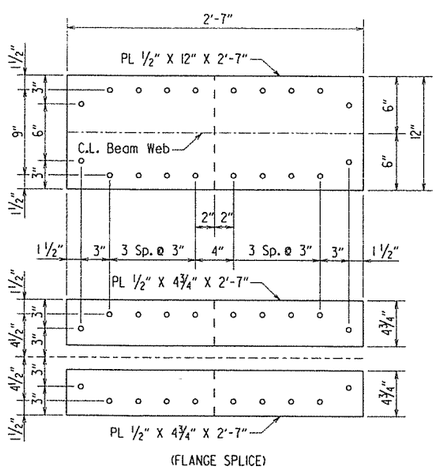
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/25/13
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 12/12
FILENAME: b110217x2_sl.dgn
SCALE: As Shown

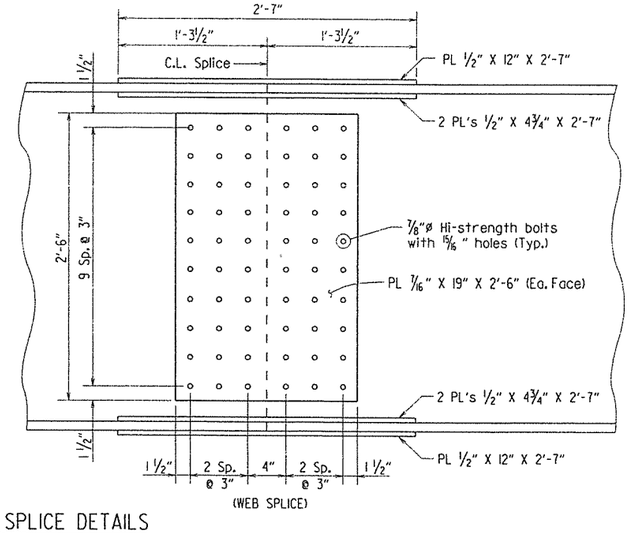
BRIDGE NO. 07320
DRAWING NO. 55882

PRINT DATE: 18-NOV-2014

NOTE: All Splice Plates shall be AASHTO M270, Gr. 50W.



(FLANGE SPLICE)



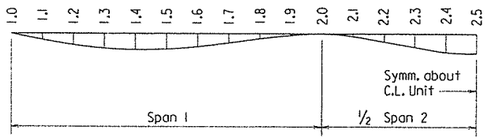
(WEB SPLICE)

FIELD SPLICE DETAILS
No Scale

TABLE OF DEAD LOAD DEFLECTIONS - INCHES

POINT OF DEFLECTION	STRUCTURAL STEEL		STRUCTURAL STEEL + SLAB		STRUCTURAL STEEL + SLAB + PARAPET	
	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM
1.0	0.000	0.000	0.000	0.000	0.000	0.000
1.1	0.032	0.030	0.193	0.172	0.198	0.191
1.2	0.059	0.055	0.355	0.318	0.364	0.353
1.3	0.077	0.072	0.466	0.417	0.477	0.463
1.4	0.085	0.079	0.513	0.459	0.525	0.509
1.5	0.082	0.076	0.494	0.441	0.506	0.489
1.6	0.069	0.064	0.416	0.372	0.426	0.413
1.7	0.049	0.046	0.296	0.265	0.303	0.294
1.8	0.027	0.025	0.161	0.144	0.165	0.160
1.9	0.008	0.007	0.047	0.042	0.048	0.047
2.0	0.000	0.000	0.000	0.000	0.000	0.000
2.1	0.013	0.012	0.079	0.070	0.081	0.078
2.2	0.040	0.038	0.244	0.218	0.250	0.242
2.3	0.069	0.064	0.417	0.373	0.427	0.414
2.4	0.090	0.084	0.543	0.486	0.556	0.539
2.5	0.097	0.091	0.589	0.527	0.603	0.585

Symmetrical about C.L. Unit →



DEAD LOAD DEFLECTION DIAGRAM
No Scale

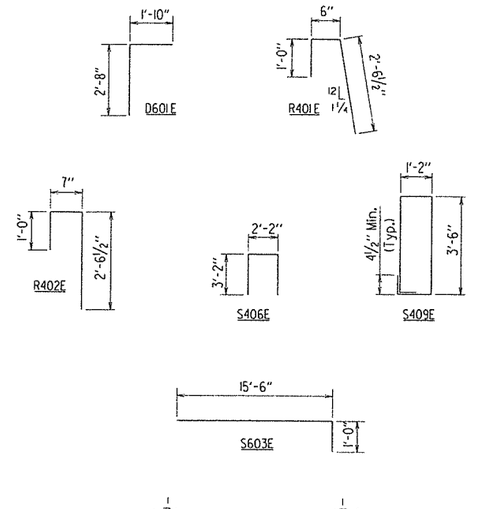
NOTE:
Camber for Dead Load Deflection plus Vertical curve +/- ¼" tolerance. Deflections shown are along a chord from C.L. Anchor Bolt to C.L. Anchor Bolt.

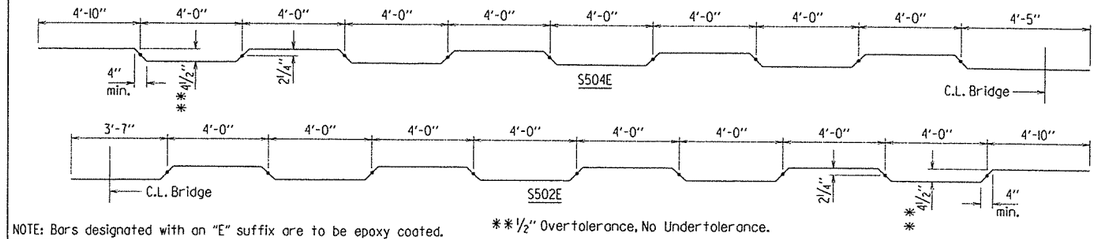
*BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
D601E	198	4'-4"	4½"
R401E	16	3'-11"	2"
R402E	16	4'-0"	2"
R403E	24	9'-8"	Str.
R404E	24	5'-0"	Str.
R601E	32	6'-7"	Str.
R602E	12	5'-0"	Str.
S401E	1,356	34'-11"	Str.
S402E	189	39'-1"	Str.
S403E	189	41'-4"	Str.
S404E	12	39'-1"	Str.
S405E	12	41'-4"	Str.
S406E	126	8'-4"	2"
S407E	128	7'-8"	Str.
S408E	32	2'-9"	Str.
S409E	126	9'-8"	2"
S410E	16	4'-0"	Str.
S411E	16	6'-4"	Str.
S501E	195	39'-9"	Str.
S502E	188	41'-4"	3"
S503E	778	5'-0"	Str.
S504E	188	42'-2"	3"
S505E	195	41'-4"	Str.
S601E	156	40'-0"	Str.
S602E	16	7'-4"	4½"
S603E	156	16'-4"	4½"
W401E	20	5'-5"	2"
W402E	20	6'-7"	Str.
W701E	12	12'-2"	Str.
W702E	48	12'-8"	5¼"

BENDING DIAGRAMS

Dimensions are out to out of bars.

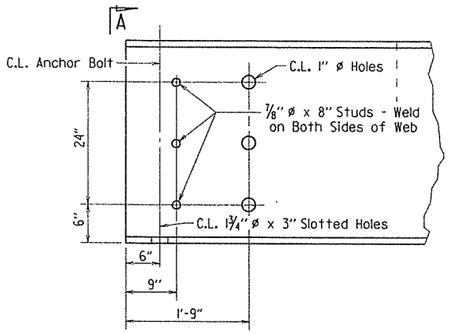


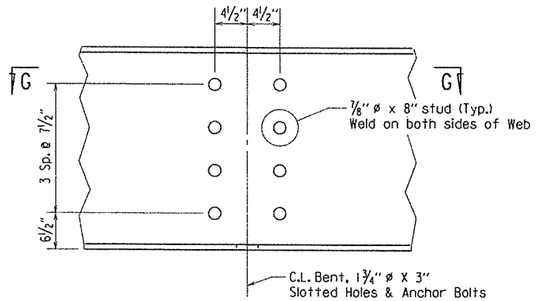


NOTE: Bars designated with an "E" suffix are to be epoxy coated.

**½" Overtolerance, No Undertolerance.

* See Dwg. No. 55884 for Parapet Rail Bar List.

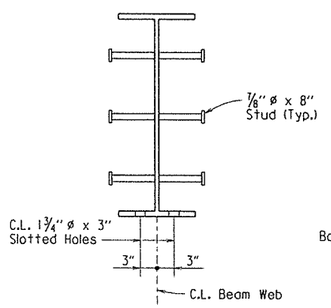




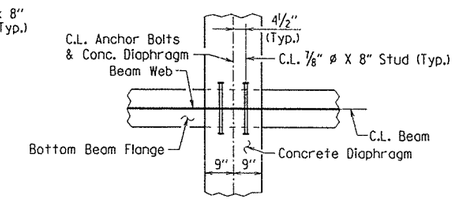
DETAIL S
¾" = 1'-0"

A

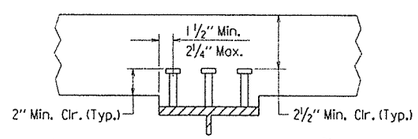
DETAIL OF BEAM END (TYP.)
No Scale



VIEW A-A
No Scale



SECTION G-G
No Scale



Stud Shear Connectors shown shall be ⅞" ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾" ø studs may be used in place of the ⅞" ø studs shown, at the ratio of 1.361 - ¾" ø studs in place of one ⅞" ø stud. ⅞" ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL
No Scale

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.		110217	144	3648
				(1)		07320 - SPAN DETAILS - 55883		

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
11-19-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT
BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/28/13 FILENAME: bll0217x2_sl.dgn
CHECKED BY: TMG DATE: 11/18/14 SCALE: AS SHOWN
DESIGNED BY: LDB DATE: 12/12

BRIDGE NO. 07320 DRAWING NO. 55883

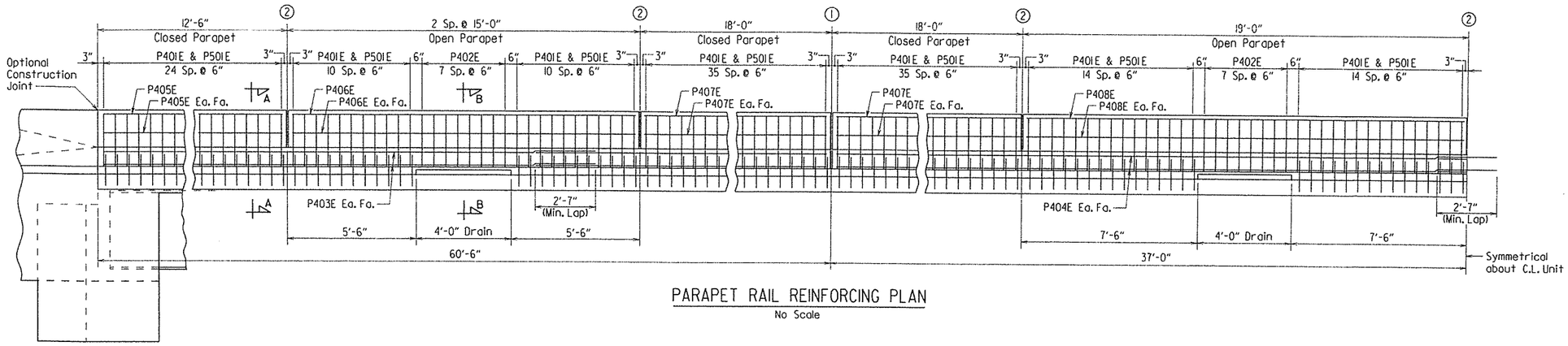
PRINT DATE: 18-NOV-2014

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.		110217	145	348
①	07320 - SPAN DETAILS - 55884			

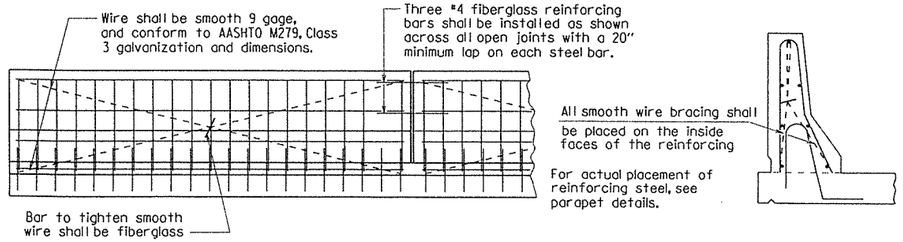
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) Stop 1'-2" from top of slab.



PARAPET RAIL REINFORCING PLAN

No Scale

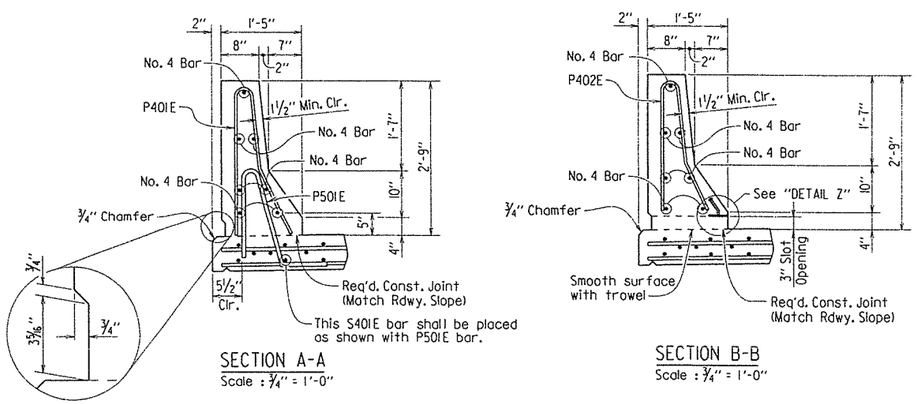


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale

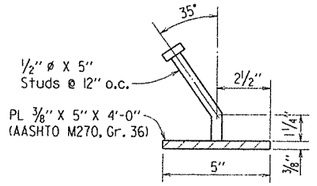


SECTION A-A

Scale : 3/4" = 1'-0"

SECTION B-B

Scale : 3/4" = 1'-0"



DETAIL Z

No Scale

NOTE:
Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)". The surfaces of the 3/8" Plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly but will be included in the item for structural steel.

PARAPET RAIL BAR LIST

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars.)
P401E	684	5'-6"	2"	3" p.d. 2'-7 1/2" 1'-2 1/8" 12 12 6 1/2 12 3/4"
P402E	96	4'-10"	2"	3" p.d. 2'-3 1/2" 1'-2 1/8" 12 12 6 1/2 11"
P403E	32	31'-5"	Str.	
P404E	16	38'-2"	Str.	
P405E	12	12'-2"	Str.	
P406E	24	14'-8"	Str.	
P407E	24	17'-8"	Str.	
P408E	12	18'-8"	Str.	
P501E	684	4'-9"	3 3/4"	3 3/4" P.D. 1'-7 1/2" 3 12 1'-9" 1'-4"

P401E P402E P501E

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

STATE OF ARKANSAS
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SHEET 6 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT
BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/25/13
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 12/12

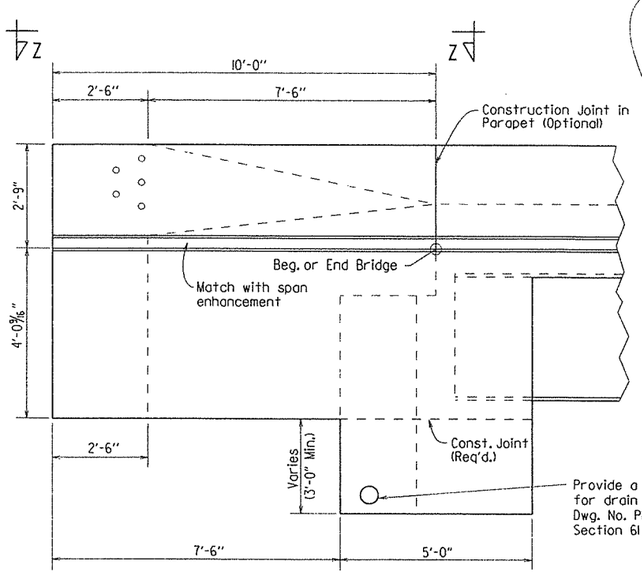
FILENAME: b110217x2_sl.dgn
SCALE: AS SHOWN

BRIDGE NO. 07320

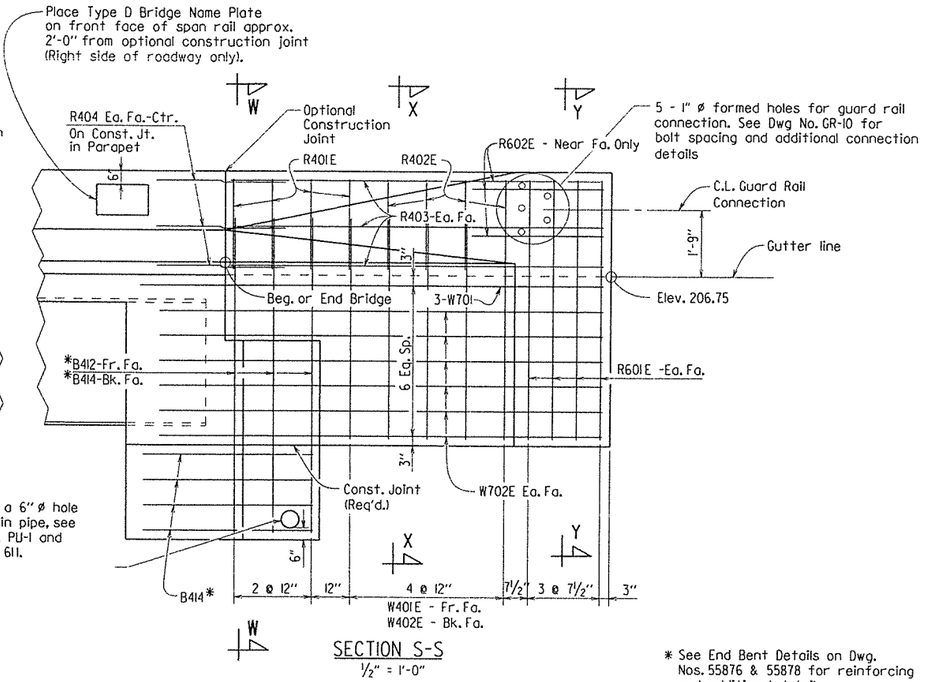
DRAWING NO. 55884

PRINT DATE: 18-NOV-2014

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.		110217	146	348
				①		07320 - SPAN DETAILS - 55885		

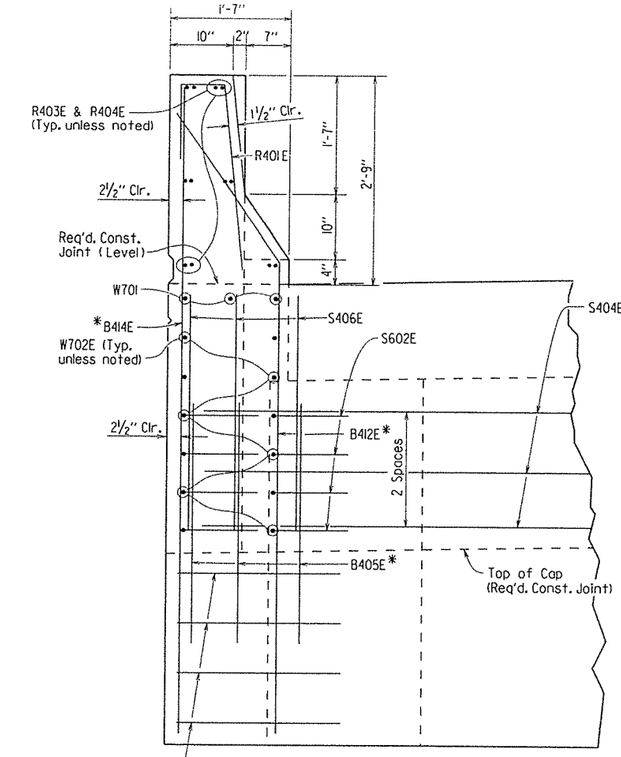


VIEW R-R
½" = 1'-0"

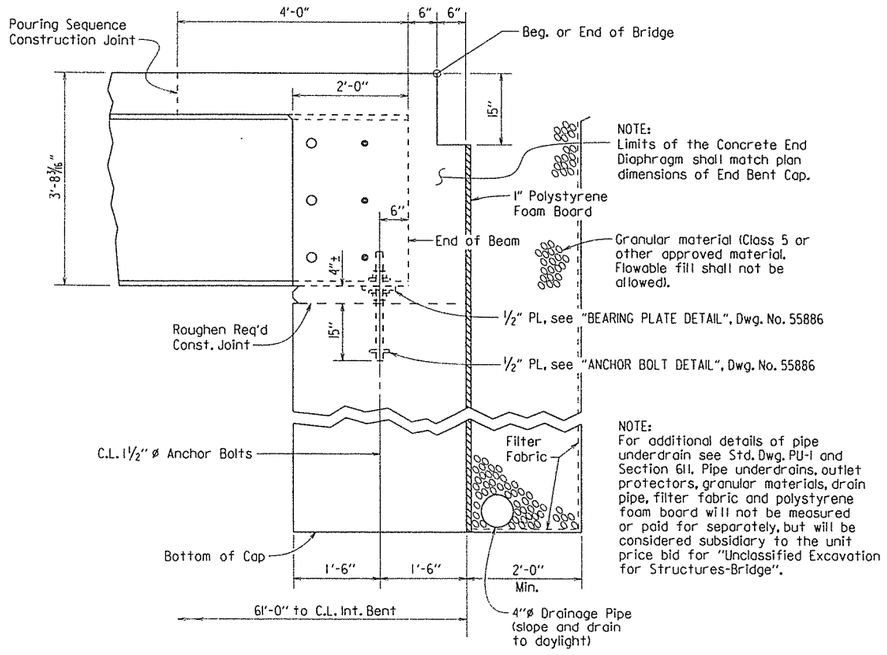


SECTION S-S
½" = 1'-0"

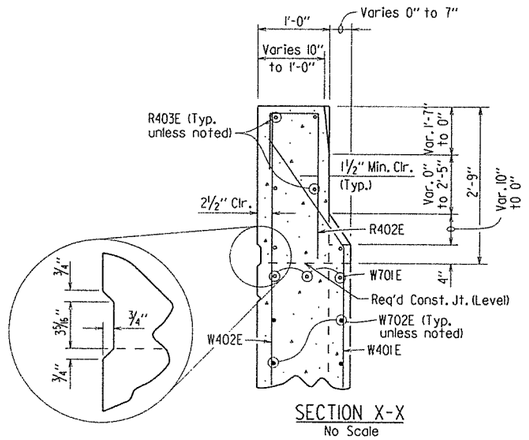
* See End Bent Details on Dwg. Nos. 55876 & 55878 for reinforcing and additional details.



SECTION W-W
1" = 1'-0"



SECTION AT END BENT
No Scale



SECTION X-X
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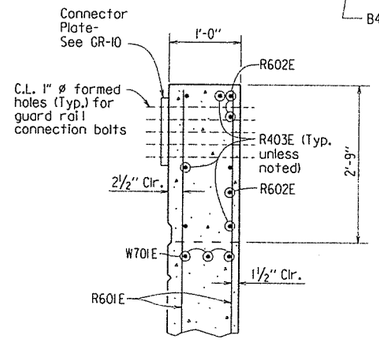
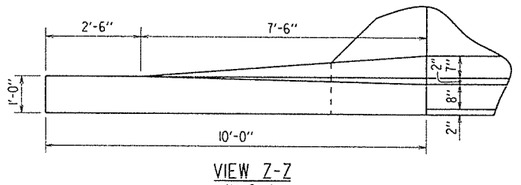


SECTION Y-Y
No Scale



VIEW Z-Z
No Scale

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
11-19-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 7 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT
BIG CYPRESS CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 02/04/13
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 12/12
FILENAME: bll0217x2_sl.dgn
SCALE: As Shown

BRIDGE NO. 07320
DRAWING NO. 55885

PRINT DATE: 18-NOV-2014

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.		110217	147	348
				(1)		07320 - SPAN DETAILS - 55886		

SUPERSTRUCTURE GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2014 edition, with applicable Supplemental Specifications and Special Provisions.

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

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c =	4,000 psi
Reinforcing Steel (Grade 60, AASHTO M31 or M322, Type A)	Fy =	60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy =	36,000 psi

CONCRETE :
Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

Concrete Diaphragms at Intermediate Bents shall be poured a minimum of 48 hours before the slab is poured. Removable form shall be used for concrete diaphragms.

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. For each stage of construction, a minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing.

REINFORCING STEEL :
All reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with Mill Test Reports. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel, (Grade 60)".

STRUCTURAL STEEL :
All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05.

All beams shall be blocked in their true position with webs horizontal in the shop. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼"+/- is allowed for camber.

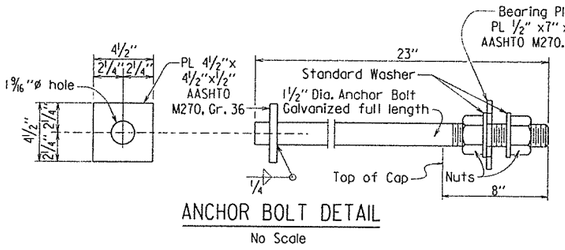
Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If the Contractor or Erector should want to make additional welds, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used to attach falsework support devices and screed rail supports to the structural steel that does not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Field connections shall be bolted with high-strength bolts and shall be ¾" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for ¾" ø high-strength bolts may be 15/16" diameter if a washer is supplied for use under both the nut and head of the bolt.

Unless otherwise noted, diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

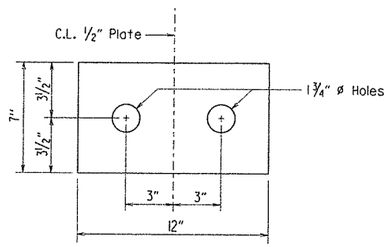
Elastomeric pads at Intermediate Bents shall conform to Subsection 807.151(b). The pads will not be paid for directly, but will be considered subsidiary to the item "Class S Concrete - Bridge".



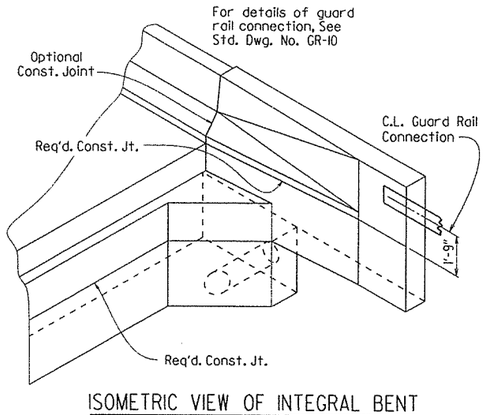
ANCHOR BOLT DETAIL
No Scale

NOTE:
Anchor bolts shall comply with AASHTO M314, Grade 55, with Supplementary Requirement S1, and galvanized according to Subsection 807.07. Nuts for bolts shall be as specified in Subsection 807.07. Plates, anchor bolts, nuts and washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)"

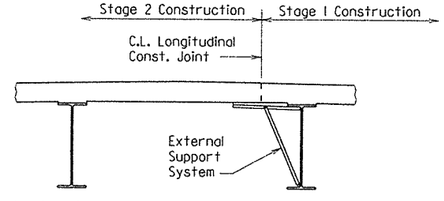
Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.



BEARING PLATE DETAIL
No Scale



ISOMETRIC VIEW OF INTEGRAL BENT
No Scale



Stage 1 external supports in this bay shall remain in place until after completion of the Stage 2 deck pour. See Subsection 802.15 for additional information regarding their removal.

DECK SUPPORT AT LONGITUDINAL CONSTRUCTION JOINT
LOOKING AHEAD
No Scale

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SHEET 8 OF 8
DETAILS OF 194'-0" INTEGRAL CONT. COMP. W-BEAM UNIT BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/29/13
CHECKED BY: TMG DATE: 11/18/14
DESIGNED BY: LJB DATE: 12-12

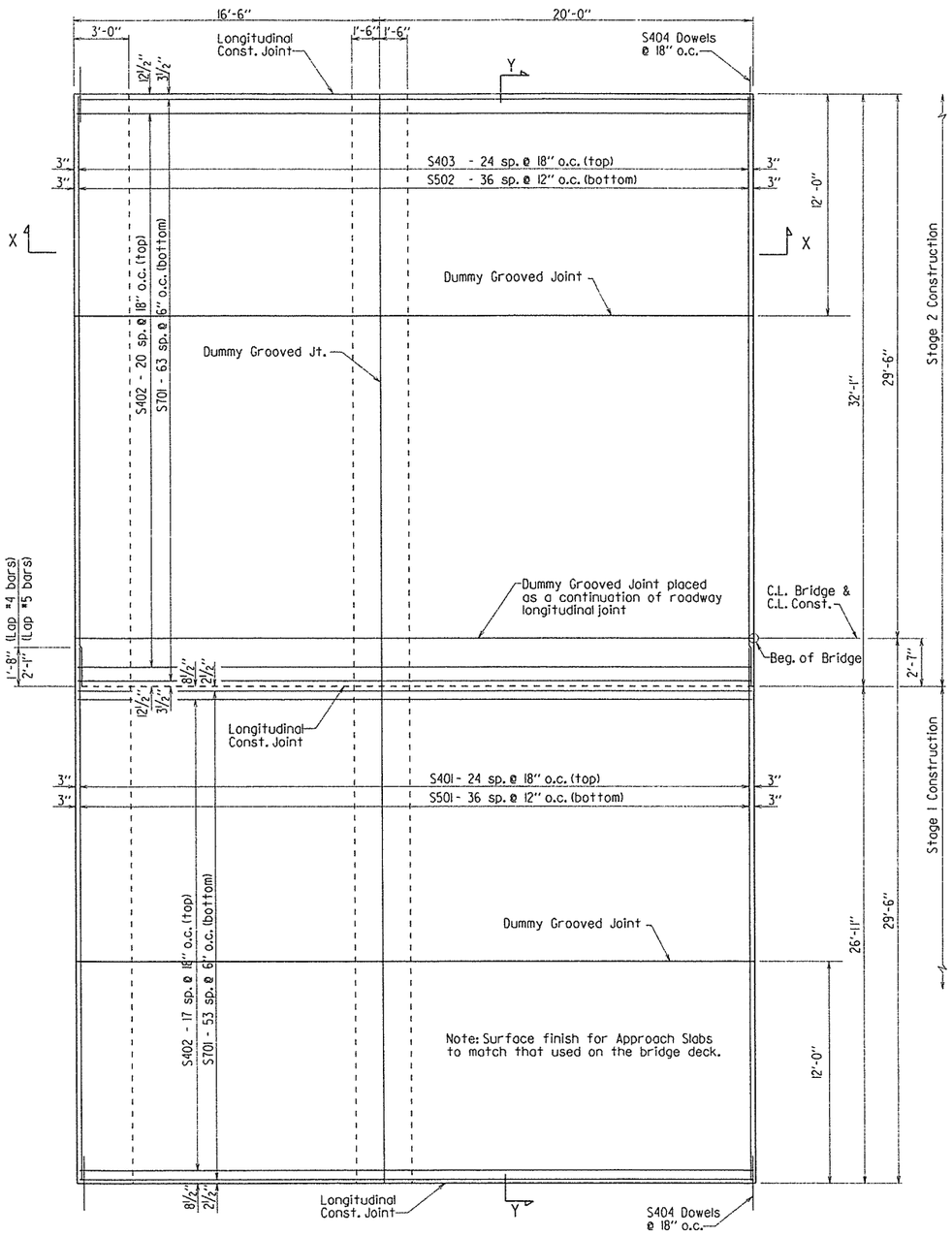
FILENAME: bll0217x2_sl.dgn
SCALE: NO SCALE

BRIDGE NO. 07320

DRAWING NO. 55886

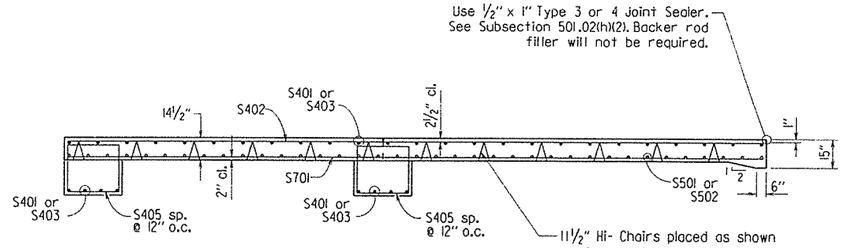
PRINT DATE: 18-NOV-2014

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.		110217	448	3438
				①	07320 - APPROACH SLAB - 55887			

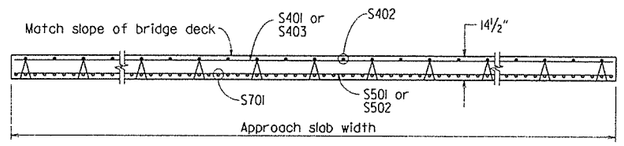


PLAN-APPROACH SLAB
Scale: ¼" = 1'-0"

Note: Approach Slab Shown for Beg. of Bridge. End of Bridge similar.



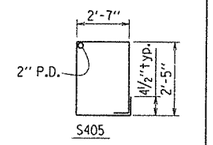
SECTION X-X
No Scale

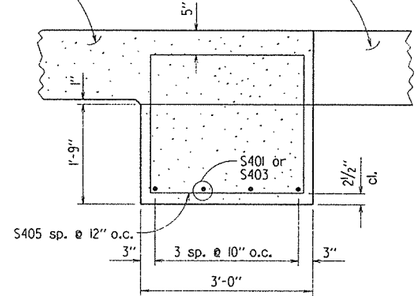


SECTION Y-Y
No Scale

BAR LIST

Mark	No. Req'd.	Length
S401	33	25'-6"
S402	39	36'-2"
S403	33	34'-10"
S404	50	3'-0"
S405	118	10'-4"
S501	37	25'-11"
S502	37	34'-10"
S701	118	36'-2"

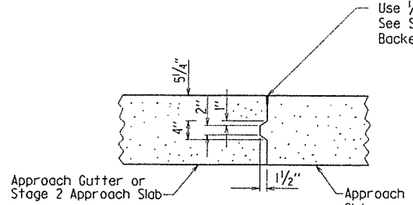




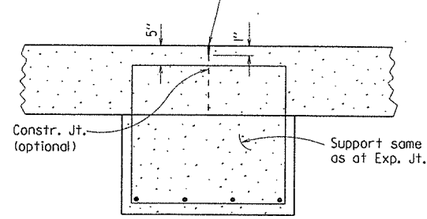
DETAILS OF SUPPORT AT EXPANSION JOINT
Scale: ¾" = 1'-0"

TABLE OF QUANTITIES FOR ONE APPROACH SLAB
(For Information Only)

Reinforcing Steel (lb.)	Concrete (Cu. Yds.)
14255	120.25



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT
Scale: ¾" = 1'-0"



DETAILS OF DUMMY GROOVED JOINT
Scale: ¾" = 1'-0"

GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi).

All Reinforcing Steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504.

Joint sealer included in the pay item "Approach Slab".

STATE OF ARKANSAS
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No. 9235
11-19-14
CHARLES R. ELLIS
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DETAILS OF TYPE SPECIAL APPROACH SLAB

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

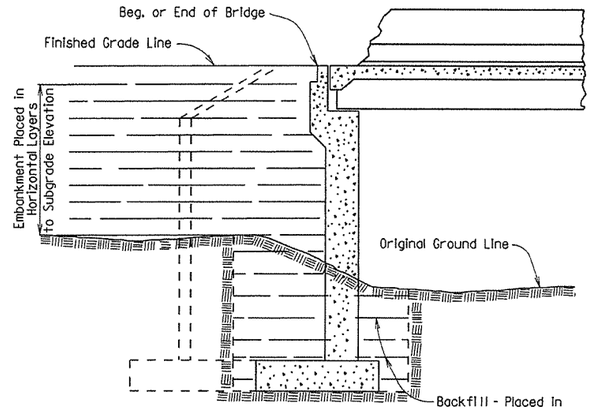
LITTLE ROCK, ARK.

DRAWN BY: JGT DATE: 5/15/14
CHECKED BY: LJB DATE: 11/18/14
DESIGNED BY: STD DATE:
FILENAME: bll0217_as.dgn
SCALE: AS NOTED

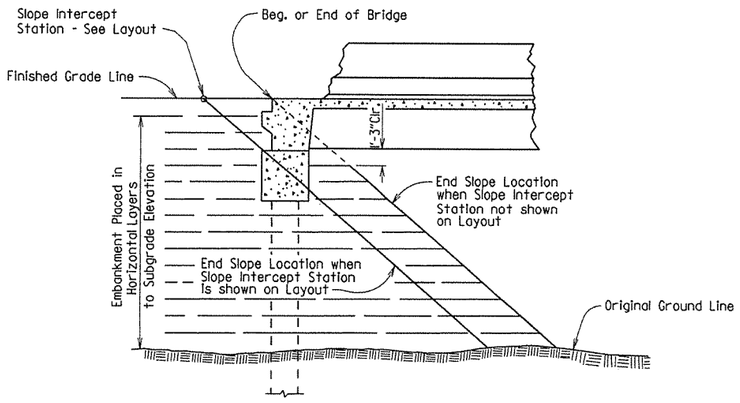
BRIDGE NO. 07320 DRAWING NO. 55887

PRINT DATE: 11/18/2014

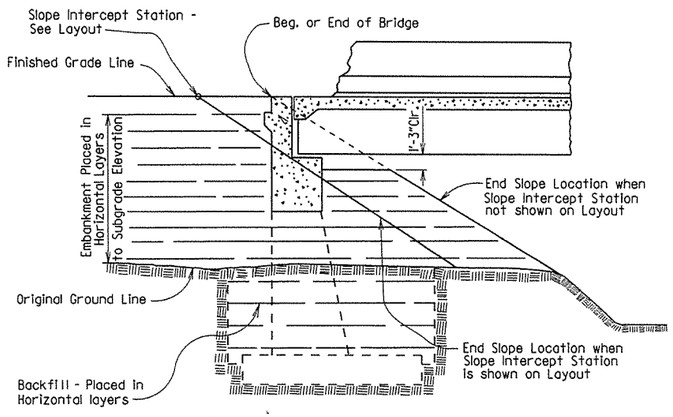
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		149	
				JOB NO.				
				(1) EMBANKMENT & BACKFILL			55000	



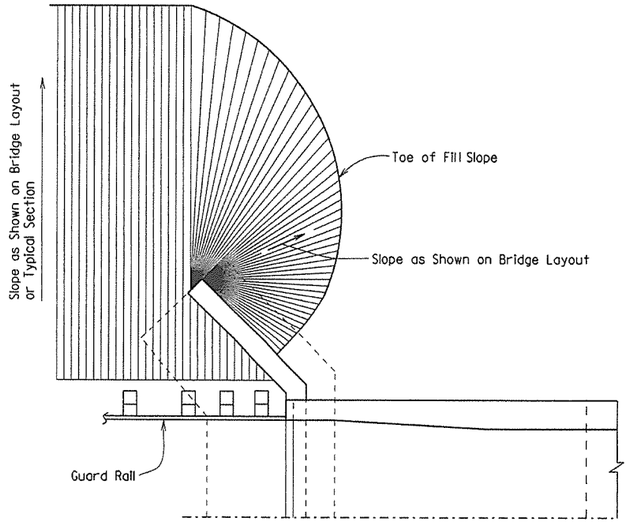
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



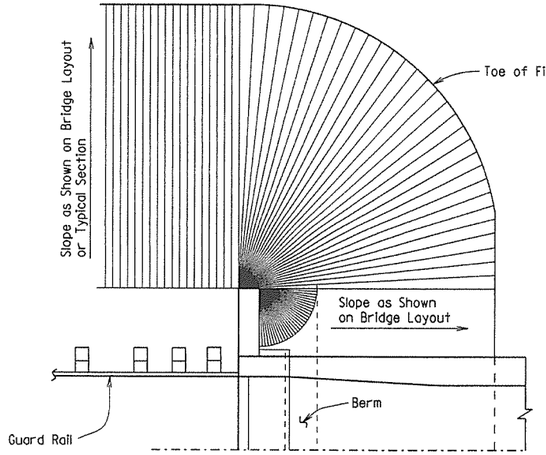
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



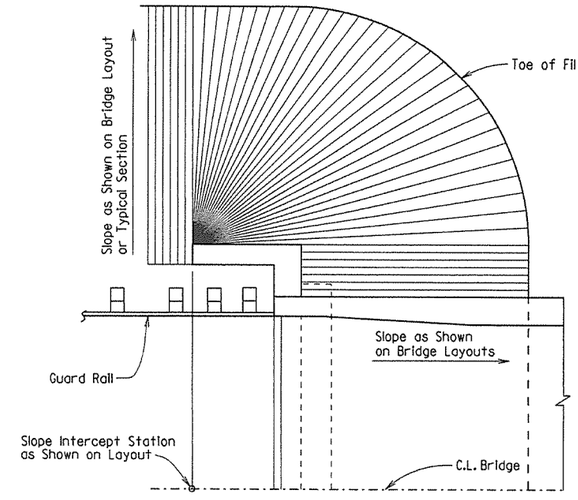
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



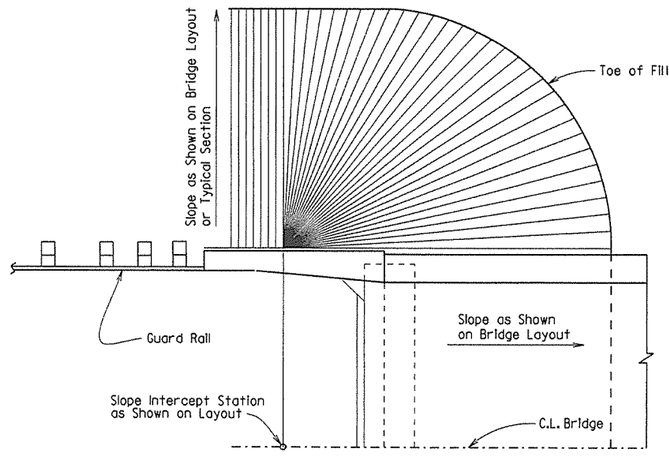
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 6 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to Subsections 210.09, 210.10 and 801.08 for construction requirements.

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

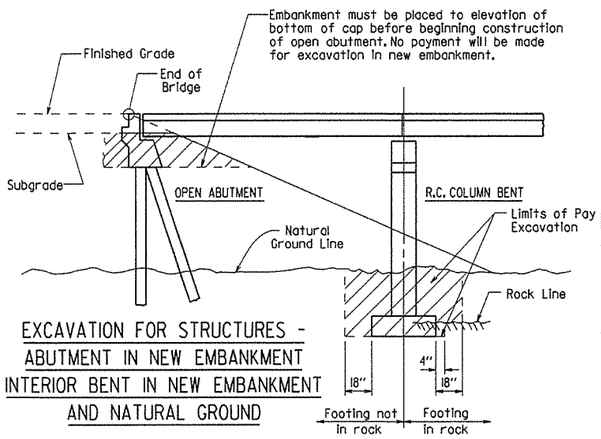
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: -

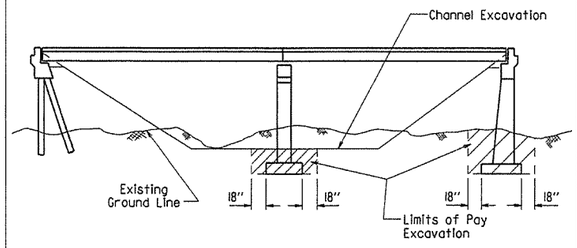
DRAWING NO. 55000

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		150	
				JOB NO.				

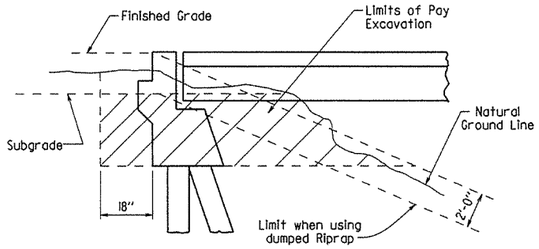
1 RIPRAP & EXCAV. 55001



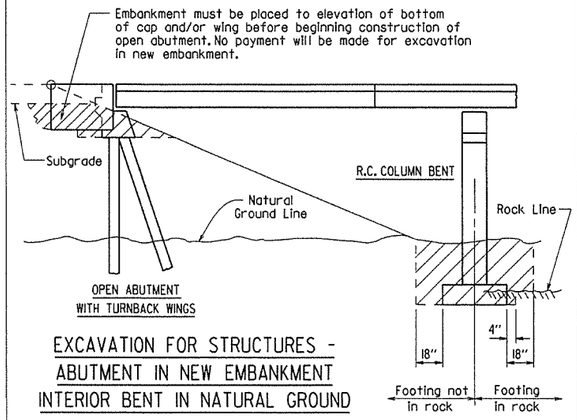
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



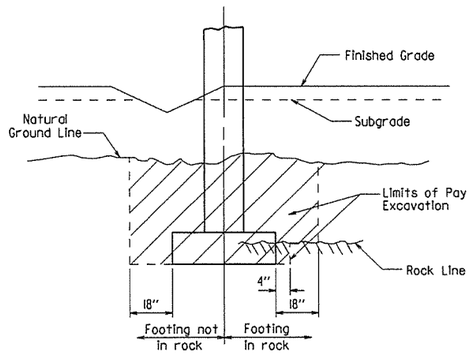
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



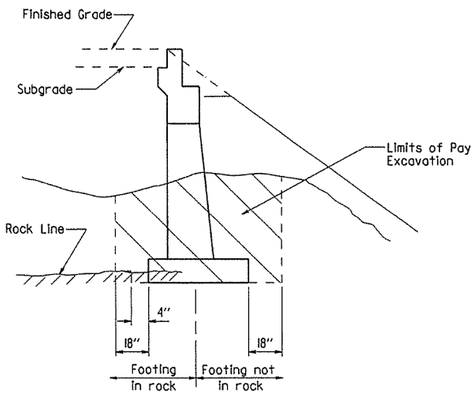
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



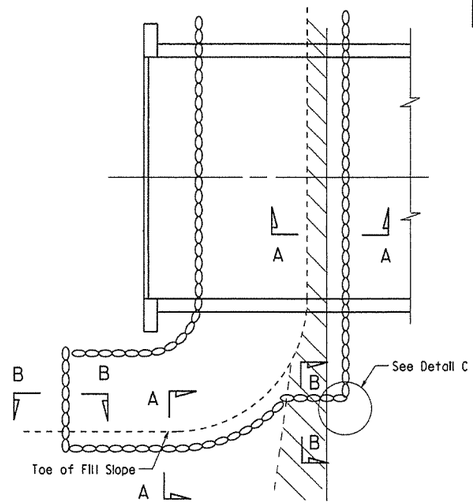
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



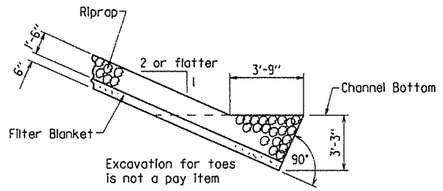
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

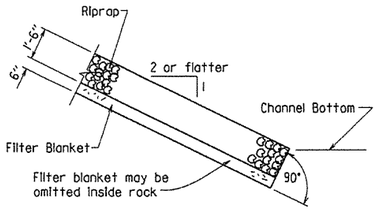


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



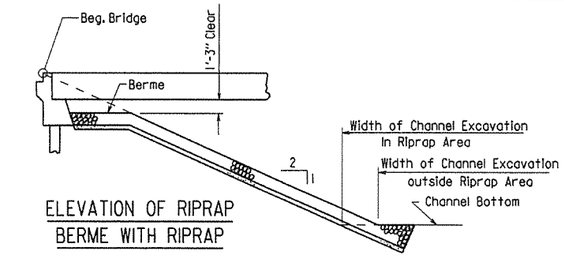
SECTION A-A

(Toe Excavation in Rock)

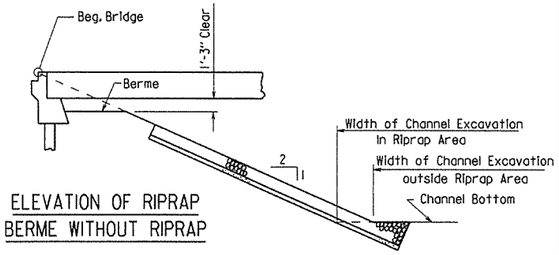
Note : Use this type of toe when rock is encountered which is in a stable condition.

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

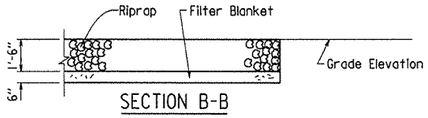
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



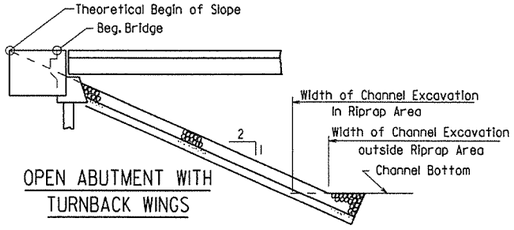
ELEVATION OF RIPRAP BERME WITH RIPRAP



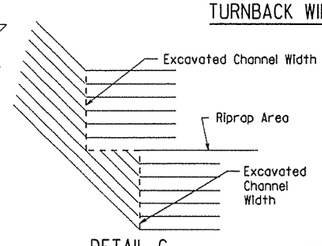
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

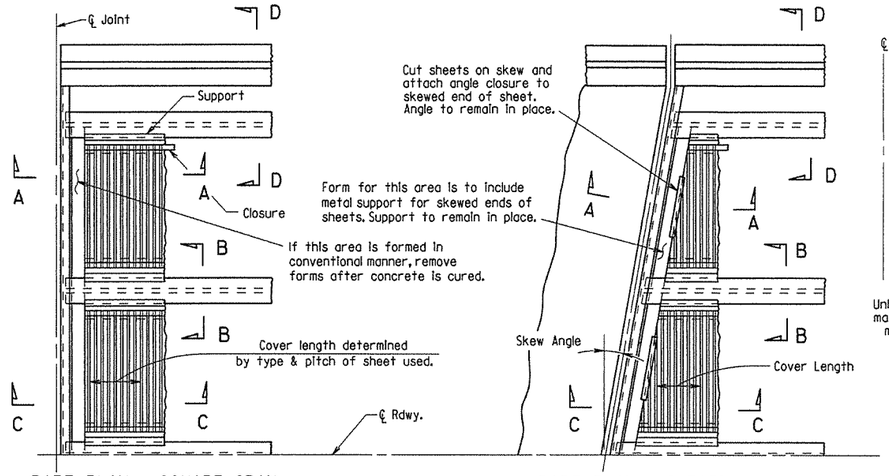
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		151	
				JOB NO.				

(1) BRIDGE DECK FORMS 55005

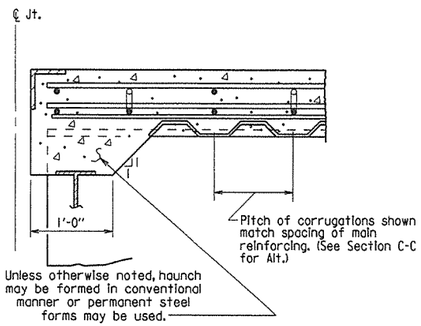


PART PLAN - SQUARE SPAN

⅜" = 1'-0"

PART PLAN - SKEWED SPAN

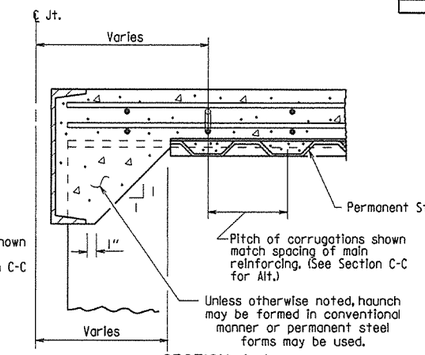
⅜" = 1'-0"



SECTION A-A

N.T.S.

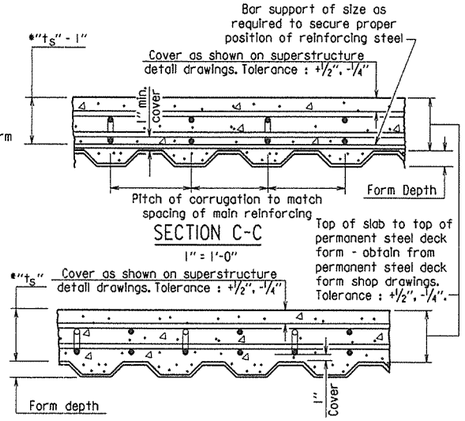
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



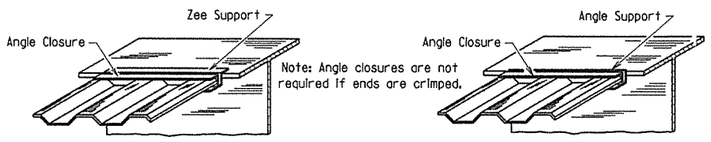
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

GENERAL NOTES

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

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

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

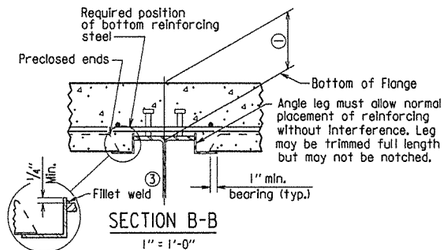
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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

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

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

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

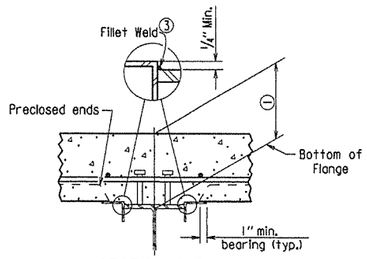


SECTION B-B

1" = 1'-0"

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

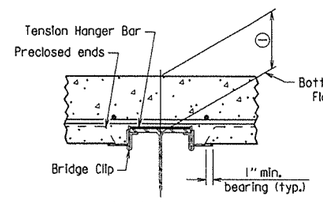
③ Minimum weld: ⅛" x 1' @ 18". More weld may be required; maximum length per weld = 1½" (typ.)



SECTION B-B

1" = 1'-0"

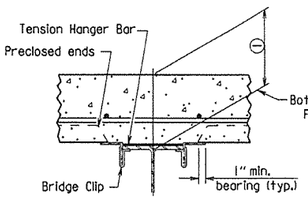
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

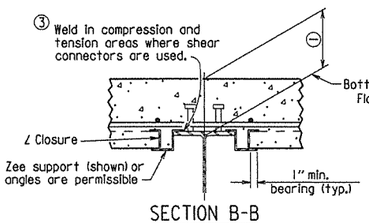
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

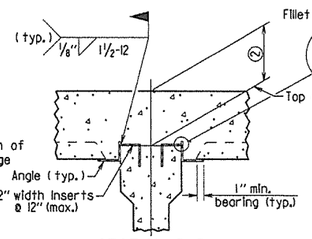
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

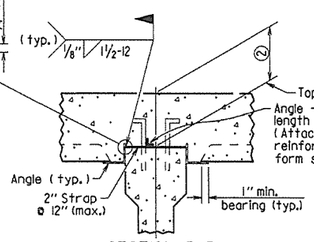


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

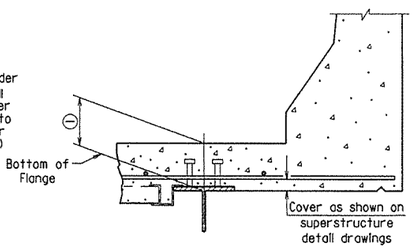


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

(1) Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_s + 1¾" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

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

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE

DESIGNED BY: STD. DATE: —

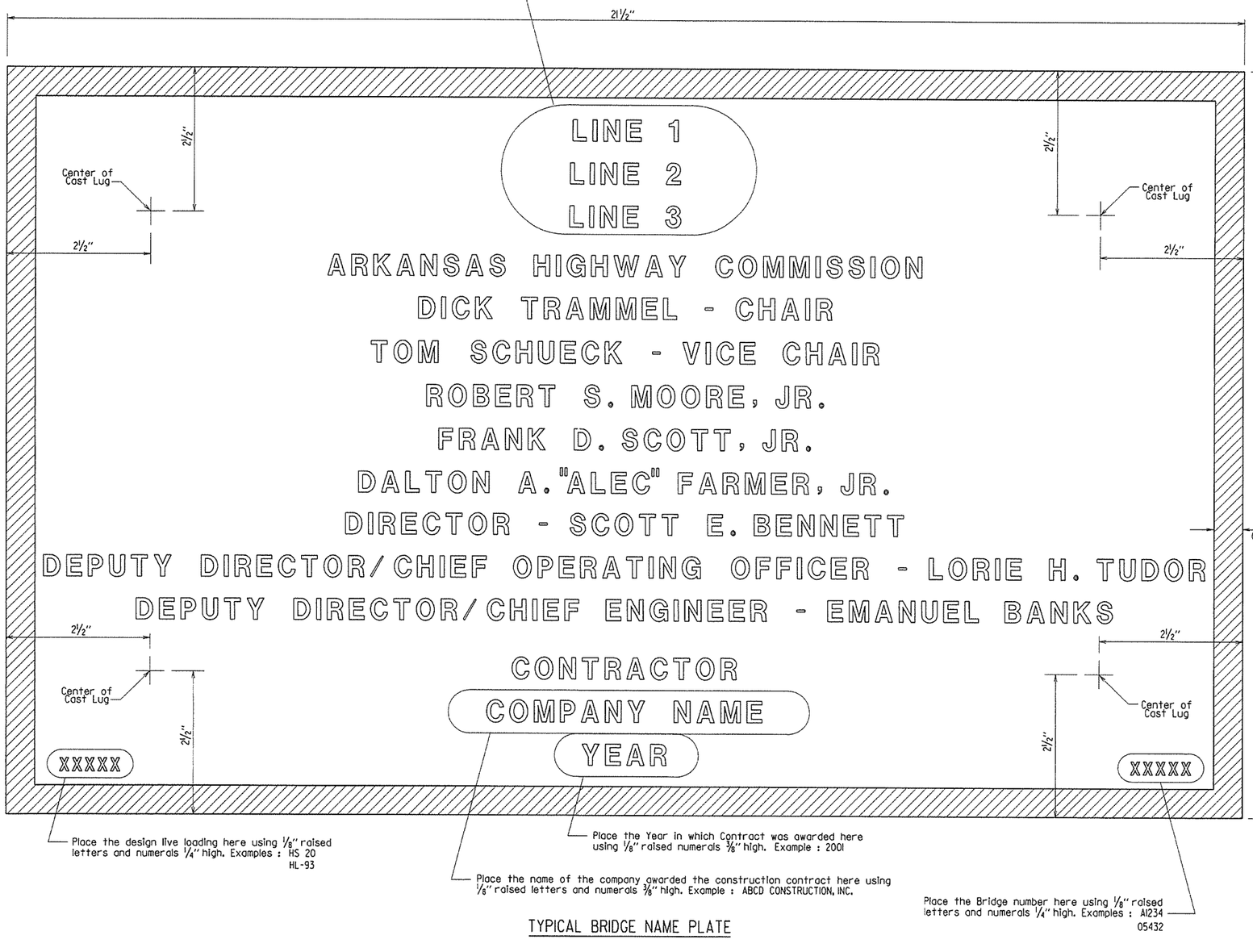
DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.		15a	
1-14-15				JOB NO.				

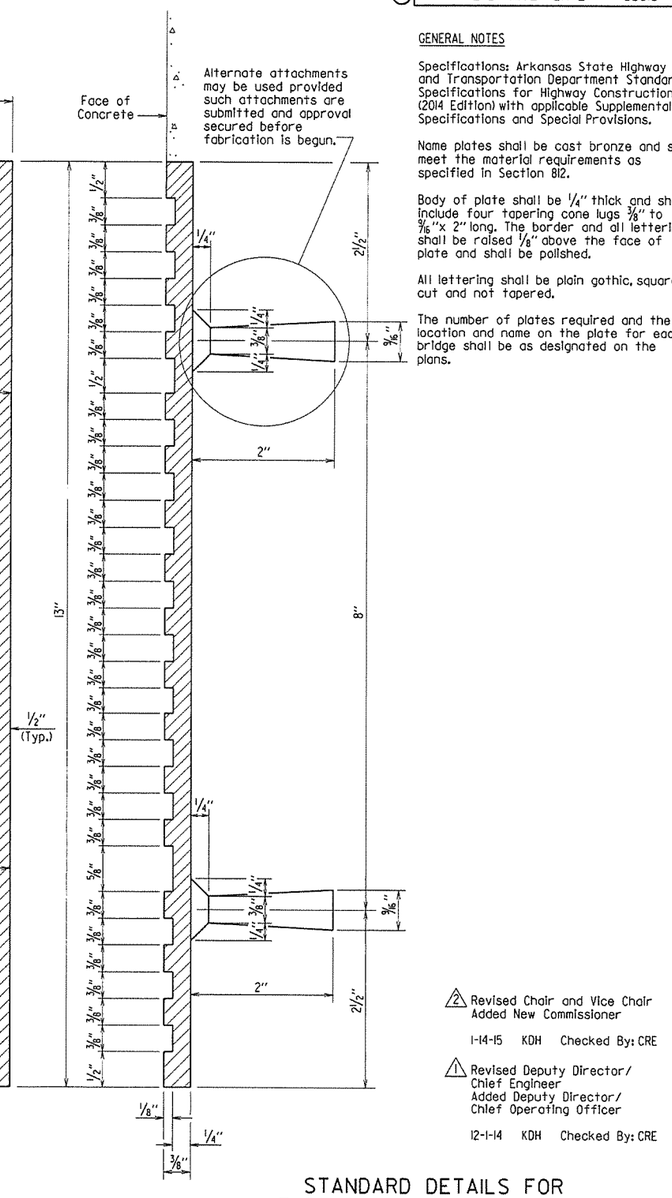
① TYPE D NAME PLATE 55010

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	Red River	Southern	Saline	
Line 2	Relief	Railroad	River	Highway 5
Line 3		Overpass	Relief	



TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

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

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 9/16"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

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

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

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

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

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

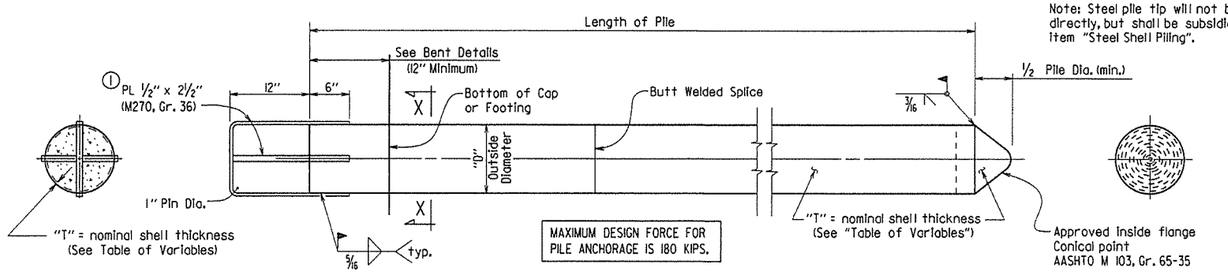
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		153	
				JOB NO.				

① STEEL SHELL PILES 55021

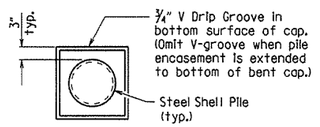


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

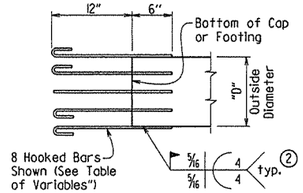
CONCRETE FILLED STEEL SHELL PILE

① Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.

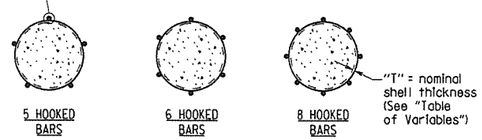
② Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.



VIEW X-X

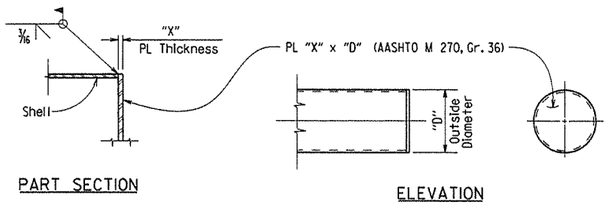


① The Contractor may use No. 7 hooked reinforcing bars equally spaced around piles. Reinforcing bars shall be ASTM A 706, Grade 60. See "Table of Variables" for number required.



ALTERNATE PILE ANCHORAGE DETAIL

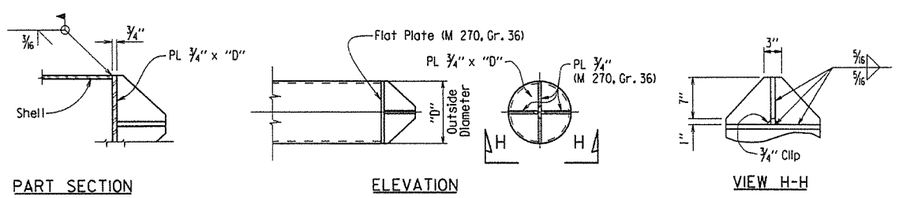
Note: Hooked bars shall be oriented to provide the required concrete clearances shown in the plans.



PART SECTION ELEVATION

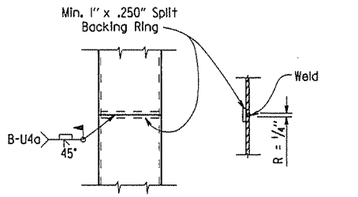
ALTERNATE FLAT TIP DETAIL

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



PART SECTION ELEVATION VIEW H-H

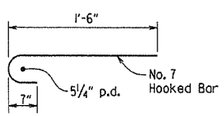
ALTERNATE VANED TIP DETAIL



TYPICAL SPLICE DETAILS

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE
14"	0.50"	¾"	5
16"	0.50"	1"	5
18"	0.50"	1¼"	6
20"	0.50"	1½"	6
24"	0.50"	1¾"	8



HOOKED BAR DETAIL

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEET PILES:

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

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

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

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

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

GENERAL NOTES FOR PILE ENCASEMENTS:

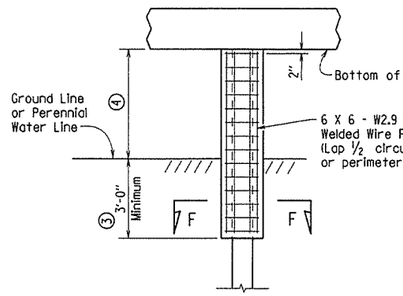
See Bridge Layout for additional notes and required location of pile encasements.

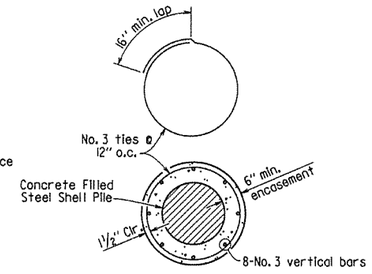
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

Welded wire fabric shall conform to AASHTO M 55 or M 221.

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





SECTION F-F (REINF. ALTERNATE)

PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

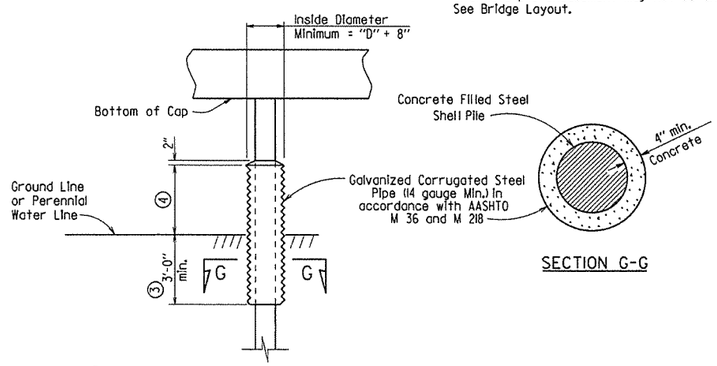
⑤(Shown with Encasement to Bottom of Cap)

③ Unless otherwise noted on Bridge Layout.

④ See Bridge Layout for height of pile encasement (3'-0" Minimum).

⑤ Pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the detail for partial height encasement.

⑥ Alternate pile encasement may not be allowed. See Bridge Layout.



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

This document was originally issued and sealed by Carl J. Fuselier, PE No. 7510, on February 27, 2014. This copy is not a signed and sealed document.

STATE OF ARKANSAS ★★★ REGISTERED PROFESSIONAL ENGINEER ★★★ No. 7510 CARL J. FUSELIER

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55021.dgn

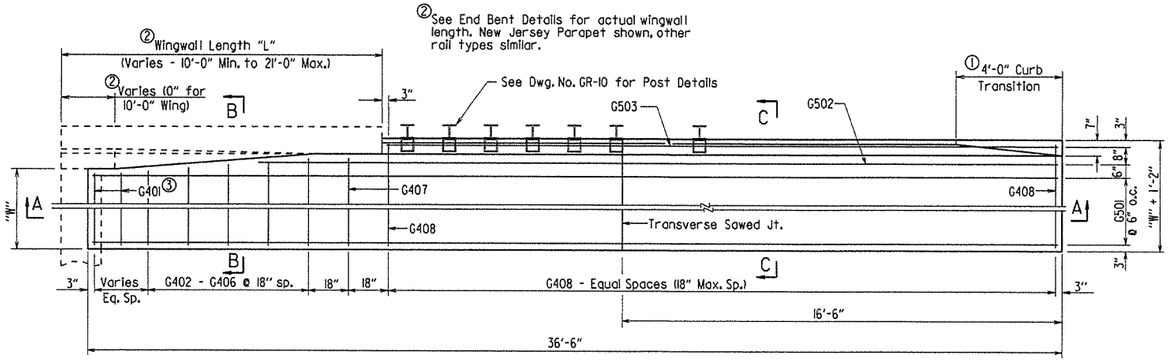
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: —

DRAWING NO. 55021

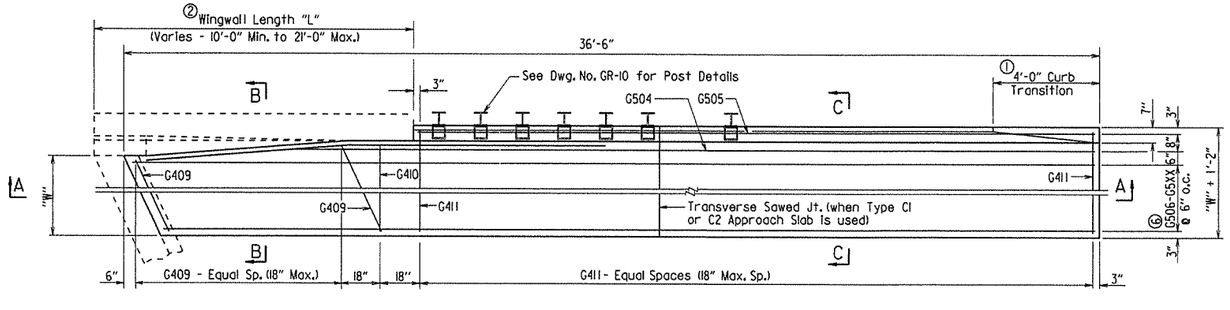
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		154	
				JOB NO.				

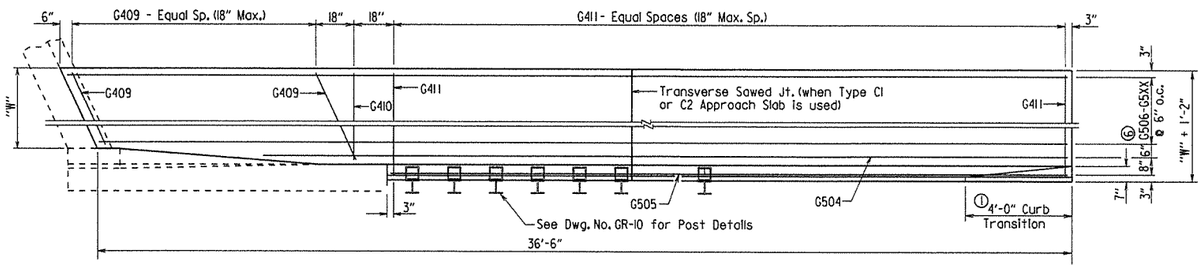
① TYPE C GUTTERS 55030C



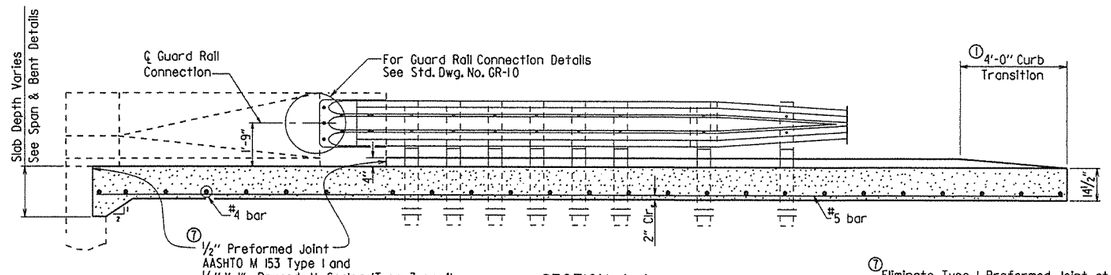
③ Provide G401 bars @ 18" max. spacing. Number of G401 bars vary with wingwall length. No G401 bars required for 10'-0" wingwalls.

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





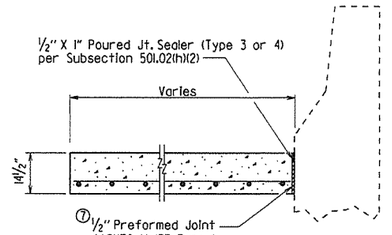
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



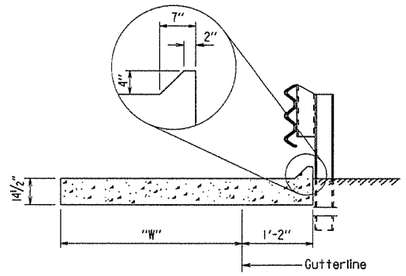
SECTION A-A

① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

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

⑦ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type C2 Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

BAR LIST FOR ONE TYPE C GUTTER

	Mark	No. Req'd. for Width "W" 4'-0"	6'-0"	8'-0"	10'-0"	Length
Square Bridge	G401	④	④	④	④	"W"- 4"
	G402-G406	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	"W"+3"
	G408	④	④	④	④	"W"+ 10"
	G501	8	12	16	20	36'-2"
	G502	1	1	1	1	(41'-11") - "L"
	G503	1	1	1	1	(37'-2") - "L"
Skewed Bridge	G409	④	④	④	④	⑤
	G410	1	1	1	1	"W"+3"
	G411	④	④	④	④	"W"+ 10"
	G504	1	1	1	1	⑤
	G505	1	1	1	1	⑤
	G506 - G5XX ⑥	1 each	1 each	1 each	1 each	⑤

④ No. Req'd. varies with Skew and Wingwall Length.

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'
G525 for "W" = 10'

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

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

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

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Gutters will be measured and paid for in accordance with Section 504.

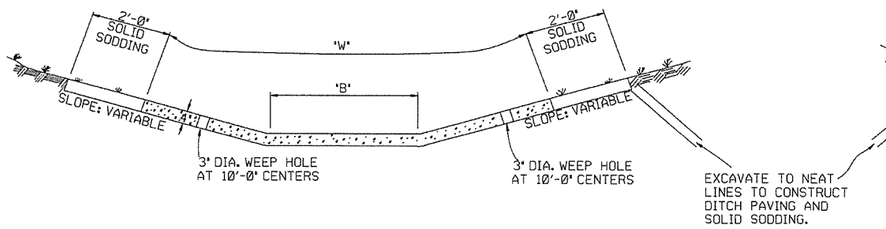
STANDARD DETAILS FOR TYPE C APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030c.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: ⅜" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

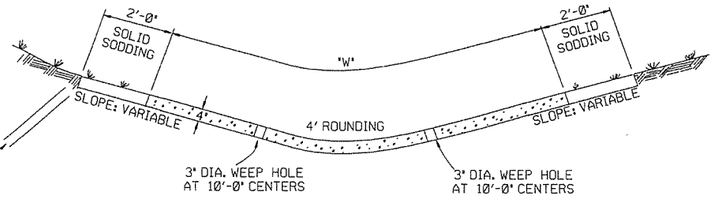
DRAWING NO. 55030C

REFER TO TABULATION OF QUANTITIES
FOR 'W' & 'B' DIMENSIONS



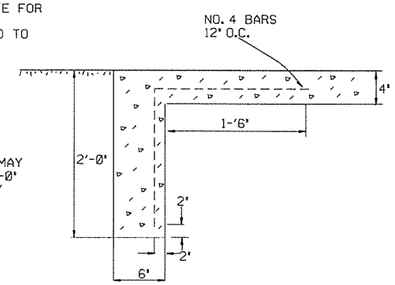
TYPE A

REFER TO TABULATION OF QUANTITIES
FOR 'W' DIMENSIONS



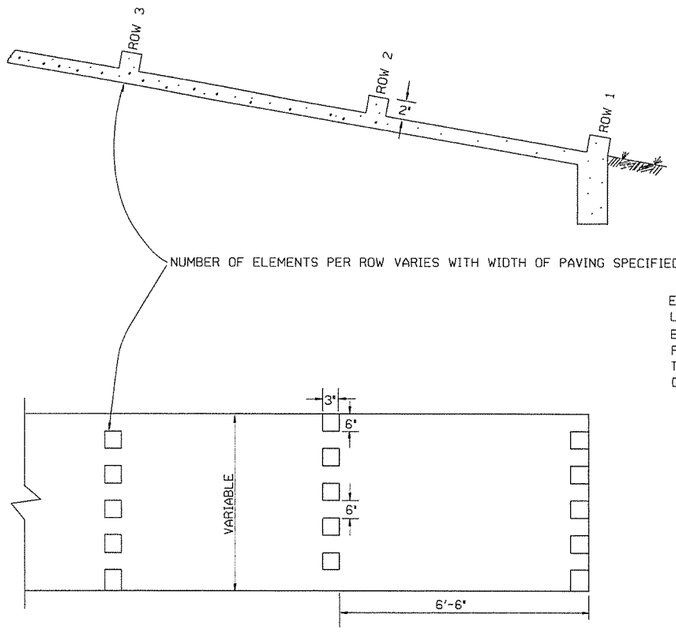
TYPE B

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.

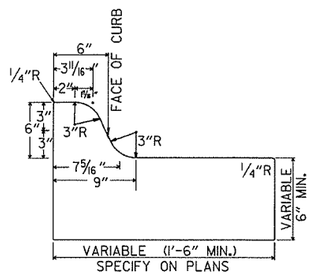
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

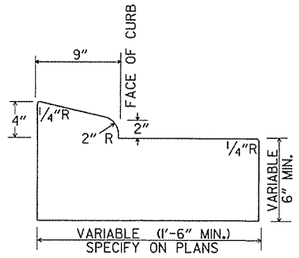
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

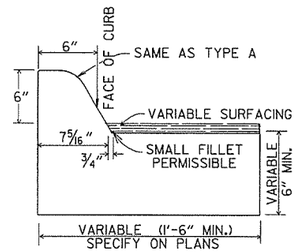
STANDARD DRAWING CDP-1



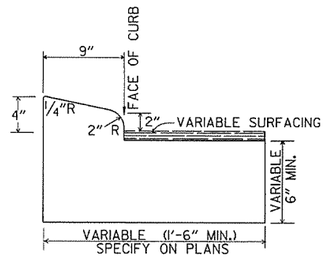
TYPE A



TYPE B-1



TYPE C



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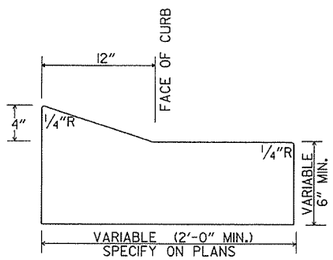
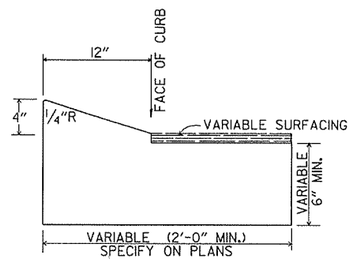
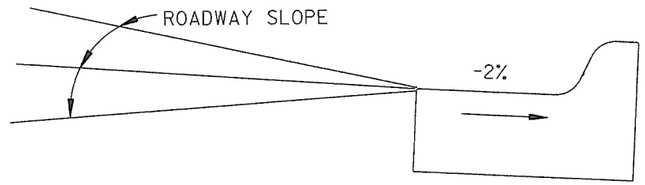


TYPE E-1



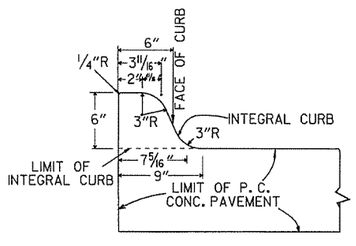
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

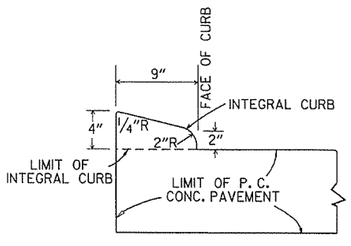


DETAIL OF GUTTER SLOPE

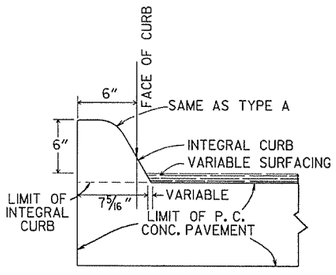
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

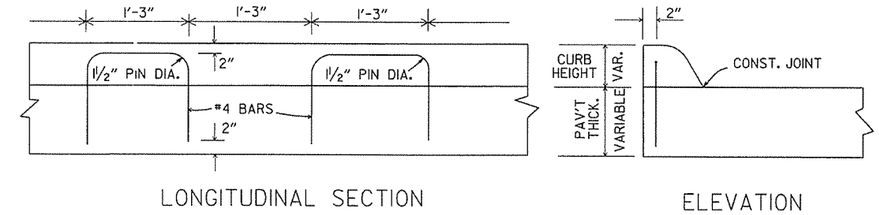


TYPE B

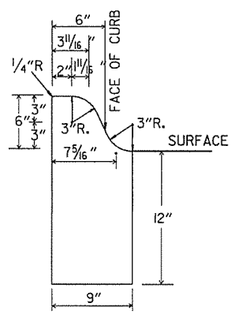


TYPE C

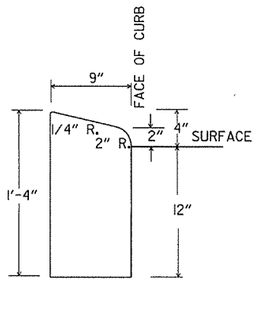
INTEGRAL CURB



ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



TYPE A



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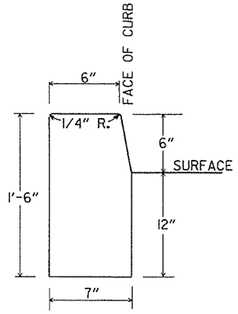

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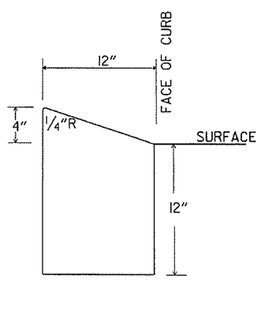
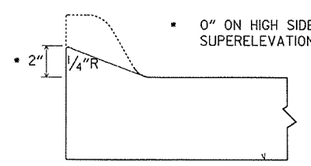


TYPE E

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.

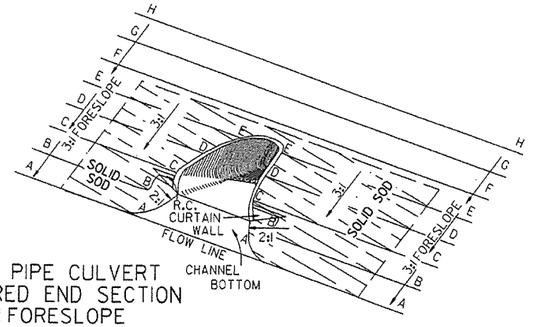
DETAILS OF MODIFIED CURB

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 1	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

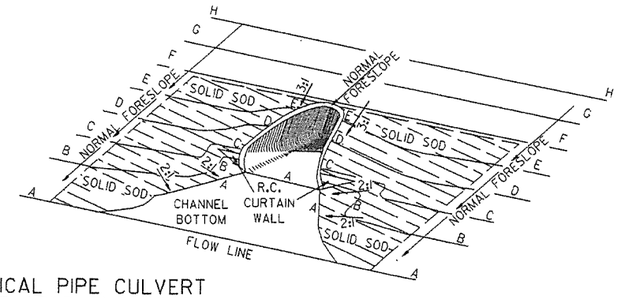
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

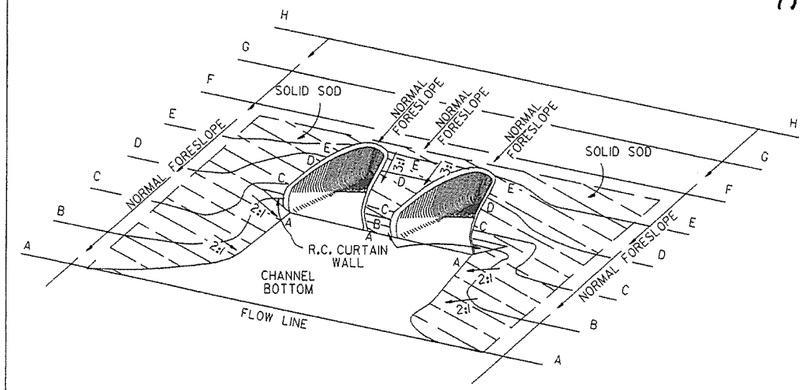
STANDARD DRAWING CG-1



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

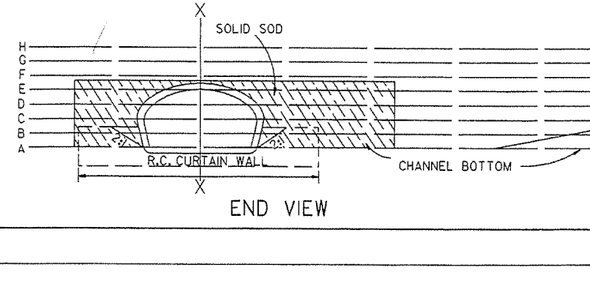
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	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.

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	V401 L	NO.	V402 L	NO.	DOUBLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	H403 L	NO.	V401 L	NO.	V402 L	NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

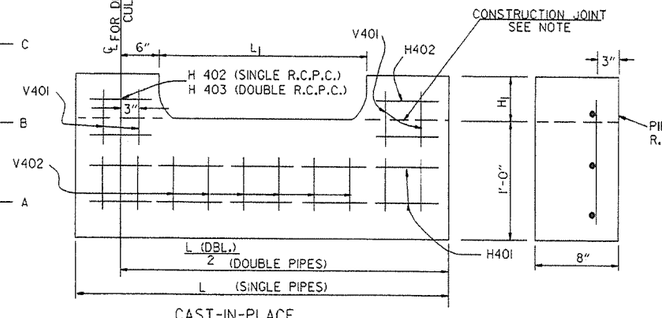
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

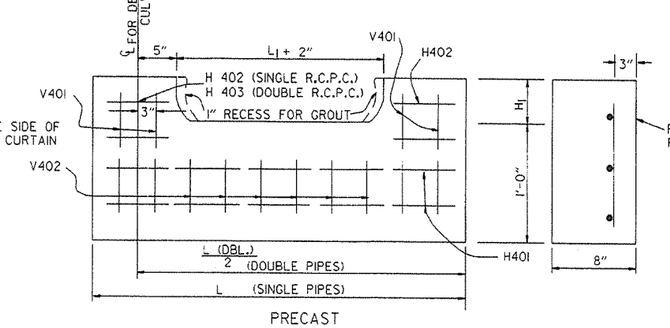
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



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

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C. 3:1	4:1	6:1	DOUBLE R.C.P.C. 3:1	4:1	6:1
	SQ. YDS.			SQ. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	36	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 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.

END VIEW

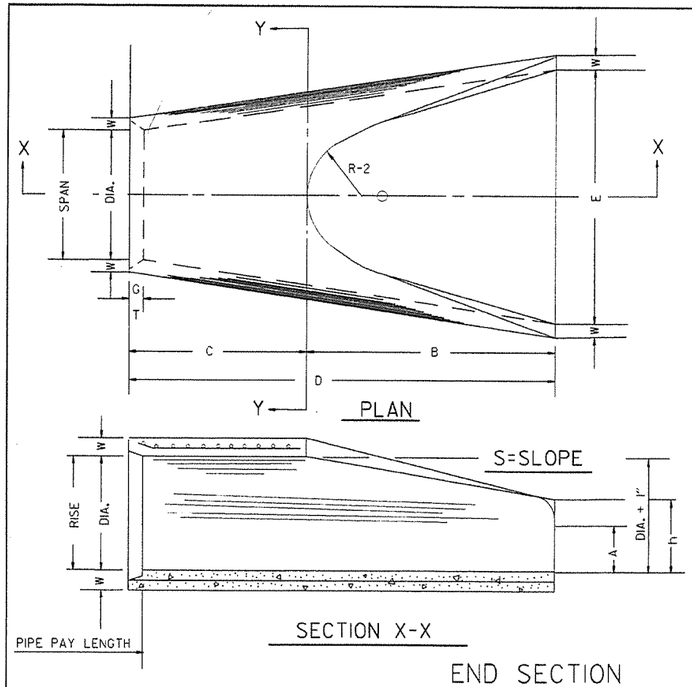
SECTIONAL VIEW "X-X"

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

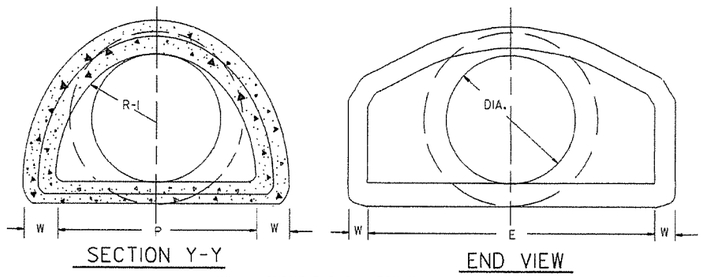
STANDARD DRAWING FES-1



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"	33 3/16"	16 11/16"	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'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47 13/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅛"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 11/16"	24"	5"	13250	4'-6"

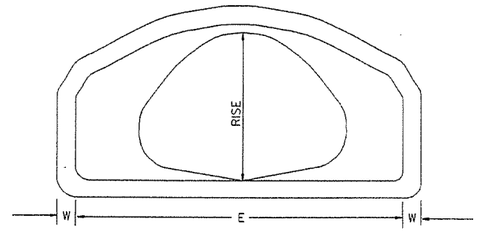


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

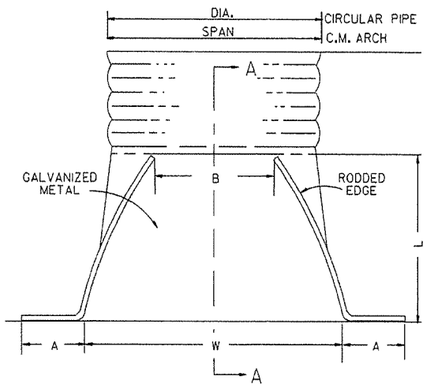
ARCH PIPE

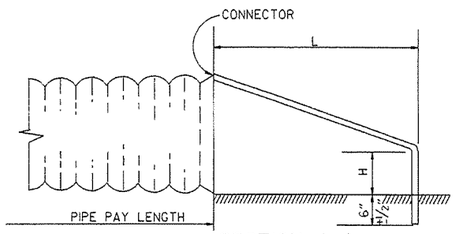
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 13/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 13/16"	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	31 5/16	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"	70 5/16"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	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.

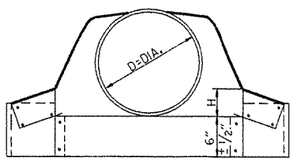


END VIEW
CONCRETE ARCH PIPE





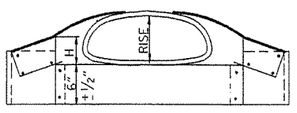
NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.



CIRCULAR PIPE

CIRCULAR PIPE

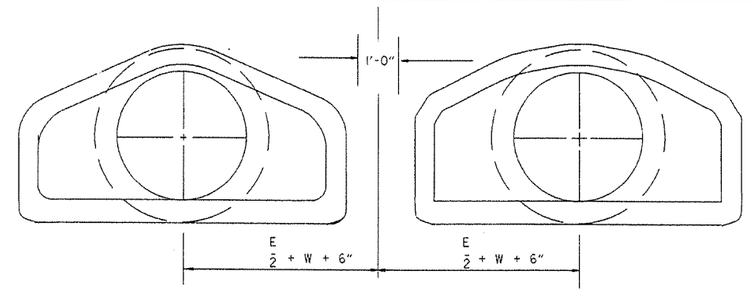
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	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



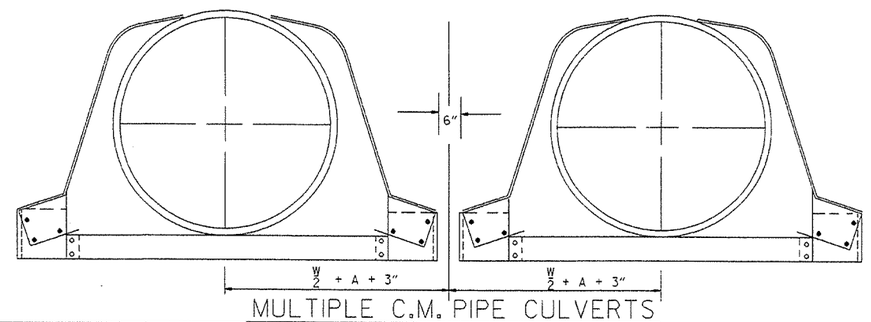
C.M. ARCH PIPE

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	2¼:1	12
60"	71	47	18	33	12	77	114	2¼:1	12



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

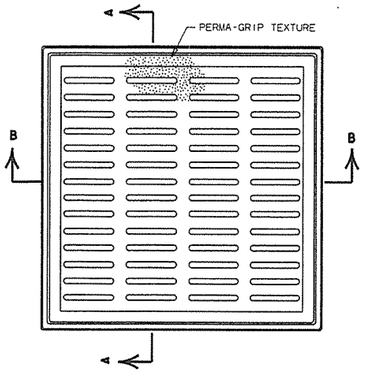
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73
10-2-72	REVISED AND REDRAWN	760-10-2-72

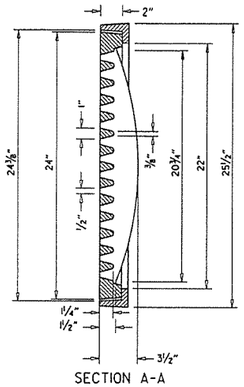
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

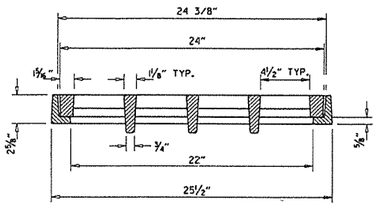
STANDARD DRAWING FES-2

stdfes2.dgn





SECTION A-A

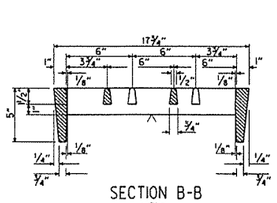


SECTION B-B

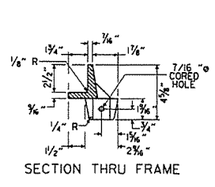
DETAILS OF PEDESTRIAN GRATE AND FRAME

GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

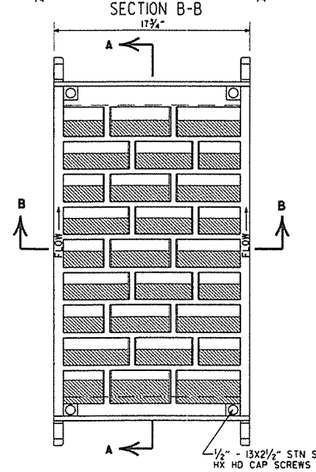
1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE ½" OPENINGS ARE PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL.
2. THE PEDESTRIAN GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
3. THE GRATE AND FRAME SHALL NOT BE PAINTED.
4. THE GRATE AND FRAME SHALL BE INSTALLED IN THE DROP INLET IN THE ASSEMBLED POSITION.
5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211 LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.

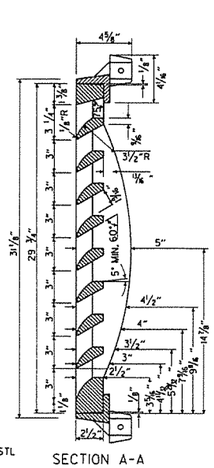


SECTION B-B



SECTION THRU FRAME



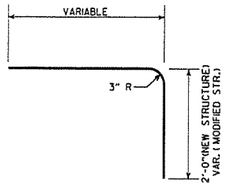


SECTION A-A

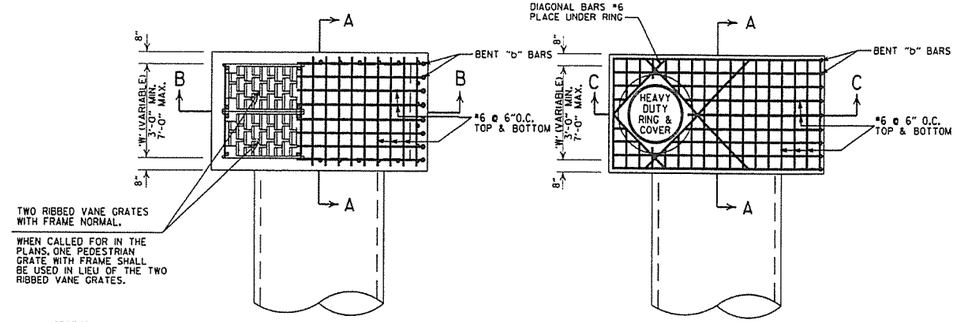
DETAILS OF RIBBED VANE GRATE AND FRAME

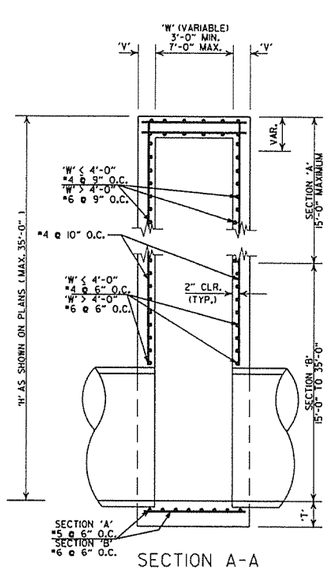
GENERAL NOTES (RIBBED VANE GRATE & FRAME)

1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.



DETAIL OF BENT "b" BAR



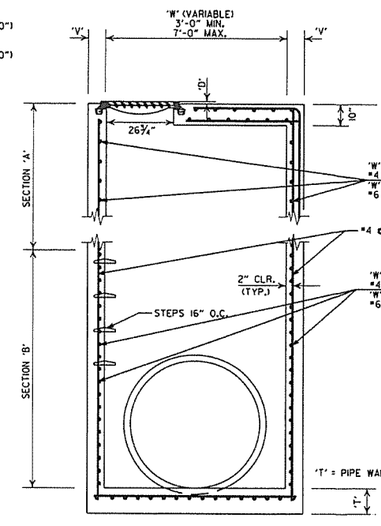


SECTION A-A

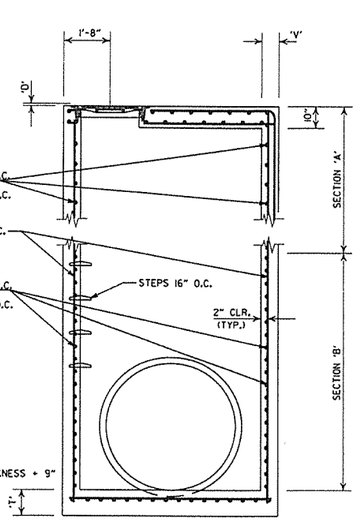
SECTION 'A' 'V' = 8"

SECTION 'B' (W≤4'-0") 'V' = 8"

SECTION 'B' (W>4'-0") 'V' = 10"



SECTION B-B

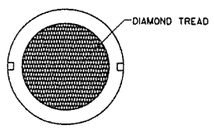


SECTION C-C

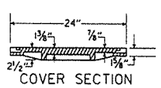
DETAILS OF JUNCTION BOX (TYPE ST)

GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

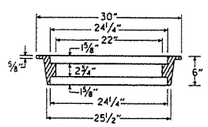
1. THE 'D' DIMENSION SHALL MATCH THE FINAL LIFT OF ACHM SURFACE COURSE SHOWN IN THE PLANS WHEN ASPHALT PAVING SURROUNDS THE GRATE OR RING COVER, AND SHALL BE 0" AT OTHER INSTALLATIONS.
2. THE STEPS SHALL BE OMITTED WHERE 'H' IS LESS THAN 4'-0".
3. ALL EXPOSED CORNERS ARE TO HAVE A ¾" CHAMFER.



COVER FACE



COVER SECTION



RING SECTION

HEAVY DUTY RING & COVER

APPROXIMATE TOTAL WEIGHT = 333 LBS.

GENERAL NOTES (HEAVY DUTY RING & COVER):

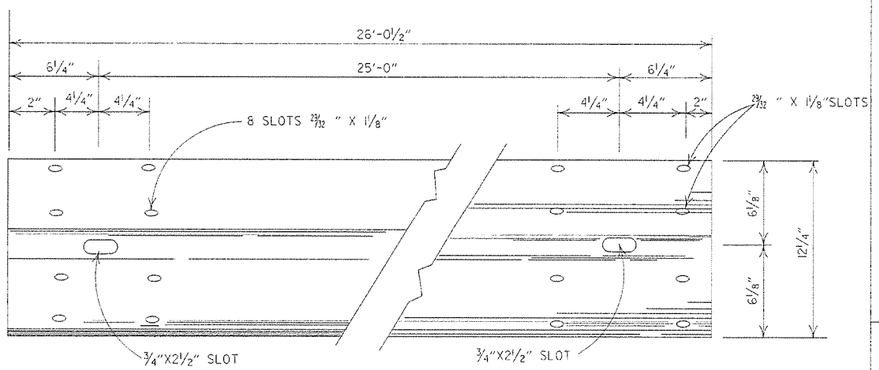
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
4. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

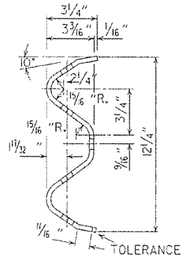
DATE REVISED	DATE FILMED	DESCRIPTION
7-26-12		REMOVED NOTE 4, REVISED 'T', REVISED BOTTOM SLAB REBAR FOR SECTION 'A', SHOWED REBAR CLEARANCE IN SECTIONS
11-16-01		ADDED NOTE 4
1-12-00		REVISED HEAVY DUTY RING & COVER
5-13-99		ADDED PEDESTRIAN FRAME & GRATE
7-02-98		REMOVED NOTE 5, REV. DIMENSIONS, ADDED HEAVY DUTY RING & COVER ADDED AASHTO REF. REVISED GRATE
10-18-96		REVISED ASTM REF. TO AASHTO
10-1-92		REVISED & REISSUED
8-15-91	8-15-91	REVISED & REISSUED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)

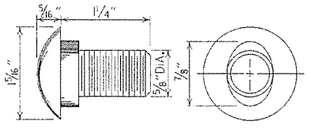
STANDARD DRAWING FPC-9S



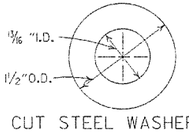


DETAILS OF W-BEAM GUARD RAIL

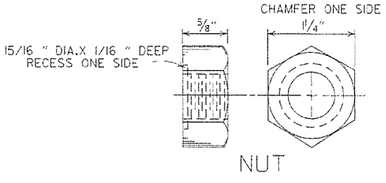
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



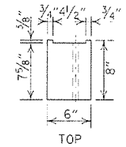
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

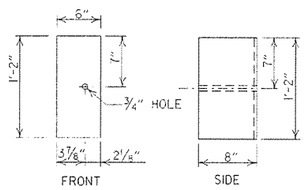


NUT

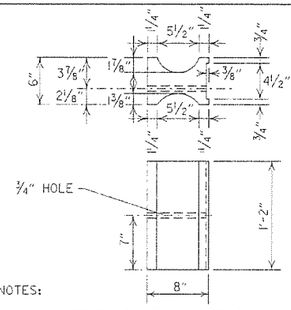


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



WOOD BLOCKOUT (W-BEAM)

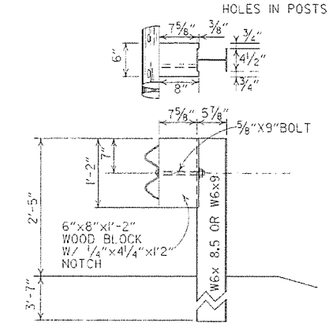


NOTES:

1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

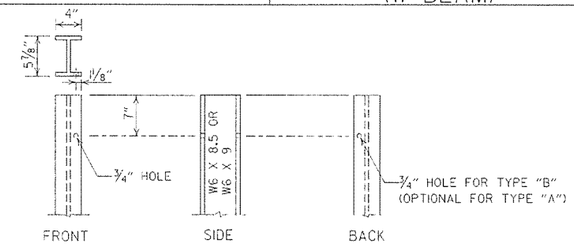
HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



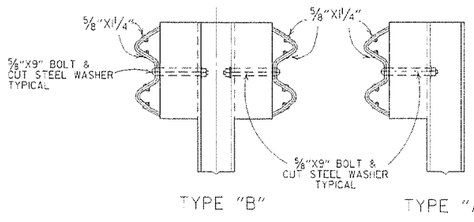
WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



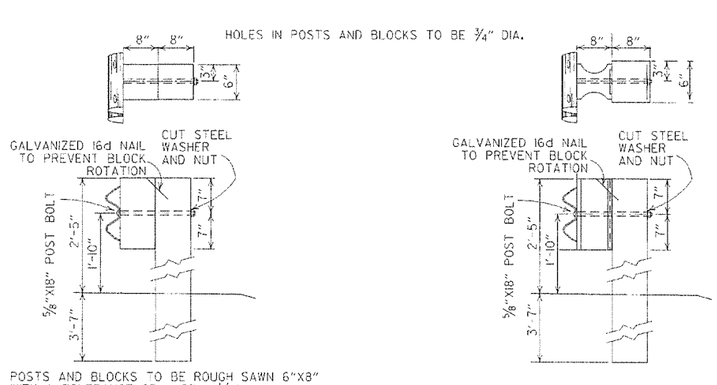
STEEL POST



TYPE "B" TYPE "A"

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

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

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

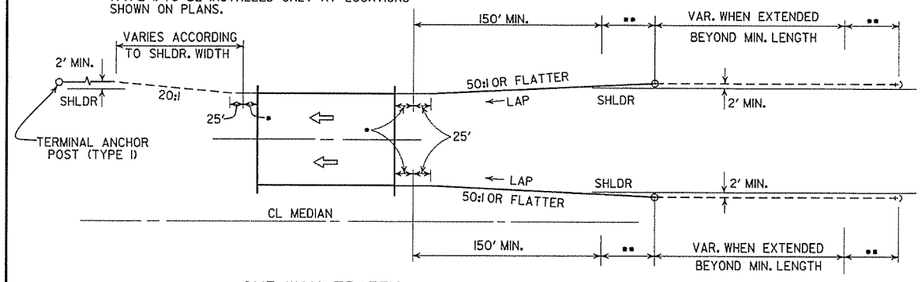
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
0-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	ADDED PLASTIC BLOCKOUT	
8-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED ALT. STEEL POST SIZE	
8-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED WASHER NOTE	8-15-91
8-2-90	REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

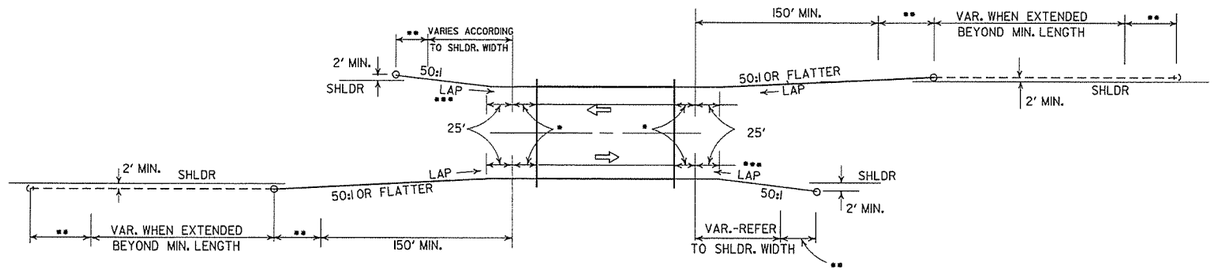
STANDARD DRAWING GR-8

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

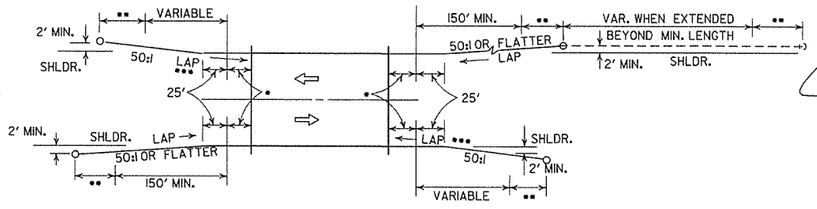
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

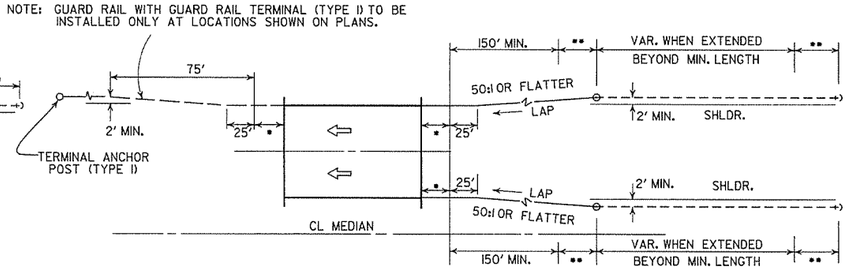
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

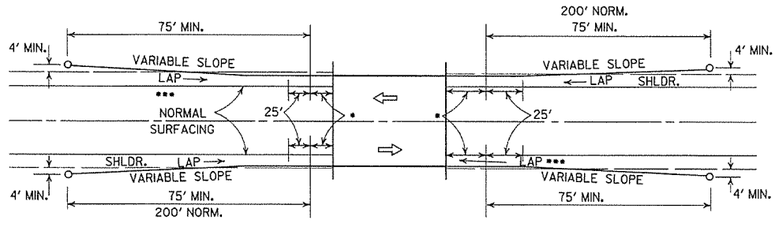
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

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

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

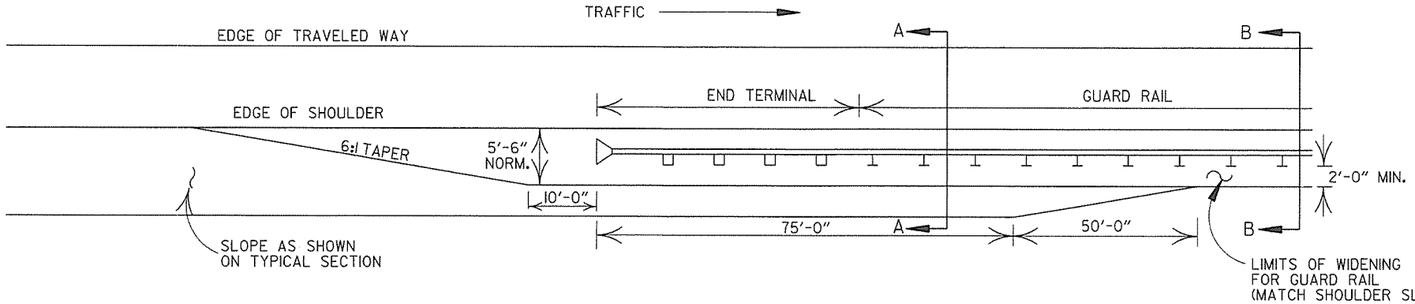
- ▪ THRIE BEAM GUARD RAIL TERMINAL
- ▪▪ GUARD RAIL TERMINAL (TYPE 2)

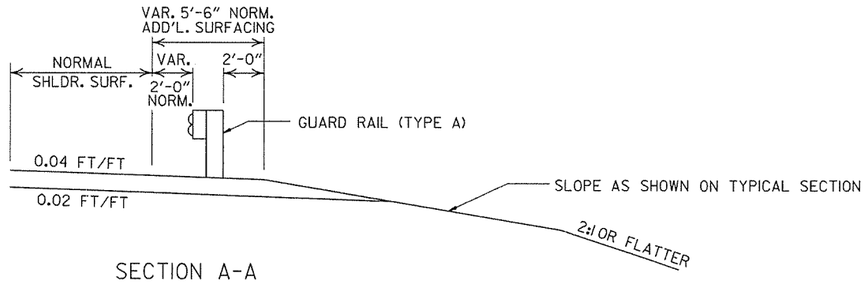
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

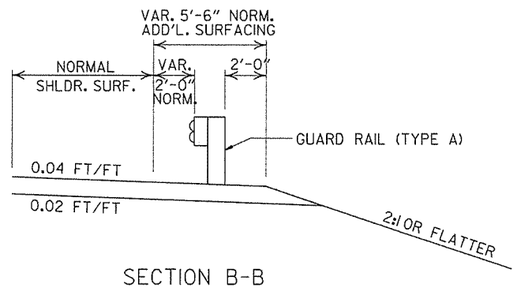
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





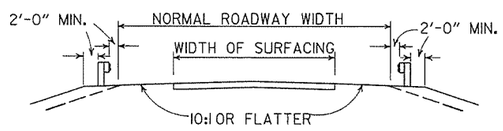
SECTION A-A



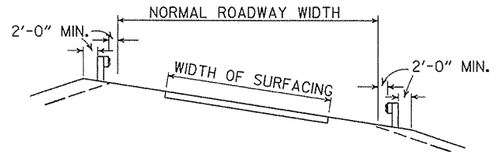
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.

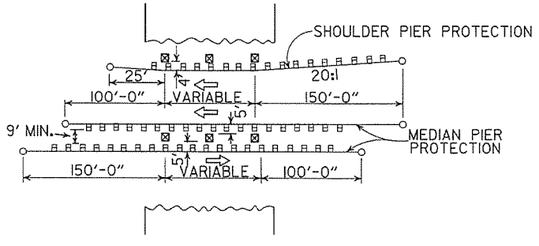


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



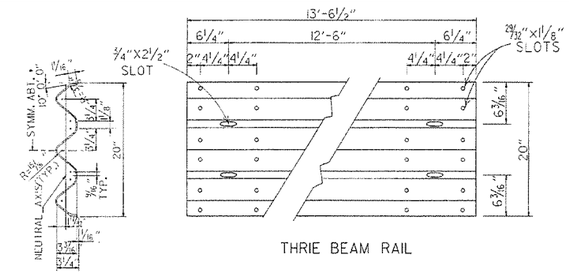
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

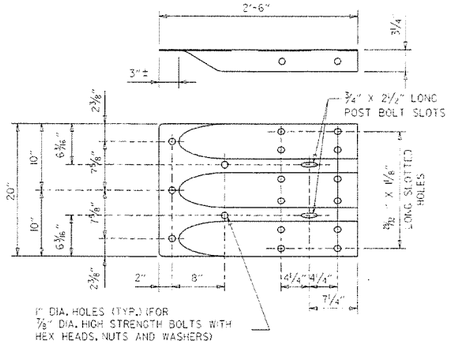
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



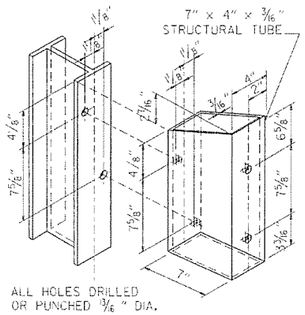
THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



1" DIA. HOLES (TYP.) (FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

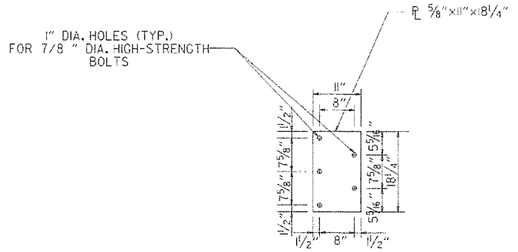
SPECIAL END SHOE



ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

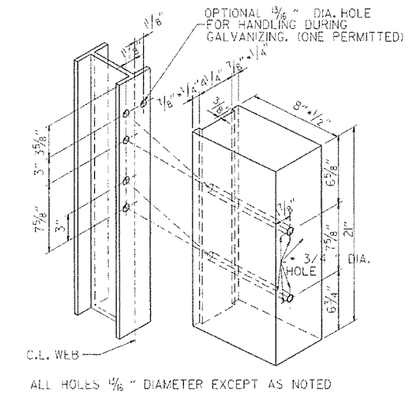
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.



CONNECTOR PLATE

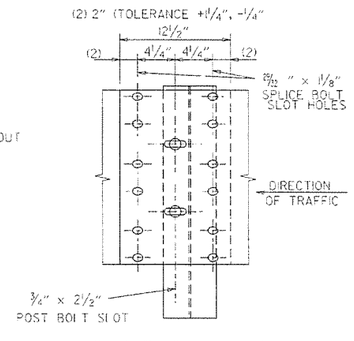
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



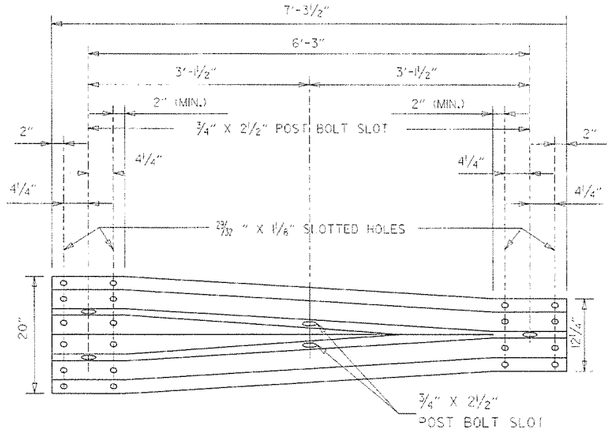
ALL HOLES 1⅛" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.

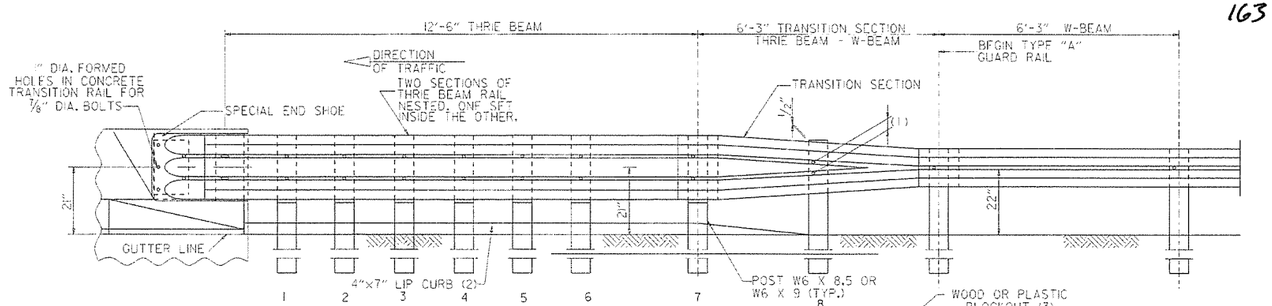


THRIE BEAM RAIL
SPLICE AT POST

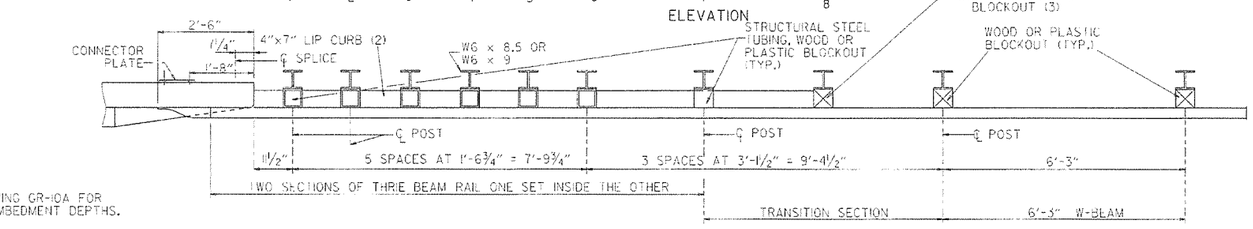


TRANSITION SECTION

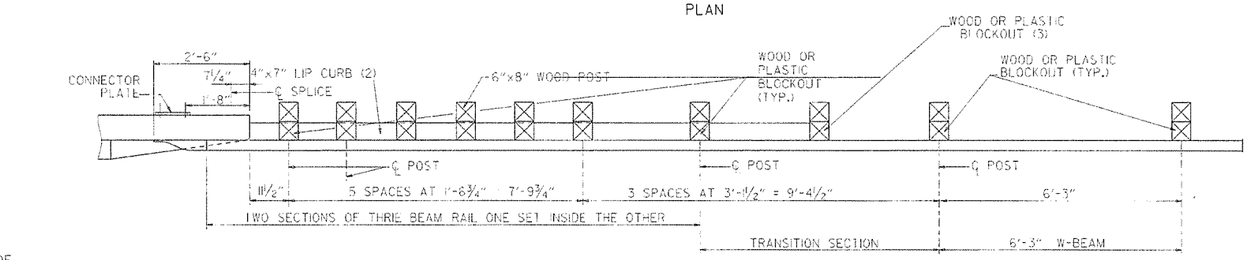
NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



ELEVATION



PLAN



PLAN

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

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

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

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

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (M00 #) OR NO. 1 1350 f SOUTHERN PINE.

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

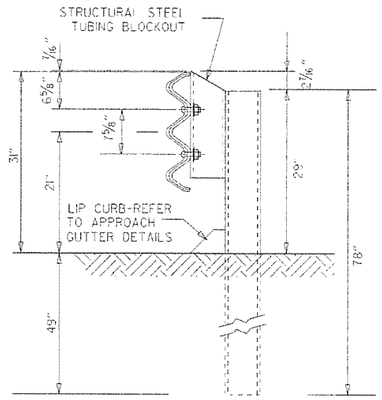
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED NOTE (2)	
6-29-00	MOVED DIMENSION LINES	
5-18-00	ADDED NOTE	
3-30-00	DRAWN & ISSUED	

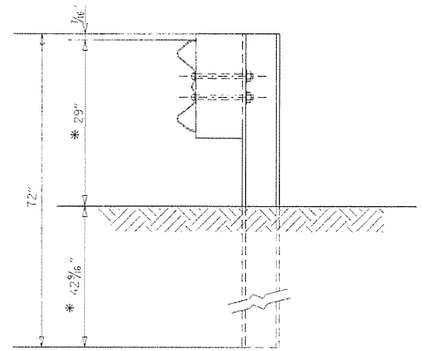
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

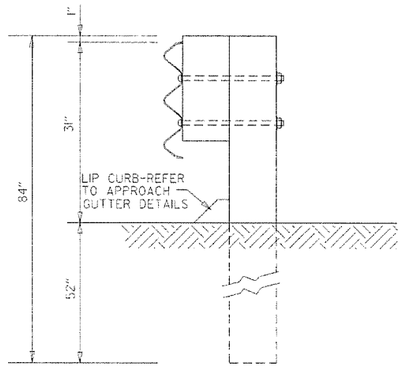


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

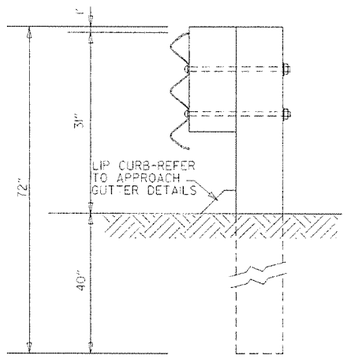


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

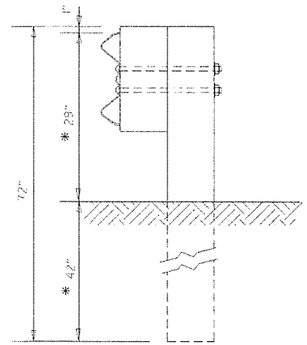
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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



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



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

GENERAL NOTES:

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

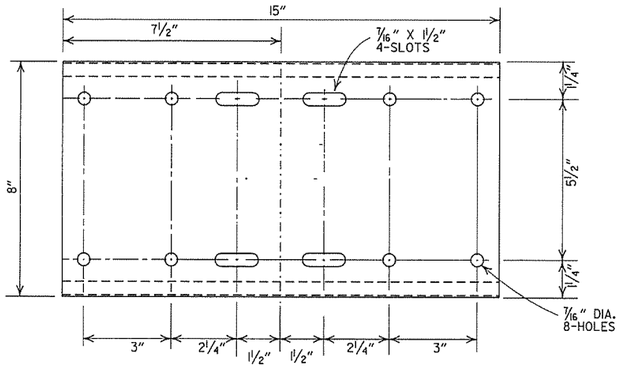
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

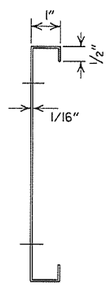
ARKANSAS STATE HIGHWAY COMMISSION

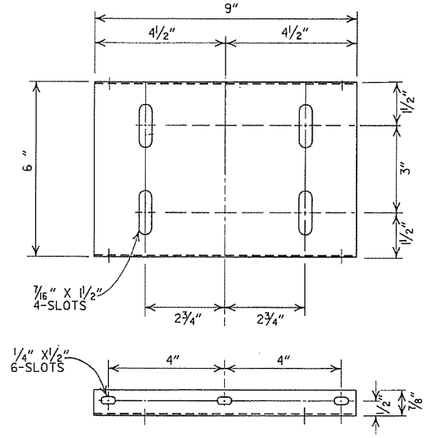
GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

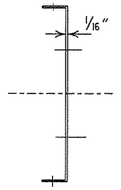


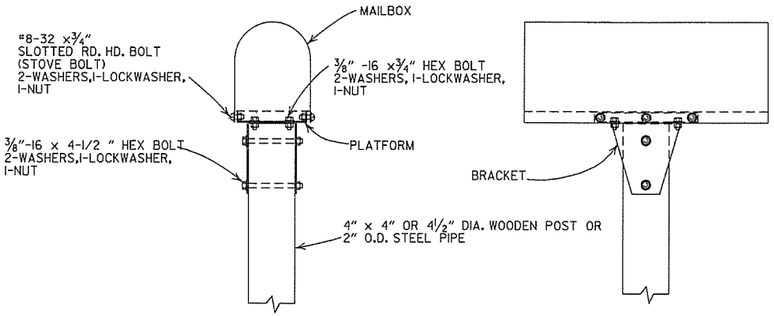
SHELF



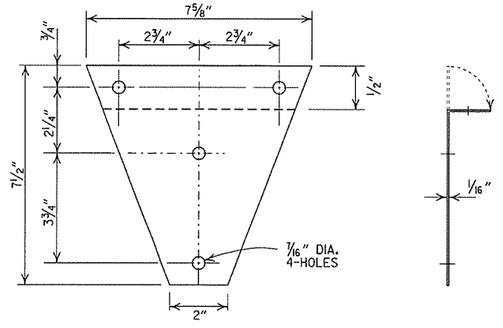


PLATFORM





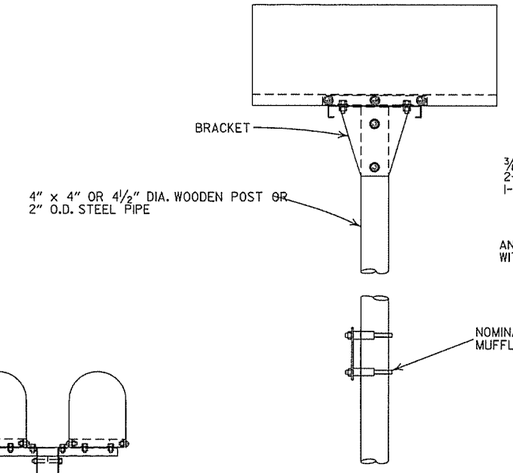
SINGLE INSTALLATION



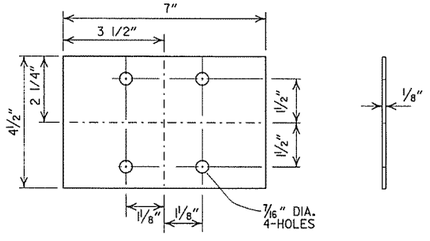
BRACKET

GENERAL NOTES

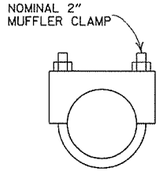
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED 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 X¾" 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.



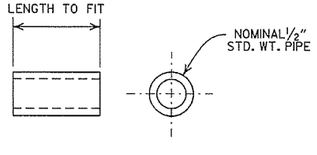
DOUBLE INSTALLATION



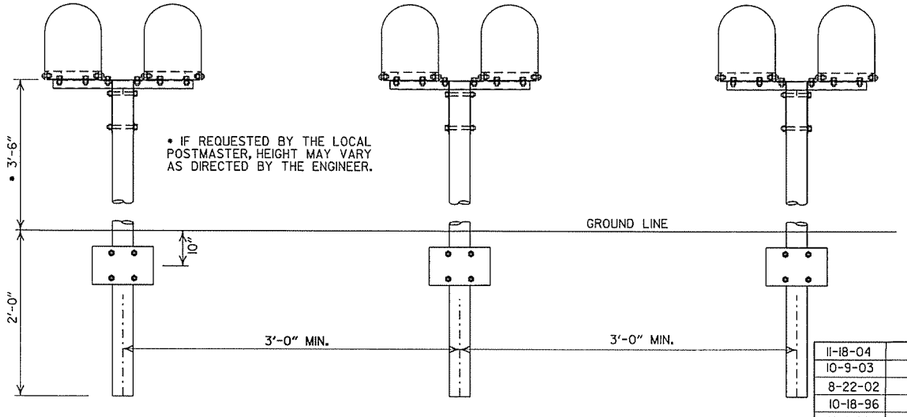
ANTI-TWIST PLATE



CLAMP



SPACER



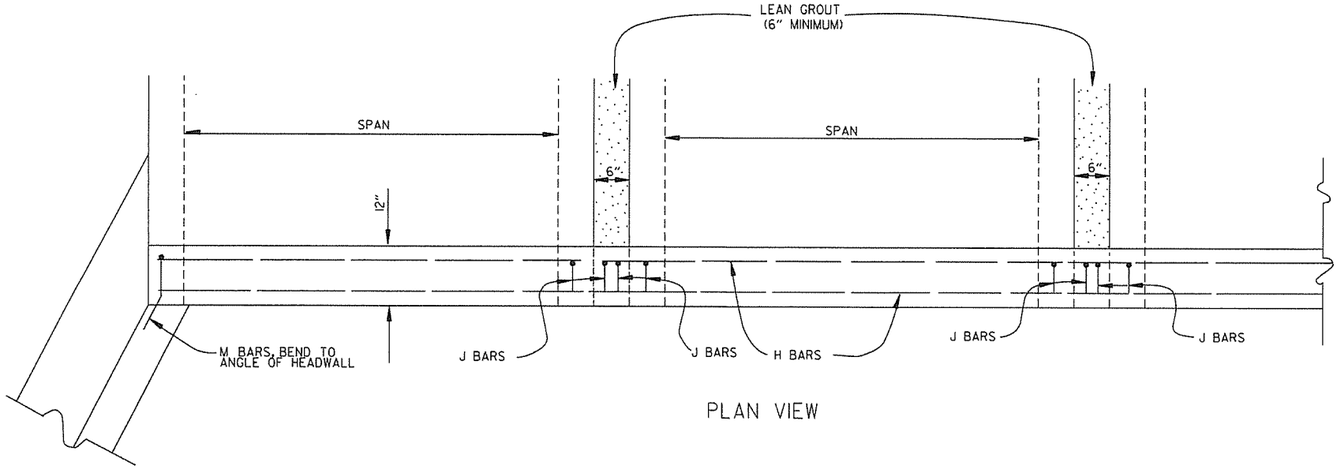
SPACING FOR MULTIPLE POST INSTALLATION

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	120-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

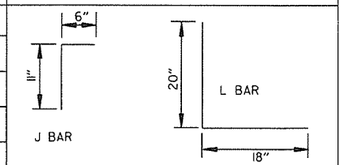
STANDARD DRAWING MB-1



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.

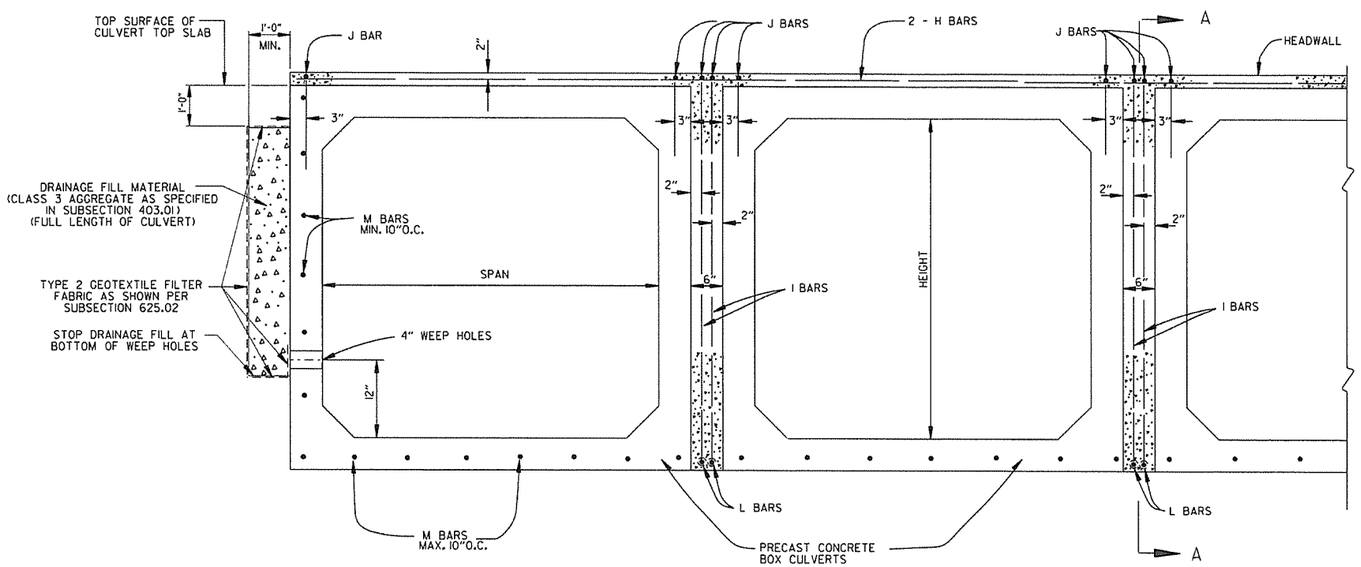
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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.

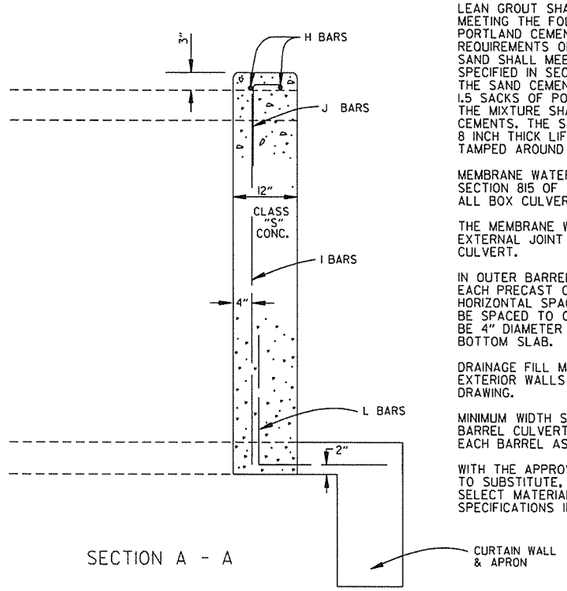
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

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	31⅜	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.

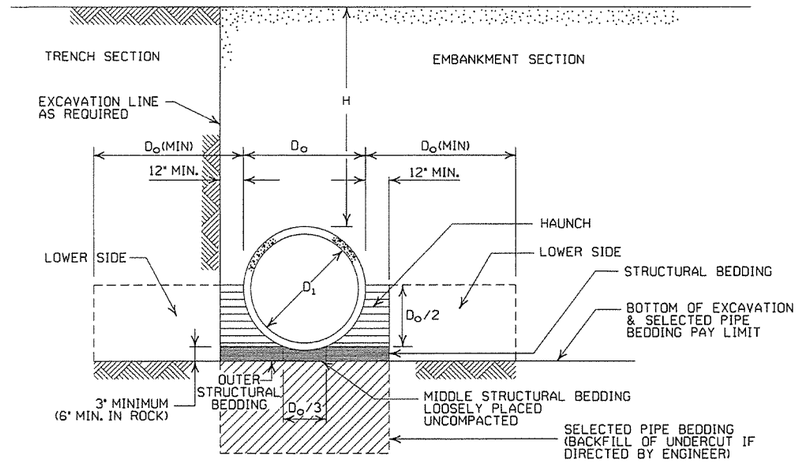
- LEGEND -

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

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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

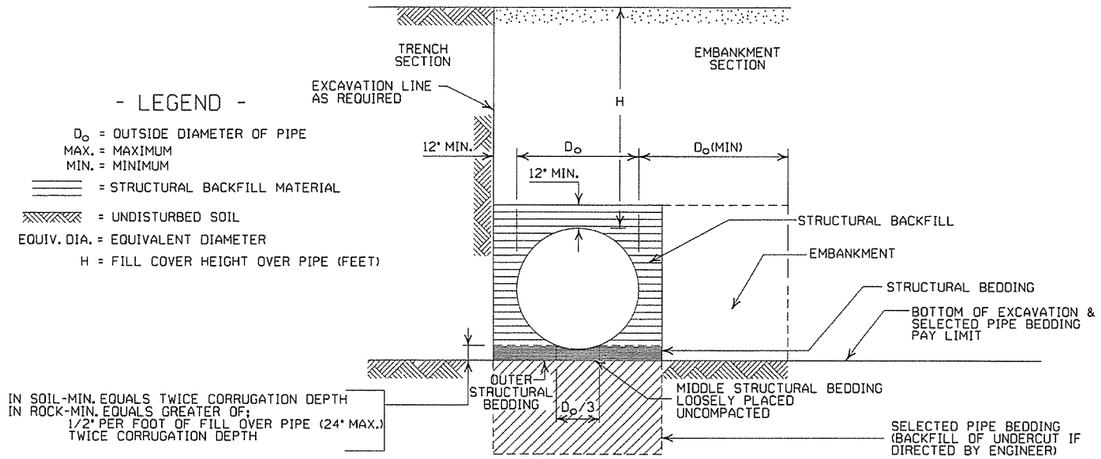
③ SM-3 WILL NOT BE ALLOWED.

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 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 HDPE PIPE.

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 TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET) "H" < 10'-0"	TRENCH WIDTH (FEET) "H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

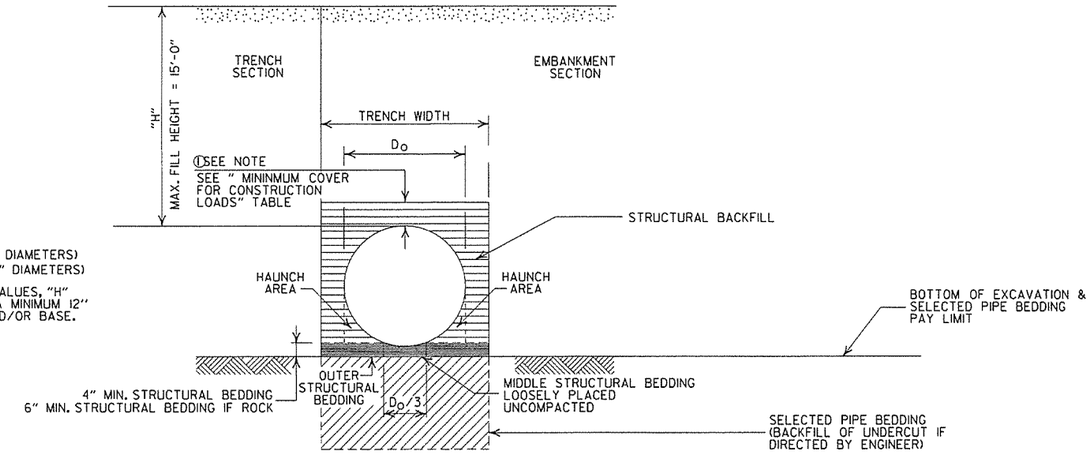
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

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.



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 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.)
Ø = 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"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"

MULTIPLE INSTALLATION OF PVC PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

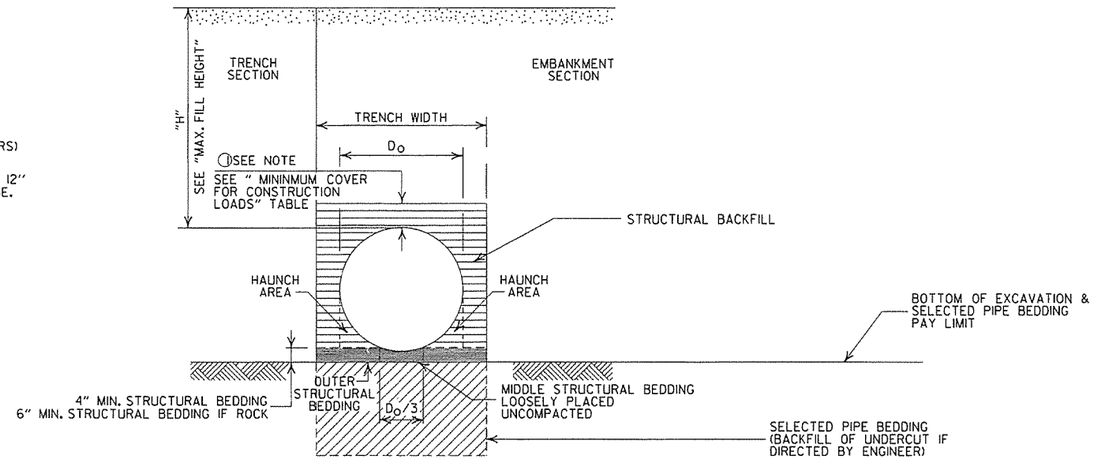
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

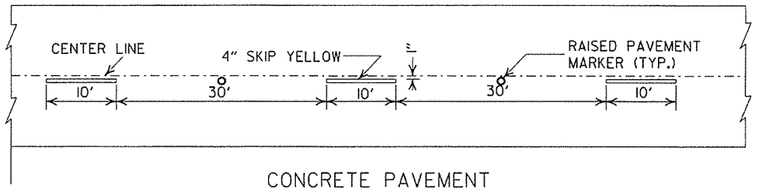
= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

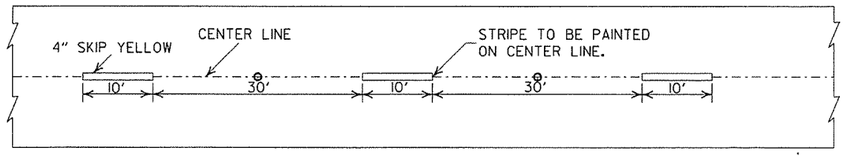
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

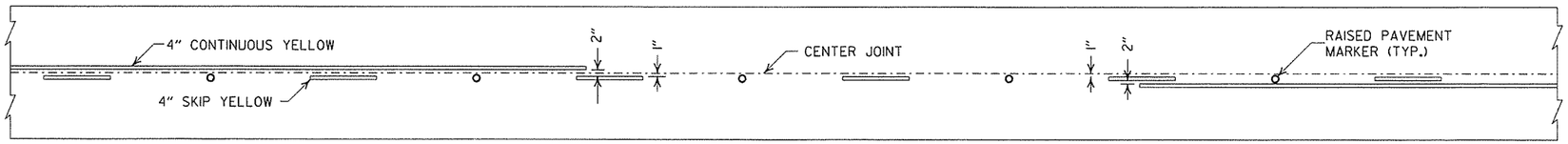


CONCRETE PAVEMENT

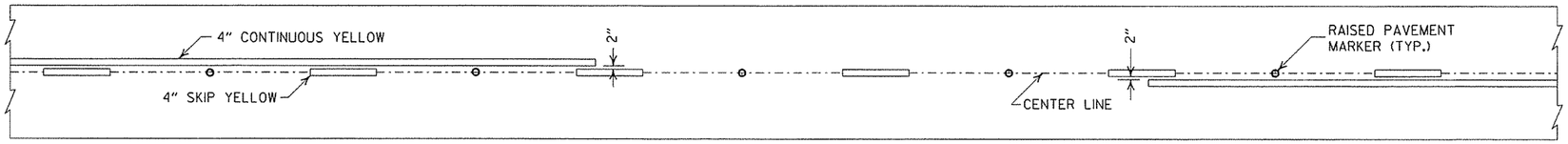


ASPHALT PAVEMENT

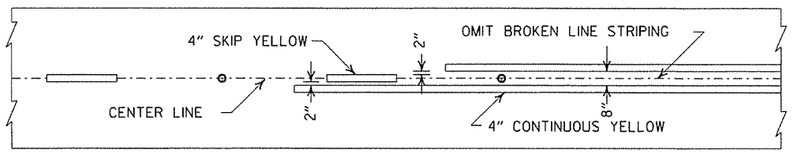
BROKEN LINE STRIPING



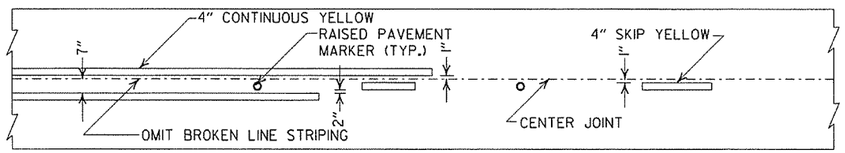
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

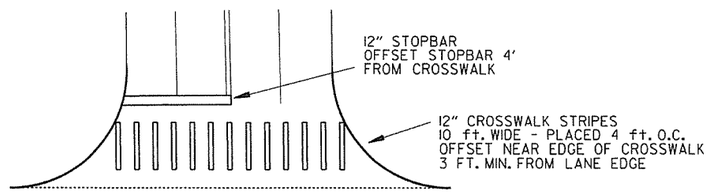


ASPHALT PAVEMENT



CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS

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.

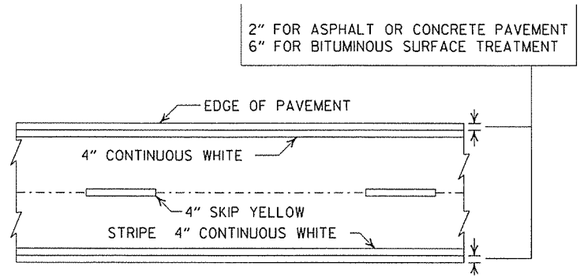
THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:

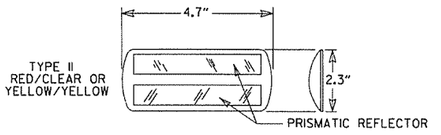
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

NOTES:

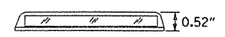
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.



PAVEMENT EDGE LINE MARKING



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

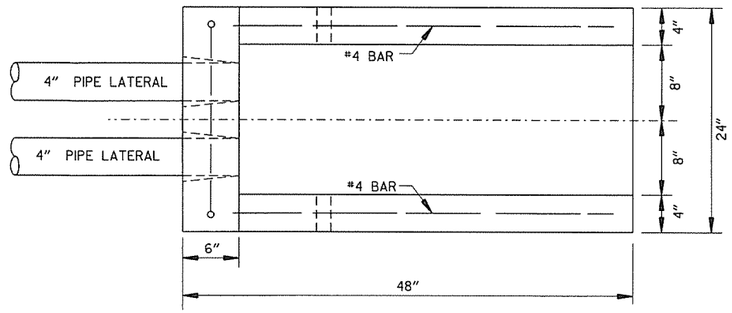
STANDARD DRAWING PM-1

171A

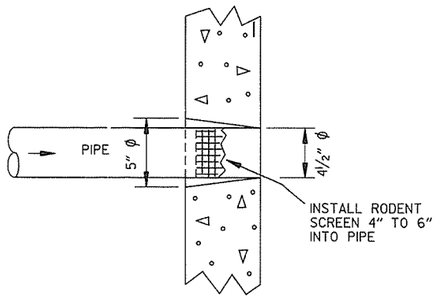
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

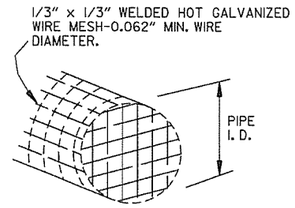
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



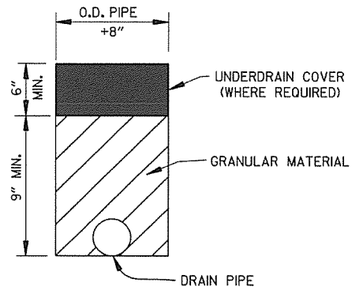
PLAN VIEW

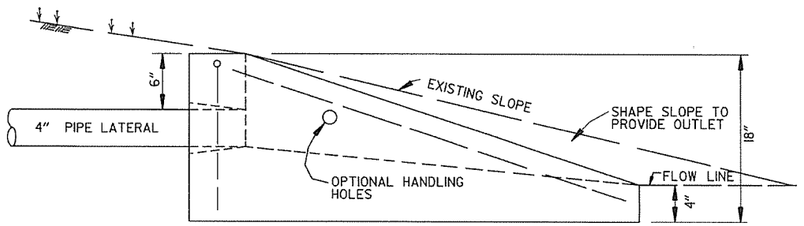


DETAIL OF HOLE FOR 4" PIPE

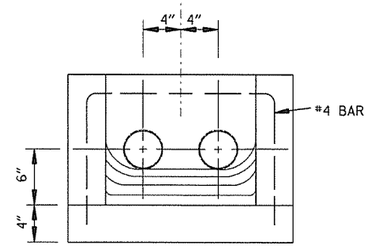


DETAIL OF RODENT SCREEN

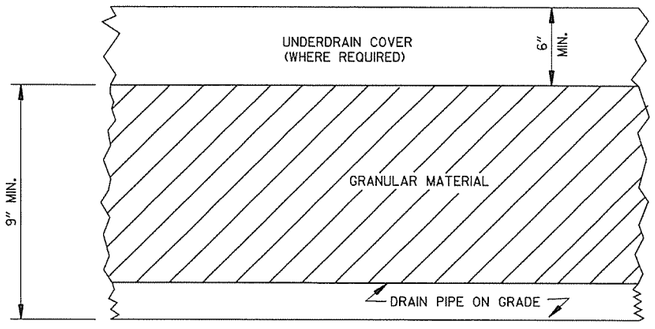




SIDE VIEW

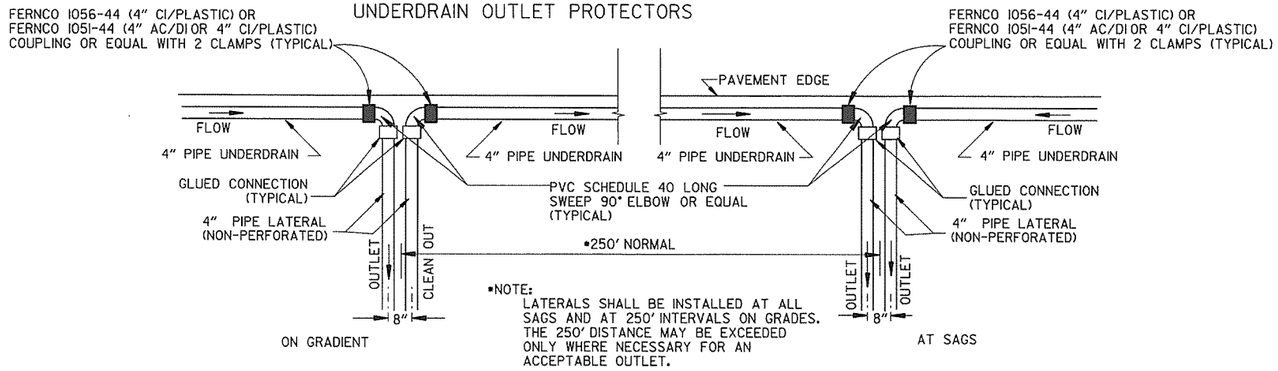


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



•NOTE:
LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

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

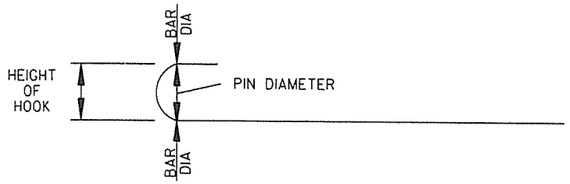
STANDARD DRAWING PU-1

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

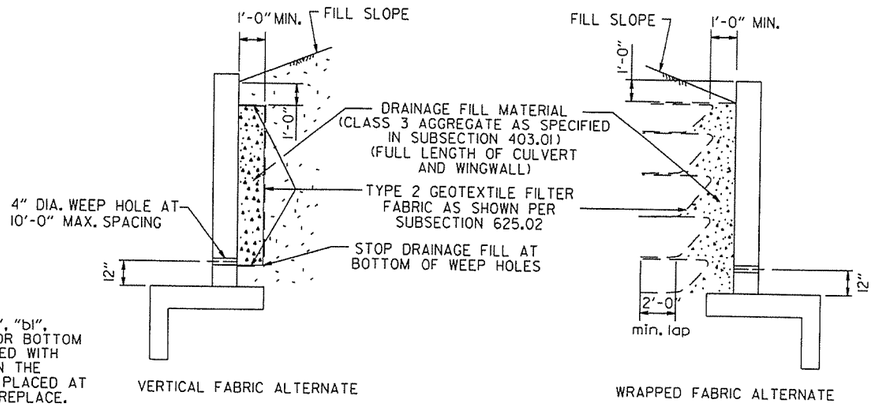
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

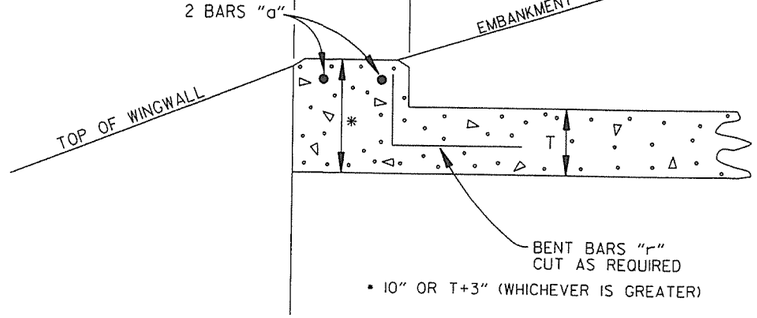
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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.

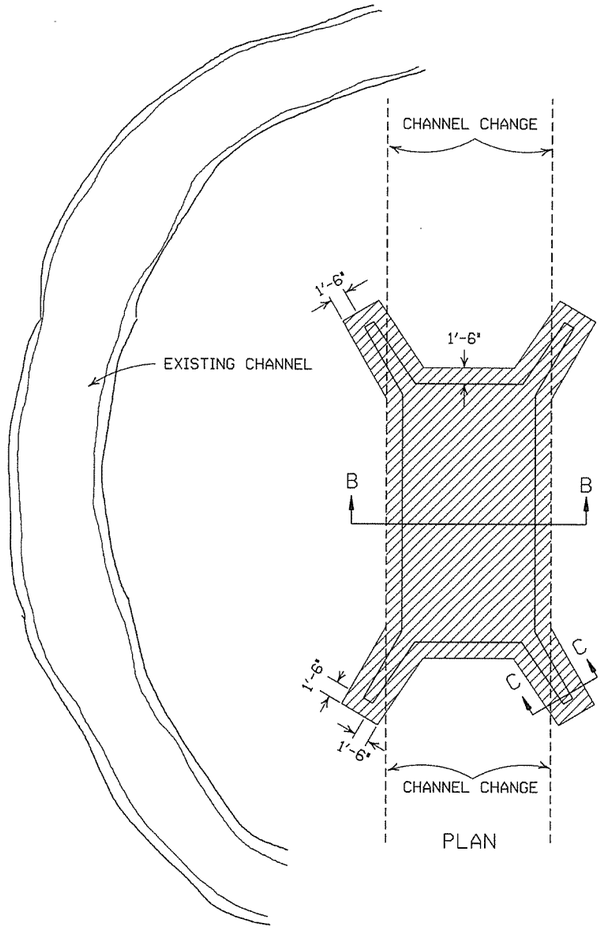
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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	

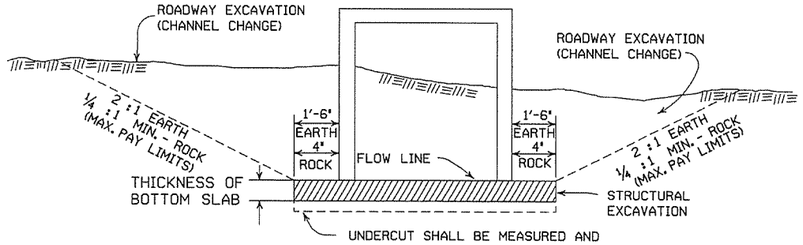
ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



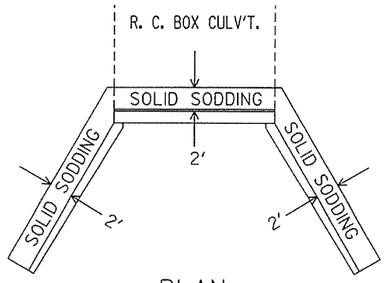
PLAN



SECTION B-B

DETAILS FOR NEW CHANNELS

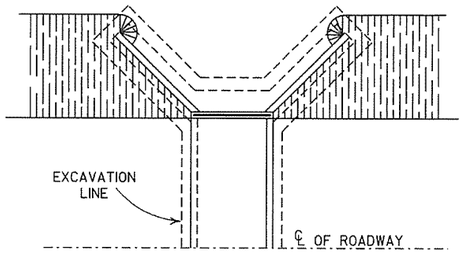
SOLID SODDING



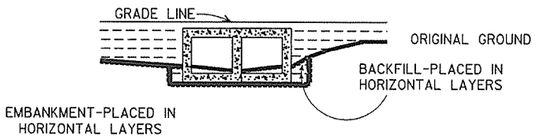
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

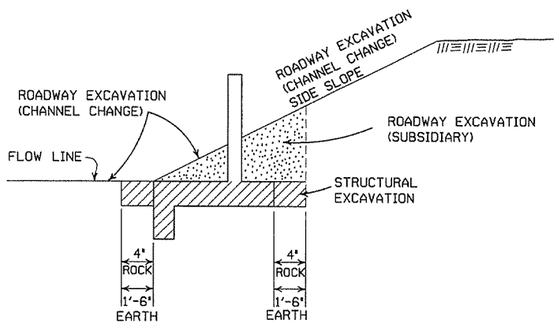


PLAN

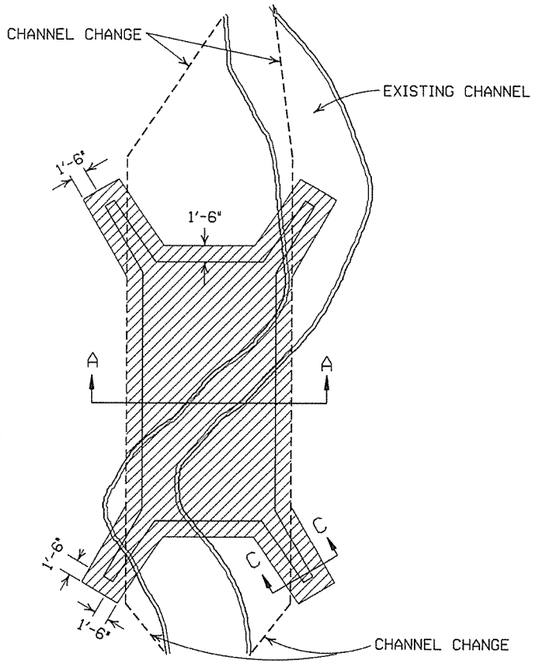


LONGITUDINAL SECTION

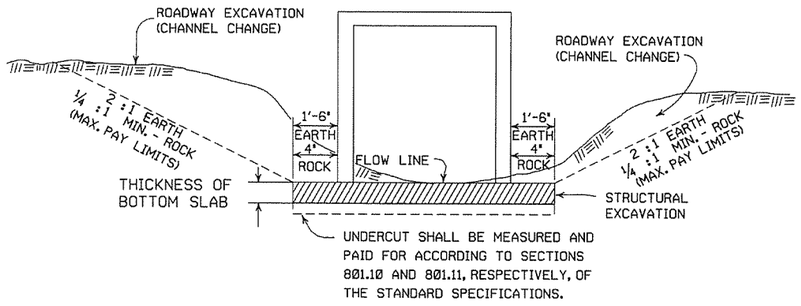
BACKFILL DETAILS FOR BOX CULVERT



SECTION C-C



PLAN



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.

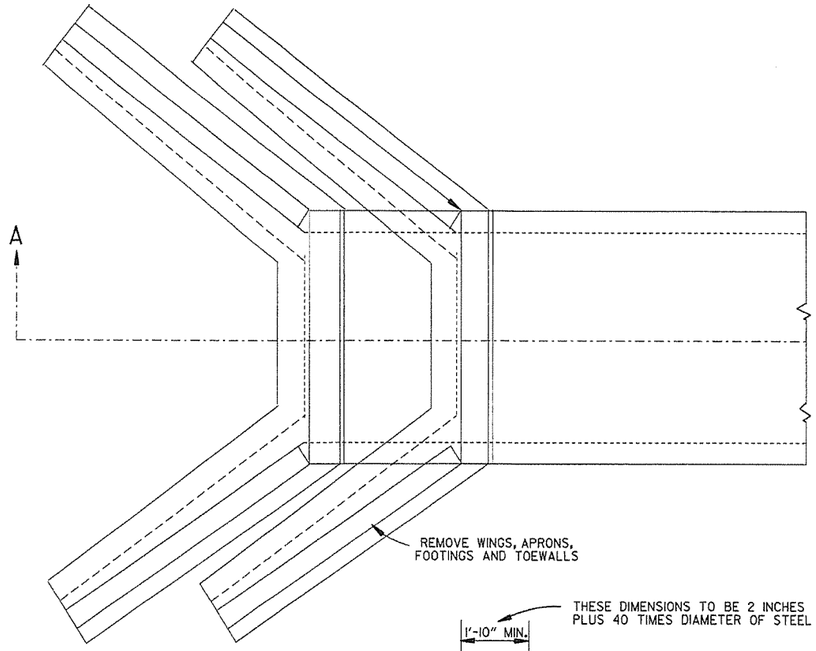
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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 AND ADDED MAXIMUM PAY LIMIT NOTES.	674-1-4-83
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

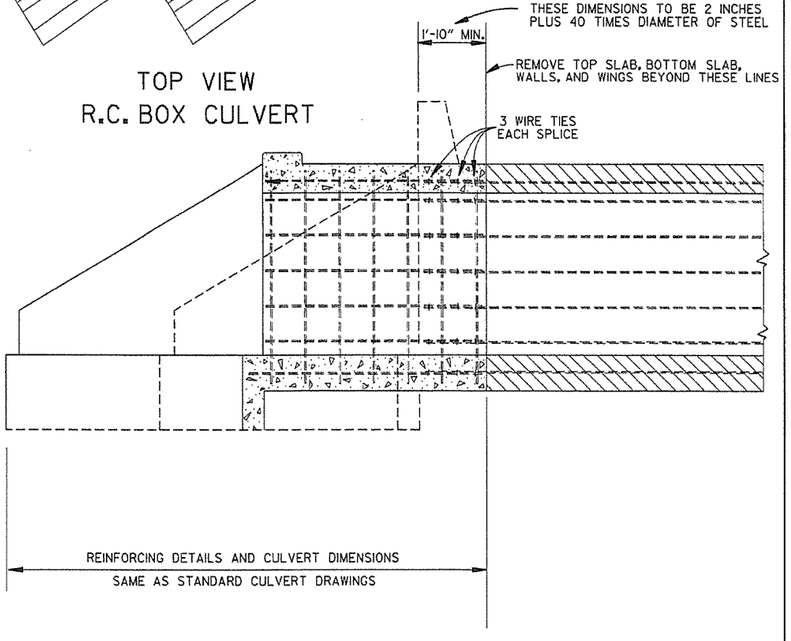
ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

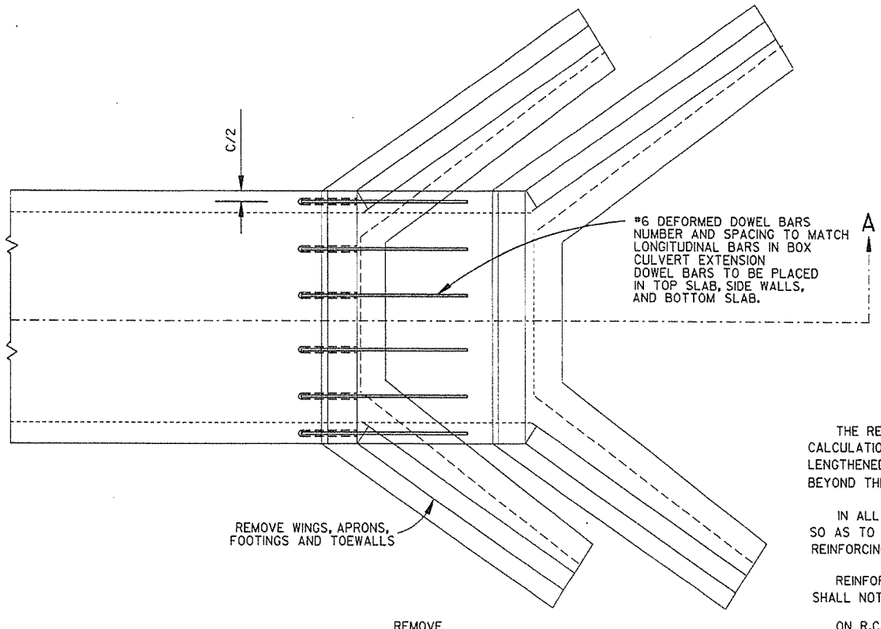


TOP VIEW
R.C. BOX CULVERT

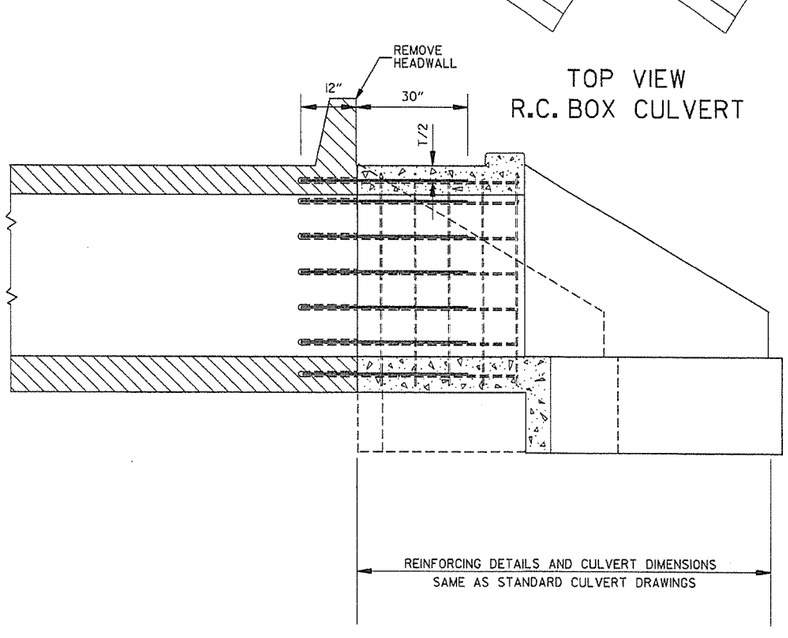


SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT



SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2, REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

FILE STDrcb3.dgn

LOOP DETECTOR INSTALLATION AND TESTING

NOTES:

1. LOOPS WITH A PERIMETER GREATER THAN 40' SHALL HAVE TWO TURNS. LOOPS WITH A PERIMETER LESS THAN OR EQUAL TO 40' SHALL HAVE THREE TURNS, UNLESS OTHERWISE NOTED ON THE PLANS. QUADRUPOLE LOOPS SHALL BE TWO TURNS (2-4-2 CONFIGURATION) UNLESS OTHERWISE NOTED.
2. LOOP AND FEEDER WIRE SHALL BE CONTINUOUS WITHOUT SPLICES EXCEPT AT THE LOOP/FEEDER WIRE SPLICE AS SHOWN. SPLICE SHALL BE ROSIN SOLDERED AND WATERPROOFED WITH AN ACCEPTED SPLICE KIT. DRAIN WIRE SHALL BE GROUNDED IN CABINET AND INSULATED AT LOOP TO FEEDER SPLICE.
3. THE LOOP TO FEEDER SPLICE, FEEDER JACKET AND JACKET OF LOOP WIRE IN DUCT SHALL BE COMPLETELY SEALED AND WATERPROOFED.
4. CONTRACTOR MAY MAKE CONNECTIONS TO SIGNAL CABLE AND LOOP TO FEEDER CONNECTION AT TERMINAL STRIPS MOUNTED TO POLE INSIDE HAND HOLD COVER AS SHOWN IN DETAIL. TERMINALS MUST BE EASILY ACCESSIBLE, BUT PROTECTED AGAINST ACCIDENTAL CONTACT. CONNECTION OF POWER CARRYING CIRCUITS MUST BE SEPARATED FROM LOOP OR LOGIC CIRCUITS. ALL CONNECTIONS TO TERMINAL STRIPS SHALL UTILIZE SPADE LUGS OR AS APPROVED BY THE ENGINEER.
5. EACH LOOP SHALL HAVE A SEPARATE "FEEDER WIRE" UNLESS OTHERWISE NOTED. ALL FEEDER WIRES SHALL BE LABELED AS TO LOOP NUMBER AS DESIGNATED ON THE PLANS.
6. ALL LOOP WIRE ENTERING PULL BOXES SHALL BE ENCLOSED IN CONDUIT. EACH LOOP WIRE SHALL ENTER PULL BOX OR POLE BASE THROUGH A SEPARATE PIECE OF ONE INCH (1"O) CONDUIT.
7. LOOP WIRE FROM LOOP TO CONDUIT IS NOT TWISTED. LOOP WIRE IN THE CONDUIT MUST BE TWISTED TWO TO FIVE TURNS PER FOOT.
8. WARRANTY PERIOD FOR LOOPS SHALL NOT COMMENCE UNTIL TESTED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. CONTRACTOR SHALL PERFORM TEST AND PROVIDE A RECORD TO THE ENGINEER AS LISTED IN THE DETECTOR LOOP TESTING PROCEDURE.
9. UNLESS OTHERWISE APPROVED BY THE ENGINEER, BACKER ROD SHALL BE INSTALLED IN SHORT SECTIONS SPACED NOT MORE THAN 18" APART AND WEDGED INTO SLOT TO HOLD CABLE IN PLACE. CABLE SHALL BE TOTALLY ENCAPSULATED IN SEALER.
10. "HOT POUR" SEALER SHALL NOT BE ALLOWED WITH 705-LOOP WIRING IN DUCT.
11. WHERE UNDERGROUND SPLICES OF SIGNAL CABLE ARE REQUIRED, CONNECTIONS SHALL BE SOLDERED AND COMPLETELY WATERPROOFED TO THE SATISFACTION OF THE ENGINEER. WATERPROOFING SHALL EXTEND A MINIMUM OF TWO INCHES PAST THE SIGNAL CABLE JACKET AND SHALL COMPLETELY COVER ALL INDIVIDUAL CONDUCTORS OF THE SIGNAL CABLE. WATERPROOFING DOES NOT APPLY TO CONNECTIONS MADE IN POLE BASES.
12. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE. ONLY ONE NEUTRAL IS REQUIRED FOR PEDESTRIAN SIGNALS. A SEPARATE 5C (TYPICAL) IS PROVIDED FOR PEDESTRIAN PUSH BUTTONS.
13. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO CONTROLLER. CONTROLLER CABINET SHALL BE WIRED SUCH POWER TO LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS DURING FLASH OPERATION.

TYPICAL PROCEDURE FOR DETECTOR LOOP TESTING

(1) DISCONNECT AND TEST CONTINUITY (< 10 OHMS)
IF CONTINUITY IS BAD, GO TO TEST 3

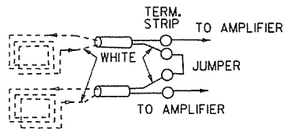
(2) TEST INSULATION (@ 500 VOLT TEST > 10 MEG-OHM)
IF TESTS 1& 2 ARE GOOD, NO FURTHER TESTING IS NECESSARY. RECORDED RESULTS CONSIST OF TESTS 1& 2 FROM CONTROL CABINET WITH FEEDER WIRE CONNECTED TO LOOP.

(3) OPEN SPLICE (DO NOT BREAK CONNECTION) REPEAT TEST 1& 2
IF TEST 3 IS BAD, GO TO TEST 4

(4) BREAK SPLICE, INSTALL JUMPER IN CABINET, REPEAT TESTS 1& 2 SEPARATELY FOR FEEDER AND FOR LOOP

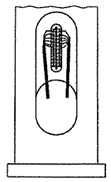
FAILURES TYPICALLY RESULT FROM BROKEN WIRE IN PAVEMENT, FAULTY INSULATION OF LOOP OR FEEDER WIRE, OR POORLY INSULATED SPLICE CONNECTION.

SERIES CONNECTED LOOPS

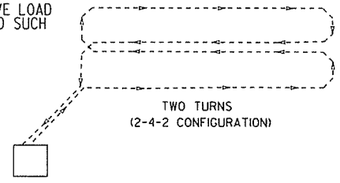


WIND LOOPS COUNTERCLOCKWISE; TAG WIRE EXITING SLOT AND TIE TO WHITE LEAD OF FEEDER WIRE; WHEN LOOPS ARE TIED TO SAME VEHICLE DETECTOR, SERIES CONNECT IN CABINET AS SHOWN.

HANDHOLE TERMINAL

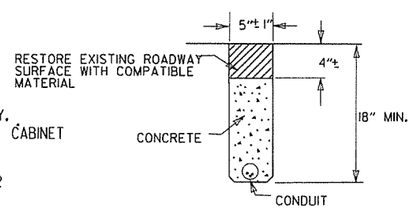


QUADRUPOLE LOOP

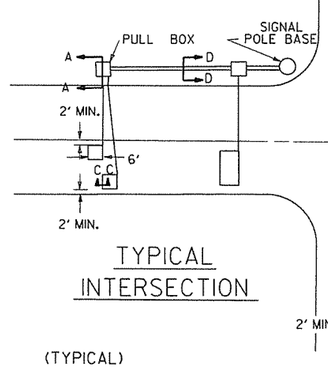


TRENCHING DETAIL

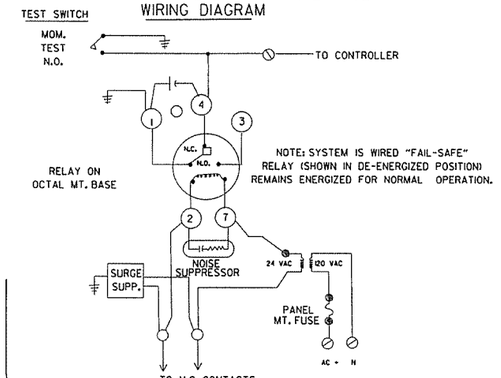
(FOR SAW CUT TRENCH IN ROADWAY)

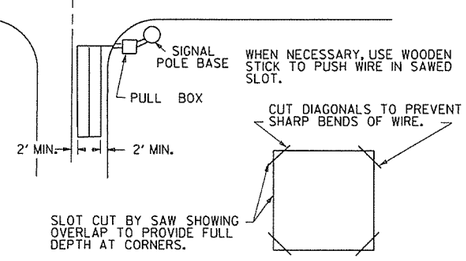


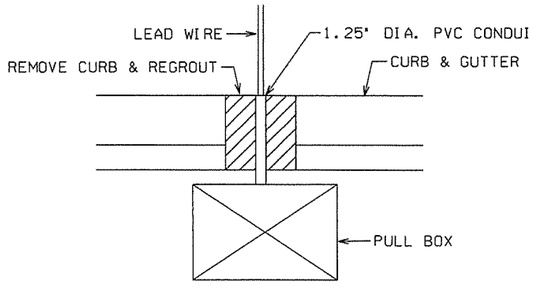
TYPICAL INTERSECTION

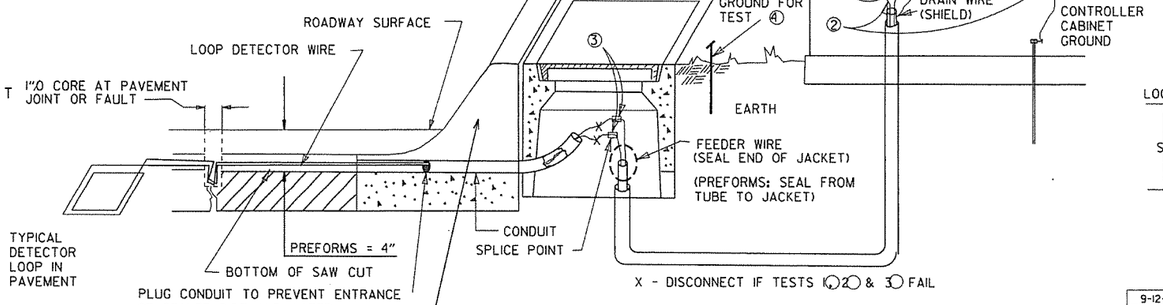


TRAFFIC SIGNAL PRE-EMPTION INTERFACE WIRING DIAGRAM





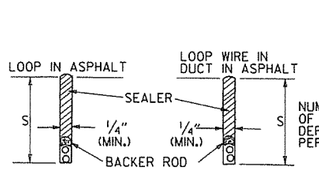




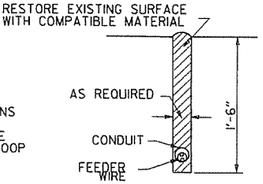
SECTION A-A
1'-6" CONCRETE COMBINATION CURB AND GUTTER

SPECIAL NOTE
IF FEEDER WIRE JACKET IS LEFT UNSEALED AND WATER IS ALLOWED TO ENTER JACKET, CONTRACTOR WILL BE REQUIRED TO REPLACE FEEDER AT NO COST TO THE DEPARTMENT.

TYPICAL SECTIONS FOR PULSE AND PRESENCE LOOP DETECTORS



SECTION C-C
S=2 ½" IN ASPHALT
S=1½" IN CONCRETE



SECTION D-D

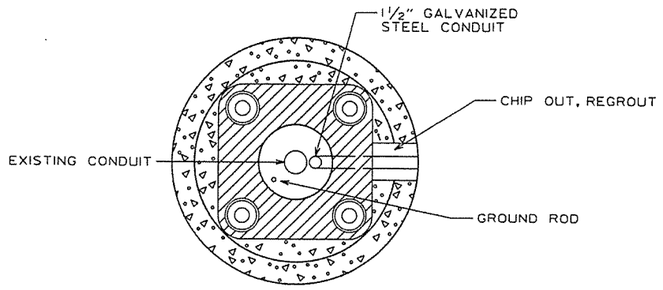
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
5-17-01	REVISED	
4-11-01	REVISED	
2-4-00	REVISED PRE-EMPTION TEST SWITCH	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

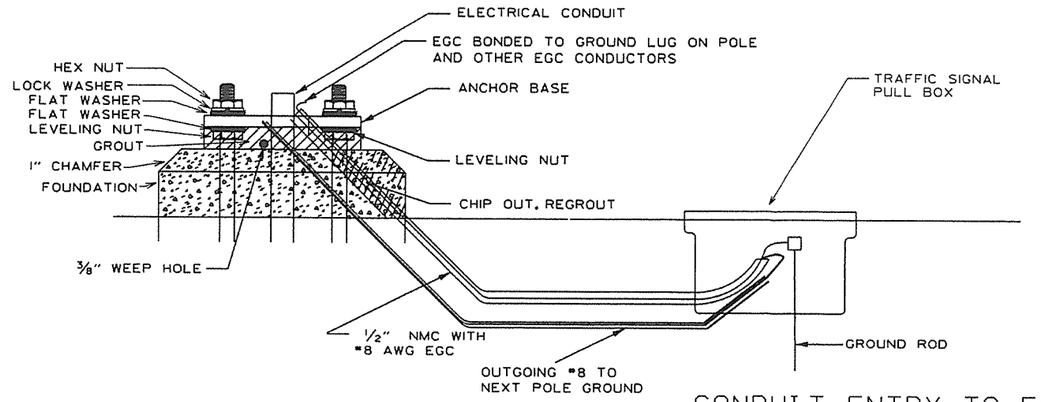
LOOP DETECTOR INSTALLATION

STANDARD DRAWING SD-4

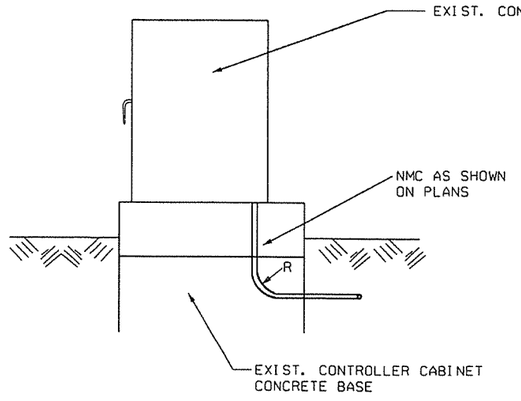
CONDUIT ENTRY TO EXISTING POLE BASE



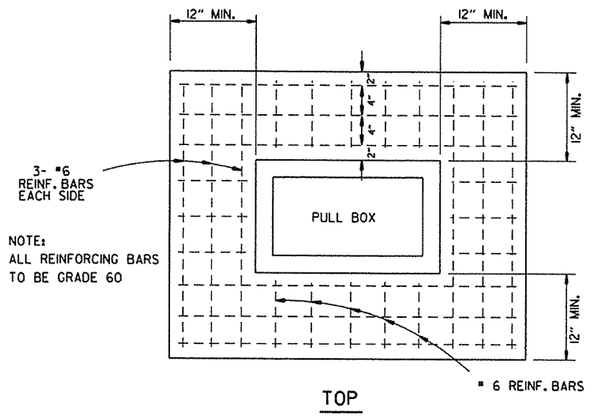
ANCHOR BASE



CONDUIT ENTRY TO EXISTING CONTROLLER CABINET

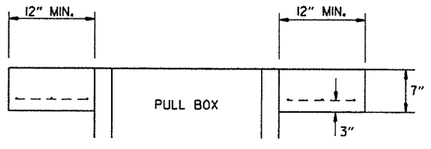


NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



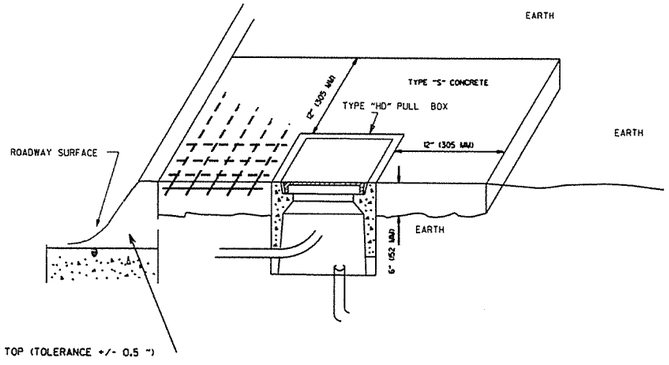
NOTE:
ALL REINFORCING BARS TO BE GRADE 60

TOP



ELEVATION

TYPE "HD" CONCRETE PULL BOX DETAIL



NOTE: ALL TYPE 1 AND TYPE 2 HD PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" (305 MM) WIDE AND 7" (178 MM) IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD PULL BOX. PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE SHALL BE CLASS "S." THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE PULL BOX IS REQUIRED IN CONCRETE.

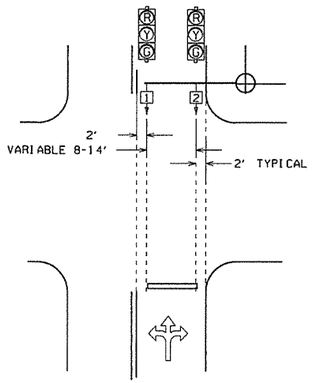
DATE	REVISION	DATE FILM
9-2-15	REVISED PULL BOX DEPTH	
9-12-13	ISSUED AS STANDARD DRAWING	
5-21-09	REVISED GROUNDING	
7-31-08	ADDED & REVISED CONDUIT ENTRY	
6-23-04	REVISED CLEARANCE AT CURB ENTRY	
1-4-02	ADDED REINFORCING TO BOX APRON	
7-2-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

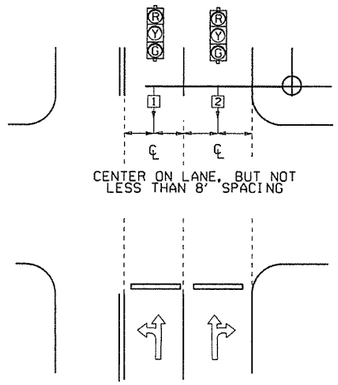
HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6

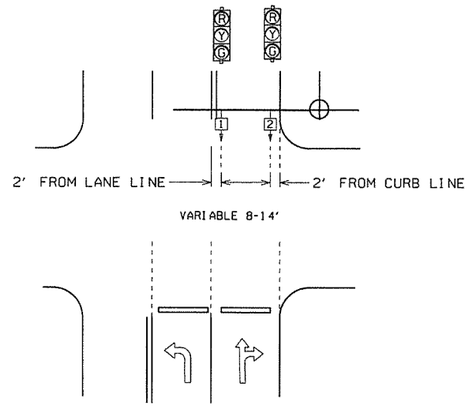
(A)



(B)



(C)



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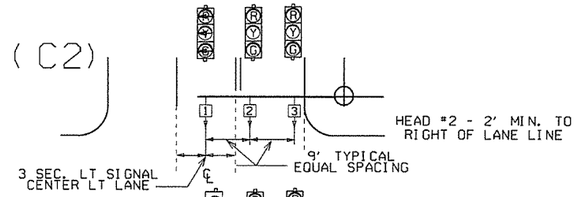
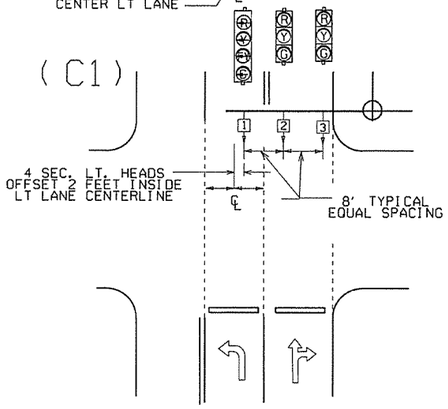


(C1)



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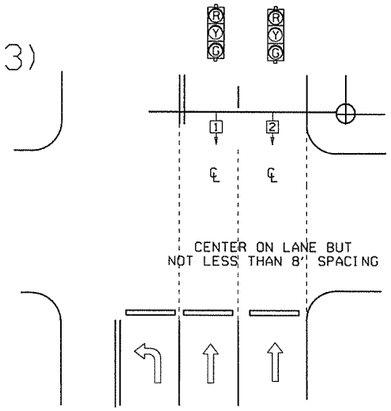

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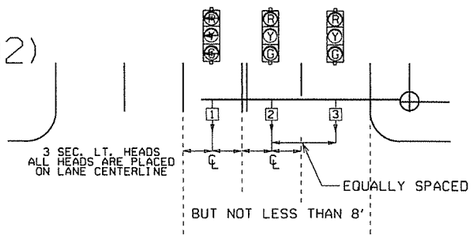
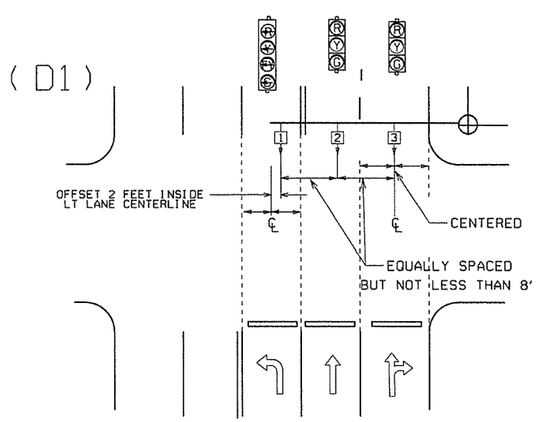
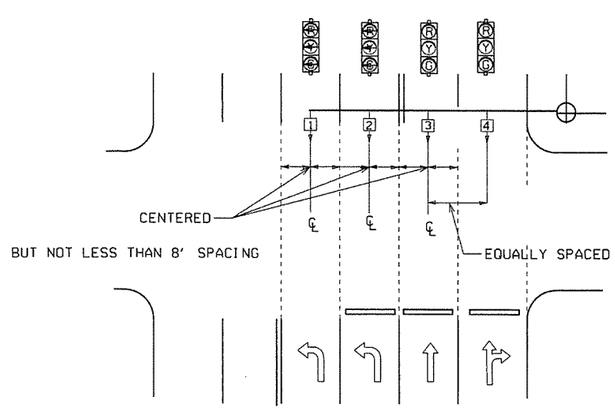


(D1)



NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.

(E)



℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION 'PROTECTED/PERMISSIVE' LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION 'PROTECTED' LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-1 OF 2009 MUTCD.

			ARKANSAS STATE HIGHWAY COMMISSION
9-12-13	ISSUED AS STANDARD DRAWING		SIGNAL HEAD PLACEMENT
3-11-10	2009 MUTCD		
12-9-99	ISSUED		
DATE	REVISION	DATE FILM	STANDARD DRAWING SD-8

NOTES, PED AND TRAFFIC SIGNAL HEAD SIGNS:
EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12' TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12' TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGN FACES SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209. ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

GENERAL NOTES:
1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

3. MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 IN. BACK PLATES:

HEADS AT END OF ARM - ONE 4 SEC., 85 LB., 16.0 SQ. FT. ONE SIGN MOUNTED 3 FT. FROM SIGNAL * 2' X 0' X 2' * 6'; 20 LB. REMAINING HEADS SPACED A 8 FT. * 3 SEC., 56 LB., TWO 5 SEC):
14.4 SQ. FT. DESIGN TO ACCOMMODATE (INCLUDING
2 HEADS FOR ARMS 10 TO 16 FT.
2 HEADS FOR ARMS 10 TO 16 FT.; INCLUDING LB.
3 HEADS FOR 18 TO 24 FT. ARMS;
4 HEADS FOR OVER 26 FT. ARMS.

STREET NAME SIGN -- 72" X 18", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) * VARIABLE ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB. PED SIGNALS -- TWO 2 SEC. 12 INCH MOUNTED 8 FT. FROM BASE OF POLE.
POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

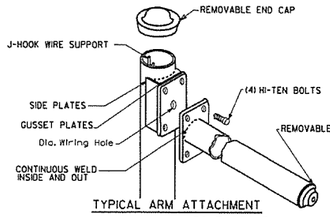
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE -- HAND HOLES SHALL BE 4 X 6 INCHES FOR STANDARD, AND 3 X 5 INCHES FOR PED POLES. MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21 FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDE A HAND HOLD WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

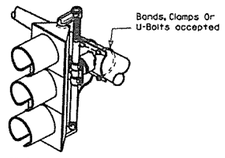
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE AFTER IT IS PLACED UNDER LOAD.

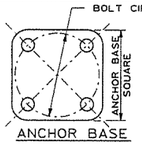
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



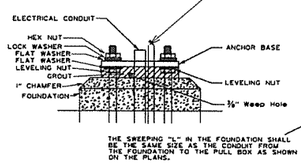
TYPICAL ARM ATTACHMENT

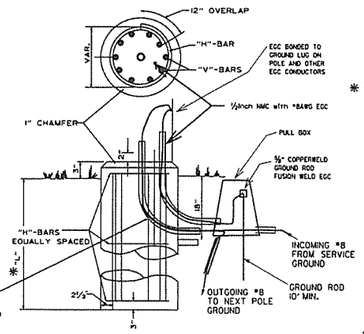


NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.



ANCHOR BASE



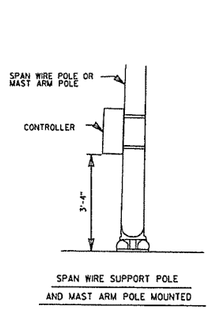


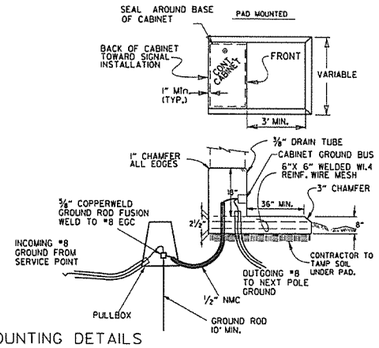
THE GROUND ROD SHALL BE FUSION WELDED TO A 1C/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FDN. DIAMETER	DEPTH "L" *	STEEL VERT.	STEEL HORZ.	STEEL O/C.
PED	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' to 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
over 12' to 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
over 20' to 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
over 35' to 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
over 50' to 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
Twins to 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
Twins over 20' to 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
Twins over 44' to 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
Twins over 50' to 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"





CONTROLLER CABINET MOUNTING DETAILS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

8. GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX. NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 1/4" WEEP HOLE. ALL CONCRETE SHALL BE CLASS "S" OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS "S" OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PED PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM PEDESTRIAN SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

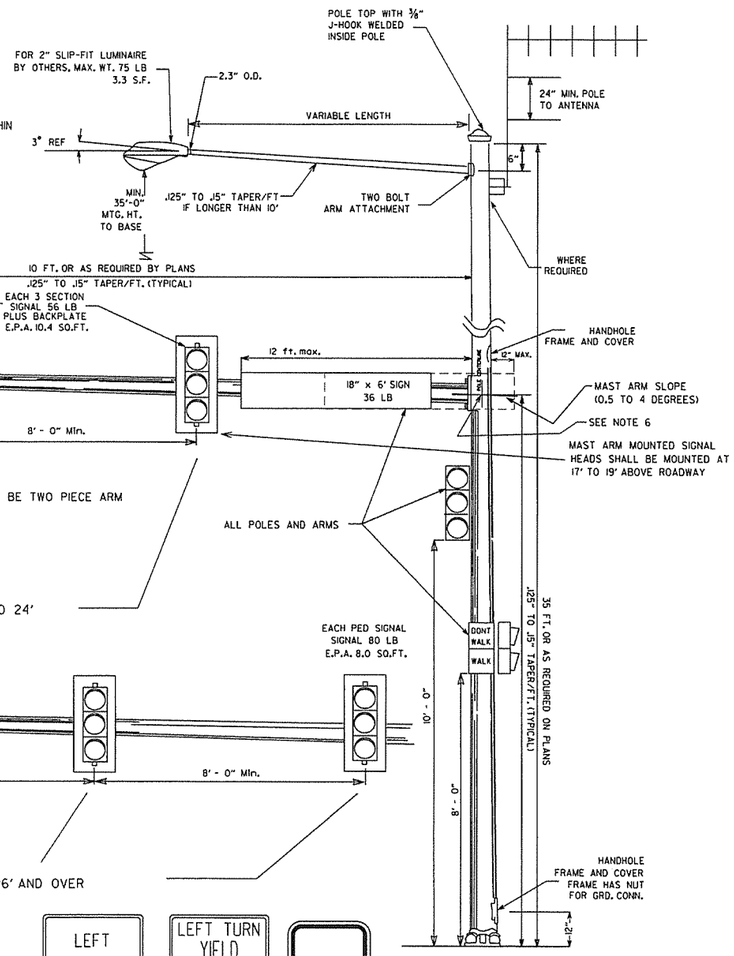
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD, AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

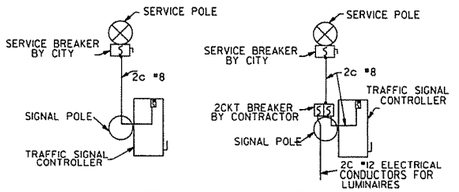
SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

* WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS.

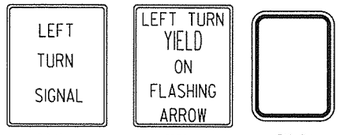
** IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 5" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

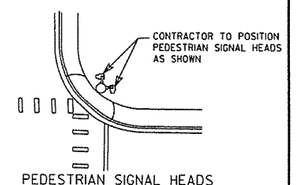
TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.





SERVICE DISCONNECT





PEDESTRIAN SIGNAL HEADS

DATE	REVISION	DATE FILM
2-27-14	REVISED NOTES.	
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED VMD, SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-8-04	REV. NOTE 3/AASHTO REQUIREMENTS	
6-11-01	REV. NOTES & POLE MAST ARM SLOPE	
4-5-01	REVISED POLE TAPERS	
4-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
11-22-99	REVISED FOUNDATION DETAILS	
11-17-98	REVISED DETAILS AND NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

STEEL POLE WITH MAST ARM

STANDARD DRAWING SD-11

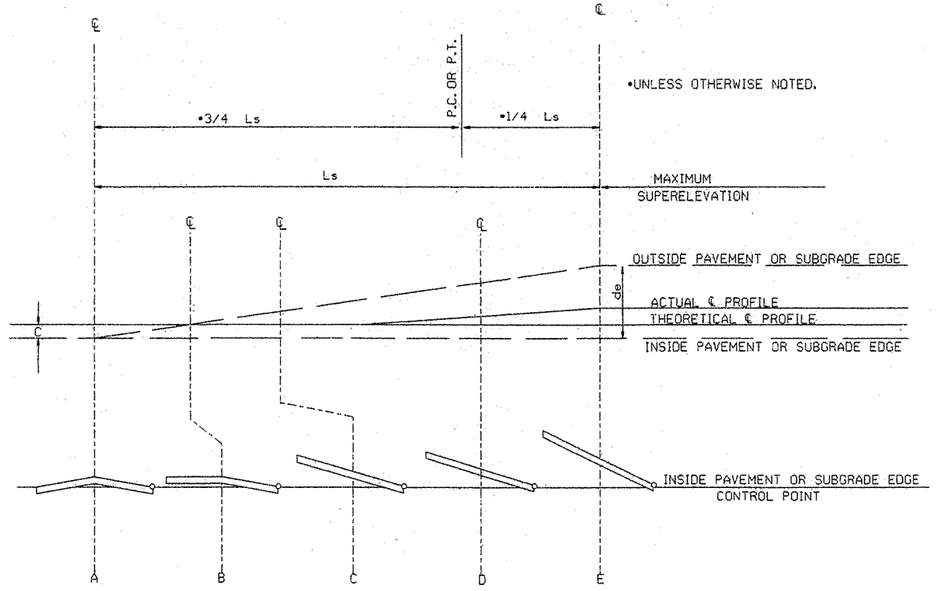
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	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	200		0.032	225		0.037	250		0.046		
1° 30′	N.C.			0.021	175		0.031			0.037			0.043			0.054		
1° 45′	N.C.			0.025			0.036			0.043			0.049			0.062		
2° 00′	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R.C.			0.031			0.045		250	0.053			0.061	300		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			0.040			0.057			0.067	230		0.077	260		0.096	350	400
3° 15′	0.027	150		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.

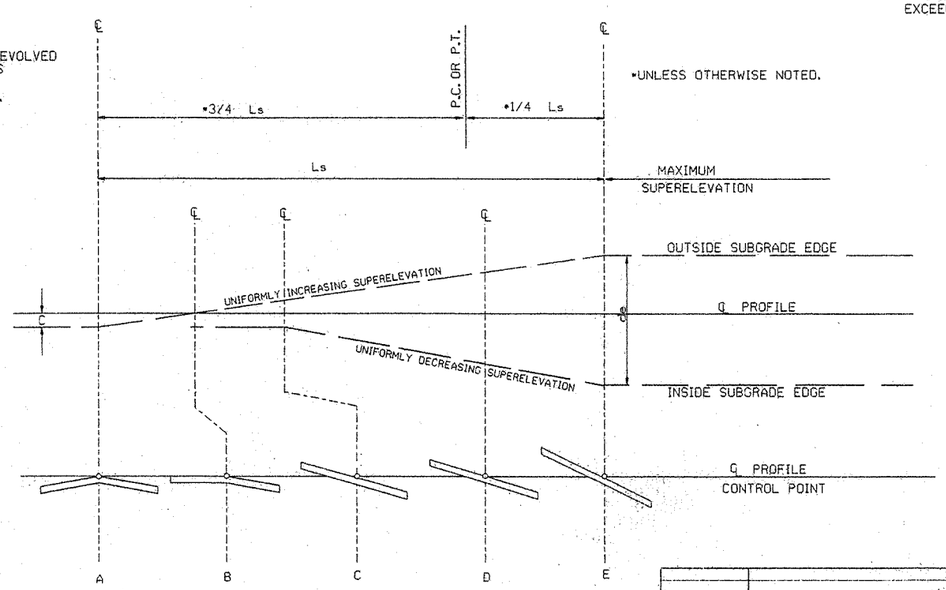
GENERAL NOTES

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 = $\frac{Lde}{Ls}$

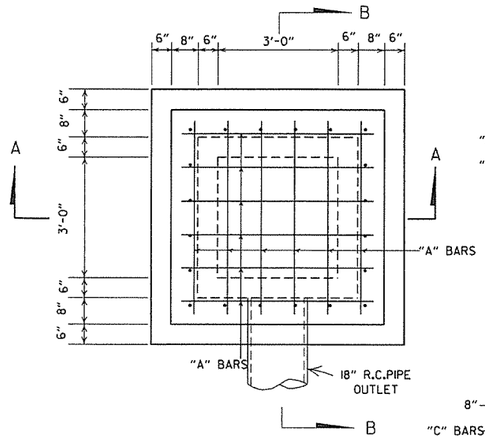
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

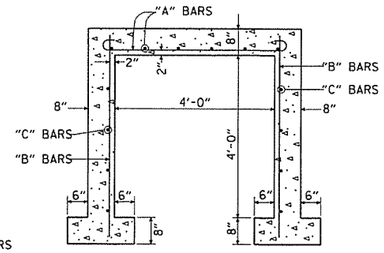
ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

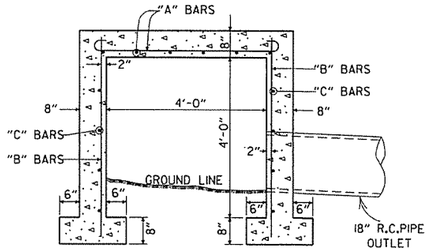
STANDARD DRAWING SE-2

FILE STDSE2.DGN





SEC A-A



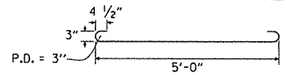
SEC B-B

NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



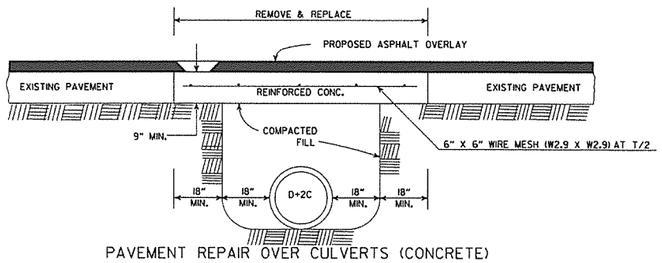
"A" BARS

QUANTITIES

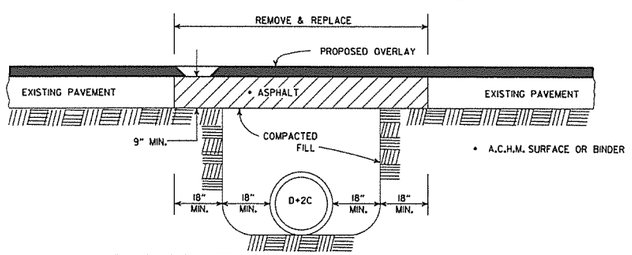
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

GENERAL NOTE:
THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITTIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



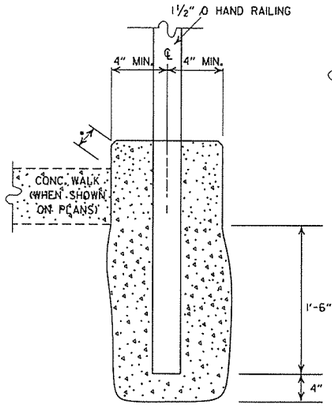
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



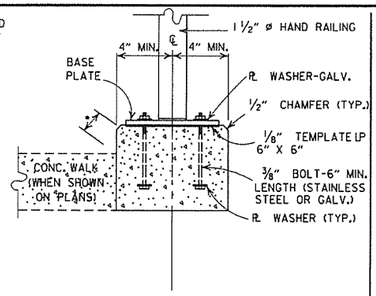
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

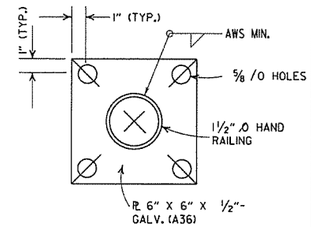
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

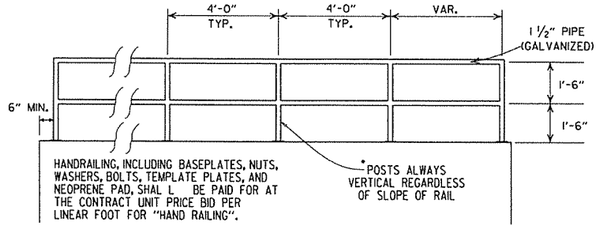


POST CONNECTION TO WALL

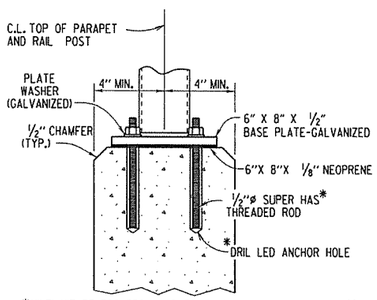


BASE PLATE

POST CONNECTION DETAILS



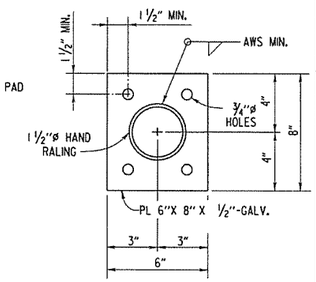
HAND RAILING SHAL L CONFORM TO SECTION 633.



*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.

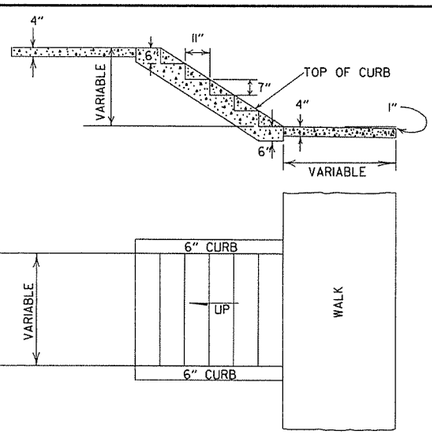
POST CONNECTION TO WALL



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

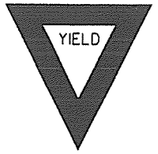
STANDARD DRAWING SI - 1

R1-1



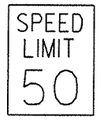
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

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



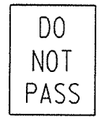
STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

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



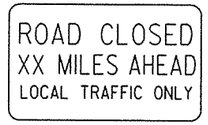
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2



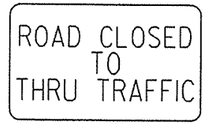
48"X30"

RII-3A



60"X30"

RII-4



60"X30"

RSP-1



48"X30"

WI-1



STD. 36"X36"
FWY. 48"X48"

WI-2



STD. 36"X36"
FWY. 48"X48"

WI-3



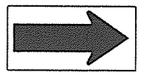
STD. 48"X48"

WI-4



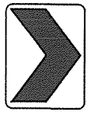
STD. 48"X48"

WI-6



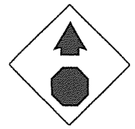
STD. 48"X24"
SPECIAL 60"X30"

WI-8



STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



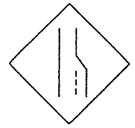
STD. 36"X36"
SPECIAL 48"X48"

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"

WI3-1



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



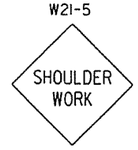
STD. 36"X36"
FWY. 48"X48"

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

WI-4b



STD. 48"X48"

R56-1



STD. 18"X18"

W8-11



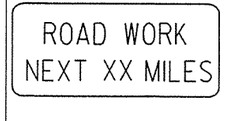
STD. 36"X36"
FWY. 48"X48"

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.

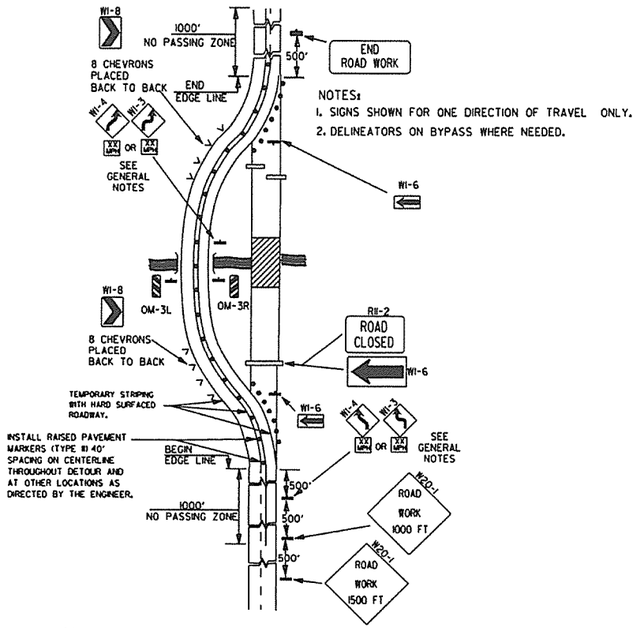
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY 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	
8-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
8-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
8-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
8-18-98	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

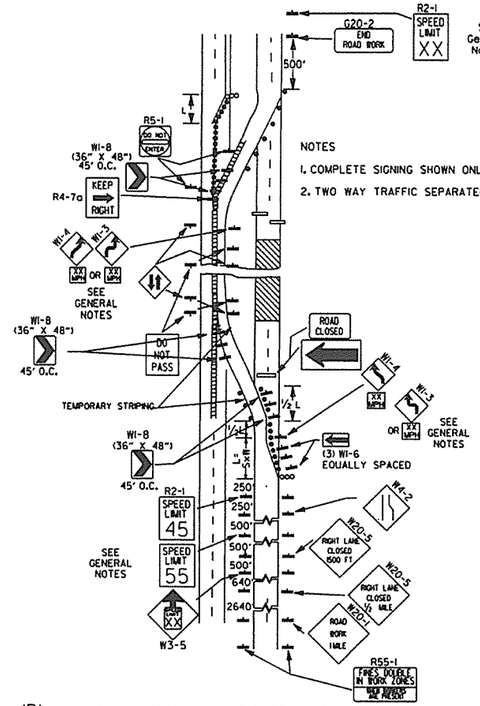
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



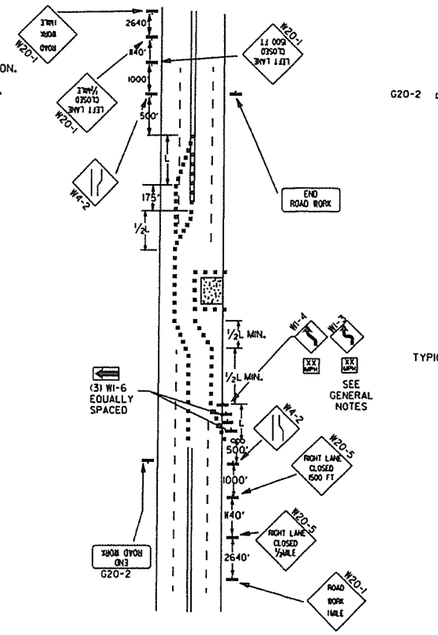
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

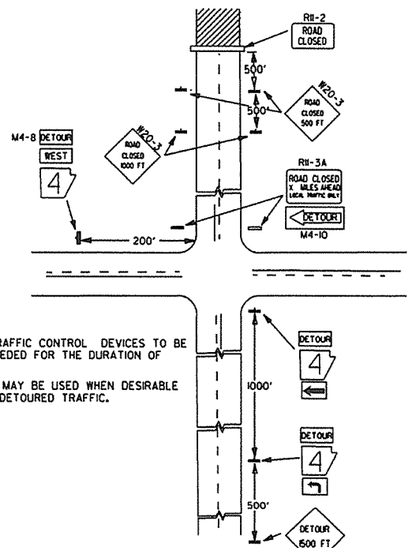


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

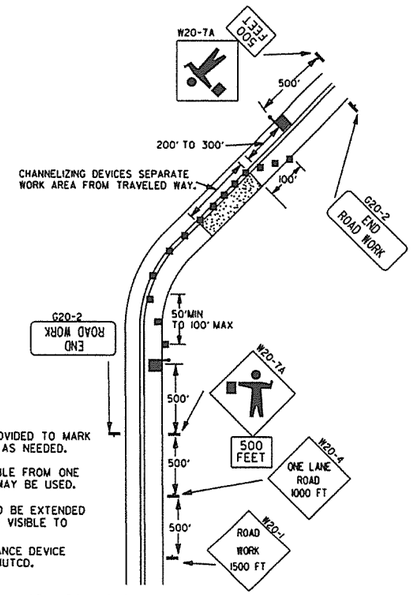


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



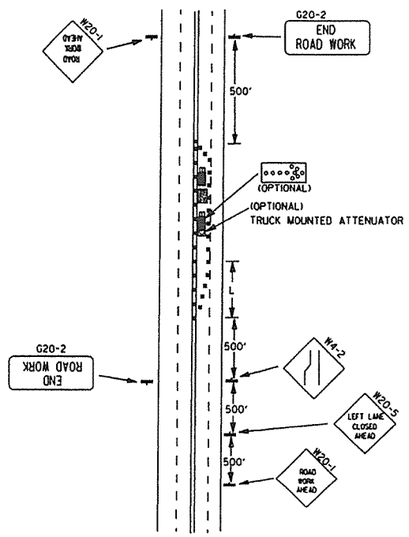
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



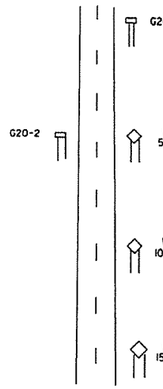
NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE 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.

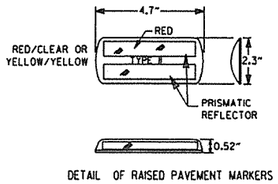


(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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:

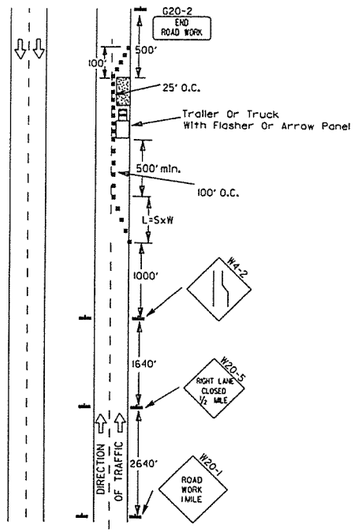
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED 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	
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
8-20-08	REVISED SIGN DESIGNATIONS	
8-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

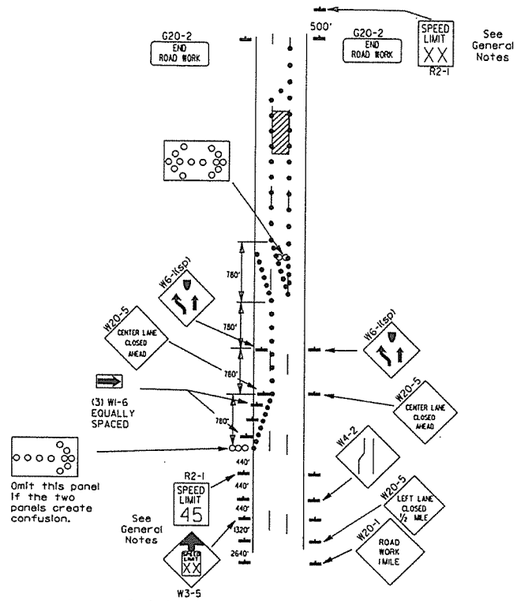
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

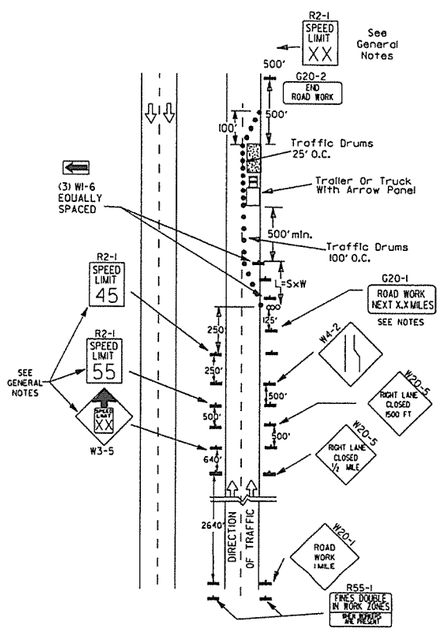
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

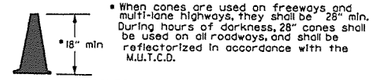
KEY:

- ○○○ 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 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

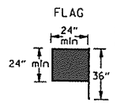
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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.

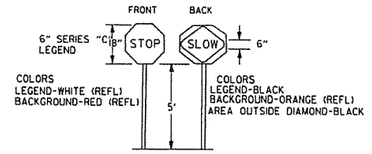
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

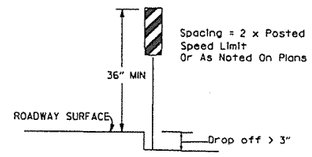


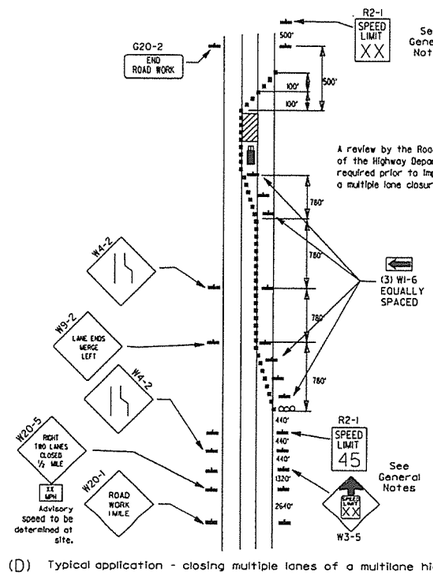
Flag shall be of good grade red material

STOP SLOW PADDLE



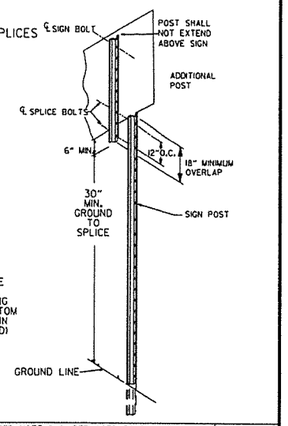
VERTICAL PANEL PLACEMENT





(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	

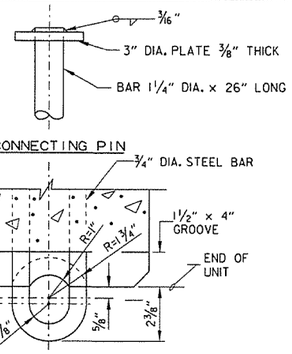
ARKANSAS STATE HIGHWAY COMMISSION

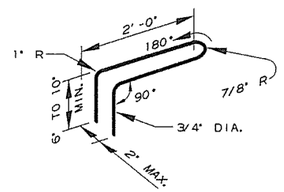
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

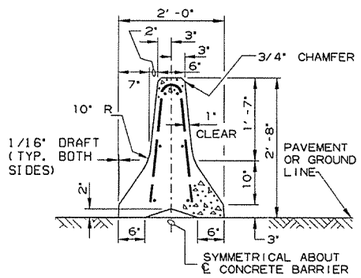
REINFORCING BAR TABLE PER BARRIER UNIT

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", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16" R, 12°, 9 1/2", 2'-1 3/8", 4 3/8"

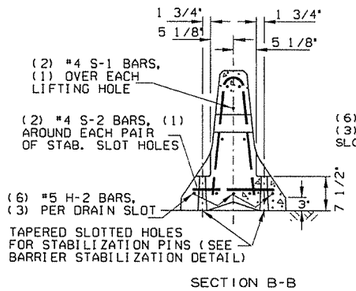




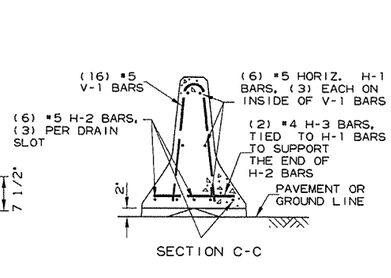
CONNECTION LOOP



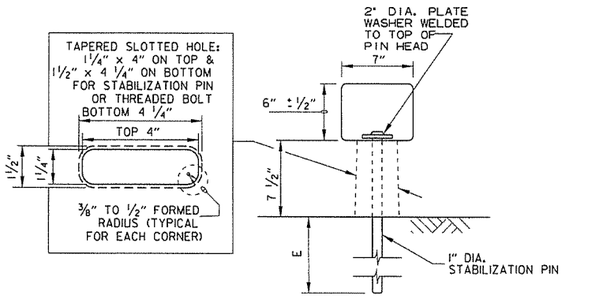
SECTION A-A



SECTION B-B



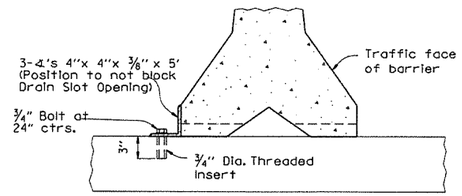
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

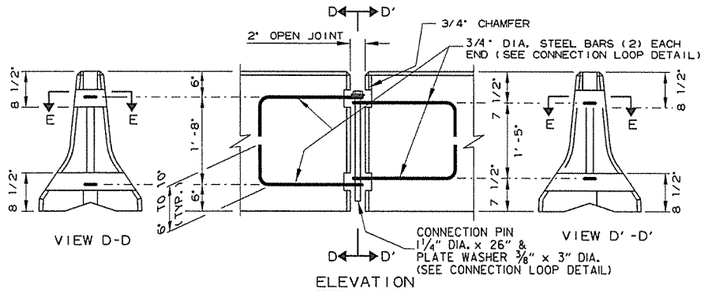
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



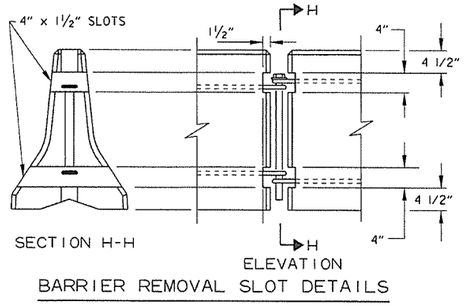
NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

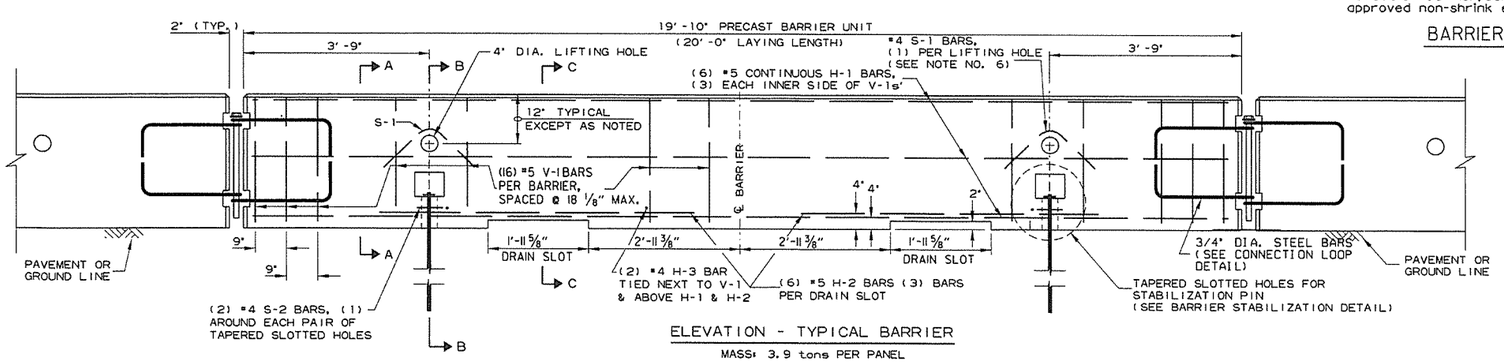
BRIDGE DECKS



ELEVATION



BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

(1) The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

(2) Materials shall meet the following minimum requirements:
Concrete: 2500 psi compressive strength at 28 days.
Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

(3) Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

(4) Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

(5) Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

(6) A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

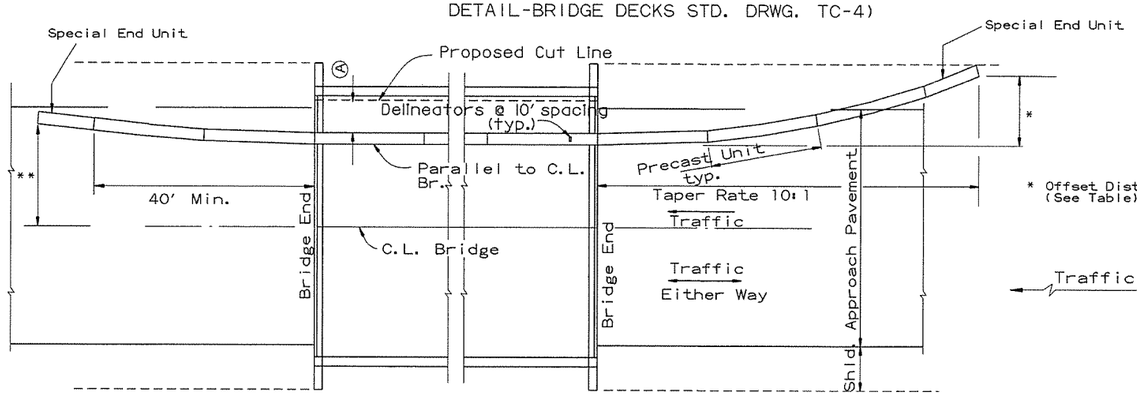
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

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

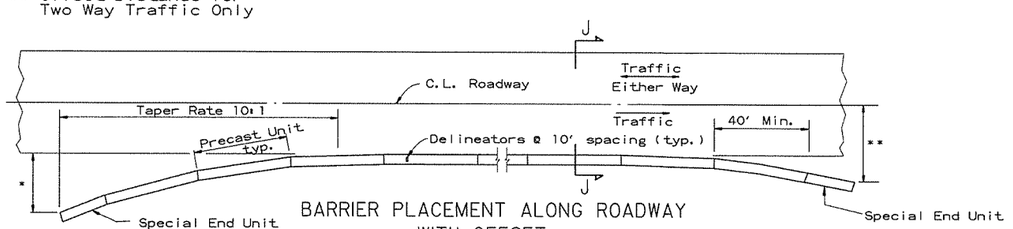


BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

* Offset Distance (See Table)

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

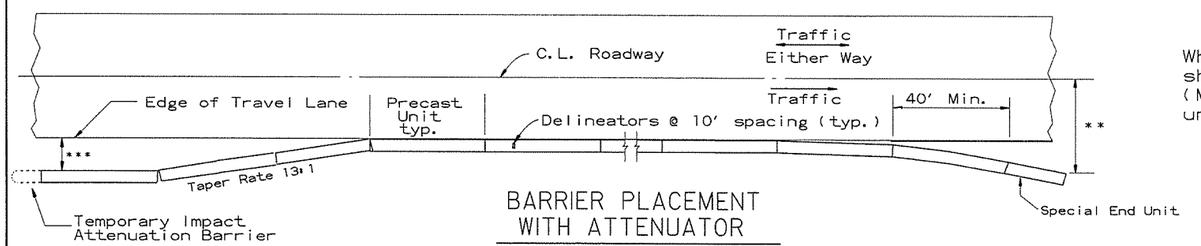
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Offset Distance Table

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

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

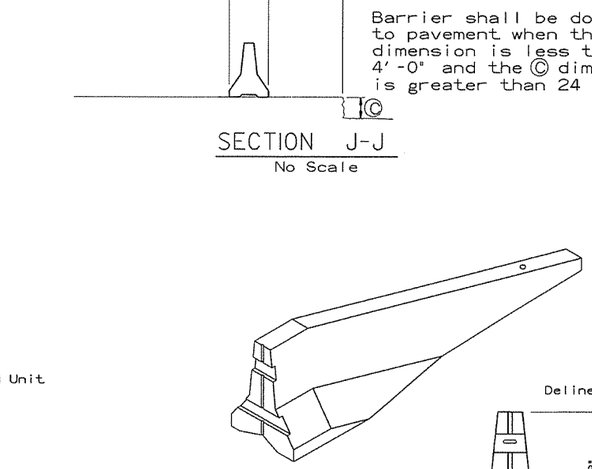


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

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

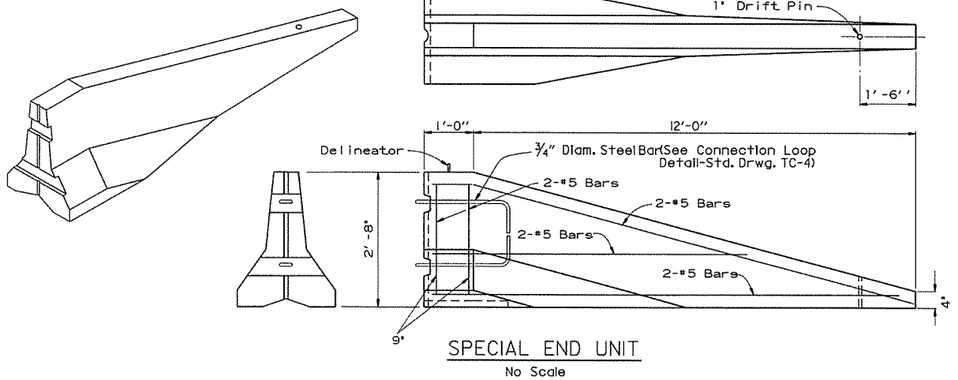
** Offset Distance For Two Way Traffic Only



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



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

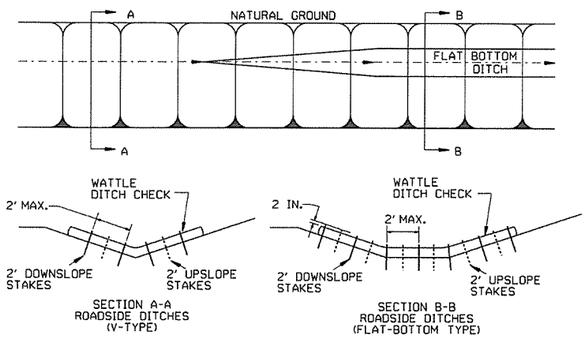
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

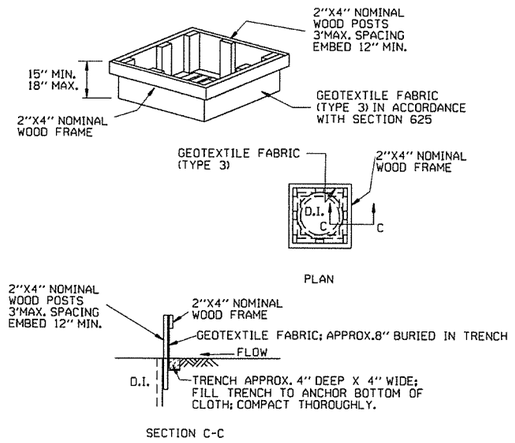
STANDARD DRAWING TC-5

GENERAL NOTES

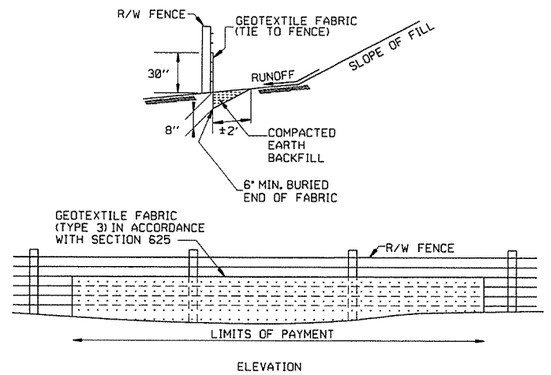
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



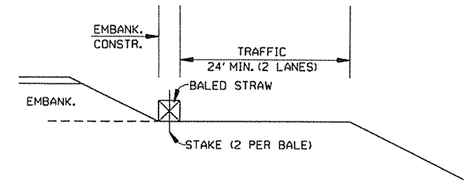
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

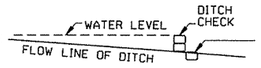
GENERAL NOTES

1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. NO GAPS SHALL BE LEFT BETWEEN BALES.
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.

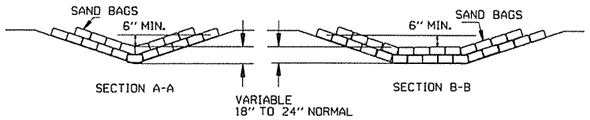


BALED STRAW FILTER BARRIER (E-2)

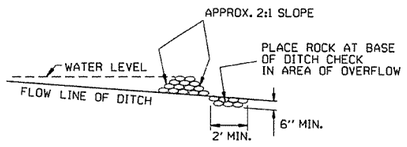
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.

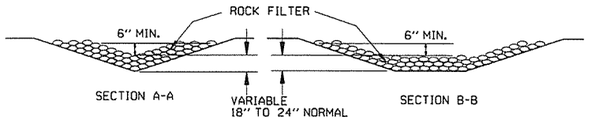


PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW



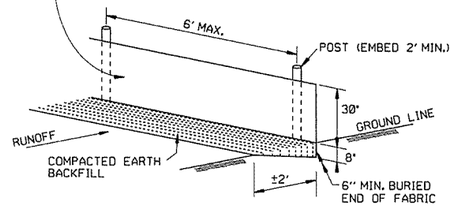
SAND BAG DITCH CHECK (E-5)





ROCK DITCH CHECK (E-6)

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625



SILT FENCE (E-11)

GENERAL NOTES

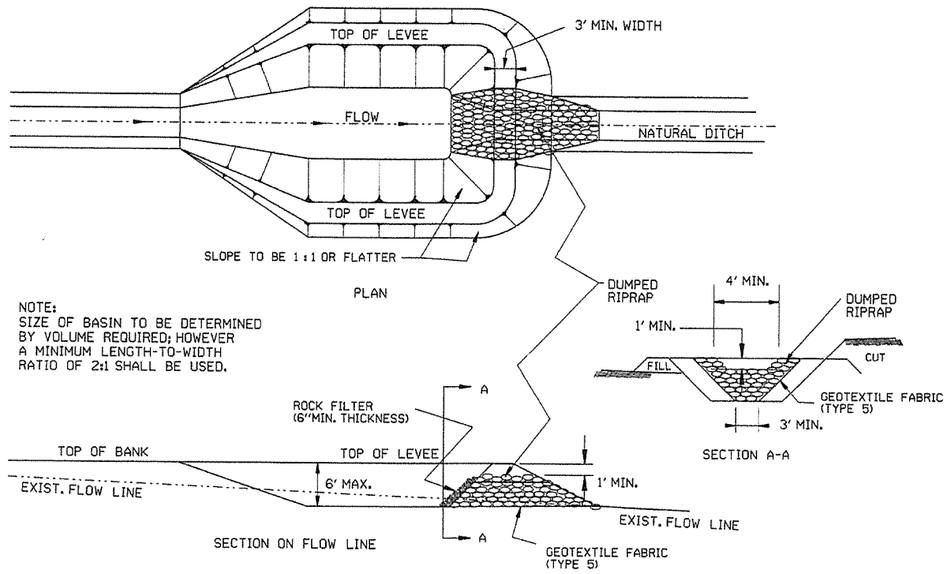
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

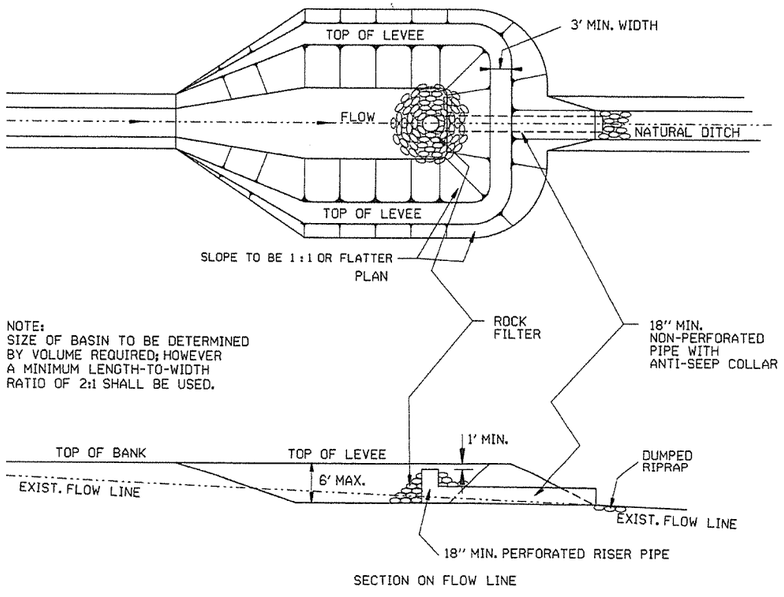
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

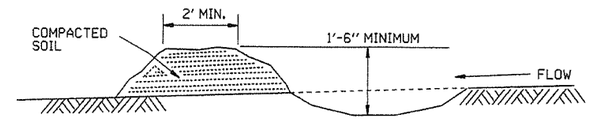
STANDARD DRAWING TEC-1



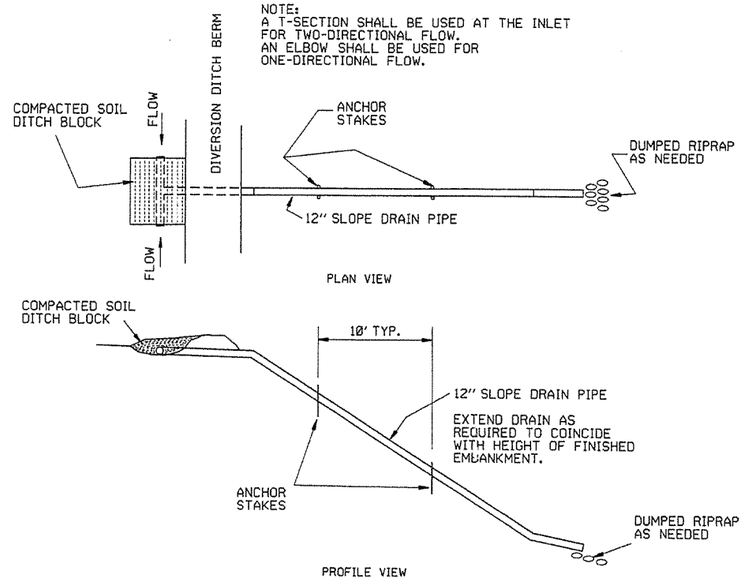
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



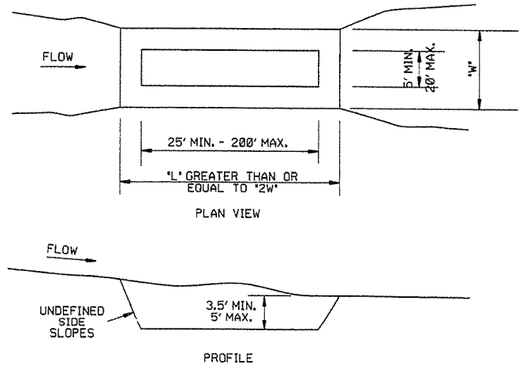
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

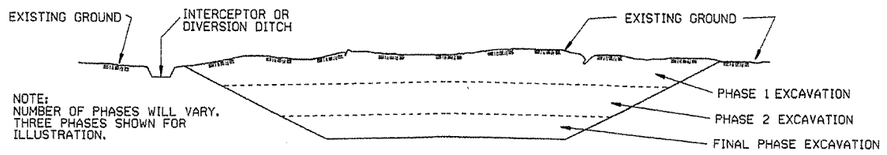
STANDARD DRAWING TEC-2

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



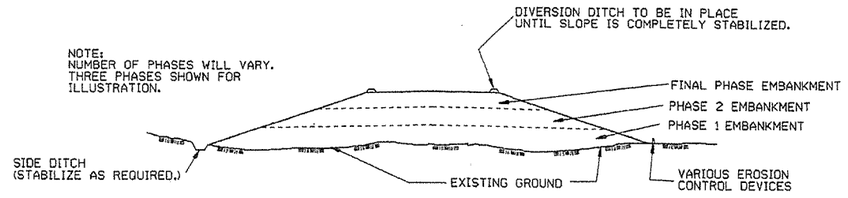
GENERAL NOTE

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.

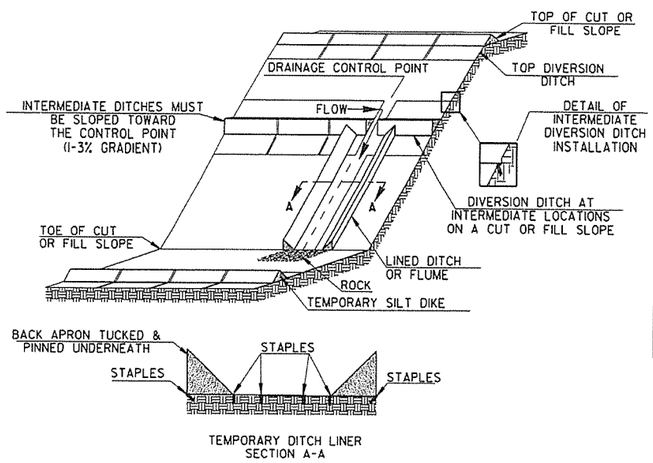
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

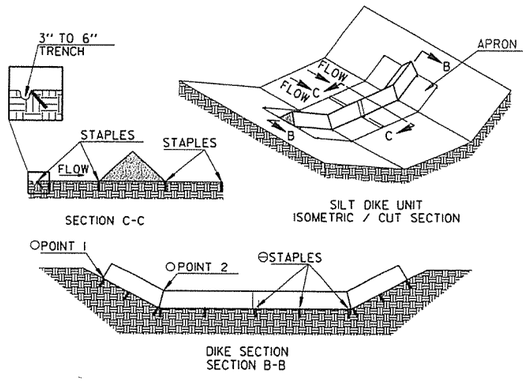
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

stdtec3.dgn



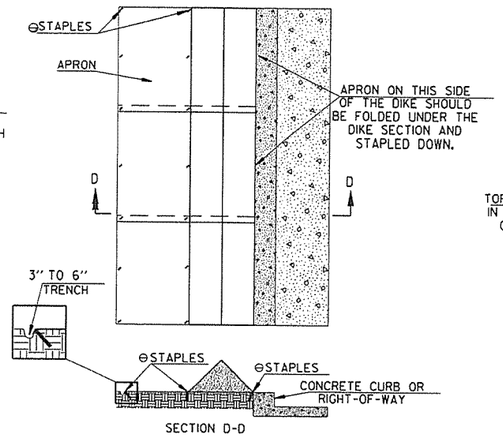
TRIANGULAR SILT DIKE INSTALLATION
FOR
DIVERSION DITCH AND/OR DITCH LINER



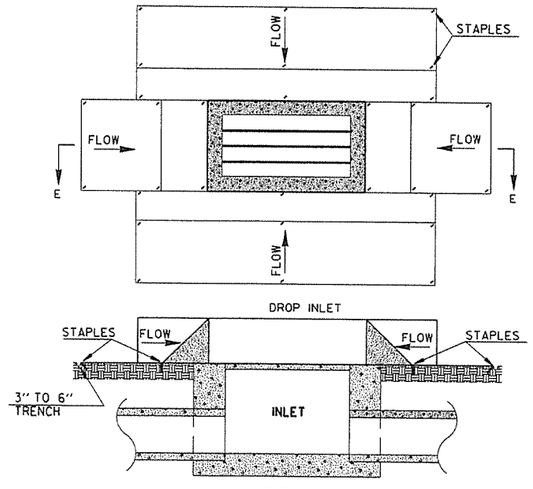
TRIANGULAR SILT DIKE INSTALLATION
FOR
ROADWAY DITCH OR DRAINAGE DITCH

○ POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

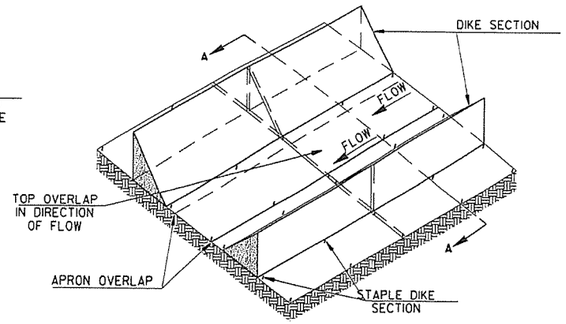
⊖ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



TRIANGULAR SILT DIKE INSTALLATION
FOR
CONTINUOUS BARRIER



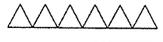
TRIANGULAR SILT DIKE INSTALLATION
FOR
DROP INLETS



TRIANGULAR SILT DIKE INSTALLATION
FOR
TEMPORARY DITCH LINER

SYMBOLOGY

SYMBOL TO BE USED TO DENOTE DEVICE ON PLANS



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

GENERAL NOTES

1. THIS WORK SHALL CONSIST OF FURNISHING, INSTALLING, AND MAINTAINING THE TRIANGULAR SILT DIKE. THE DIKES SHALL BE USED AS A CONTINUOUS LINE BARRIER AT THE TOE OF SLOPE OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED AND LOCATED AS SOON AS CONSTRUCTION WILL ALLOW OR AS DIRECTED BY THE ENGINEER.

2. TRIANGULAR SILT DIKE SHALL BE TRIANGULAR SHAPED HAVING A HEIGHT OF AT LEAST 8" TO 10" IN THE CENTER WITH EQUAL SIDES AND A 16" TO 20" BASE. THE TRIANGULAR SHAPED INNER MATERIAL SHALL BE URETHANE FOAM. THE OUTER COVER SHALL BE A WOVEN GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL & ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE 24" TO 36". THIS FABRIC SHOULD BE MILDEW RESISTANT, ROT-PROOF AND RESISTANT TO HEAT AND ULTRAVIOLET RADIATION MEETING REQUIREMENTS FOR SEDIMENT CONTROL IN AASHTO M288. THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE STAPLES. THE STAPLES SHALL BE NO. 11 GAUGE WIRE AND BE AT LEAST 6" TO 8" LONG. STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.

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

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

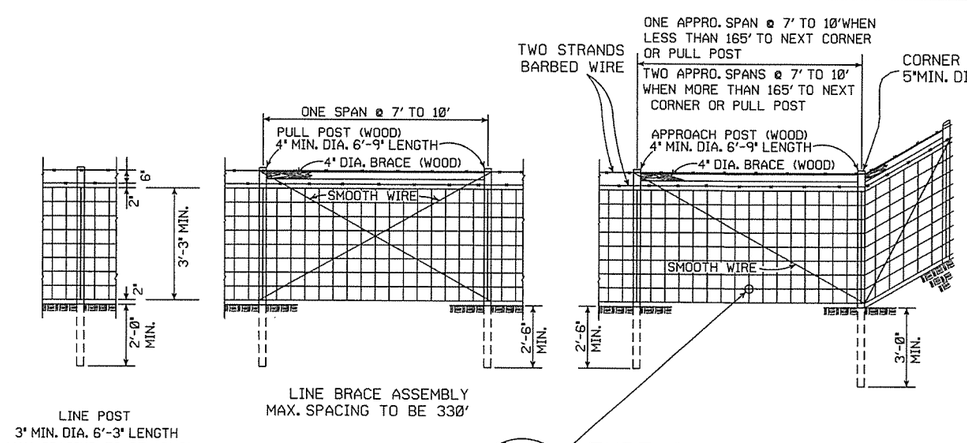
DATE	REVISION	FILMED
7-26-12	REVISED GENERAL NOTE 2.	
12-15-11	ISSUED	

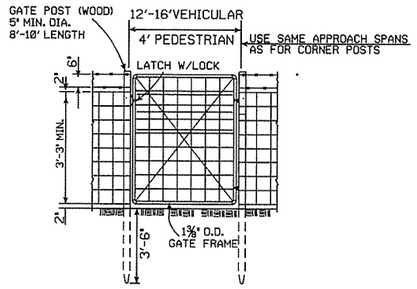
ARKANSAS STATE HIGHWAY COMMISSION

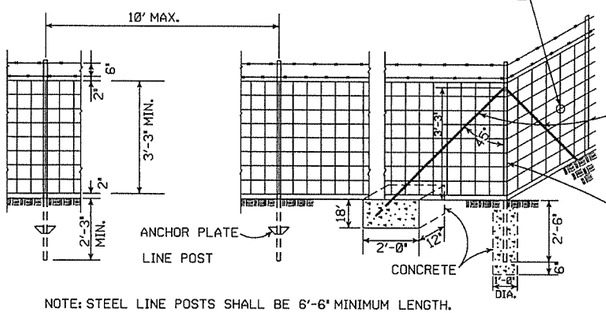
TEMPORARY EROSION CONTROL DEVICES

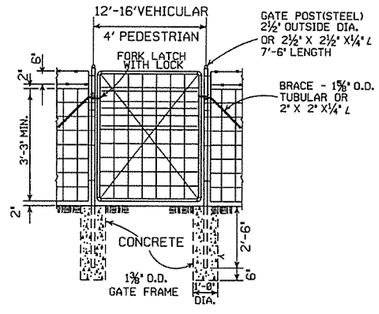
STANDARD DRAWING TEC-4

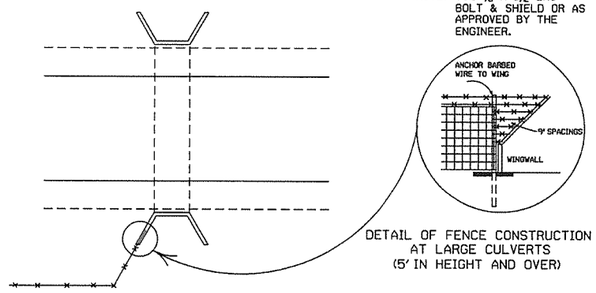
TYPE C FENCE (WOOD POSTS)











DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

OTHER APPROVED TIES WILL BE PERMITTED

NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

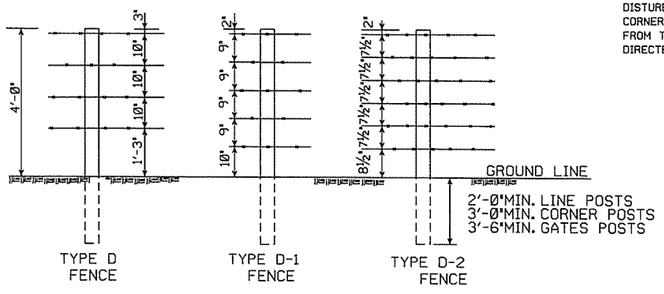
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

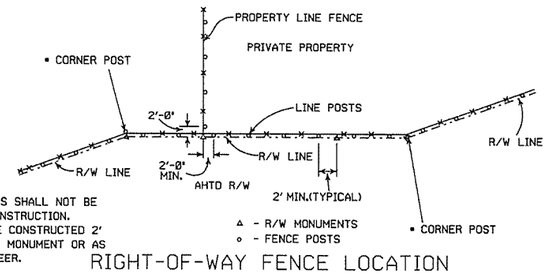
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)

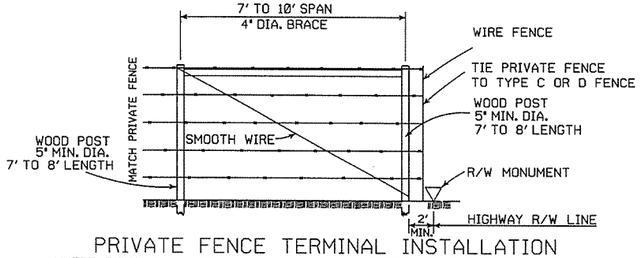


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



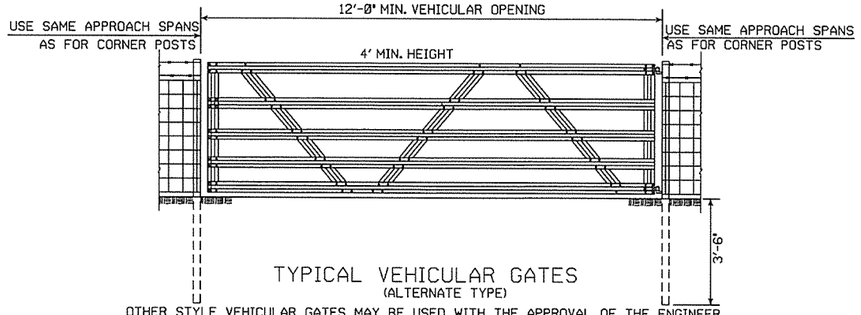
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION

WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER. THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

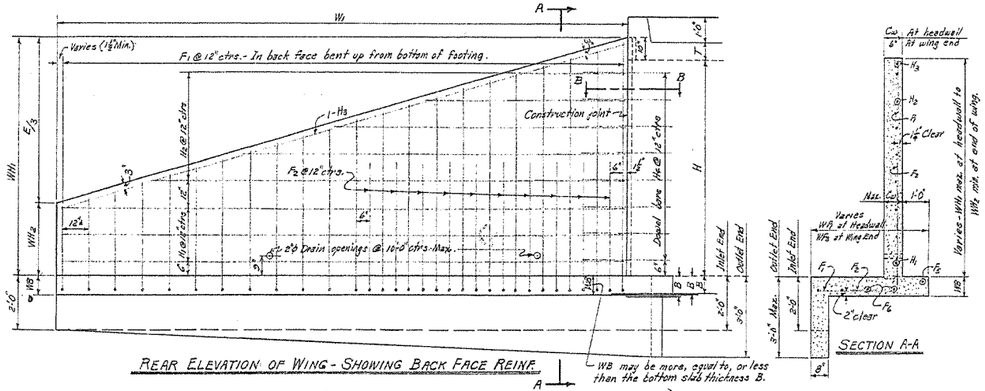
DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

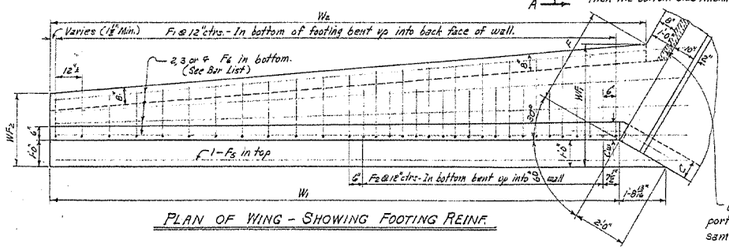
STANDARD DRAWING WF-4

FED. ROAD DIV. NO.	STATE	FED. AID PROJECT	SHEET NO.	TOTAL SHEETS
8	ARK.		191	
JOB NO.				



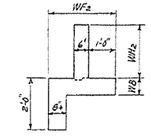
REAR ELEVATION OF WING - SHOWING BACK FACE REINF.

WB may be more, equal to, or less than the bottom slab thickness B.



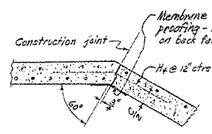
PLAN OF WING - SHOWING FOOTING REINF.

SECTION A-A

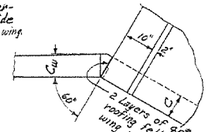


END VIEW OF WING

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the barrel base B.



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 (Constant)	WINGWALL HEIGHTS: At Headwall	WINGWALL HEIGHTS: At End of Wing	WIDTHS OF WING FOOTINGS: At Headwall	WIDTHS OF WING FOOTINGS: At End of Wing	PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM H at TO END OF WING	LENGTH OF WING WALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE: INLET END	* QUANTITY PER WING CLASS S CONCRETE: OUTLET END
H	WB	Cw	WH1	WH2	WF1	WF2	F	E	W1	W2	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"	3'-8"	2'-1½"	1'-4⅞"	8'-6"	9'-3⅝"	9'-2⅝"	1.338	1.466
4'	7"	6"	4'-10"	1'-5"	3'-0	2'-3"	1'-9"	10'-6"	12'-1⅝"	12'-1⅝"	1.868	2.027
5'	7"	6"	5'-10"	1'-8"	3'-0"	2'-6⅝"	2'-1⅞"	12'-6"	14'-5¾"	14'-7⅞"	2.478	2.668
		7"	5'-10"	1'-8"	3'-6"	2'-4⅝"	2'-1⅞"	12'-6"	14'-5¾"	14'-7⅞"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅛"	14'-6"	16'-9"	17'-1⅝"	3.440	3.661
		7⅝"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅛"	14'-6"	16'-9"	17'-1⅝"	3.511	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6⅛"	14'-6"	16'-9"	17'-1⅝"	3.582	3.803
7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0½"	19'-3⅜"	4.505	4.758
		8"	7'-10"	2'-5"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0½"	19'-3⅜"	4.597	4.851
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 facewall for the length W2.

APRON DIMENSION W3

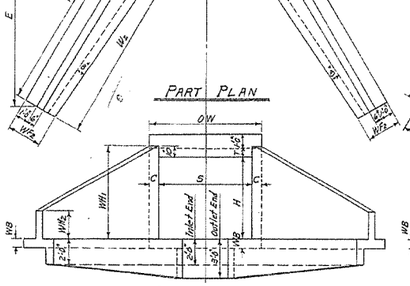
W3 = (OW - 2F)

CLEAR SPAN S	CLEAR HEIGHT H	2 x FOOTING DIMENSION 2F	SINGLE BARREL CULVERT: OW	SINGLE BARREL CULVERT: W3	DOUBLE BARREL CULVERT: OW	DOUBLE BARREL CULVERT: W3	TRIPLE BARREL CULVERT: OW	TRIPLE BARREL CULVERT: W3	QUADRUPLE BARREL CULVERT: OW	QUADRUPLE BARREL CULVERT: W3	QUINTUPLE BARREL CULVERT: OW	QUINTUPLE BARREL CULVERT: W3
4'	2'	1'-11⅛"	5'-0"	3'-0⅛"	9'-8"	7'-6⅛"	14'-4"	12'-0⅛"	19'-0"	17'-0⅛"	23'-8"	21'-8⅛"
	3'	2'-8⅝"	5'-0"	2'-3⅜"	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'-10⅝"	14'-4"	10'-0⅝"	19'-0"	14'-10⅝"	23'-8"	19'-10⅝"
	6'	5'-0⅞"	5'-2"	0'-1½"	9'-11"	4'-10½"	14'-8"	9'-7½"	19'-5"	14'-2½"	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'-6⅜"	17'-4"	13'-0⅝"	23'-0"	18'-8⅜"	28'-8"	24'-6⅝"
	6'	5'-0⅞"	6'-2"	1'-1½"	11'-11"	6'-10½"	17'-8"	12'-7½"	23'-5"	18'-2½"	29'-2"	24'-1⅝"
	7'	6'-2⅝"	6'-3"	0'-0⅞"	12'-1"	5'-10⅞"	17'-11"	11'-8⅛"	23'-9"	17'-6⅛"	29'-7"	23'-6⅛"
6'	3'	2'-8⅝"	7'-0"	4'-3⅜"	13'-8"	10'-11⅛"	20'-4"	17'-7⅛"	27'-0"	24'-3⅛"	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'-6⅜"	20'-4"	16'-0⅝"	27'-0"	22'-8⅜"	33'-8"	29'-6⅝"
	6'	5'-0⅞"	7'-2"	2'-1½"	13'-11"	8'-10½"	20'-8"	15'-7½"	27'-5"	22'-2½"	34'-2"	29'-1⅝"
	7'	6'-2⅝"	7'-3"	1'-0⅞"	14'-1"	7'-10⅞"	20'-11"	14'-8⅛"	27'-9"	21'-6⅛"	34'-7"	28'-6⅛"
	8'	7'-4"	7'-4"	0'-0"	14'-2"	6'-10"	21'-0"	13'-8"	27'-10"	20'-6"	34'-8"	27'-8"
7'	4'	3'-6"	8'-0"	4'-3"	15'-6"	12'-2"	23'-5"	19'-1"	31'-0"	27'-6"	38'-8"	35'-3"
	5'	4'-3⅜"	8'-0"	3'-8⅝"	15'-8"	11'-6⅜"	23'-6"	18'-0⅝"	31'-0"	26'-8⅜"	38'-8"	34'-6⅝"
	6'	5'-0⅞"	8'-2"	3'-1½"	15'-11"	10'-10½"	23'-8"	17'-7½"	31'-5"	26'-2½"	39'-1"	34'-1⅝"
	7'	6'-2⅝"	8'-3"	2'-0⅞"	16'-1"	9'-10⅞"	23'-11"	16'-8⅛"	31'-9"	25'-6⅛"	39'-7"	33'-6⅛"
	8'	7'-4"	8'-5"	1'-0"	16'-2"	8'-10"	24'-1"	15'-8"	31'-10"	24'-6"	39'-8"	32'-8"
8'	4'	3'-6"	9'-0"	5'-6"	17'-6"	14'-2"	26'-6"	22'-1⅛"	35'-0"	31'-6"	43'-8"	40'-3"
	5'	4'-3⅜"	9'-2"	4'-10⅜"	17'-11"	13'-7⅜"	26'-8"	21'-2⅝"	35'-5"	30'-10⅜"	44'-2"	39'-7⅝"
	6'	5'-0⅞"	9'-2"	4'-1½"	17'-11"	12'-10½"	26'-8"	20'-2½"	35'-5"	30'-2½"	44'-2"	39'-1⅝"
	7'	6'-2⅝"	9'-3"	3'-0⅞"	18'-1"	11'-10⅞"	26'-11"	19'-3⅛"	35'-9"	29'-6⅛"	44'-7"	38'-6⅛"
	8'	7'-4"	9'-4"	2'-0"	18'-2"	10'-10"	27'-0"	18'-3"	35'-10"	28'-6"	44'-8"	37'-8"
9'	5'	4'-3⅜"	10'-2"	5'-0⅜"	19'-11"	15'-7⅜"	29'-8"	25'-4⅝"	39'-5"	35'-1⅜"	49'-2"	44'-10⅝"
	6'	5'-0⅞"	10'-3"	5'-1½"	20'-1"	15'-0½"	29'-11"	24'-5⅝"	39'-9"	34'-5½"	49'-7"	44'-1⅝"
	7'	6'-2⅝"	10'-3"	4'-0⅞"	20'-1"	14'-0⅞"	29'-11"	23'-6⅛"	39'-9"	33'-6⅛"	49'-7"	43'-1⅛"
	8'	7'-4"	10'-4"	3'-0"	20'-2"	12'-10"	30'-0"	22'-3"	39'-10"	32'-2"	49'-8"	42'-4"
10'	5'	4'-3⅜"	11'-2"	6'-0⅜"	21'-11"	17'-7⅜"	32'-8"	28'-4⅝"	43'-5"	39'-1⅜"	54'-2"	49'-10⅝"
	6'	5'-0⅞"	11'-3"	6'-1½"	22'-1"	17'-0½"	32'-11"	27'-10½"	43'-9"	38'-5½"	54'-7"	49'-1⅝"
	7'	6'-2⅝"	11'-3"	5'-0⅞"	22'-1"	15'-10⅞"	32'-11"	26'-6⅛"	43'-9"	37'-1⅛"	54'-7"	48'-4⅛"
	8'	7'-4"	11'-4"	4'-0"	22'-2"	14'-10"	33'-0"	25'-3"	43'-10"	36'-2"	54'-8"	47'-4"
11'	6'	5'-0⅞"	12'-4"	7'-1½"	24'-2"	19'-1½"	36'-0"	30'-11⅝"	47'-10"	42'-9½"		
	7'	6'-2⅝"	12'-4"	6'-0⅞"	24'-2"	17'-11⅞"	36'-0"	29'-6⅛"	47'-10"	41'-7⅛"		
	8'	7'-4"	12'-5"	5'-0"	24'-3"	16'-10"	36'-0"	28'-3"	47'-11"	40'-6"		
12'	6'	5'-0⅞"	13'-4"	8'-1⅜"	26'-2"	21'-1⅜"	39'-0"	33'-11⅜"	51'-10"	46'-3⅜"		
	7'	6'-2⅝"	13'-5"	7'-1⅛"	26'-2"	19'-11⅛"	39'-0"	32'-5⅝"	51'-10"	45'-1⅝"		
	8'	7'-4"	13'-5"	6'-0"	26'-2"	18'-10"	39'-0"	31'-3"	51'-10"	44'-0"		

QUANTITIES

CLEAR SPAN S	CLEAR HEIGHT H	THICKNESS OF WING AT HEADWALL Cw	THICKNESS OF WING FOOTING WB	⊙ REINFORCING STEEL - LB.	CLASS S CONCRETE - 4 WINGS: HEADWALLS, WINGWALLS, FOOTINGS, TOE WALLS 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"	108.0	4.50	5.96	6.42	7.36	8.34
	3'	6"	7"	169.4	6.26	7.21	8.17	9.13	10.09
	4'	6"	7"	259.6	8.33	9.28	10.24	11.20	12.16
	5'	6"	7"	357.8	10.72	11.69	12.69	13.60	14.56
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49
5'	3'	6"	7"	169.4	6.47	7.43	8.79	9.36	11.12
	4'	6"	7"	259.6	8.58	9.70	10.87	12.03	13.20
	5'	6"	7"	357.8	10.96	12.10	13.26	14.43	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7½"	8½"	1134.6	18.94	20.15	21.37	22.59	23.80
6'	3'	6"	7"	169.4	6.68	8.06	9.92	10.80	12.18
	4'	6"	7"	259.6	8.75	10.14	11.99	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'	7½"	8½"	1134.6	19.15	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"	259.6	8.97	10.58	12.15	13.76	15.35
	5'	6"	7"	357.8	11.36	12.97	14.54	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66
	7'	7½"	8½"	1134.6	19.38	21.02	22.64	24.29	25.92
	8'	8"	9"	1925.6	24.32	25.97	27.60	29.25	30.89
8'	4'	6"	7"	259.6	9.19	11.03	12.82	14.65	16.45
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.34
	6'	7"	8"	583.1	15.92	17.27	19.09	20.93	22.75
	7'	7½"	8½"	1134.6	19.59	21.96	23.30	25.16	26.99
	8'	8"	9"	1925.6	24.54	26.91	28.24	30.11	31.96
9'	5'	7"	7"	357.8	12.26	13.97	16.87	18.45	20.47
	6'	7½"	8"	583.1	15.94	18.04	20.09	22.19	24.23
	7'	7½"	8½"	1136.6	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	19.24	21.52
	6'	7½"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7½"	8½"	1134.6	20.09	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"	1134.6	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	22.45	25.18	
	7'	8"	8½"	1134.6	20.87	23.69	26.40	29.13	
	8'	8"	9"	1925.6	25.92	28.25	30.96	33.69	

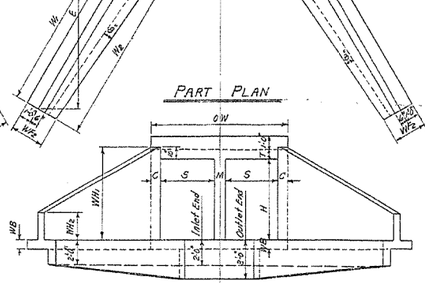
⊙ For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT

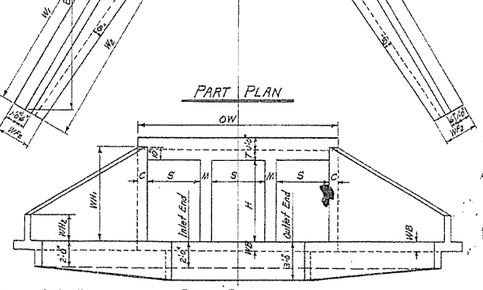


PART PLAN

END ELEVATION

DOUBLE BARREL CULVERT

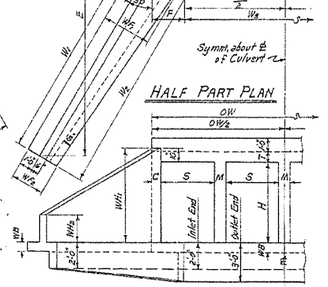
NOTE:- Plans and Elevations are not to scale.



PART PLAN

END ELEVATION

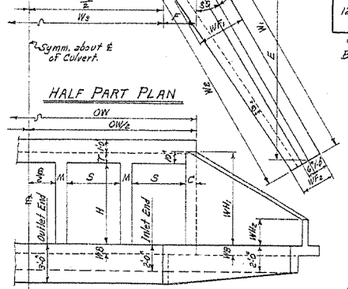
TRIPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUINTUPLE BARREL CULVERT

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.

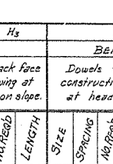
SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

CLASS S CONCRETE

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT H	F1 Bent: In bottom of footing, bent up into back face of wing. One bar of each length. Size	Spacing	No. Reqd	Lengths Vary Min.	Lengths Vary Max.	X Min.	X Max.	Y Min.	Y Max.	F2 Bent: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. Size	Spacing	No. Reqd	Length	X	Y	F3 Straight: Longitudinal in top of wing footing heel. Size	No. Reqd	Length	F4 Straight: Longitudinal in bottom of wing footing toe. Size	No. Reqd	Length	H1 Straight: Horizontal in back face of wing. Size	Spacing	No. Reqd	Length	H2 Straight: Horizontal in back face of wing. One bar of each length. Size	Spacing	No. Reqd	Lengths Vary Max.	Lengths Vary Min.	H3 Straight: In back face of wing at top - on slope. Size	No. Reqd	Length	H4 Bent: Dowels thru construction joint at headwall. Size	Spacing	No. Reqd	Length	X	QUANTITY REINFORCING STEEL PER WING LB.
H	Size	Spacing	No. Reqd	Min.	Max.	Min.	Max.	Min.	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	Max.	Min.	Size	No. Reqd	Length	Size	Spacing	No. Reqd	Length	X	
2'	#3	18"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	—	—	—	—	—	—	#3	1	9'-8"	#3	2	9'-6"	#3	1	7'-1"	#3	12"	1	9'-8"	#3	12"	2	4'-0"	1'-6"	#3	1	7'-9"	#3	12"	2	2'-8"	1'-6"	27.0
3'	#3	18"	10	2'-2"	5'-2"	0'-10"	1'-3"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	12'-0"	#3	2	11'-6"	#3	1	9'-6"	#3	12"	2	7'-6"	4'-0"	#3	1	9'-9"	#3	12"	3	2'-8"	1'-6"	41.1
4'	#3	12"	13	2'-9"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	14'-9"	#3	3	13'-6"	#3	1	11'-10"	#3	12"	2	10'-11"	4'-0"	#3	1	12'-2"	#3	12"	4	2'-8"	1'-6"	63.7
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#5	12"	2	16'-2"	#3	12"	2	16'-0"	#3	12"	3	10'-11"	4'-0"	#3	1	14'-5"	#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'-6"	3'-3"	#3	1	19'-6"	#3	3	18'-6"	#3	12"	2	16'-6"	#3	12"	4	16'-4"	4'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-6"	145.8
7'	#4	12"	20	3'-9"	10'-8"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	21'-6"	#4	4	21'-0"	#4	12"	2	19'-9"	#4	12"	3	19'-7"	4'-0"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	283.7
8'	#4	12"	22	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	23'-0"	#4	12"	2	21'-1"	#4	12"	3	21'-0"	4'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4

BAR BENDING DIAGRAMS



MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

REVISIONS:- Membrane added. 5-10-66 W.C.H.

Designed By:- W.C.H. 8-20-62. Checked By:- RMS - 1-9-63
Drawn By:- W.C.H. 12-4-62. Checked By:- RMS - 1-31-63
Quantities By:- W.C.H. 12-14-62. Checked By:- RMS - 3-22-63
Reprocessed By:-

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

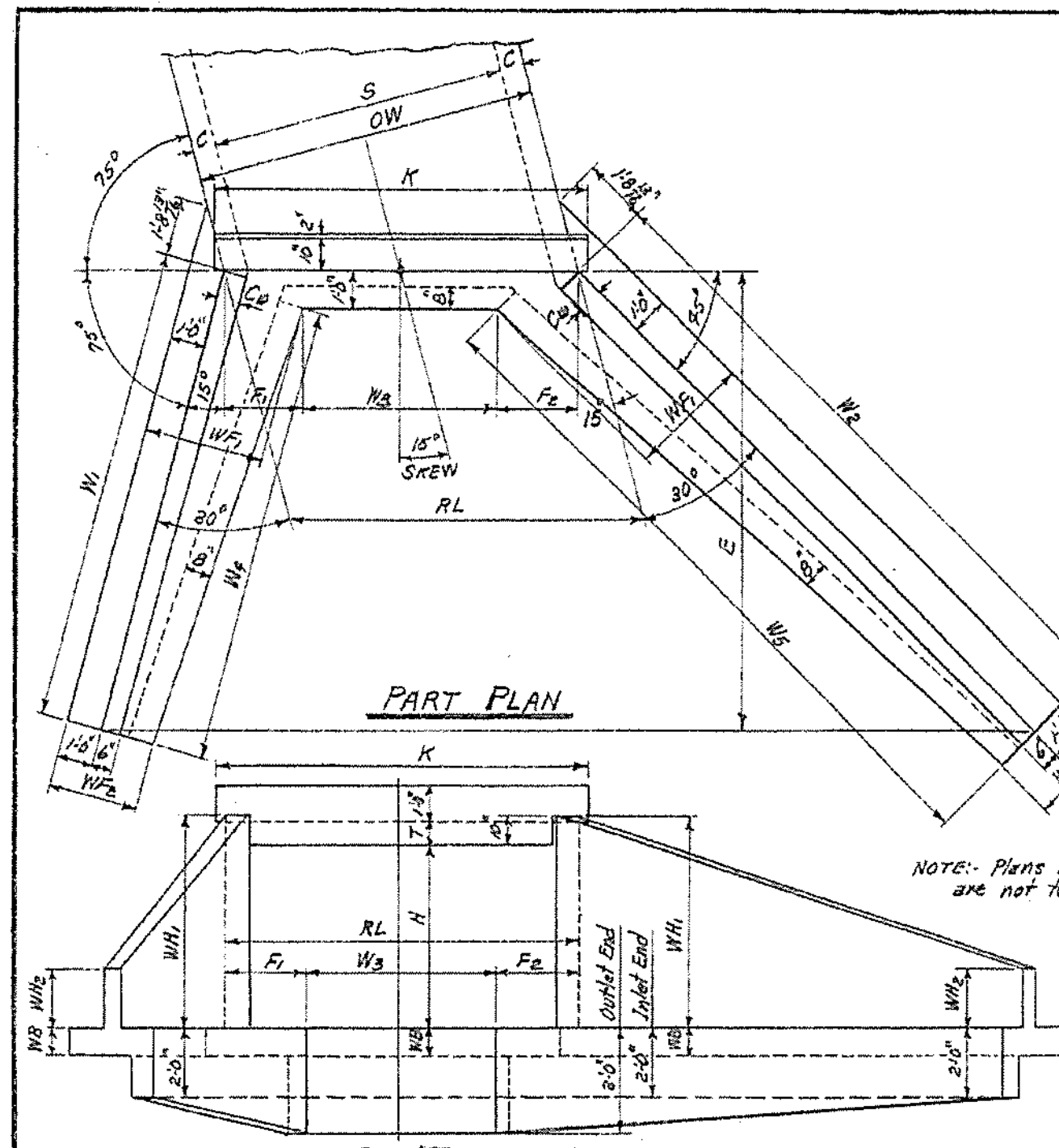
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X003-1

MV1-68 (3)

Reshot 3-5-93 172

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			192	
JOB No.					



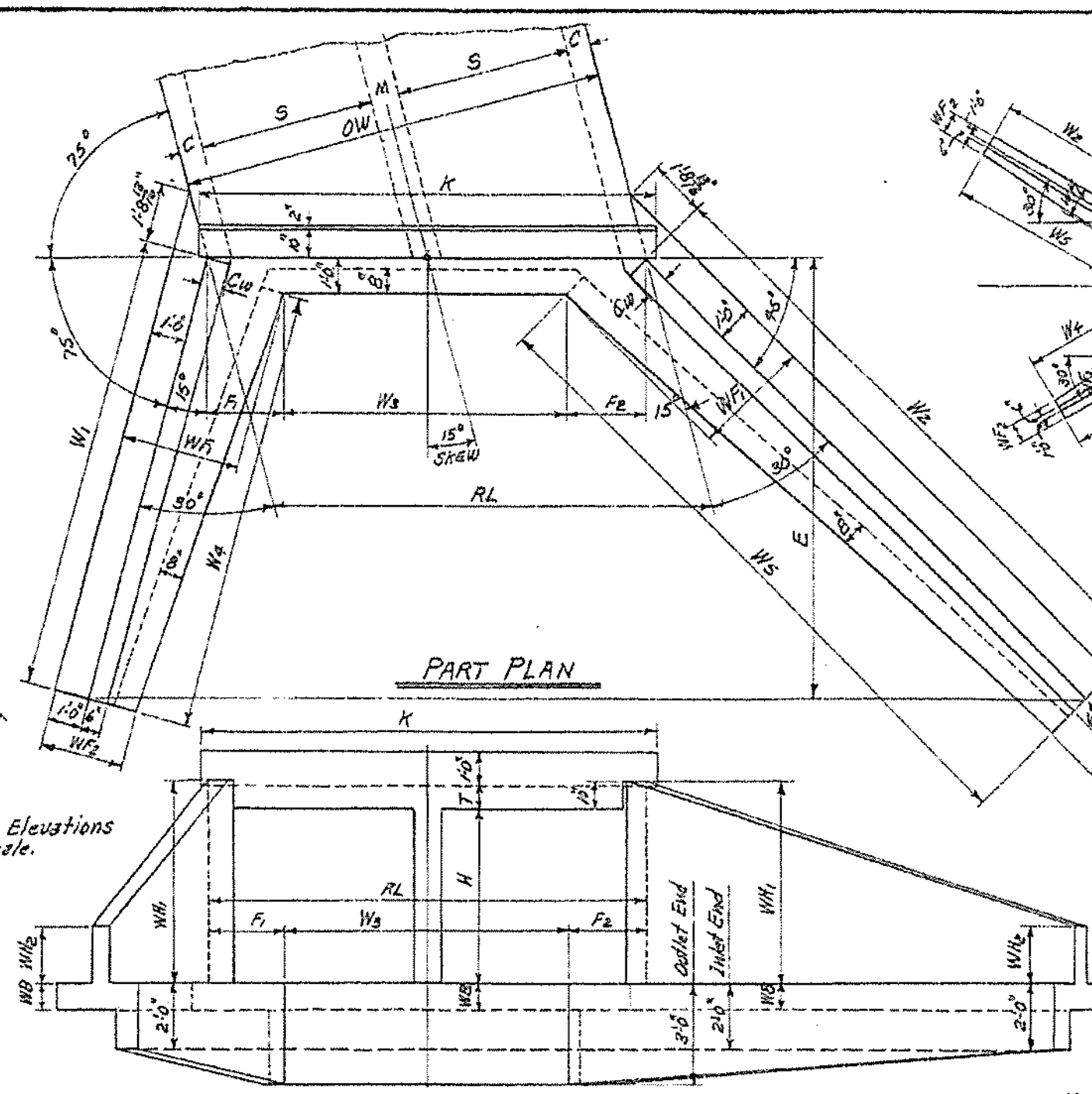
PART PLAN

END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.

NOTE:- Plans and Elevations are not to scale.

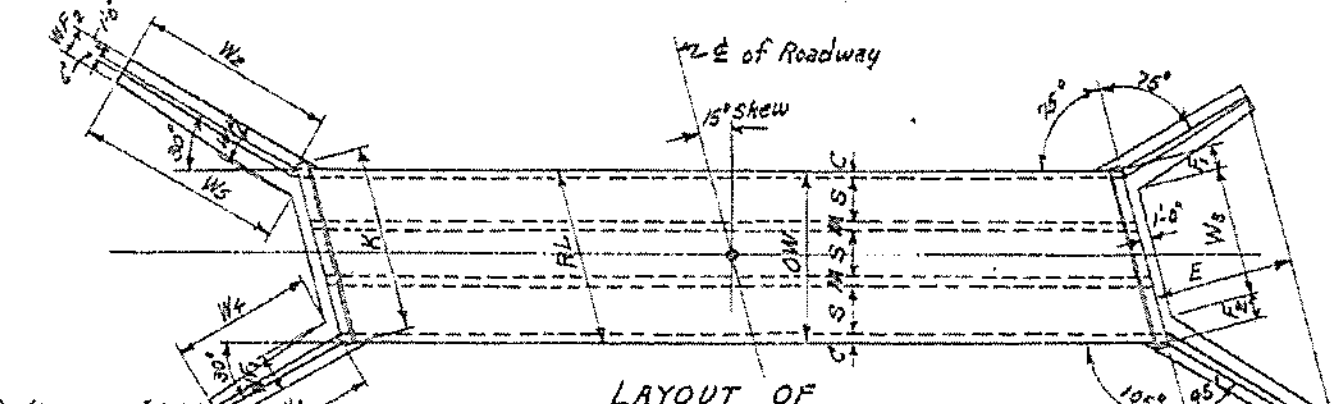


PART PLAN

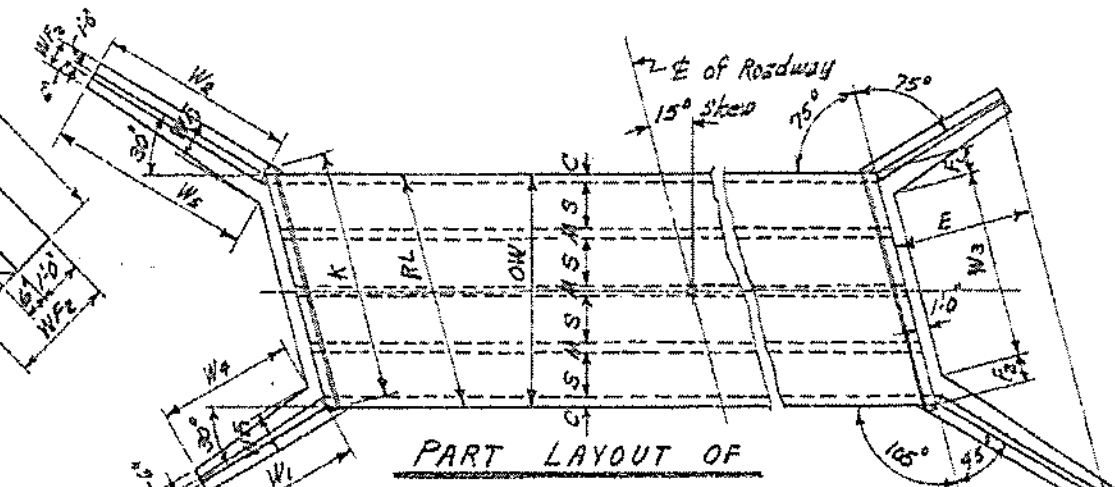
END ELEVATION

DOUBLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

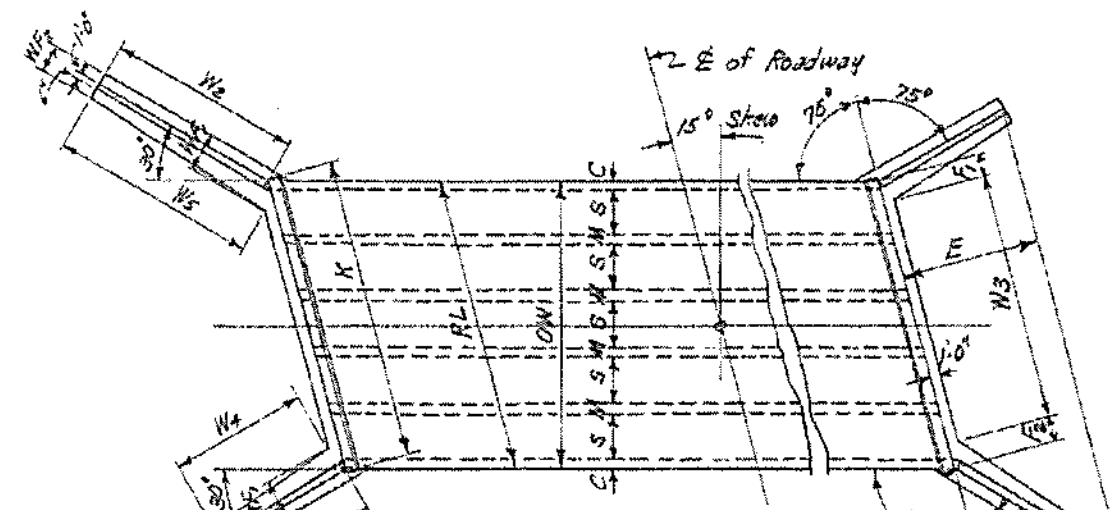
Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.



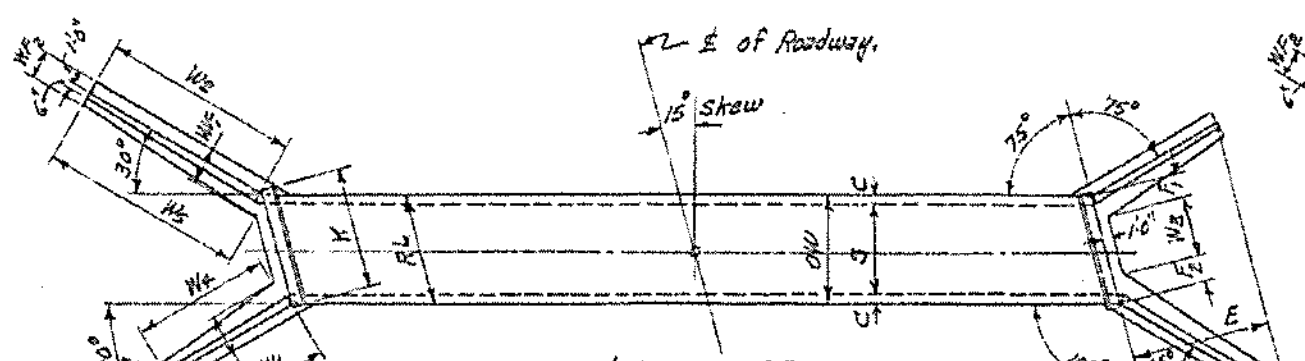
LAYOUT OF TRIPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



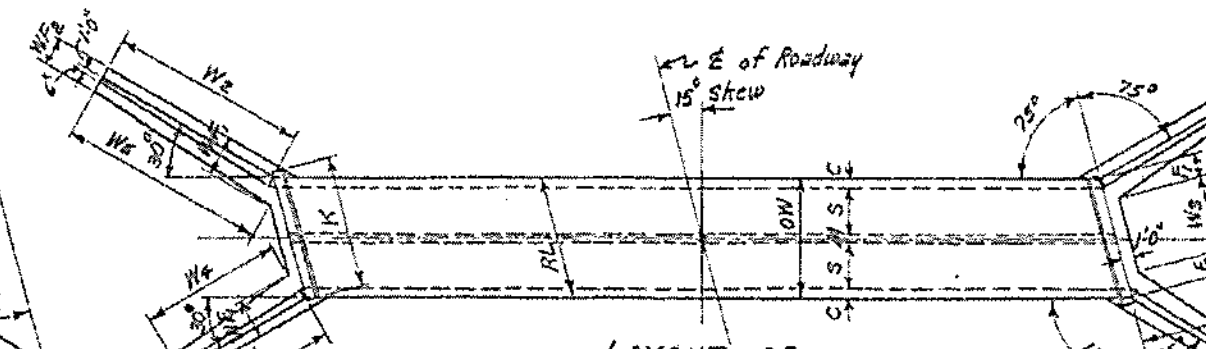
PART LAYOUT OF QUADRUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



PART LAYOUT OF QUINTUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD

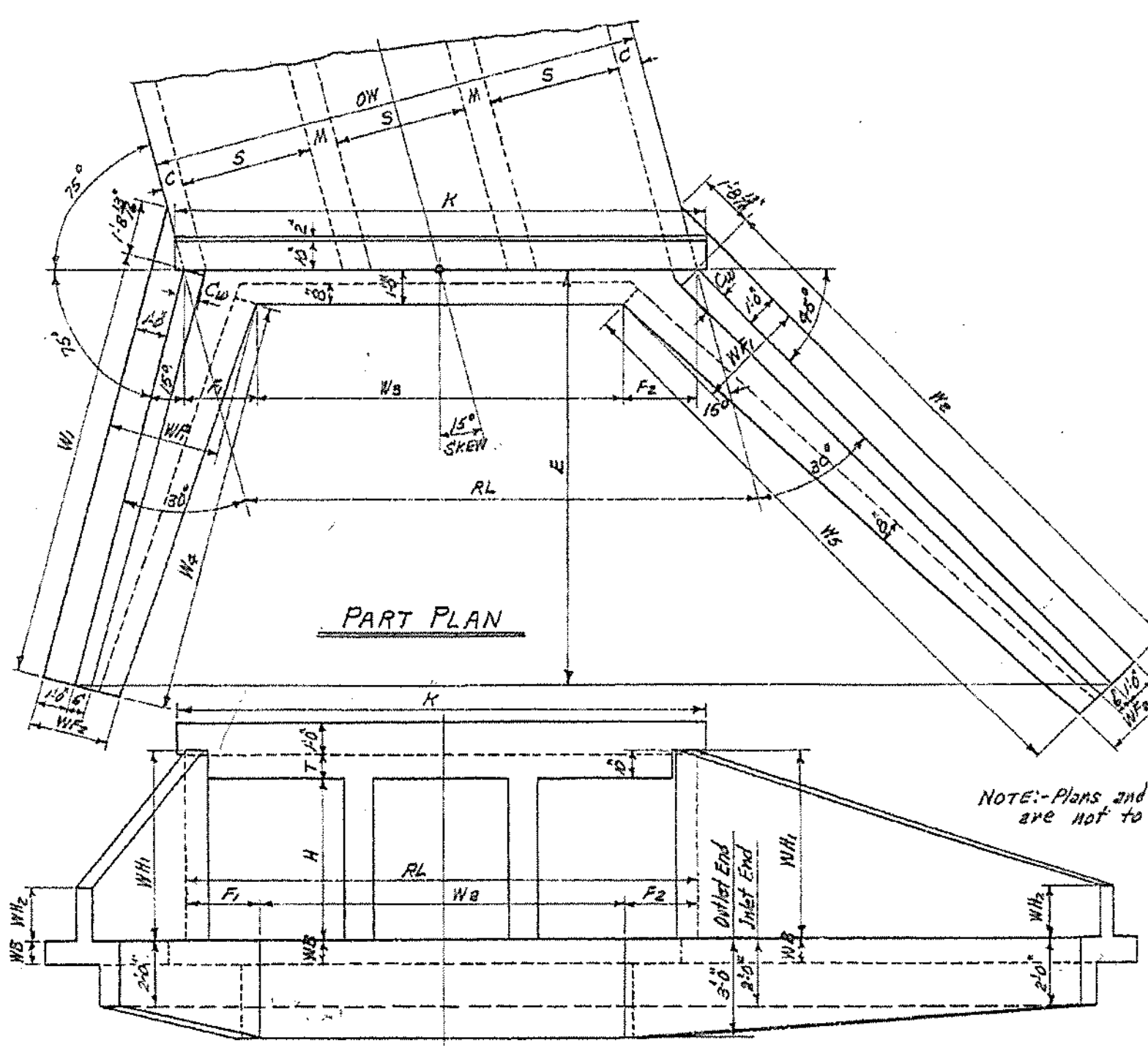


LAYOUT OF SINGLE BARREL CULVERT - 15° SKEW LEFT FORWARD



LAYOUT OF DOUBLE BARREL CULVERT - 15° SKEW LEFT FORWARD

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.



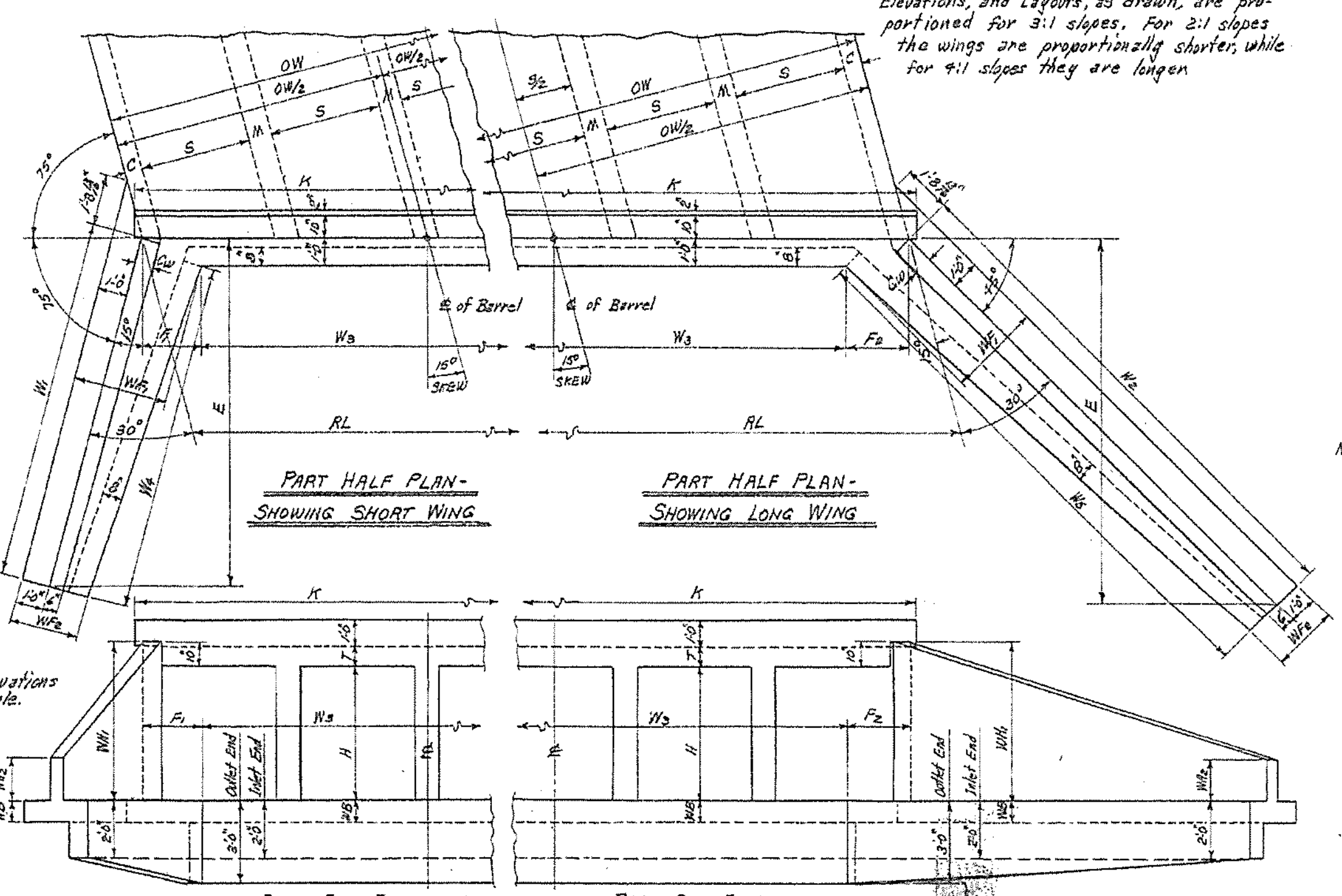
PART PLAN

END ELEVATION

TRIPLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at top center of sheet.

NOTE:- Plans and Elevations are not to scale.



PART HALF PLAN - SHOWING SHORT WING

PART HALF PLAN - SHOWING LONG WING

PART END ELEVATION

QUADRUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at above center.

PART END ELEVATION

QUINTUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout above.

ROADWAY LENGTH RL HEADWALL LENGTH K APRON DIMENSION W_3

RL = OW x 1.035276 K = RL + (6 1/2") $W_3 = RL - (F_1 + F_2)$

USE WITH DRAWING No.	CLEAR SPAN S	CLEAR HEIGHT H	SUM OF FOOTING DIMENSIONS F_1 & F_2	SINGLE BARREL CULVERT OW	RL	K	W_3	DOUBLE BARREL CULVERT OW	RL	K	W_3	TRIPLE BARREL CULVERT OW	RL	K	W_3	QUADRUPLE BARREL CULVERT OW	RL	K	W_3	QUINTUPLE BARREL CULVERT OW	RL	K	W_3
W-X152-1, W-X153-1 or W-X154-1. (FOR H=8'-0" OR LESS)	4'	2'	2'-0"	5'-0"	5'-2 1/8"	5'-8 5/8"	3'-2 1/8"	9'-8"	10'-0"	10'-6 1/2"	8'-0"	14'-4"	14'-10"	15'-4 1/2"	12'-10"	19'-0"	19'-8"	20'-2 1/2"	17'-8"	23'-8"	24'-6"	25'-0 1/2"	22'-6"
		3'	2'-9 3/4"	5'-0"	"	"	2'-4 3/8"	9'-8"	"	"	7'-2 1/4"	14'-4"	"	"	12'-0 1/4"	19'-0"	"	"	16'-10 1/4"	23'-8"	"	"	21'-8 1/4"
		4'	3'-7 5/8"	5'-0"	"	"	1'-6 1/4"	9'-8"	"	"	6'-4 1/4"	14'-4"	"	"	11'-2 1/2"	19'-0"	"	"	16'-0 1/4"	23'-8"	"	"	20'-10 1/8"
		5'	4'-5 3/8"	5'-0"	"	"	0'-8 3/4"	9'-8"	"	"	5'-6 3/4"	14'-4"	"	"	10'-4 3/8"	19'-0"	"	"	15'-2 3/4"	23'-8"	"	"	20'-0 3/4"
		6'	5'-3 1/8"	5'-2"	5'-4 1/8"	5'-10 5/8"	0'-1"	9'-11"	10'-3 1/8"	10'-9 5/8"	5'-0"	14'-8"	15'-2 1/4"	15'-8 3/4"	9'-11"	19'-5"	20'-1 1/8"	20'-7 5/8"	14'-10"	24'-2"	25'-0 1/8"	25'-6 5/8"	19'-9"
	5'	3'	2'-9 3/4"	6'-0"	6'-2 1/2"	6'-9"	3'-4 3/8"	11'-8"	12'-1"	12'-7 1/2"	9'-3 1/8"	17'-4"	17'-11 3/8"	18'-5 3/4"	15'-1 1/2"	23'-0"	23'-9 3/4"	24'-4 1/4"	21'-0"	28'-8"	29'-8 1/8"	30'-2 5/8"	26'-10 1/4"
		4'	3'-7 5/8"	6'-0"	"	"	2'-7"	11'-8"	"	"	8'-5 3/8"	17'-4"	"	"	14'-3 3/4"	23'-0"	"	"	20'-2 1/4"	28'-8"	"	"	26'-0 3/8"
		5'	4'-5 3/8"	6'-0"	"	"	1'-9 1/8"	11'-8"	"	"	7'-7 5/8"	17'-4"	"	"	13'-6"	23'-0"	"	"	19'-4 1/2"	28'-8"	"	"	25'-2 3/4"
		6'	5'-3 1/8"	6'-2"	6'-4 5/8"	6'-11 1/8"	1'-1 1/2"	11'-11"	12'-4"	12'-10 1/2"	7'-0 7/8"	17'-8"	18'-3 1/2"	18'-10"	13'-0 1/4"	23'-5"	24'-2 5/8"	24'-9 1/8"	18'-11 3/8"	29'-2"	30'-2 3/4"	30'-8 3/4"	24'-11 1/4"
		7'	6'-5 7/8"	6'-3"	6'-5 5/8"	7'-0 1/8"	Ⓐ 0"	12'-1"	12'-6 1/2"	13'-0 1/2"	6'-0 1/4"	17'-11"	18'-6 5/8"	19'-1"	12'-0 3/4"	23'-9"	24'-7"	25'-1 1/2"	18'-1 1/4"	29'-7"	30'-7 1/4"	31'-2"	24'-1 3/4"
	6'	3'	2'-9 3/4"	7'-0"	7'-3"	7'-9 1/2"	4'-3 1/4"	13'-8"	14'-1 3/4"	14'-8 1/4"	11'-4"	20'-4"	21'-0 5/8"	21'-7"	18'-2 3/4"	27'-0"	27'-11 3/8"	28'-5 3/4"	25'-1 3/4"	33'-8"	34'-10 1/4"	35'-4 3/4"	32'-0 1/4"
		4'	3'-7 5/8"	7'-0"	"	"	3'-7 3/8"	13'-8"	"	"	10'-6 1/4"	20'-4"	"	"	17'-5"	27'-0"	"	"	24'-3 3/8"	33'-8"	"	"	31'-2 3/8"
		5'	4'-5 3/8"	7'-0"	"	"	2'-9 1/8"	13'-8"	"	"	9'-8 3/8"	20'-4"	"	"	16'-7 1/4"	27'-0"	"	"	23'-6"	33'-8"	"	"	30'-4 3/8"
		6'	5'-3 1/8"	7'-2"	7'-5"	7'-11 1/2"	2'-1 7/8"	13'-11"	14'-5"	14'-11 1/2"	9'-1 3/8"	20'-8"	21'-4 3/4"	21'-11 1/4"	16'-1 1/2"	27'-5"	28'-4 5/8"	28'-11"	23'-1 1/2"	34'-2"	35'-4 1/2"	35'-11"	30'-1 1/4"
		7'	6'-5 7/8"	7'-3"	7'-6"	8'-0 1/2"	1'-0 1/4"	14'-1"	14'-7"	15'-1 1/2"	8'-1 1/8"	20'-11"	21'-7 3/4"	22'-2 1/4"	15'-2"	27'-9"	28'-8 3/4"	29'-3 1/4"	22'-3"	34'-7"	35'-9 5/8"	36'-4"	29'-3 3/4"
		8'	7'-8 5/8"	7'-4"	7'-7 1/8"	8'-1 5/8"	Ⓐ 0"	14'-2"	14'-8"	15'-2 1/2"	6'-11 3/4"	21'-0"	21'-8 7/8"	22'-3 1/4"	14'-0 1/4"	27'-10"	28'-9 3/4"	29'-4 1/4"	21'-1 1/4"	34'-8"	35'-10 5/8"	36'-5"	28'-2"
	7'	4'	3'-7 5/8"	8'-0"	8'-3 3/8"	8'-9 7/8"	4'-7 3/4"	15'-8"	16'-2 5/8"	16'-9"	12'-7"	23'-4"	24'-1 1/8"	24'-8 1/4"	20'-6 1/4"	31'-0"	32'-1 1/8"	32'-7 1/2"	28'-5 1/4"	38'-8"	40'-0 1/8"	40'-6 3/4"	36'-4 3/4"
		5'	4'-5 3/8"	8'-0"	"	"	3'-10"	15'-8"	"	"	11'-9 1/4"	23'-4"	"	"	19'-8 1/2"	31'-0"	"	"	27'-7 3/8"	38'-8"	"	"	35'-7"
		6'	5'-3 1/8"	8'-2"	8'-5 1/2"	9'-0"	3'-2 1/4"	15'-11"	16'-5 3/8"	17'-0 1/4"	11'-2 1/4"	23'-8"	24'-6"	25'-0 1/2"	19'-2 3/4"	31'-5"	32'-6 1/4"	33'-0 3/4"	27'-3"	39'-2"	40'-6 3/4"	41'-1"	35'-3 1/2"
		7'	6'-5 7/8"	8'-3"	8'-6 1/2"	9'-1"	2'-0 3/4"	16'-1"	16'-7 3/8"	17'-2 1/4"	10'-2"	23'-11"	24'-9 1/8"	25'-3 1/2"	18'-3 1/4"	31'-9"	32'-10 1/4"	33'-5"	26'-4 1/4"	39'-7"	40'-11 3/8"	41'-6 1/4"	34'-6"
		8'	7'-8 5/8"	8'-4"	8'-7 1/2"	9'-2"	0'-11"	16'-2"	16'-8 7/8"	17'-3 1/4"	9'-0 1/4"	24'-0"	24'-10 1/8"	25'-4 1/2"	17'-1 1/8"	31'-10"	32'-11 1/2"	33'-6"	25'-3"	39'-8"	41'-0 3/4"	41'-7 1/4"	33'-4 1/4"
	8'	4'	3'-7 5/8"	9'-0"	9'-3 3/8"	9'-10 1/4"	5'-8 1/4"	17'-8"	18'-3 1/4"	18'-10"	14'-8"	26'-4"	27'-3 1/4"	27'-9 3/4"	23'-7 1/4"	35'-0"	36'-2 3/8"	36'-9 1/4"	32'-7 1/4"	43'-8"	45'-2 1/4"	45'-9"	41'-7"
		5'	4'-5 3/8"	9'-2"	9'-5 3/8"	10'-0 1/4"	5'-0 1/4"	17'-11"	18'-6 5/8"	19'-1"	14'-1 1/4"	26'-8"	27'-7 1/4"	28'-1 3/4"	23'-2"	35'-5"	36'-8"	37'-2 1/2"	32'-2 3/4"	44'-2"	45'-8 3/4"	46'-3 1/4"	41'-3 1/4"
		6'	5'-3 1/8"	9'-2"	"	"	4'-2 1/4"	17'-11"	"	"	13'-3 1/4"	26'-8"	"	"	22'-4"	35'-5"	"	"	31'-4 3/4"	44'-2"	"	"	40'-5 1/8"
		7'	6'-5 7/8"	9'-3"	9'-6 7/8"	10'-1 1/4"	3'-1"	18'-1"	18'-8 3/4"	19'-3"	12'-2 3/4"	26'-11"	27'-10 5/8"	28'-4 3/4"	21'-4 5/8"	35'-9"	37'-0 1/4"	37'-6 3/4"	30'-6 1/4"	44'-7"	46'-1 7/8"	46'-8 1/4"	39'-8"
		8'	7'-8 5/8"	9'-4"	9'-8"	10'-2 1/2"	1'-11 1/4"	18'-2"	18'-9 3/4"	19'-4 1/4"	11'-1 1/4"	27'-0"	27'-11 3/8"	28'-5 3/4"	20'-2 3/4"	35'-10"	37'-1 1/8"	37'-7 1/2"	29'-4 1/4"	44'-8"	46'-2 3/4"	46'-9 1/4"	38'-6 1/4"
	9'	5'	4'-5 3/8"	10'-2"	10'-6 1/4"	11'-0 3/4"	6'-1"	19'-11"	20'-7 1/4"	21'-2"	16'-2"	29'-8"	30'-8 1/2"	31'-3"	26'-3 1/4"	39'-5"	40'-9 3/4"	41'-4 1/4"	36'-4 1/4"	49'-2"	50'-10 3/8"	51'-5 1/4"	46'-5 1/8"
		6'	5'-3 1/8"	10'-3"	10'-7 3/8"	11'-1 7/8"	5'-4 1/8"	20'-1"	20'-9 1/4"	21'-4"	15'-6 1/4"	29'-11"	30'-11 5/8"	31'-6"	25'-8 1/4"	39'-9"	41'-1 1/8"	41'-8 1/4"	35'-10 3/4"	49'-7"	51'-4"	51'-10 1/8"	46'-0 3/8"
		7'	6'-5 7/8"	10'-3"	"	"	4'-1 1/2"	20'-1"	"	"	14'-3 3/4"	29'-11"	"	"	24'-5 3/4"	39'-9"	"	"	34'-8"	49'-7"	"	"	44'-10"
		8'	7'-8 5/8"	10'-4"	10'-8 3/4"	11'-2 3/4"	2'-11 3/4"	20'-2"	20'-10 1/2"	21'-5"	13'-2"	30'-0"	31'-0 3/4"	31'-7 1/4"	23'-4 1/4"	39'-10"	41'-2 7/8"	41'-9 1/4"	33'-6 1/4"	49'-8"	51'-5"	51'-11 1/4"	43'-8 1/4"
	10'	5'	4'-5 3/8"	11'-2"	11'-6 3/4"	12'-1 1/4"	7'-1 3/8"	21'-11"	22'-8 1/4"	23'-2 3/4"	18'-3"	32'-8"	33'-9 3/4"	34'-4 1/4"	29'-4 1/4"	43'-5"	44'-11 1/4"	45'-6"	40'-6"	54'-2"	56'-1"	56'-7 1/2"	51'-7 1/2"
		6'	5'-3 1/8"	11'-3"	11'-7 3/8"	12'-2 1/4"	6'-4 5/8"	22'-1"	22'-10 3/4"	23'-4 3/4"	17'-7 1/4"	32'-11"	34'-1"	34'-7 1/2"	28'-9 3/4"	43'-9"	45'-3 1/2"	45'-10"	40'-0 1/4"	54'-7"	56'-6"	57'-0 1/2"	51'-3"
		7'	6'-5 7/8"	11'-3"	"	"	5'-1 7/8"	22'-1"	"	"	16'-4 1/4"	32'-11"	"	"	27'-7"	43'-9"	"	"	38'-9 3/4"	54'-7"	"	"	50'-0 1/4"
		8'	7'-8 5/8"	11'-4"	11'-8 3/4"	12'-3 1/4"	4'-0 1/4"	22'-2"	22'-11 3/4"	23'-5 3/4"	15'-2 3/4"	33'-0"	34'-2"	34'-8 1/2"	26'-5 1/2"	43'-10"	45'-4 1/4"	45'-11"	37'-8"	54'-8"	56'-7 1/2"	57'-1 1/2"	48'-10 1/4"
	11'	6'	5'-3 1/8"	12'-4"	12'-9 1/4"	13'-3 3/4"	7'-6"	24'-2"	25'-0 1/4"	25'-6 3/4"	19'-9"	36'-0"	37'-3 1/4"	37'-9 3/4"	32'-0"	47'-10"	49'-6 1/4"	50'-0 3/4"	44'-3"	—	—	—	—
		7'	6'-5 7/8"	12'-4"	"	"	6'-3 3/8"	24'-2"	"	"	18'-6 1/4"	36'-0"	"	"	30'-9 1/4"	47'-10"	"	"	43'-0 1/4"	—	—	—	—
		8'	7'-8 5/8"	12'-4"	"	"	5'-0 5/8"	24'-2"	"	"	17'-3 1/4"	36'-0"	"	"	29'-6 3/4"	47'-10"	"	"	41'-9 3/4"	—	—	—	—
	12'	6'	5'-3 1/8"	13'-4"	13'-9 5/8"	14'-4"	8'-6 1/4"	26'-2"	27'-1"	27'-7 1/2"	21'-10"	39'-0"	40'-4 1/2"	40'-11"	35'-1 1/4"	51'-10"	53'-8"	54'-2 1/2"	48'-4 3/4"	—	—	—	—
		7'	6'-5 7/8"	13'-4"	"	"	7'-3 3/4"	26'-2"	"	"	20'-7 1/4"	39'-0"	"	"	33'-10 3/4"	51'-10"	"	"	47'-2"	—	—	—	—
		8'	7'-8 5/8"	13'-4"	"	"	6'-1"	26'-2"	"	"	19'-4 1/4"	39'-0"	"	"	32'-8"	51'-10"	"	"	45'-11 1/4"	—	—	—	—
W-X152-2, W-X153-2 or W-X154-2. (FOR H=9'-0" & OVER)	7'																						
		9'	8'-11 1/4"	8'-6"	8'-9 3/8"	9'-4"	Ⓐ 0"	16'-5"	17'-0"	17'-6 1/2"	8'-0 1/4"	24'-4"	25'-2 1/2"	25'-8 3/4"	16'-3"	32'-3"	33'-4 3/8"	33'-11"	24'-5 1/4"	40'-2"	41'-7"	42'-1 1/2"	32'-7 3/4"
	8'	9'	8'-11 1/4"	9'-6"	9'-10"	10'-4 1/2"	0'-10 1/4"	18'-5"	19'-0 3/4"	19'-7 1/4"	10'-1 1/2"	27'-4"	28'-3 1/4"	28'-10"	19'-4 1/2"	36'-3"	37'-6 3/4"	38'-0 3/4"	28'-7"	45'-2"	46'-9 1/8"	47'-3 1/4"	37'-9 3/4"
		10'	10'-2"	9'-8"	10'-0 1/4"	10'-6 1/2"	Ⓐ 0"	18'-8"	19'-3 7/8"	19'-10 1/4"	9'-2"	27'-8"	28'-7 3/4"	29'-2 1/4"	18'-5 3/4"	36'-8"	37'-11 1/4"	38'-6"	27'-9 3/4"	45'-8"	47'-3 3/4"	47'-9 3/4"	37'-1 1/4"
	9'	9'	8'-11 1/4"	10'-6"	10'-10 1/4"	11'-5"	1'-11 1/4"	20'-5"	21'-1 1/8"	21'-8 1/4"	12'-2 1/4"	30'-4"	31'-4 3/4"	31'-11 1/4"	22'-5 1/2"	40'-3"	41'-8"	42'-2 1/4"	32'-8 3/4"	50'-2"	51'-11 1/4"	52'-5 3/4"	43'-0"
		10'	10'-2"	10'-8"	11'-0 1/4"	11'-7"	0'-10 3/4"	20'-8"	21'-4 3/4"	21'-11 1/4"	11'-2 3/4"	30'-8"	31'-9"	32'-3 1/4"	21'-7"	40'-8"	42'-1 1/4"	42'-7 3/4"	31'-11 1/4"	50'-8"	52'-5 1/4"	53'-0"	42'-3 1/4"
		11'	11'-4 5/8"	10'-10"	11'-2 3/4"	11'-9"	Ⓐ 0"	20'-10"	21'-6 3/4"	22'-1 1/4"	10'-2 1/4"	30'-10"	31'-11"	32'-5 1/4"	20'-6 1/4"	40'-10"	42'-3 1/4"	42'-9 3/4"	30'-10 3/4"	50'-10"	52'-7 1/4"	53'-2"	41'-2 3/4"
	10'	9'	8'-11 1/4"	11'-6"	11'-10 3/4"	12'-5 1/4"	2'-11 3/4"	22'-5"	23'-2 1/4"	23'-9"	14'-3 1/4"	33'-4"	34'-6 1/4"	35'-0 3/4"	25'-6 3/4"	44'-3"	45'-9 3/4"	46'-4 1/4"	36'-10 3/4"	55'-2"	57'-1 3/4"	57'-7 3/4"	48'-2"
		10'	10'-2"	11'-8"	12'-1"	12'-7 1/4"	1'-11"	22'-8"	23'-5 3/4"	24'-0"	13'-3 3/4"	33'-8"	34'-10 1/4"	35'-4 3/4"	24'-8 3/4"	44'-8"	46'-2 1/4"	46'-9 1/4"	36'-1"	55'-8"	57'-7 3/4"	58'-2"	47'-5 1/4"
		11'	11'-4 5/8"	11'-10"	12'-3"	12'-9 1/4"	0'-10 3/4"	22'-10"	23'-7 3/4"	24'-2"	12'-3"	33'-10"	35'-0 1/4"	35'-6 3/4"	23'-7 3/4"	44'-10"	46'-5"	46'-11 1/4"	35'-0 1/4"	55'-10"	57'-9 3/4"	58'-4"	46'-5"
		12'	12'-7 3/4"	12'-0"	12'-5 1/4"	12'-11 3/4"	Ⓐ 0"	23'-0"	23'-9 3/4"	24'-4 1/4"	11'-2 1/4"	34'-0"	35'-2 3/4"	35'-8 3/4"	22'-7"	45'-0"	46'-7"	47'-1 1/2"	33'-11 3/4"	56'-0"	57'-11 3/4"	58'-6"	45'-4 1/4"
	11'	9'	8'-11 1/4"	12'-6"	12'-11 1/4"	13'-5 3/4"	4'-0"	24'-5"	25'-3 3/4"	25'-9 3/4"	16'-4"	36'-4"	37'-7 3/4"	38'-1 3/4"	28'-8"	48'-3"	49'-11 3/4"	50'-5 3/4"	41'-0 1/4"	—	—	—	—
		10'	10'-2"	12'-8"	13'-1 3/4"	13'-7 3/4"	2'-11 3/4"	24'-8"	25'-6 1/4"	26'-1"	15'-4 1/4"	36'-8"	37'-11 1/4"	38'-6"	27'-9 1/4"	48'-8"	50'-4 5/8"	50'-11"	40'-2 3/4"	—	—	—	—
		11'	11'-4 5/8"	12'-10"	13'-3 3/4"	13'-10"	1'-10 3/4"	24'-10"	25'-8 1/4"	26'-3"	14'-3 3/4"	36'-10"	38'-1 5/8"	38'-8"	26'-9"	48'-10"	50'-6 5/8"	51'-1"	39'-2"	—	—	—	—
		12'	12'-7 3/4"	13'-0"	13'-5 1/4"	14'-0"	0'-10 3/4"	25'-0"	25'-10 5/8"	26'-5"	13'-3 1/4"	37'-0"	38'-3 5/8"	38'-10"	25'-8 1/4"	49'-0"	50'-8 3/4"	51'-3 3/4"	38'-1 1/4"	—	—	—	—
	12'	9'	8'-11 1/4"	13'-6"	13'-11 3/4"	14'-6 1/2"	5'-0 1/4"	26'-5"	27'-4 1/4"	27'-10 3/4"	18'-5"	39'-4"	40'-8 3/4"	41'-3"	31'-9 1/2"	52'-3"	54'-1 1/8"	54'-7 1/2"	45'-1 1/4"	—	—	—	—
		10'	10'-2"	13'-8"	14'-1 3/4"	14'-8 3/4"	3'-11 3/4"	26'-8"	27'-7 1/4"	28'-1 3/4"	17'-5 1/4"	39'-8"	41'-0 3/4"	41'-7 1/4"	30'-10 3/4"	52'-8"	54'-6 1/4"	55'-0 3/4"	44'-4 1/4"	—	—	—	—
		11'	11'-4 5/8"	13'-10"	14'-3 3/4"	14'-10 1/4"	2'-11 1/4"	26'-10"	27'-9 3/4"	28'-3 3/4"	16'-4 3/4"	39'-10"	41'-2 3/4"	41'-9 1/4"	29'-10 1/4"	52'-10"	54'-8 3/4"	55'-2 3/4"	43'-3 1/4"	—	—	—	—
		12'	12'-7 3/4"	14'-0"	14'-5 3/4"	15'-0 1/2"	1'-10 1/4"	27'-0"	27'-11 3/4"	28'-6"	15'-4"	40'-0"	41'-4 3/4"	41'-11 1/4"	28'-9 1/2"	53'-0"	54'-10 3/4"	55'-4 3/4"	42'-3"	—	—	—	—

Ⓐ Special case for these boxes, See Detail "A" and Table "A" for revised values of F_1, F_2, W_4 and W_5, when apron width is more than 1'-0" and W_3 = 0". For Detail "A" and Tables "A" for each slope, see Drawing Nos. W-X152-1, W-X152-2, or W-X153-1, W-X153-2, or W-X154-1, W-X154-2.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 15° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X152-1 or W-X152-2	W-X153-1 or W-X153-2	W-X154-1 or W-X154-2.

This drawing to be used in conjunction with Std. Barrel Sections, Drawing Nos.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 15° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

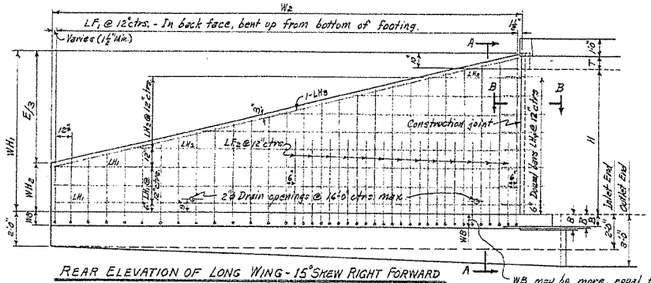
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H=2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'.

STANDARD DRAWING NO. W-X15

Designed by:- W.C.H. 5-22-63. Checked by:-
Traced by:- W.C.H. 6-13-63 Checked by:- J.E.M. 6-20-63
Quantities by:- Checked by:-

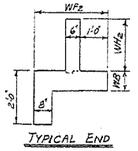
RESHOT 3-8-93 175

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	ARK.			193	
JOB No.					



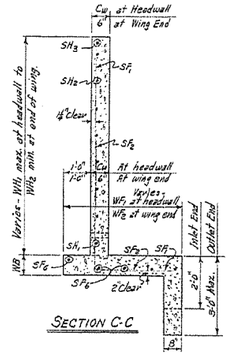
REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING

WB may be more, equal to, or less than the bottom slab thickness B.

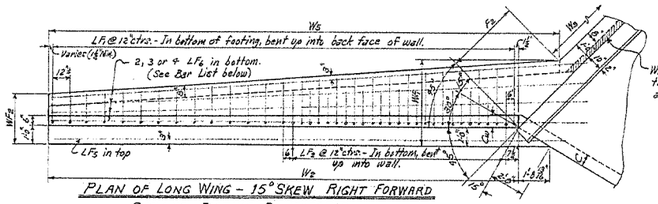


TYPICAL END VIEW OF WING

SECTION A-A



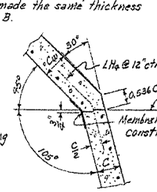
SECTION C-C



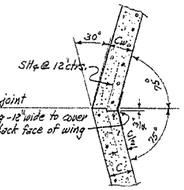
PLAN OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING.

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

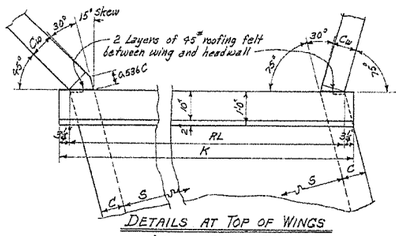


SECTION B-B

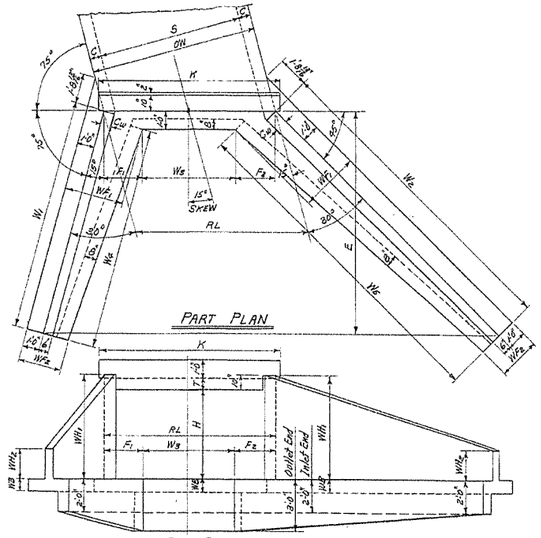


SECTION D-D

SECTIONS THRU CONSTRUCTION JOINTS



DETAILS AT TOP OF WINGS
15° SKEW RIGHT FORWARD



PART PLAN

END ELEVATION

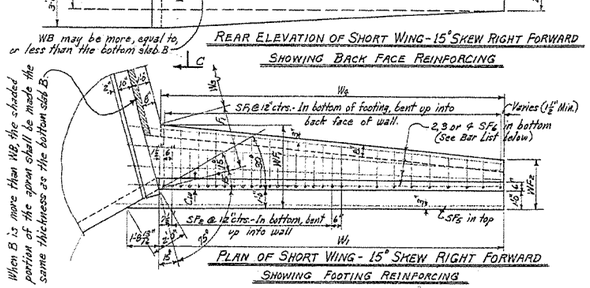
SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD
Details of Culvert with 15° skew Left Forward is reversed, see Drwg. No. W-X.15

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-X.15. For values of RL, K, and W3 for each box, see the above Std. also.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopplings of waterproofing asphalt and two alternate layers of treated cotton fabric, shall be applied to the back face of wing to cover the construction joints in wings.

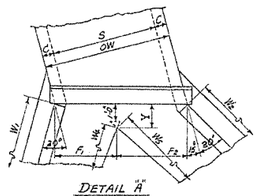
REVISIONS:- Membrane Added. 5-10-66 W.C.H.



REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING

WB may be more, equal to, or less than the bottom slab B.

PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING



DETAIL "A"

TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F_1	F_2	W_4	W_5	W_3	Y
5'	7'	3'-8"	3'-5⅝"	16'-10⅝"	25'-0⅜"	0"	1'-0⅛"
6'	8'	3'-6"	4'-1⅛"	19'-0⅝"	28'-3½"	0"	1'-1"

REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEAD = C	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING DIMENSION - PARALLEL WITH HEADWALL SHORT WING	FOOTING DIMENSION - PARALLEL WITH HEADWALL LONG WING	PERPENDICULAR DIST. FROM HEAD TO END OF WING	LENGTHS OF WINGWALLS SHORT WING	LENGTHS OF WINGWALLS LONG WING	INSIDE FOOTING DIMENSIONS SHORT WING	INSIDE FOOTING DIMENSIONS LONG WING	* QUANTITY PER WING CLASS S CONCRETE INLET END SHORT WING	INLET END LONG WING	OUTLET END SHORT WING	OUTLET END LONG WING
H	WB	CW	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'-0"	2'-0"	1'-1⅜"	0'-10⅝"	6'-6"	6'-0⅝"	9'-2⅝"	6'-0⅝"	9'-1⅝"	0.789	1.094	0.876	1.212
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-4½"	1'-5⅝"	1'-4⅛"	8'-6"	8'-0½"	12'-0⅝"	8'-2½"	12'-3½"	1.186	1.650	1.300	1.808
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-9⅝"	1'-10"	10'-6"	10'-10½"	14'-10⅝"	10'-4½"	15'-5⅝"	1.656	2.305	1.797	2.502
5'	7"	6"	5'-10"	1'-8"	3'-0"	2'-6½"	2'-1⅜"	2'-3⅜"	12'-6"	12'-11⅛"	17'-8⅝"	12'-6⅛"	18'-7½"	2.196	3.059	2.363	3.295
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅜"	2'-3⅜"	12'-6"	12'-11⅛"	17'-8⅝"	12'-6⅛"	18'-7½"	2.287	3.188	2.955	3.429
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅝"	2'-5⅝"	14'-6"	15'-0⅛"	20'-6"	14'-8⅛"	21'-9"	3.052	4.242	3.256	4.517
		7⅝"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅝"	2'-5⅝"	14'-6"	15'-0⅛"	20'-6"	14'-8⅛"	21'-9"	3.114	4.329	3.309	4.605
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅝"	2'-5⅝"	14'-6"	15'-0⅛"	20'-6"	14'-8⅛"	21'-9"	3.177	4.417	3.371	4.693
⊙ 7'	8⅛"	7⅝"	7'-10"	2'-8"	4'-2"	2'-10⅝"	3'-0⅞"	3'-5⅝"	16'-6"	17'-1"	23'-4"	16'-10⅜"	25'-1"	3.998	5.560	4.220	5.877
		8"	7'-10"	2'-8"	4'-2"	2'-10⅝"	3'-0⅞"	3'-5⅝"	16'-6"	17'-1"	23'-4"	16'-10⅜"	25'-1"	4.079	5.675	4.301	5.991
⊙ 8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-4⅜"	4'-2⅛"	18'-6"	19'-1⅝"	26'-2"	19'-1½"	28'-5"	5.111	7.111	5.360	7.470

* 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 5'x7' and 6'x8' Box Culverts.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING ⊙ STEEL - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	CW	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	3'	6"	7"	117	4.73	5.78	6.77	7.77	8.76
	4'	6"	7"	176	6.48	7.64	8.63	9.63	10.62
	5'	6"	7"	267	8.85	9.84	10.86	11.83	12.82
	6'	7"	8"	379	11.90	12.98	13.98	14.97	15.96
	7'	7⅞"	8⅛"	626	15.95	16.96	17.98	18.51	19.53
5'	3'	6"	7"	176	6.87	8.07	9.28	10.48	11.69
	4'	6"	7"	267	9.08	10.28	11.49	12.69	13.90
	5'	6"	7"	379	11.41	12.81	14.02	15.23	16.44
	6'	7"	8"	626	15.67	16.90	18.14	19.38	20.61
	7'	7⅞"	8⅛"	1210	20.11	21.36	22.62	23.88	25.14
6'	3'	6"	7"	176	7.03	8.52	9.92	11.36	12.78
	4'	6"	7"	267	9.29	10.73	12.13	13.54	14.98
	5'	6"	7"	379	11.83	13.26	14.67	16.10	17.53
	6'	7"	8"	626	15.89	17.35	18.79	20.25	21.70
	7'	7⅞"	8⅛"	1210	20.33	21.81	23.28	24.76	26.24
	8'	8"	9"	1533	25.56	27.05	28.53	30.02	31.50
7'	4'	6"	7"	267	9.52	11.18	12.81	14.47	16.09
	5'	6"	7"	379	12.05	13.72	15.35	17.01	18.63
	6'	7"	8"	626	16.12	17.80	19.45	21.13	22.78
	7'	7⅞"	8⅛"	1210	20.56	22.26	23.94	25.69	27.33
	8'	8"	9"	1533	25.80	27.50	29.20	30.90	32.60
8'	4'	6"	7"	267	9.75	11.65	13.51	15.41	17.28
	5'	7"	7"	379	12.74	14.68	16.55	18.47	20.31
	6'	7"	8"	626	16.34	18.26	20.14	22.06	23.90
	7'	7⅞"	8⅛"	1210	20.78	22.72	24.62	26.55	28.42
	8'	8"	9"	1533	26.03	27.96	29.86	31.80	33.71
9'	5'	7"	7"	379	12.99	15.15	17.25	19.40	21.45
	6'	7⅞"	8"	626	16.89	18.07	21.19	23.36	25.42
	7'	7⅞"	8⅛"	1210	21.01	23.19	25.31	27.48	29.54
	8'	8"	9"	1533	26.25	28.42	30.55	32.72	34.78
10'	5'	7"	7"	379	18.23	16.42	19.05	20.24	22.59
	6'	7⅞"	8"	626	17.13	19.54	21.89	24.20	26.56
	7'	7⅞"	8⅛"	1210	21.44	23.66	26.01	28.32	30.68
	8'	8"	9"	1533	26.48	28.89	31.25	33.56	35.92
11'	6'	8"	8"	626	17.47	20.39	22.92	25.98	—
	7'	8"	8⅛"	1210	21.88	24.55	27.13	29.49	—
	8'	8"	9"	1533	26.70	29.37	31.96	34.52	—
12'	6'	8"	8"	626	17.91	20.84	23.64	26.46	—
	7'	8"	8⅛"	1210	22.11	25.04	27.85	30.67	—
	8'	8"	9"	1533	26.93	29.86	32.67	35.49	—

⊙ For reinforcing steel in Headwalls and Aprons, see Drawings 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 Std. Barrel Sections, Drawing Nos.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 15° 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-X153-1

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 of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SF2 & LF2 BENT In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	SF3 & LF3 STRAIGHT Longitudinal in top of wing footing heel. SIZE	NO. REQ'D	LENGTH	SF4 & LF4 STRAIGHT Longitudinal in bottom of wing footing toe. SIZE	NO. REQ'D	LENGTH	SH1 & LH1 STRAIGHT Horizontal in back face of wing. SIZE	SPACING	NO. REQ'D	LENGTH	SH2 & LH2 STRAIGHT Horizontal in back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MAX.	MIN.	SH3 & LH3 STRAIGHT In back face of wing at top or on slope. SIZE	NO. REQ'D	LENGTH	SH4 & LH4 BENT Dowels thru construction joint at headwall. SIZE	SPACING	NO. REQ'D	LENGTH	X	QUANTITY REINFORCING STEEL PER WING - LBS. SHORT WING	LONG WING
H	SHORT OR LONG																																													
2'	Short	#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	0'-0"	3'-0"	—	—	—	—	—	—	#3	1	9'-2"	#3	2	7'-10"	#3	12'	1	6'-5"	#5	12'	1	—	3'-6"	#3	1	6'-10"	#3	12"	2	2'-8"	1'-5"	24.9	33.4
	Long	#3	12"	10	1'-7"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-10"	#3	12"	1	8'-11"	#3	12"	1	—	4'-8"	#3	1	9'-1"	#3	12"	2	"	"		
3'	Short	#3	12"	9	2'-2"	5'-8"	0'-10"	1'-6"	1'-5"	4'-6"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-0"	#3	12"	1	8'-6"	#3	12"	2	6'-7"	3'-6"	#3	1	9'-0"	#3	12"	3	"	"	37.7	50.3
	Long	#3	12"	13	1'-11"	5'-8"	0'-10"	1'-3"	1'-2"	4'-6"	—	—	—	—	—	—	#3	1	14'-6"	#3	2	14'-0"	#3	12"	1	11'-9"	#3	12"	2	8'-11"	4'-8"	#3	1	12'-0"	#3	12"	3	"	"		
4'	Short	#3	12"	11	2'-2"	6'-7"	0'-11"	1'-9"	1'-9"	5'-0"	—	—	—	—	—	—	#3	1	13'-10"	#3	3	12'-2"	#3	12"	1	10'-7"	#3	12"	3	9'-8"	5'-6"	#3	1	11'-2"	#3	12"	4	"	"	57.3	76.4
	Long	#3	12"	15	2'-6"	6'-6"	0'-11"	1'-7"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	17'-4"	#3	3	17'-2"	#3	12"	1	14'-7"	#3	12"	3	12'-2"	6'-8"	#3	1	14'-11"	#3	12"	4	"	"		
5'	Short	#3	12"	13	3'-1"	7'-11"	1'-1"	2'-0"	2'-1"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	15'-5"	#3	3	14'-9"	#3	12"	2	12'-8"	#3	12"	3	9'-8"	5'-6"	#3	1	13'-6"	#3	12"	5	"	"	81.1	108.4
	Long	#3	12"	18	3'-6"	7'-10"	1'-1"	1'-11"	2'-0"	6'-0"	#3	12"	5	3'-6"	1'-1"	2'-6"	#3	1	20'-2"	#3	3	20'-0"	#3	12"	2	17'-5"	#3	12"	3	13'-2"	7'-8"	#3	1	15'-10"	#3	12"	5	"	"		
6'	Short	#4	12"	16	3'-6"	9'-4"	1'-2"	2'-4"	2'-5"	7'-1"	#3	12"	4	4'-6"	1'-4"	3'-3"	#3	1	17'-6"	#3	3	16'-6"	#3	12"	2	10'-8"	#3	12"	4	12'-9"	7'-3"	#3	1	15'-4"	#3	12"	6	"	"	134.8	178.1
	Long	#4	12"	21	3'-5"	9'-3"	1'-2"	2'-3"	2'-4"	7'-1"	#3	12"	5	4'-6"	1'-4"	3'-3"	#3	1	23'-0"	#3	3	23'-2"	#3	12"	2	20'-3"	#3	12"	4	17'-5"	9'-8"	#3	1	20'-9"	#3	12"	6	2'-8"	1'-4"		
7'	Short	#4	12"	18	3'-9"	10'-10"	1'-3"	2'-10"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-10"	#4	1	19'-3"	#3	4	18'-9"	#3	12"	2	16'-10"	#4	12"	5	15'-10"	3'-6"	#4	1	13'-8"	#3	12"	7	3'-6"	1'-9"	259.5	345.2
	Long	#4	12"	24	3'-10"	10'-10"	1'-3"	2'-9"	2'-8"	8'-1"	#4	12"	9	5'-6"	1'-7"	4'-10"	#4	1	25'-10"	#4	5	26'-0"	#4	12"	2	23'-1"	#4	12"	5	21'-8"	9'-8"	#4	1	23'-8"	#4	12"	7	"	"		
8'	Short	#5	12"	20	4'-2"	12'-5"	1'-5"	3'-4"	3'-2"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	21'-8"	#4	5	21'-8"	#4	12"	3	18'-11"	#4	12"	5	15'-10"	3'-6"	#4	1	13'-8"	#4	12"	8	"	"	328.0	438.3
	Long	#5	12"	27	4'-2"	12'-8"	1'-5"	3'-2"	3'-2"	9'-2"	#4	12"	13	6'-6"	1'-10"	4'-9"	#4	1	26'-2"	#4	6	30'-3"	#4	12"	3	25'-11"	#4	12"	5	21'-8"	9'-8"	#4	1	26'-3"	#4	12"	8	3'-6"	1'-9"		

BAR BENDING DIAGRAM
SF1 & SF2 LF1 & LF2 — Y, X, 3" Min.
SH4 & LH4 — X, 7, 1/2
Note:- Dimensions are to bar centers.

NOTE:- Bars for short wing shall be marked with prefix letter 'S', while those for long wing shall be marked with letter 'L'.

Designed By:- W.C.H. 5-13-63 Checked By:-
Drawn By:- W.C.H. 6-20-63 Checked By:- RJHS - 8-7-63
Quantities By:- W.C.H. 9-23-63 Checked By:-

RESHOT 3-4-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			194	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

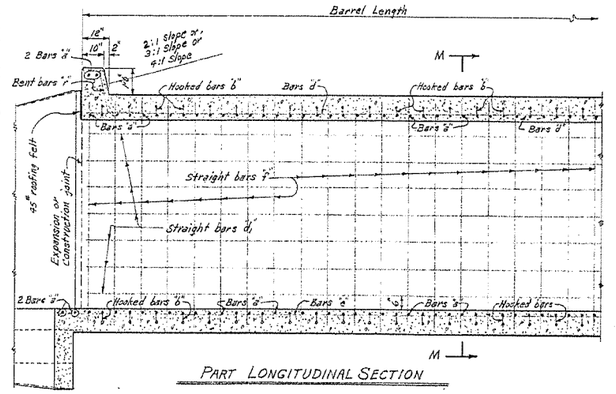
DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall each. SIZE	"a" bars SPACING	"a" bars NUMBER REQ'D 3:1	"a" bars NUMBER REQ'D 4:1	"a" bars LENGTH	"b" bars BENT - See Diagram below. In Top and Bottom Slabs of Barrel. Alternate with "a" bars. SIZE	"b" bars SPACING	"b" bars NUMBER REQ'D 3:1	"b" bars NUMBER REQ'D 4:1	"b" bars LENGTH	X	"d" bars Longitudinal in Top Slab of Barrel SIZE	"d" bars SPACING	"d" bars NO. REQ'D	"d" bars LENGTH	"d1" bars STRAIGHT Longitudinal in Sidewalls SIZE	"d1" bars SPACING	"d1" bars NO. REQ'D	"d1" bars LENGTH	"e" bars. Longitudinal in Bottom Slab of Barrel SIZE	"e" bars. SPACING	"e" bars. NO. REQ'D	"e" bars. LENGTH	"f" bars STRAIGHT Verticals in Sidewalls SIZE	"f" bars SPACING	"f" bars NUMBER REQ'D 3:1	"f" bars NUMBER REQ'D 4:1	"f" bars LENGTH
0'-0" TO 5'-0" MAXIMUM	4'	2'			120	120	4'-9"			110	110	5'-10"	4'-8"					#4	12"	4	6'					#4	12"	5	2'-11"	120	120	2'-11"
		3'			120	120	4'-9"			110	110	5'-10"	4'-8"							6	6'									120	120	3'-11"
	1 @ 4'	4'	#5	13"	120	120	4'-9"	#6	13"	110	110	5'-10"	4'-8"	#5	10½"	6	6'	#4	12"	8	6'	#4	12"	10	6'	#4	12"	6	4'-11"	120	120	4'-11"
		5'			120	120	4'-9"			110	110	5'-10"	4'-8"							10	6'									120	120	5'-11"
		6'			120	120	4'-11"			110	110	6'-0"	4'-10"							12	6'									120	120	6'-11"
		3'			120	120	5'-9"			110	110	6'-10"	5'-8"							6	7'									120	120	4'-0"
	1 @ 5'	4'			120	120	5'-9"			110	110	6'-10"	5'-8"							8	7'									120	120	5'-0"
		5'	#6	13"	120	120	5'-9"	#6	13"	110	110	6'-10"	5'-8"	#5	10½"	7	7'	#4	12"	10	7'	#4	12"	12	7'	#4	12"	6	6'-0"	120	120	6'-0"
		6'			120	120	5'-11"			110	110	7'-0"	5'-10"							12	7'									120	120	7'-0"
		7'			120	120	6'-0"			110	110	7'-1"	5'-11"							14	7'									120	120	8'-0"
		3'			128	128	6'-9"			118	118	7'-10"	6'-8"							6	8'									120	120	4'-1"
		4'			128	128	6'-9"			118	118	7'-10"	6'-8"							8	8'									120	120	5'-1"
	1 @ 6'	5'	#6	12"	128	128	6'-9"	#6	12"	118	118	7'-10"	6'-8"	#5	10½"	8	8'	#4	12"	10	8'	#4	12"	12	8'	#4	12"	7	6'-1"	120	120	6'-1"
		6'			128	128	6'-11"			118	118	8'-0"	6'-10"							12	8'									120	120	7'-1"
		7'			128	128	7'-0"			118	118	8'-1"	6'-11"							14	8'									120	120	8'-1"
		8'			128	128	7'-1"			118	118	8'-2"	7'-0"							16	8'							#5	12"	120	120	9'-1"
		4'			140	140	7'-9"			130	130	8'-10"	7'-8"							8	9'									120	120	5'-2"
		5'			140	140	7'-9"			130	130	8'-10"	7'-8"							10	9'									120	120	6'-2"
	1 @ 7'	6'	#6	11"	140	140	7'-11"	#6	11"	130	130	9'-0"	7'-10"	#5	10½"	9	9'	#4	12"	12	9'	#4	12"	8	9'	#4	12"	8	7'-2"	120	120	7'-2"
		7'			140	140	8'-0"			130	130	9'-1"	7'-11"							14	9'									120	120	8'-2"
		8'			140	140	8'-1"			130	130	9'-2"	8'-0"							16	9'							10"	144	144	9'-2"
		9'			140	140	8'-3"			130	130	9'-4"	8'-2"							18	9'							#5	12"	120	120	10'-2"
		4'			128	128	8'-9"			118	118	9'-10"	8'-8"							8	11'									120	120	5'-9"
		5'			128	128	8'-11"			118	118	10'-0"	8'-10"							10	11'									120	120	6'-9"
	1 @ 8'	6'			128	128	8'-11"			118	118	10'-0"	8'-10"							12	11'							#4	12"	120	120	7'-9"
		7'	#7	12"	128	128	9'-0"	#6	12"	118	118	10'-1"	8'-11"	#5	10"	11	11'	#4	12"	14	11'	#4	12"	9	11'	#4	12"	9	8'-8"	120	120	8'-8"
		8'			128	128	9'-1"			118	118	10'-2"	9'-0"							16	11'							10"	144	144	9'-8"
		9'			128	128	9'-3"			118	118	10'-4"	9'-2"							18	11'							#5	12"	120	120	10'-4"
		10'			128	128	9'-5"			118	118	10'-6"	9'-4"							20	11'							11"	132	132	11'-9"
		5'			140	140	9'-11"			130	130	11'-0"	9'-10"							10	12'									120	120	6'-5"
		6'			140	140	10'-0"			130	130	11'-1"	9'-11"							12	12'									120	120	7'-5"
	1 @ 9'	7'			140	140	10'-0"			130	130	11'-1"	9'-11"							14	12'							12"	120	120	8'-5"
		8'	#7	11"	140	140	10'-1"	#6	11"	130	130	11'-2"	10'-0"	#5	10"	16	12'	#4	12"	16	12'	#4	12"	10	12'	#4	12"	10	9'-5"	144	144	9'-5"
		9'			140	140	10'-3"			130	130	11'-4"	10'-2"							18	12'									120	120	10'-5"
		10'			140	140	10'-5"			130	130	11'-6"	10'-4"							20	12'							#5	11"	132	132	11'-5"
		11'			140	140	10'-7"			130	130	11'-8"	10'-6"							22	12'							10"	144	144	12'-5"
		5'			128	128	10'-11"			118	118	12'-2"	10'-10"							10	13'									120	120	6'-6"
		6'			128	128	11'-0"			118	118	12'-3"	10'-11"							12	13'									120	120	7'-6"
	1 @ 10'	7'			128	128	11'-0"			118	118	12'-3"	10'-11"							14	13'							12"	120	120	8'-6"
		8'	#7	12"	128	128	11'-1"	#7	12"	118	118	12'-4"	11'-0"	#5	10"	16	13'	#4	12"	16	13'	#4	12"	11	13'	#4	12"	10	9'-6"	144	144	9'-6"
		9'			128	128	11'-3"			118	118	12'-6"	11'-2"							18	13'									120	120	10'-6"
		10'			128	128	11'-5"			118	118	12'-8"	11'-4"							20	13'							#5	11"	132	132	11'-6"
		11'			128	128	11'-7"			118	118	12'-10"	11'-6"							22	13'							10"	144	144	12'-6"
		12'			128	128	11'-9"			118	118	13'-0"	11'-8"							24	13'							#6	12"	120	120	13'-6"
		6'			140	140	12'-1"			130	130	13'-5"	12'-0"							12	15'									120	120	7'-7"
		7'			140	140	12'-1"			130	130	13'-5"	12'-0"							14	15'							14"	120	120	8'-7"
	1 @ 11'	8'			140	140	12'-1"			130	130	13'-6"	12'-0"							16	15'							10"	144	144	9'-7"
		9'	#7	11"	140	140	12'-3"	#7	11"	130	130	13'-6"	12'-2"	#5	9½"	15	15'	#4	12"	18	15'	#4	12"	12	15'	#4	12"	12	10'-7"	144	144	10'-7"
		10'			140	140	12'-5"			130	130	13'-8"	12'-4"							20	15'							#5	11"	132	132	11'-7"
		11'			140	140	12'-7"			130	130	13'-10"	12'-6"							22	15'							10"	144	144	12'-7"
		12'			140	140	12'-9"			130	130	14'-0"	12'-8"							24	15'							#6	12"	120	120	13'-7"
		6'			128	128	13'-1"			118	118	14'-4"	13'-0"							12	16'									120	120	7'-8"
		7'			128	128	13'-1"			118	118	14'-5"	13'-0"							14	16'							14"	120	120	8'-9"
	1 @ 12'	8'			128	128	13'-1"			118	118	14'-6"	13'-0"							16	16'							10"	144	144	9'-9"
		9'	#8	12"	128	128	13'-3"	#7	12"	118	118	14'-6"	13'-2"	#5	9½"	16	16'	#4	12"	18	16'	#4	12"	13	16'	#4	12"	12	10'-8"	144	144	10'-8"
		10'			128	128	13'-5"			118	118	14'-8"	13'-3"							20	16'							#5	11"	132	132	11'-8"
		11'			128	128	13'-7"			118	118	14'-10"	13'-4"							22	16'							10"	144	144	12'-8"
		12'			128	128	13'-9"			118	118	15'-0"	13'-6"							24	16'							#6	12"	120	120	13'-8"

Designed By:- W.C.H. 1-23-63. Checked By:- RBMS - 5-6-63
Drawn By:- W.C.H. 2-8-63. Checked By:- RBMS - 5-24-63
Quantities By:- W.C.H. 2-12-63. Checked By:- RBMS - 5-24-63

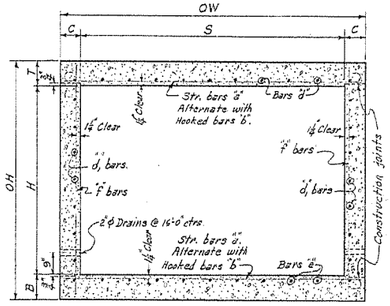
DIMENSIONS AND QUANTITIES

MARK DESIGN DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	BARREL DIMENSIONS SQ. FT. OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	UNIT QUANTITIES CLASS S CONC. PER LIN. FT. OF BARREL CU.YD.	REINFORCING STEEL PER LIN. FT. OF BARREL LB.	REINFORCING STEEL ADDITIONAL PER LAP LB.	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & APRONS LB.
5'-0"	4'	2'	8	5'-0"	7"	6"	6½"	3'-1½"	0.282	41.99	17.95	66.35
		3'	12	5'-0"		6"		4'-1½"	0.319	44.16	19.62	66.35
		4'	16	5'-0"		6"		5'-1½"	0.356	46.83	21.29	66.35
		5'	20	5'-0"		6"		6'-1½"	0.395	49.59	22.96	66.35
		6'	24	5'-2"		7"		7'-1½"	0.474	52.96	24.63	67.75
	1 @ 5'	3'	15	6'-0"	7½"	6"	7"	4'-2½"	0.380	55.55	22.19	101.27
		4'	20	6'-0"		6"		5'-2½"	0.417	58.23	23.86	101.27
		5'	25	6'-0"		6"		6'-2½"	0.454	60.90	25.53	101.27
		6'	30	6'-2"		7"		7'-2½"	0.535	64.99	27.20	103.27
		7'	35	6'-3"		7½"		8'-2½"	0.604	67.63	28.87	104.27
		3'	18	7'-0"		6"		4'-3½"	0.496	66.29	29.76	118.96
		4'	24	7'-0"		6"		5'-3½"	0.583	68.96	26.93	118.96
	1 @ 6'	5'	30	7'-0"	8"	6"	7½"	6'-3½"	0.520	71.64	28.10	118.96
		6'	36	7'-2"		7"		7'-3½"	0.602	75.31	29.77	120.96
		7'	42	7'-3"		7½"		8'-3½"	0.671	78.98	31.44	121.97
		8'	48	7'-5"		8"		9'-3½"	0.746	88.47	33.11	122.37
		4'	28	8'-0"		6"		5'-5"	0.568	81.32	29.01	136.89
		5'	35	8'-0"		6"		6'-5"	0.605	84.00	30.68	136.88
	1 @ 7'	6'	42	8'-2"	8½"	7"	8½"	7'-5"	0.688	87.76	32.35	138.88
		7'	49	8'-3"		7½"		8'-5"	0.757	90.98	34.02	139.88
		8'	56	8'-3"		8"		9'-5"	0.832	96.65	35.69	140.88
		9'	63	8'-6"		9"		10'-5"	0.996	105.59	37.36	142.89
		4'	32	9'-0"		6"		5'-7"	0.676	95.26	38.38	159.07
		5'	40	9'-2"		7"		6'-7"	0.756	99.12	39.99	196.80
	1 @ 8'	6'	48	9'-2"	9½"	7"	9½"	7'-7"	0.787	101.79	36.66	196.80
		7'	56	9'-3"		7½"		8'-7"	0.867	105.05	38.38	198.16
		8'	64	9'-6"		8"		9'-7"	0.992	110.91	40.10	199.52
		9'	72	9'-6"		9"		10'-7"	1.057	113.92	41.67	202.25
		10'	80	9'-8"		10"		11'-7"	1.189	126.67	43.34	204.97
		5'	45	10'-2"		7"		6'-8"	0.844	114.72	37.56	219.61
		6'	54	10'-3"		7½"		7'-8"	0.910	118.04	39.23	220.97
	1 @ 9'	7'	63	10'-3"	10'	7½"	10'	8'-8"	0.957	120.71	40.90	220.97
		8'	72	10'-5"		8"		9'-8"	1.033	126.54	42.57	222.33
		9'	81	10'-6"		9"		10'-8"	1.198	135.80	44.24	224.06
		10'	90	10'-8"		10"		11'-8"	1.276	142.68	45.91	227.28
		11'	99	10'-10"		11"		12'-8"	1.416	150.40	47.58	230.51
		5'	50	11'-2"		7"		6'-9½"	0.957	130.69	40.13	242.69
		6'	60	11'-3"		7½"		7'-9½"	1.024	133.99	41.80	244.00
	1 @ 10'	7'	70	11'-5"		7½"		8'-9½"	1.071	136.66	43.47	244.00
		8'	80	11'-6"	10½"	8"	11"	9'-9½"	1.147	142.55	45.14	245.36
		9'	90	11'-6"		9"		10'-9½"	1.263	151.92	96.81	248.09
		10'	100	11'-8"		10"		11'-9½"	1.391	158.89	98.98	250.81
		11'	110	11'-10"		11"		12'-9½"	1.532	166.71	50.15	253.99
		12'	120	12'-0"		12"		13'-9½"	1.685	178.67	51.82	256.26
		6'	66	12'-9"		8"		7'-10½"	1.153	156.16	96.12	268.62
		7'	77	12'-9"		8"		8'-10½"	1.202	157.83	97.79	268.62
	1 @ 11'	8'	88	12'-9"	11"	8"	11⅛"	9'-10½"	1.252	162.06	99.96	268.62
		9'	99	12'-6"		9"		10'-10½"	1.368	172.60	51.13	271.34
		10'	110	12'-8"		10"		11'-10½"	1.497	179.70	52.80	274.07
		11'	121	12'-10"		11"		12'-10½"	1.638	187.67	54.97	276.79
		12'	132	13'-0"		12"		13'-10½"	1.792	199.79	56.14	279.52
		6'	72	13'-9"		8"		8'-0"	1.284	172.20	98.69	352.62
		7'	84	13'-9"		8"		9'-0"	1.333	174.87	50.36	352.62
	1 @ 12'	8'	96	13'-9"	11⅝"	8"	12⅛"	10'-0"	1.383	180.15	52.03	352.62
		9'	108	13'-6"		9"		11'-0"	1.500	189.85	58.70	361.18
		10'	120	13'-8"		10"		12'-0"	1.630	197.07	55.37	369.74
		11'	132	13'-10"		11"		13'-0"	1.772	205.16	57.04	368.30
		12'	144	14'-0"		12"		14'-0"	1.926	217.45	58.71	371.86

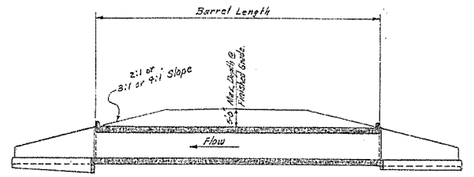
W-X002-1, W-X003-2 or W-X004-1 and W-X004-2.



PART LONGITUDINAL SECTION



TYPICAL SECTION M-M



LONGITUDINAL SECTION

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.

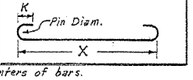
BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.

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.

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#6	3"	5"	1'-2"
#7	3½"	5⅝"	1'-4"

BENDING DIAGRAM Bars "b"

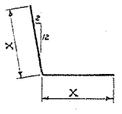


NOTE:- Dimensions are to centers of bars.

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	NO. REQ'D	LENGTH	X
4'	#4	11"±	12	2'-6"	1'-3"
5'	#4	11"±	14	2'-7"	1'-3½"
6'	#4	11"±	16	2'-8"	1'-4"
7'	#4	11"±	18	2'-9"	1'-4½"
8'	#4	11½"±	20	2'-11"	1'-5½"
9'	#4	11½"±	22	3'-0"	1'-6"
10'	#4	11½"±	24	3'-1"	1'-6½"
11'	#4	12"±	26	3'-2"	1'-7"
12'	#4	12"±	28	3'-3"	1'-7½"

Bars "r" Dowel bars in Headwalls.



DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961

AND

SPECIAL MILITARY LOADING

Two 24,000 Lb. Axles @ 9'-0" ctrs.

UNIT STRESSES:-

Class S Concrete (n=10) 1200 #/□"
Reinforcing Steel 20,000 #/□"

NOTE:- This drawing to be used in conjunction with Standard Drawing Nos. W-X003-1 or W-X003-2 and W-X004-1 or W-X004-2. Also Drawing Nos. W-X002-1 or W-X002-2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

4,5,6,7,8,9,10,11 & 12' SPANS SINGLES — 3:1 OR 4:1 SLOPES UNDER 5'-0" COVER

STANDARD DRAWING NO. R-100X-0

RESHOT 3-8-93

179

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			195	
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 Slabs of Barrel. SIZE	SPACING	NO. REQ'D	LENGTH	"b" bars STRAIGHT BENT- See Diagram. In Top and Bottom Slabs of Barrel. Alternate with "a" bars SIZE	SPACING	NO. REQ'D	LENGTH	X	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel. SIZE	SPACING	NO. REQ'D	LENGTH	"d1" bars STRAIGHT Longitudinal in Sidewalls SIZE	SPACING	NO. REQ'D	LENGTH	"e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel SIZE	SPACING	NO. REQ'D	LENGTH	"f" bars STRAIGHT Verticals in Sidewalls SIZE	SPACING	NO. REQ'D	LENGTH	"k" bars STRAIGHT 2 in Top of Headwalls and Aprons - Each. SIZE	NO. REQ'D	LENGTH
D	S	H																												
0'-0" TO 5'-0" MAXIMUM	4' @ 4'	2'			112	9'-11"			110	6'-0"	9'-10"			6														8	5'-5"
		3'			112	9'-11"			110	6'-0"	9'-10"			6														8	5'-5"
		4'	3/4"	13"	112	9'-11"	#6	13"	110	6'-0"	9'-10"	#5	10½"	6	3/4"	12"	4	3/4"	12"	5	3/4"	12"	5	#5	12"	120	2'-11"	8	5'-5"
		5'			112	9'-11"			110	6'-0"	9'-10"			6												120	5'-11"	8	5'-5"
		6'			112	9'-11"			110	6'-0"	9'-10"			6												120	6'-11"	8	5'-5"
	5' @ 5'	3'			112	5'-11"			110	7'-1"	5'-11"			7			6									120	4'-8"	8	6'-6"
		4'			112	5'-11"			110	7'-1"	5'-11"			7			8									120	5'-8"	8	6'-6"
		5'	#6	13"	112	5'-11"	#6	18"	110	7'-1"	5'-11"	#5	10½"	7	3/4"	12"	10	3/4"	12"	6	3/4"	12"	6	#6	12"	120	6'-10"	8	6'-6"
		6'			112	6'-1"			110	7'-3"	6'-1"			7			12									120	7'-10"	8	6'-8"
		7'			112	6'-8"			110	7'-10"	6'-8"			7			14									120	8'-10"	8	6'-9"
	6' @ 6'	3'			120	7'-0"			118	8'-1"	6'-11"			8			6			7						120	4'-11"	8	7'-6"
		4'			120	7'-0"			118	8'-1"	6'-11"			8			8									120	5'-11"	8	7'-6"
		5'	#6	12"	120	7'-0"	#6	12"	118	8'-1"	6'-11"	#5	10½"	8	3/4"	12"	10	3/4"	12"	7	3/4"	12"	7	#6	12"	120	6'-11"	8	7'-6"
		6'			120	7'-2"			118	8'-3"	7'-1"			8			12									120	7'-11"	8	7'-8"
		7'			120	7'-3"			118	8'-4"	7'-2"			8			14									120	8'-11"	8	7'-9"
		8'			120	7'-9"			118	8'-5"	7'-3"			8			16									120	9'-11"	8	7'-10"
	7' @ 7'	4'			132	8'-0"			130	9'-1"	7'-11"			9			8			8						120	5'-2"	8	8'-7"
		5'			132	8'-0"			130	9'-1"	7'-11"			9			10									120	6'-2"	8	8'-7"
		6'	#6	11"	132	8'-2"	#6	11"	130	9'-3"	8'-1"	#5	10½"	9	3/4"	12"	12	3/4"	12"	8	3/4"	12"	8	#6	12"	120	7'-2"	8	8'-9"
		7'			132	8'-3"			130	9'-4"	8'-2"			9			14									120	8'-2"	8	8'-10"
		8'			132	8'-4"			130	9'-5"	8'-3"			9			16									120	9'-2"	8	8'-11"
		9'			132	8'-6"			130	9'-7"	8'-5"			9			18									120	10'-2"	8	9'-1"
	8' @ 8'	4'			120	9'-1"			118	10'-2"	9'-0"			11			8			9						120	5'-6"	8	9'-7"
		5'			120	9'-3"			118	10'-6"	9'-2"			11			10									120	6'-6"	8	9'-9"
		6'			120	9'-3"			118	10'-8"	9'-2"			11			12									120	7'-6"	8	9'-9"
		7'	#7	12"	120	9'-4"	#6	12"	118	10'-8"	9'-3"	#5	10"	11	3/4"	12"	14	3/4"	12"	9	3/4"	12"	9	#7	12"	120	8'-6"	8	9'-10"
		8'			120	9'-5"			118	10'-6"	9'-4"			11			16									120	9'-6"	8	9'-11"
		9'			120	9'-7"			118	10'-8"	9'-6"			11			18									120	10'-6"	8	10'-1"
		10'			120	9'-9"			118	10'-10"	9'-8"			11			20									120	11'-6"	8	10'-3"
	9' @ 9'	5'			132	10'-3"			130	11'-4"	10'-2"			12			10			10						120	6'-5"	8	10'-9"
		6'			132	10'-4"			130	11'-5"	10'-3"			12			12									120	7'-5"	8	10'-10"
		7'			132	10'-4"			130	11'-5"	10'-3"			12			14									120	8'-5"	8	10'-10"
		8'	#7	11"	132	10'-5"	#6	11"	130	11'-6"	10'-4"	#5	10"	12	3/4"	12"	16	3/4"	12"	10	3/4"	12"	10	#7	12"	120	9'-5"	8	10'-11"
		9'			132	10'-7"			130	11'-8"	10'-6"			12			18									120	10'-5"	8	11'-0"
		10'			132	10'-9"			130	11'-10"	10'-8"			12			20									120	11'-5"	8	11'-1"
		11'			132	10'-11"			130	12'-0"	10'-10"			12			22									120	12'-5"	8	11'-2"
	10' @ 10'	5'			120	11'-3"			118	12'-7"	11'-3"			13			10			11						120	6'-6"	8	11'-10"
		6'			120	11'-9"			118	12'-8"	11'-4"			13			12									120	7'-6"	8	11'-11"
		7'			120	11'-6"			118	12'-8"	11'-4"			13			14									120	8'-6"	8	11'-11"
		8'	#7	12"	120	11'-5"	#7	12"	118	12'-9"	11'-5"	#5	10"	13	3/4"	12"	16	3/4"	12"	11	3/4"	12"	11	#7	12"	120	9'-6"	8	12'-0"
		9'			120	11'-8"			118	12'-11"	11'-7"			13			18									120	10'-6"	8	12'-0"
		10'			120	11'-10"			118	13'-1"	11'-9"			13			20									120	11'-6"	8	12'-1"
		11'			120	12'-0"			118	13'-3"	11'-11"			13			22									120	12'-6"	8	12'-1"
		12'			120	12'-2"			118	13'-5"	12'-1"			13			24									120	13'-6"	8	12'-2"
	12' @ 11'	6'			132	12'-6"			130	13'-9"	12'-5"			15			12			12						120	7'-6"	8	13'-0"
		7'			132	12'-6"			130	13'-9"	12'-5"			15			14									120	8'-6"	8	13'-0"
		8'			132	12'-7"			130	13'-11"	12'-7"			15			16									120	9'-6"	8	13'-1"
		9'	#7	11"	132	12'-8"	#7	11"	130	14'-1"	12'-9"	#5	9½"	15	3/4"	12"	18	3/4"	12"	12	3/4"	12"	12	#7	12"	120	10'-6"	8	13'-2"
		10'			132	12'-10"			130	14'-3"	12'-11"			15			20									120	11'-6"	8	13'-3"
		11'			132	13'-0"			130	14'-5"	13'-1"			15			22									120	12'-6"	8	13'-4"
		12'			132	13'-2"			130	14'-5"	13'-1"			15			24									120	13'-6"	8	13'-5"
	1 @ 12'	6'			132	12'-6"			130	13'-9"	12'-5"			15			12			13						120	7'-6"	8	13'-0"
		7'			132	12'-6"			130	13'-9"	12'-5"			15			14									120	8'-6"	8	13'-0"
		8'			132	12'-7"			130	13'-11"	12'-7"			15			16									120	9'-6"	8	13'-1"
		9'	#7	11"	132	12'-8"	#7	11"	130	14'-1"	12'-9"	#5	9½"	15	3/4"	12"	18	3/4"	12"	13	3/4"	12"	13	#7	12"	120	10'-6"	8	13'-2"
		10'			132	12'-10"			130	14'-3"	12'-11"			15			20									120	11'-6"	8	13'-3"
		11'			132	13'-0"			130	14'-5"	13'-1"			15			22									120	12'-6"	8	13'-4"
		12'			132	13'-2"			130	14'-5"	13'-1"			15			24									120	13'-6"	8	13'-5"
	1 @ 12'	6'			132	12'-6"			130	13'-9"	12'-5"			15			12			13						120	7'-6"	8	13'-0"
		7'			132	12'-6"			130	13'-9"	12'-5"			15			14									120	8'-6"	8	13'-0"
		8'			132	12'-7"			130	13'-11"	12'-7"			15			16									120	9'-6"	8	13'-1"
		9'	#7	11"	132	12'-8"	#7	11"	130	14'-1"	12'-9"	#5	9½"	15	3/4"	12"	18	3/4"	12"	13	3/4"	12"	13	#7	12"	120	10'-6"	8	13'-2"
		10'			132	12'-10"			130	14'-3"	12'-11"			15			20									120	11'-6"	8	13'-3"
		11'			132	13'-0"			130	14'-5"	13'-1"			15			22									120	12'-6"	8	13'-4"
		12'			132	13'-2"			130	14'-5"	13'-1"			15			24									120	13'-6"	8	13'-5"

NOTE:- The "a" and "b" bars are to be placed parallel with the headwalls, spacing to be parallel with barrel.

DIMENSIONS — QUANTITIES

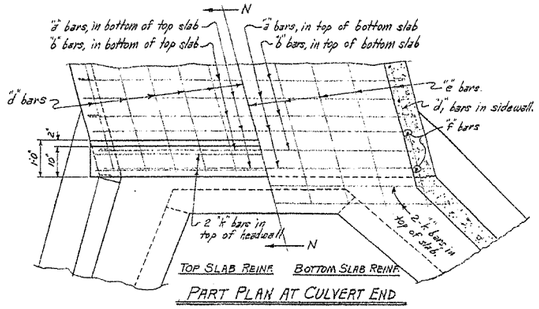
MAX. DESIGN DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	SQ. FT. OF OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	ROADWAY LENGTH RL	LENGTH OF HEADWALL K	CLASS S CONC. PER LIN. FT. OF BARREL CU.YD.	REINFORCING STEEL PER LIN. FT. OF BARREL LB.	REINFORCING STEEL ADDITIONAL PER LAP LB.	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & APRONS LB.
0'-0" TO 5'-0" MAXIMUM	4' @ 4'	2'	8	5'-0"	6"	6"	6½"	3'-1½"	5'-0½"	5'-8⅝"	0.282	92.27	17.95	71.92
		3'	12	5'-0"		6"		4'-1½"	"	"	0.319	94.94	19.62	71.92
		4'	16	5'-0"		6"		5'-1½"	"	"	0.356	97.62	21.29	71.92
		5'	20	5'-0"		6"		6'-1½"	"	"	0.394	50.29	22.96	71.92
		6'	24	5'-2"		7"		7'-1½"	5'-6½"	5'-10⅝"	0.474	53.74	24.63	73.31
	5' @ 5'	3'	15	6'-0"		6"		4'-2½"	6'-2½"	6'-9"	0.380	56.71	22.19	110.28
		4'	20	6'-0"		6"		5'-2½"	"	"	0.417	59.38	23.86	110.28
		5'	25	6'-0"	7½"	6"	7"	6'-2½"	"	"	0.454	62.05	25.53	110.28
		6'	30	6'-2"		7"		7'-2½"	6'-6⅝"	6'-11½"	0.535	65.45	27.20	112.28
		7'	35	6'-8"		7½"		8'-2½"	6'-5⅜"	7'-0⅝"	0.604	68.78	28.87	113.28
	6' @ 6'	3'	18	7'-0"		6"		4'-3⅜"	7'-3"	7'-9⅝"	0.446	67.79	24.96	127.97
		4'	24	7'-0"		6"		5'-3⅜"	"	"	0.483	70.47	26.93	127.97
		5'	30	7'-0"		6"		6'-3⅜"	"	"	0.520	73.14	28.10	127.97
		6'	36	7'-2"	8"	7"	7½"	7'-3⅜"	7'-5"	7'-11½"	0.602	76.81	29.77	129.98
		7'	42	7'-3"		7½"		8'-3⅜"	7'-6"	8'-0½"	0.671	79.93	31.44	130.98
		8'	48	7'-9"		8"		9'-3⅜"	7'-7⅜"	8'-1⅝"	0.746	83.97	33.11	131.98
	7' @ 7'	4'	28	8'-0"		6"		5'-5"	8'-3½"	8'-9½"	0.568	82.96	29.01	196.89
		5'	35	8'-0"		6"		6'-5"	"	"	0.605	85.63	30.68	196.89
		6'	42	8'-2"	8½"	7"	8½"	7'-5"	8'-5½"	9'-0"	0.688	88.40	32.35	198.89
		7'	49	8'-3"		7½"		8'-5"	8'-6⅛"	9'-1"	0.757	92.62	34.02	199.90
		8'	56	8'-4"		8"		9'-5"	8'-7⅛"	9'-2"	0.832	98.28	35.69	150.90
		9'	63	8'-6"		9"		10'-5"	8'-9⅜"	9'-4"	0.946	107.22	37.36	152.90
	8' @ 8'	4'	32	9'-0"		6"		5'-7"	9'-3⅜"	9'-10⅛"	0.676	97.69	33.32	207.70
		5'	40	9'-2"		7"		6'-7"	9'-5⅞"	10'-0⅛"	0.754	101.98	34.99	210.92
		6'	48	9'-2"	9½"	7"	9½"	7'-7"	"	"	0.797	104.15	36.66	210.92
		7'	56	9'-3"		7½"		8'-7"	9'-6⅝"	10'-1⅛"	0.867	107.92	38.33	211.79
		8'	64	9'-4"		8"		9'-7"	9'-8"	10'-2¼"	0.982	113.17	40.00	213.15
		9'	72	9'-6"		9"		10'-7"	9'-10"	10'-4½"	1.057	122.28	41.67	215.87
		10'	80	9'-8"		10"		11'-7"	10'-0⅞"	10'-6⅝"	1.184	129.04	43.34	218.60
	9' @ 9'	5'	45	10'-2"		7"		6'-8"	10'-6⅝"	11'-0⅝"	0.864	117.30	37.56	233.23
		6'	54	10'-3"		7½"		7'-8"	10'-7½"	11'-1⅝"	0.910	120.62	39.23	234.60
		7'	63	10'-3"		7½"		8'-8"	"	"	0.957	123.29	40.90	234.60
		8'	72	10'-4"	10"	8"	10"	9'-8"	10'-8½"	11'-2⅝"	1.033	129.12	42.57	235.96
		9'	81	10'-4"		9"		10'-8"	10'-10⅝"	11'-5"	1.148	138.38	44.24	240.05
		10'	90	10'-8"		10"		11'-8"	11'-0⅝"	11'-7"	1.276	145.26	45.91	242.77
		11'	99	10'-10"		11"		12'-8"	11'-2⅝"	11'-9"	1.416	150.98	47.58	245.50
	10' @ 10'	5'	50	11'-2"		7"		6'-9"	11'-6⅝"	12'-1⅛"	0.957	133.70	40.13	257.63
		6'	60	11'-3"		7½"		7'-9"	11'-7⅝"	12'-2⅝"	1.024	137.06	41.80	258.99
		7'	70	11'-3"		7½"		8'-9"	"	"	1.071	139.78	43.47	258.99
		8'	80	11'-4"	10½"	8"	11"	9'-3½"	11'-8⅜"	12'-3⅛"	1.147	145.62	45.14	260.35
		9'	90	11'-4"		9"		10'-3½"	11'-10⅜"	12'-5⅛"	1.263	155.33	46.81	263.08
		10'	100	11'-8"		10"		11'-3½"	12'-1"	12'-7⅛"	1.391	162.30	48.48	265.80
		11'	110	11'-8"		11"		12'-3½"	12'-3"	12'-9⅛"	1.532	170.12	50.15	268.53
		12'	120	12'-0"		11"		13'-3½"	12'-5"	12'-11⅛"	1.695	182.08	51.82	271.25
	11' @ 11'	6'	66	12'-4"		8"		7'-10½"	12'-9⅜"	13'-3⅝"	1.153	158.87	46.12	283.61
		7'	77	12'-4"		8"		8'-10½"	"	"	1.202	161.55	47.79	283.61
		8'	88	12'-4"	11½"	8"	11½"	9'-10½"	"	"	1.252	166.78	49.46	283.61
		9'	99	12'-6"		9"		10'-10½"	12'-11⅝"	13'-5⅝"	1.368	176.31	51.13	286.33
		10'	110	12'-8"		10"		11'-10½"	13'-1⅜"	13'-7⅝"	1.497	183.42	52.80	289.06
		11'	121	12'-10"		11"		12'-10½"	13'-3⅜"	13'-10"	1.638	191.38	54.47	293.15
		12'	132	13'-0"		11"		13'-10½"	13'-5½"	14'-0"	1.792	203.51	56.14	295.87
	12' @ 12'	6'	72	13'-4"		8"		8'-0"	13'-9⅝"	14'-4"	1.284	176.97	48.69	378.98
		7'	84	13'-4"		8"		9'-0"	"	"	1.333	179.16	50.36	378.98
		8'	96	13'-4"	11½"	8"	11½"	10'-0"	"	"	1.385	184.42	52.03	378.98
		9'	108	13'-6"		9"		11'-0"	13'-11⅝"	14'-6⅛"	1.500	194.12	53.70	382.54
		10'	120	13'-8"		10"		12'-0"	14'-1⅝"	14'-8¼"	1.630	201.34	55.37	386.10
		11'	132	13'-10"		11"		13'-0"	14'-3⅝"	14'-10⅛"	1.772	209.48	57.04	389.66
		12'	144	14'-0"		12"		14'-0"	14'-5⅝"	15'-0⅛"	1.926	221.72	58.71	393.22

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM Bars "b"
#6	3"	5"	1'-2"	Pin diam. / X
#7	3⅝"	5⅞"	1'-4"	

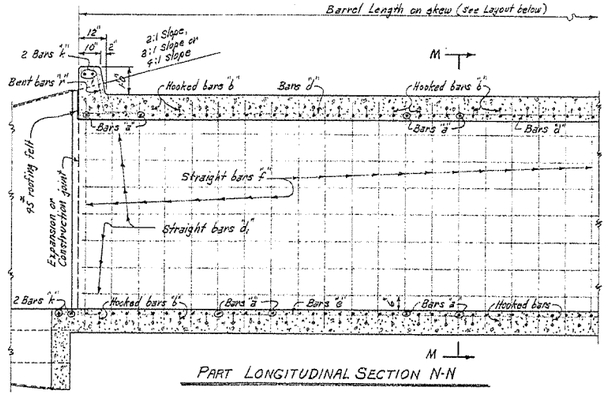
NOTE:- Dimensions are to centers of bars

DOWEL BARS FOR TWO HEADWALLS

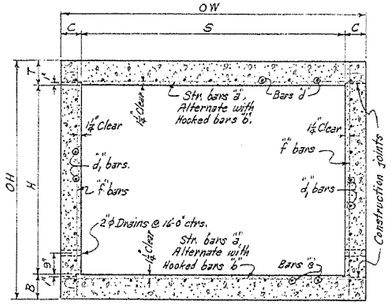
SPAN @	SIZE	SPACING	NO. REQ'D	LENGTH	X	Bars "k" Dowel bars in headwalls
4'	#4	11"	12	2'-6"	1'-3"	
5'	#4	11"	14	2'-7"	1'-3½"	
6'	#4	11"	16	2'-8"	1'-4"	
7'	#4	11½"	18	2'-9"	1'-4⅝"	
8'	#4	11½"	20	2'-11"	1'-5½"	
9'	#4	11⅝"	22	3'-0"	1'-6"	
10'	#4	12"	24	3'-1"	1'-6⅝"	
11'	#4	12"	26	3'-2"	1'-7"	
12'	#4	12"	28	3'-3"	1'-7½"	



PART PLAN AT CULVERT END

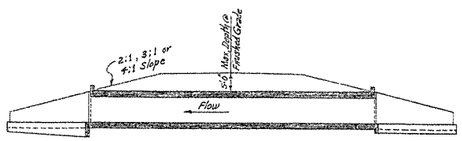


PART LONGITUDINAL SECTION N-N

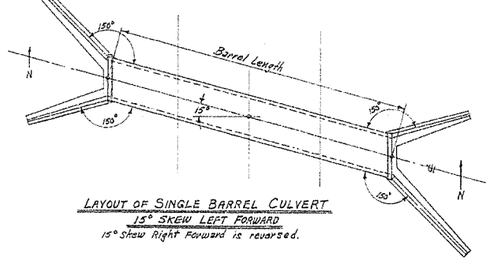


TYPICAL SECTION M-M

Note:- For details of wings and bar lists, see Drawing Nos. W-X152-1 or W-X152-2 and W-X15 / W-X153-1 or W-X153-2 " " / W-X154-1 or W-X154-2 " "



LONGITUDINAL SECTION N-N



LAYOUT OF SINGLE BARREL CULVERT
15° SKEW LEFT FORWARD
15° Skew Right Forward is reversed.

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 82'-0". Lap longitudinal bars 30 diameters.

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.

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 Drawing Nos. W-X152-1 or W-X152-2, W-X153-1 or W-X153-2 and W-X154-1 or W-X154-2. Also W-X15.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS 15° 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-115X-0

Designed By:- W.C.H. 1-23-63 Checked By:- R.R.S. 5-8-63

Drawn By:- W.C.H. 8-14-63 Checked By:- J.H.S. 10-7-63

Quantities By:- W.C.H. 8-21-63 Checked By:- R. G. 12-10-63.

RESHOT 3-5-93

157

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			196	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

| DEPTH OF COVER D | CLEAR SPANS S | CLEAR HEIGHT H | "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 | "b" bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | X | Y | Z | "b_2" bars BENT - See Diagram below. In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars. SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | X | Y | Z | "c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with "b" and "b_2" bars. SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | "d" bars STRAIGHT Longitudinal in Top Slab of Barrel SIZE | SPACING | NO. REQ'D | LENGTH | "d_1" bars STRAIGHT Longitudinal in Sidewalls and Division Walls. SIZE | SPACING | NO. REQ'D | LENGTH | "e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE | SPACING | NO. REQ'D | LENGTH | "f" bars STRAIGHT Vertical in Sidewalls and Division Walls. SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH |
|---|---|---|---|---|---

Reshot 3-8-93

385 ~~187~~

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			197	
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. Size	Spacing	No. Reqd.	Length
D	S	H				
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	120	9'-9"
		3'			120	9'-9"
		4'			120	9'-9"
		5'			120	9'-9"
		6'			120	10'-0"
	2 @ 6'	3'	#5	12"	120	11'-0"
		4'			120	11'-0"
		5'			120	11'-0"
		6'			120	12'-1"
		7'			120	12'-9"
	2 @ 8'	3'	#5	11"	132	13'-11"
		4'			132	13'-11"
		5'			132	15'-11"
		6'			132	14'-8"
		7'			132	14'-8"
		8'			132	14'-8"
	2 @ 10'	4'	#6	12"	120	15'-11"
		5'			120	15'-11"
		6'			120	16'-2"
		7'			120	16'-9"
		8'			120	16'-5"
		9'			120	16'-8"
	2 @ 12'	4'	#6	11"	132	18'-0"
		5'			132	18'-3"
		6'			132	18'-3"
		7'			132	18'-5"
		8'			132	18'-6"
		9'			132	18'-9"
		10'			132	19'-0"
	2 @ 14'	5'	#6	11"	132	20'-4"
		6'			132	20'-6"
		7'			132	20'-6"
		8'			132	20'-7"
		9'			132	20'-10"
		10'			132	21'-1"
		11'			132	21'-3"
	2 @ 16'	5'	#7	12"	120	22'-5"
		6'			120	22'-7"
		7'			120	22'-7"
		8'			120	22'-8"
		9'			120	22'-11"
		10'			120	23'-2"
		11'			120	23'-5"
		12'			120	23'-8"
	2 @ 18'	6'	#7	12"	120	24'-9"
		7'			120	24'-9"
		8'			120	24'-9"
		9'			120	25'-0"
		10'			120	25'-3"
		11'			120	25'-5"
		12'			120	25'-7"
	2 @ 20'	6'	#7	11"	132	26'-10"
		7'			132	26'-10"
		8'			132	26'-10"
		9'			132	27'-1"
		10'			132	27'-5"
		11'			132	27'-6"
		12'			132	27'-8"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b" bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. Size	Spacing	No. Reqd.	Length	X	Y	Z
D	S	H							
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	59	9'-9"	0'-3"	2'-3½"	3'-5½"
		3'			59	9'-9"	"	2'-3½"	3'-5½"
		4'			59	9'-9"	"	2'-3½"	3'-5½"
		5'			59	10'-0"	"	2'-3½"	3'-5½"
		6'			59	11'-1"	0'-3"	2'-4½"	3'-6½"
	2 @ 6'	3'	#5	12"	59	12'-11"	0'-3½"	2'-3"	4'-3"
		4'			59	12'-11"	"	2'-3"	4'-3"
		5'			59	12'-11"	"	2'-3"	4'-3"
		6'			59	13'-10"	"	2'-3"	4'-3"
		7'			59	13'-9"	0'-3½"	2'-10"	4'-6½"
	2 @ 8'	3'	#5	11"	65	15'-0"	0'-3"	3'-2"	5'-0"
		4'			65	15'-0"	"	3'-2"	5'-0"
		5'			65	15'-0"	"	3'-2"	5'-0"
		6'			65	15'-3"	"	3'-3"	5'-1"
		7'			65	15'-5"	"	3'-3"	5'-1½"
		8'			65	15'-6"	0'-3"	3'-3"	5'-2"
	2 @ 10'	4'	#6	12"	59	17'-3"	0'-4½"	3'-7"	5'-9"
		5'			59	17'-3"	"	3'-7"	5'-9"
		6'			59	17'-6"	"	3'-8"	5'-10"
		7'			59	17'-8"	"	3'-9"	5'-10½"
		8'			59	17'-9"	"	3'-9"	5'-11"
		9'			59	18'-0"	0'-4½"	3'-10"	6'-0"
	2 @ 12'	4'	#6	11"	65	19'-5"	0'-5"	4'-0"	6'-6½"
		5'			65	19'-5"	"	4'-0"	6'-7"
		6'			65	19'-8"	"	4'-1"	6'-7½"
		7'			65	19'-10"	"	4'-2"	6'-8"
		8'			65	19'-11"	"	4'-2"	6'-8½"
		9'			65	20'-2"	"	4'-3"	6'-9½"
		10'			65	20'-5"	0'-5"	4'-3"	6'-10½"
	2 @ 14'	5'	#6	11"	65	21'-9"	0'-5½"	4'-6"	7'-5"
		6'			65	21'-11"	"	4'-7"	7'-5½"
		7'			65	21'-11"	"	4'-7"	7'-5½"
		8'			65	22'-0"	"	4'-7"	7'-6"
		9'			65	22'-3"	"	4'-8"	7'-7"
		10'			65	22'-6"	"	4'-9"	7'-8"
		11'			65	22'-8"	0'-5½"	4'-9"	7'-8½"
	2 @ 16'	5'	#7	12"	59	23'-11"	0'-6"	5'-0"	8'-2"
		6'			59	24'-1"	"	5'-1"	8'-2½"
		7'			59	24'-1"	"	5'-1"	8'-2½"
		8'			59	24'-2"	"	5'-0"	8'-3"
		9'			59	24'-5"	"	5'-1"	8'-3½"
		10'			59	24'-8"	"	5'-2"	8'-4"
		11'			59	24'-10"	"	5'-2"	8'-4½"
		12'			59	25'-0"	0'-6"	5'-2"	8'-5"
	2 @ 18'	6'	#7	12"	59	26'-3"	0'-6½"	5'-5"	9'-1"
		7'			59	26'-3"	"	5'-5"	9'-1"
		8'			59	26'-5"	"	5'-5"	9'-1"
		9'			59	26'-6"	"	5'-6"	9'-2"
		10'			59	26'-9"	"	5'-5"	9'-3"
		11'			59	26'-11"	"	5'-5"	9'-3"
		12'			59	27'-1"	0'-6½"	5'-5"	9'-5"
	2 @ 20'	6'	#7	11"	65	28'-4"	0'-7"	5'-11"	9'-10"
		7'			65	28'-6"	"	5'-11"	9'-10"
		8'			65	28'-8"	"	5'-11"	9'-10"
		9'			65	28'-7"	"	5'-9"	9'-11"
		10'			65	28'-10"	"	6'-1"	10'-0"
		11'			65	29'-0"	"	6'-1"	10'-1"
		12'			65	29'-2"	0'-7"	6'-1"	10'-2"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b2" bars BENT - See Diagram below In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars. Size	Spacing	No. Reqd.	Length	X	Y	Z
D	S	H							
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	59	10'-10"	0'-2½"	2'-4½"	3'-5½"
		3'			59	10'-10"	"	2'-4½"	3'-5½"
		4'			59	10'-10"	"	2'-4½"	3'-5½"
		5'			59	10'-10"	"	2'-4½"	3'-5½"
		6'			59	11'-1"	0'-2½"	2'-5½"	3'-6½"
	2 @ 6'	3'	#5	12"	59	12'-11"	0'-3½"	2'-3"	4'-3"
		4'			59	12'-11"	"	2'-3"	4'-3"
		5'			59	12'-11"	"	2'-3"	4'-3"
		6'			59	13'-10"	"	2'-10"	4'-6"
		7'			59	13'-9"	0'-3½"	2'-11"	4'-6½"
	2 @ 8'	3'	#5	11"	65	15'-0"	0'-3"	3'-2"	5'-0"
		4'			65	15'-0"	"	3'-2"	5'-0"
		5'			65	15'-0"	"	3'-2"	5'-0"
		6'			65	15'-3"	"	3'-3"	5'-1"
		7'			65	15'-5"	"	3'-3"	5'-1½"
		8'			65	15'-6"	0'-3"	3'-3"	5'-2"
	2 @ 10'	4'	#6	12"	59	17'-3"	0'-4½"	3'-7"	5'-9"
		5'			59	17'-3"	"	3'-7"	5'-9"
		6'			59	17'-6"	"	3'-8"	5'-10"
		7'			59	17'-8"	"	3'-9"	5'-10½"
		8'			59	17'-9"	"	3'-9"	5'-11"
		9'			59	18'-0"	0'-4½"	3'-10"	6'-0"
	2 @ 12'	4'	#6	11"	65	19'-5"	0'-5"	4'-0"	6'-6½"
		5'			65	19'-5"	"	4'-0"	6'-7"
		6'			65	19'-8"	"	4'-1"	6'-7½"
		7'			65	19'-10"	"	4'-2"	6'-8"
		8'			65	19'-11"	"	4'-2"	6'-8½"
		9'			65	20'-2"	"	4'-3"	6'-9½"
		10'			65	20'-5"	0'-5"	4'-3"	6'-10½"
	2 @ 14'	5'	#6	11"	65	21'-9"	0'-5½"	4'-6"	7'-5"
		6'			65	21'-11"	"	4'-7"	7'-5½"
		7'			65	21'-11"	"	4'-7"	7'-5½"
		8'			65	22'-0"	"	4'-7"	7'-6"
		9'			65	22'-3"	"	4'-8"	7'-7"
		10'			65	22'-6"	"	4'-8"	7'-8"
		11'			65	22'-8"	0'-5½"	4'-9"	7'-8½"
	2 @ 16'	5'	#7	12"	59	23'-11"	0'-6"	5'-0"	8'-2"
		6'			59	24'-1"	"	5'-1"	8'-2½"
		7'			59	24'-1"	"	5'-1"	8'-2½"
		8'			59	24'-2"	"	5'-0"	8'-3"
		9'			59	24'-5"	"	5'-1"	8'-3½"
		10'			59	24'-8"	"	5'-2"	8'-4"
		11'			59	24'-10"	"	5'-2"	8'-4½"
		12'			59	25'-0"	0'-6"	5'-2"	8'-5"
	2 @ 18'	6'	#7	12"	59	26'-3"	0'-6½"	5'-5"	9'-1"
		7'			59	26'-3"	"	5'-5"	9'-1"
		8'			59	26'-5"	"	5'-5"	9'-1"
		9'			59	26'-6"	"	5'-6"	9'-2"
		10'			59	26'-9"	"	5'-5"	9'-3"
		11'			59	26'-11"	"	5'-5"	9'-3"
		12'			59	27'-1"	0'-6½"	5'-5"	9'-5"
	2 @ 20'	6'	#7	11"	65	28'-4"	0'-7"	5'-11"	9'-10"
		7'			65	28'-6"	"	5'-11"	9'-10"
		8'			65	28'-8"	"	5'-11"	9'-10"
		9'			65	28'-7"	"	5'-9"	9'-11"
		10'			65	28'-10"	"	6'-1"	10'-0"
		11'			65	29'-0"	"	6'-1"	10'-1"
		12'			65	29'-2"	0'-7"	6'-1"	10'-2"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alt. with "a" and "b2" bars. Size	Spacing	No. Reqd.	Length
D	S	H				
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	120	9'-10"
		3'			120	9'-10"
		4'			120	9'-10"
		5'			120	9'-10"
		6'			120	9'-11"
	2 @ 6'	3'	#5	12"	120	11'-5"
		4'			120	11'-5"
		5'			120	11'-5"
		6'			120	11'-11"
		7'			120	12'-0"
	2 @ 8'	3'	#5	11½"	132	13'-0"
		4'			132	13'-0"
		5'			132	14'-10"
		6'			132	14'-8"
		7'			132	14'-8"
		8'			132	14'-8"
	2 @ 10'	4'	#6	12"	120	14'-10"
		5'			120	14'-10"
		6'			120	15'-0"
		7'			120	15'-0"
		8'			120	15'-0"
		9'			120	15'-0"
	2 @ 12'	4'	#6	11"	132	17'-0"
		5'			132	17'-0"
		6'			132	17'-0"
		7'			132	17'-0"
		8'			132	17'-0"
		9'			132	17'-0"
		10'			132	17'-0"
	2 @ 14'	5'	#6	11"	132	18'-11"
		6'			132	18'-11"
		7'			132	18'-11"
		8'			132	18'-11"
		9'			132	18'-11"
		10'			132	18'-11"
		11'			132	18'-11"
	2 @ 16'	5'	#7	12"	120	20'-2"
		6'			120	20'-2"
		7'			120	20'-2"
		8'			120	20'-2"
		9'			120	20'-2"
		10'			120	20'-2"
		11'			120	20'-2"
		12'			120	20'-2"
	2 @ 18'	6'	#7	11"	132	21'-5"
		7'			132	21'-5"
		8'			132	21'-5"
		9'			132	21'-5"
		10'			132	21'-5"
		11'			132	21'-5"
		12'			132	21'-5"
	2 @ 20'	6'	#7	11½"	132	23'-0"
		7'			132	23'-0"
		8'			132	23'-0"
		9'			132	23'-0"
		10'			132	23'-0"
		11'			132	23'-0"
		12'			132	23'-0"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel Size	Spacing	No. Reqd.	Length
D	S	H				
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#4	12"	14	
		3'			14	
		4'			14	
		5'			14	
		6'			14	
	2 @ 6'	3'	#4	12"	14	
		4'			14	
		5'			14	
		6'			14	
		7'			14	
	2 @ 8'	3'	#4	12"	16	
		4'			16	
		5'			16	
		6'			16	
		7'			16	
		8'			16	
	2 @ 10'	4'	#4	12"	16	
		5'			16	
		6'			16	
		7'			16	
		8'			16	
		9'			16	
	2 @ 12'	4'	#4	12"	20	
		5'			20	
		6'			20	
		7'			20	
		8'			20	
		9'			20	
		10'			20	
	2 @ 14'	5'	#4	12"	20	
		6'			20	
		7'			20	
		8'			20	
		9'			20	
		10'			20	
		11'			20	
	2 @ 16'	5'	#4	12"	22	
		6'			22	
		7'			22	
		8'			22	
		9'			22	
		10'			22	
		11'			22	
		12'			22	
	2 @ 18'	6'	#4	12"	24	
		7'			24	
		8'			24	
		9'			24	
		10'			24	
		11'			24	
		12'			24	
	2 @ 20'	6'	#4	12"	26	
		7'			26	
		8'			26	
		9'			26	
		10'			26	
		11'			26	
		12'			26	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d1" bars STRAIGHT Longitudinal in Sidewalls and Division Wall Size	Spacing	No. Reqd.	Length
D	S	H				
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#4	12"	8	
		3'			12	
		4'			16	
		5'			16	
		6'			20	
	2 @ 6'	3'	#4	12"	16	
		4'			16	
		5'			20	
		6'			20	
		7'			24	
	2 @ 8'	3'	#4	12"	20	
		4'			20	
		5'			24	
		6'			24	
		7'			28	
		8'			28	
	2 @ 10'	4'	#4	12"	20	
		5'			24	
		6'			28	
		7'			28	
		8'			28	
		9'			28	
	2 @ 12'	4'	#4	12"	24	
		5'			28	
		6'			28	
		7'			28	
		8'			28	
		9'			28	
		10'			28	
	2 @ 14'	5'	#4	12"	28	
		6'			28	
		7'			28	
		8'			28	
		9'			28	
		10'			28	
		11'			28	
	2 @ 16'	5'	#4	12"	32	
		6'			32	
		7'			32	
		8'			32	
		9'			32	
		10'			32	
		11'			32	
		12'			32	
	2 @ 18'	6'	#4	12"	36	
		7'			36	
		8'			36	
		9'			36	
		10'			36	
		11'			36	
		12'			36	
	2 @ 20'	6'	#4	12"	40	
		7'			40	
		8'			40	
		9'			40	
		10'			40	
		11'			40	
		12'			40	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d2" bars STRAIGHT Longitudinal in Sidewalls and Division Wall Size	Spacing	No. Reqd.	Length
D	S	H				
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#4	12"	8	
		3'			12	
		4'			16	
		5'			16	
		6'			20	
	2 @ 6'	3'	#4	12"	16	
		4'			16	
		5'			20	
		6'			20	
		7'			24	
	2 @ 8'	3'	#4	12"	20	
		4'			20	
		5'			24	
		6'			24	
		7'			28	
		8'			28	
	2 @ 10'	4'	#4	12"	20	
		5'			24	
		6'			28	
		7'			28	
		8'			28	
		9'			28	
	2 @ 12'	4'	#4	12"	24	
		5'			28	
		6'			28	
		7'			28	
		8'			28	
		9'			28	
		10'			28	
	2 @ 14'	5'	#4	12"	28	
		6'			28	
		7'			28	
		8'			28	
		9'			28	
		10'			28	
		11'			28	
	2 @ 16'	5'	#4	12"	32	
		6'			32	
		7'			32	
		8'			32	
		9'			32	
		10'			32	
		11'			32	
		12'			32	
	2 @ 18'	6'	#4	12"	36	
		7'			36	
		8'			36	
		9'			36	
		10'			36	
		11'			36	
		12'			36	
	2 @ 20'	6'	#4	12"	40	
		7'			40	
		8'			40	
		9'			40	
		10'			40	
		11'			40	
		12'			40	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel Size	Spacing	No. Reqd.	Length
D	S	H				
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#4	12"	14	
		3'			14	
		4'			14	
		5'			14	
		6'			14	
	2 @ 6'	3'	#4	12"	14	
		4'			14	
		5'			14	
		6'			14	
		7'			14	
	2 @ 8'	3'	#4	12"	16	
		4'			16	
		5'			16	
		6'			16	
		7'			16	
		8'			16	
	2 @ 10'	4'	#4	12"	16	
		5'			16	
		6'			16	
		7'			16	
		8'			16	
		9'			16	
	2 @ 12'	4'	#4	12"	20	
		5'			20	
		6'			20	
		7'			20	
		8'			20	
		9'			20	
		10'			20	
	2 @ 14'	5'	#4	12"	20	
		6'			20	
		7'			20	
		8'			20	
		9'			20	
		10'			20	
		11'			20	
	2 @ 16'	5'	#4	12"	22	
		6'			22	
		7'			22	
		8'			22	
		9'			22	
		10'			22	
		11'			22	
		12'			22	
	2 @ 18'	6'	#4	12"	24	
		7'			24	
		8'			24	
		9'			24	
		10'			24	
		11'			24	
		12'			24	
	2 @ 20'	6'	#4	12"	26	
		7'			26	
		8'			26	
		9'			26	
		10'			26	
		11'			26	
		12'			26	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"f" bars STRAIGHT Verticals in Sidewalls and Division Wall Size	Spacing	No. Reqd.	Length
D	S	H				
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#4	12"	240	2'-10"
		3'			240	3'-10"
		4'			240	4'-10"
		5'			240	5'-10"
		6'			240	6'-10"
	2 @ 6'	3'	#4	12"	240	3'-11"
		4'			240	4'-11"
		5'			240	5'-11"
		6'			240	6'-11"
		7'			240	7'-11"
	2 @ 8'	3'	#4	12"	240	4'-0"
		4'			240	5'-0"
		5'			240	6'-0"
		6'			240	7'-0"
		7'			240	8'-0"
		8'			240	9'-0"
	2 @ 10'	4'	#4	12"	240	5'-1"
		5'			240	6'-1"
		6'			240	7'-1"
		7'			240	8'-1"
		8'			240	9'-1"
		9'			240	10'-1"
	2 @ 12'	4'	#4	12"	240	6'-2"
		5'			240	7'-2"
		6'			240	8'-2"
		7'			240	9'-2"
		8'			240	10'-2"
		9'			240	11'-2"
		10'			240	12'-3"
	2 @ 14'	5'	#4	12"	240	7'-3"
		6'			240	8'-3"
		7'			240	9'-3"
		8'			240	10'-3"
		9'			240	11'-3"
		10'			240	12'-3"
		11'			240	13'-4"
	2 @ 16'	5'	#4	12"	240	8'-4"
		6'			240	9'-4"
		7'			240	10'-4"
		8'			240	11'-4"
		9'			240	12'-4"
		10'			240	13'-4"
		11'			240	14'-5"
		12'			240	15'-5"
	2 @ 18'	6'	#4	12"	240	9'-5"
		7'			240	10'-5"
		8'			240	11'-5"
		9'			240	12'-5"
		10'			240	13'-5"
		11'			240	14'-6"
		12'			240	15'-6"
	2 @ 20'	6'	#4	12"	240	10'-6"
		7'			240	11'-6"
		8'			240	12'-6"
		9'			240	13'-6"
		10'			240	14'-7"
		11'			240	15'-7"
		12'			240	16'-7"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"k" bars STRAIGHT 2 in Top of Headwalls and Aprons - Each. Size	No. Reqd.	Length
D	S	H			
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	8	10'-3"
		3'		8	"
		4'		8	"
		5'		8	"
		6'		8	10'-6"
	2 @ 6'	3'	#5	8	12'-9"
		4'		8	"
		5'		8	"
		6'		8	12'-9"
		7'		8	"
	2 @ 8'	3'	#5	8	14'-5"
		4'		8	"
		5'		8	"
		6'		8	14'-8"
		7'		8	14'-8"
		8'		8	14'-8"
	2 @ 10'	4'	#6	8	16'-4"
		5'		8	"
		6'		8	16'-9"
		7'		8	16'-11"
		8'		8	17'-0"
		9'		8	17'-2"
	2 @ 12'	4'	#6	8	18'-7"
		5'		8	18'-10"
		6'		6	"
		7'		6	"
		8'		8	19'-0"
		9'		8	19'-1"
		10'		8	19'-3"
	2 @ 14'	5'	#7	8	20'-11"
		6'		8	21'-1"
		7'		8	"
		8'		8	21'-2"
		9'		8	21'-3"
		10'		8	21'-5"
		11'		8	21'-6"
	2 @ 16'	5'	#7	8	23'-2"
		6'		8	23'-4"
		7'		8	"
		8'		8	23'-5"
		9'		8	23'-6"
		10'		8	23'-8"
		11'		8	23'-9"
		12'		8	23'-11"
	2 @ 18'	6'	#7	8	25'-3"
		7'		8	"
		8'		8	"
		9'		8	25'-6"
		10'		8	25'-10"
		11'		8	26'-0"
		12'		8	26'-2"
	2 @ 20'	6'	#7	8	27'-6"
		7'		8	"
		8'		8	"
		9'		8	27'-7"
		10'		8	27'-10"
		11'		8	28'-0"
		12'		8	28'-2"

NOTE:- The "a", "b", "b2", and "c" bars are to be placed parallel with the headwalls, spacing to be parallel with barrel.

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#5	2½"	6½"	0'-11⅝"
#6	3"	5"	1'-2"

BENDING DIAGRAM FOR BARS "b" and "b2"

NOTE:- Dimensions are to centers of bars.

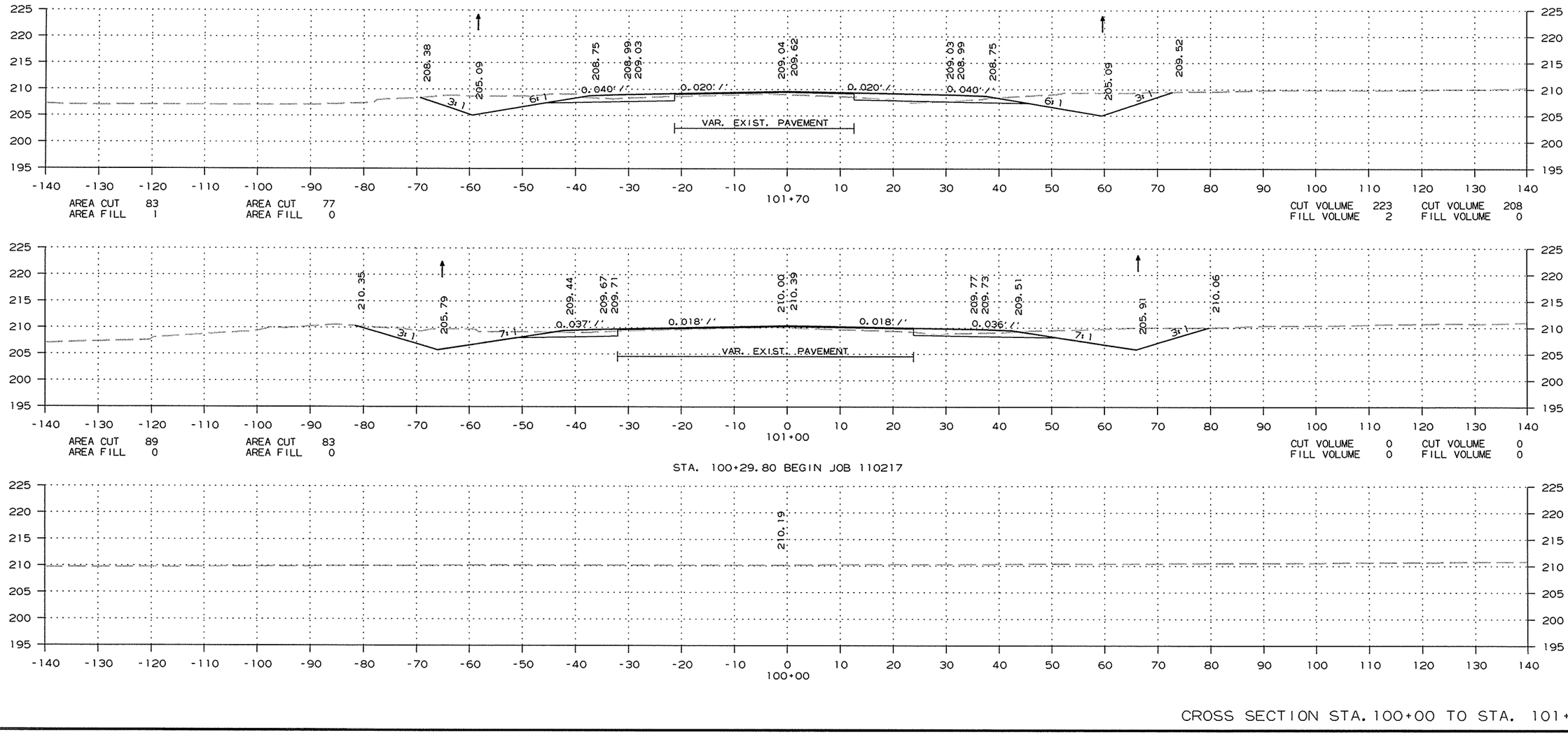
DOWEL BARS FOR TWO HEADWALLS

2 SPANS @	SIZE	SPACING	No. REQD.	LENGTH	X
4'	#4	12"	20	2'-5"	1'-2½"
5'	#4	12"	24	2'-6"	1'-3"
6'	#4	12"	28	2'-7"	1'-3½"
7'	#4	12"	32	2'-8"	1'-4"
8'	#4	12"	38	2'-9"	1'-4½"
9'	#4

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	198	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



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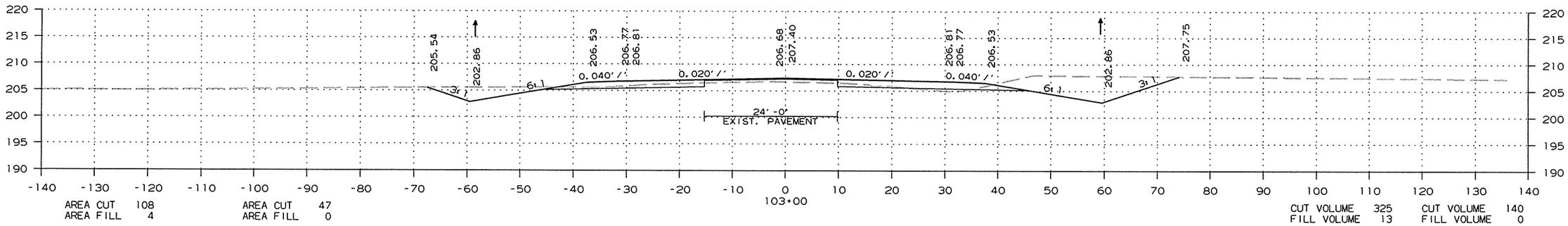
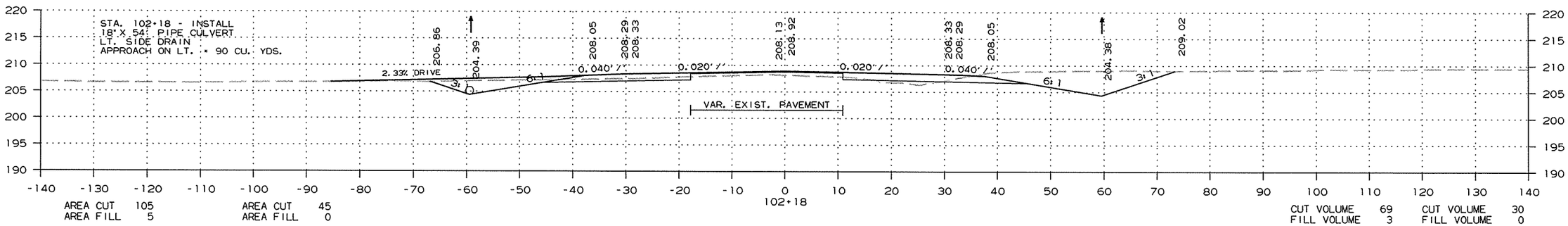
CROSS SECTION STA. 100+00 TO STA. 101+70

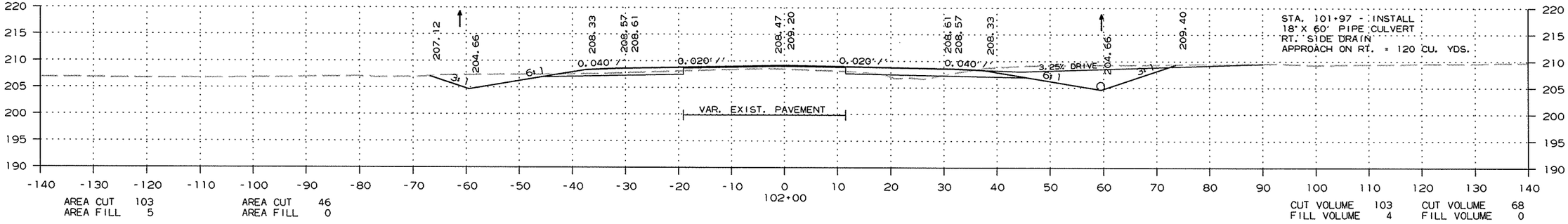
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RO. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	199	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 102+00 TO STA. 103+00

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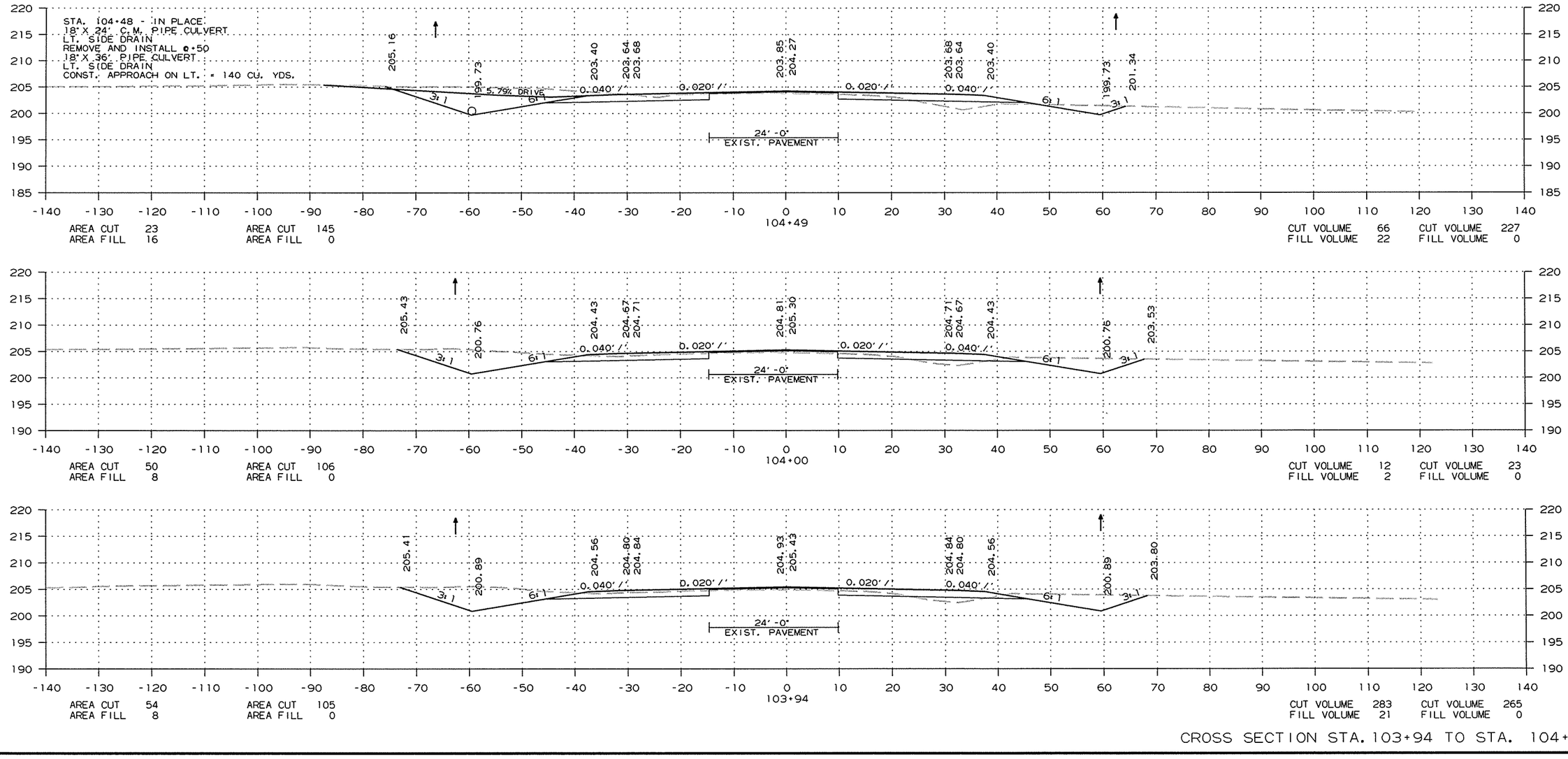
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	200	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 103+94 TO STA. 104+49

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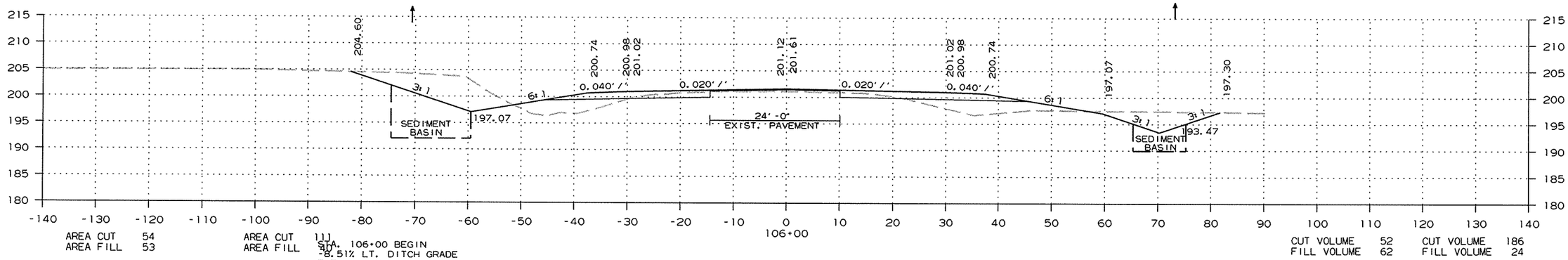
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	201	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



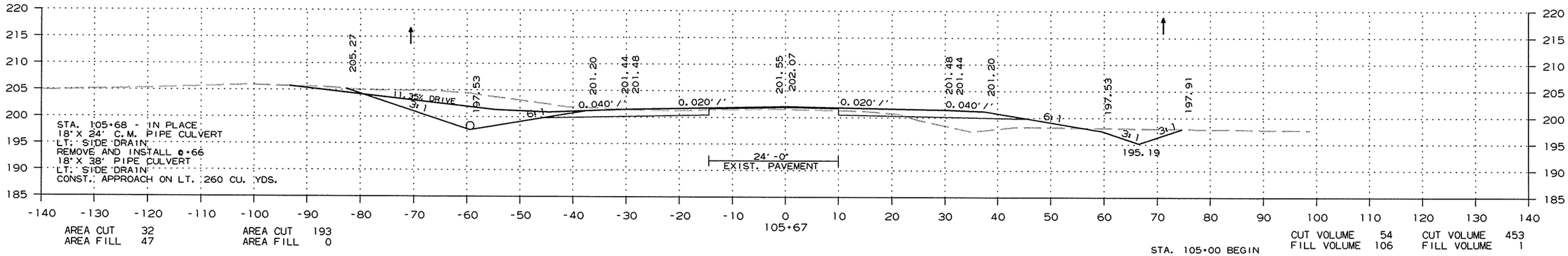
AREA CUT 54 AREA FILL 53

AREA CUT 111 AREA FILL 40

STA. 106+00 BEGIN
-8.51% LT. DITCH GRADE
ELEV. = 197.07

CUT VOLUME 52 FILL VOLUME 62

CUT VOLUME 186 FILL VOLUME 24



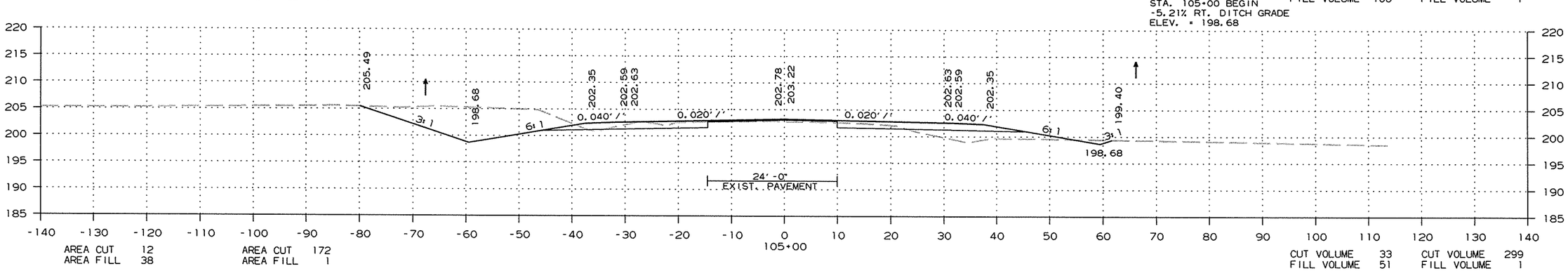
AREA CUT 32 AREA FILL 47

AREA CUT 193 AREA FILL 0

CUT VOLUME 54 FILL VOLUME 106

CUT VOLUME 453 FILL VOLUME 1

STA. 105+00 BEGIN
-5.21% RT. DITCH GRADE
ELEV. = 198.68



AREA CUT 12 AREA FILL 38

AREA CUT 172 AREA FILL 1

CUT VOLUME 33 FILL VOLUME 51

CUT VOLUME 299 FILL VOLUME 1

CROSS SECTION STA. 105+00 TO STA. 106+00

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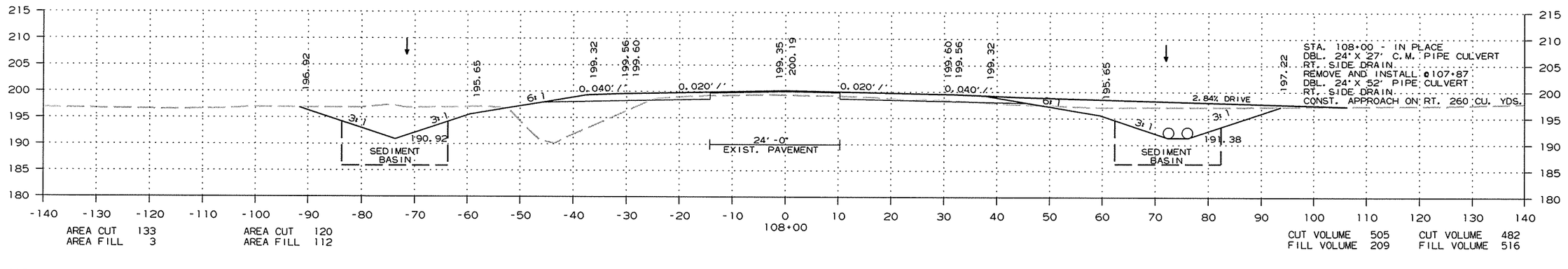
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	202	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 106+83 TO STA. 108+00

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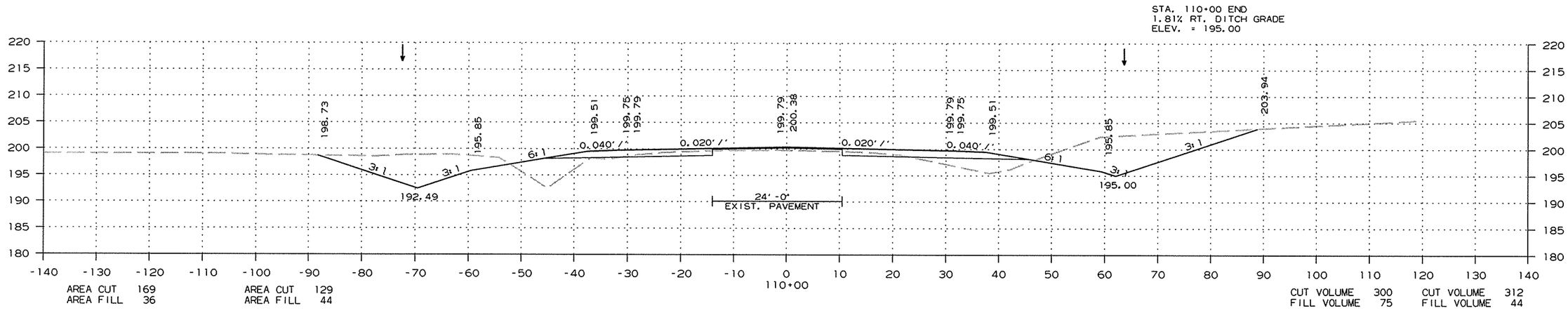
R110217.DGN

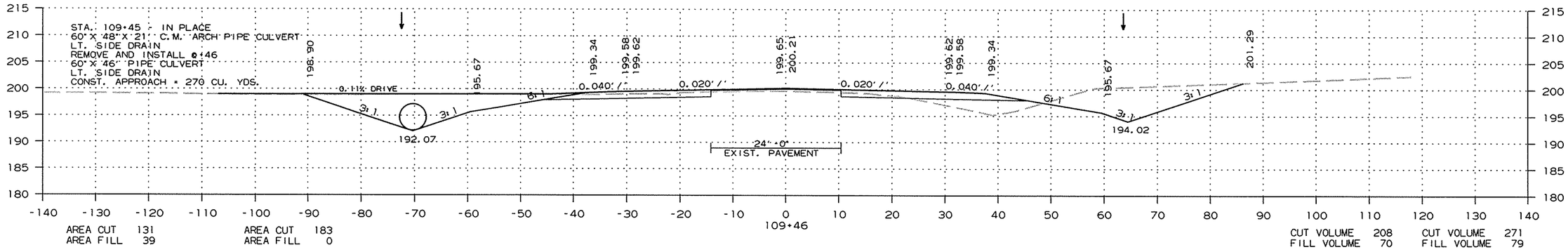
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	203	348

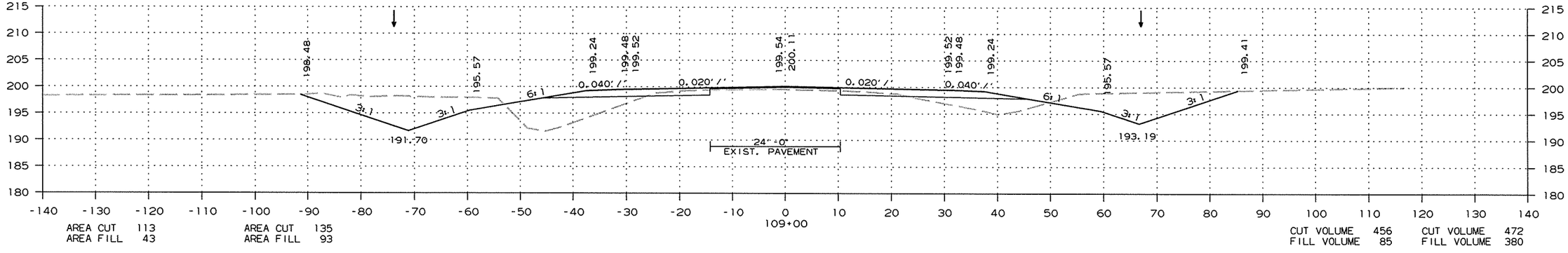
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 109+00 TO STA. 110+00

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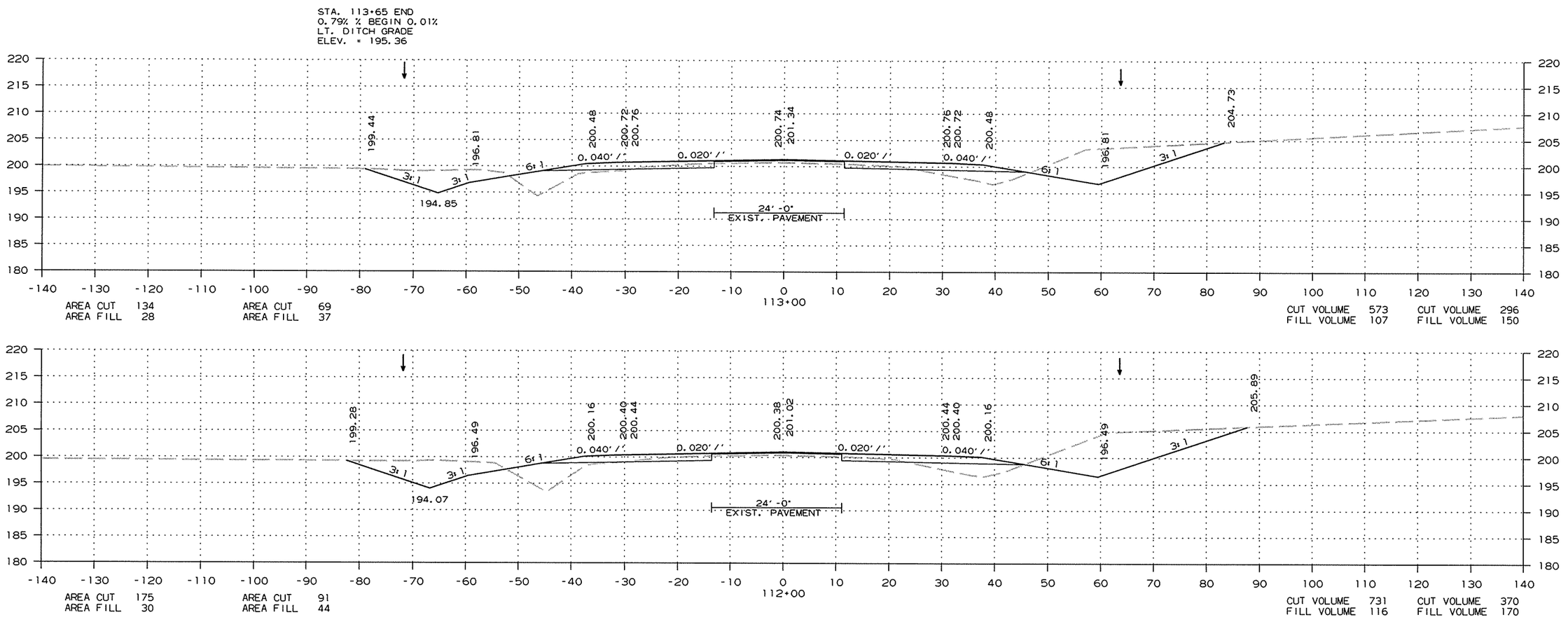
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	204	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 111+00 TO STA. 113+00

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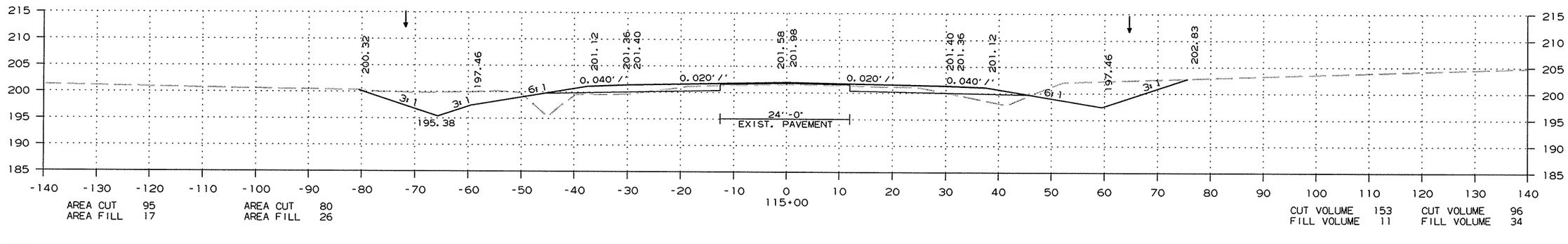
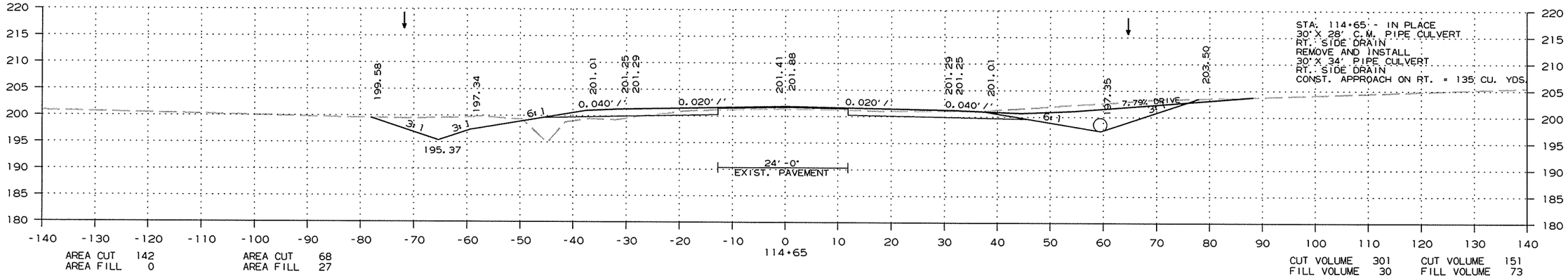
R110217.DGN

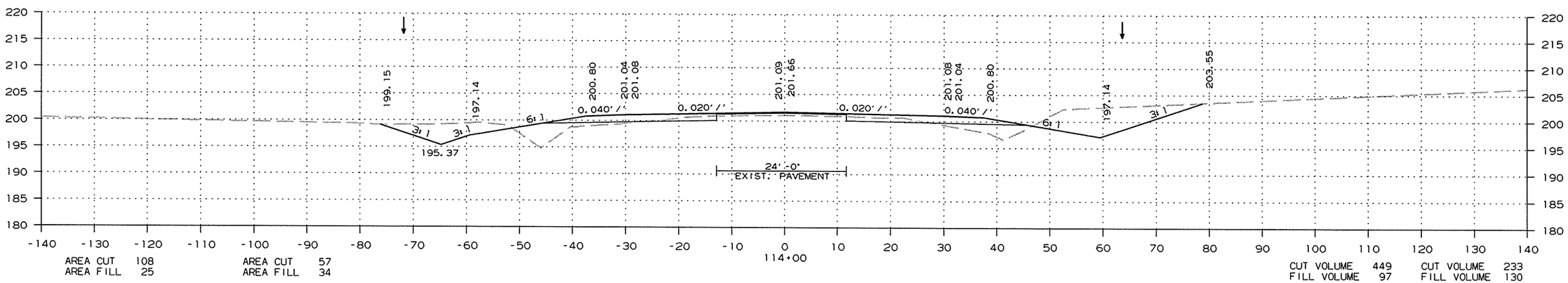
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	205	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 114+00 TO STA. 115+00

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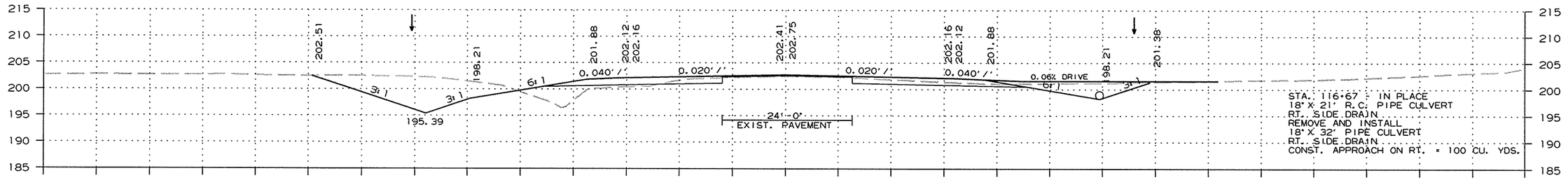
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	206	348

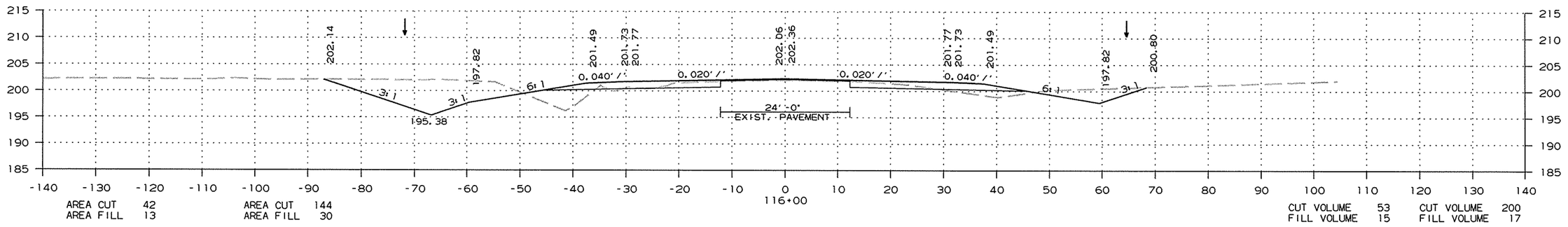
(2) CROSS SECTIONS

STAGE 1 STAGE 2



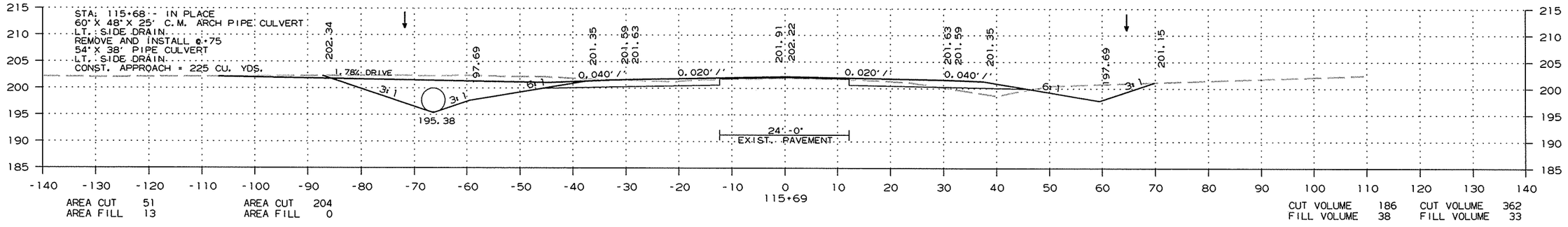
AREA CUT 61 AREA FILL 0 | AREA CUT 144 AREA FILL 35

CUT VOLUME 127 FILL VOLUME 16 | CUT VOLUME 357 FILL VOLUME 80



AREA CUT 42 AREA FILL 13 | AREA CUT 144 AREA FILL 30

CUT VOLUME 53 FILL VOLUME 15 | CUT VOLUME 200 FILL VOLUME 17



AREA CUT 51 AREA FILL 13 | AREA CUT 204 AREA FILL 0

CUT VOLUME 186 FILL VOLUME 38 | CUT VOLUME 362 FILL VOLUME 33

CROSS SECTION STA. 115+69 TO STA. 116+67

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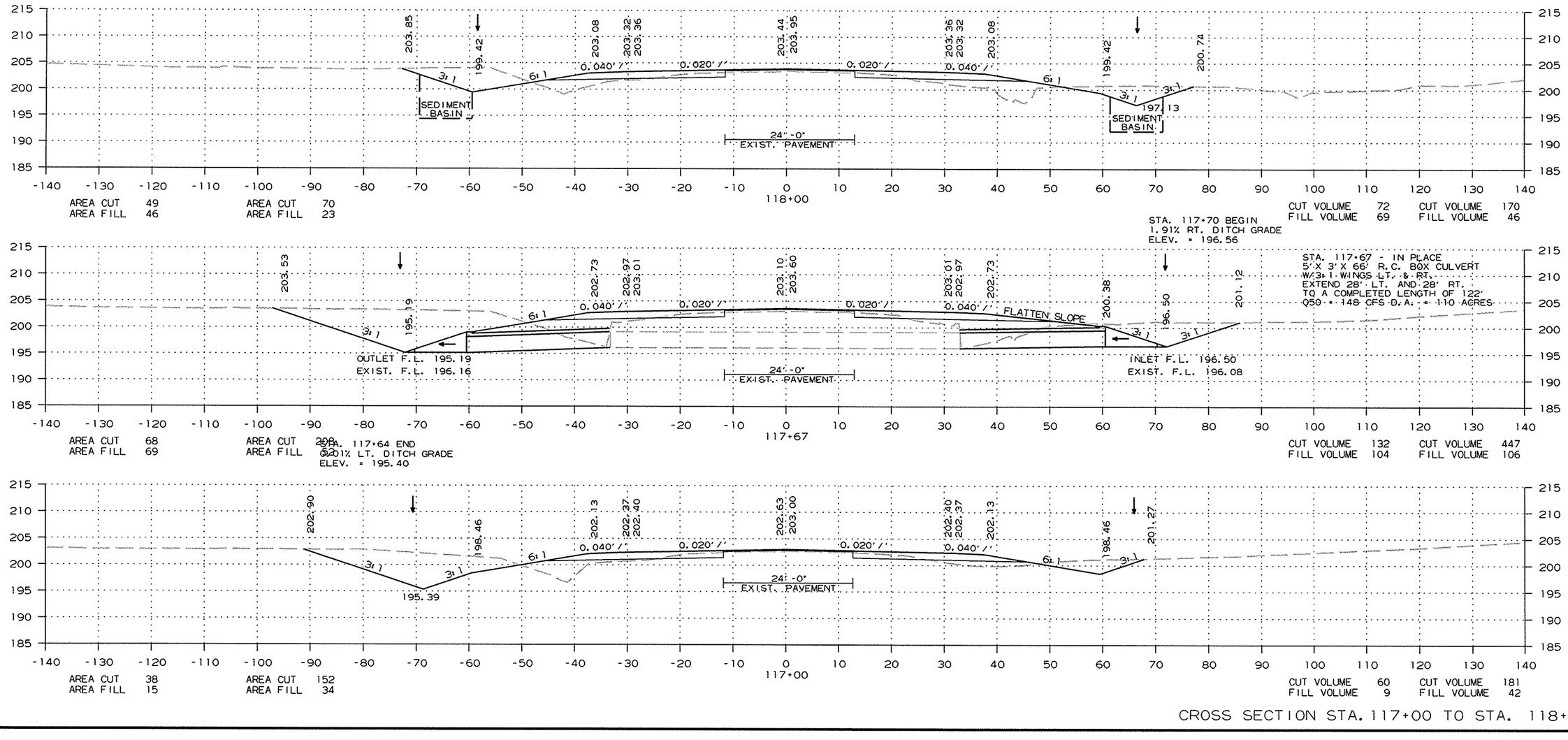
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	207	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 117+00 TO STA. 118+00

9/30/2013

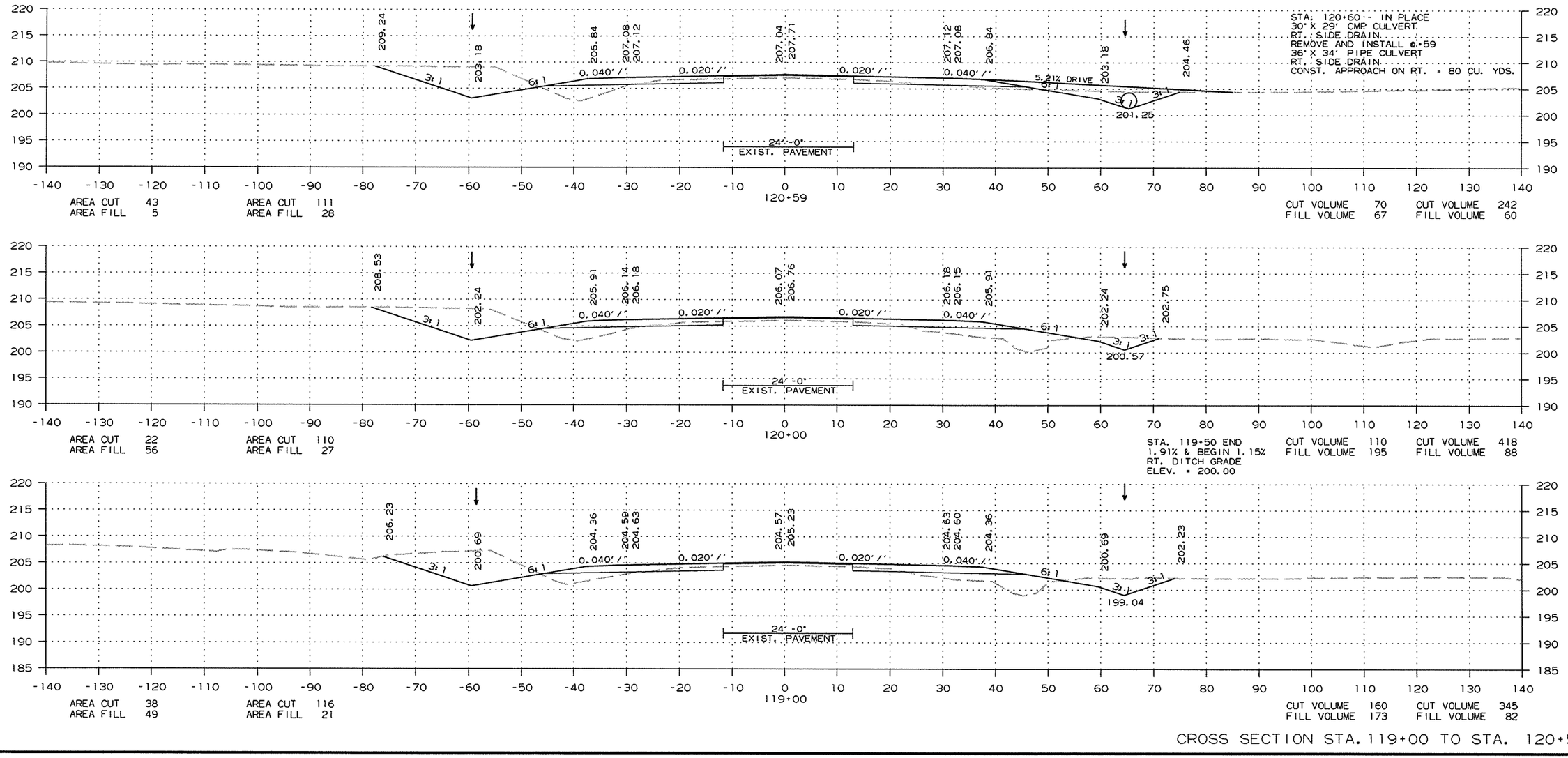
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	208	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 119+00 TO STA. 120+59

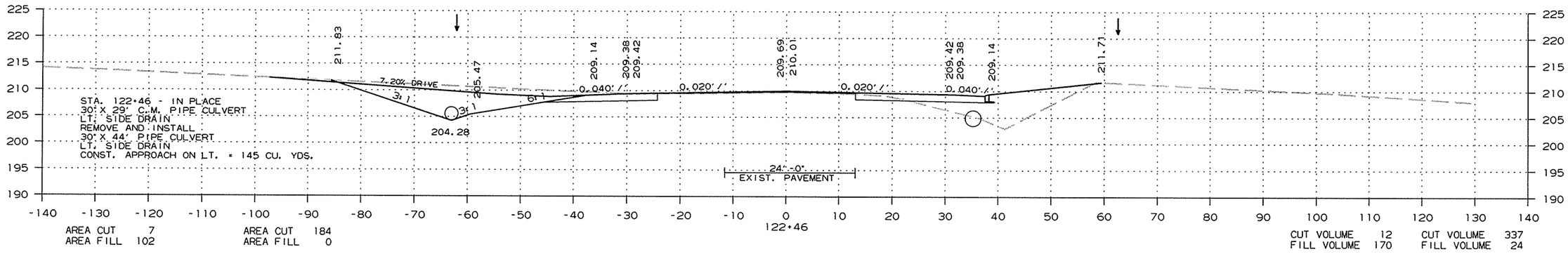
9/30/2013

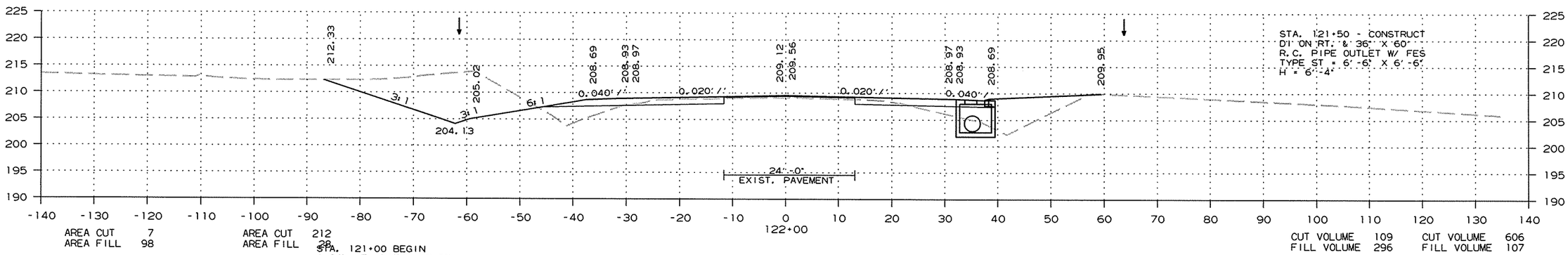
R110217.DGN

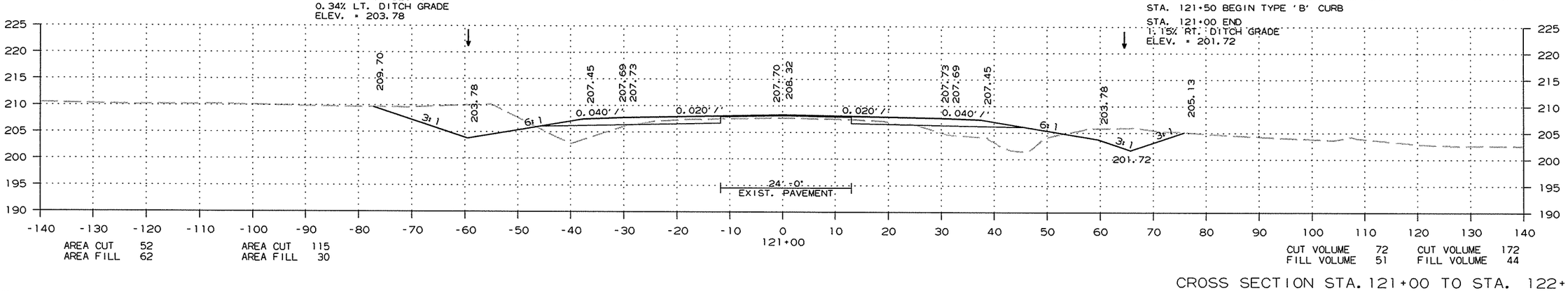
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	209	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 121+00 TO STA. 122+46

9/30/2013

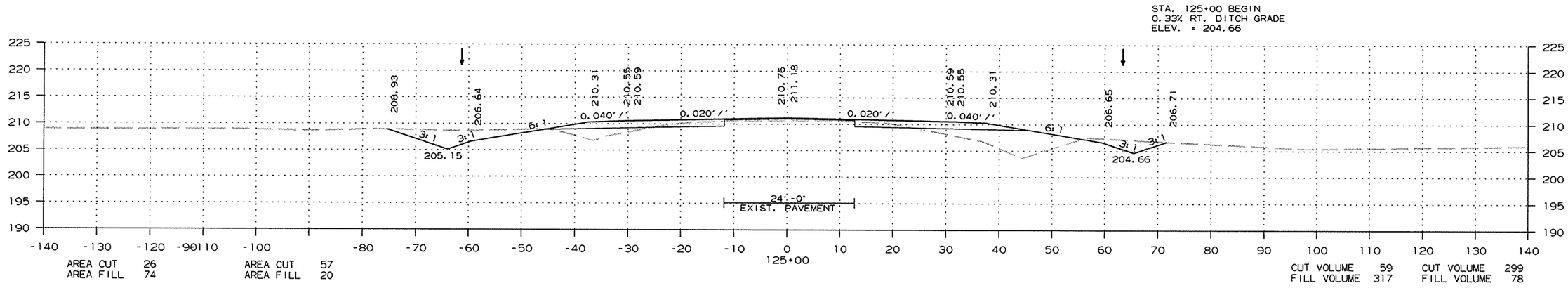
R110217.DGN

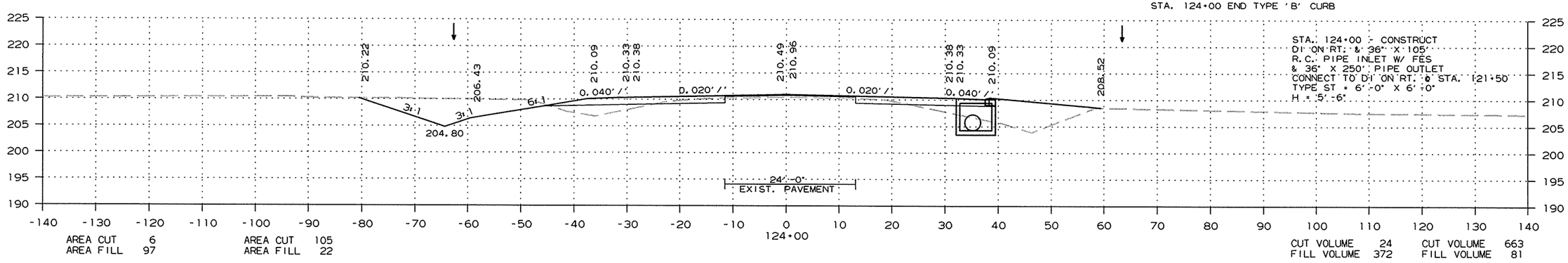
STAGE 1 STAGE 2

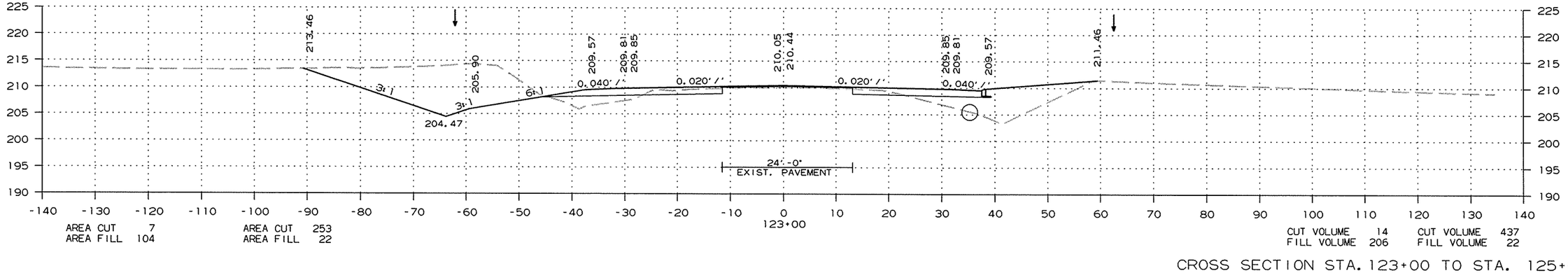
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	210	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 123+00 TO STA. 125+00

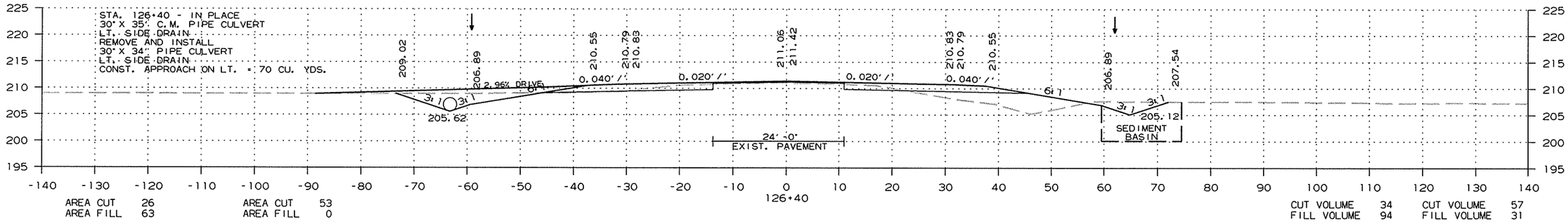
9/30/2013

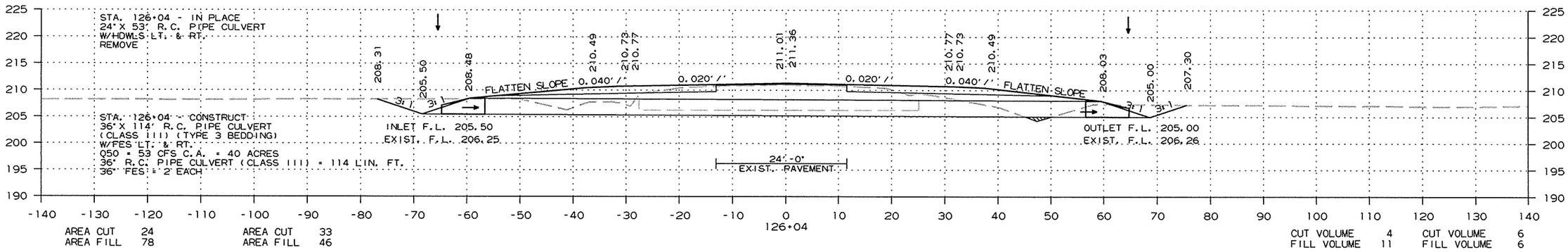
R110217.DGN

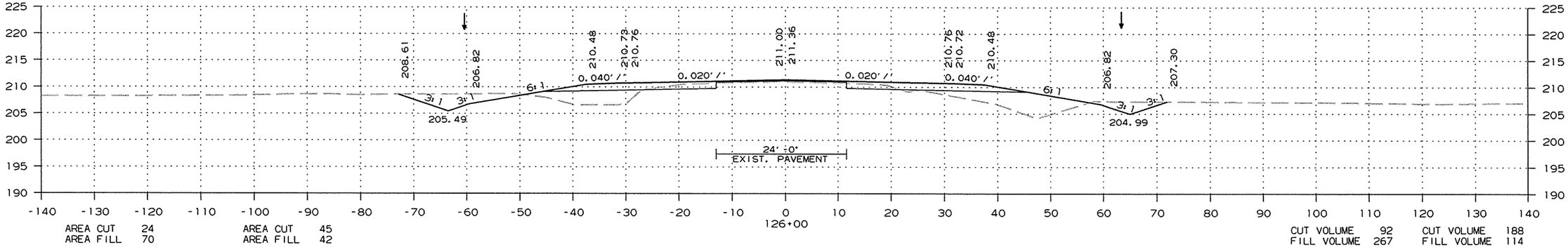
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	211	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 126+00 TO STA. 126+40

9/30/2013

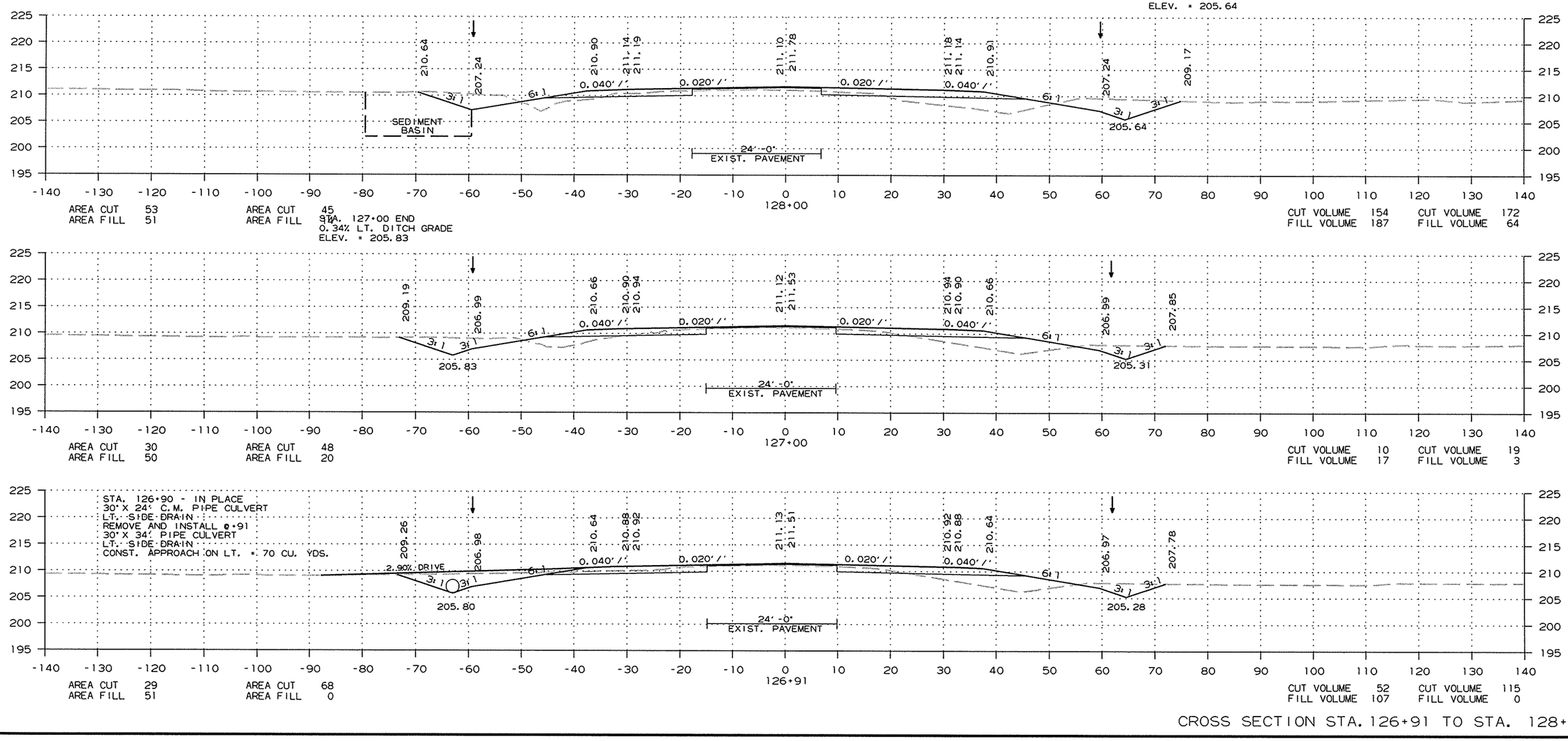
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	212	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 126+91 TO STA. 128+00

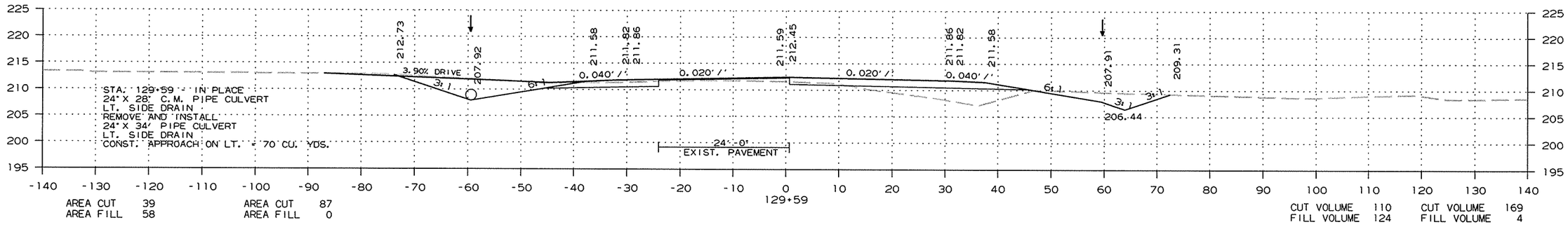
9/30/2013

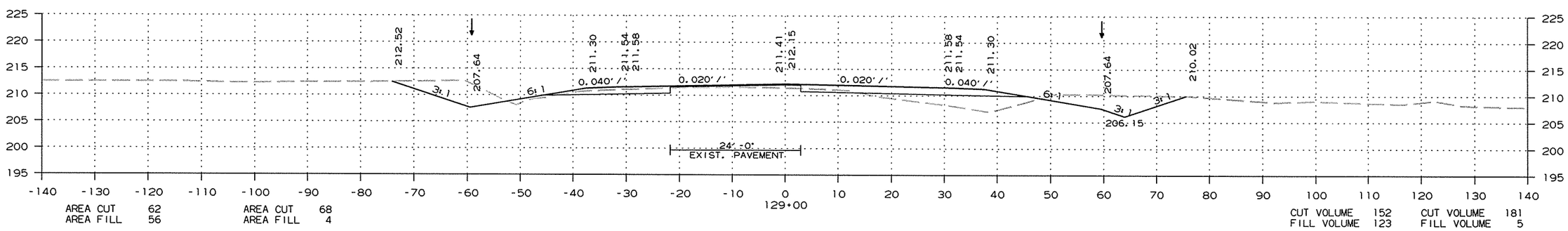
R110217.DGN

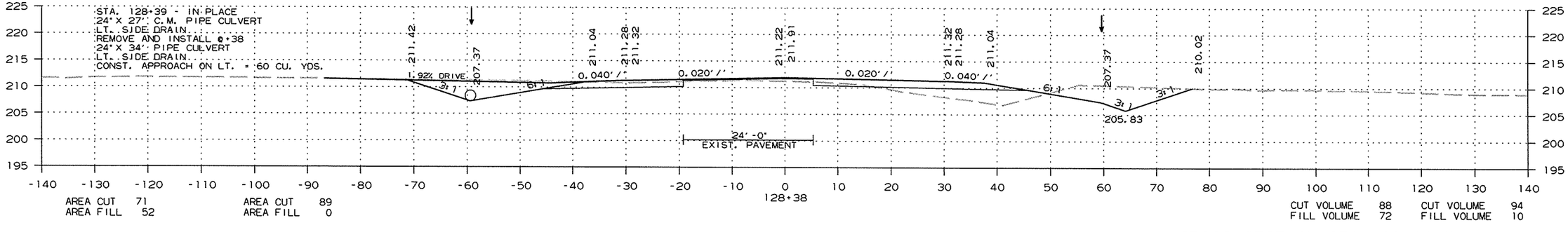
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	213	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 128+38 TO STA. 129+59

9/30/2013

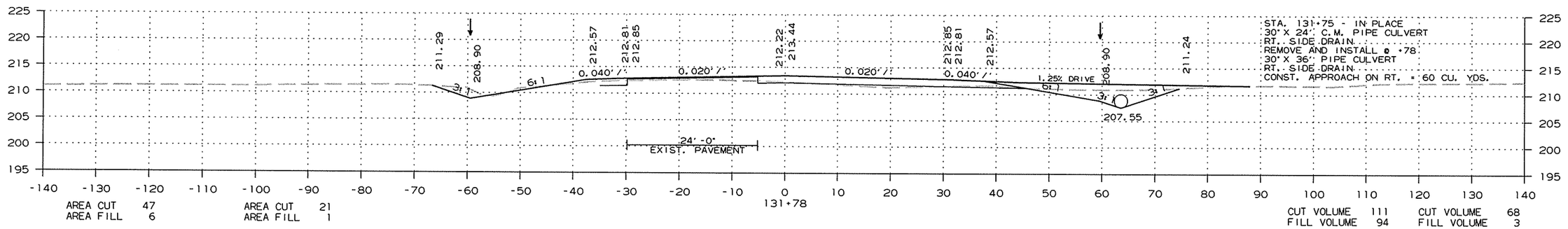
R110217.DGN

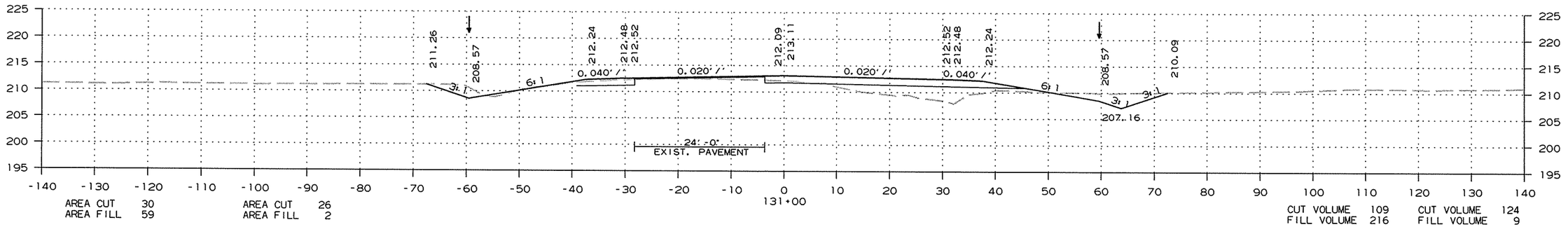
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	214	348

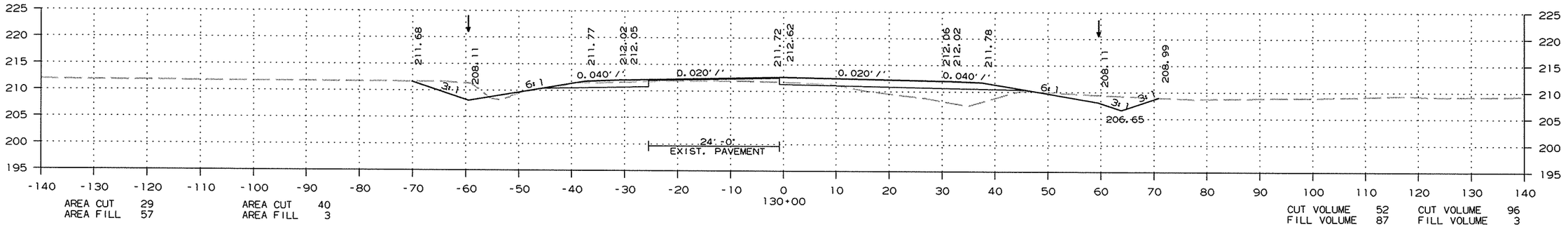
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 130+00 TO STA. 131+78

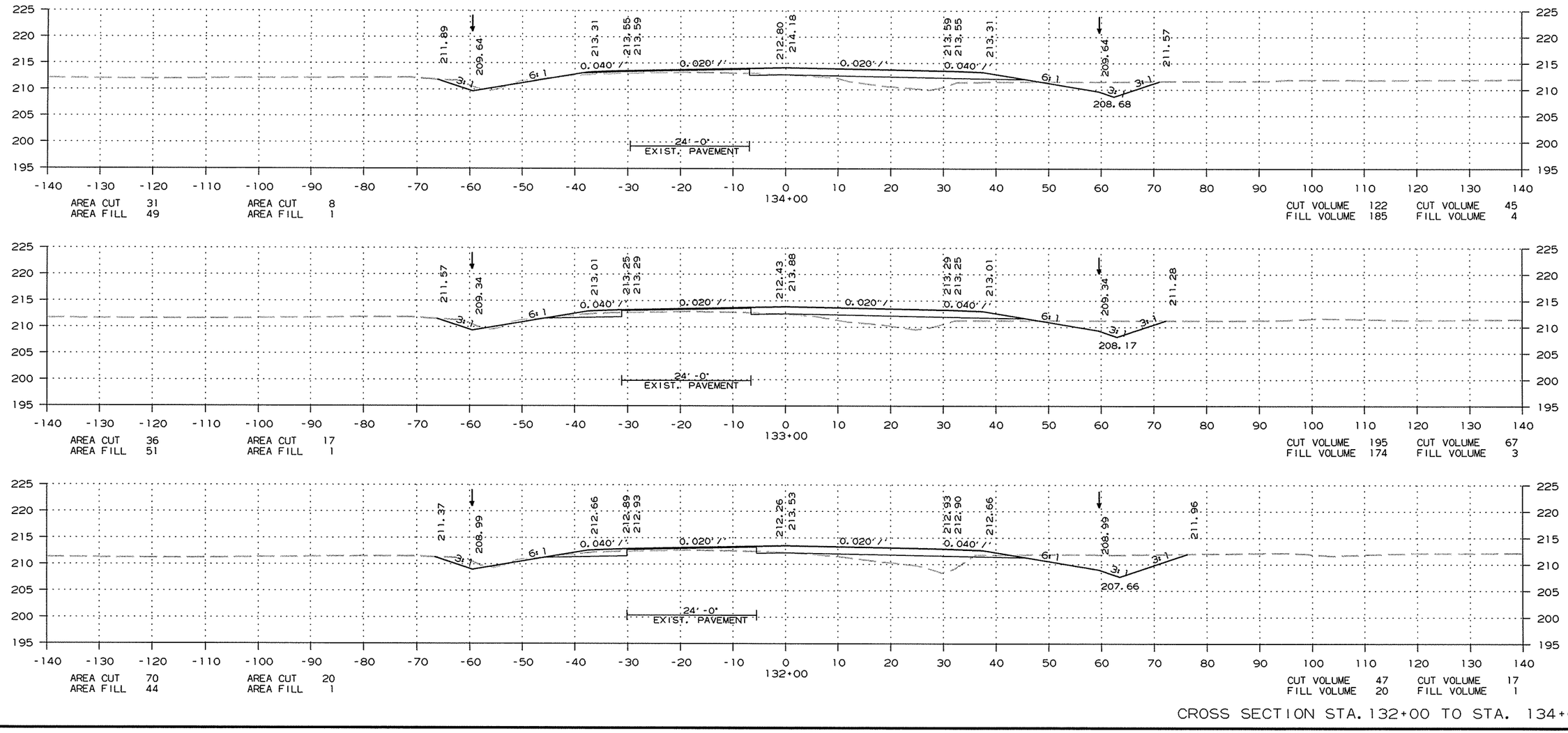
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	215	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 132+00 TO STA. 134+00

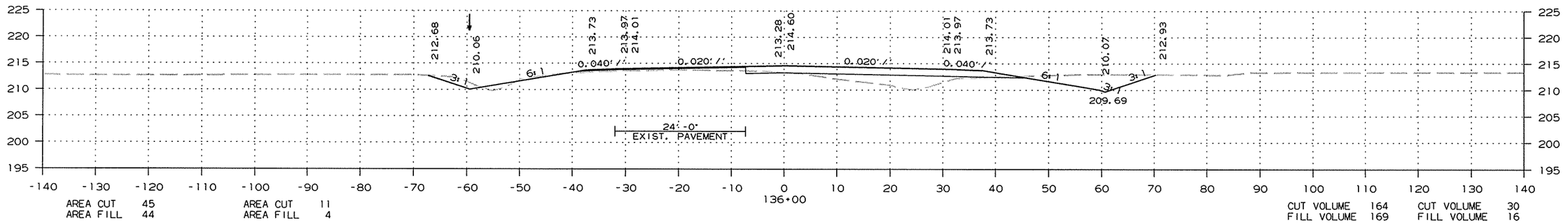
9/30/2013

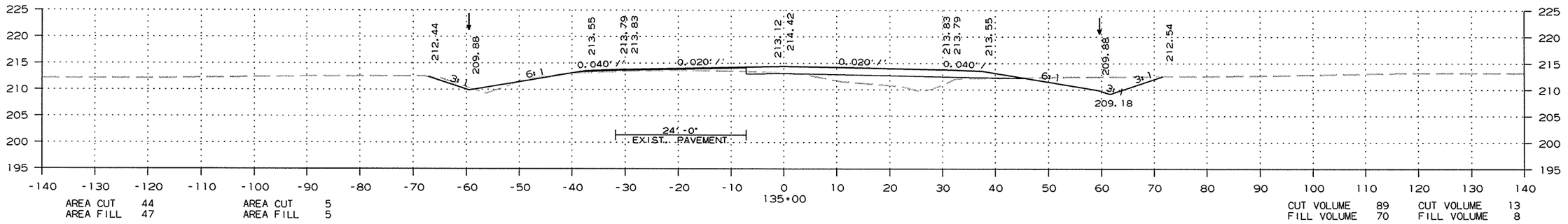
R110217.DGN

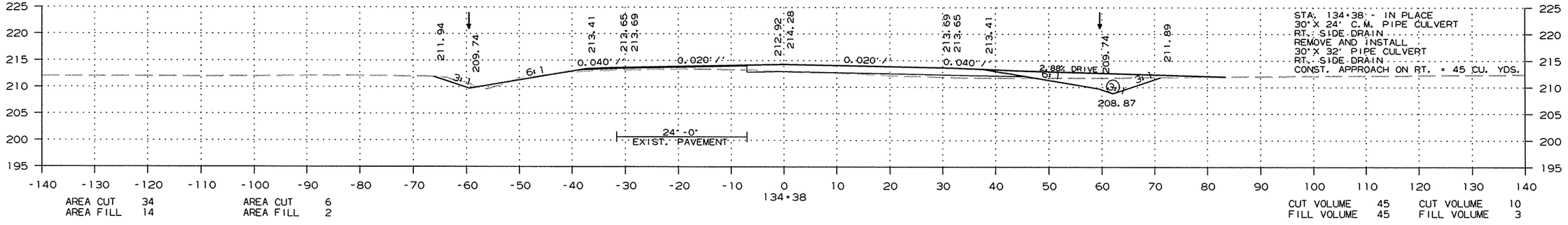
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	216	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 134+38 TO STA. 136+00

9/30/2013

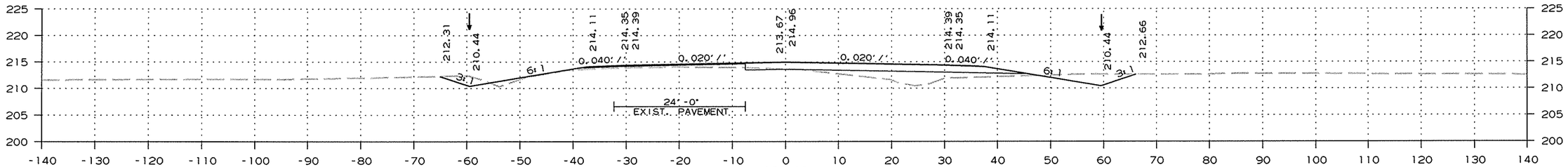
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	217	348

(2) CROSS SECTIONS

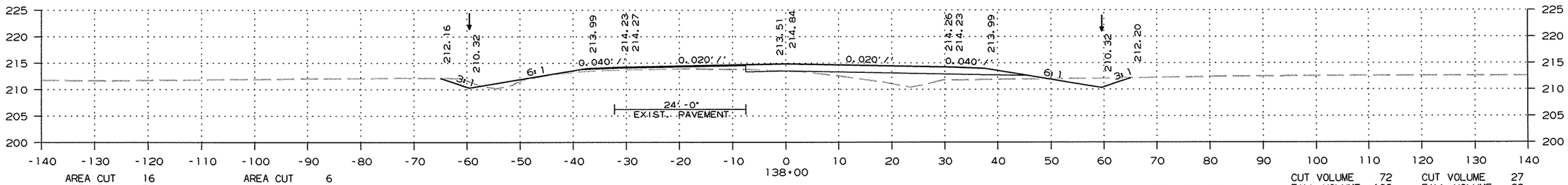
STAGE 1 STAGE 2

STAGE 1 STAGE 2



AREA CUT 23 AREA CUT 9
AREA FILL 48 AREA FILL 4

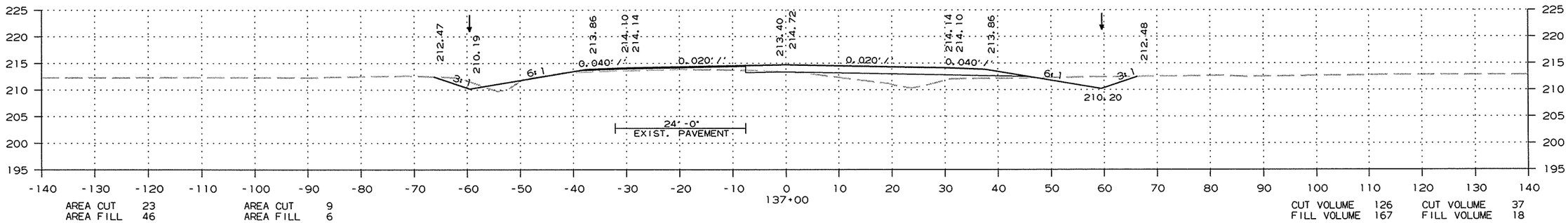
CUT VOLUME 71 CUT VOLUME 28
FILL VOLUME 185 FILL VOLUME 20



AREA CUT 16 AREA CUT 6
AREA FILL 52 AREA FILL 6

CUT VOLUME 72 CUT VOLUME 27
FILL VOLUME 182 FILL VOLUME 23

STA. 137+00 END
0.51% RT. DITCH GRADE
ELEV. = 210.20



AREA CUT 23 AREA CUT 9
AREA FILL 46 AREA FILL 6

CUT VOLUME 126 CUT VOLUME 37
FILL VOLUME 167 FILL VOLUME 18

CROSS SECTION STA. 137+00 TO STA. 139+00

9/30/2013

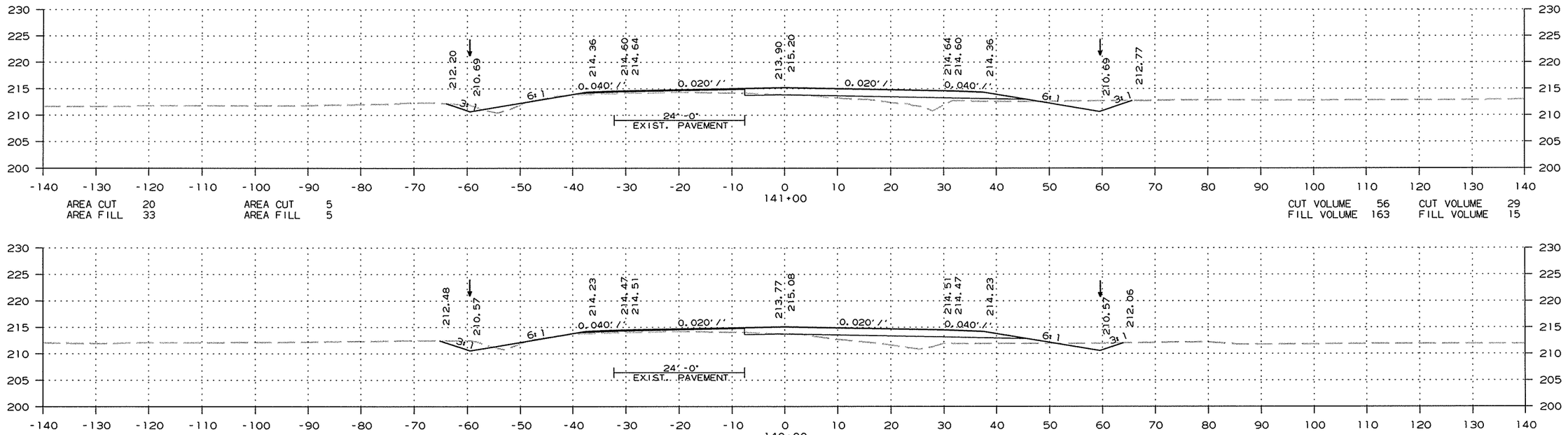
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	218	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 139+34 TO STA. 141+00

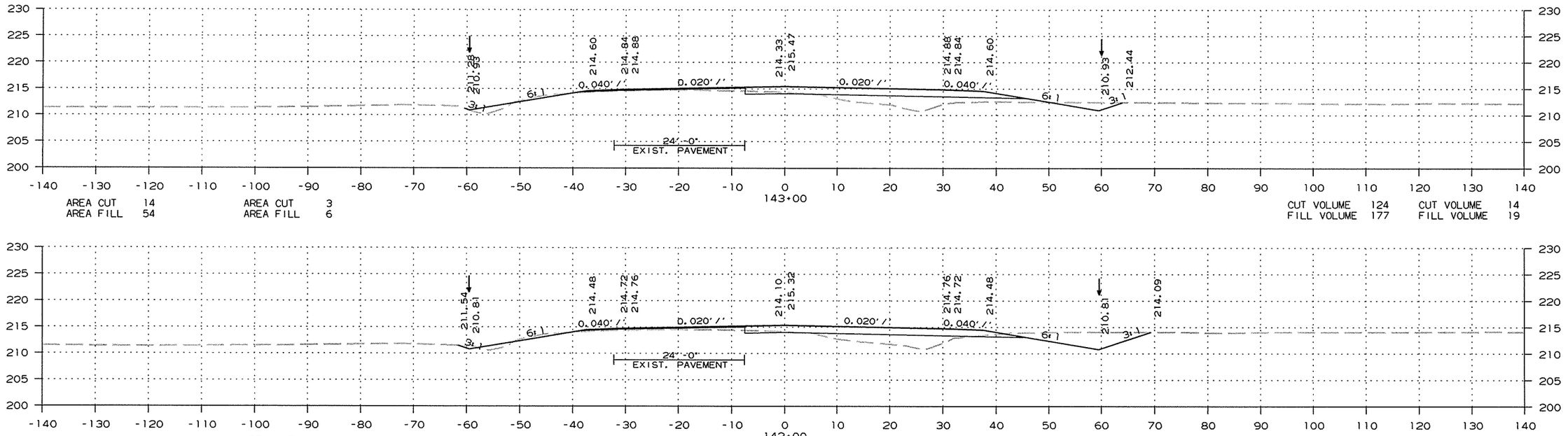
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	219	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 141+12 TO STA. 143+00

9/30/2013

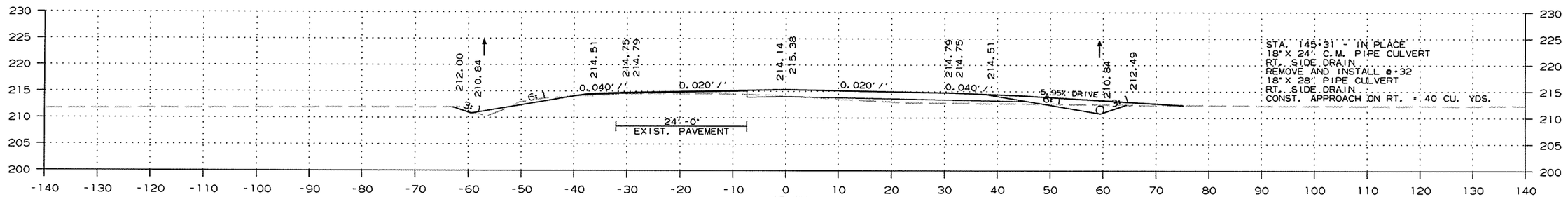
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	220	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

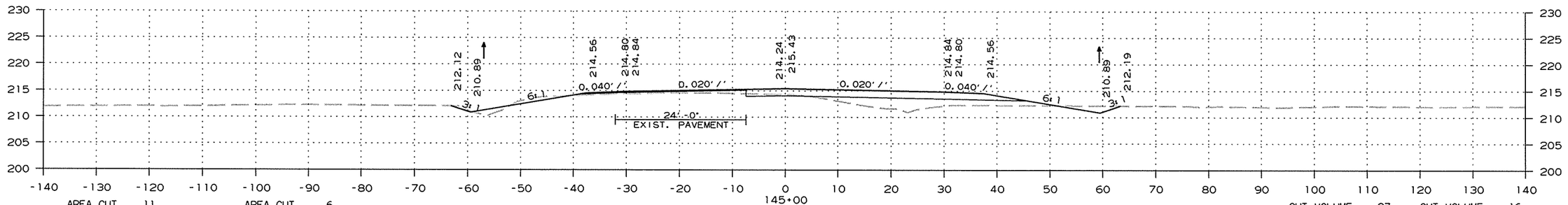


AREA CUT 16 AREA FILL 22

AREA CUT 5 AREA FILL 4

CUT VOLUME 16 FILL VOLUME 47

CUT VOLUME 7 FILL VOLUME 5

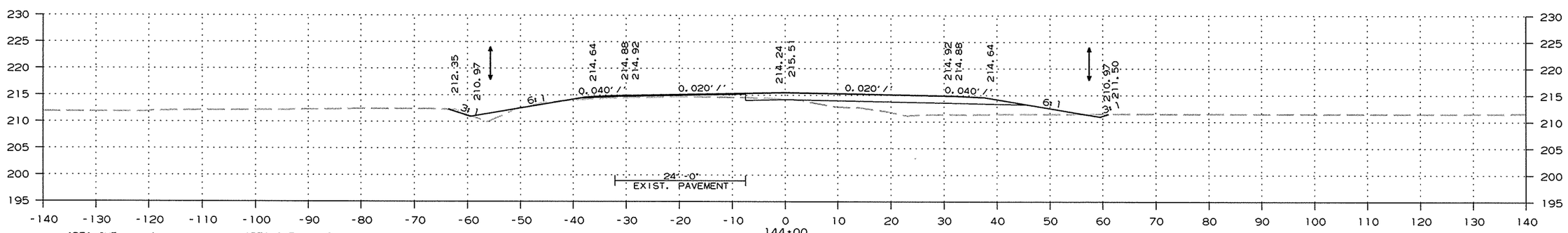


AREA CUT 11 AREA FILL 57

AREA CUT 6 AREA FILL 5

CUT VOLUME 27 FILL VOLUME 261

CUT VOLUME 16 FILL VOLUME 21



AREA CUT 4 AREA FILL 84

AREA CUT 2 AREA FILL 7

CUT VOLUME 33 FILL VOLUME 254

CUT VOLUME 10 FILL VOLUME 24

CROSS SECTION STA. 144+00 TO STA. 145+32

9/30/2013

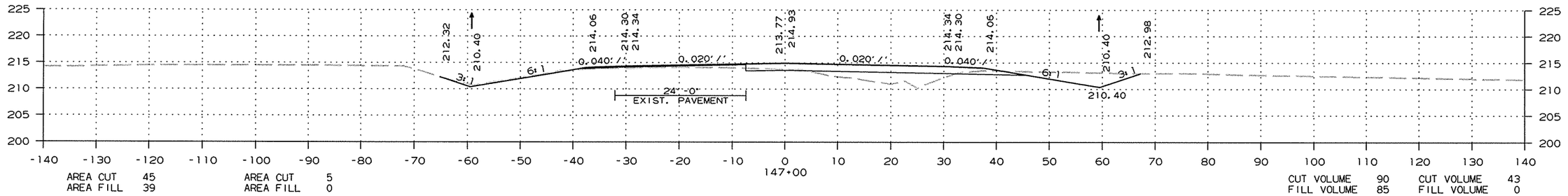
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	221	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



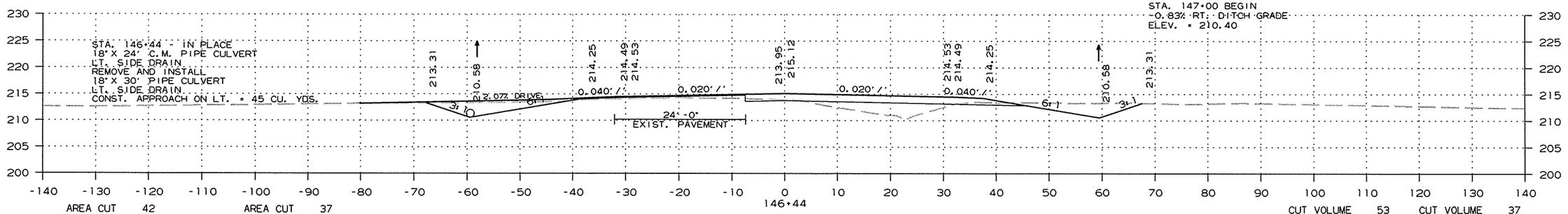
AREA CUT 45 AREA FILL 39

AREA CUT 5 AREA FILL 0

CUT VOLUME 90 FILL VOLUME 85

CUT VOLUME 43 FILL VOLUME 0

STA. 147+00 BEGIN
-0.83% RT. DITCH GRADE
ELEV. = 210.40

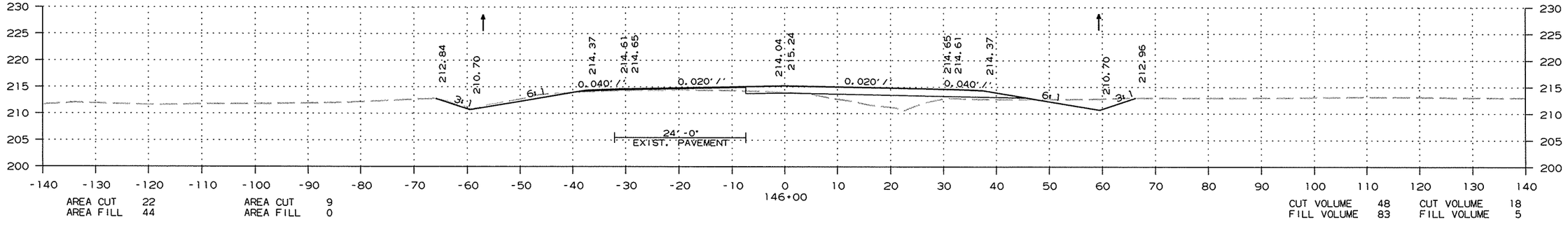


AREA CUT 42 AREA FILL 43

AREA CUT 37 AREA FILL 0

CUT VOLUME 53 FILL VOLUME 71

CUT VOLUME 37 FILL VOLUME 0



AREA CUT 22 AREA FILL 44

AREA CUT 9 AREA FILL 0

CUT VOLUME 48 FILL VOLUME 83

CUT VOLUME 18 FILL VOLUME 5

CROSS SECTION STA. 146+00 TO STA. 147+00

9/30/2013

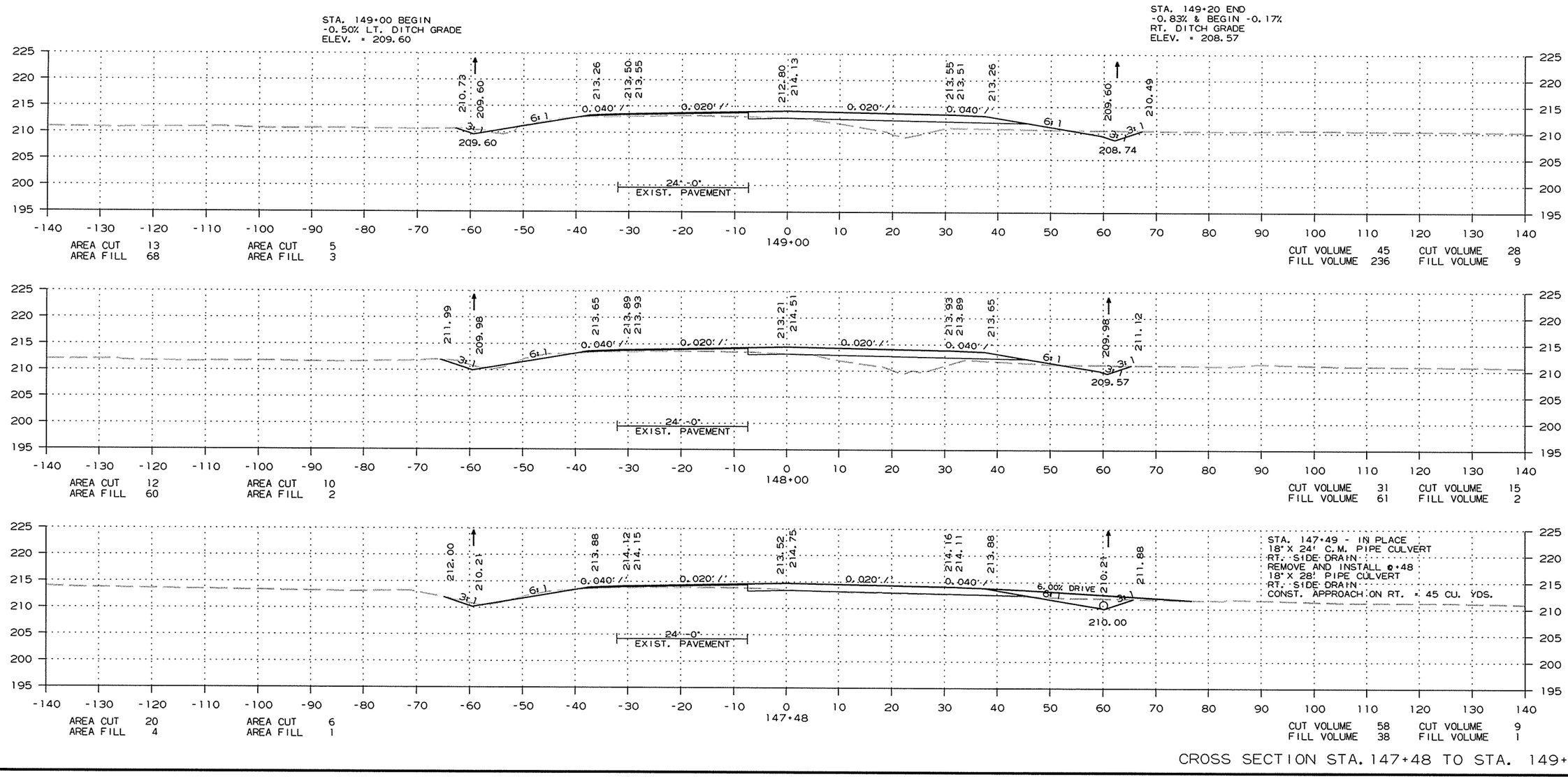
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	222	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 147+48 TO STA. 149+00

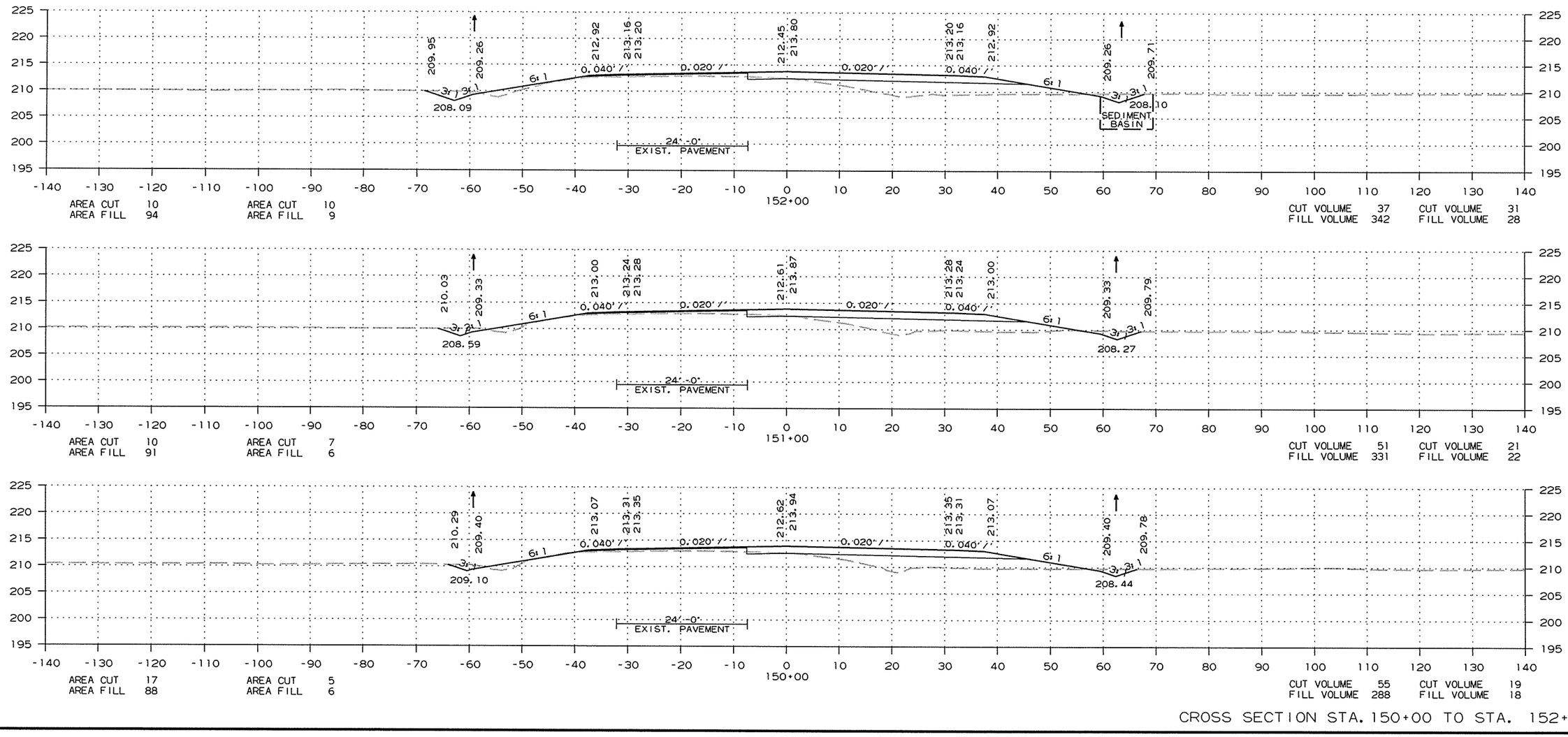
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	223	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 150+00 TO STA. 152+00

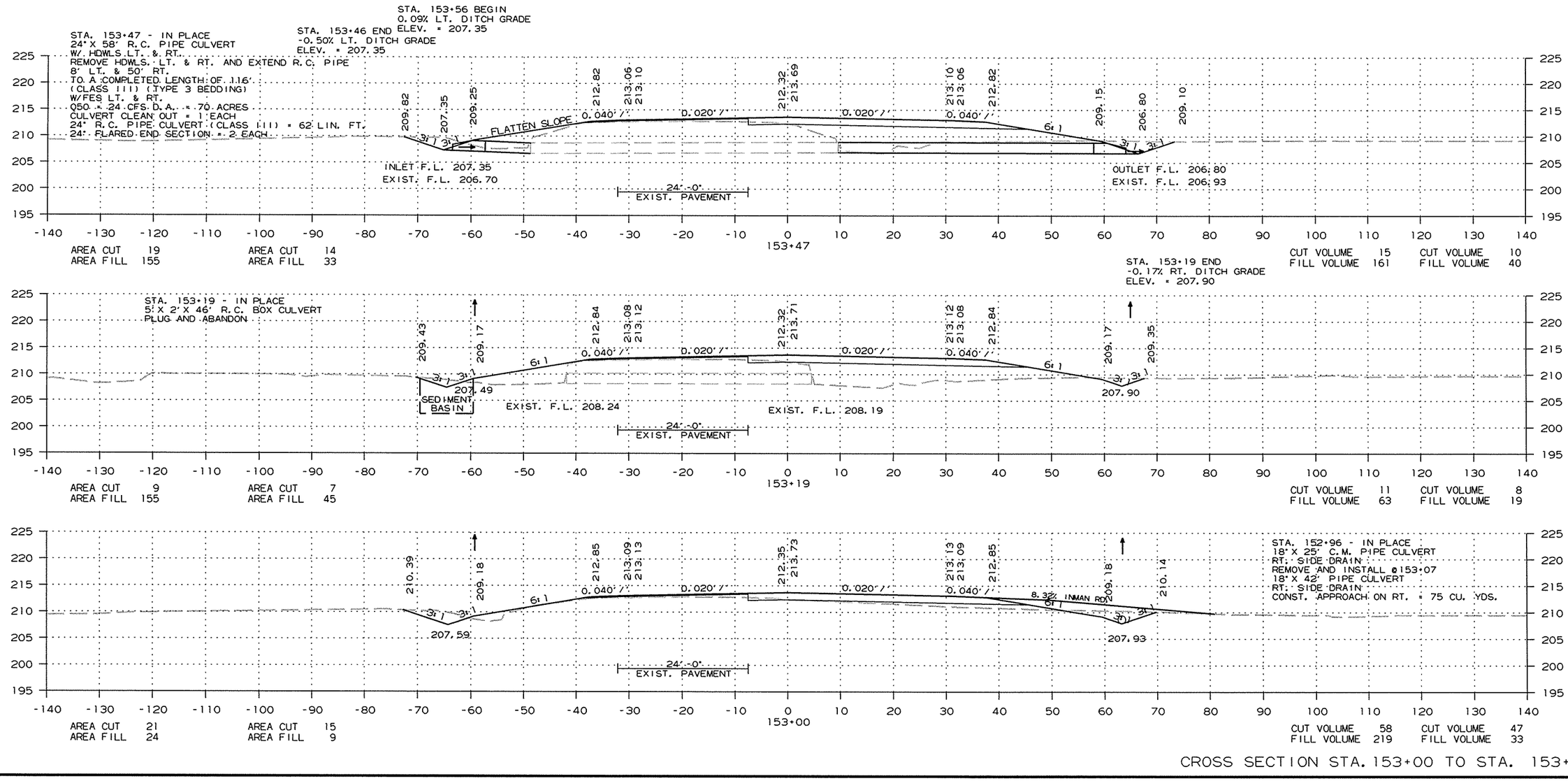
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	224	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 153+00 TO STA. 153+47

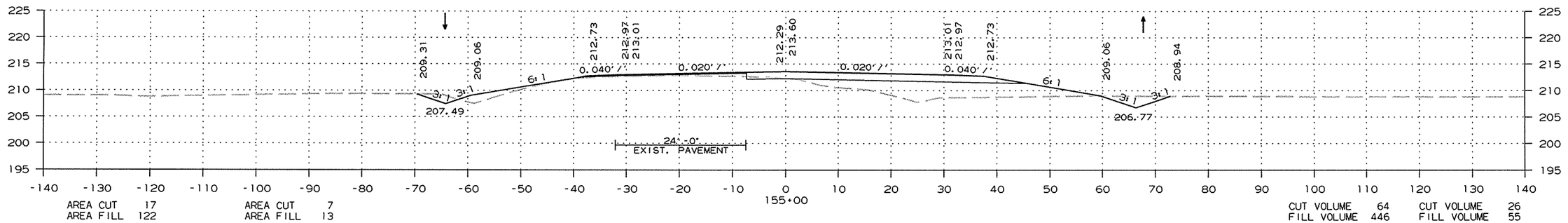
9/30/2013

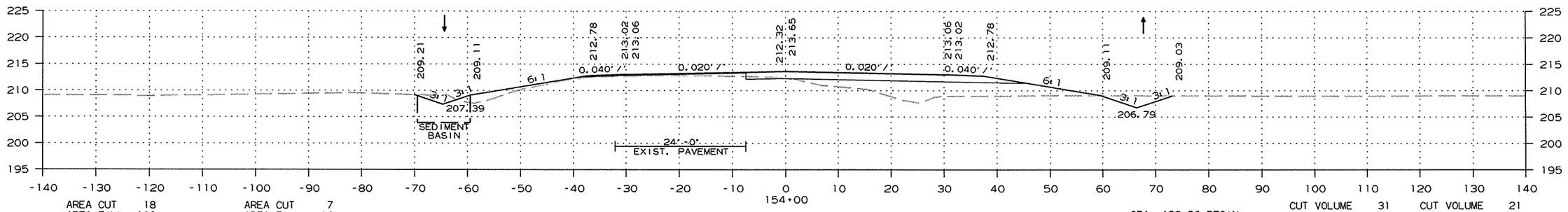
R110217.DGN

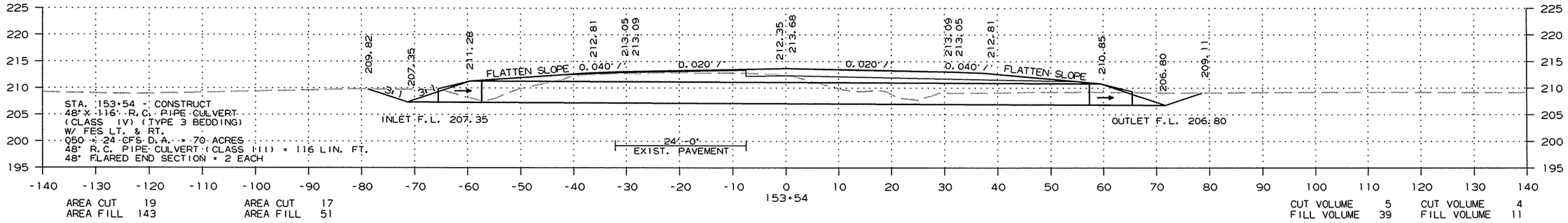
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	225	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 153+54 TO STA. 155+00

9/30/2013

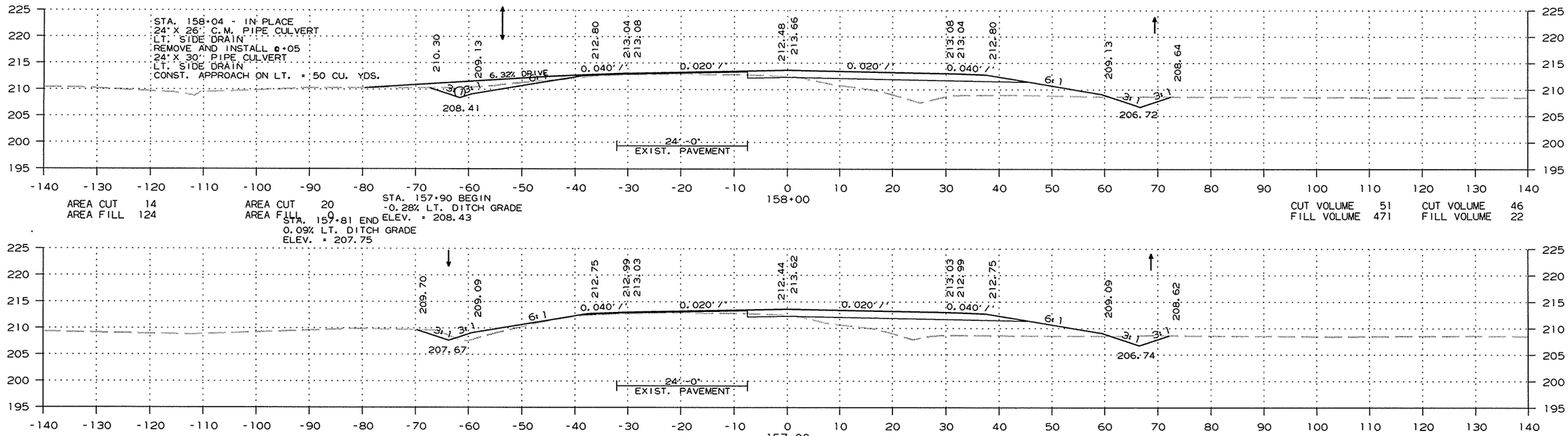
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	226	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 156+00 TO STA. 158+00

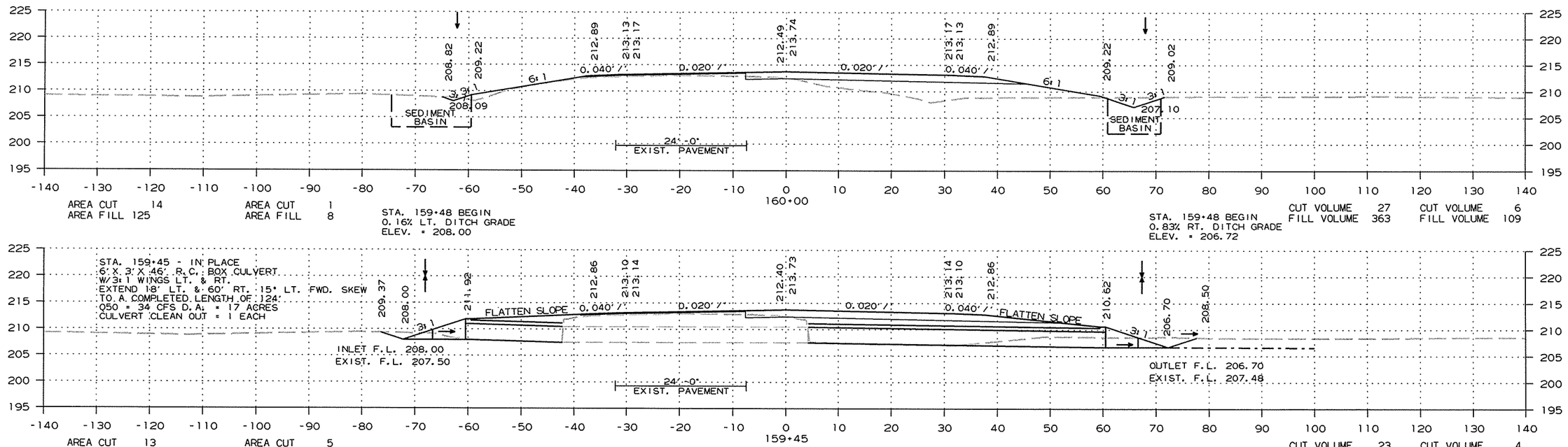
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	227	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 159+00 TO STA. 160+00

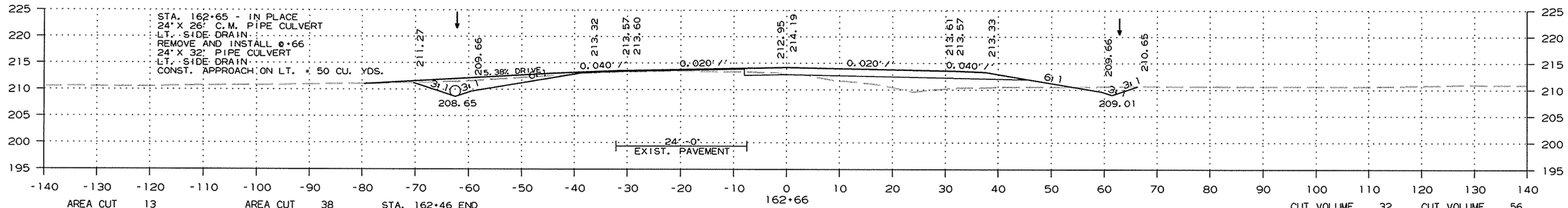
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	228	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 161+00 TO STA. 162+66

9/30/2013

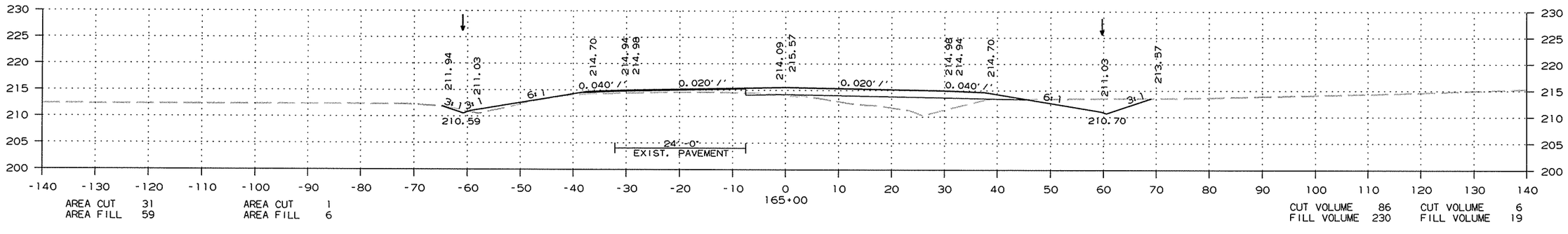
R110217.DGN

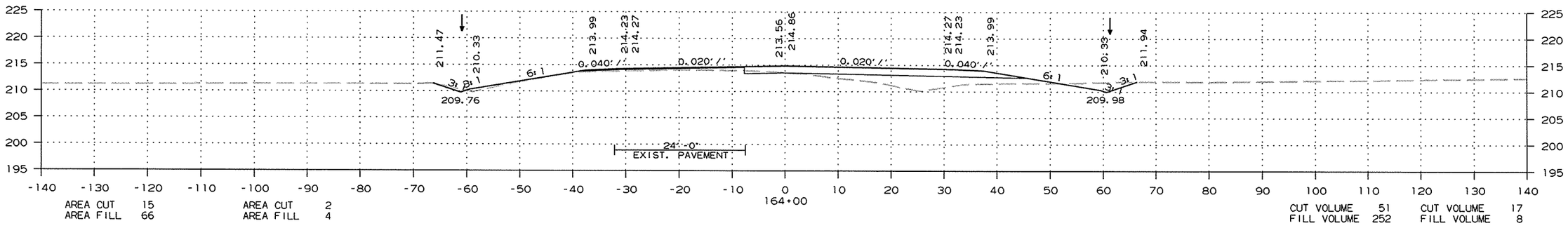
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	229	348

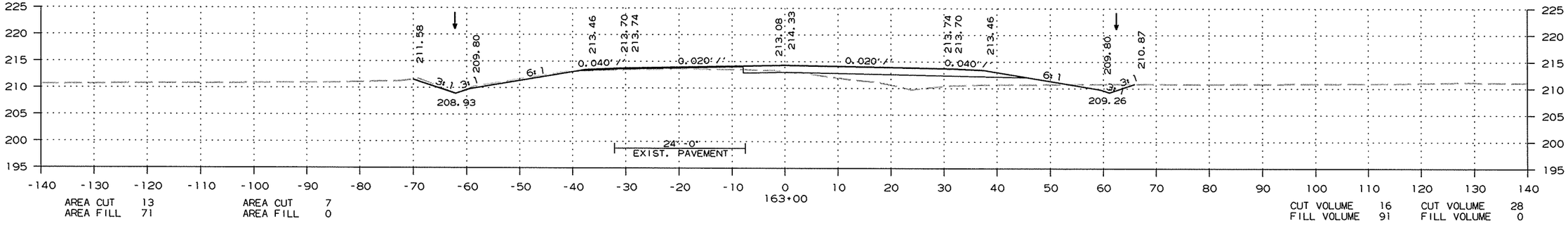
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 163+00 TO STA. 165+00

9/30/2013

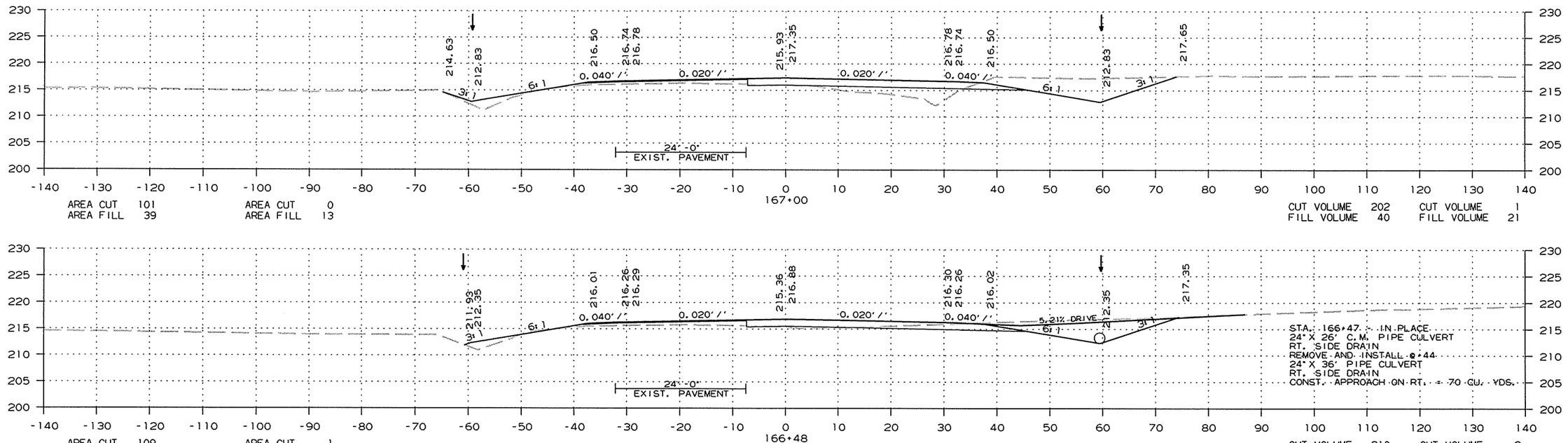
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	230	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 166+00 TO STA. 167+00

9/30/2013

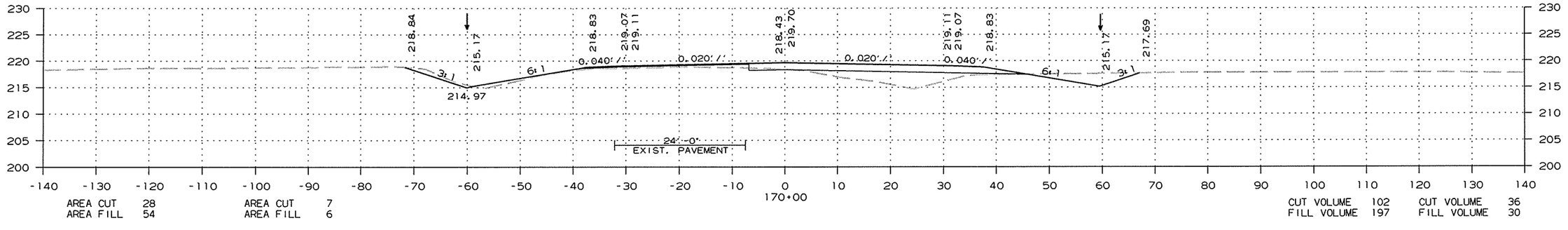
R110217.DGN

STAGE 1 STAGE 2

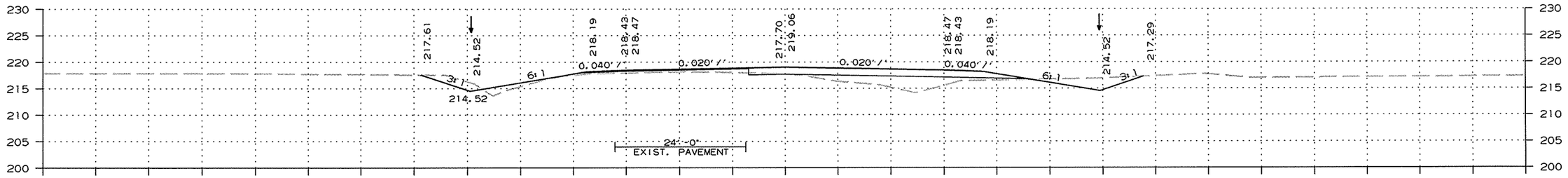
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	231	348

(2) CROSS SECTIONS

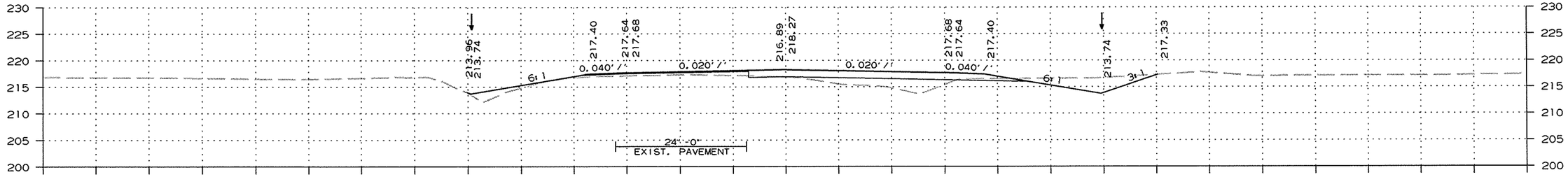
STAGE 1 STAGE 2



AREA CUT 28 AREA FILL 54 | AREA CUT 7 AREA FILL 6 | CUT VOLUME 102 FILL VOLUME 197 | CUT VOLUME 36 FILL VOLUME 30



AREA CUT 27 AREA FILL 52 | AREA CUT 13 AREA FILL 10 | STA. 169+00 BEGIN 0.45% LT. DITCH GRADE ELEV. = 214.52 | CUT VOLUME 134 FILL VOLUME 172 | CUT VOLUME 24 FILL VOLUME 41



AREA CUT 46 AREA FILL 40 | AREA CUT 0 AREA FILL 12 | CUT VOLUME 272 FILL VOLUME 146 | CUT VOLUME 0 FILL VOLUME 46

CROSS SECTION STA. 168+00 TO STA. 170+00

9/30/2013

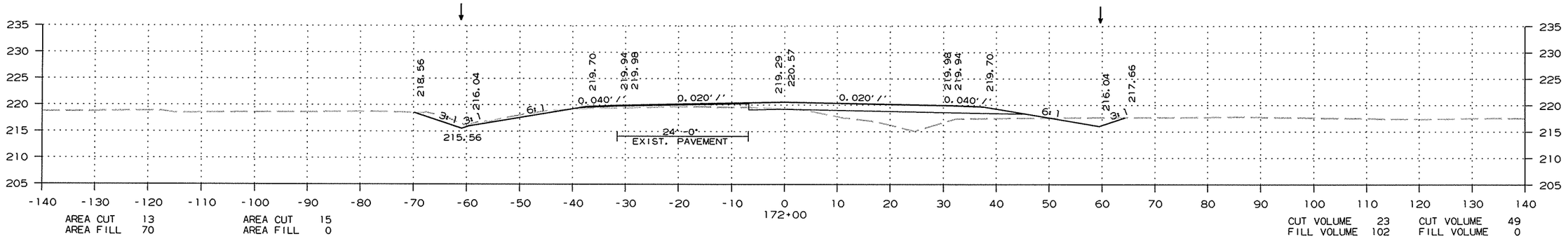
R110217.DGN

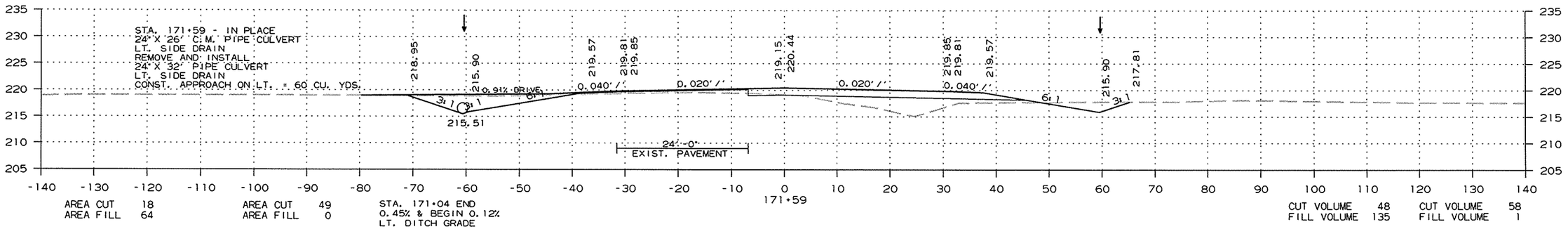
STAGE 1 STAGE 2

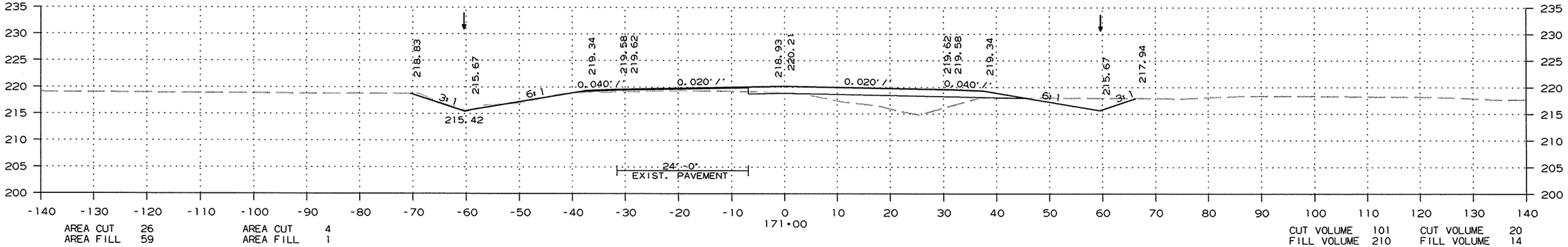
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RO. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	232	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 171+00 TO STA. 172+00

9/30/2013

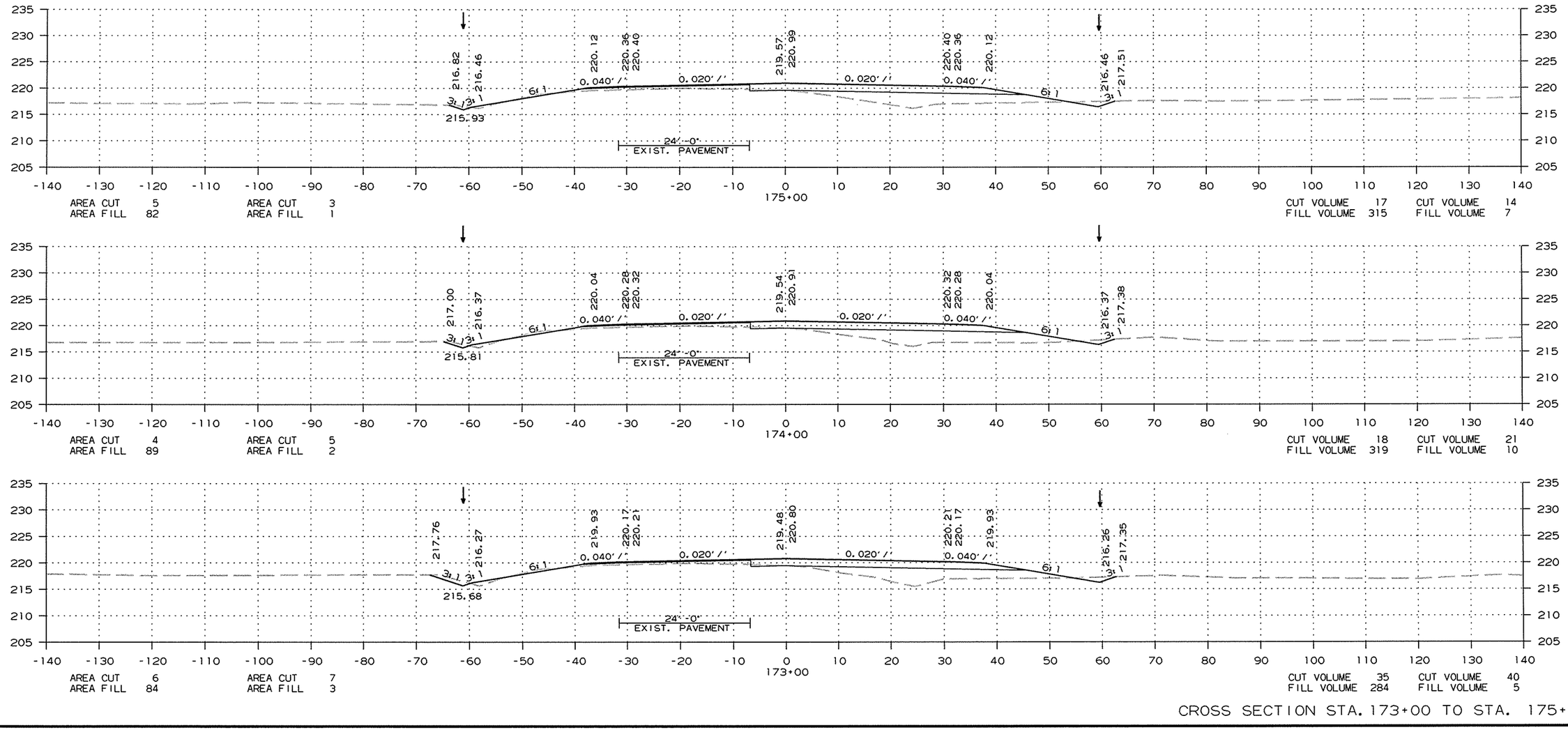
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	233	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 173+00 TO STA. 175+00

9/30/2013

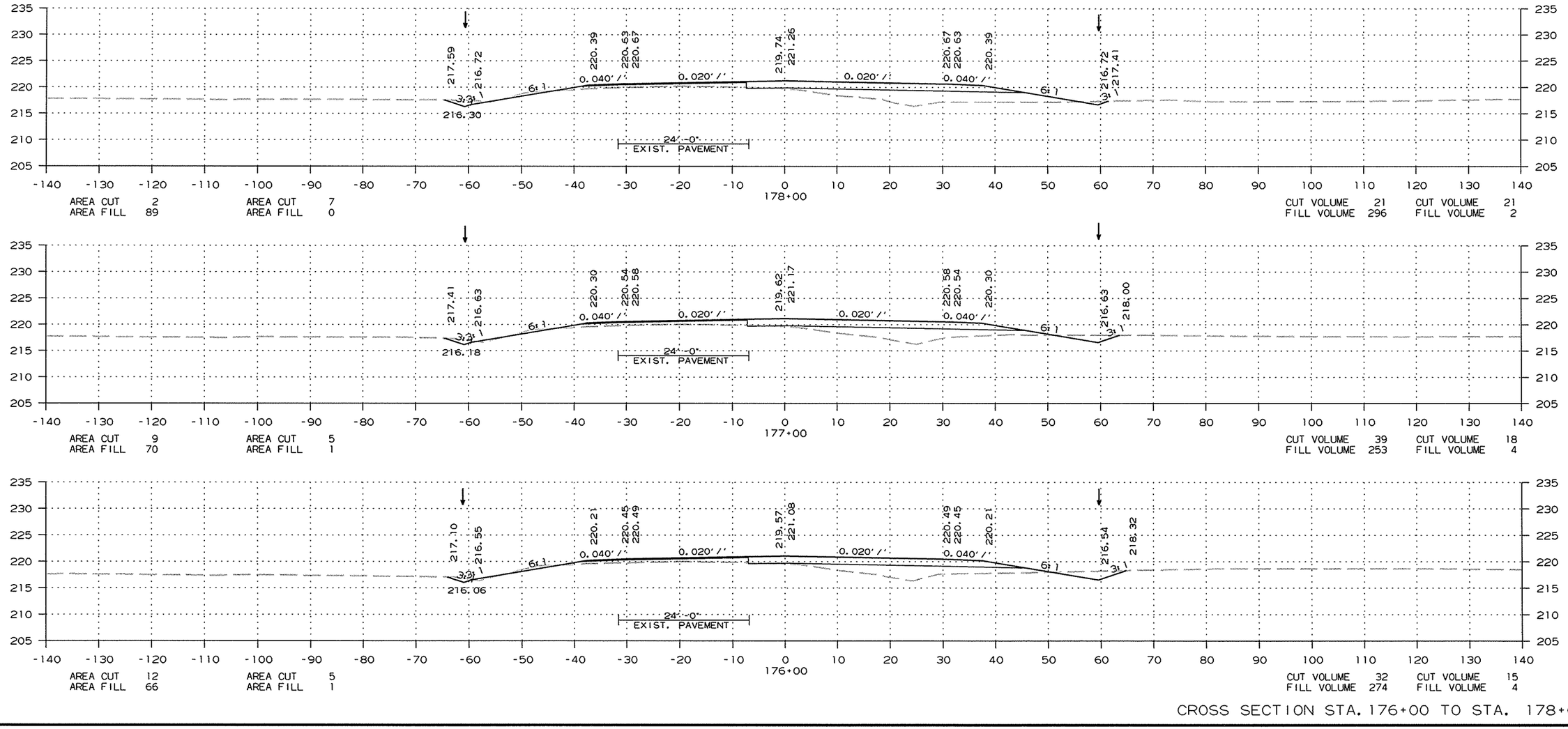
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	234	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 176+00 TO STA. 178+00

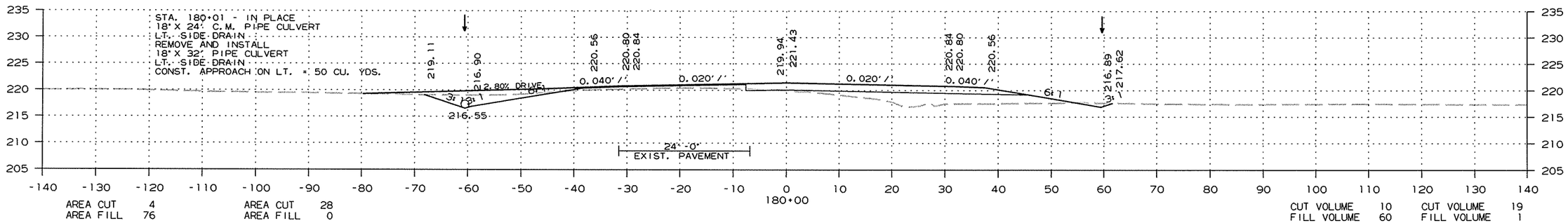
9/30/2013

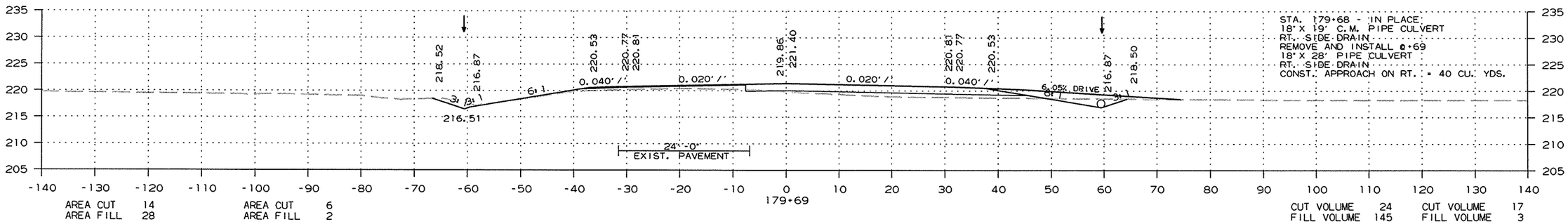
R110217.DGN

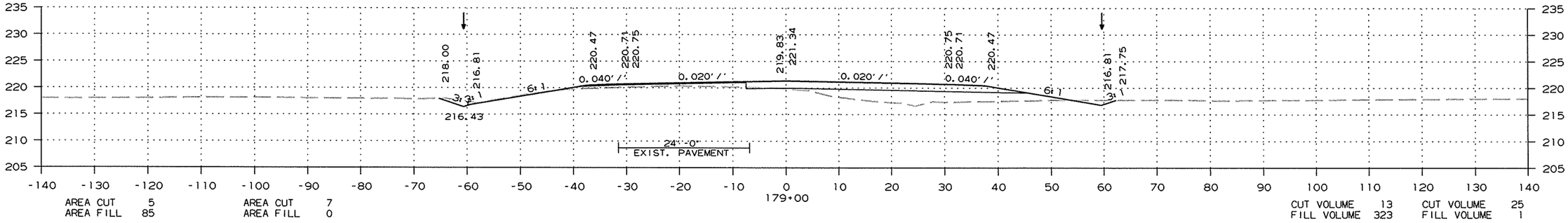
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	235	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 179+00 TO STA. 180+00

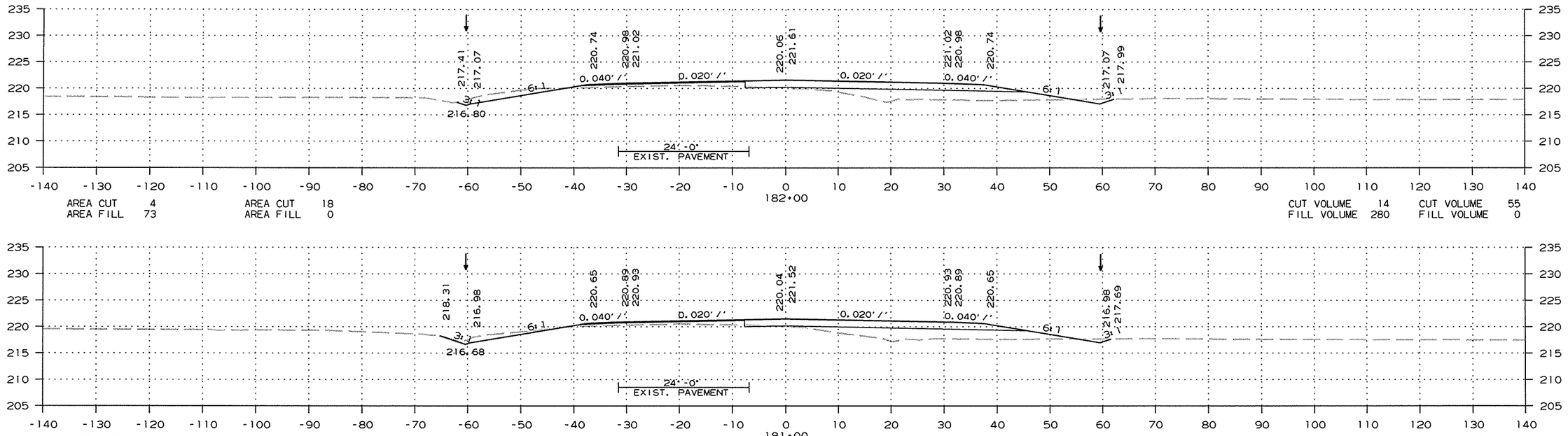
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	236	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 180+61 TO STA. 182+00

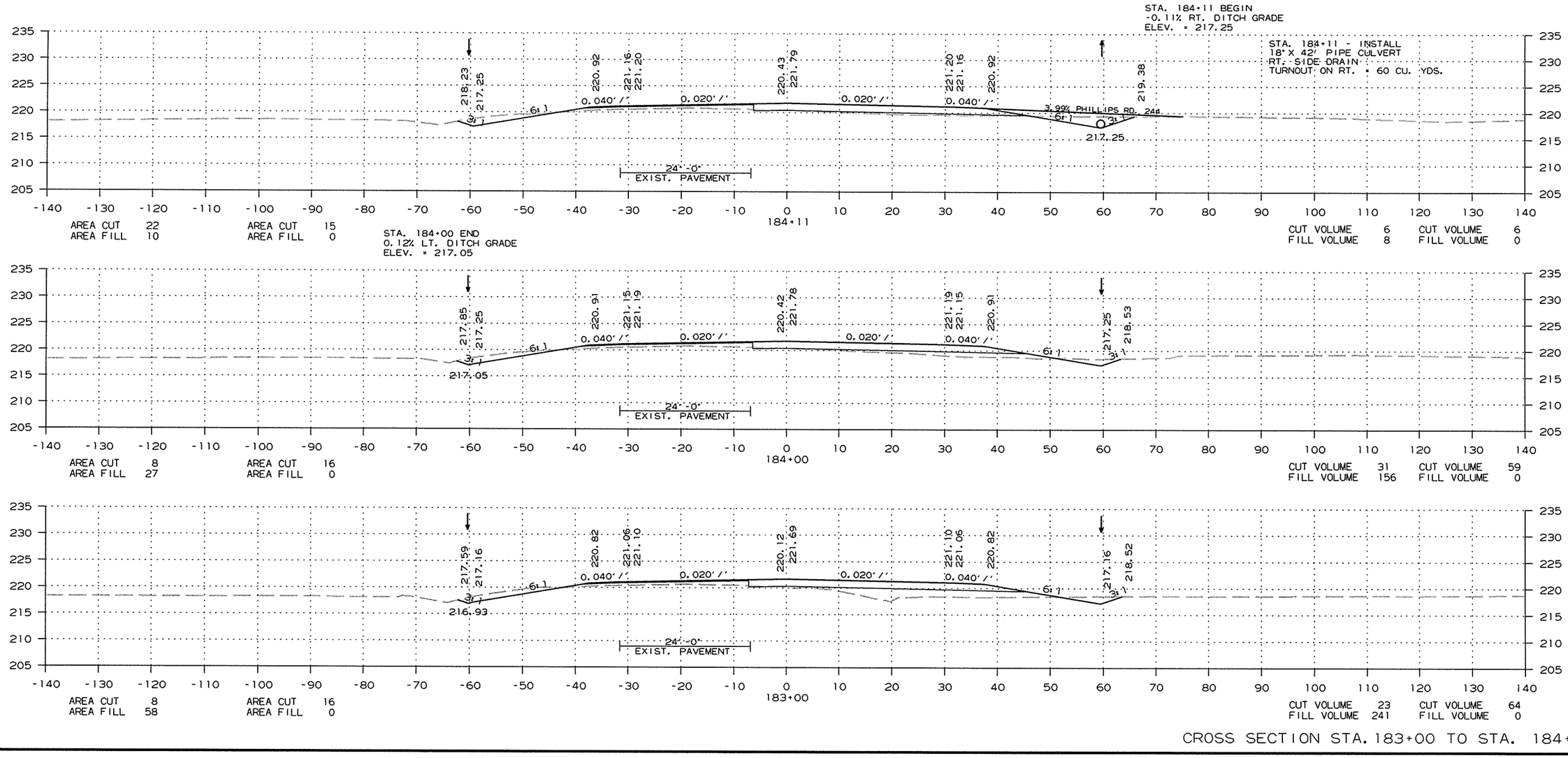
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	237	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 183+00 TO STA. 184+11

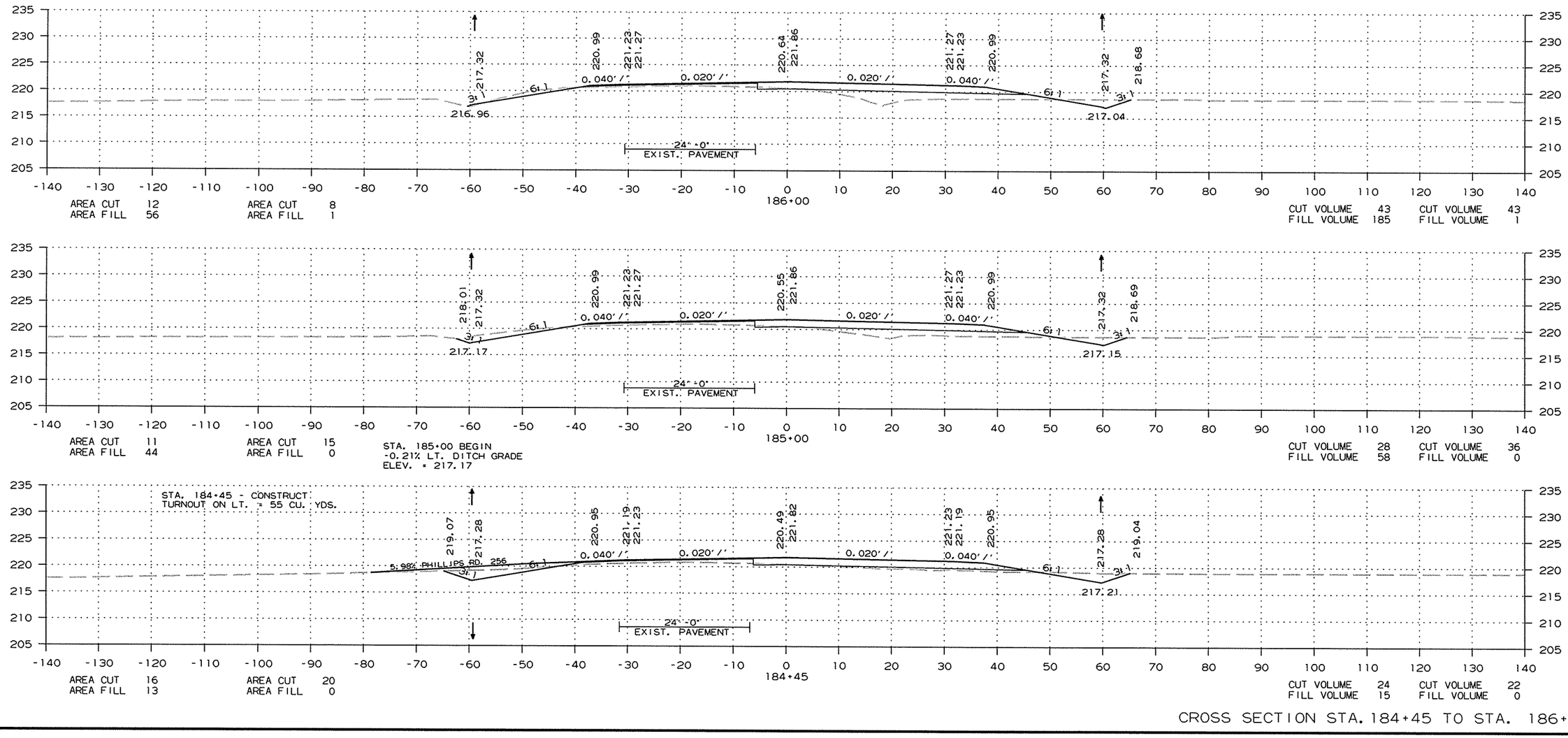
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	238	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 184+45 TO STA. 186+00

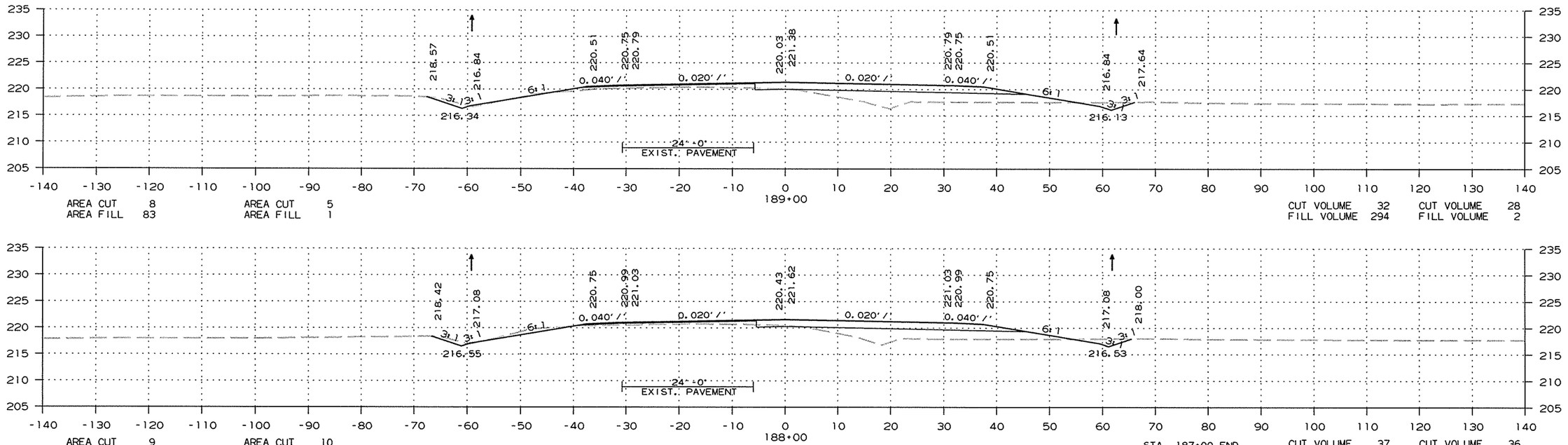
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16 .				6	ARK.			
				JOB NO.		110217	239	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



AREA CUT 8 AREA FILL 83 | AREA CUT 5 AREA FILL 1 | CUT VOLUME 32 FILL VOLUME 294 | CUT VOLUME 28 FILL VOLUME 2

AREA CUT 9 AREA FILL 76 | AREA CUT 10 AREA FILL 0 | STA. 187+00 END -0.11% & BEGIN -0.40% RT. DITCH GRADE ELEV. = 216.93 | CUT VOLUME 37 FILL VOLUME 264 | CUT VOLUME 36 FILL VOLUME 1

AREA CUT 11 AREA FILL 67 | AREA CUT 10 AREA FILL 0 | CUT VOLUME 43 FILL VOLUME 228 | CUT VOLUME 32 FILL VOLUME 2

CROSS SECTION STA. 187+00 TO STA. 189+00

9/30/2013

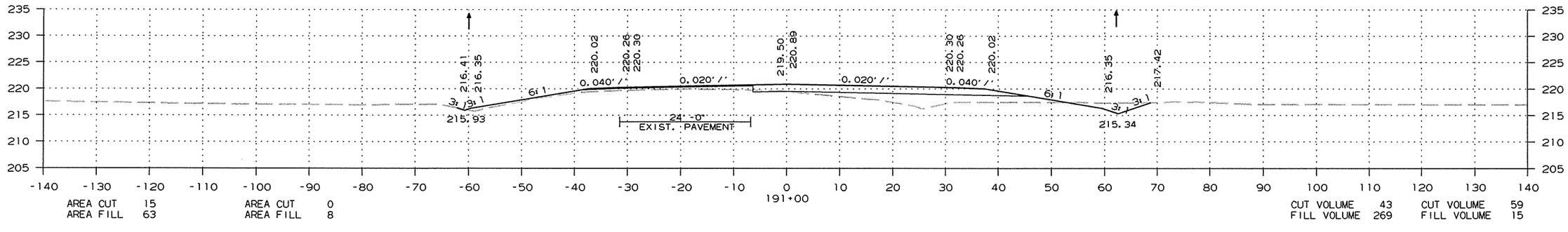
R110217.DGN

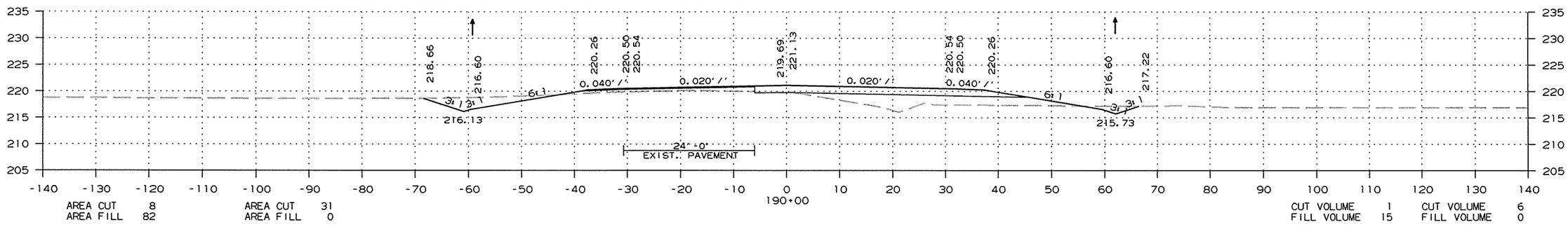
STAGE 1 STAGE 2

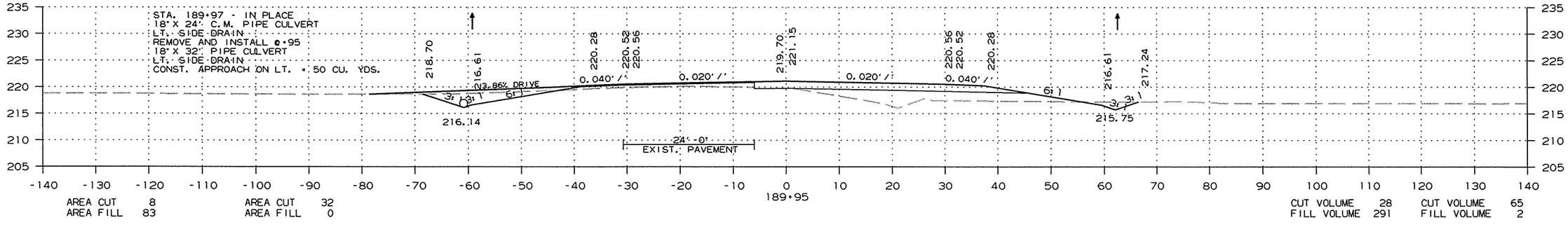
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	240	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 189+95 TO STA. 191+00

9/30/2013

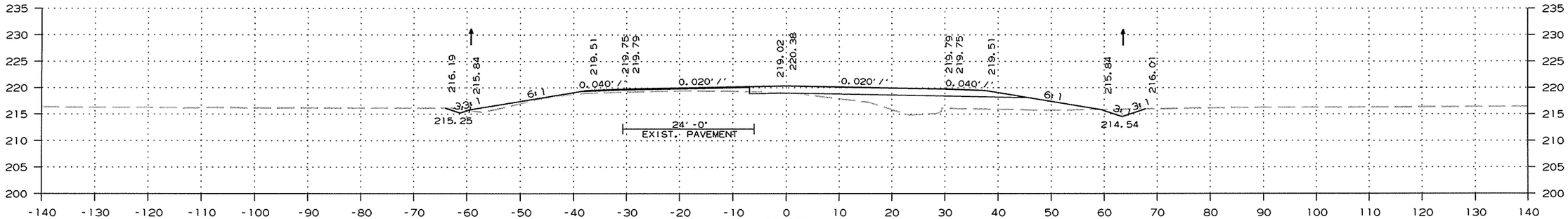
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	241	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

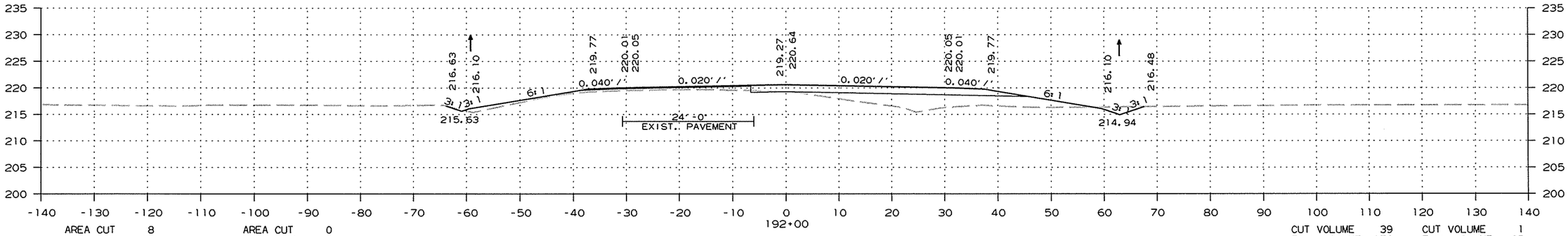


AREA CUT 7
AREA FILL 106

AREA CUT 2
AREA FILL 8

CUT VOLUME 28
FILL VOLUME 372

CUT VOLUME 4
FILL VOLUME 32



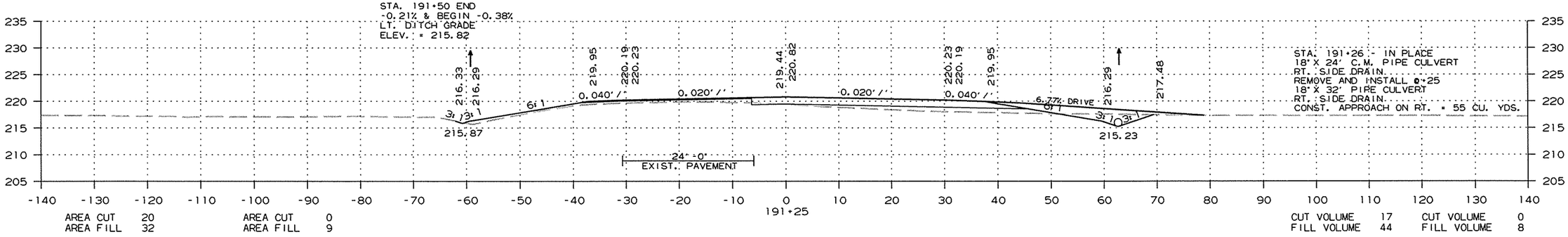
AREA CUT 8
AREA FILL 95

AREA CUT 0
AREA FILL 9

CUT VOLUME 39
FILL VOLUME 176

CUT VOLUME 1
FILL VOLUME 25

STA. 191+50 END
-0.21% & BEGIN -0.38%
LT. DITCH GRADE
ELEV. = 215.82



STA. 191+26 - IN PLACE
18' X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN.
REMOVE AND INSTALL 0+25
18' X 32' PIPE CULVERT
RT. SIDE DRAIN.
CONST. APPROACH ON RT. = 55 CU. YDS.

AREA CUT 20
AREA FILL 32

AREA CUT 0
AREA FILL 9

CUT VOLUME 17
FILL VOLUME 44

CUT VOLUME 0
FILL VOLUME 8

CROSS SECTION STA. 191+25 TO STA. 193+00

9/30/2013

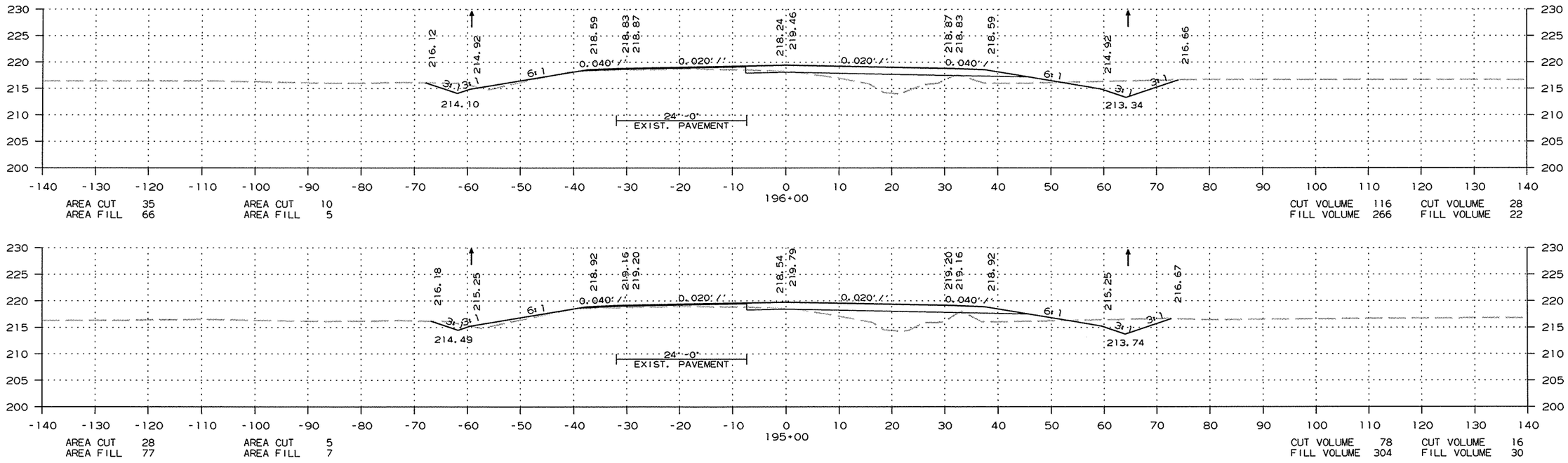
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	242	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 194+00 TO STA. 196+00

9/30/2013

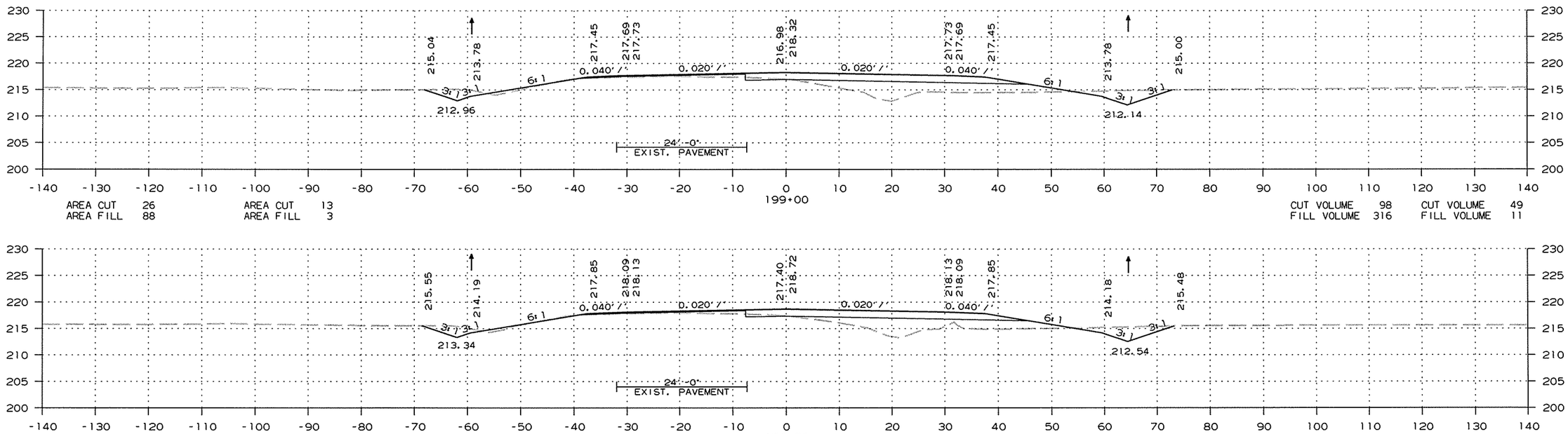
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	243	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



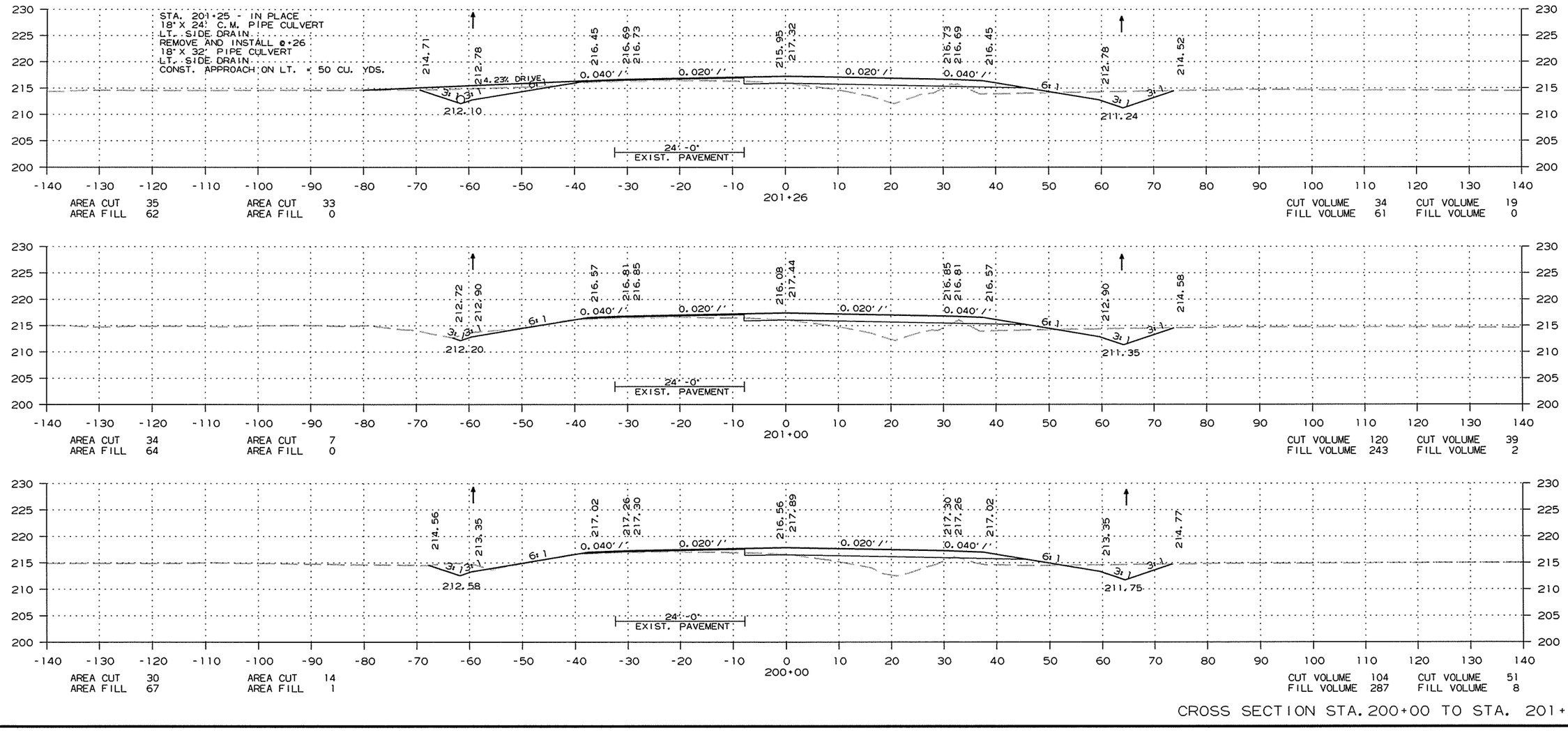
CROSS SECTION STA. 197+00 TO STA. 199+00

9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	244	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 200+00 TO STA. 201+26

9/30/2013

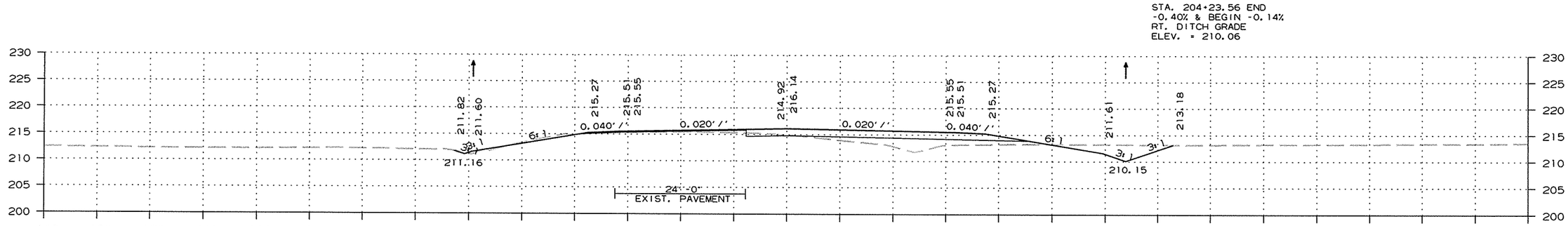
R110217.DGN

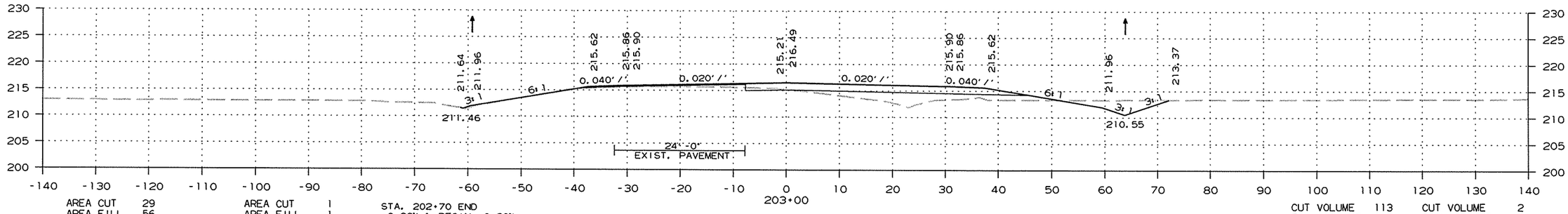
STAGE 1 STAGE 2

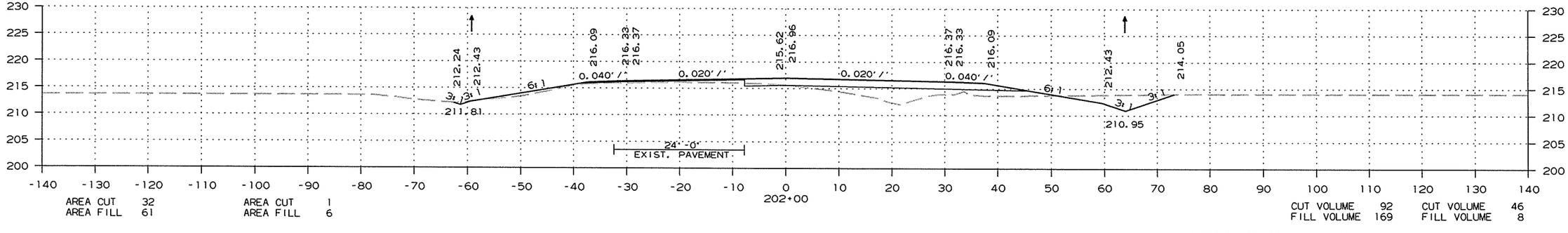
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	245	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 202+00 TO STA. 204+00

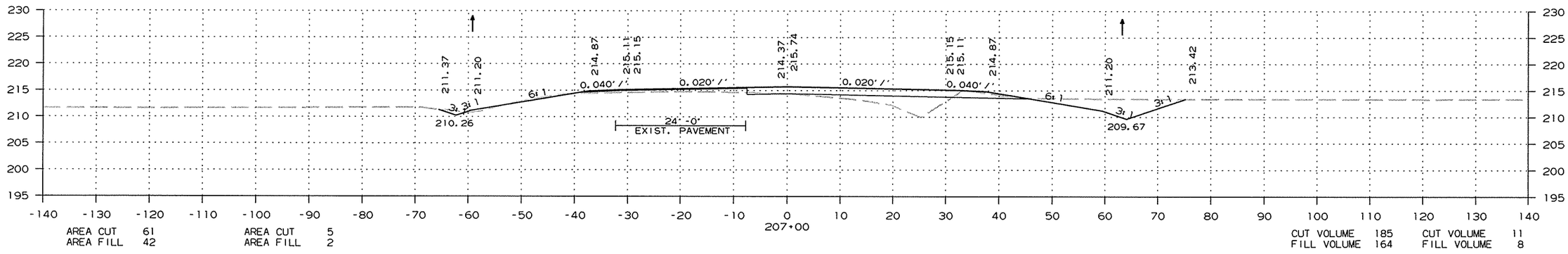
9/30/2013

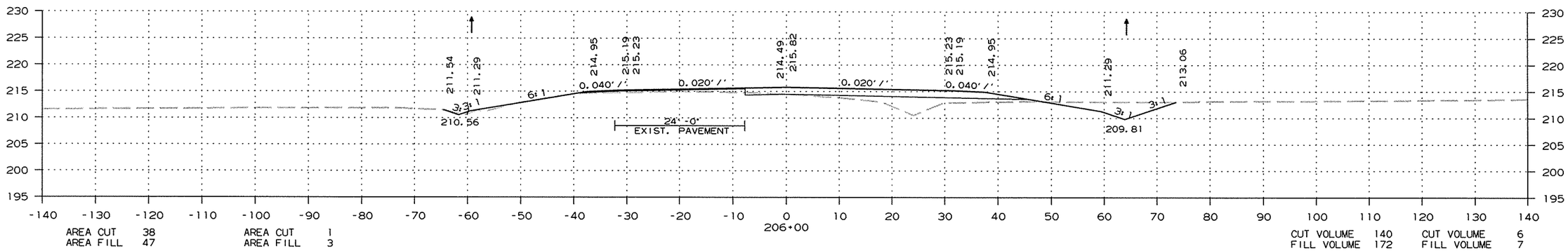
R110217.DGN

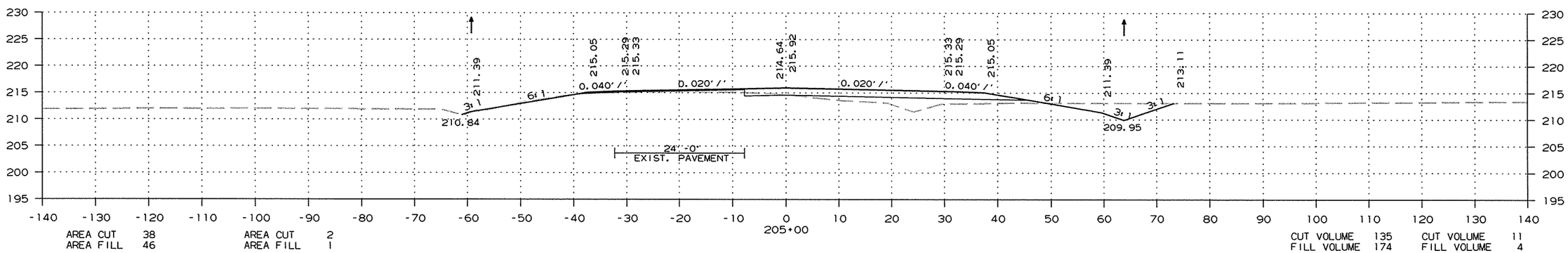
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	246	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 205+00 TO STA. 207+00

9/30/2013

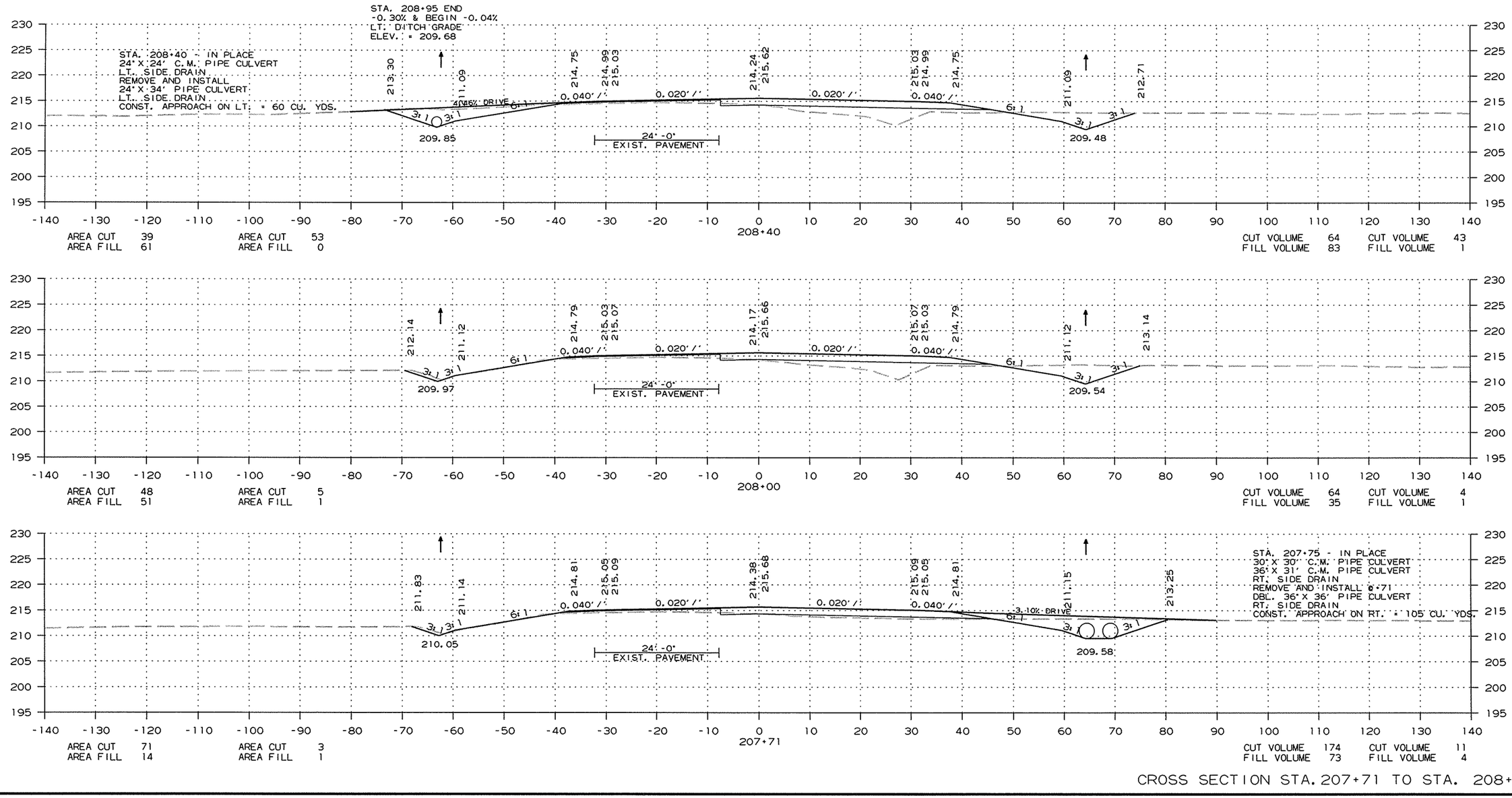
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	247	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 207+71 TO STA. 208+40

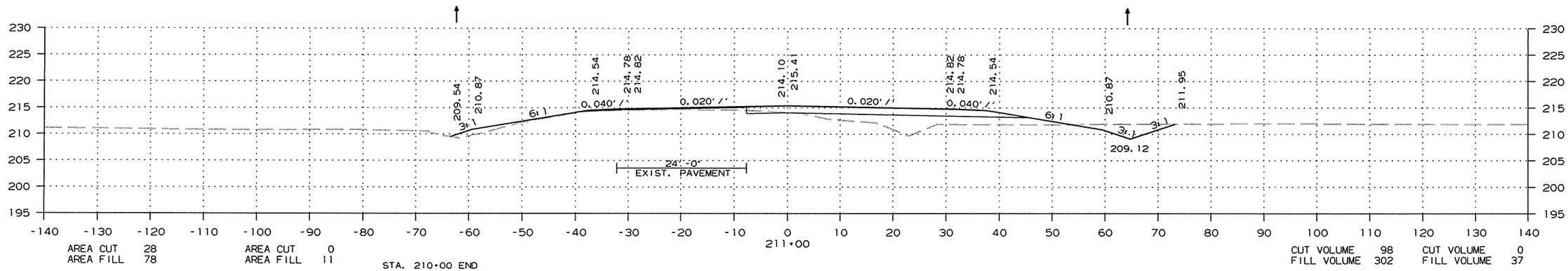
9/30/2013

R110217.DGN

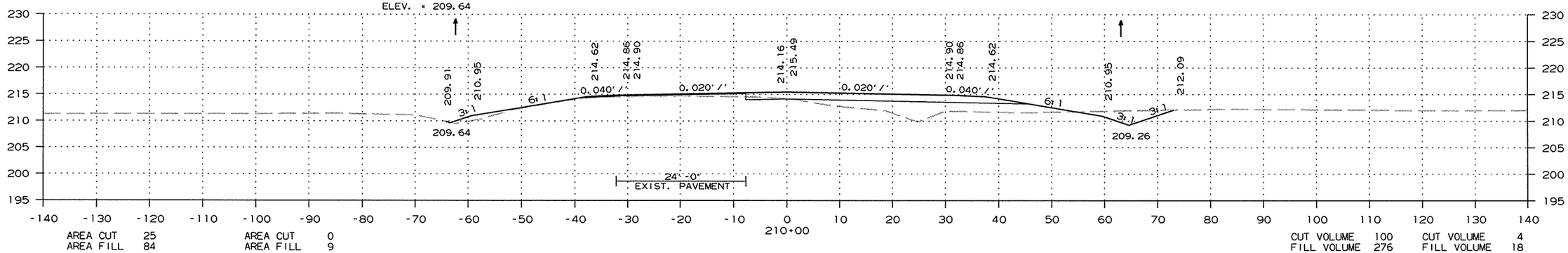
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	248	348
				(2) CROSS SECTIONS				

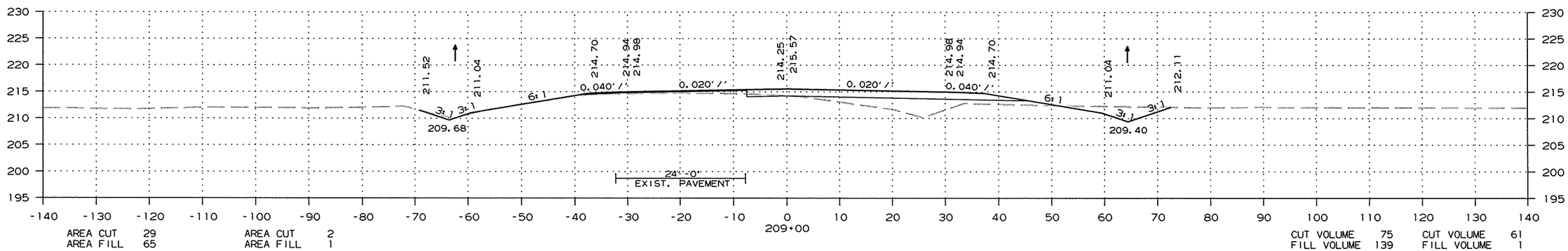
STAGE 1 STAGE 2

STAGE 1 STAGE 2



STA. 210+00 END
-0.04% LT. DITCH GRADE
ELEV. = 209.64





CROSS SECTION STA. 209+00 TO STA. 211+00

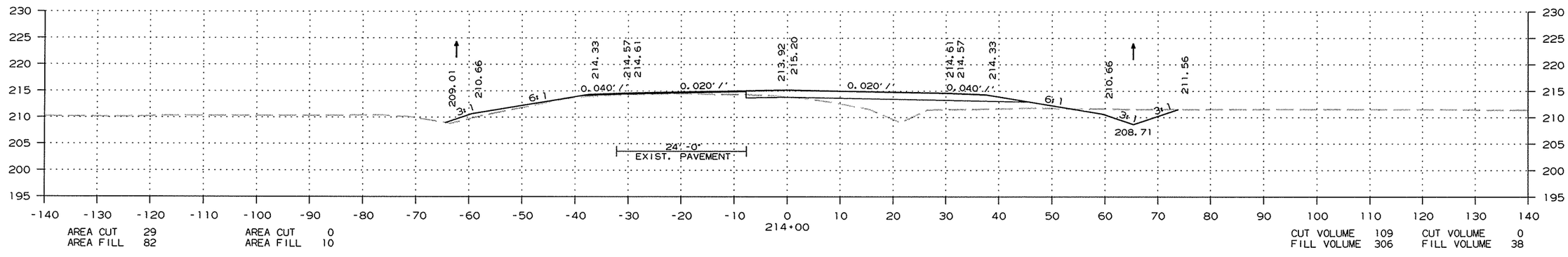
9/30/2013

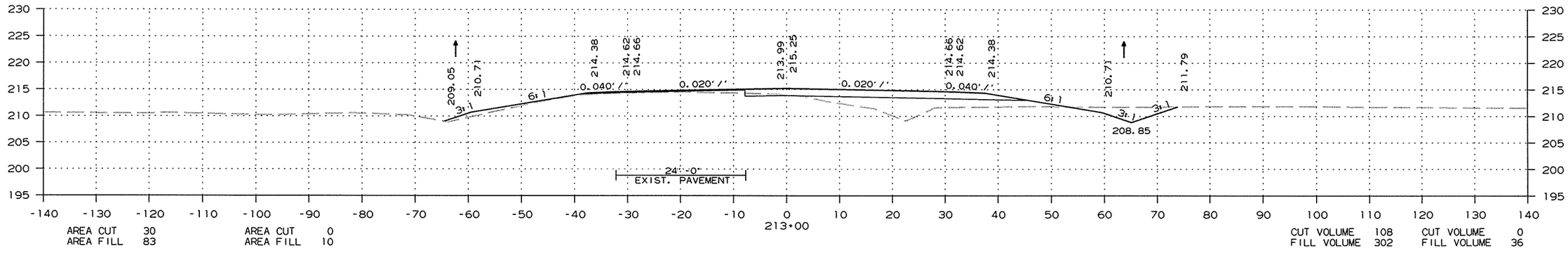
R110217.DGN

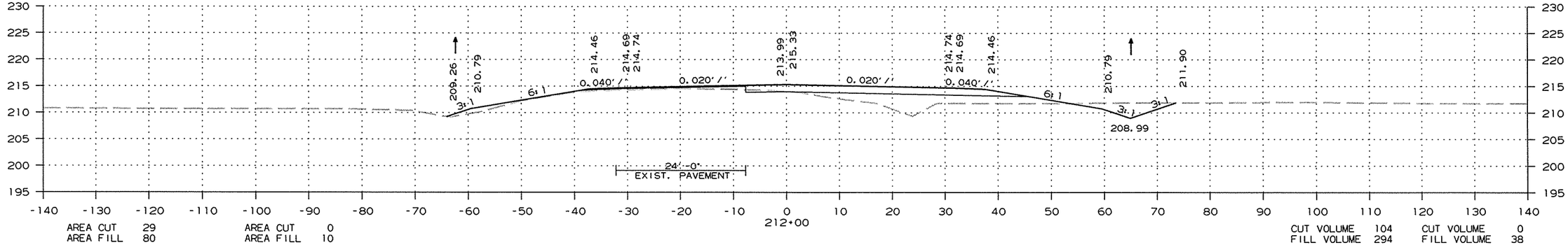
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	249	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 212+00 TO STA. 214+00

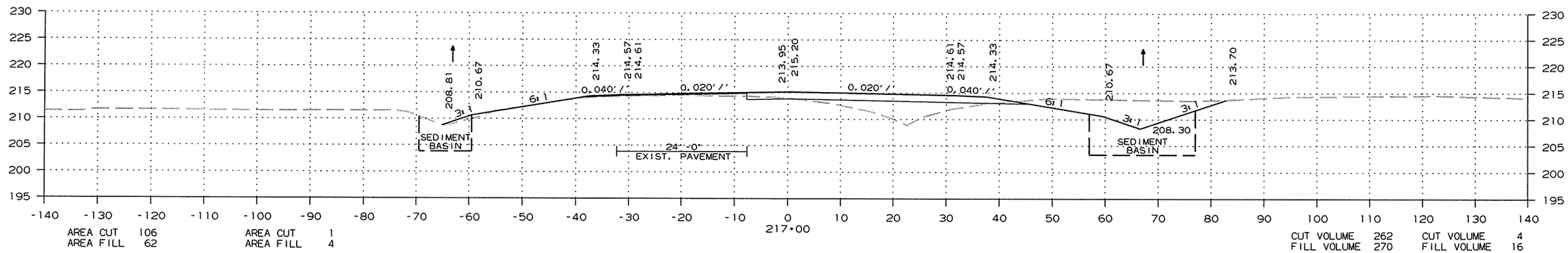
9/30/2013

R110217.DGN

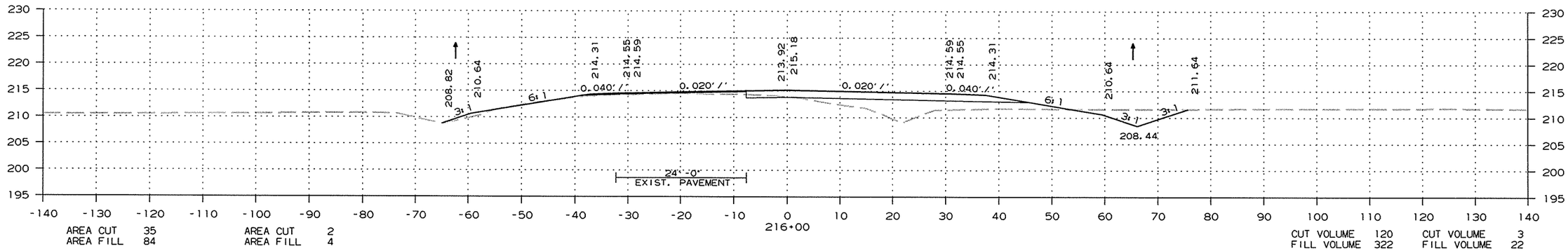
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	250	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

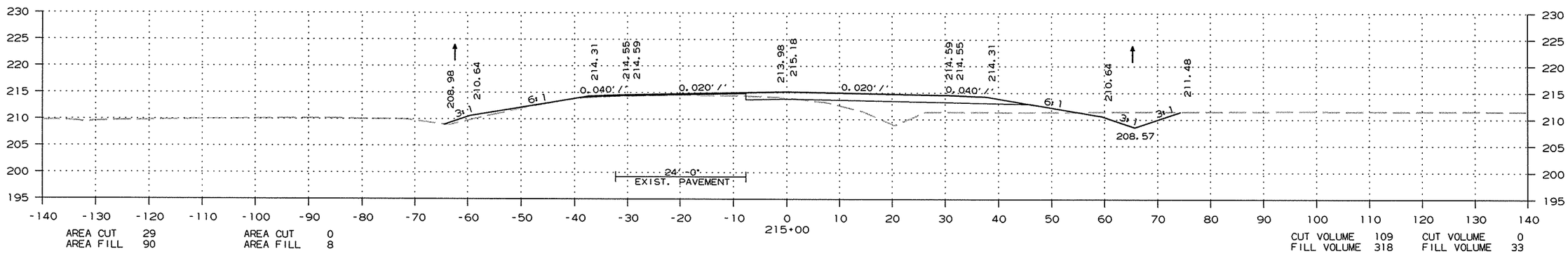
STAGE 1 STAGE 2



AREA CUT 106 AREA FILL 62 | AREA CUT 1 AREA FILL 4 | CUT VOLUME 262 FILL VOLUME 270 | CUT VOLUME 4 FILL VOLUME 16



AREA CUT 35 AREA FILL 84 | AREA CUT 2 AREA FILL 4 | CUT VOLUME 120 FILL VOLUME 322 | CUT VOLUME 3 FILL VOLUME 22



AREA CUT 29 AREA FILL 90 | AREA CUT 0 AREA FILL 8 | CUT VOLUME 109 FILL VOLUME 318 | CUT VOLUME 0 FILL VOLUME 33

CROSS SECTION STA. 215+00 TO STA. 217+00

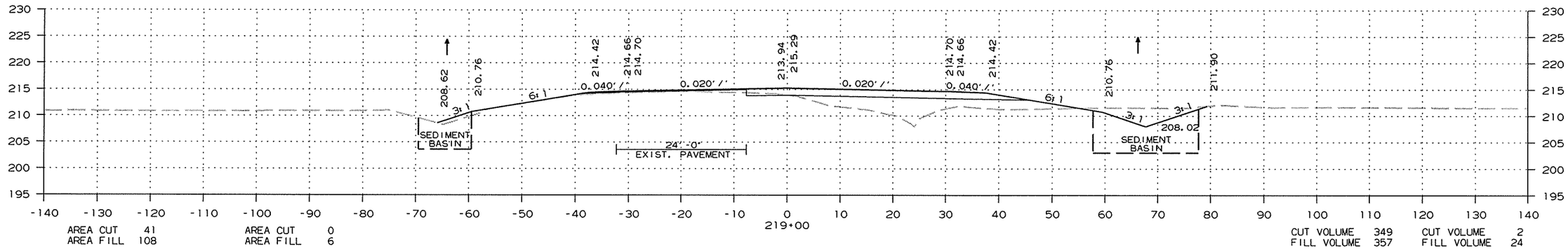
9/30/2013

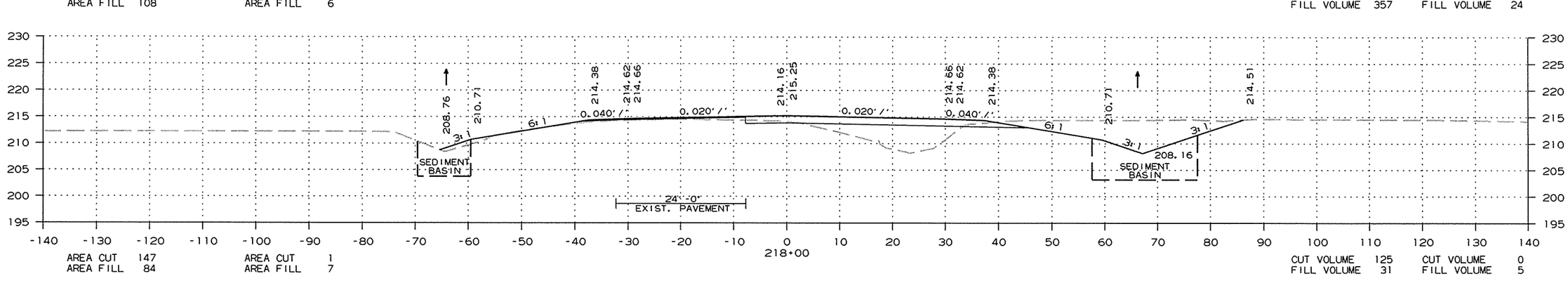
R110217.DGN

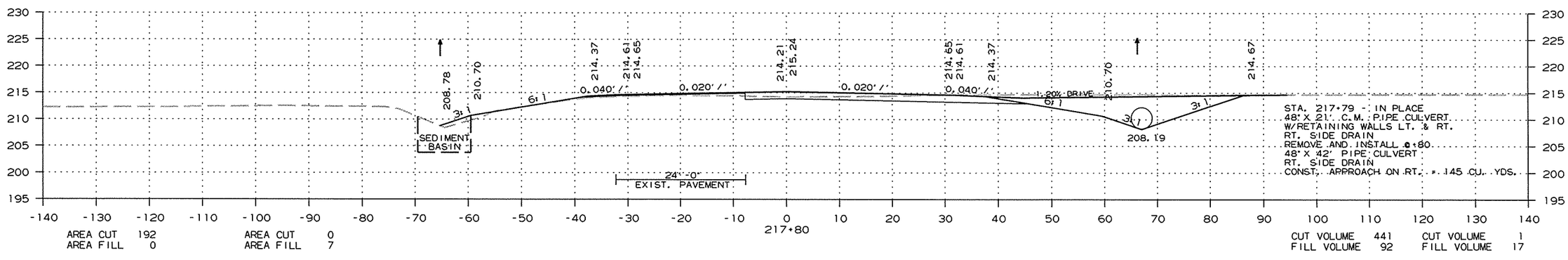
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	251	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 217+80 TO STA. 219+00

9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	252	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

CROSS SECTION STA. 220+00 TO STA. 221+00

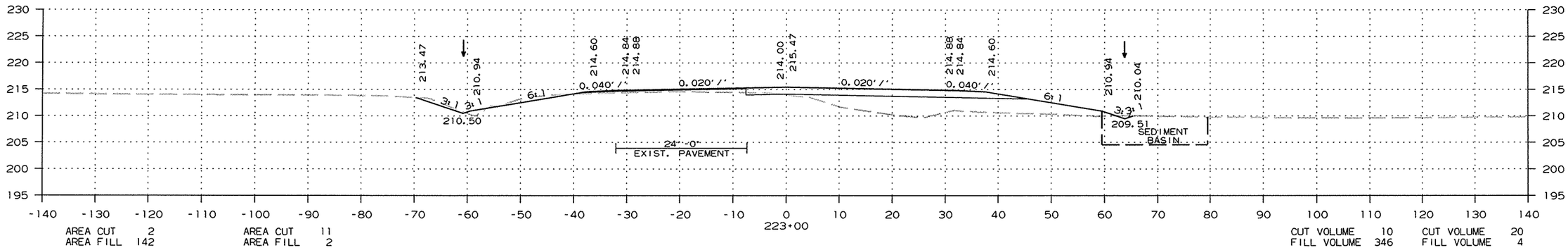
9/30/2013

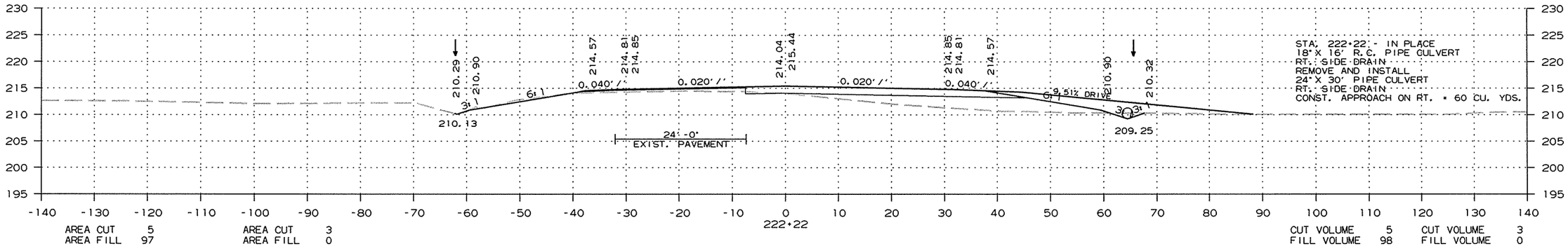
R110217.DGN

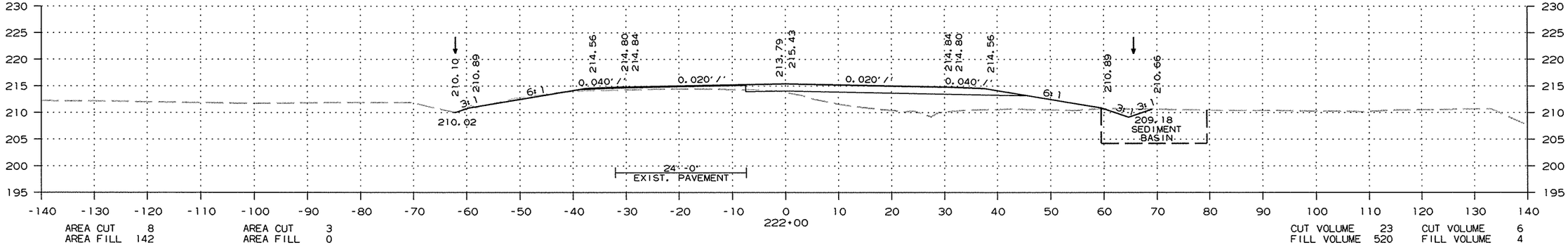
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	253	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 222+00 TO STA. 223+00

9/30/2013

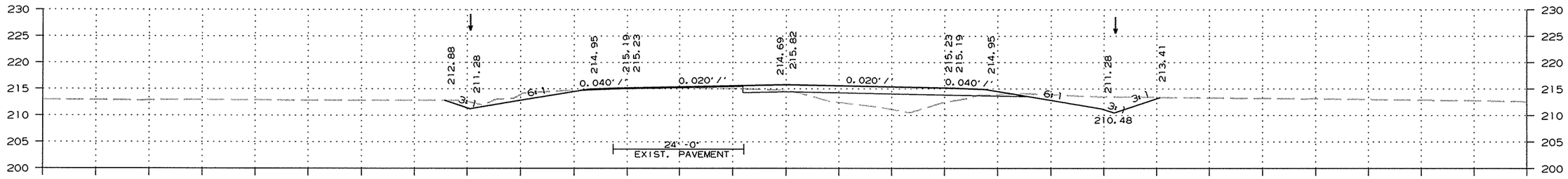
R110217.DGN

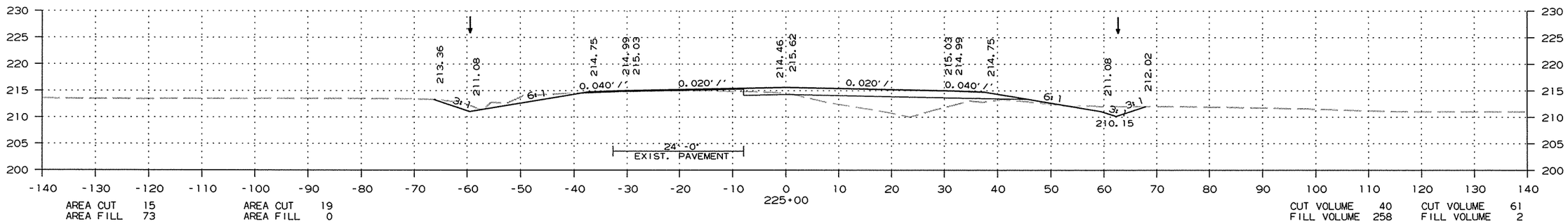
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	254	348

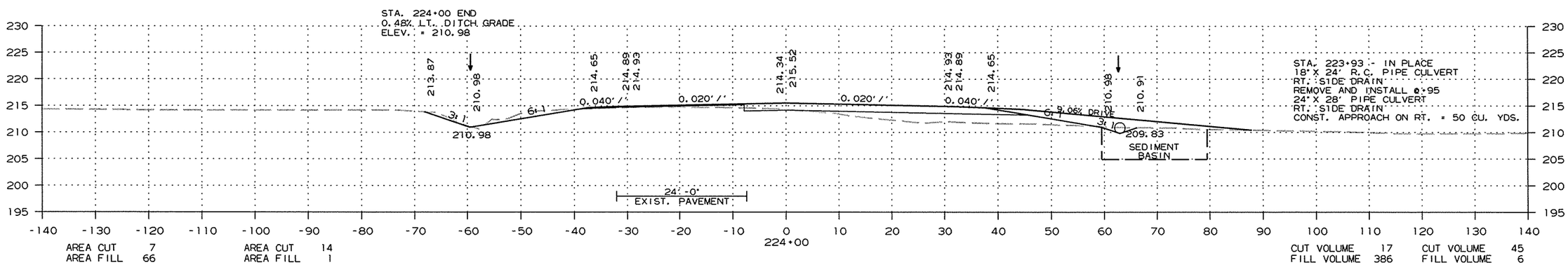
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 224+00 TO STA. 226+00

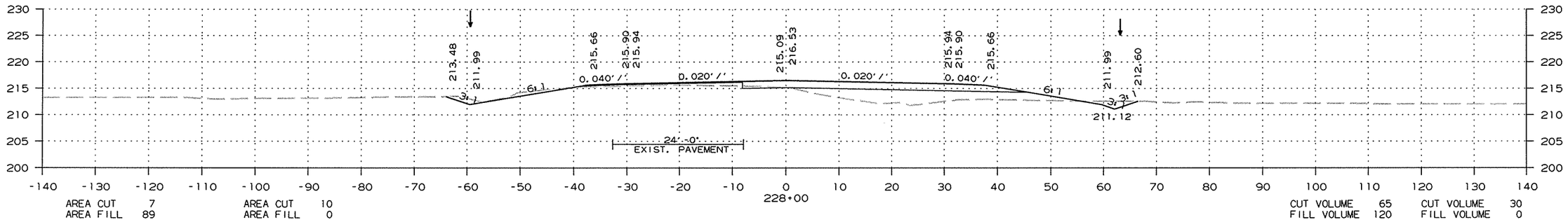
9/30/2013

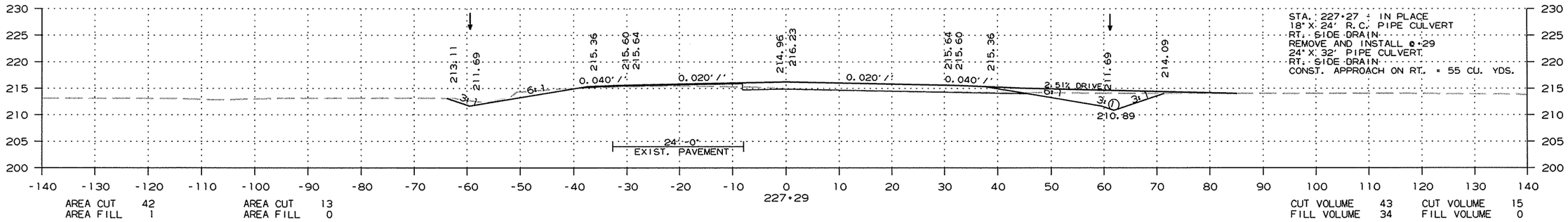
R110217.DGN

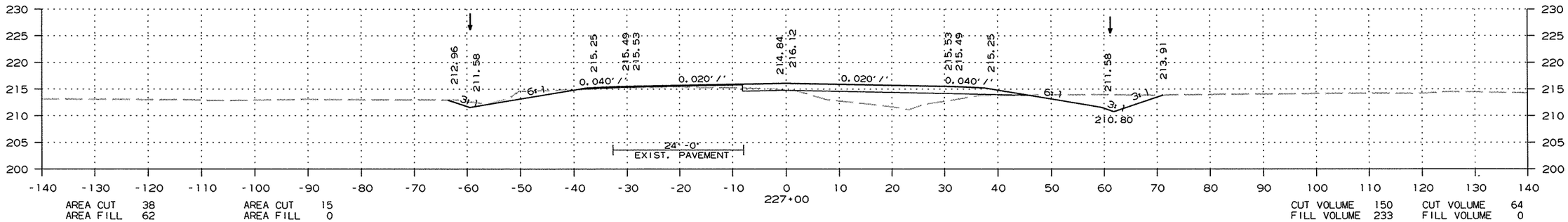
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	255	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 227+00 TO STA. 228+00

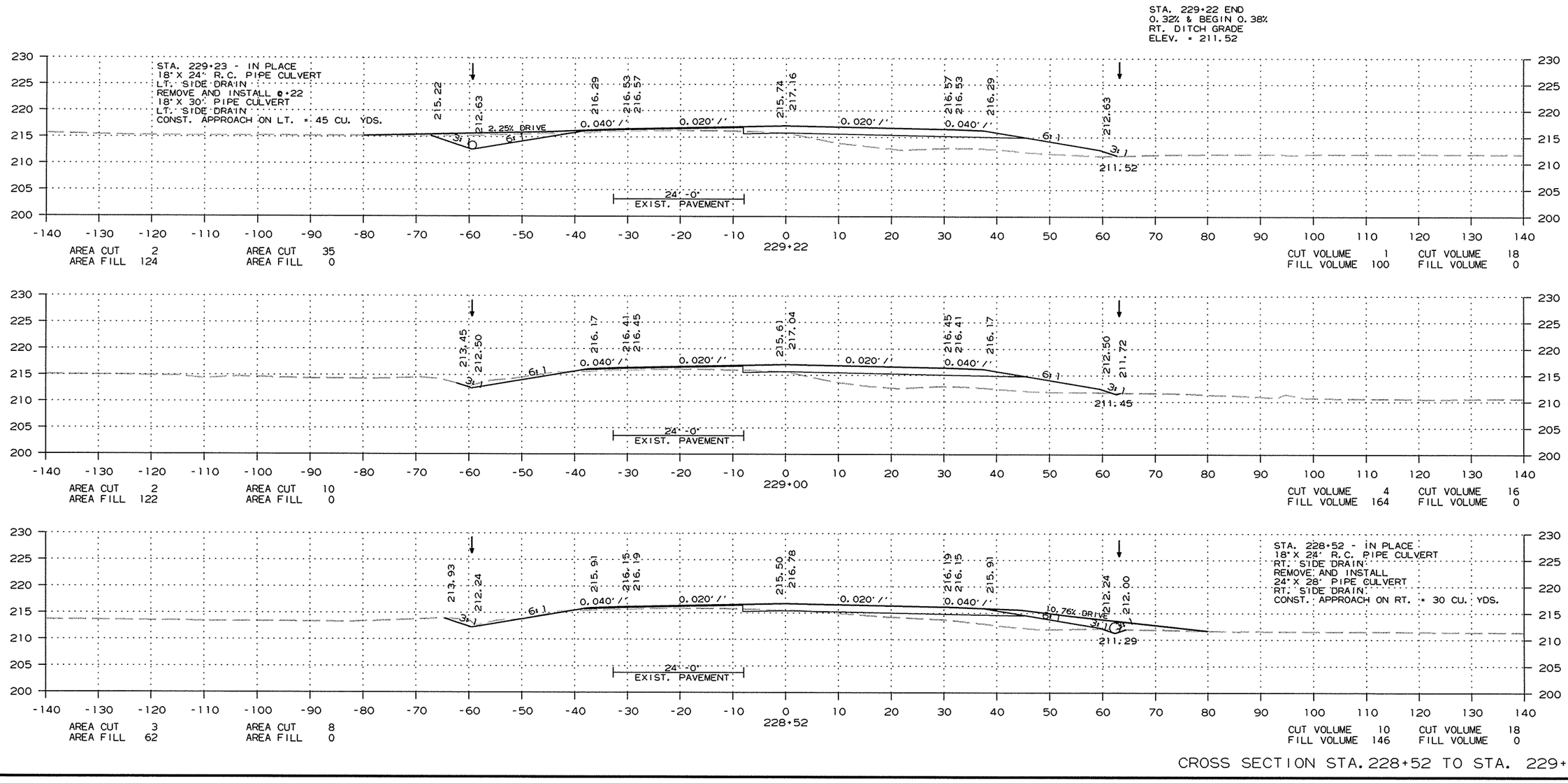
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	256	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 228+52 TO STA. 229+22

9/30/2013

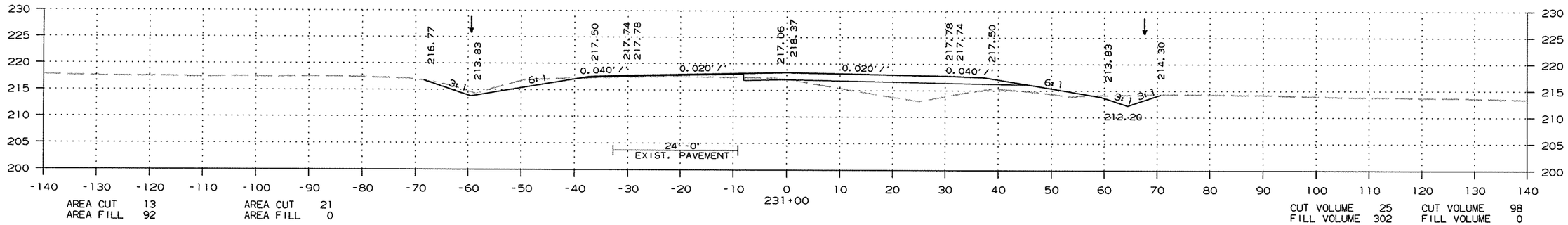
R110217.DGN

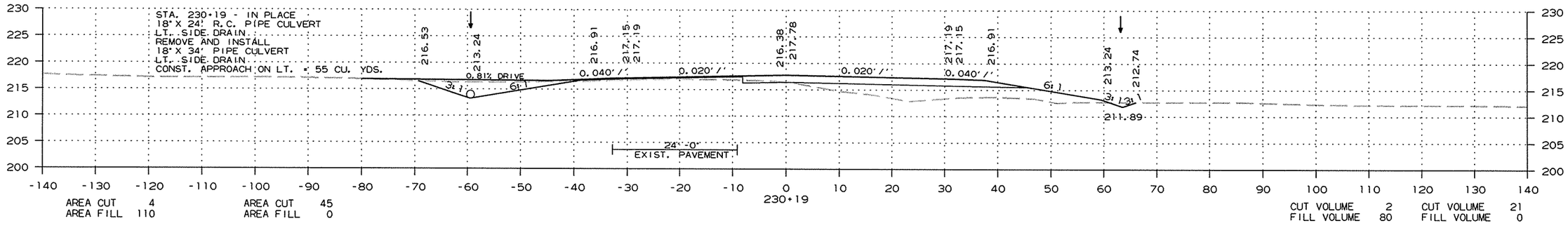
STAGE 1 STAGE 2

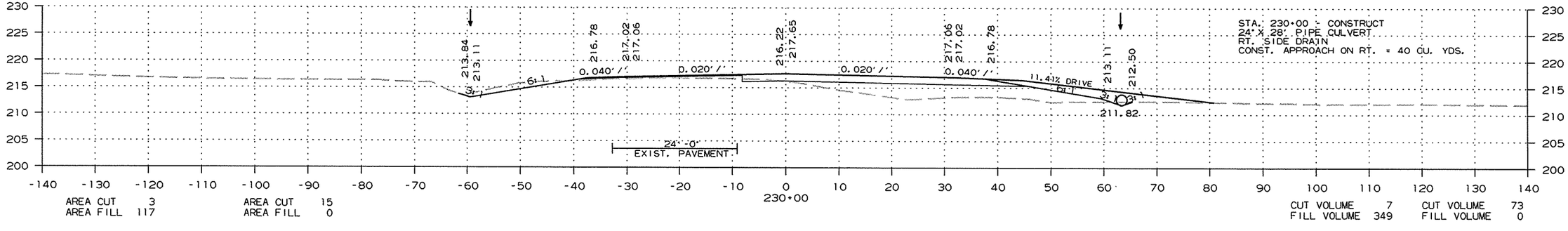
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	257	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 230+00 TO STA. 231+00

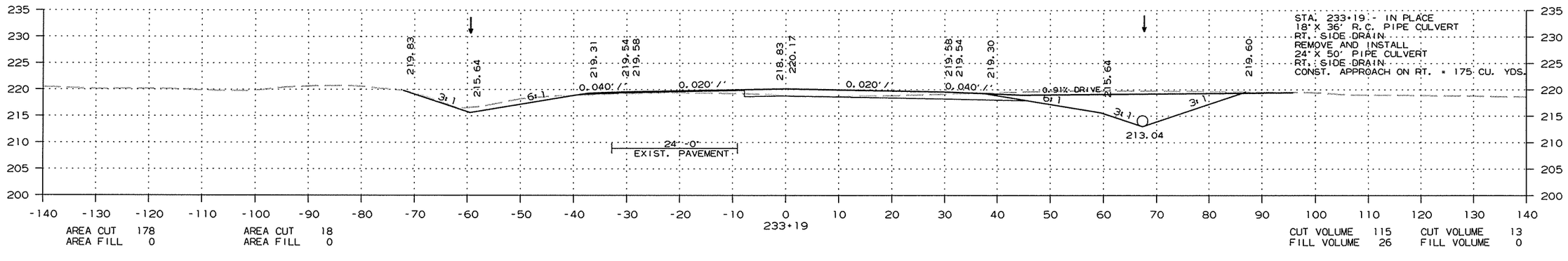
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	258	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 232+00 TO STA. 233+19

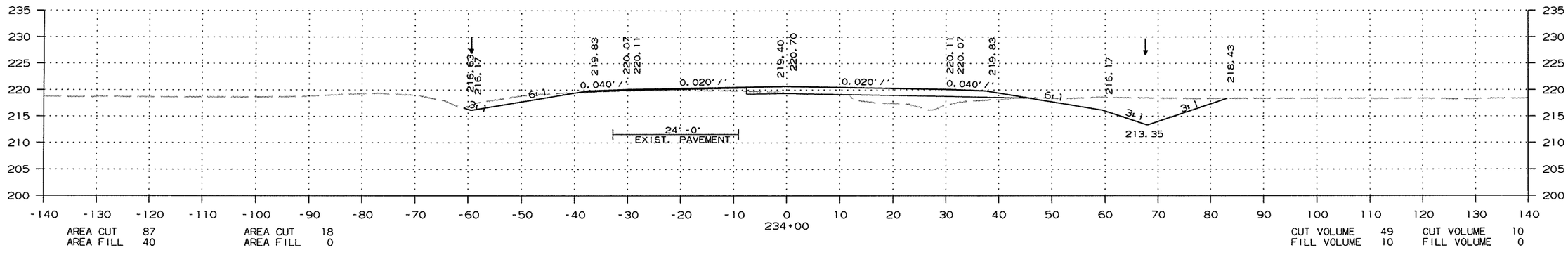
9/30/2013

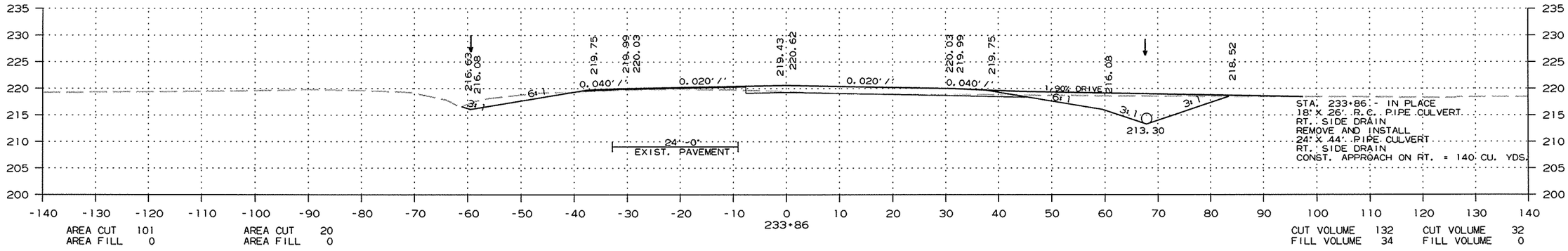
R110217.DGN

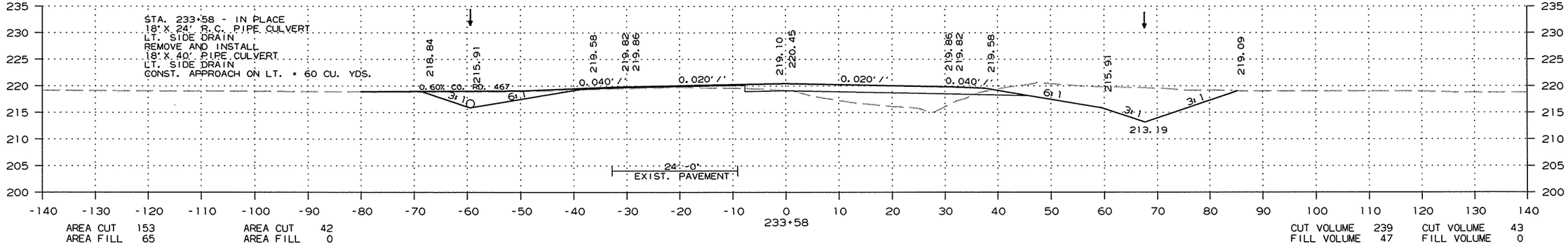
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	259	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







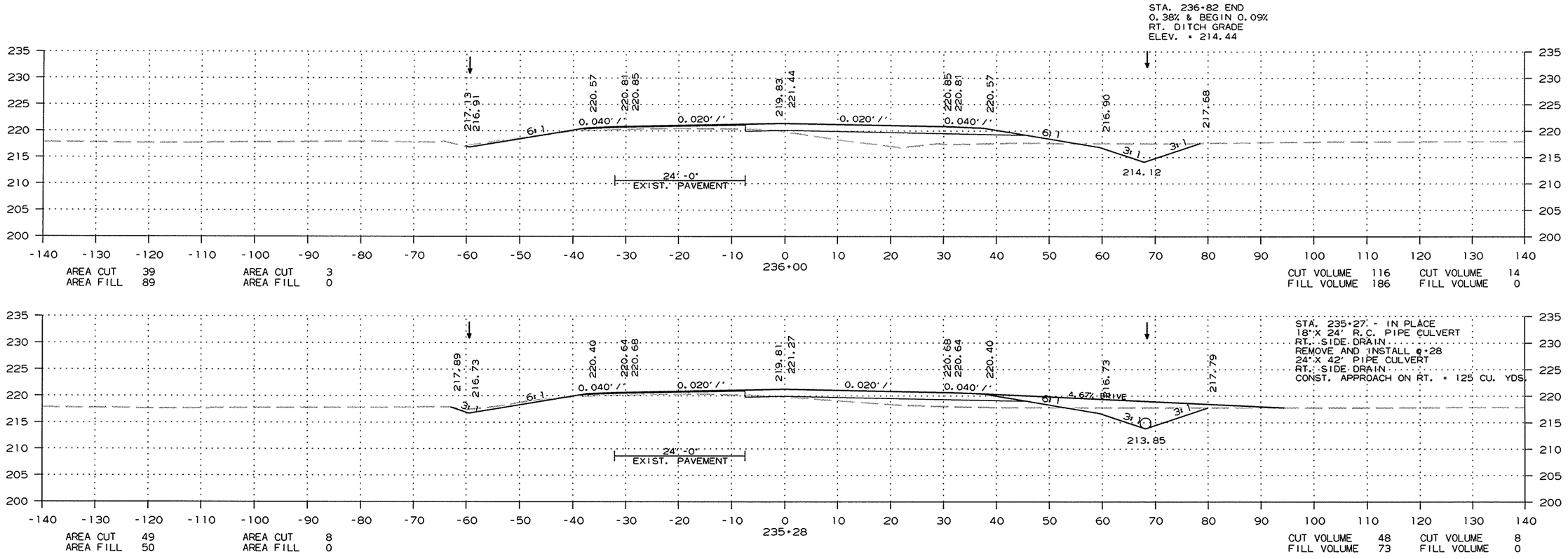
CROSS SECTION STA. 233+58 TO STA. 234+00

9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	260	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 235+00 TO STA. 236+00

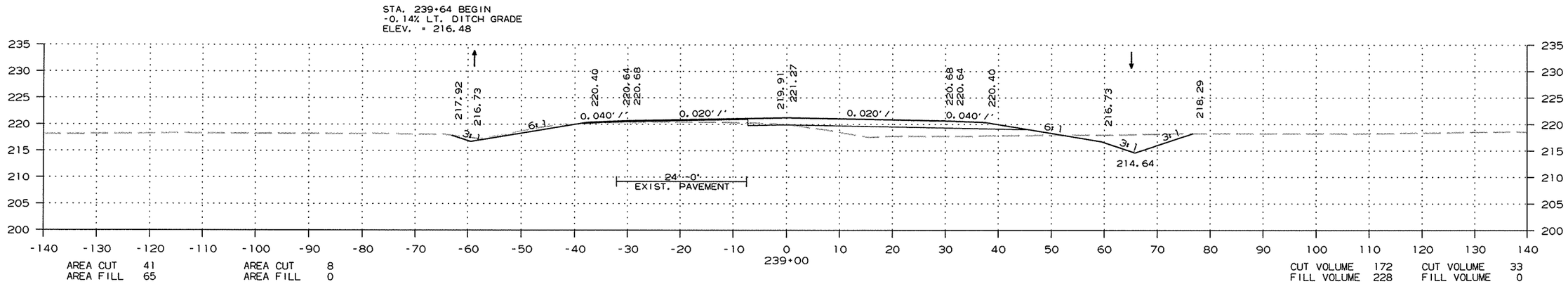
9/30/2013

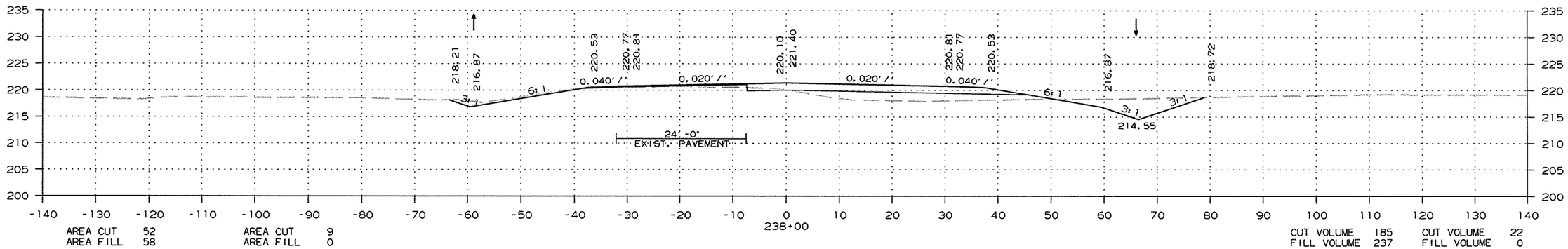
R110217.DGN

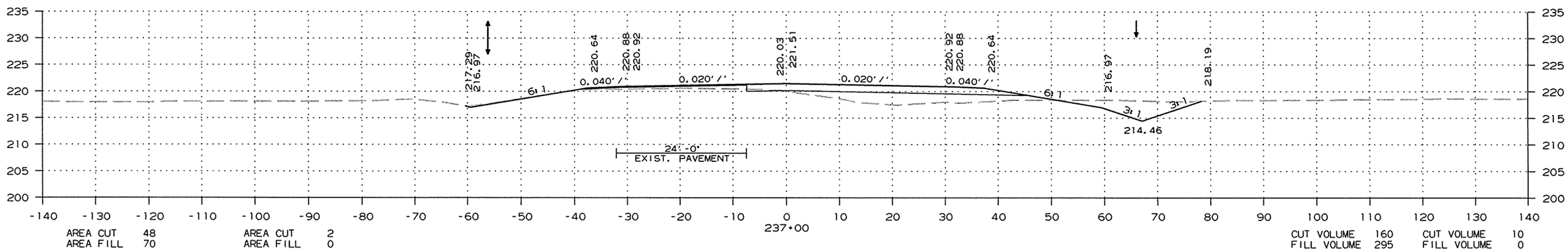
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	261	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 237+00 TO STA. 239+00

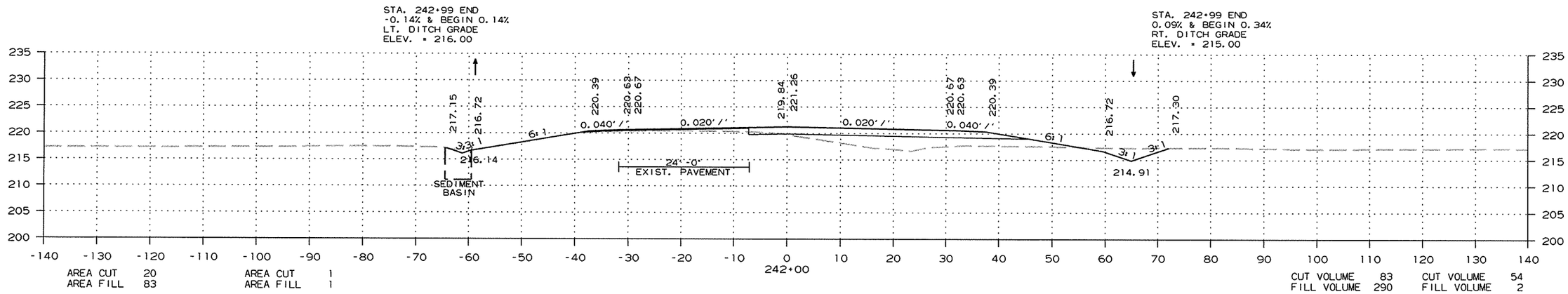
9/30/2013

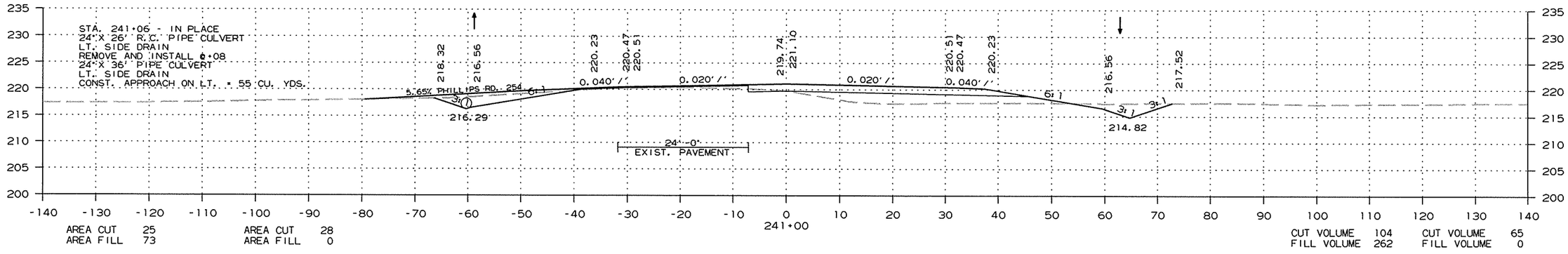
R110217.DGN

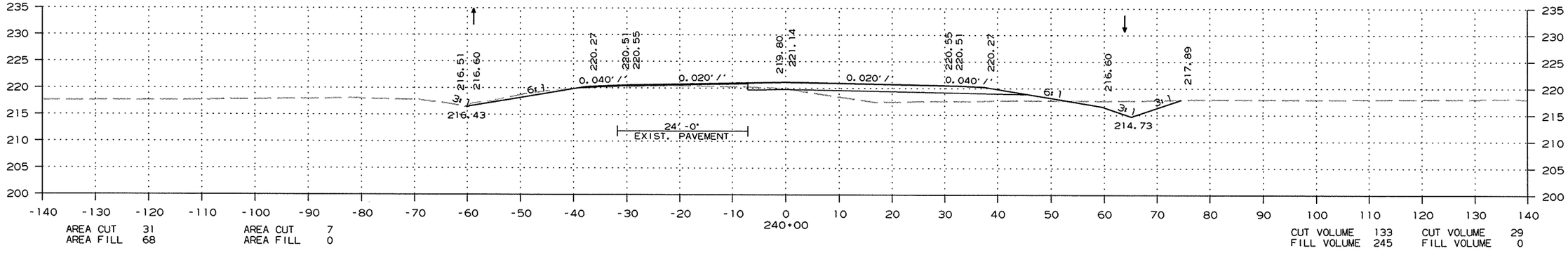
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	262	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







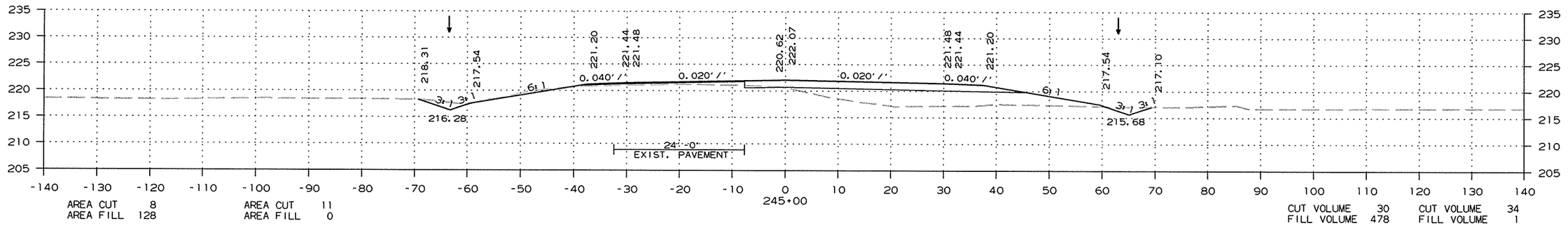
CROSS SECTION STA. 240+00 TO STA. 242+00

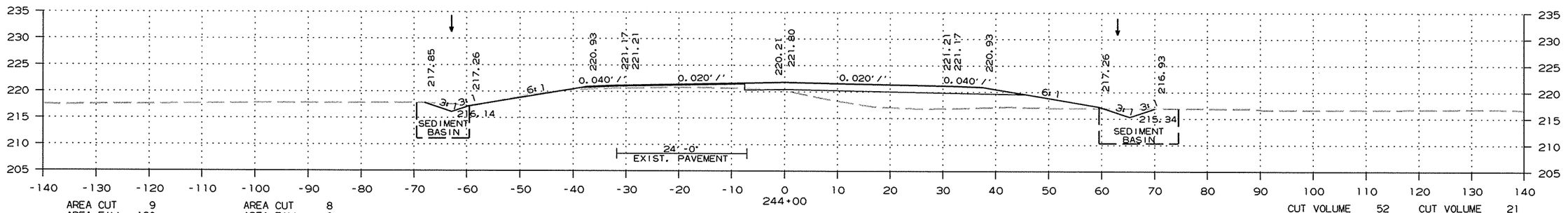
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	263	348
				(2) CROSS SECTIONS				

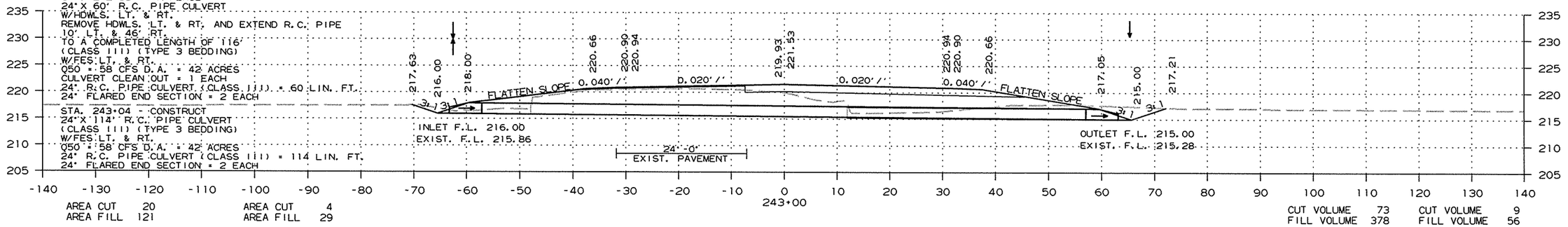
STAGE 1 STAGE 2





STA. 242+99 - IN PLACE
24" X 60' R.C. PIPE CULVERT
W/HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
10' LT. & 46' RT.
TO A COMPLETED LENGTH OF 116'
(CLASS III) (TYPE 3 BEDDING)
W/FES: LT. & RT.
Q50 = .58 CFS D.A. = 42 ACRES
CULVERT CLEAN OUT = 1 EACH
24" R.C. PIPE CULVERT (CLASS III) = 60 LIN. FT.
24" FLARED END SECTION = 2 EACH

STA. 243+04 - CONSTRUCT
24"X 114' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES: LT. & RT.
Q50 = .58 CFS D.A. = 42 ACRES
24" R.C. PIPE CULVERT (CLASS III) = 114 LIN. FT.
24" FLARED END SECTION = 2 EACH



CROSS SECTION STA. 243+00 TO STA. 245+00

9/30/2013

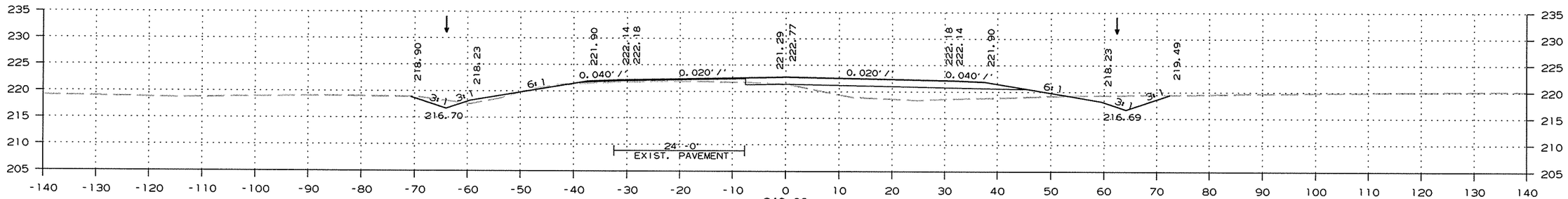
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	264	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

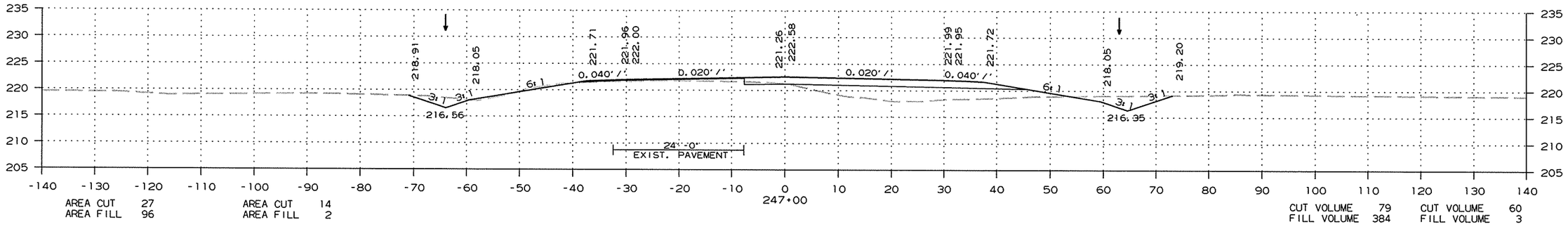


AREA CUT 25 AREA FILL 90

AREA CUT 9 AREA FILL 5

CUT VOLUME 96 FILL VOLUME 344

CUT VOLUME 44 FILL VOLUME 12

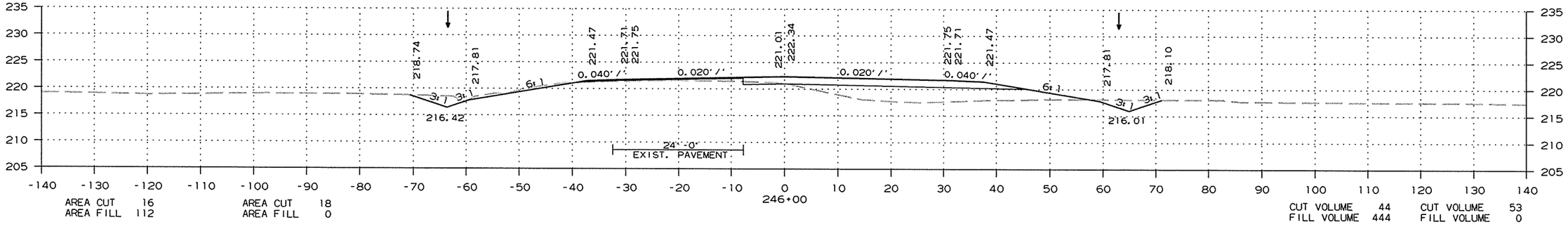


AREA CUT 27 AREA FILL 96

AREA CUT 14 AREA FILL 2

CUT VOLUME 79 FILL VOLUME 384

CUT VOLUME 60 FILL VOLUME 3



AREA CUT 16 AREA FILL 112

AREA CUT 18 AREA FILL 0

CUT VOLUME 44 FILL VOLUME 444

CUT VOLUME 53 FILL VOLUME 0

CROSS SECTION STA. 246+00 TO STA. 248+00

9/30/2013

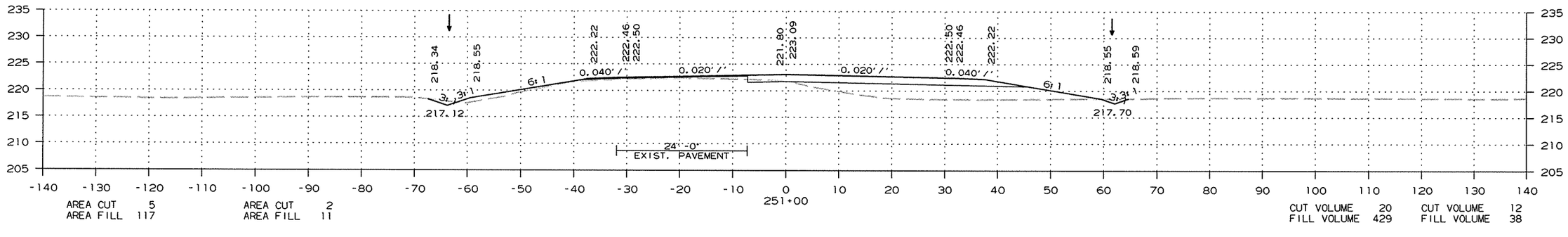
R110217.DGN

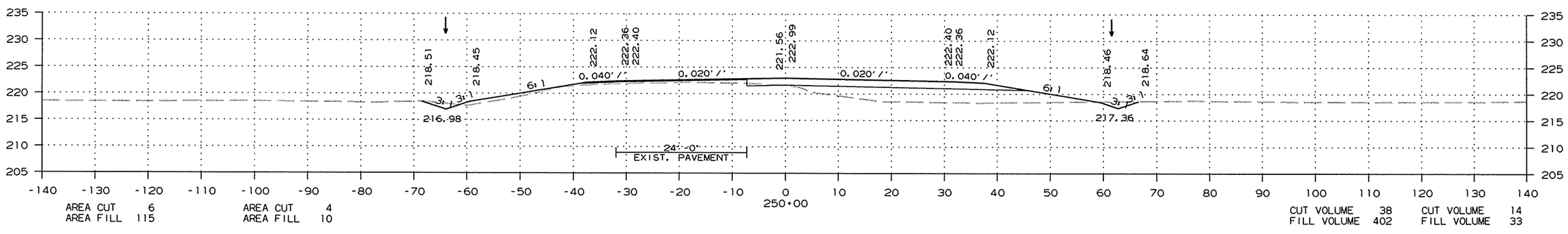
STAGE 1 STAGE 2

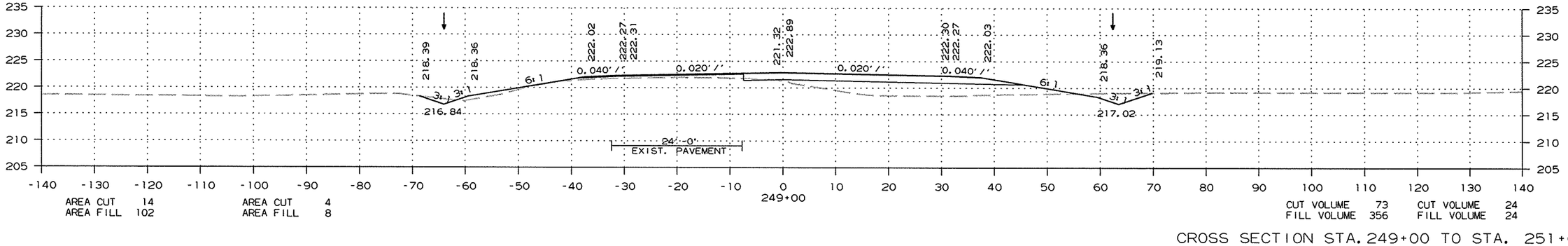
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	265	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 249+00 TO STA. 251+00

9/30/2013

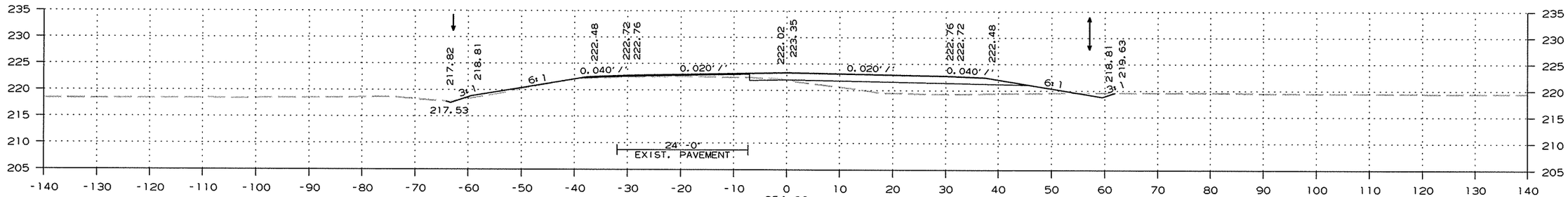
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	266	348

(2) CROSS SECTIONS

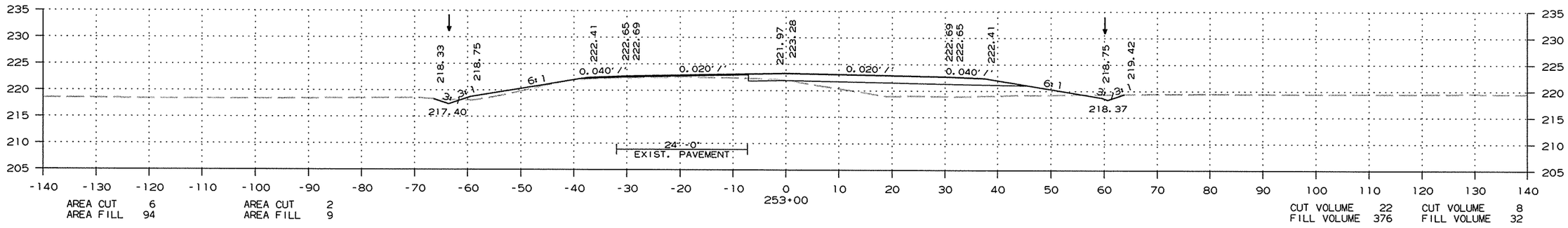
STAGE 1 STAGE 2



AREA CUT 5 AREA CUT 0
AREA FILL 82 AREA FILL 4

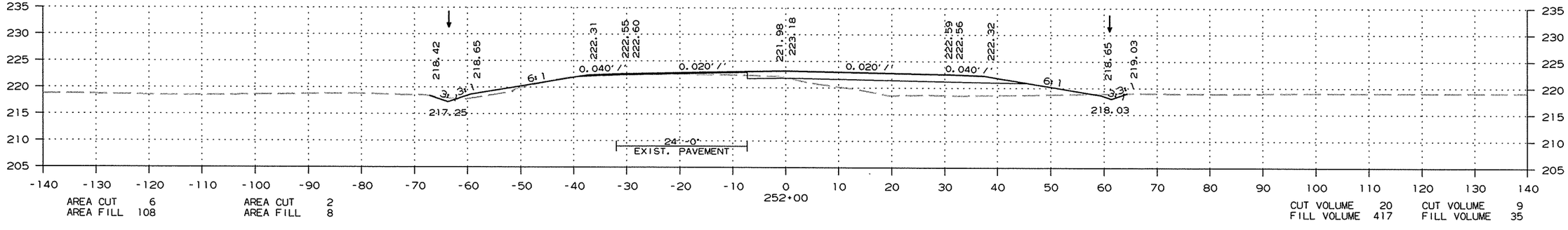
STA. 253+98.98 END
0.34% RT. DITCH GRADE
ELEV. = 218.70

CUT VOLUME 20 CUT VOLUME 5
FILL VOLUME 327 FILL VOLUME 24



AREA CUT 6 AREA CUT 2
AREA FILL 94 AREA FILL 9

CUT VOLUME 22 CUT VOLUME 8
FILL VOLUME 376 FILL VOLUME 32



AREA CUT 6 AREA CUT 2
AREA FILL 108 AREA FILL 8

CUT VOLUME 20 CUT VOLUME 9
FILL VOLUME 417 FILL VOLUME 35

CROSS SECTION STA. 252+00 TO STA. 254+00

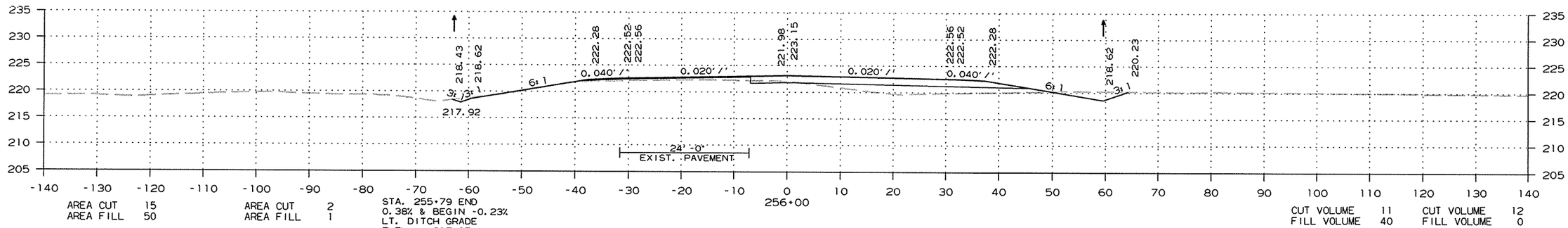
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	267	348
				(2) CROSS SECTIONS				

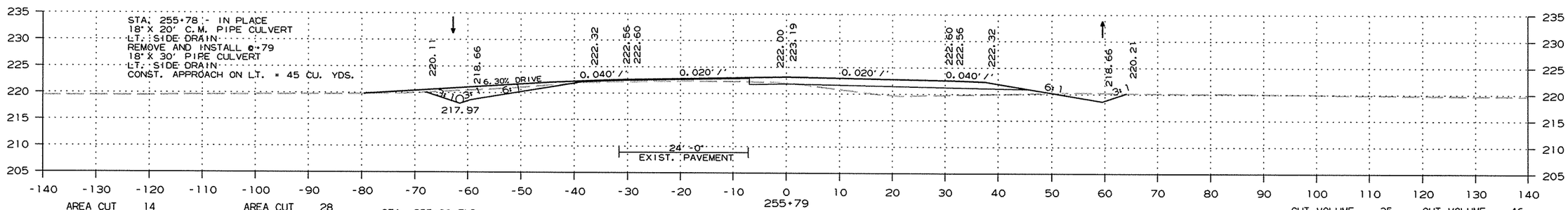
STAGE 1 STAGE 2



AREA CUT 15 AREA FILL 50 | AREA CUT 2 AREA FILL 1

STA. 255+79 END
0.38% & BEGIN -0.23%
LT. DITCH GRADE
ELEV. = 217.97

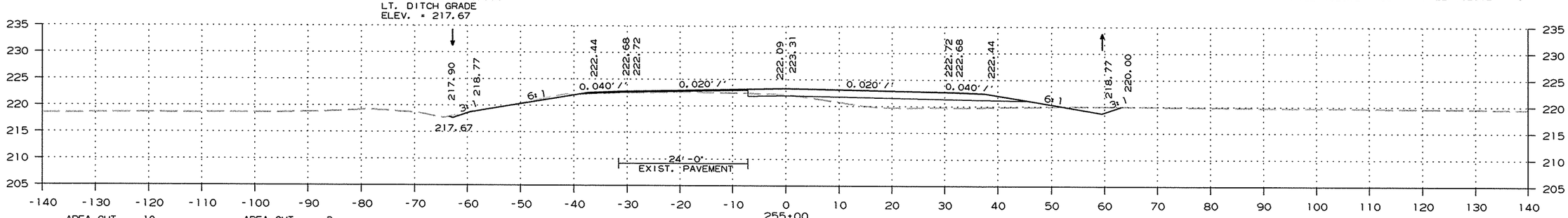
CUT VOLUME 11 FILL VOLUME 40 | CUT VOLUME 12 FILL VOLUME 0



AREA CUT 14 AREA FILL 53 | AREA CUT 28 AREA FILL 0

CUT VOLUME 35 FILL VOLUME 168 | CUT VOLUME 46 FILL VOLUME 0

STA. 255+00 END
0.14% & BEGIN 0.38%
LT. DITCH GRADE
ELEV. = 217.67



AREA CUT 10 AREA FILL 62 | AREA CUT 3 AREA FILL 0

CUT VOLUME 28 FILL VOLUME 267 | CUT VOLUME 6 FILL VOLUME 8

CROSS SECTION STA. 255+00 TO STA. 256+00

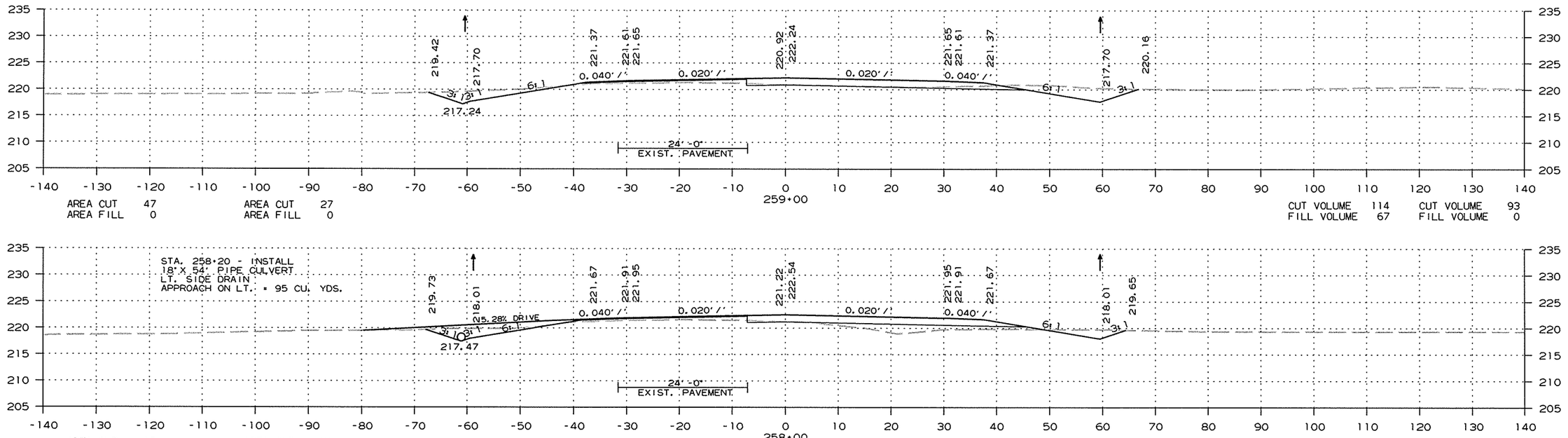
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	268	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 257+00 TO STA. 259+00

9/30/2013

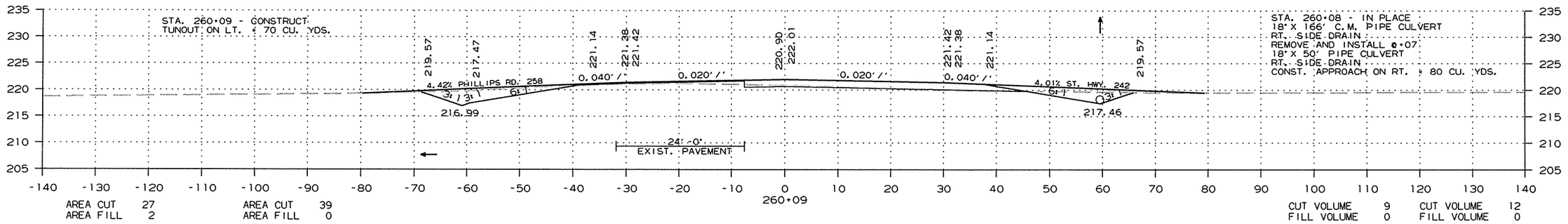
R110217.DGN

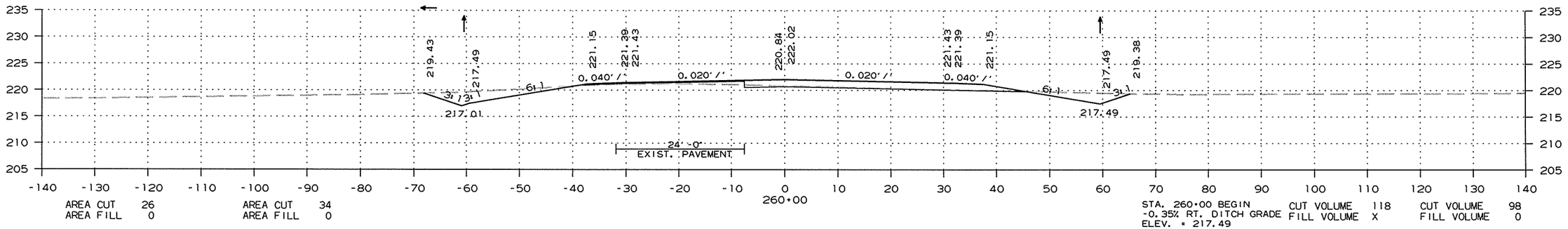
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	269	348

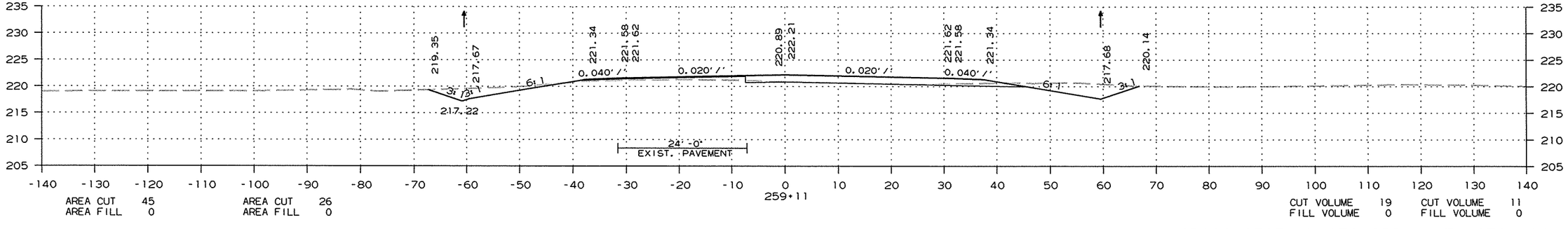
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 259+11 TO STA. 260+09

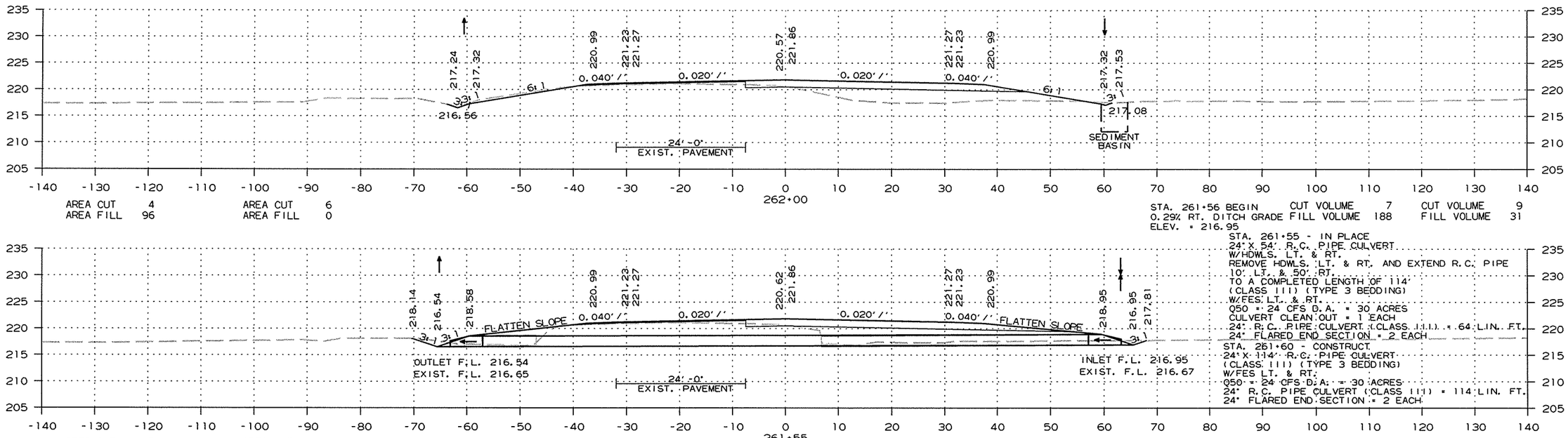
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	270	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



AREA CUT 4
AREA FILL 96

AREA CUT 6
AREA FILL 0

STA. 261+56 BEGIN
0.29% RT. DITCH GRADE
ELEV. = 216.95

CUT VOLUME 7
FILL VOLUME 188

CUT VOLUME 9
FILL VOLUME 31

STA. 261+55 - IN PLACE
24" X 54" R.C. PIPE CULVERT
W/HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
10' LT. & 50' RT.
TO A COMPLETED LENGTH OF 114'
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 24 CFS D.A. = 30 ACRES
CULVERT CLEAN OUT = 1 EACH
24" R.C. PIPE CULVERT (CLASS III) = 64 LIN. FT.
24" FLARED END SECTION = 2 EACH

AREA CUT 5
AREA FILL 130

AREA CUT 4
AREA FILL 37

CUT VOLUME 10
FILL VOLUME 226

CUT VOLUME 23
FILL VOLUME 37

STA. 261+54 END
-0.35% RT. DITCH GRADE
ELEV. = 216.95

STA. 261+60 - CONSTRUCT
24" X 114" R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/FES LT. & RT.
Q50 = 24 CFS D.A. = 30 ACRES
24" R.C. PIPE CULVERT (CLASS III) = 114 LIN. FT.
24" FLARED END SECTION = 2 EACH

AREA CUT 5
AREA FILL 92

AREA CUT 18
AREA FILL 0

CUT VOLUME 54
FILL VOLUME 158

CUT VOLUME 95
FILL VOLUME 0

CROSS SECTION STA. 261+00 TO STA. 262+00

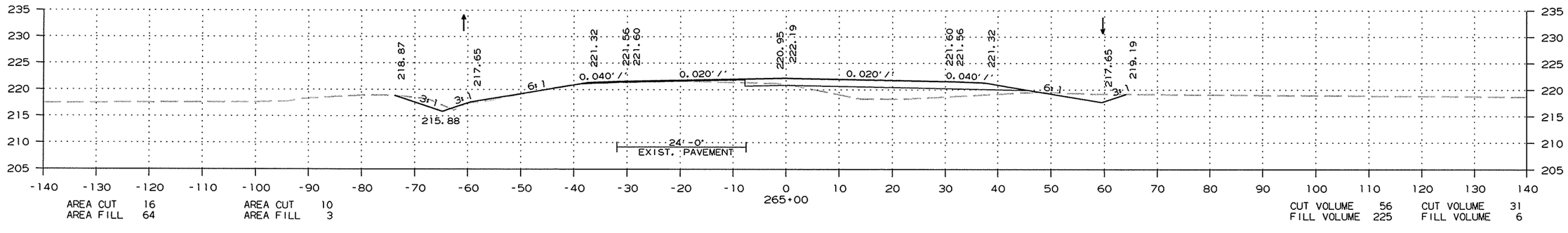
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

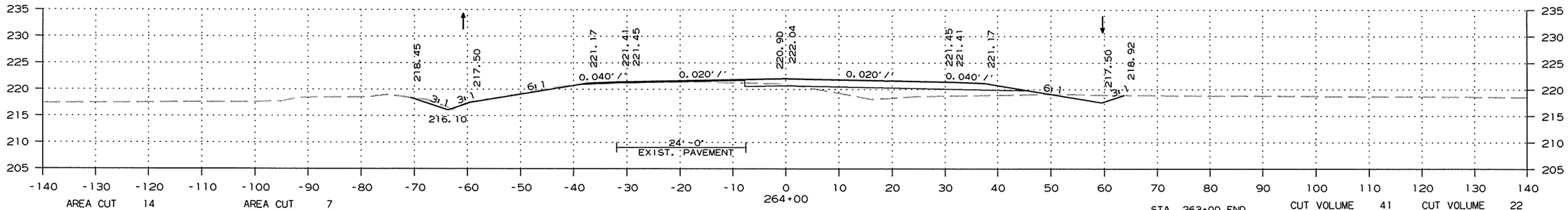
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	271	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



AREA CUT 16 AREA CUT 10
AREA FILL 64 AREA FILL 3

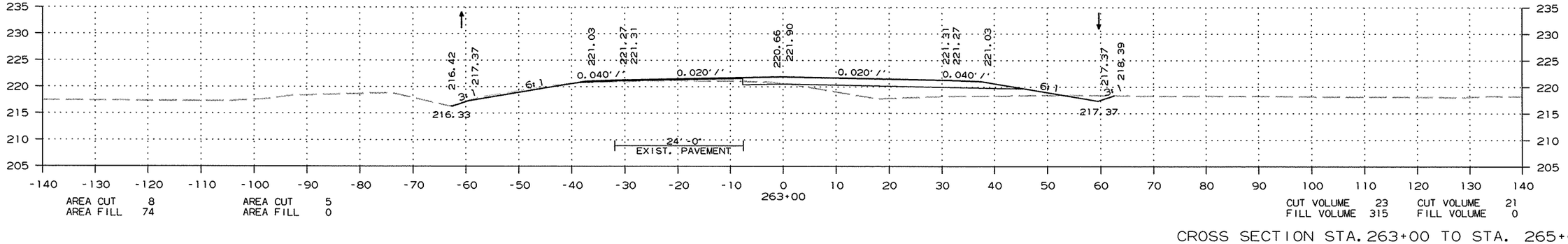
CUT VOLUME 56 CUT VOLUME 31
FILL VOLUME 225 FILL VOLUME 6



AREA CUT 14 AREA CUT 7
AREA FILL 58 AREA FILL 0

STA. 263+00 END
0.29% RT. DITCH GRADE
ELEV. = 217.37

CUT VOLUME 41 CUT VOLUME 22
FILL VOLUME 244 FILL VOLUME 0



AREA CUT 8 AREA CUT 5
AREA FILL 74 AREA FILL 0

CUT VOLUME 23 CUT VOLUME 21
FILL VOLUME 315 FILL VOLUME 0

CROSS SECTION STA. 263+00 TO STA. 265+00

9/30/2013

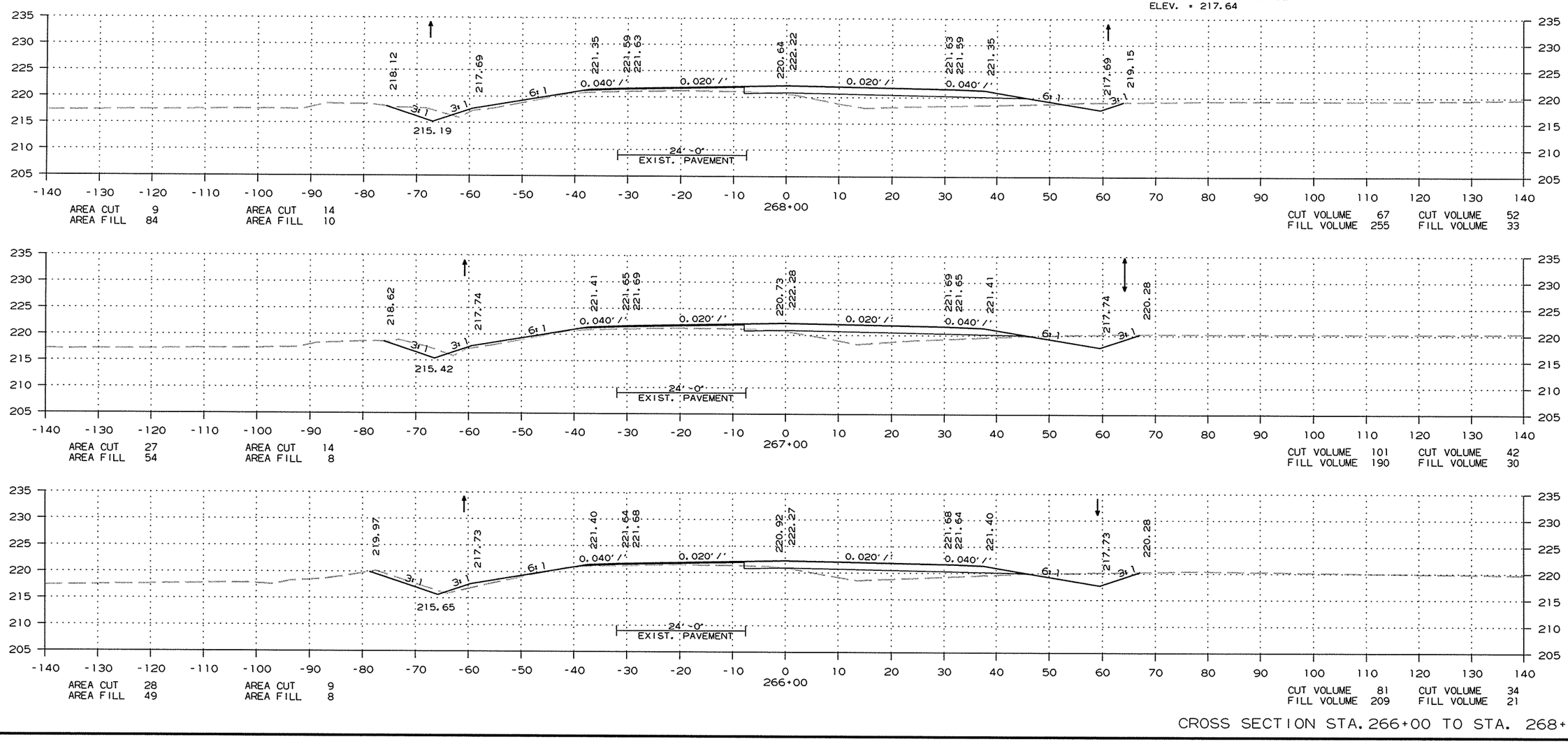
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	272	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 266+00 TO STA. 268+00

9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	273	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

CROSS SECTION STA. 269+00 TO STA. 271+00

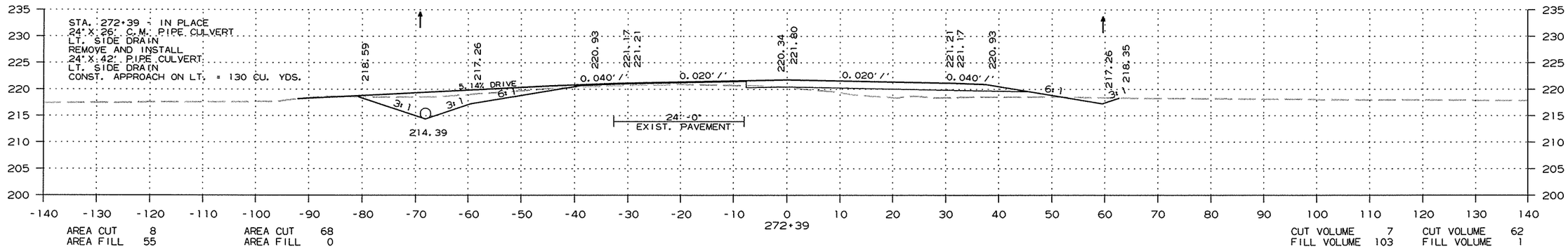
9/30/2013

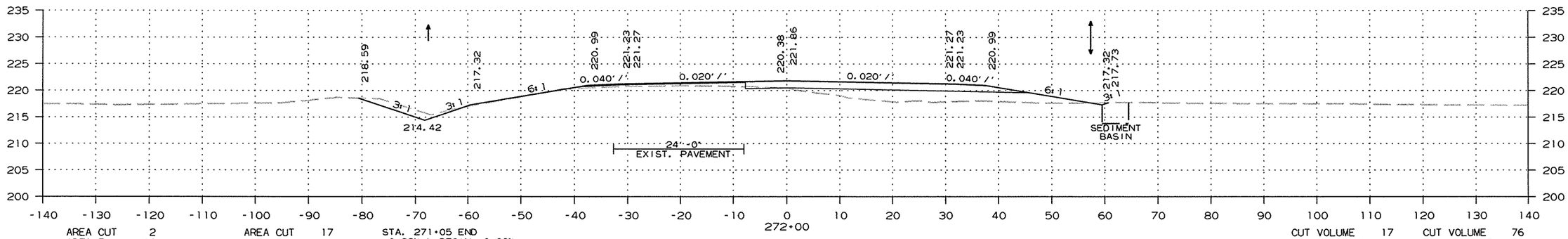
R110217.DGN

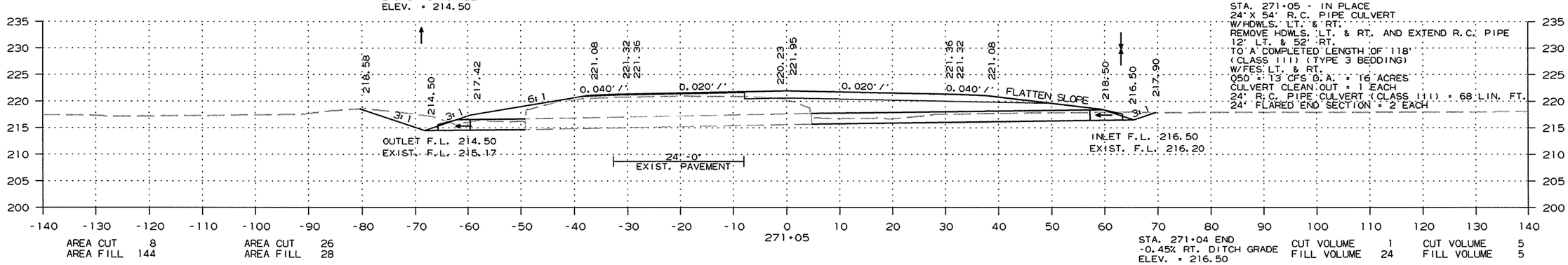
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	274	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 271+05 TO STA. 272+39

9/30/2013

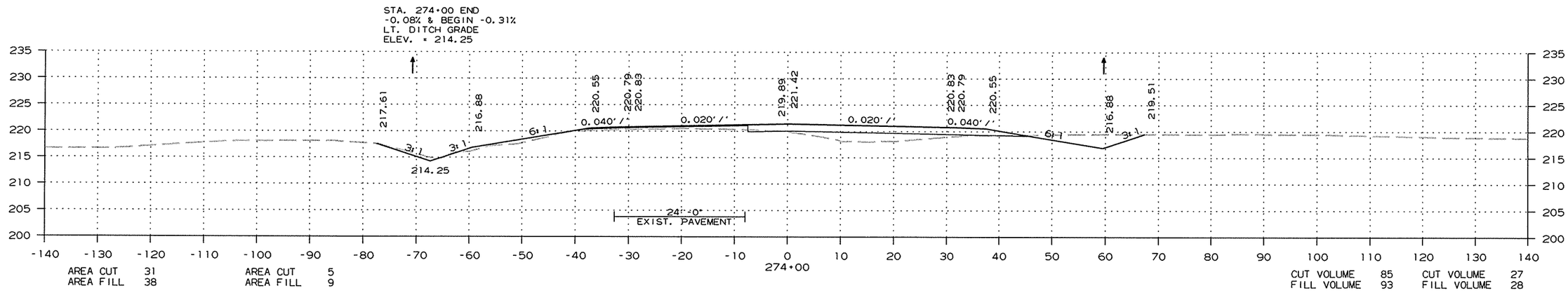
R110217.DGN

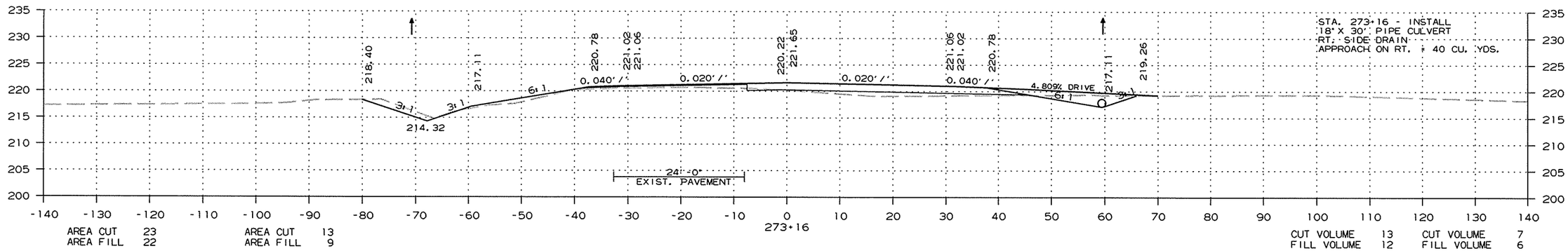
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	275	348

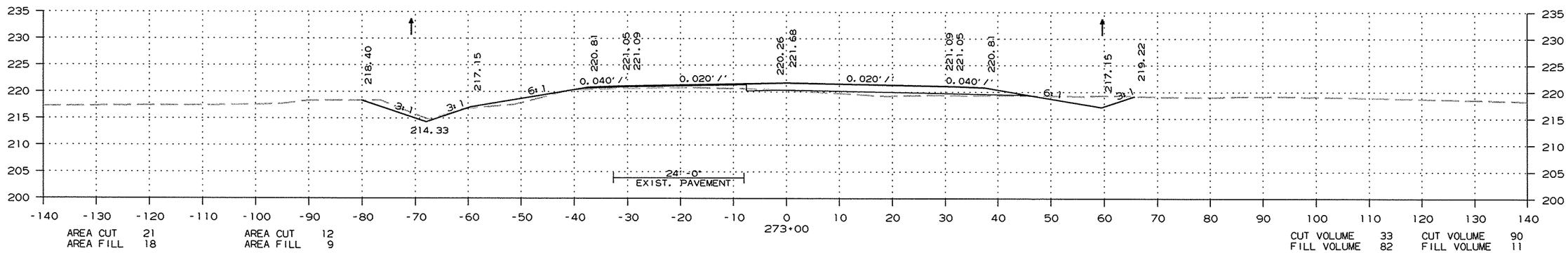
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 273+00 TO STA. 274+00

9/30/2013

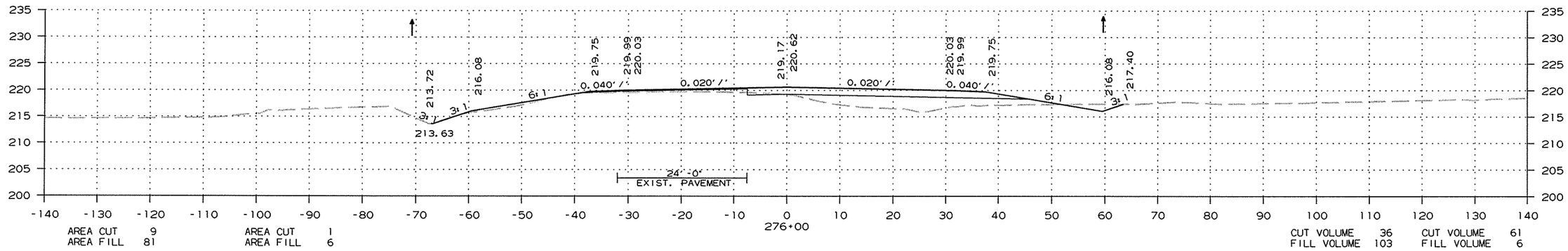
R110217.DGN

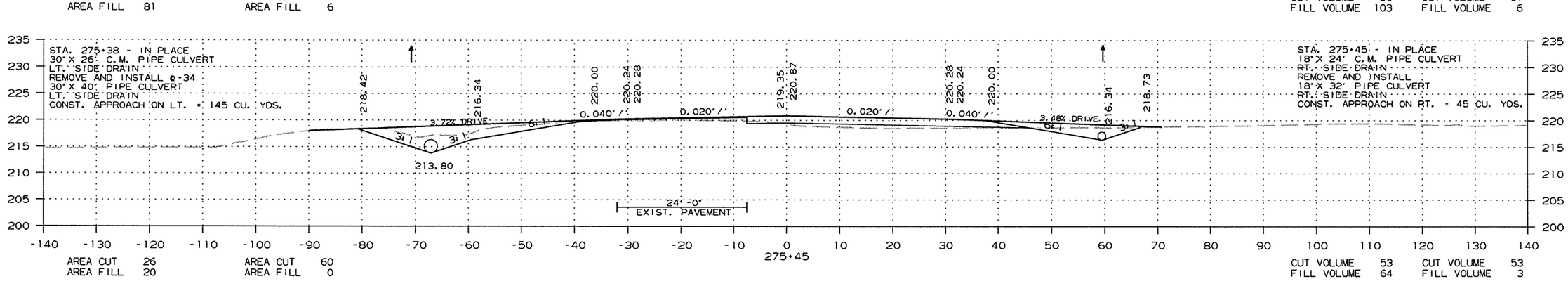
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	276	348

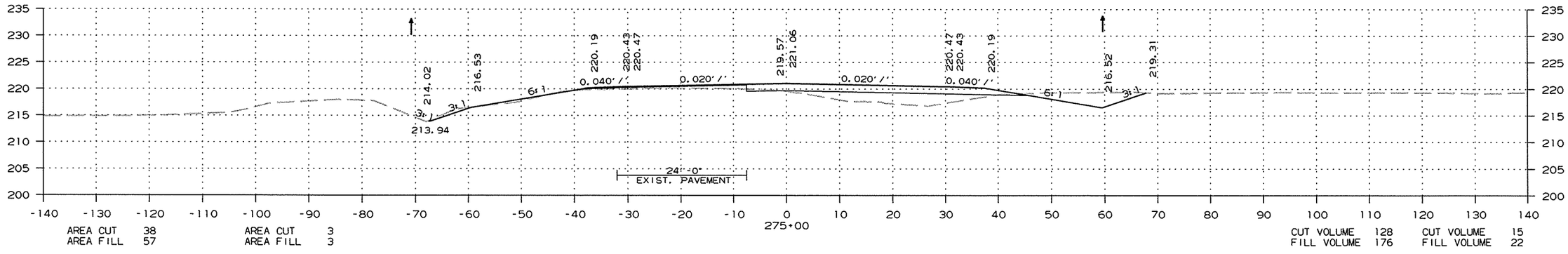
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 275+00 TO STA. 276+00

9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	277	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

CROSS SECTION STA. 276+86 TO STA. 278+00

9/30/2013

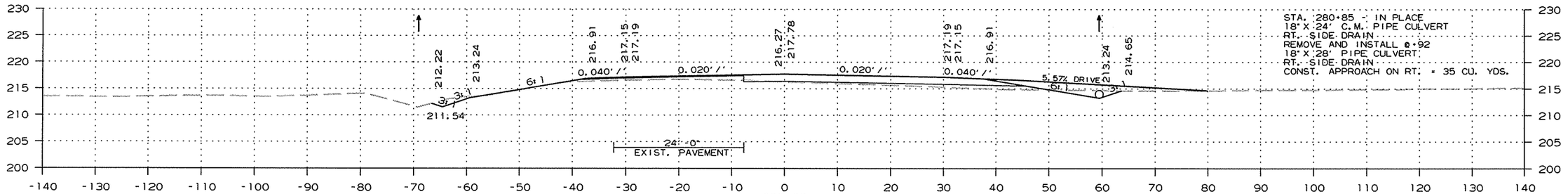
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	278	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2

STA. 281+00 BEGIN
-2.19% RT. DITCH GRADE
ELEV. = 213.21



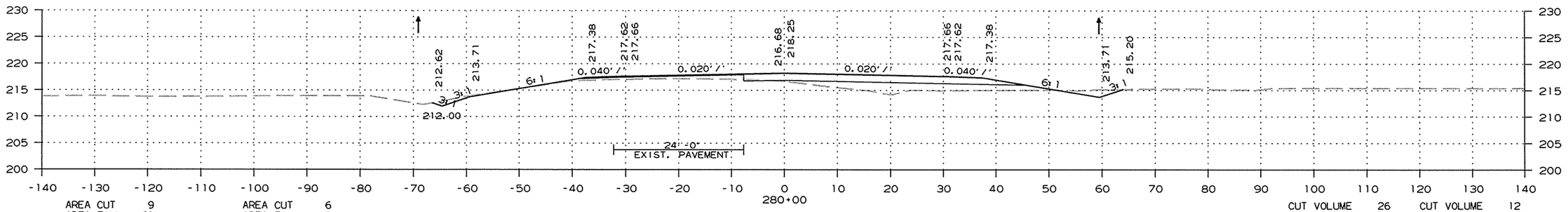
AREA CUT 11
AREA FILL 23

AREA CUT 6
AREA FILL 1

280+92

CUT VOLUME 34
FILL VOLUME 142

CUT VOLUME 20
FILL VOLUME 3



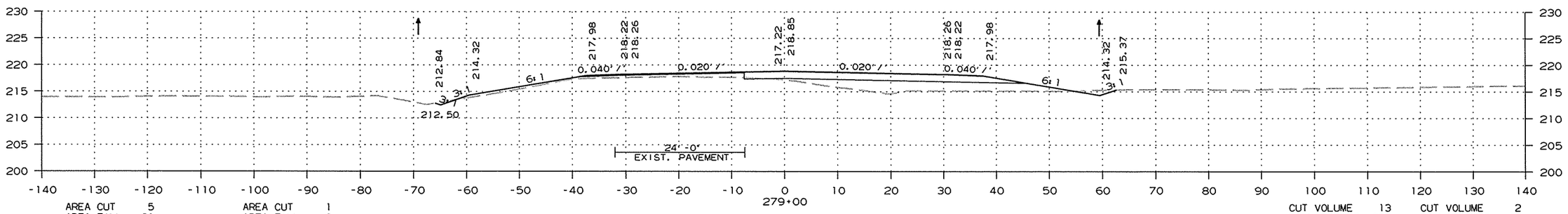
AREA CUT 9
AREA FILL 61

AREA CUT 6
AREA FILL 1

280+00

CUT VOLUME 26
FILL VOLUME 262

CUT VOLUME 12
FILL VOLUME 16



AREA CUT 5
AREA FILL 81

AREA CUT 1
AREA FILL 8

279+00

CUT VOLUME 13
FILL VOLUME 329

CUT VOLUME 2
FILL VOLUME 35

CROSS SECTION STA. 279+00 TO STA. 280+92

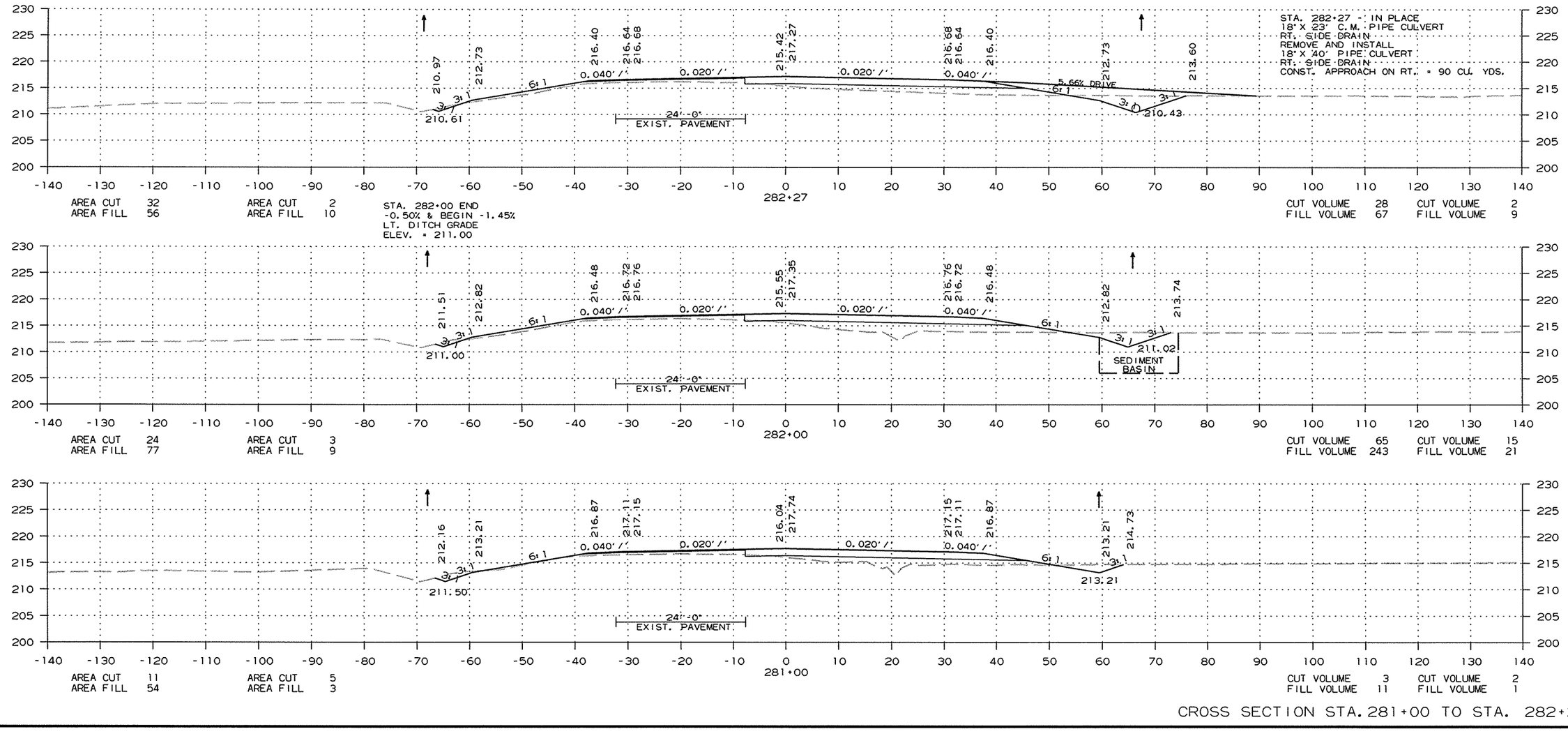
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	279	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 281+00 TO STA. 282+27

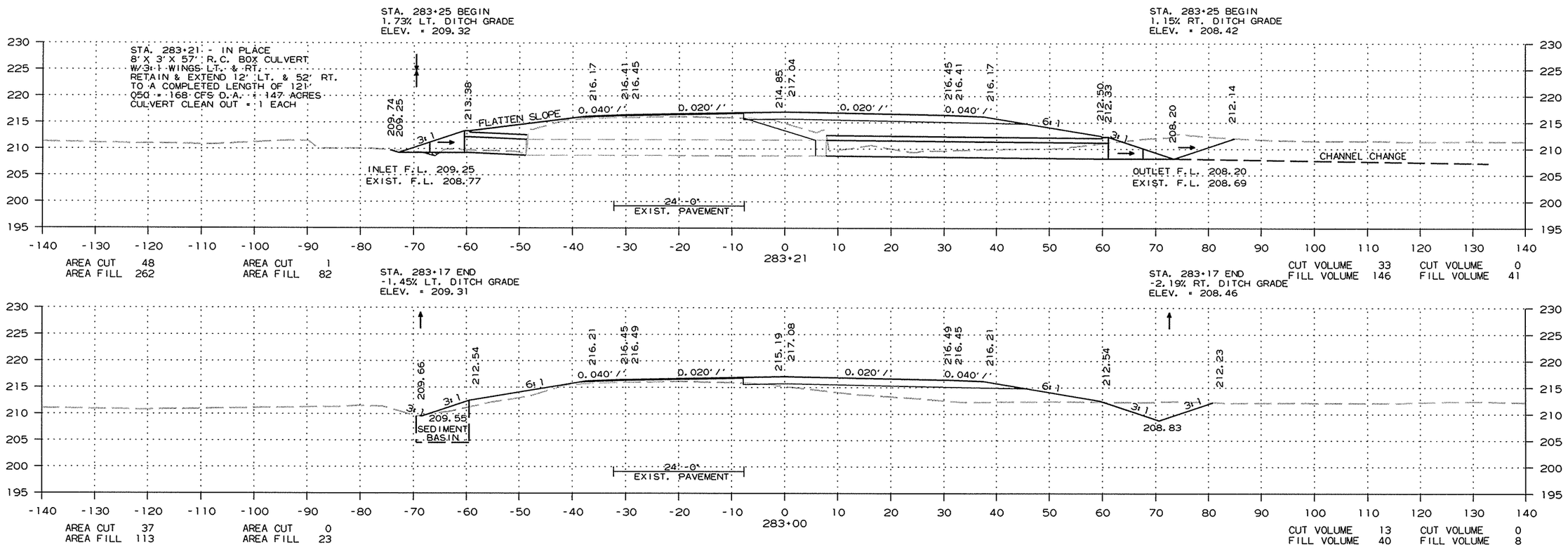
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	280	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 282+90 TO STA. 283+21

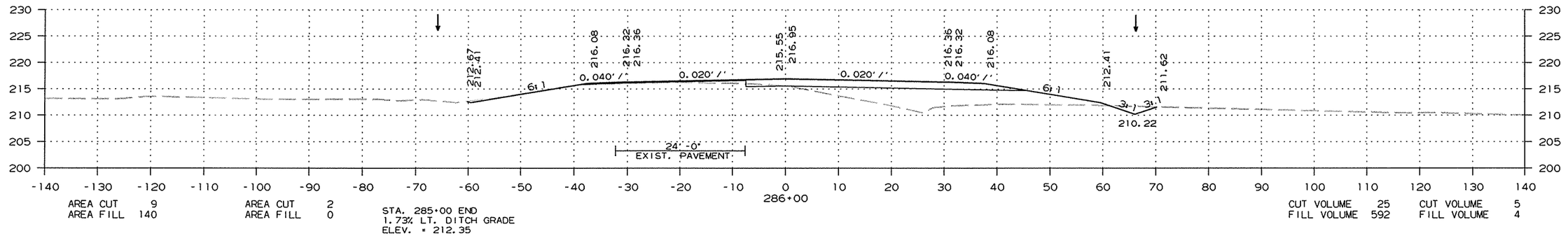
9/30/2013

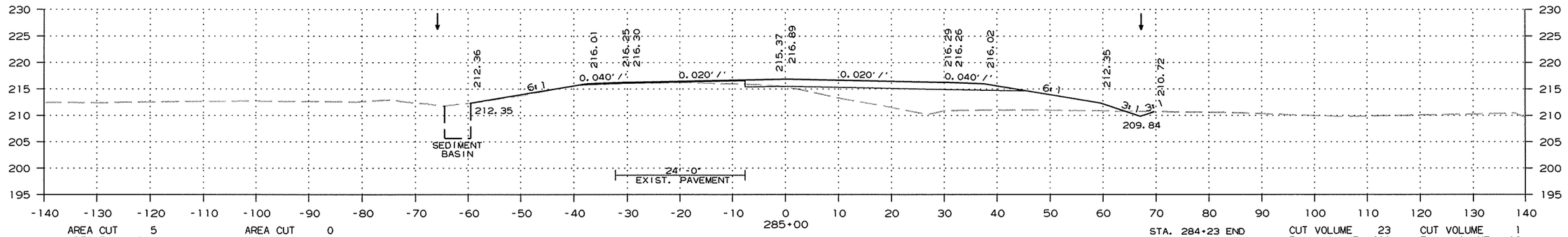
R110217.DGN

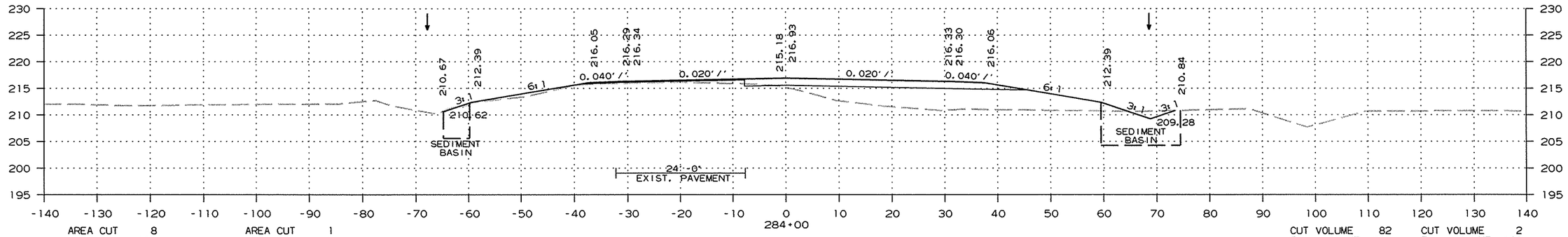
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	281	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 284+00 TO STA. 286+00

9/30/2013

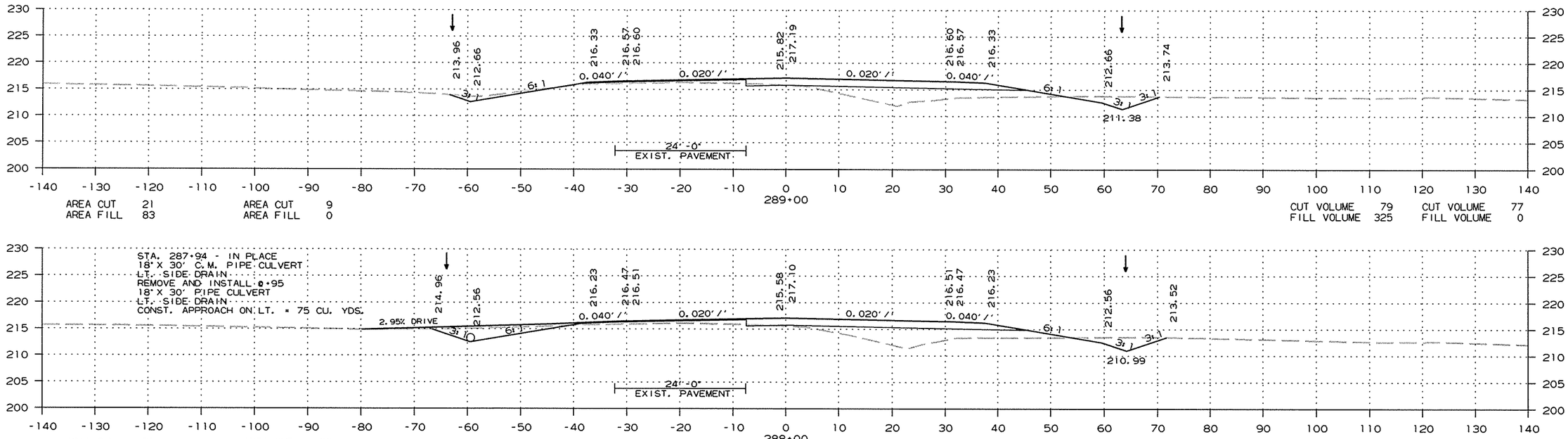
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	282	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 287+00 TO STA. 289+00

9/30/2013

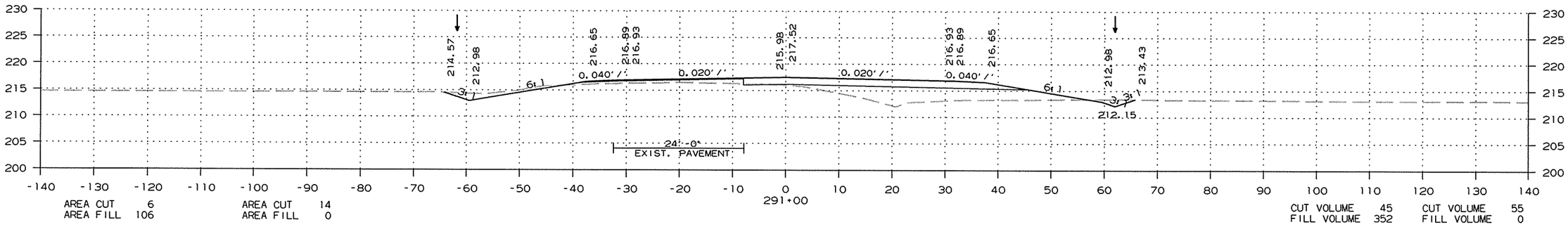
R110217.DGN

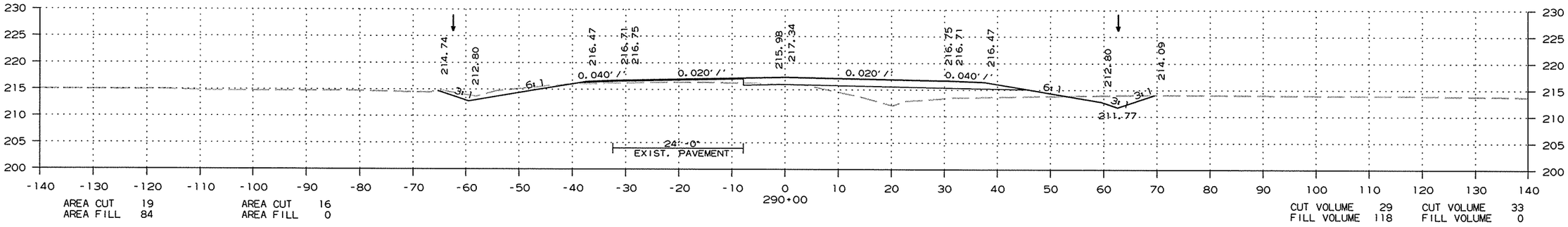
STAGE 1 STAGE 2

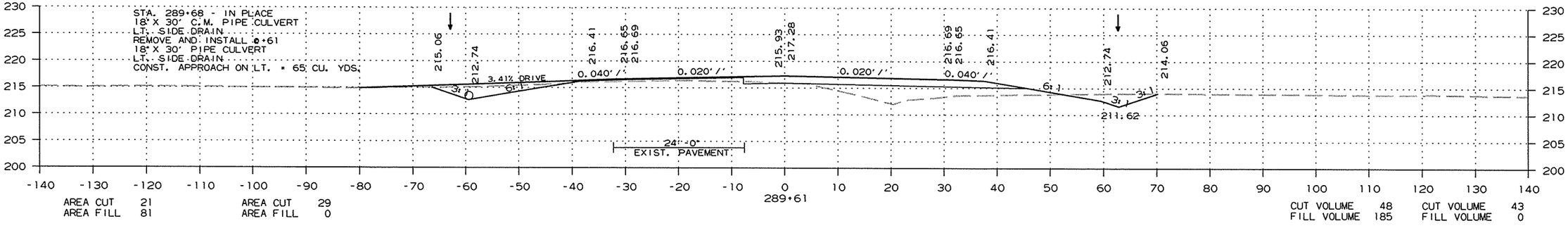
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	283	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 289+61 TO STA. 291+00

9/30/2013

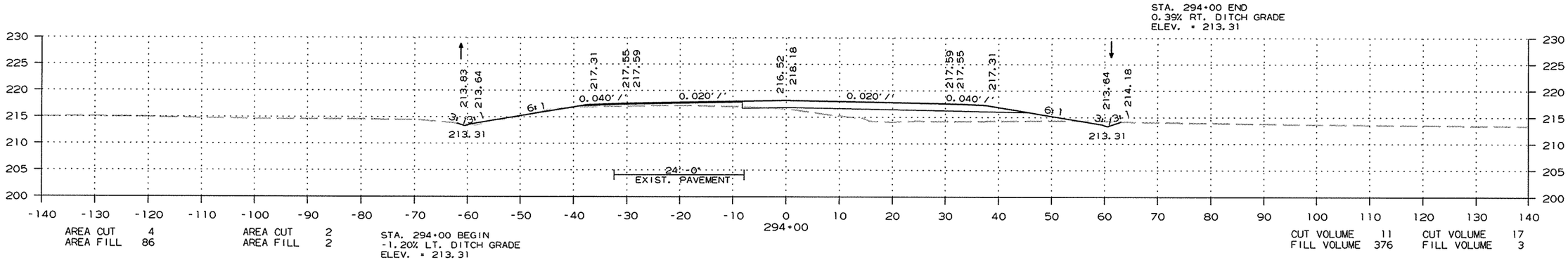
R110217.DGN

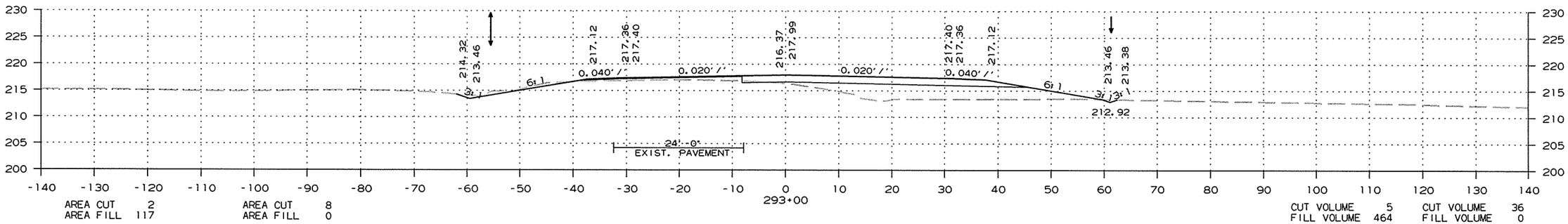
STAGE 1 STAGE 2

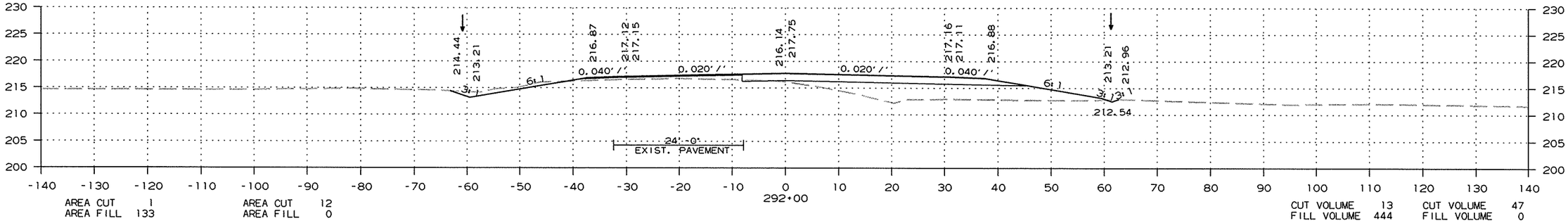
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	284	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 292+00 TO STA. 294+00

9/30/2013

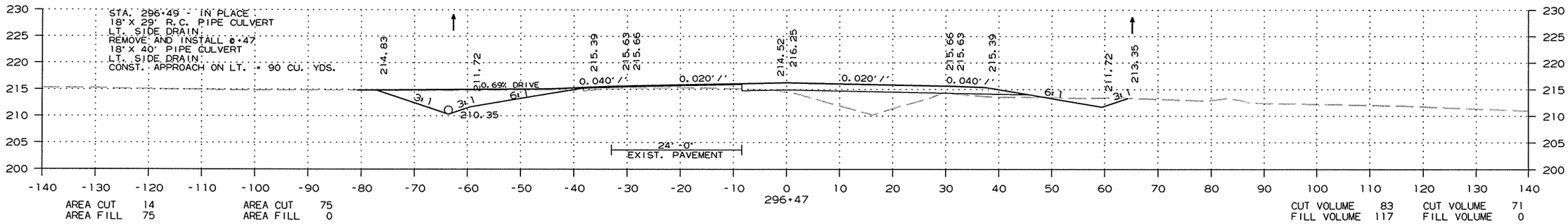
R110217.DGN

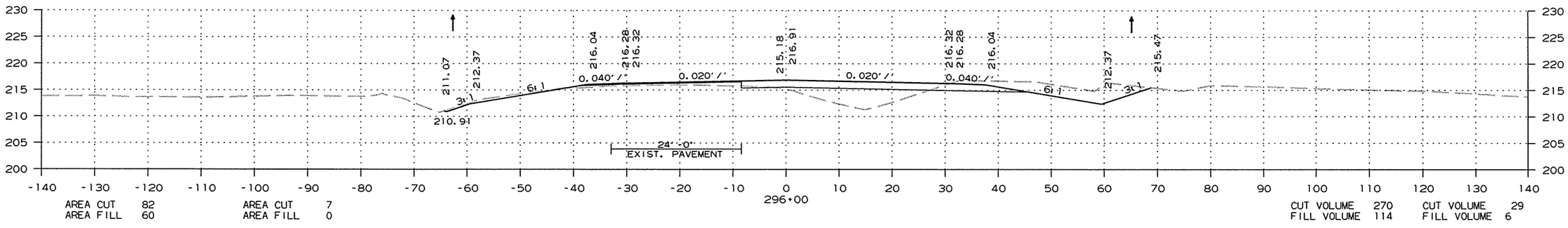
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	285	348

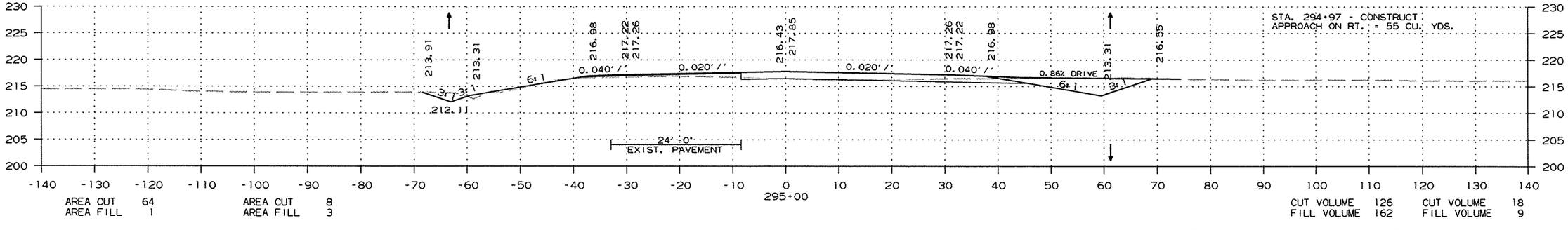
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 295+00 TO STA. 296+47

9/30/2013

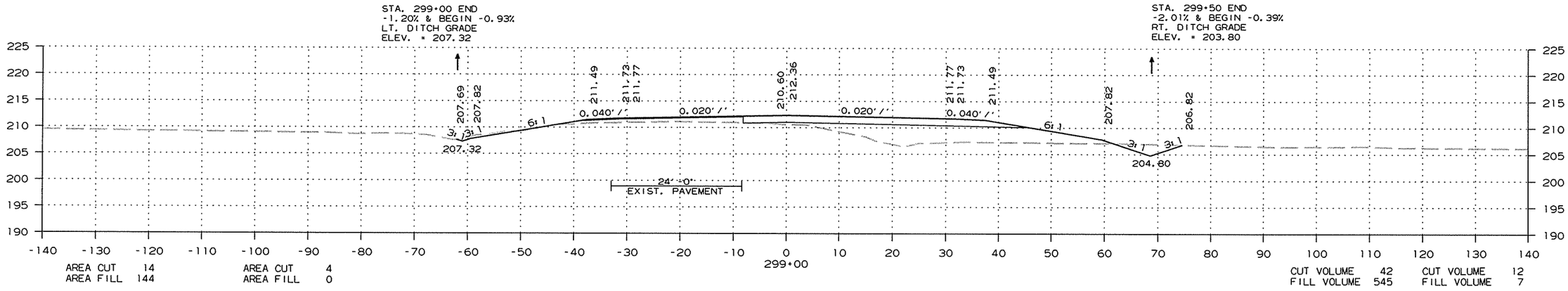
R110217.DGN

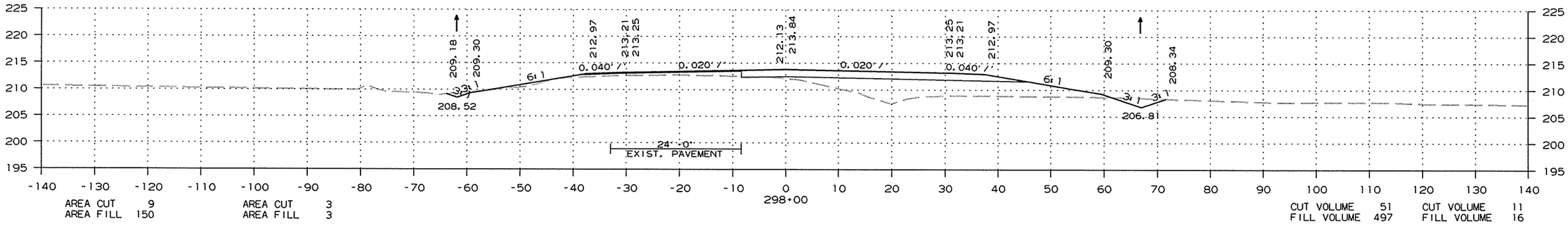
STAGE 1 STAGE 2

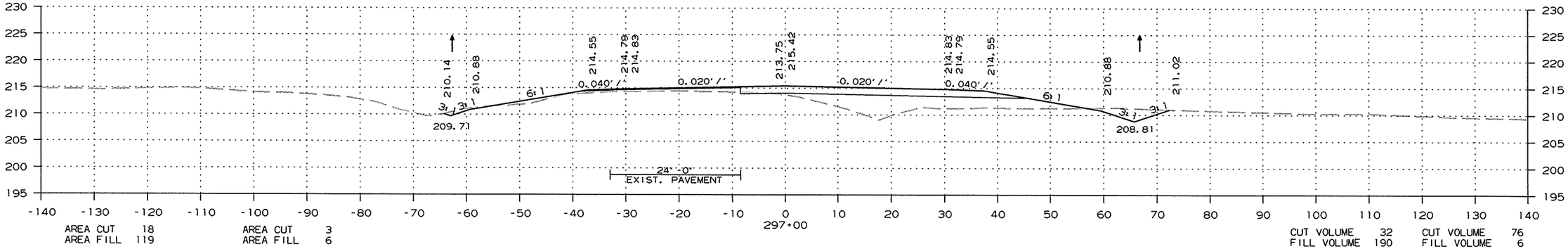
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	286	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 297+00 TO STA. 299+00

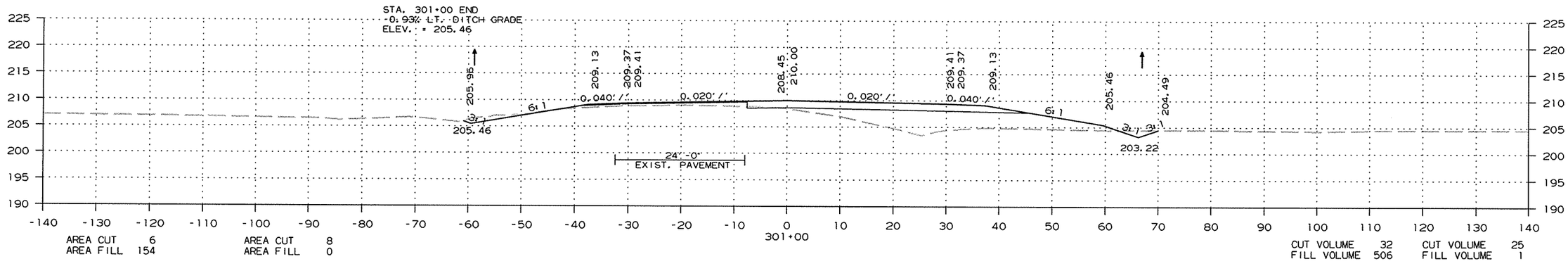
9/30/2013

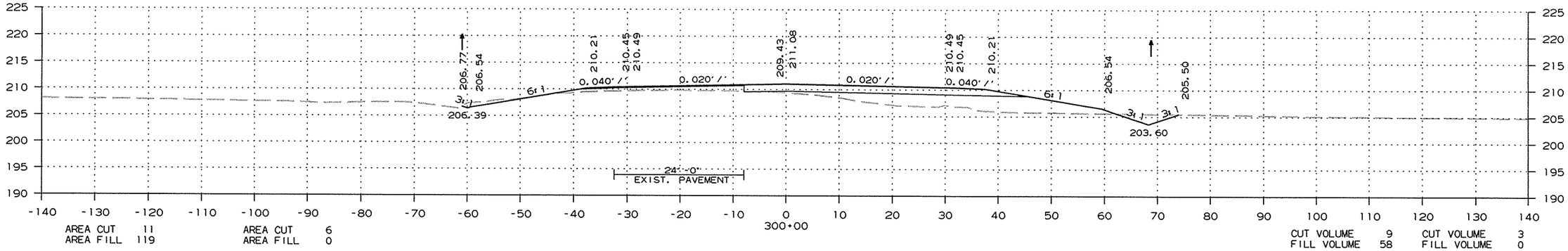
R110217.DGN

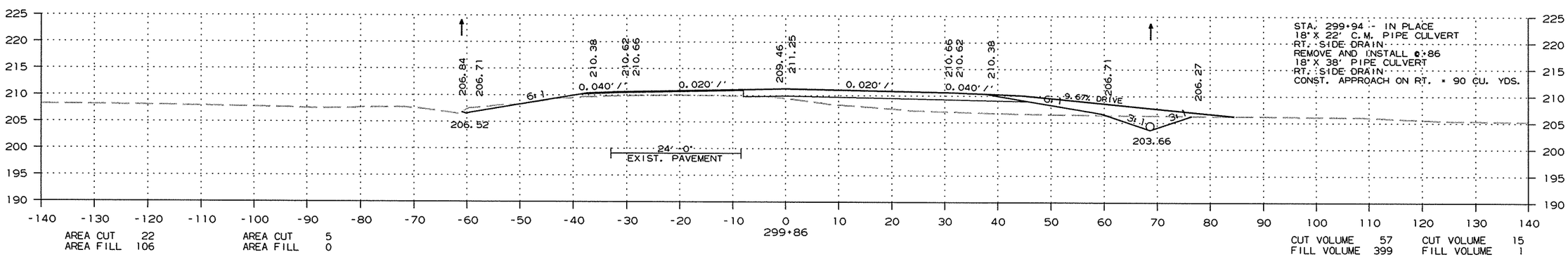
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	287	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







STA. 299+94 - IN PLACE
18' X 22' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ 86
18' X 38' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 90 CU. YDS.

CROSS SECTION STA. 299+86 TO STA. 301+00

9/30/2013

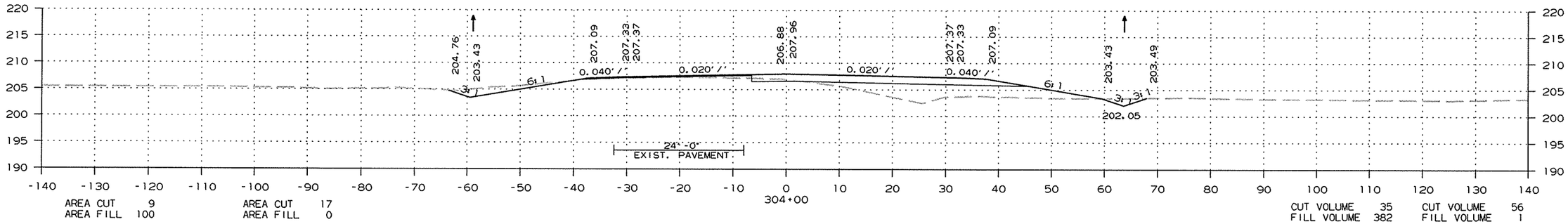
R110217.DGN

STAGE 1 STAGE 2

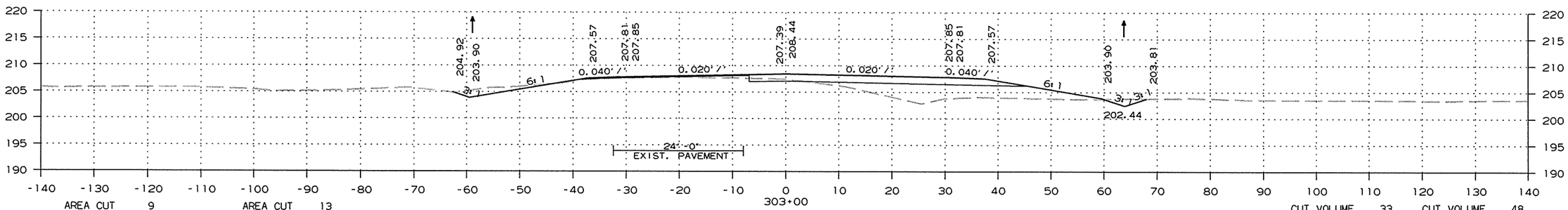
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	288	348

(2) CROSS SECTIONS

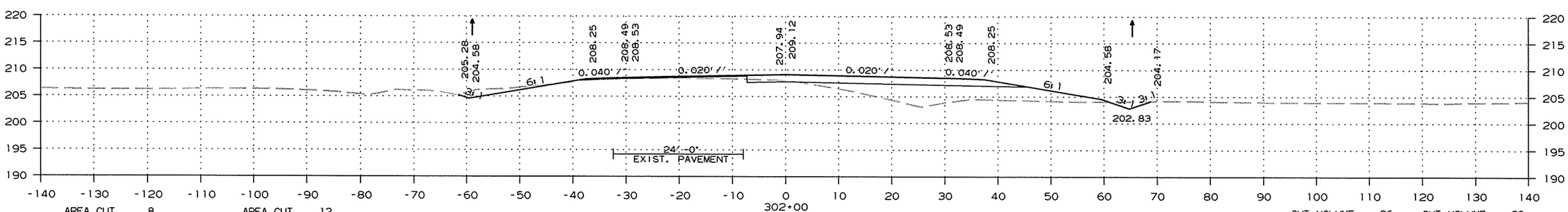
STAGE 1 STAGE 2



AREA CUT 9 AREA FILL 100
AREA CUT 17 AREA FILL 0
CUT VOLUME 35 FILL VOLUME 382
CUT VOLUME 56 FILL VOLUME 1



AREA CUT 9 AREA FILL 106
AREA CUT 13 AREA FILL 1
CUT VOLUME 33 FILL VOLUME 430
CUT VOLUME 48 FILL VOLUME 1



AREA CUT 8 AREA FILL 126
AREA CUT 12 AREA FILL 0
CUT VOLUME 26 FILL VOLUME 519
CUT VOLUME 38 FILL VOLUME 0

CROSS SECTION STA. 302+00 TO STA. 304+00

9/30/2013

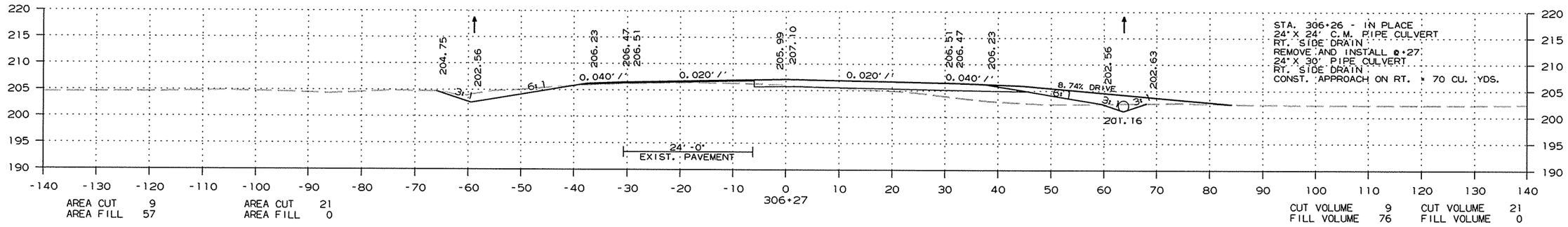
R110217.DGN

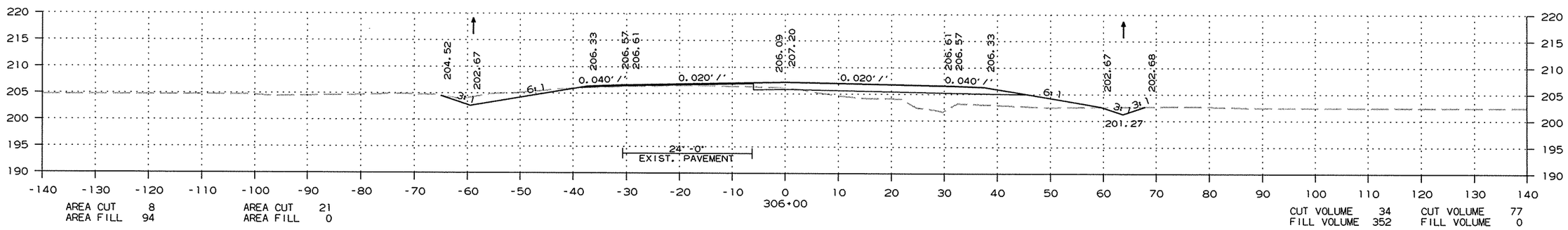
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	289	348

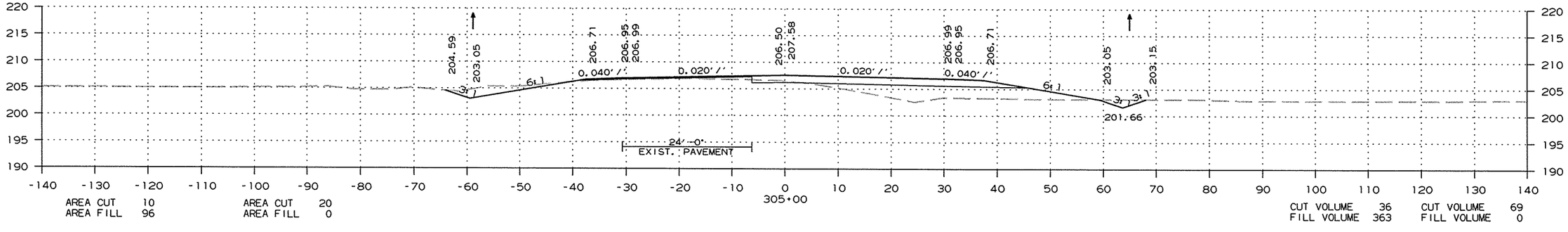
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 305+00 TO STA. 306+27

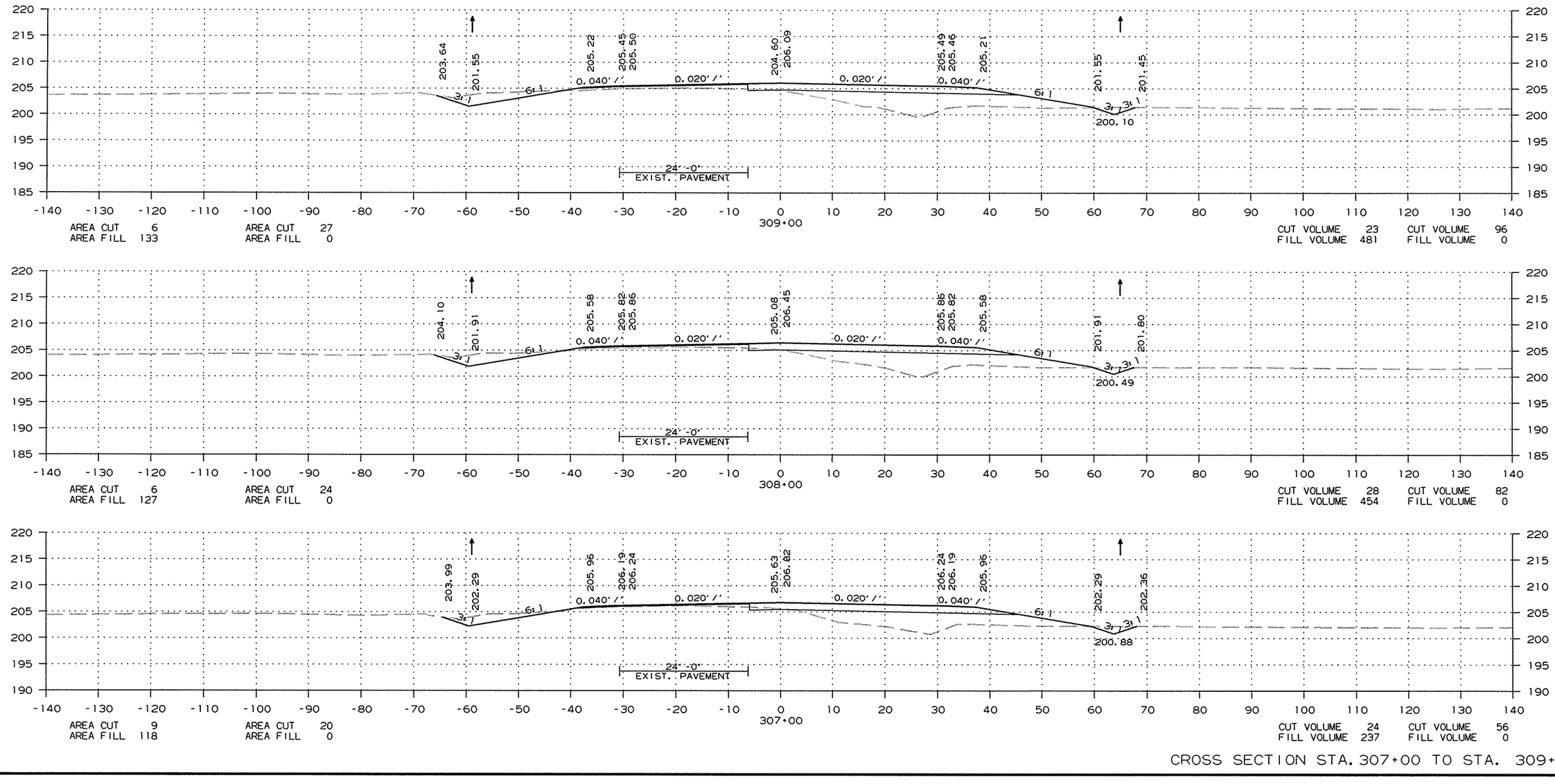
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	290	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 307+00 TO STA. 309+00

9/30/2013

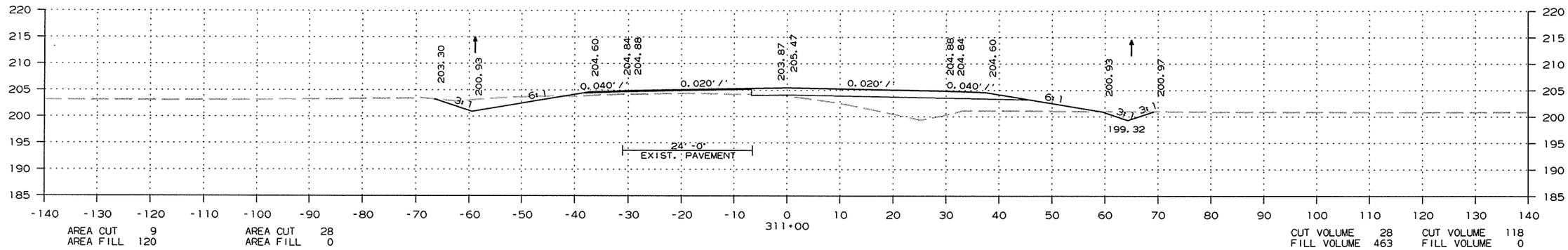
R110217.DGN

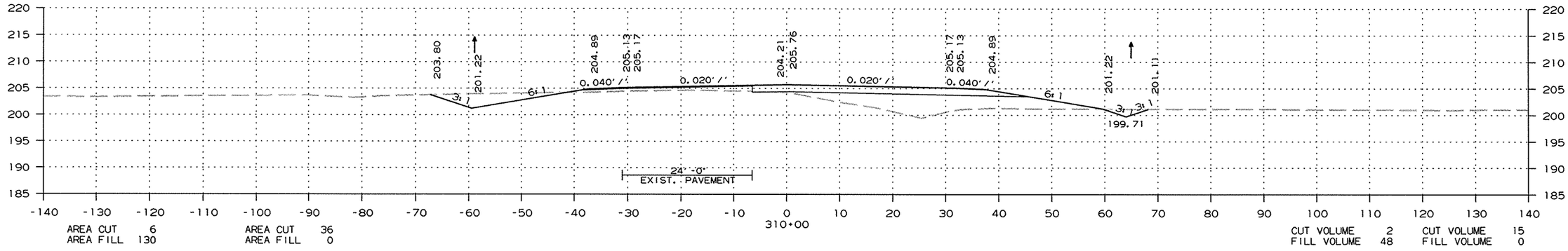
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	291	348

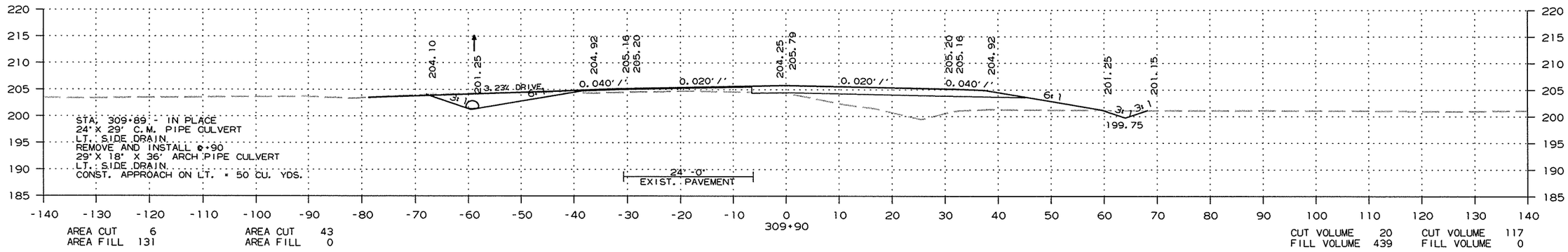
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 309+90 TO STA. 311+00

9/30/2013

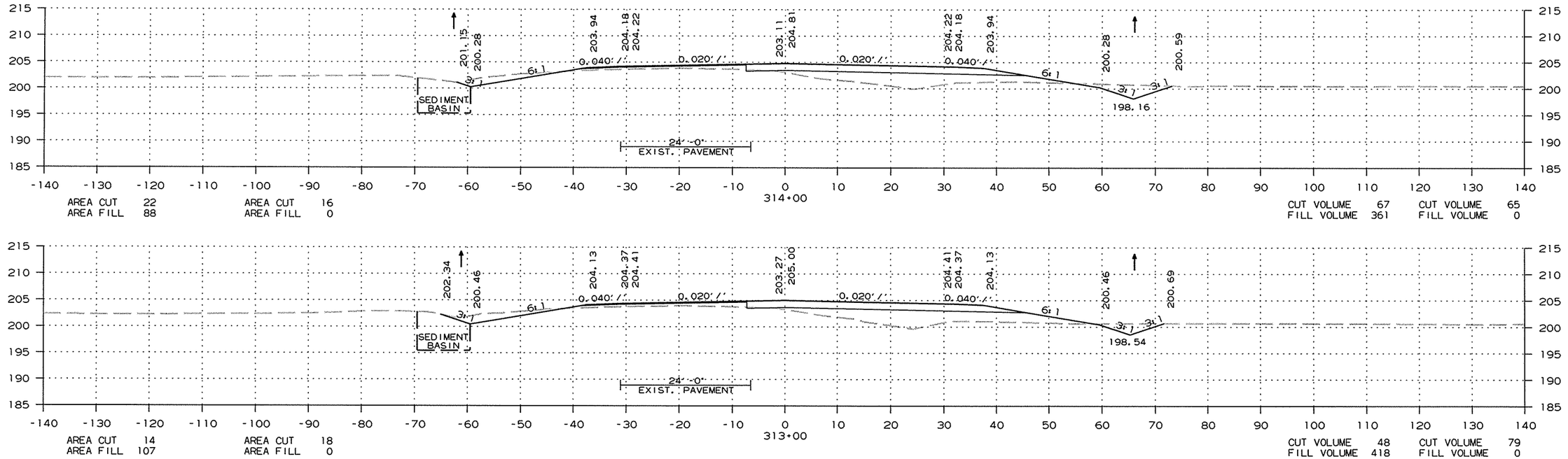
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	292	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 312+00 TO STA. 314+00

9/30/2013

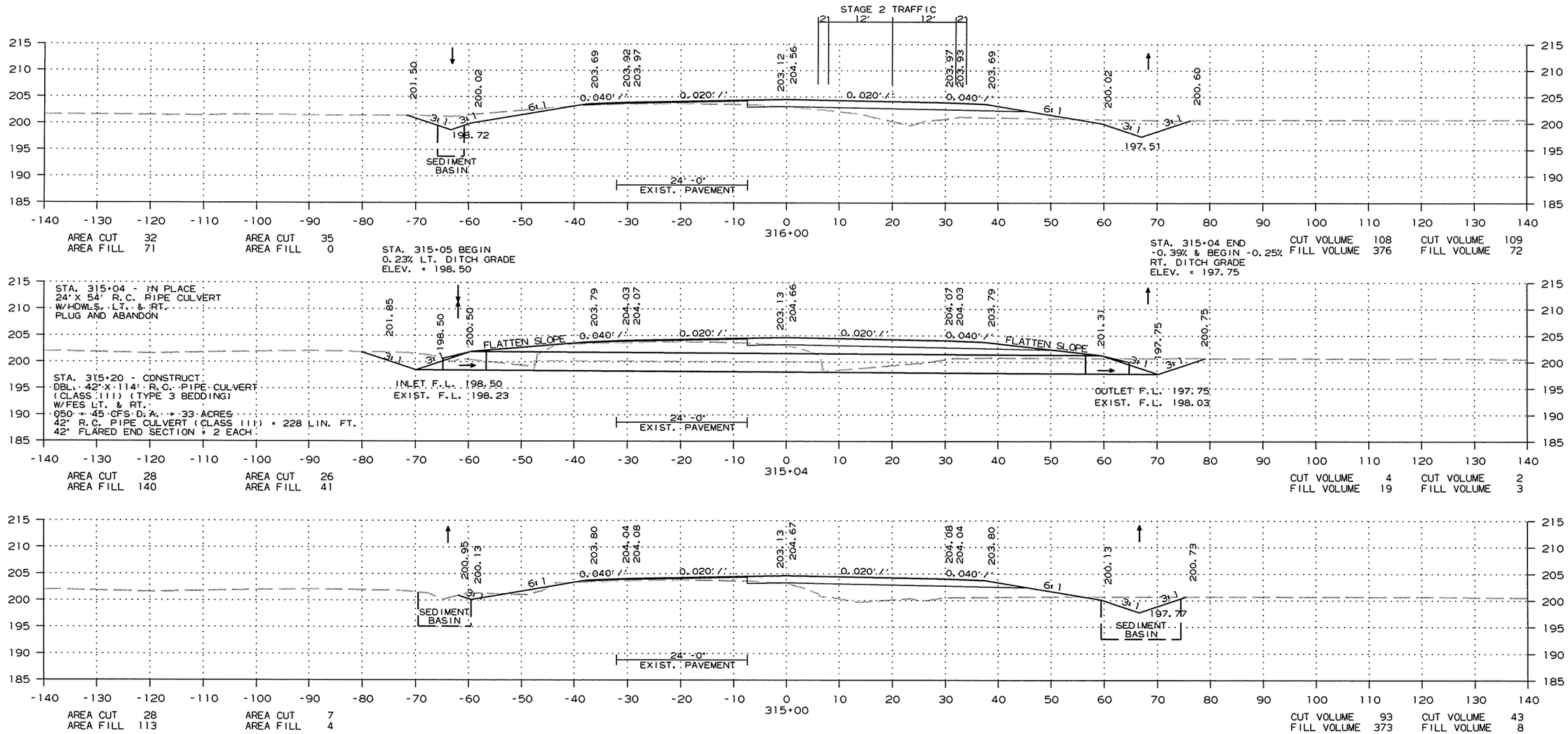
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	293	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 315+00 TO STA. 316+00

9/30/2013

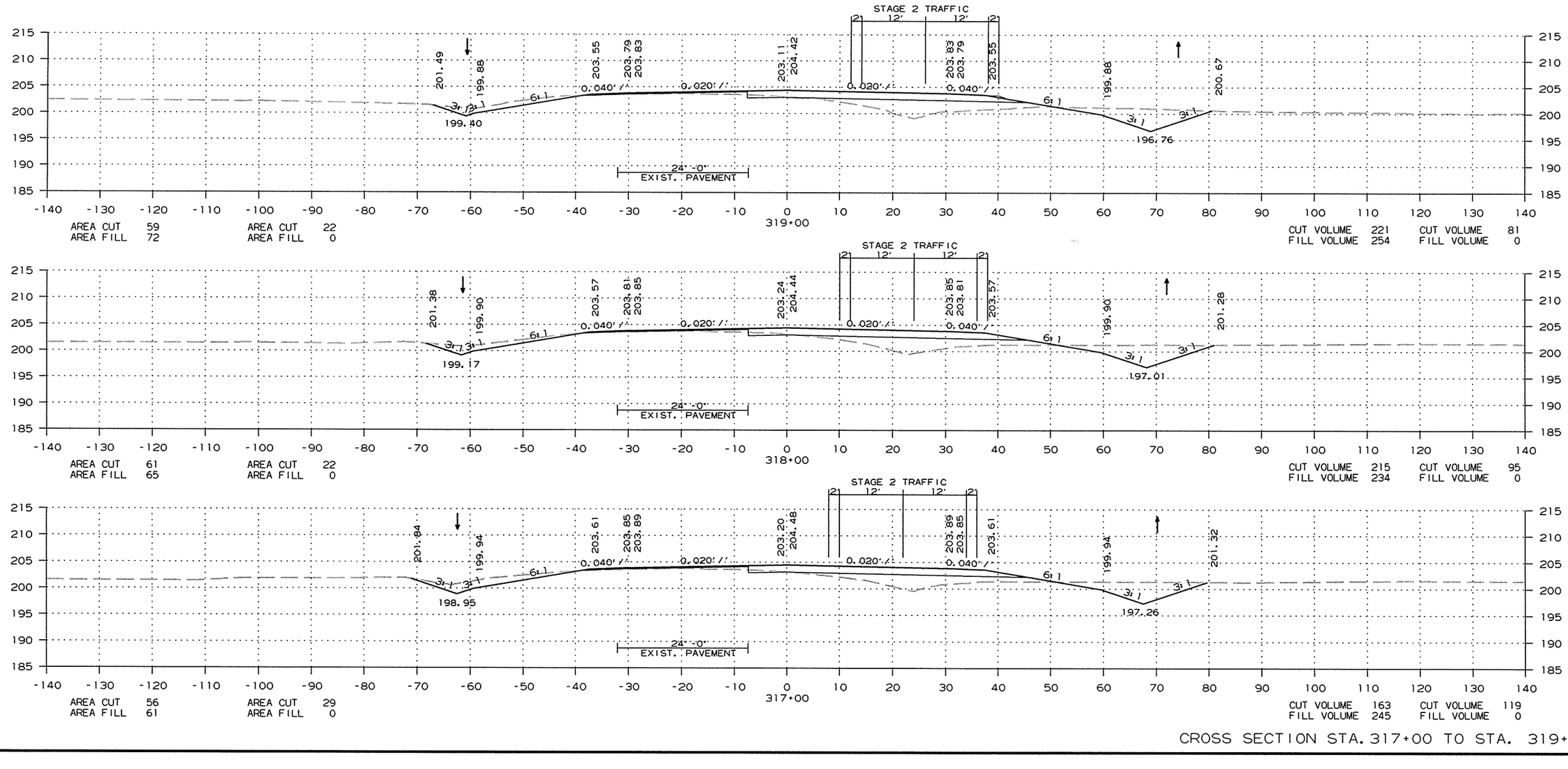
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	294	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 317+00 TO STA. 319+00

9/30/2013

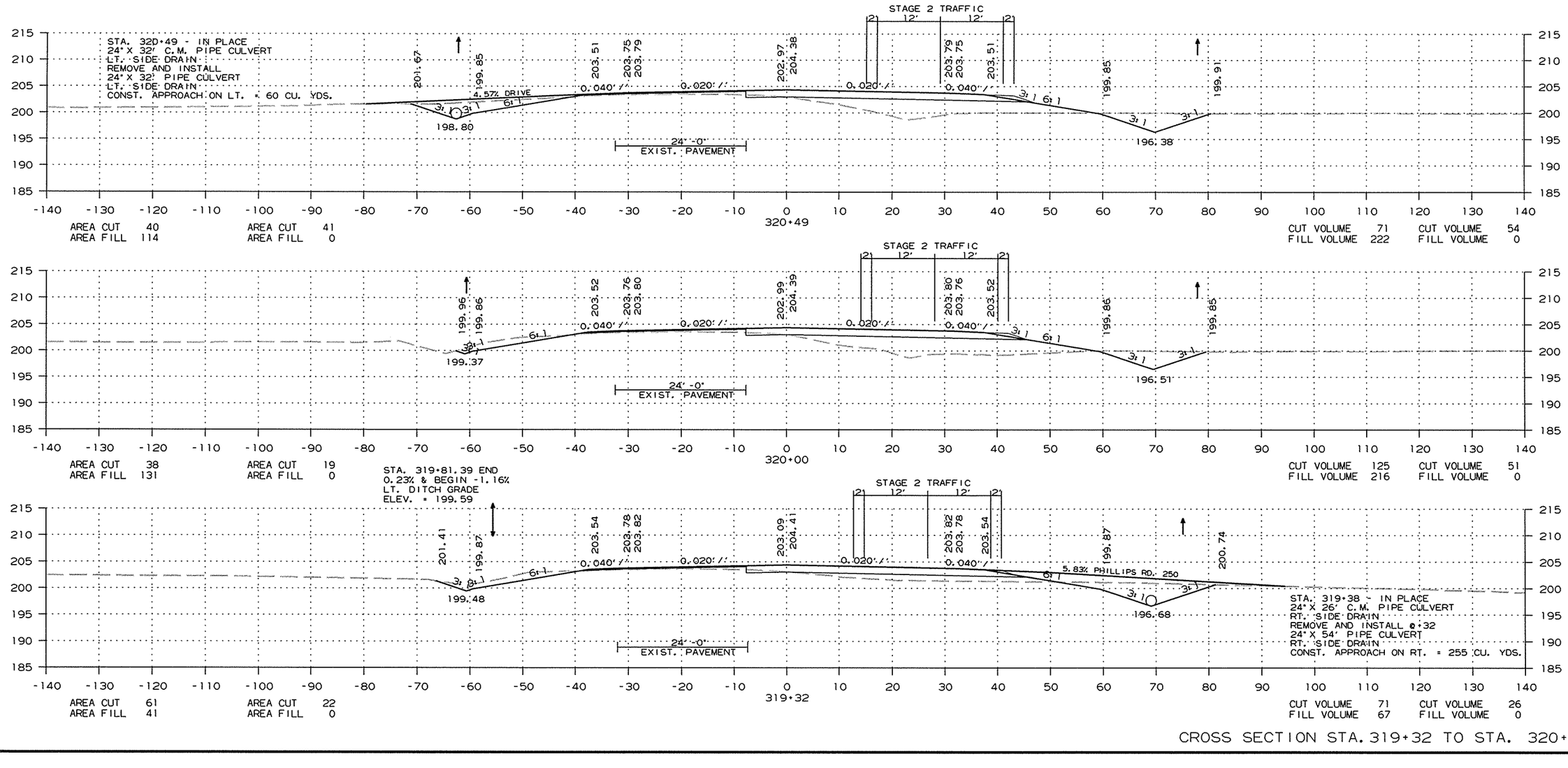
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	295	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 319+32 TO STA. 320+49

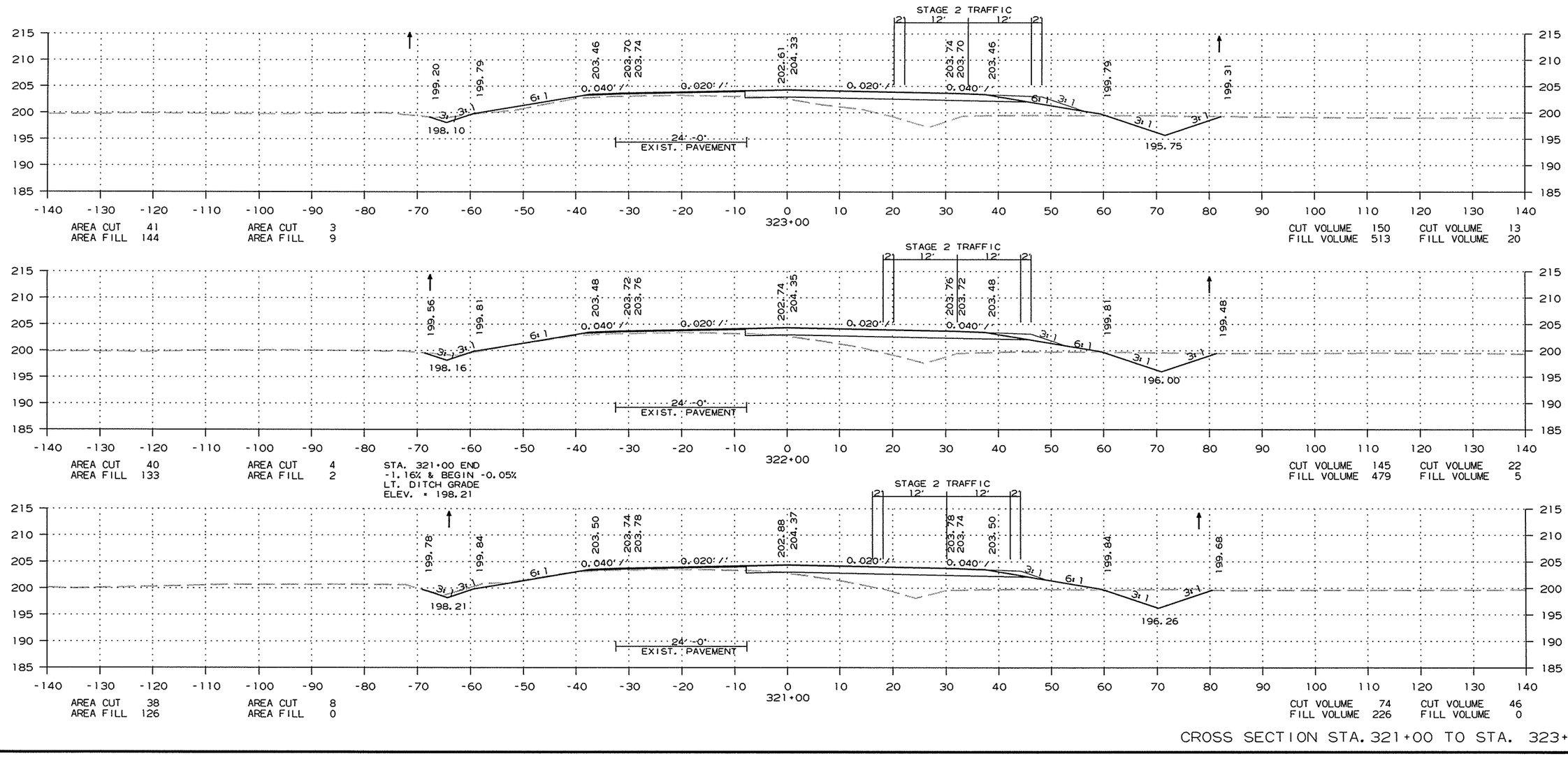
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	296	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 321+00 TO STA. 323+00

9/30/2013

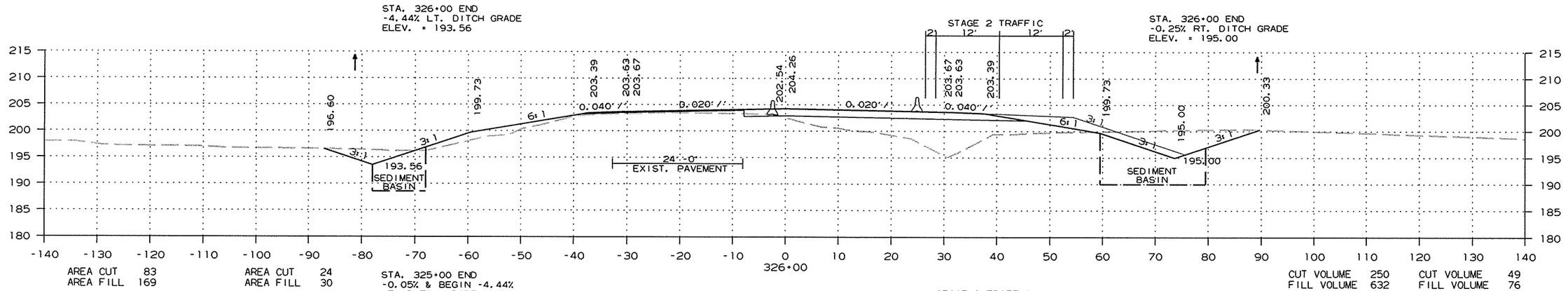
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	297	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 324+00 TO STA. 326+00

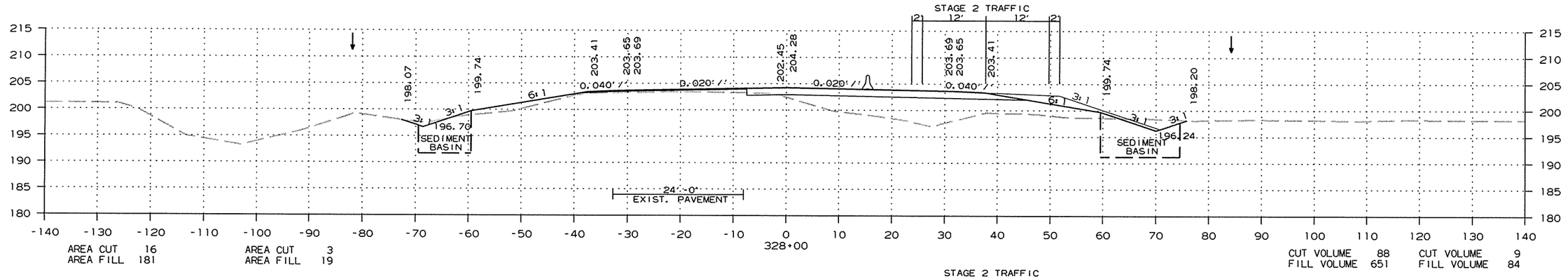
9/30/2013

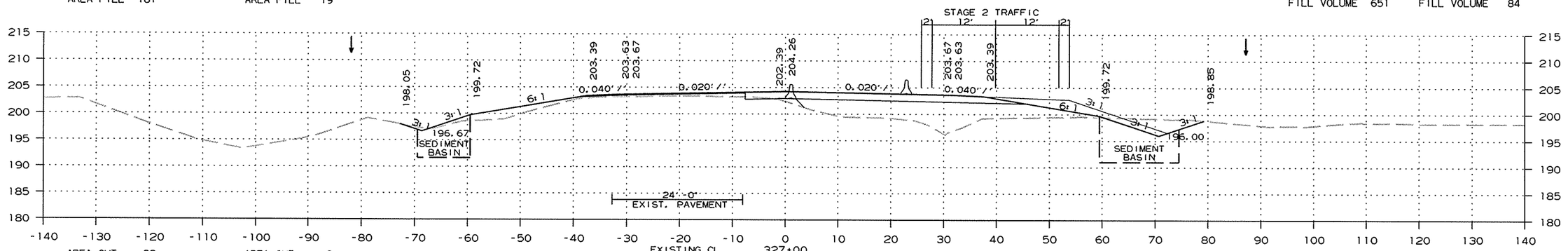
R110217.DGN

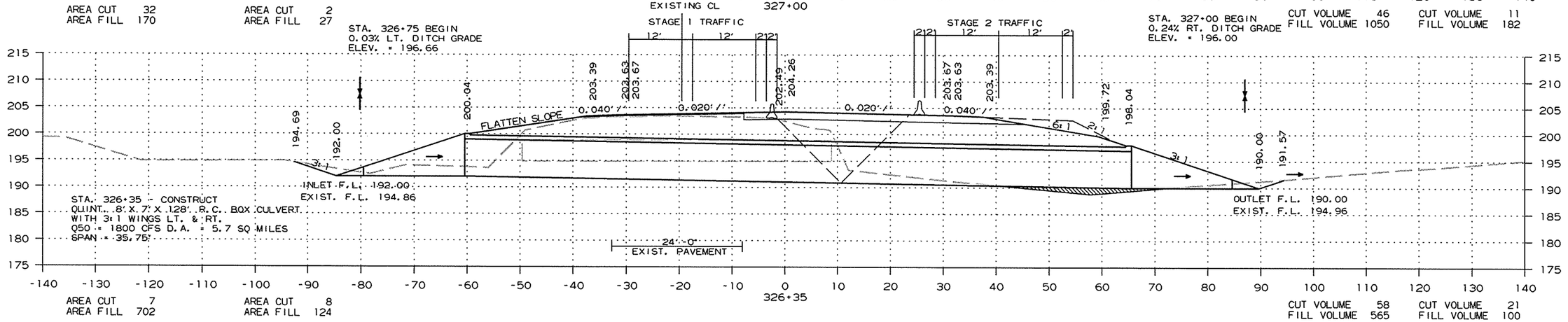
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	298	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 326+35 TO STA. 328+00

9/30/2013

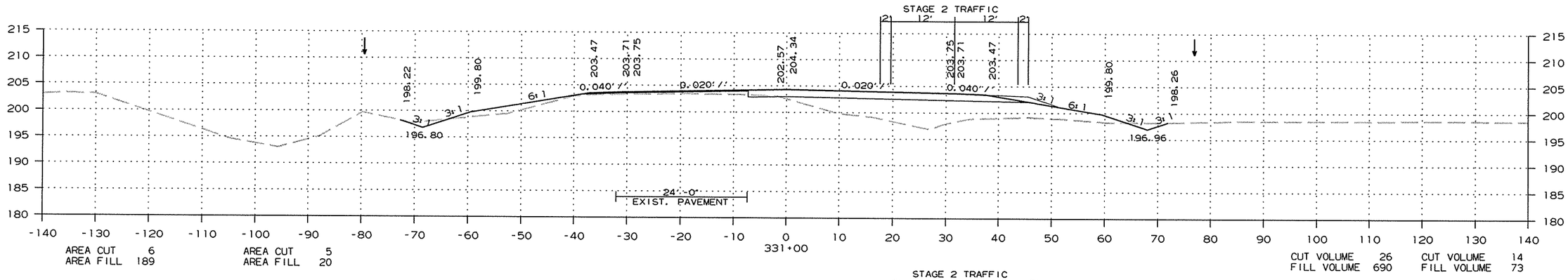
R110217.DGN

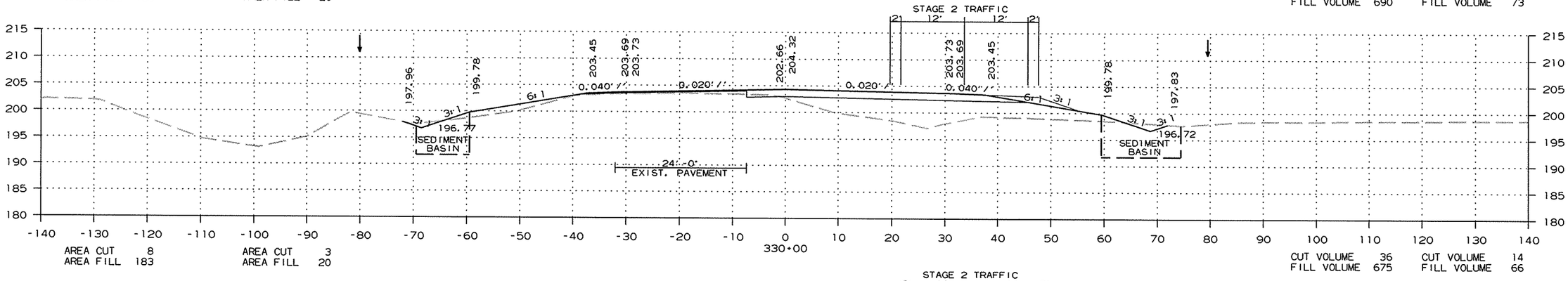
STAGE 1 STAGE 2

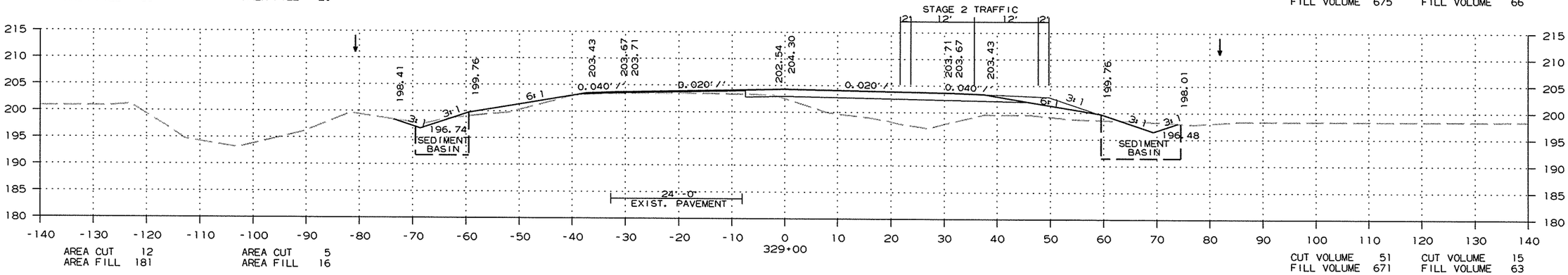
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	299	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 329+00 TO STA. 331+00

9/30/2013

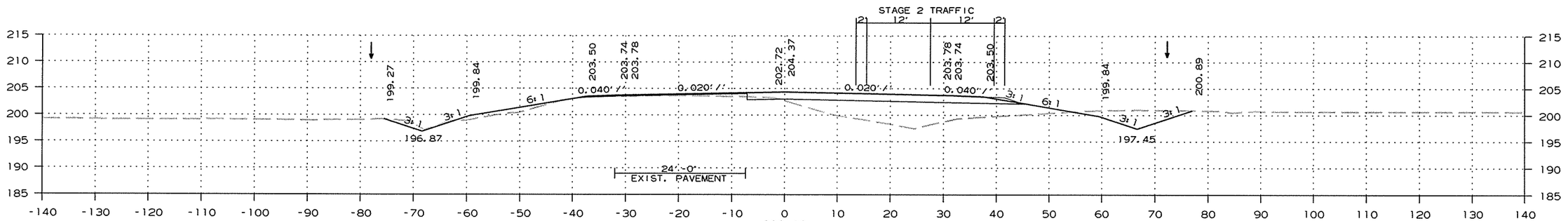
R110217.DGN

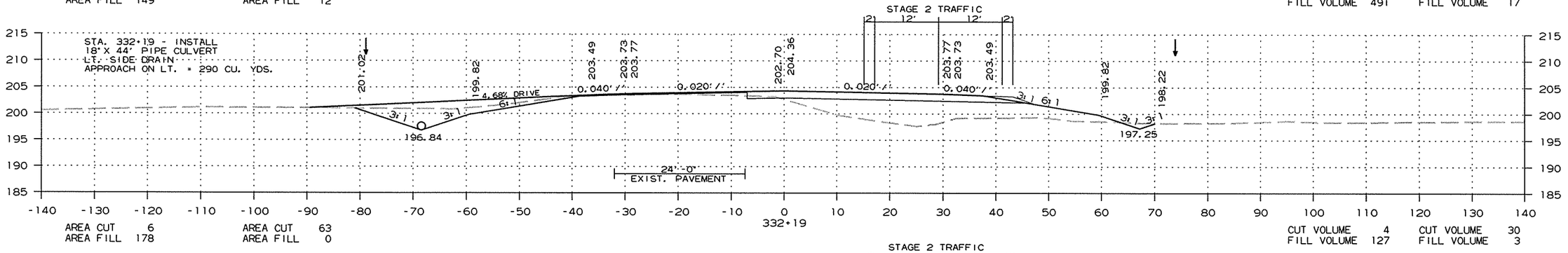
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	300	348

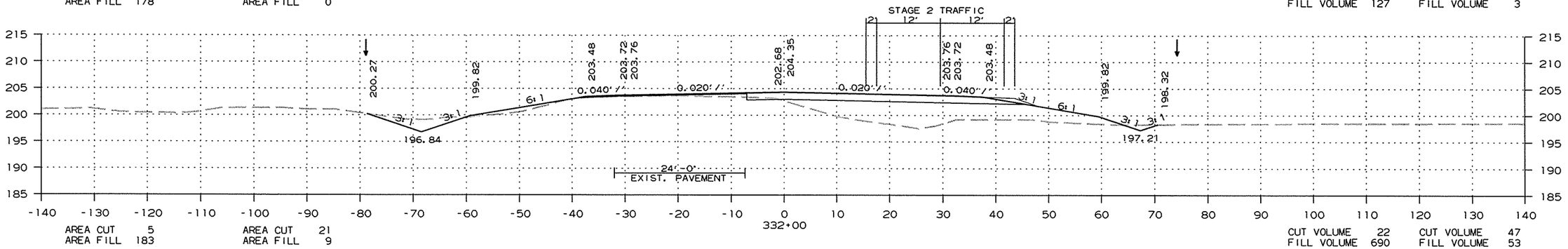
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 332+00 TO STA. 333+00

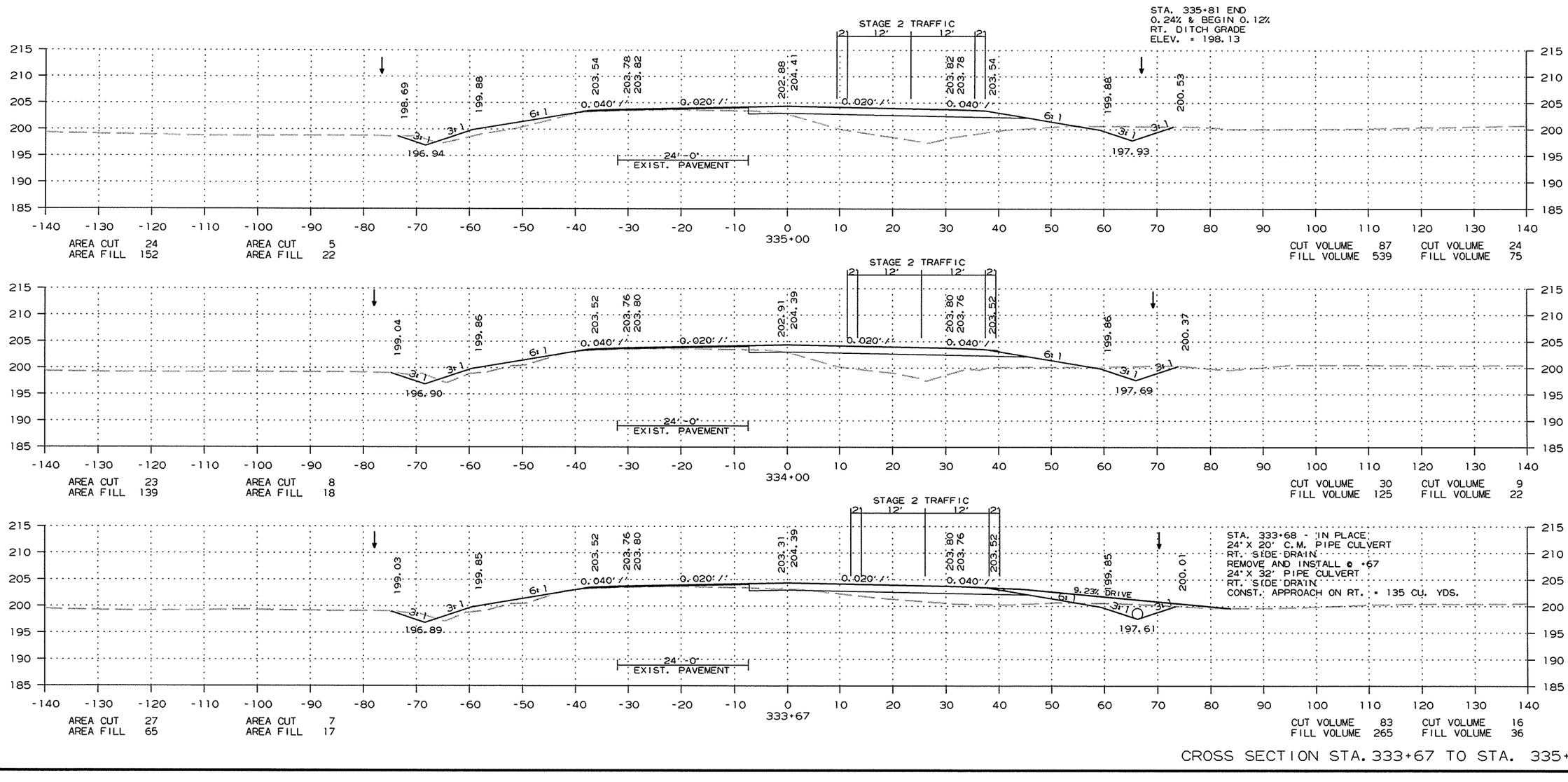
9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	301	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 333+67 TO STA. 335+00

9/30/2013

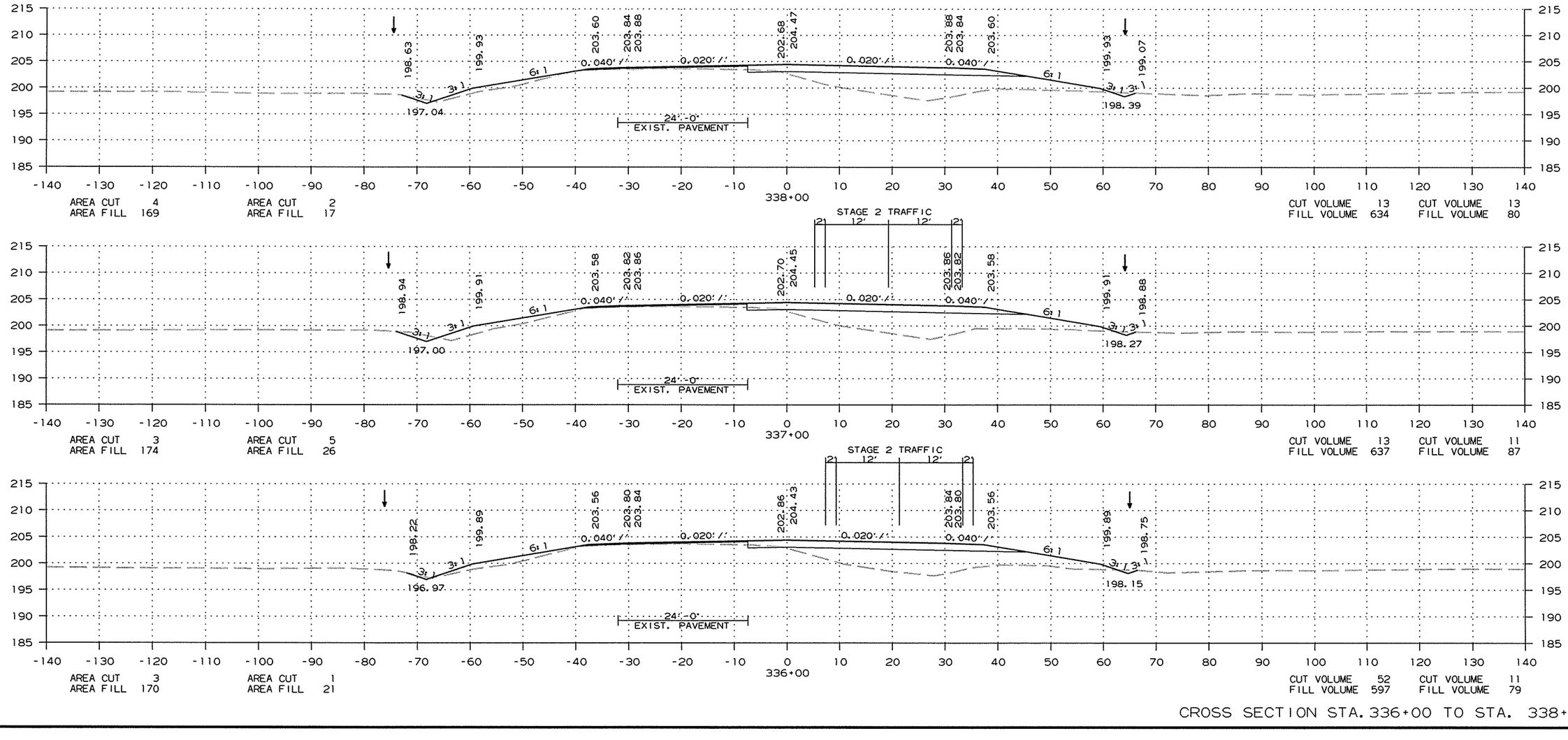
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	302	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 336+00 TO STA. 338+00

9/30/2013

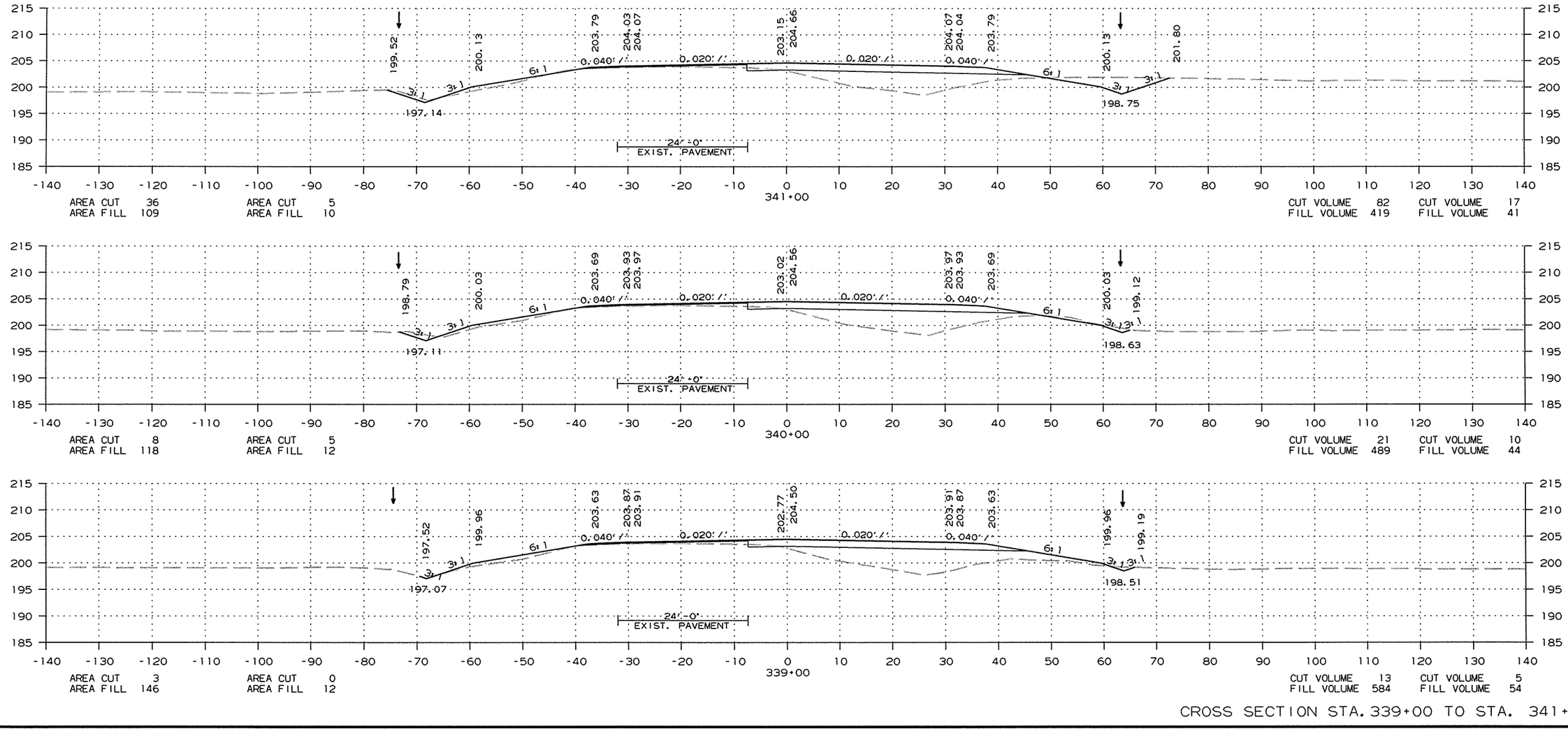
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	303	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 339+00 TO STA. 341+00

9/30/2013

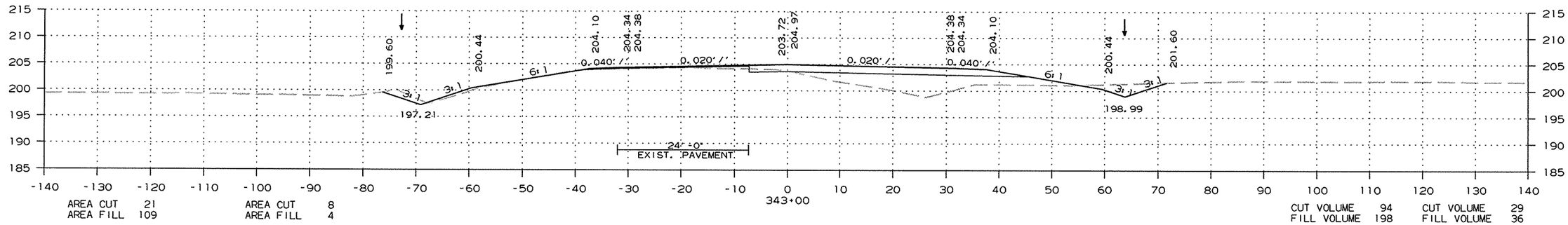
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	304	348

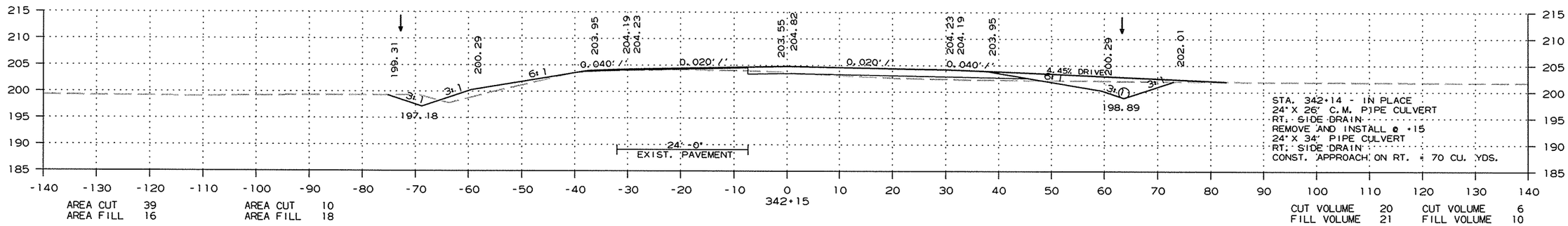
(2) CROSS SECTIONS

STAGE 1 STAGE 2



AREA CUT 21 AREA CUT 8
AREA FILL 109 AREA FILL 4

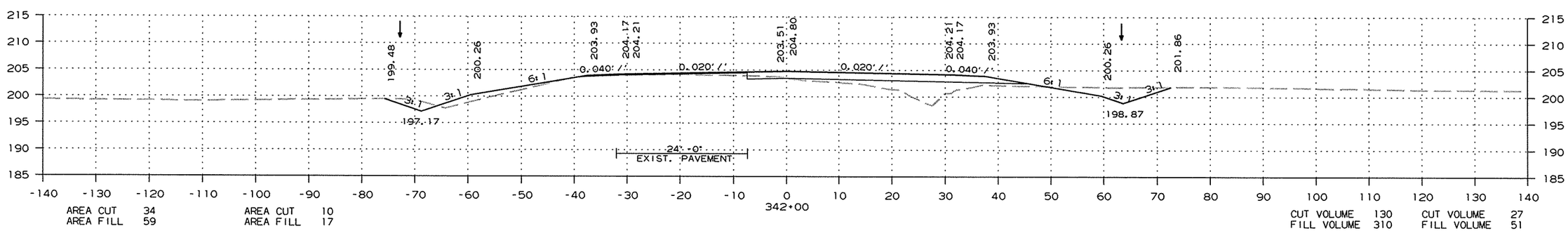
CUT VOLUME 94 CUT VOLUME 29
FILL VOLUME 198 FILL VOLUME 36



STA. 342+14 - IN PLACE
24" X 26' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +15
24" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH ON RT. = 70 CU. YDS.

AREA CUT 39 AREA CUT 10
AREA FILL 16 AREA FILL 18

CUT VOLUME 20 CUT VOLUME 6
FILL VOLUME 21 FILL VOLUME 10



AREA CUT 34 AREA CUT 10
AREA FILL 59 AREA FILL 17

CUT VOLUME 130 CUT VOLUME 27
FILL VOLUME 310 FILL VOLUME 51

CROSS SECTION STA. 342+00 TO STA. 343+00

9/30/2013

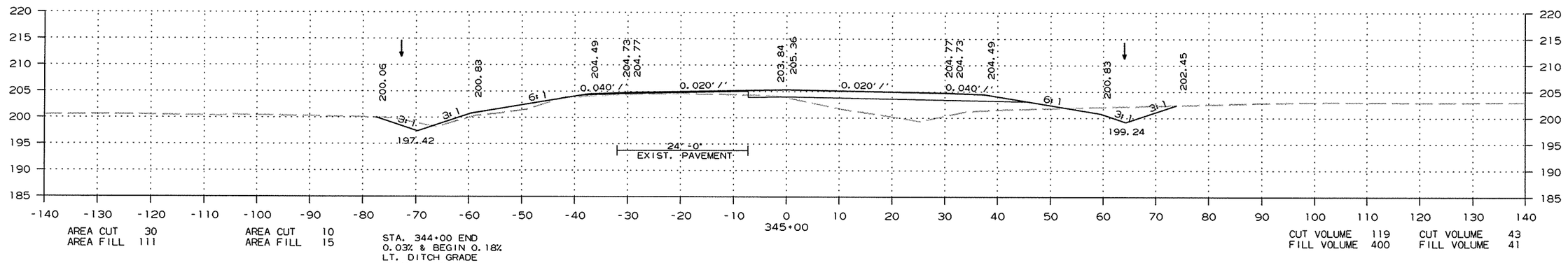
R110217.DGN

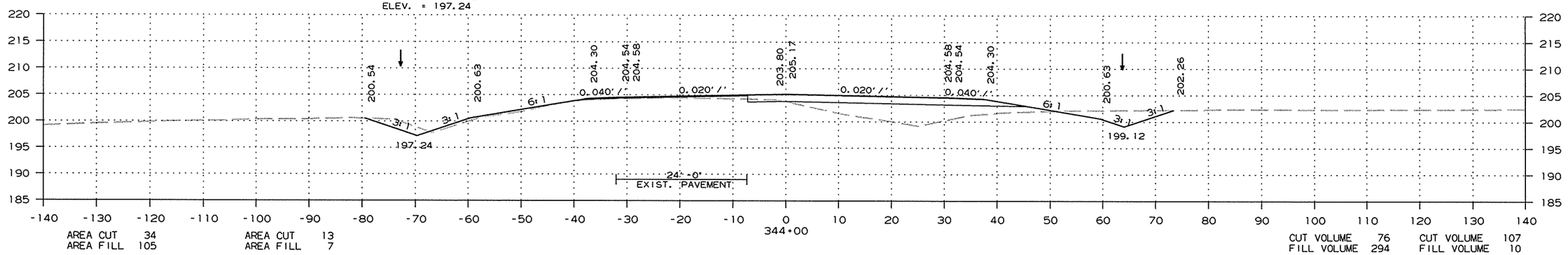
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	305	348

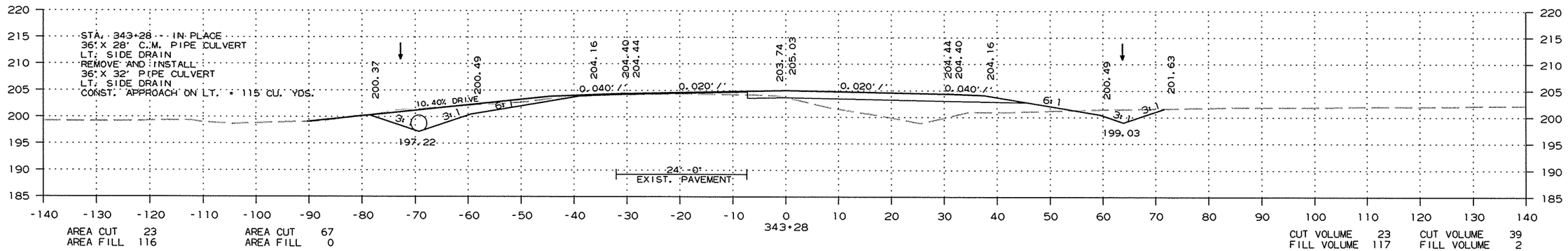
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 343+28 TO STA. 345+00

9/30/2013

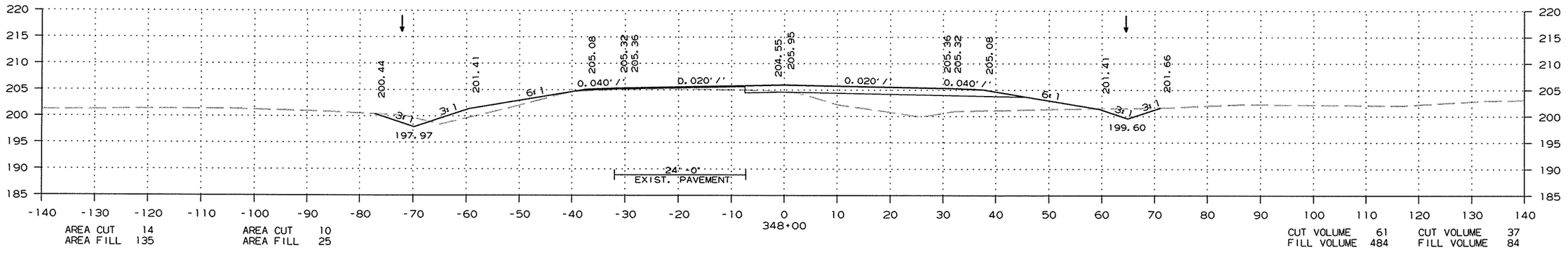
R110217.DGN

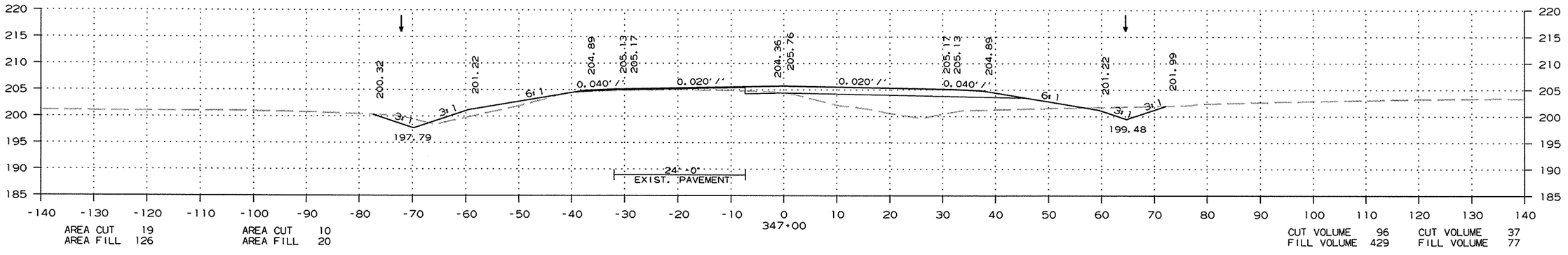
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	306	348

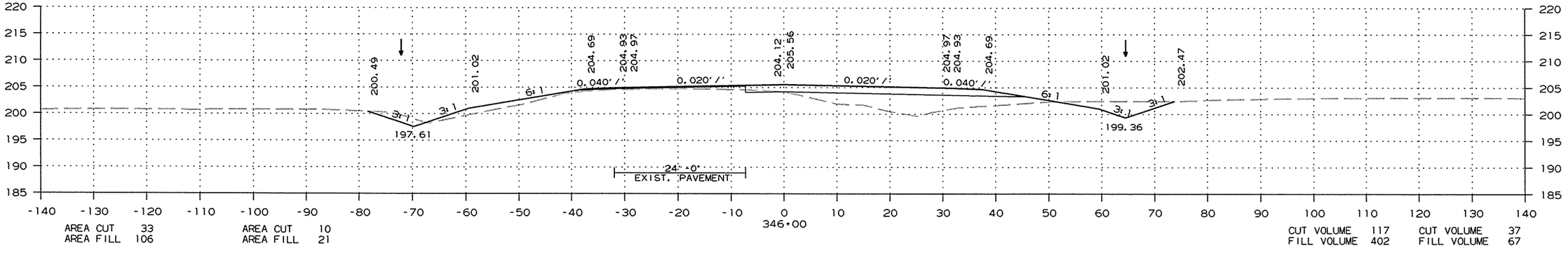
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 346+00 TO STA. 348+00

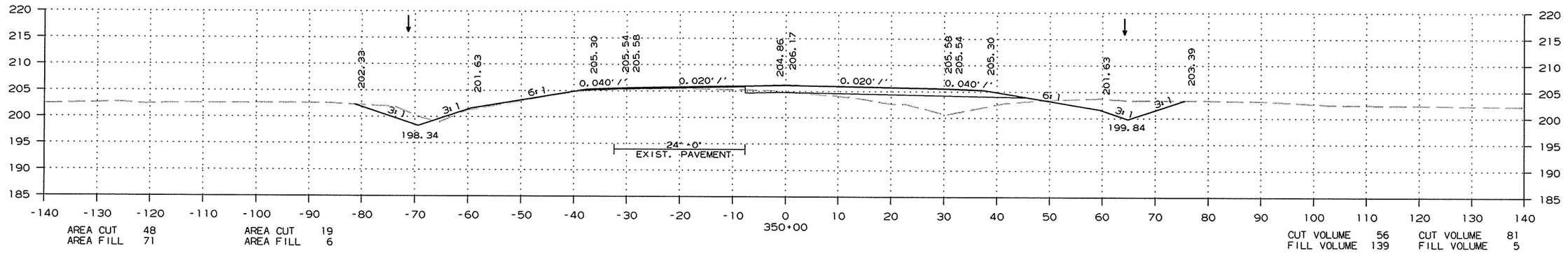
9/30/2013

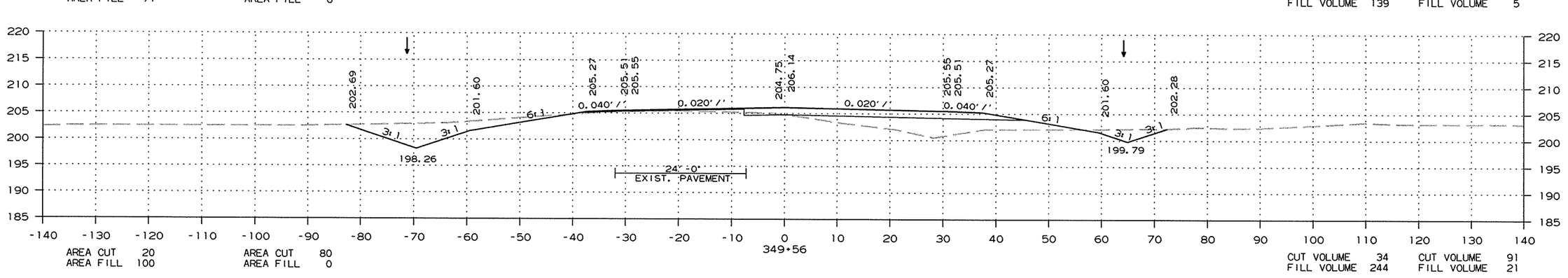
R110217.DGN

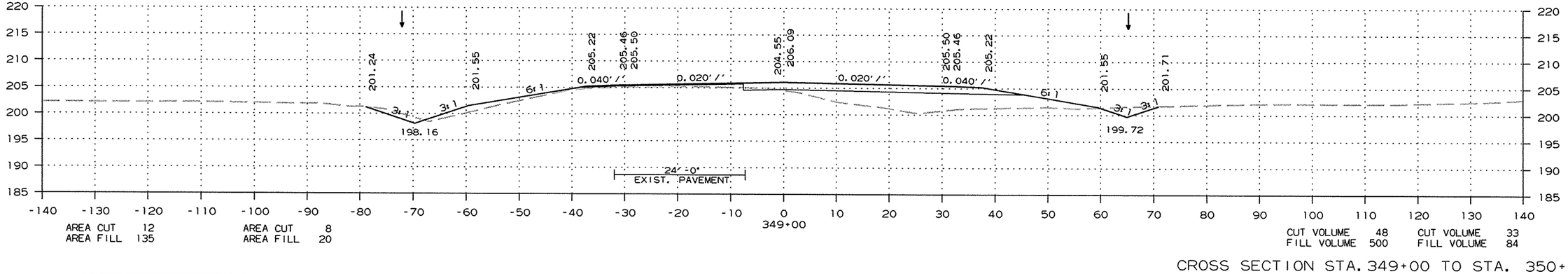
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	307	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 349+00 TO STA. 350+00

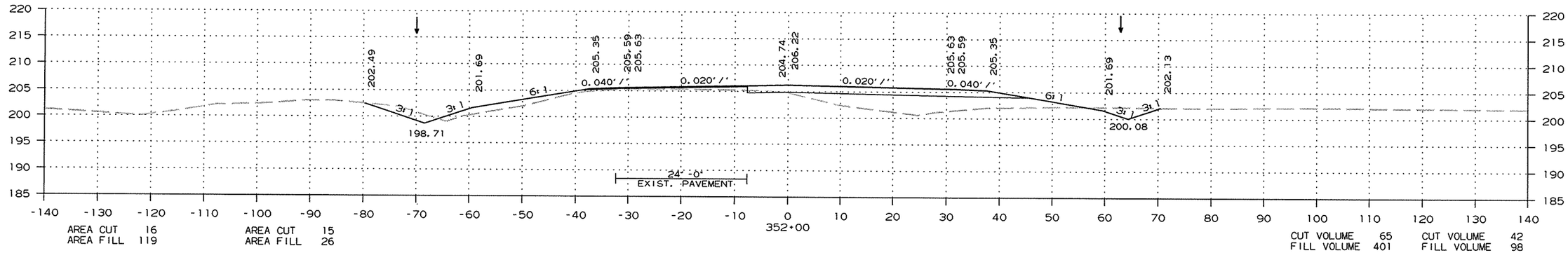
9/30/2013

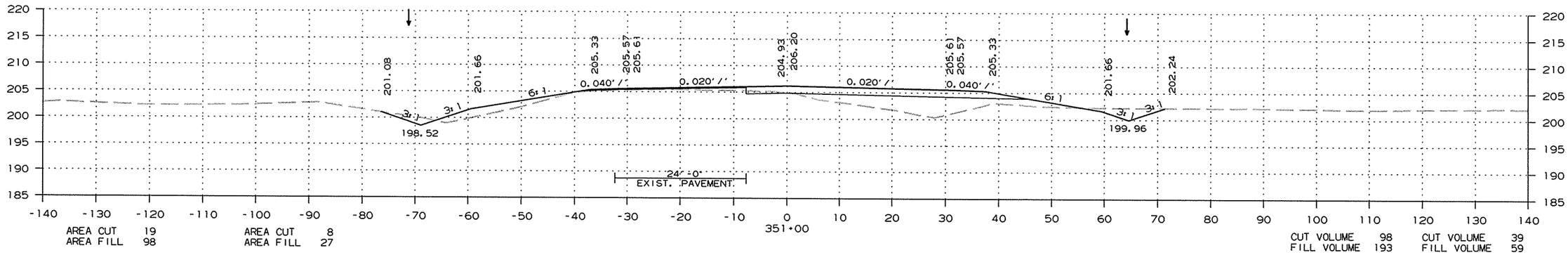
R110217.DGN

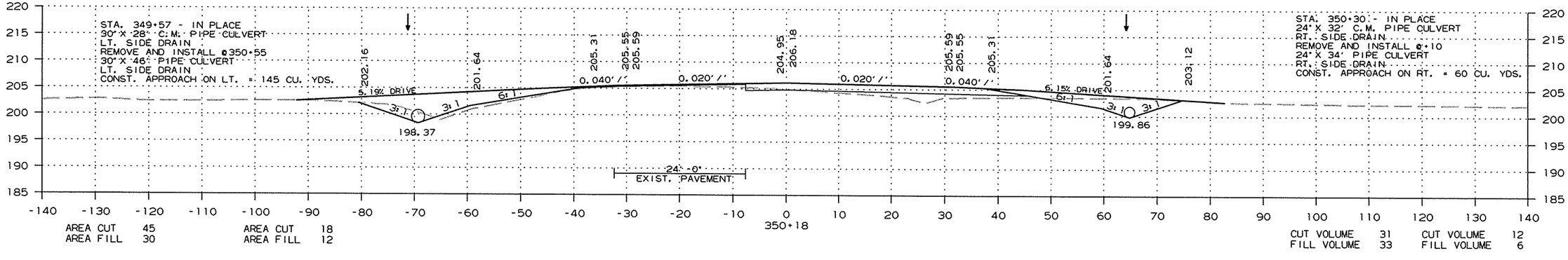
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	308	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 350+18 TO STA. 352+00

9/30/2013

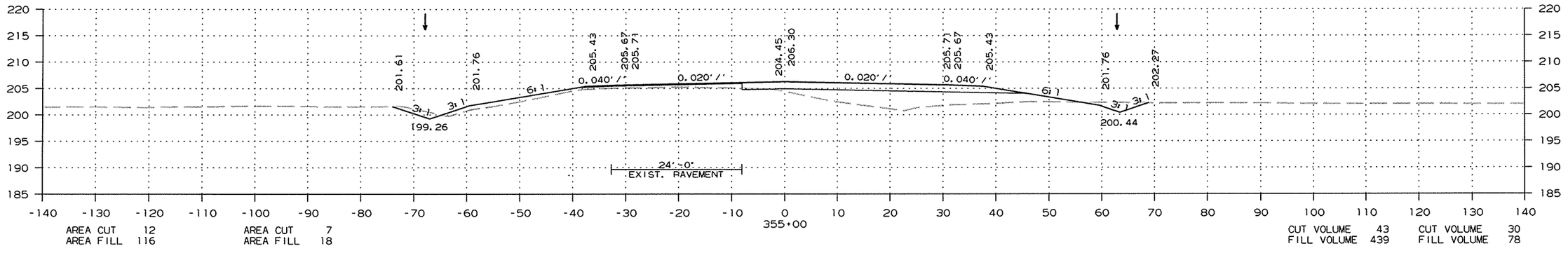
R110217.DGN

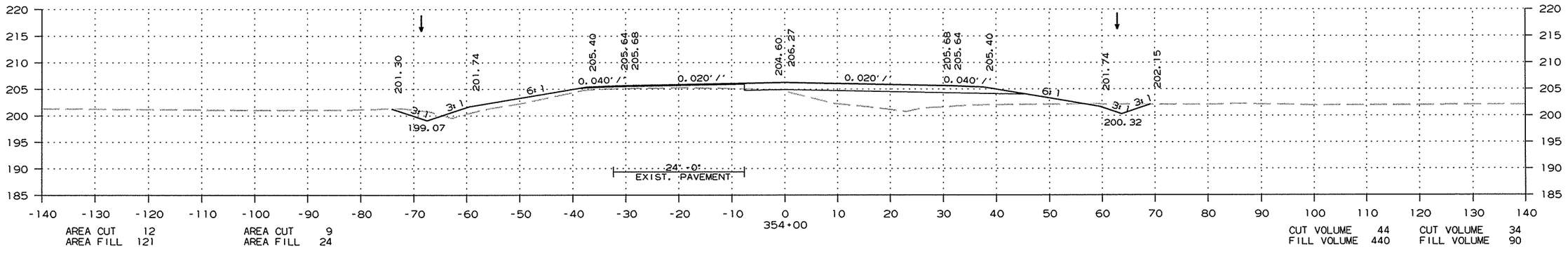
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	309	348

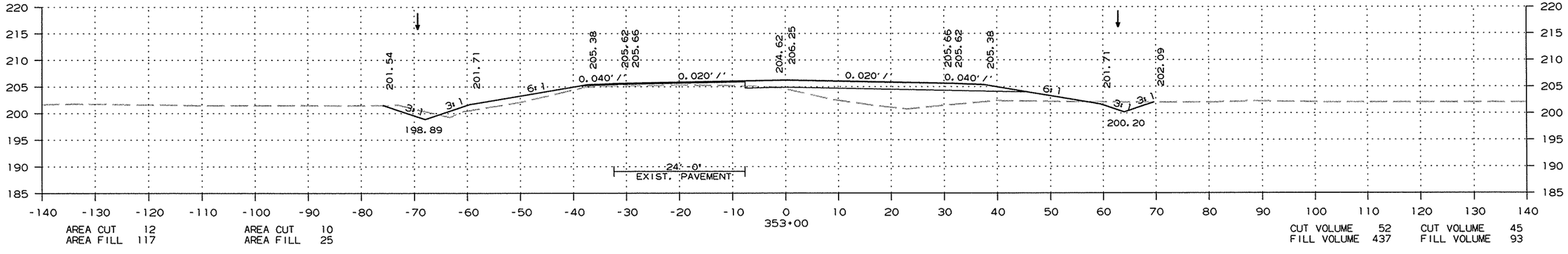
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 353+00 TO STA. 355+00

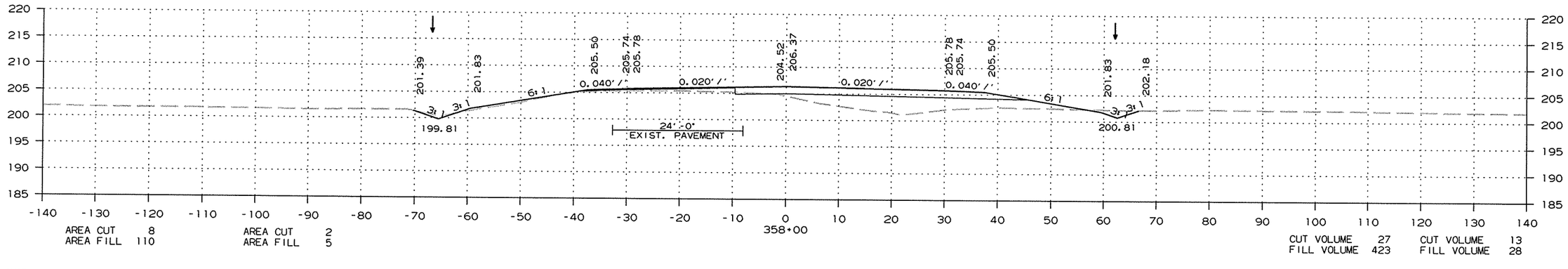
9/30/2013

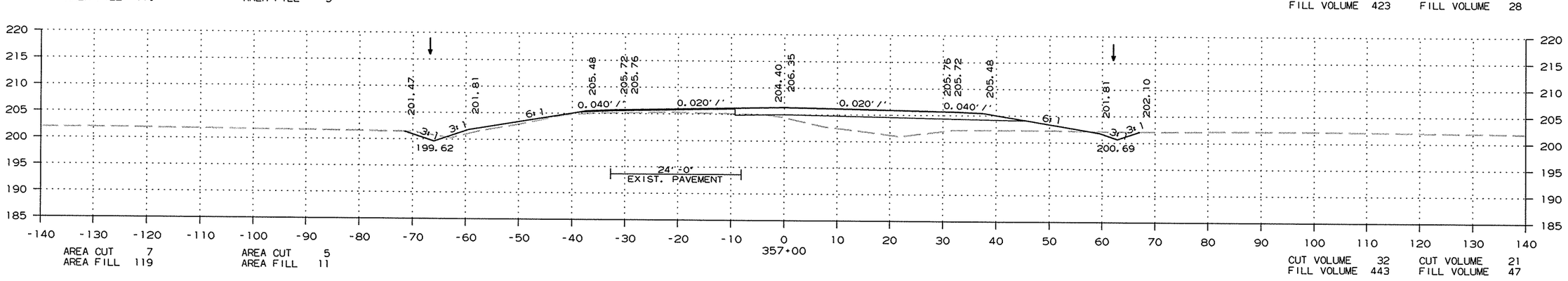
R110217.DGN

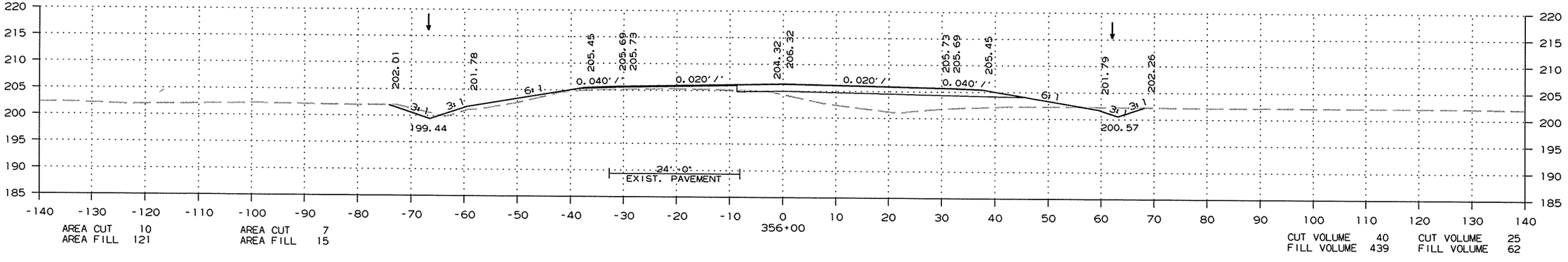
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	310	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 356+00 TO STA. 358+00

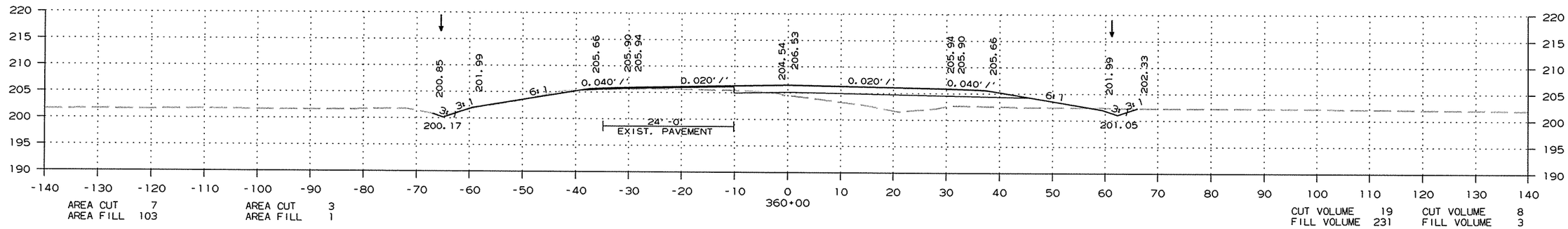
9/30/2013

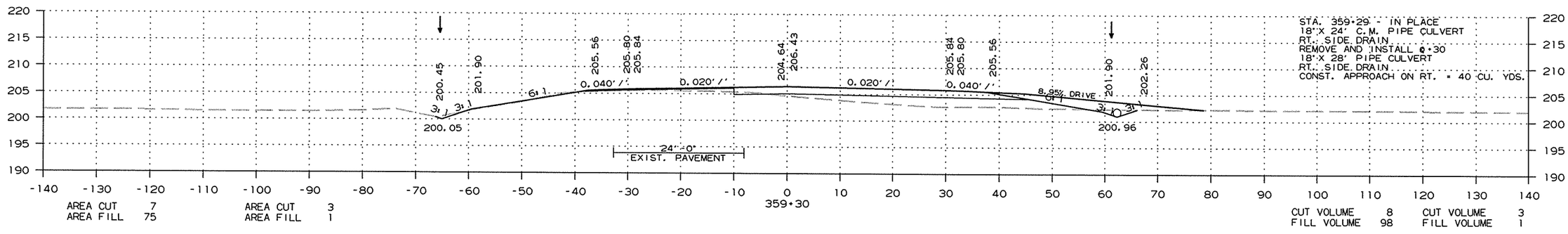
R110217.DGN

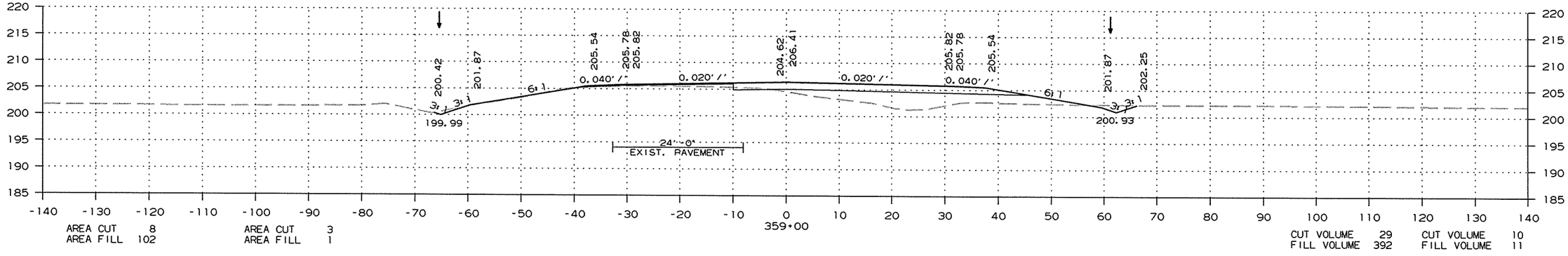
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	311	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 359+00 TO STA. 360+00

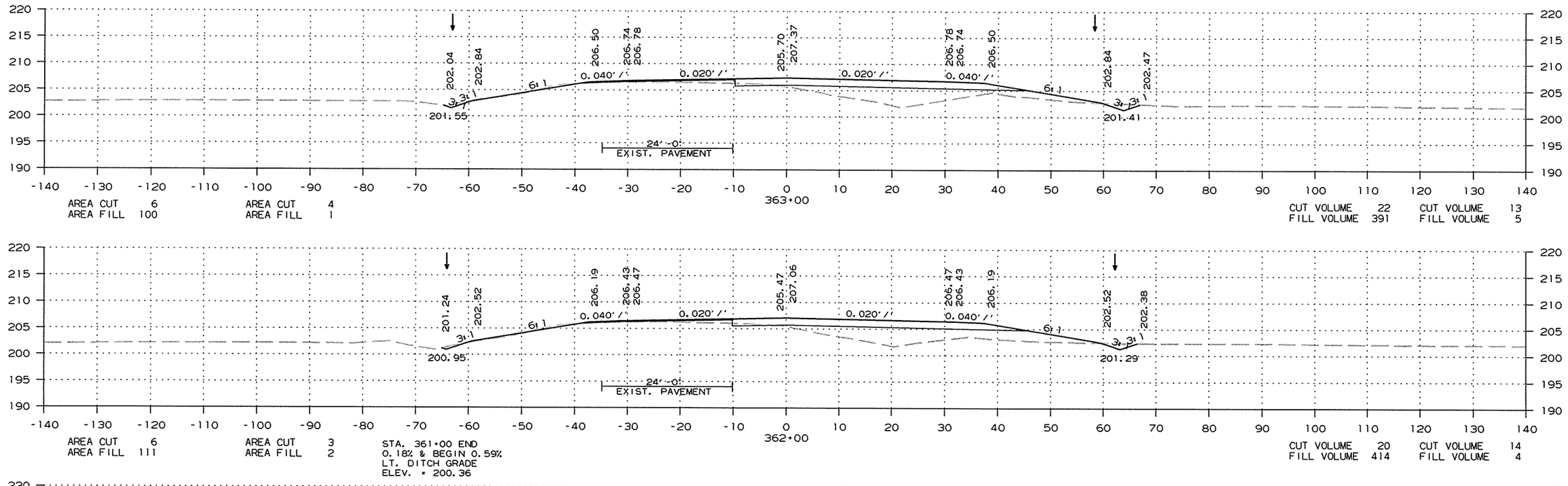
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	312	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 361+00 TO STA. 363+00

9/30/2013

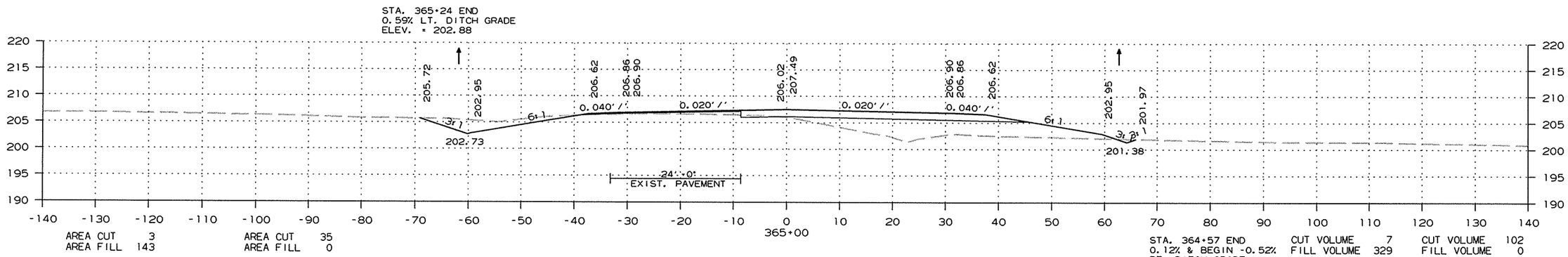
R110217.DGN

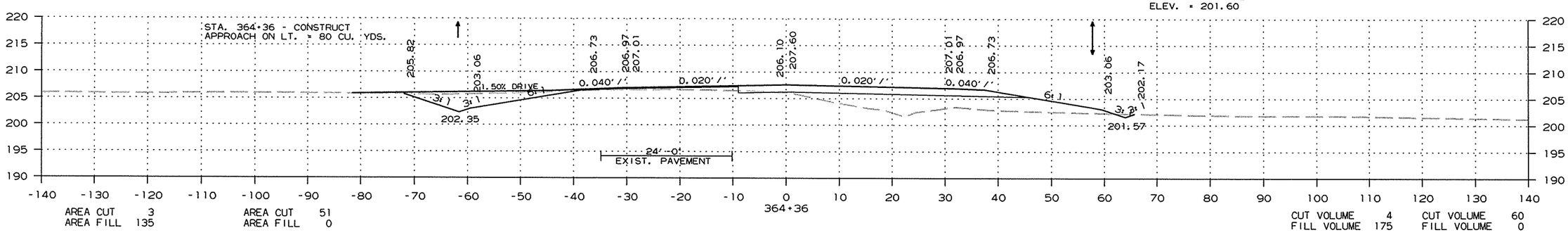
STAGE 1 STAGE 2

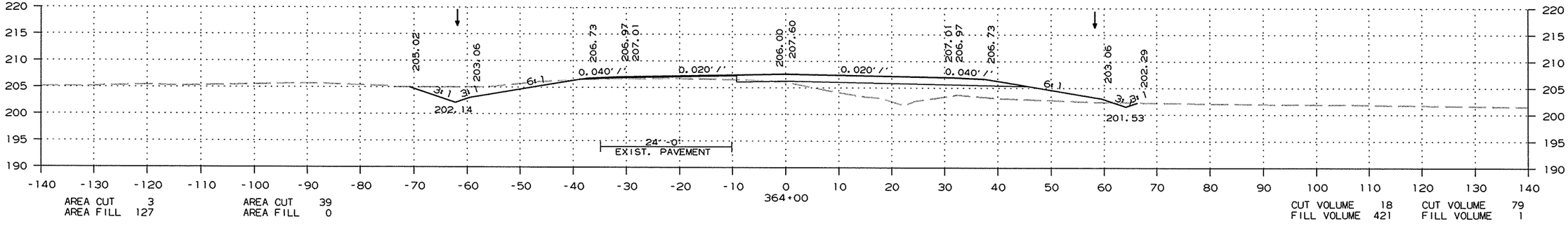
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	313	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 364+00 TO STA. 365+00

9/30/2013

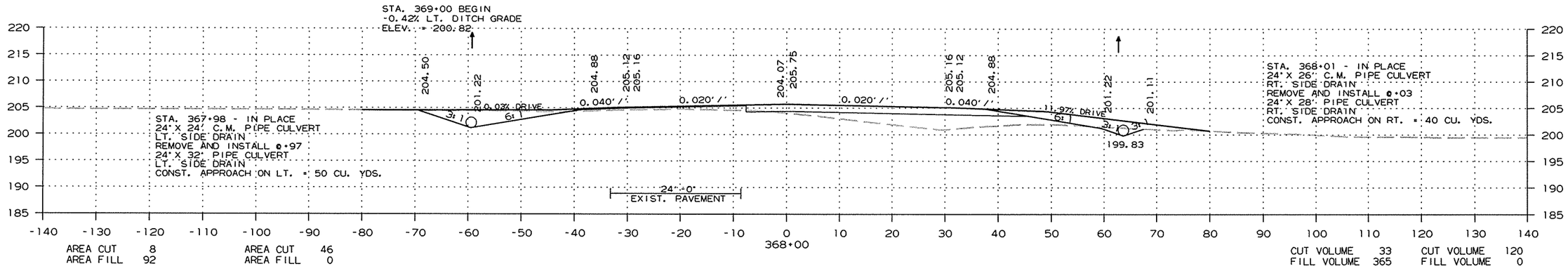
R110217.DGN

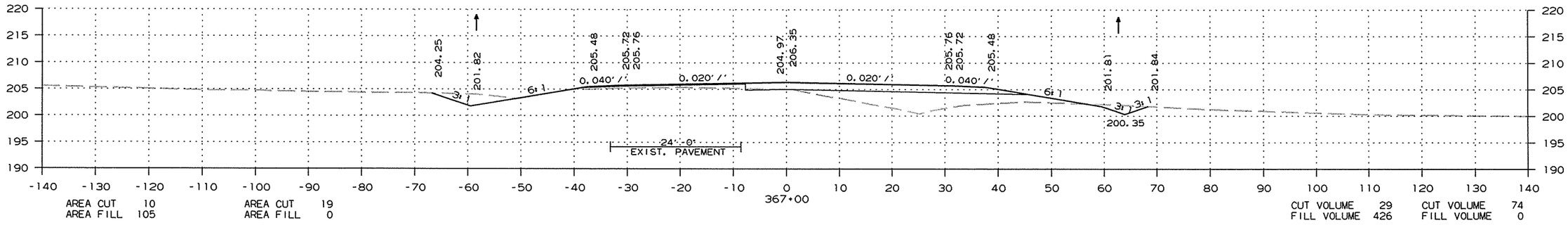
STAGE 1 STAGE 2

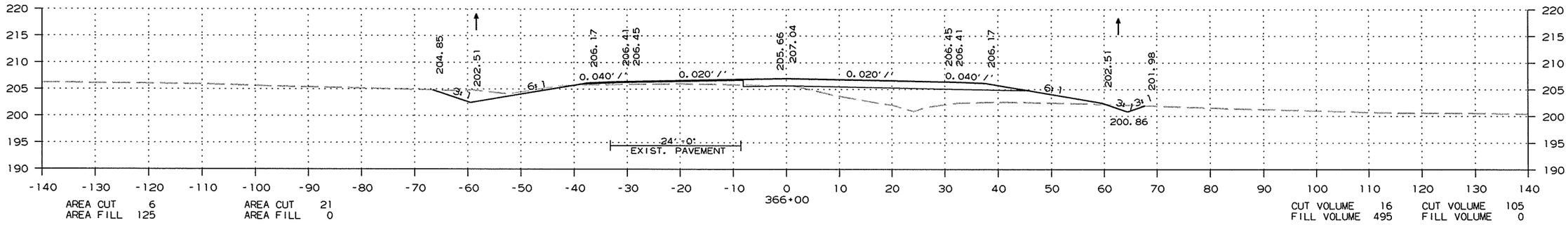
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	314	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 366+00 TO STA. 368+00

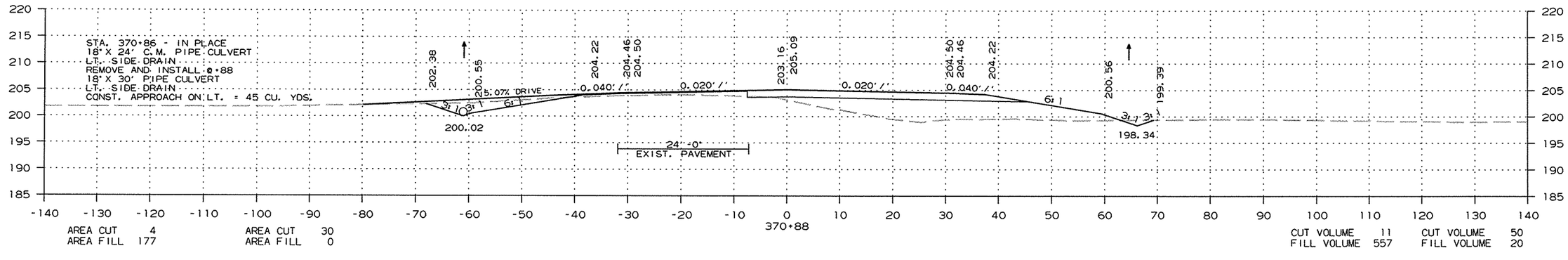
9/30/2013

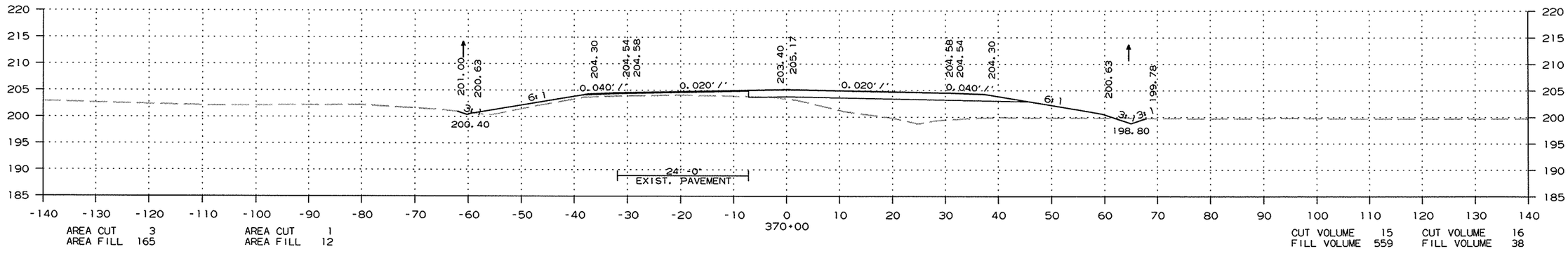
R110217.DGN

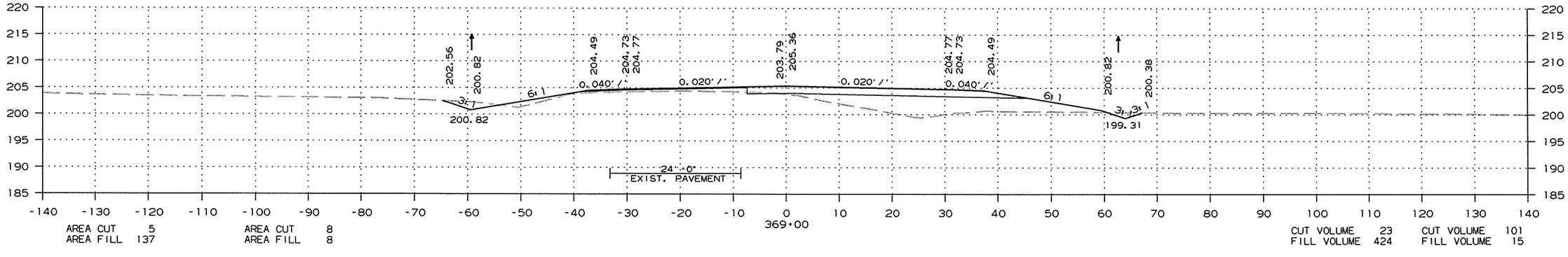
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	315	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 369+00 TO STA. 370+88

9/30/2013

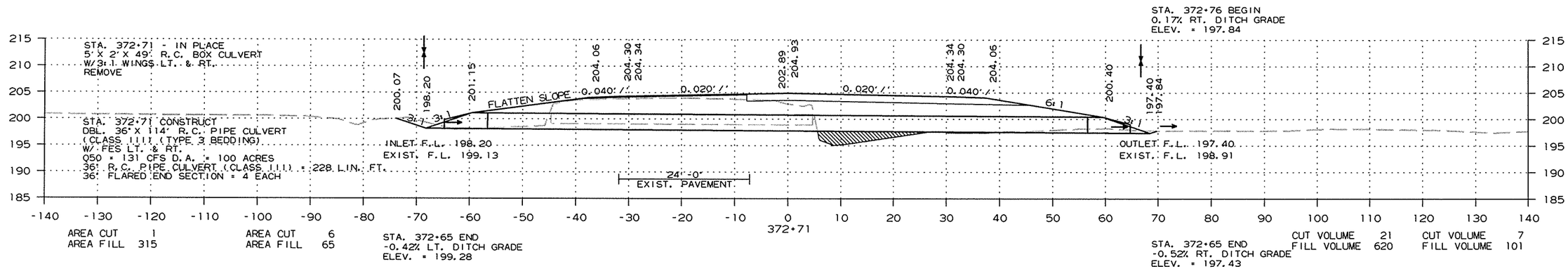
R110217.DGN

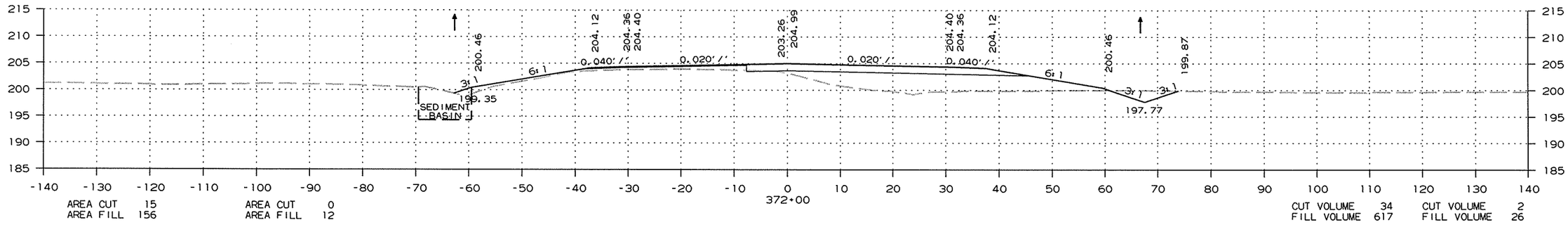
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	316	348

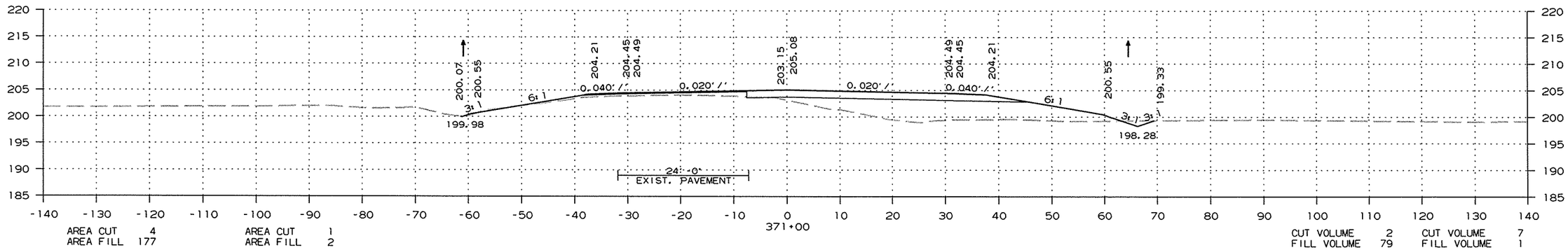
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 371+00 TO STA. 372+71

9/30/2013

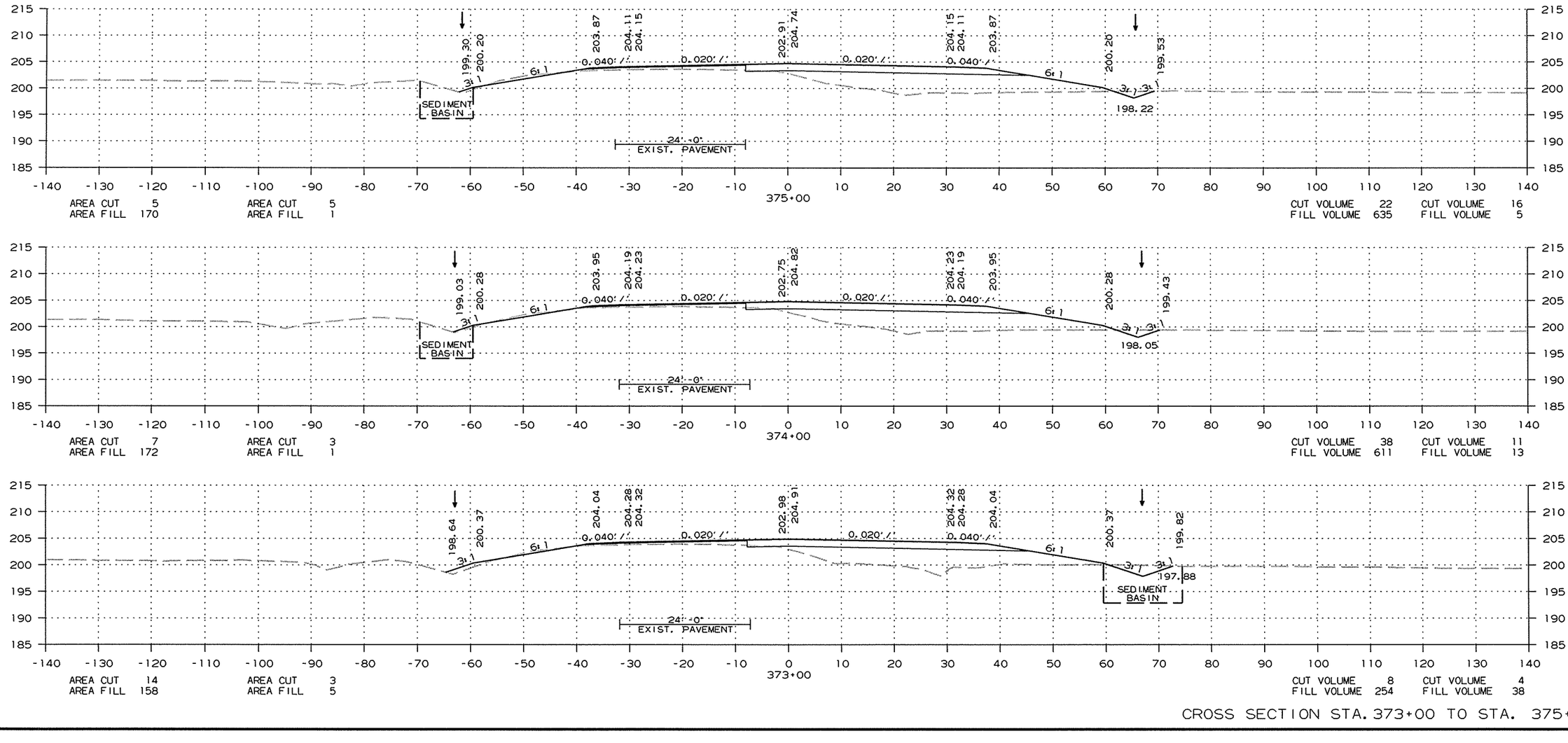
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	317	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 373+00 TO STA. 375+00

9/30/2013

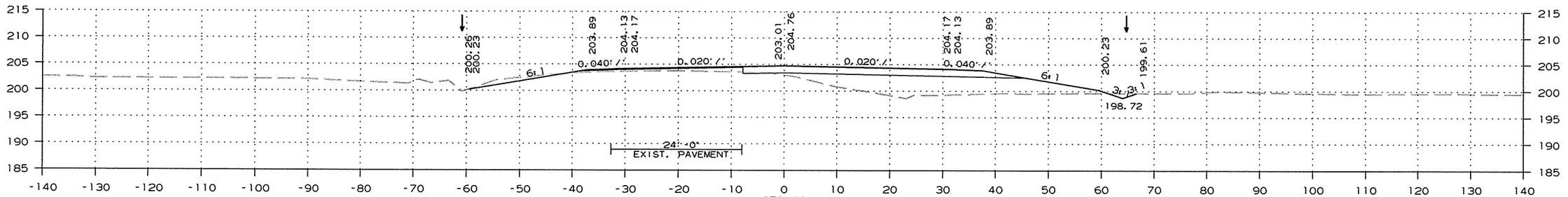
R110217.DGN

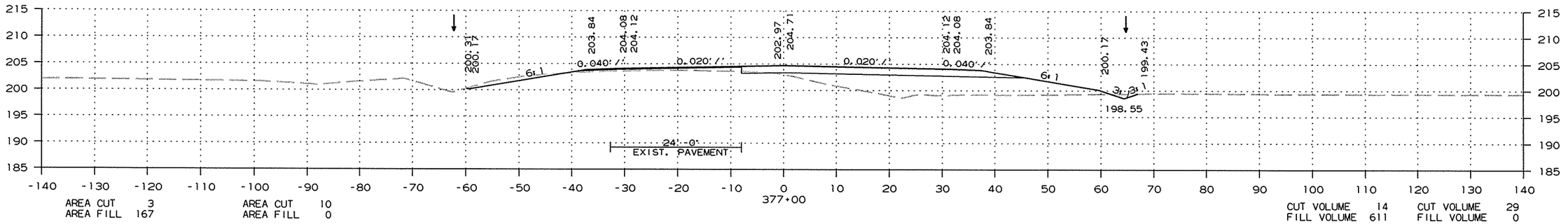
STAGE 1 STAGE 2

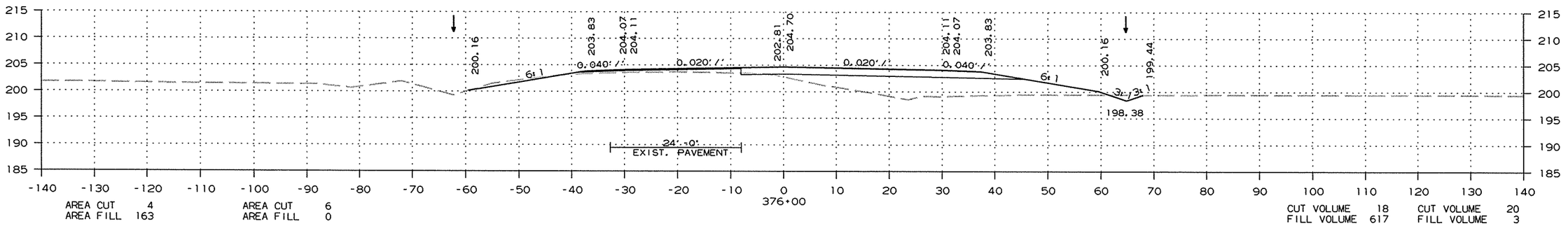
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	318	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 376+00 TO STA. 378+00

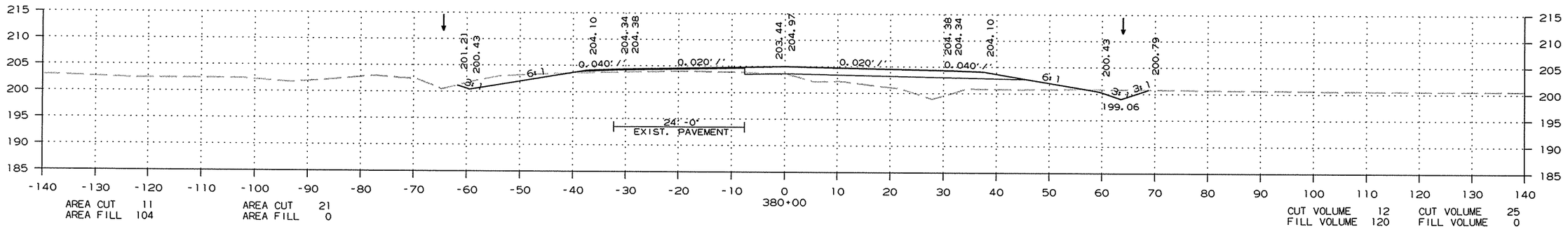
9/30/2013

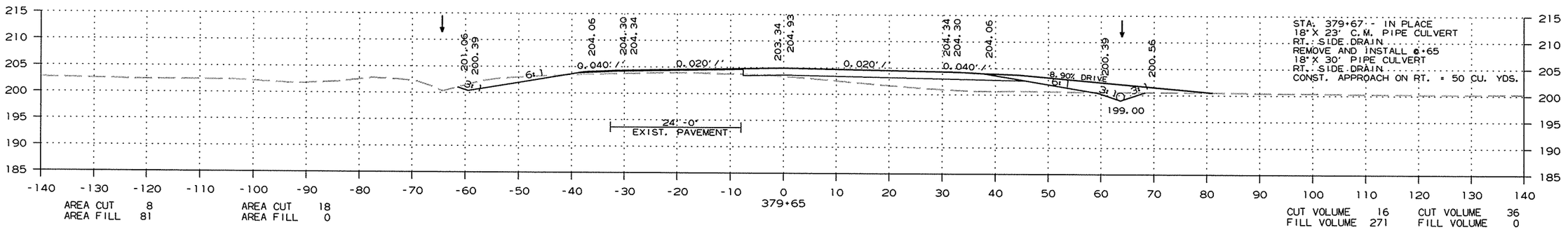
R110217.DGN

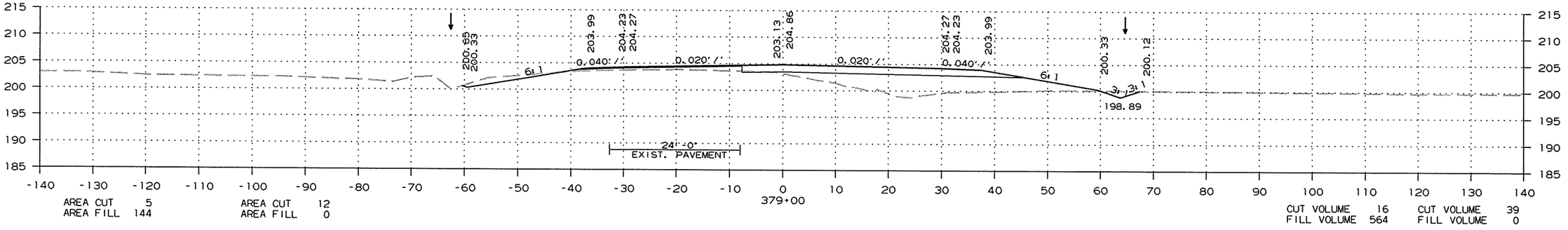
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	319	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 379+00 TO STA. 380+00

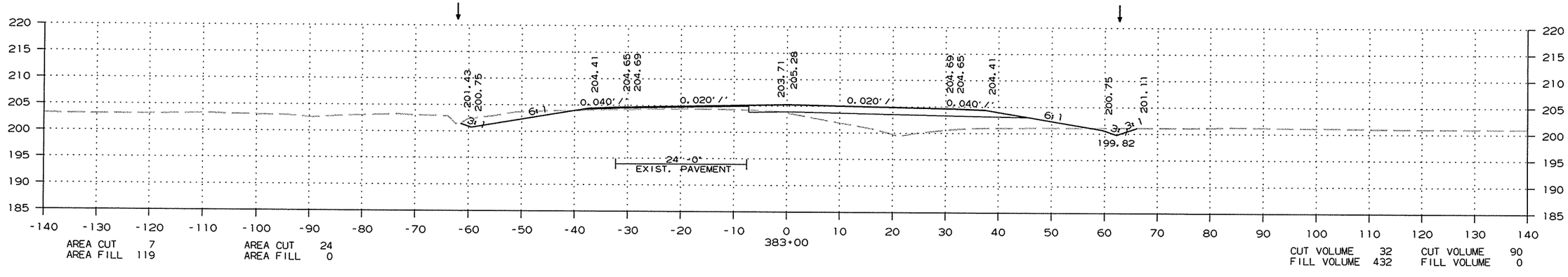
9/30/2013

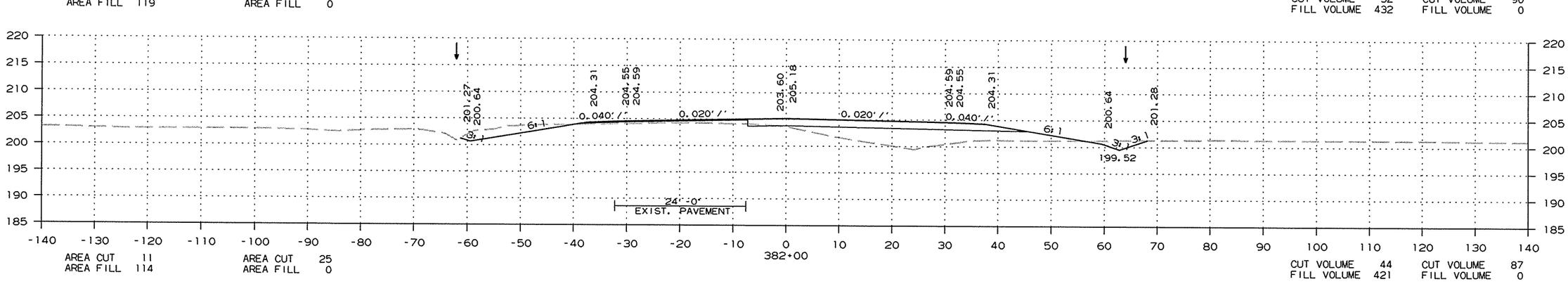
R110217.DGN

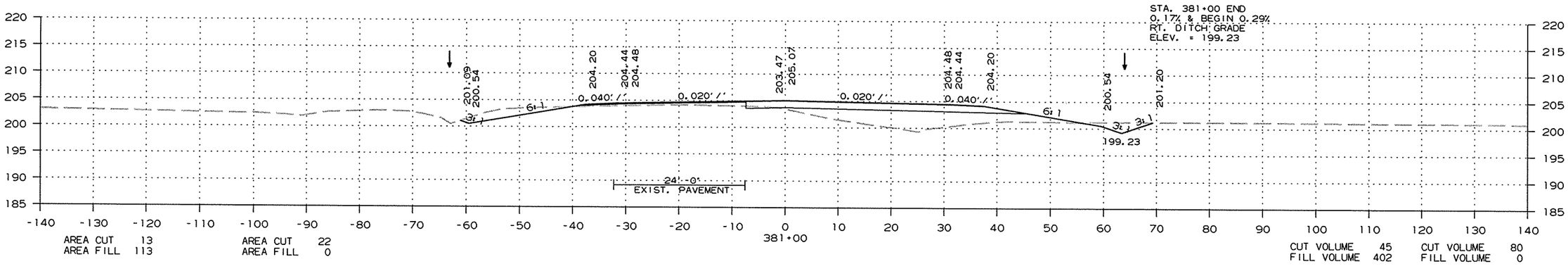
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	320	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 381+00 TO STA. 383+00

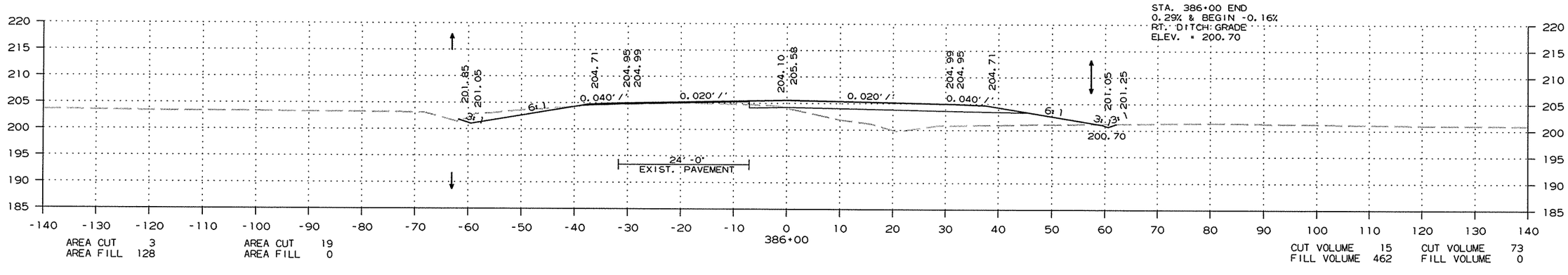
9/30/2013

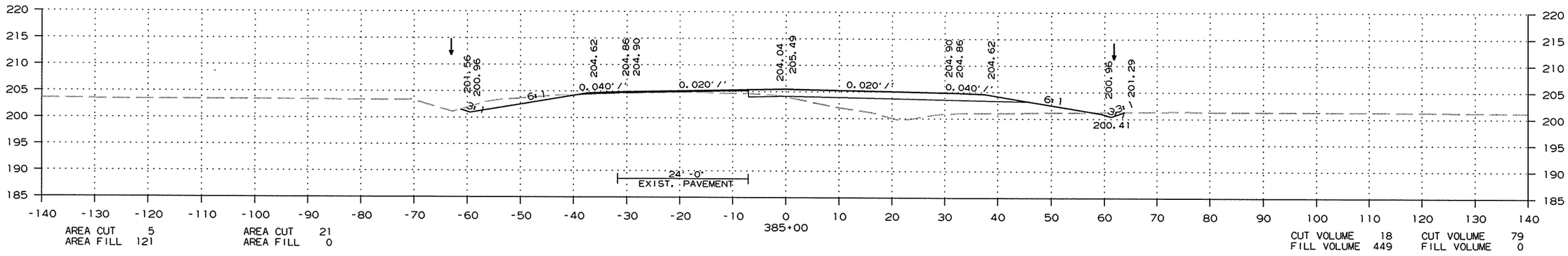
R110217.DGN

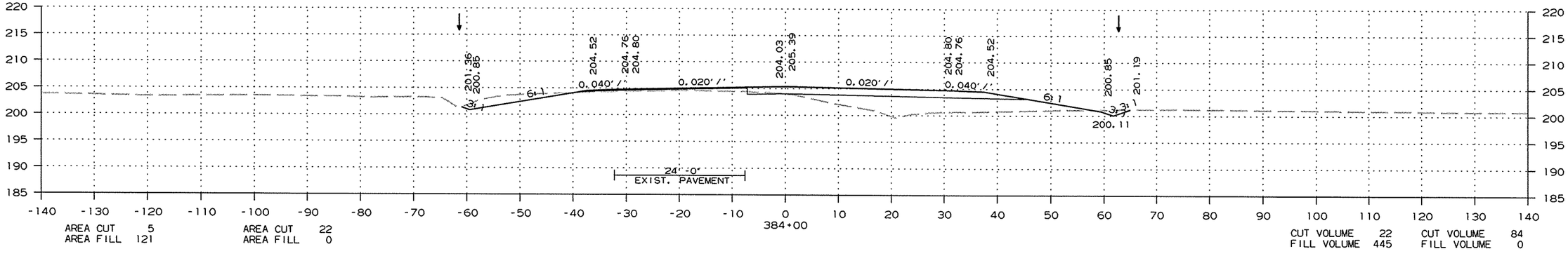
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	321	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 384+00 TO STA. 386+00

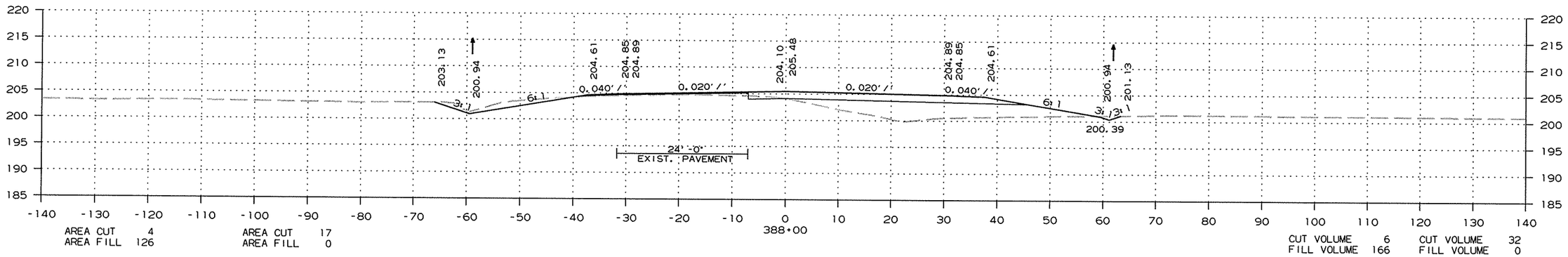
9/30/2013

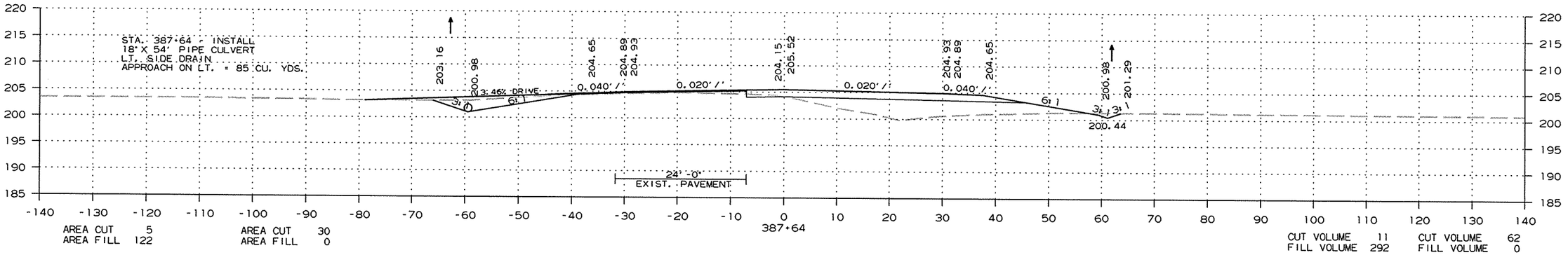
R110217.DGN

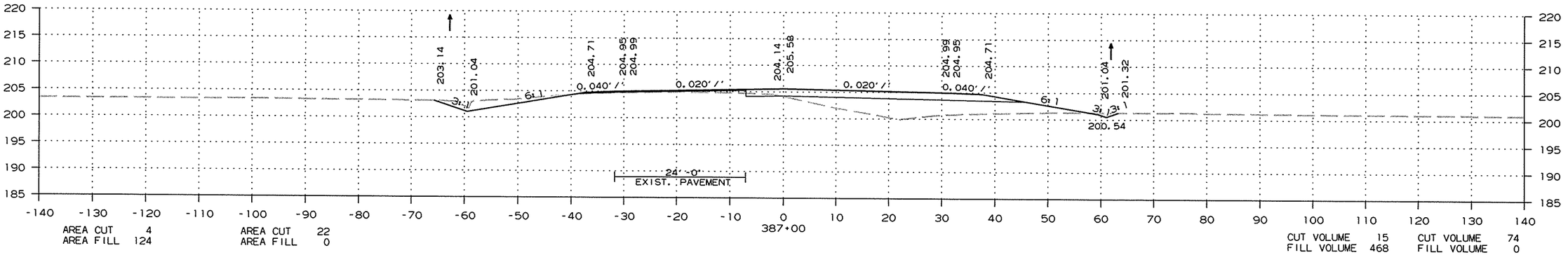
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	322	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 387+00 TO STA. 388+00

9/30/2013

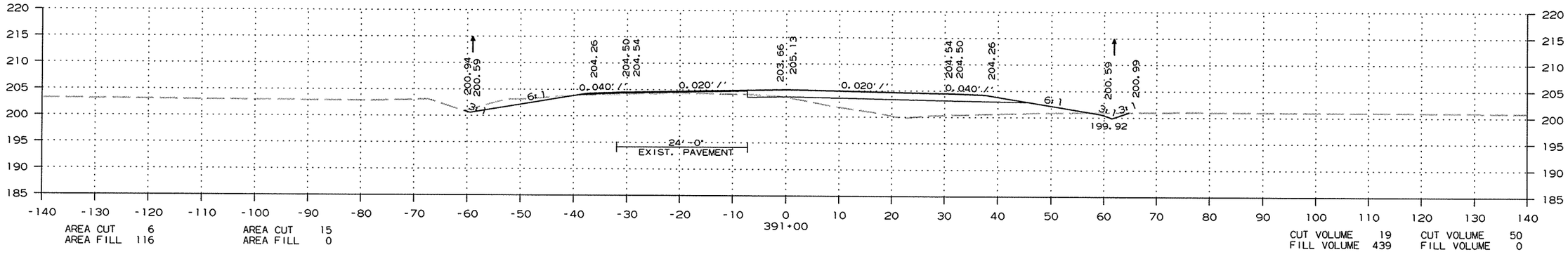
R110217.DGN

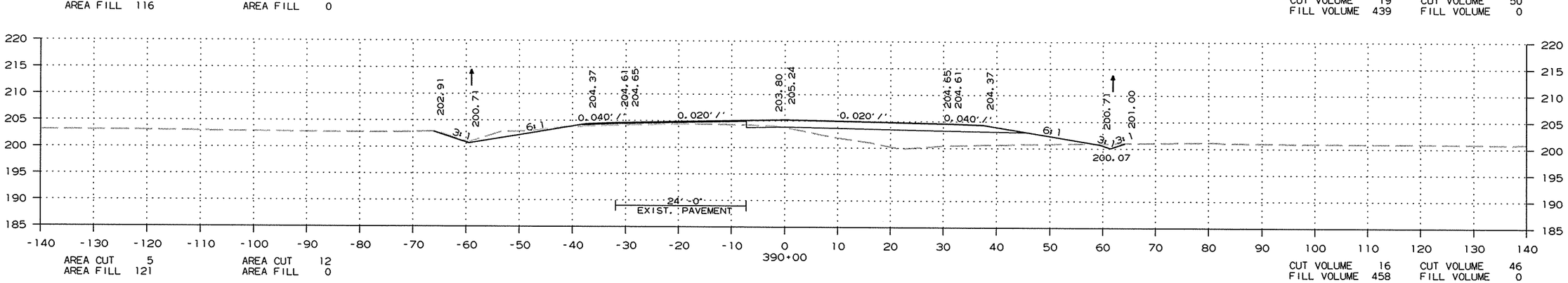
STAGE 1 STAGE 2

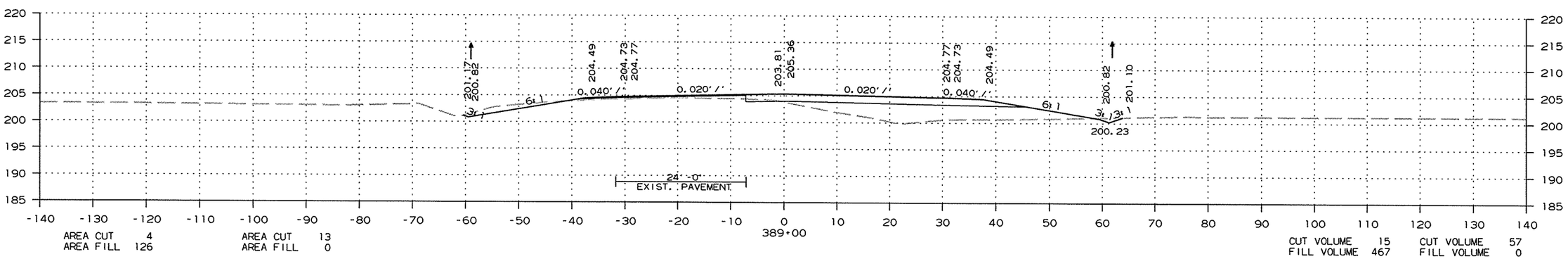
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	323	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 389+00 TO STA. 391+00

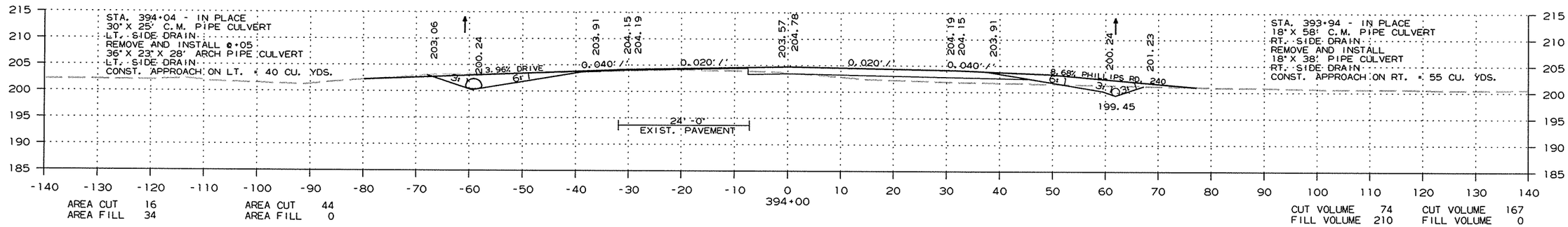
9/30/2013

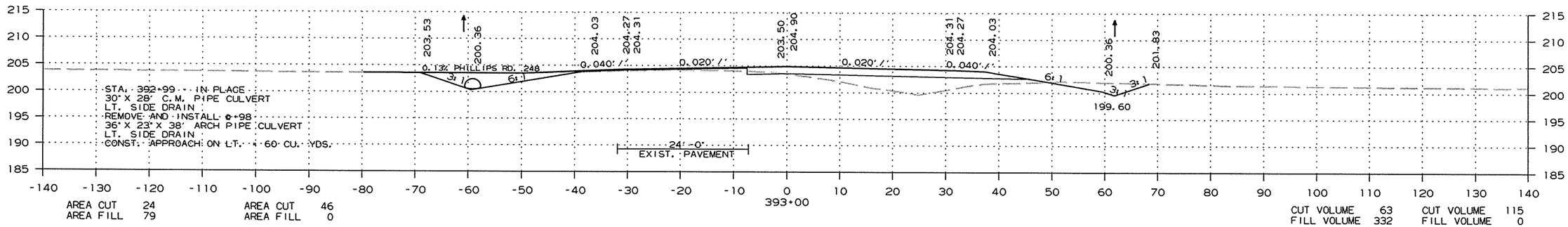
R110217.DGN

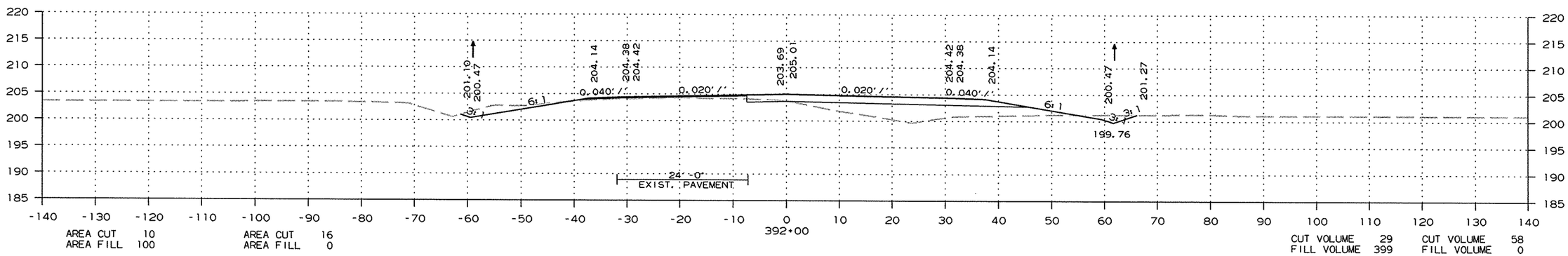
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	324	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 392+00 TO STA. 394+00

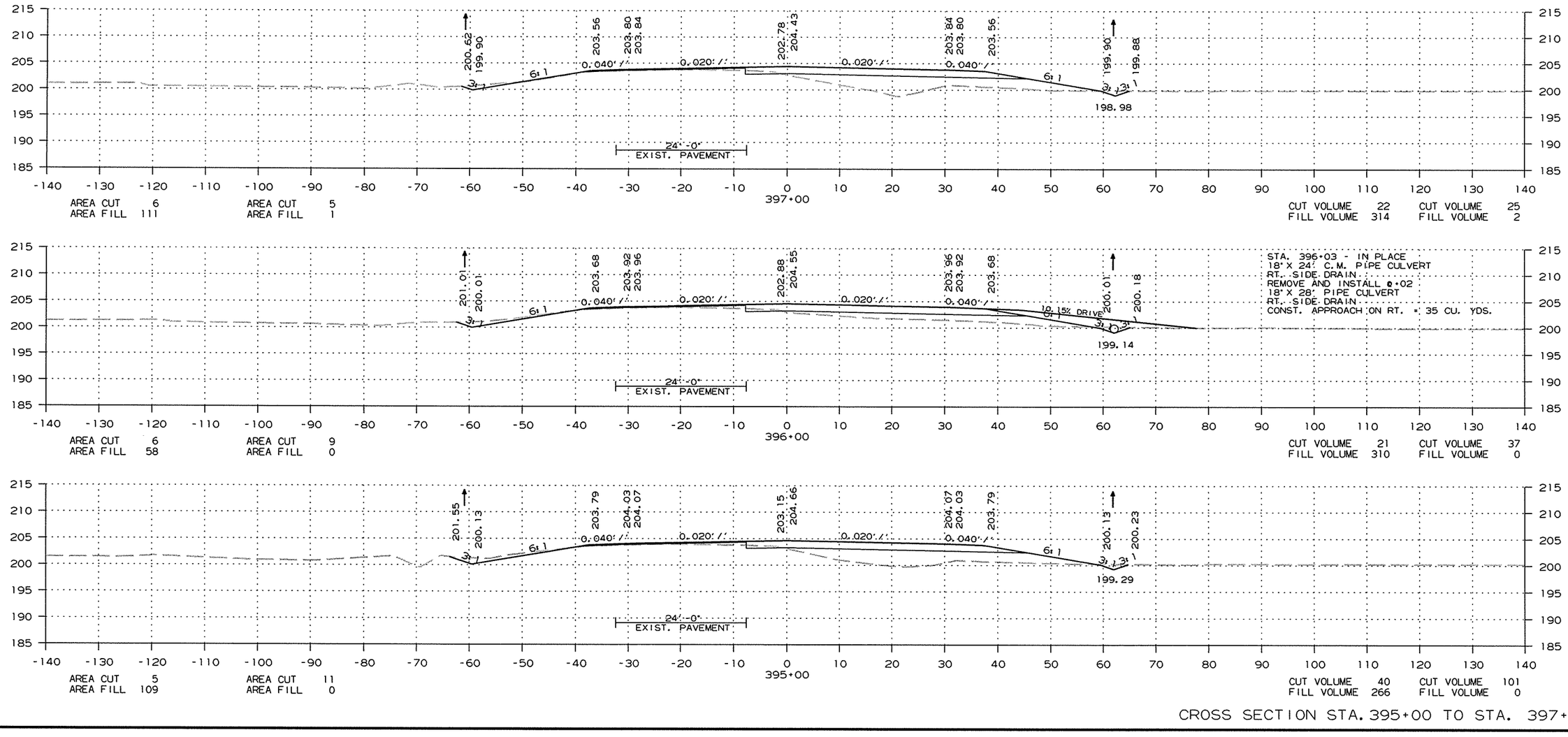
9/30/2013

R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	325	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2



CROSS SECTION STA. 395+00 TO STA. 397+00

9/30/2013

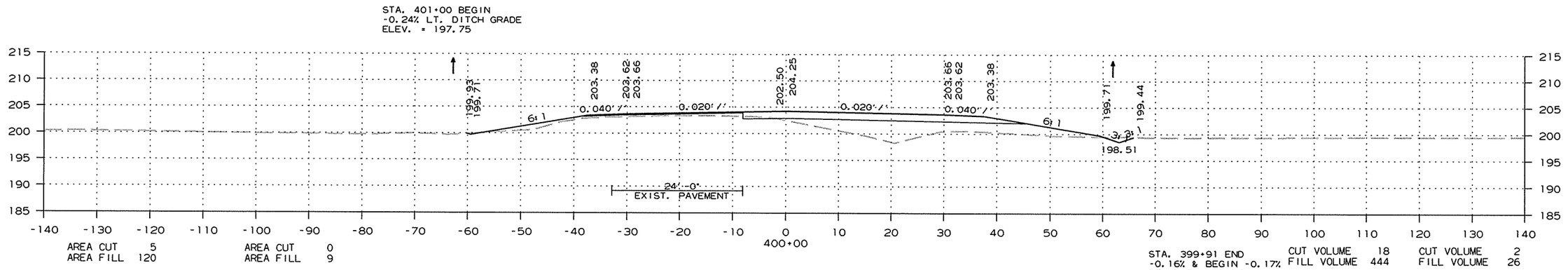
R110217.DGN

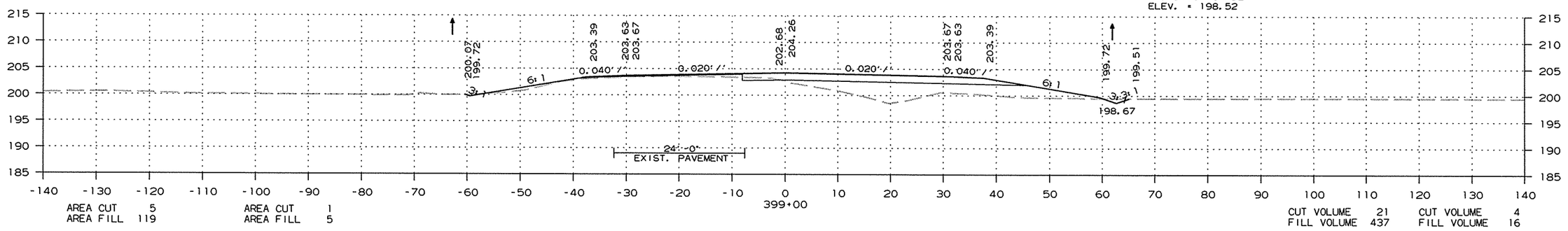
STAGE 1 STAGE 2

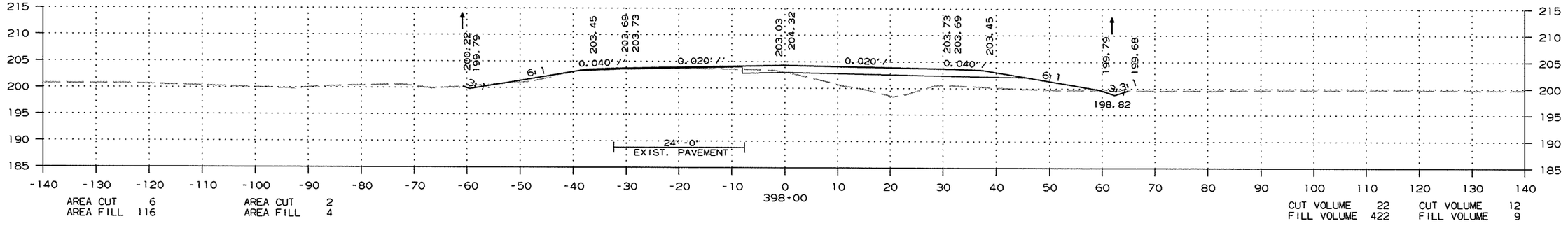
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	326	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 398+00 TO STA. 400+00

9/30/2013

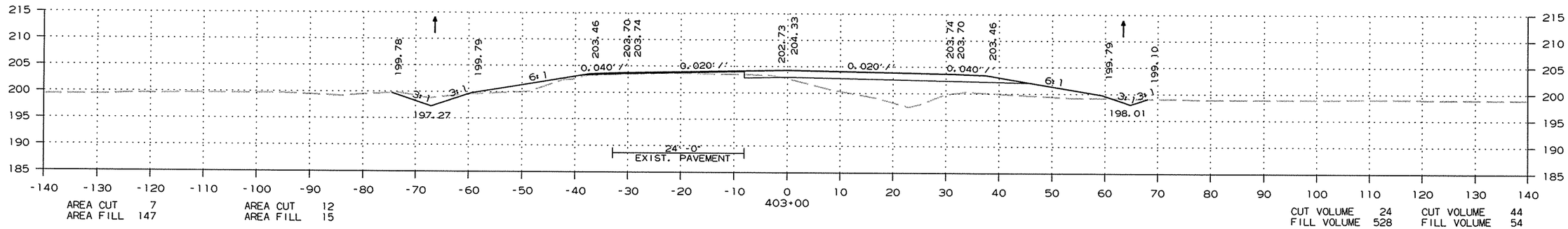
R110217.DGN

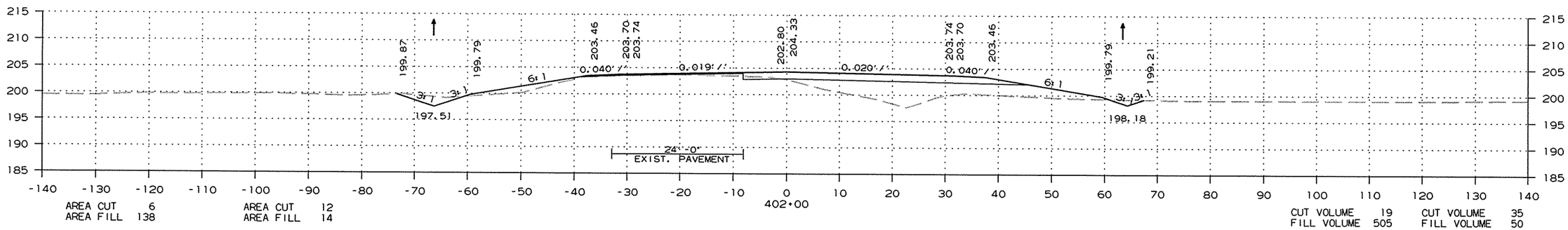
STAGE 1 STAGE 2

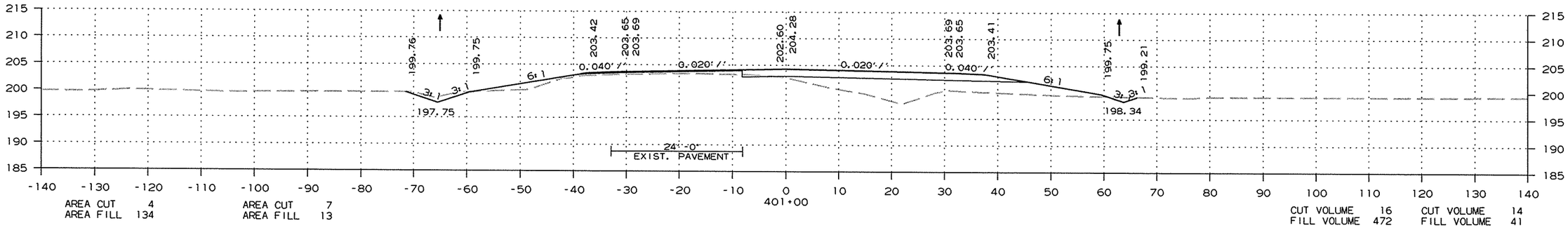
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	327	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 401+00 TO STA. 403+00

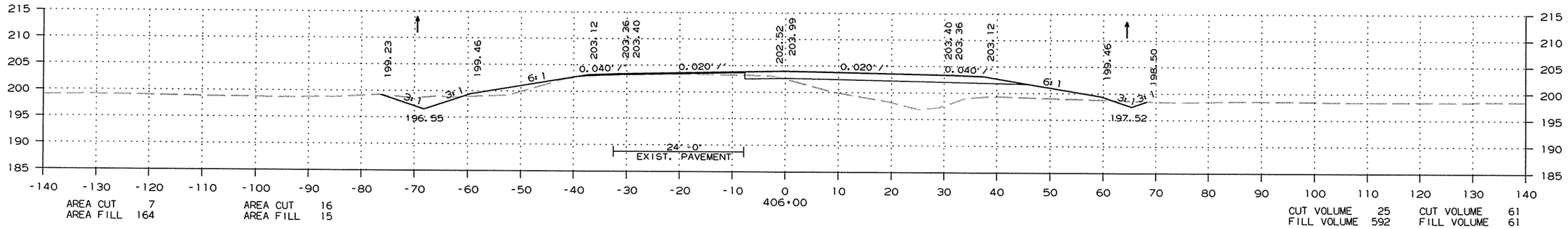
9/30/2013

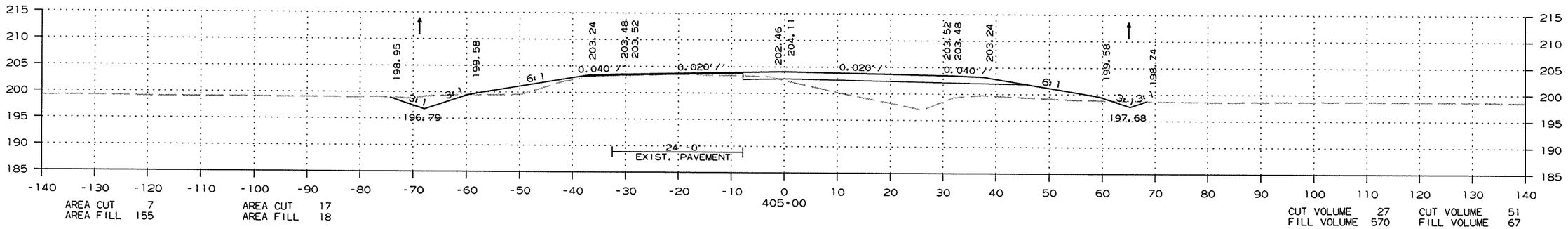
R110217.DGN

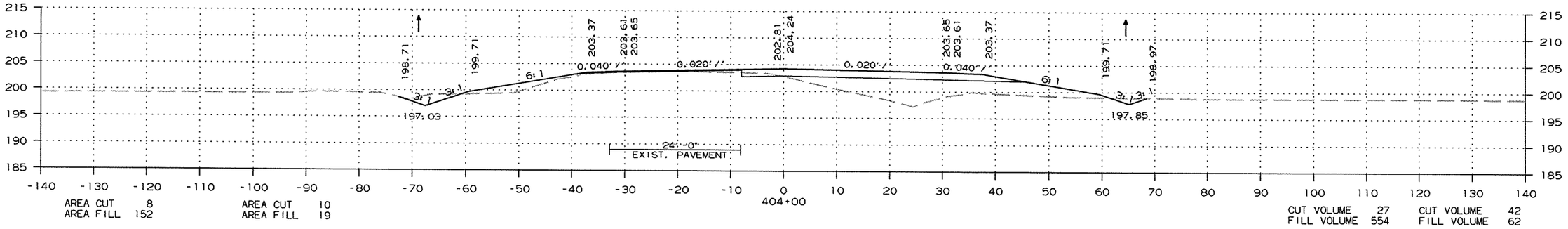
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	328	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 404+00 TO STA. 406+00

9/30/2013

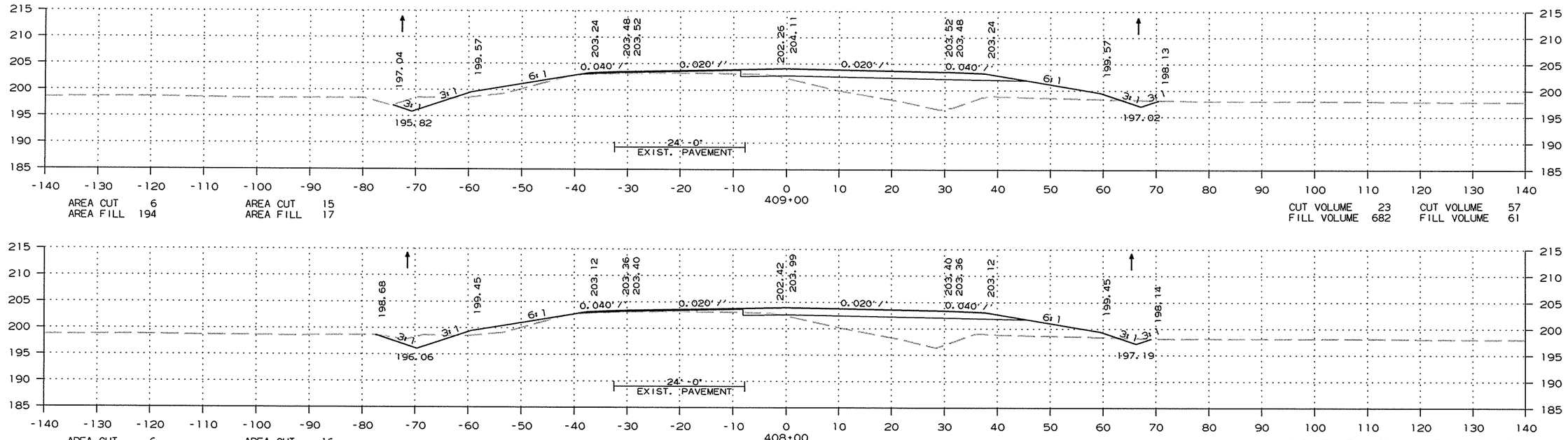
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	329	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 407+00 TO STA. 409+00

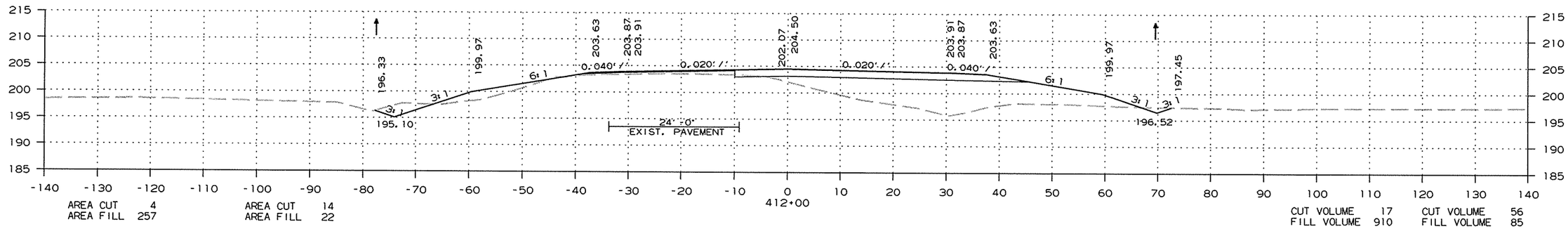
9/30/2013

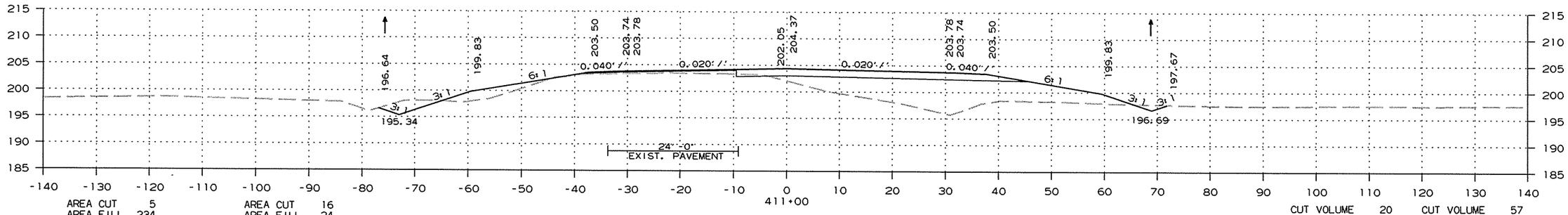
R110217.DGN

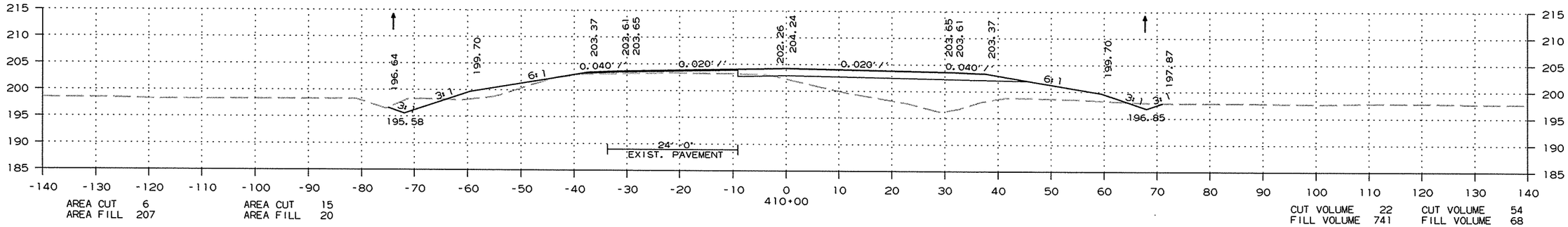
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	330	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 410+00 TO STA. 412+00

9/30/2013

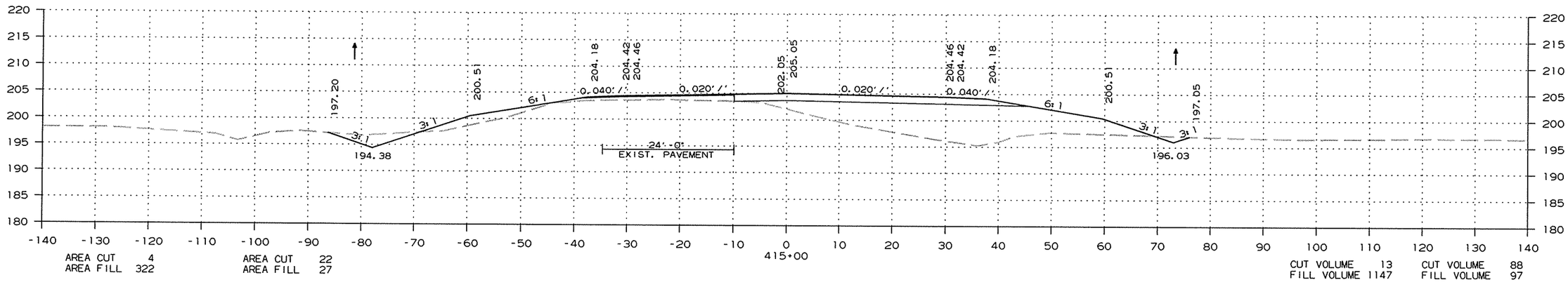
R110217.DGN

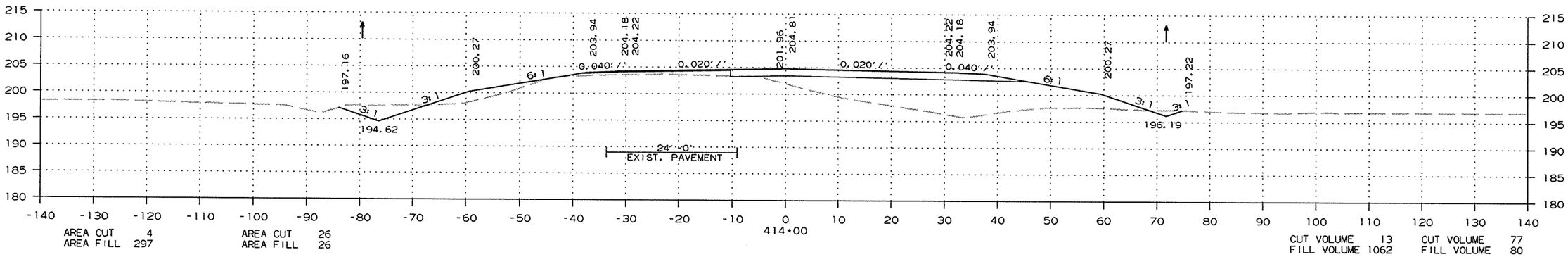
STAGE 1 STAGE 2

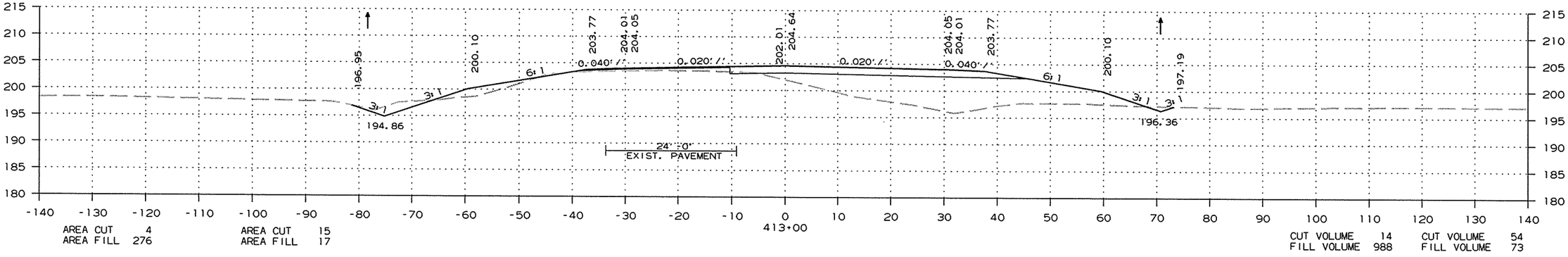
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	331	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 413+00 TO STA. 415+00

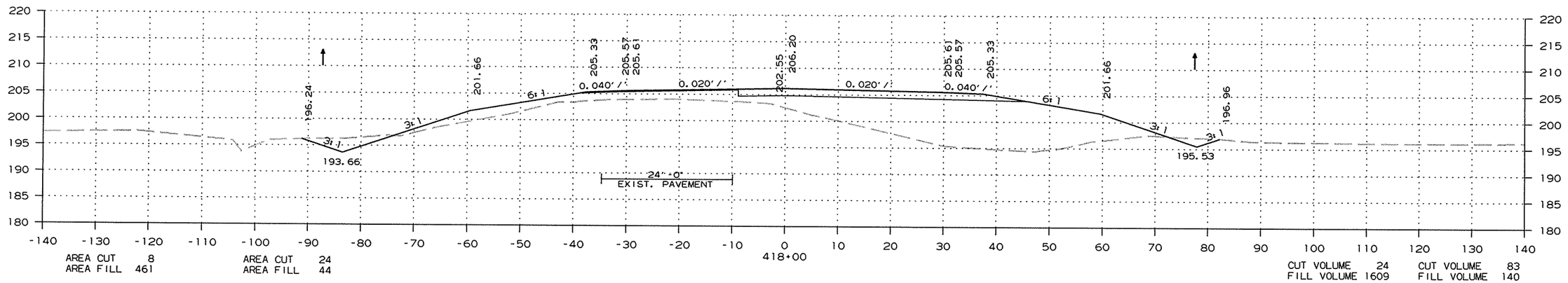
9/30/2013

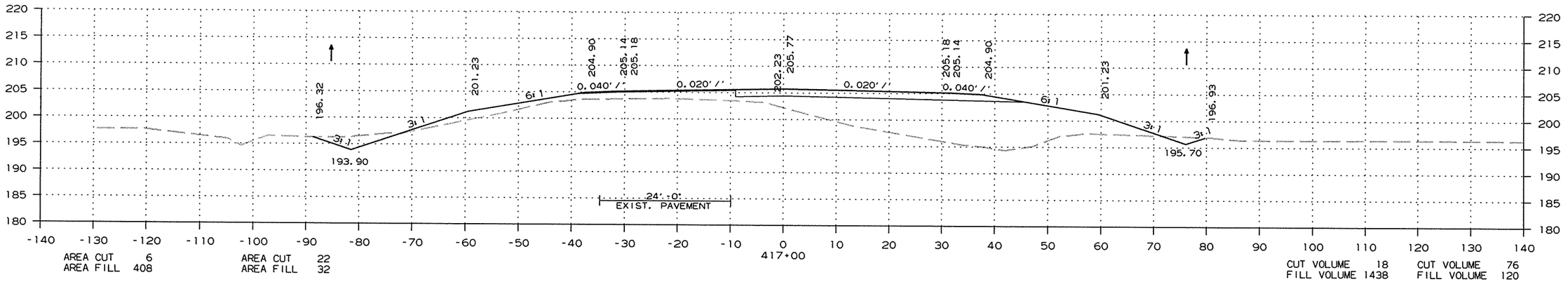
R110217.DGN

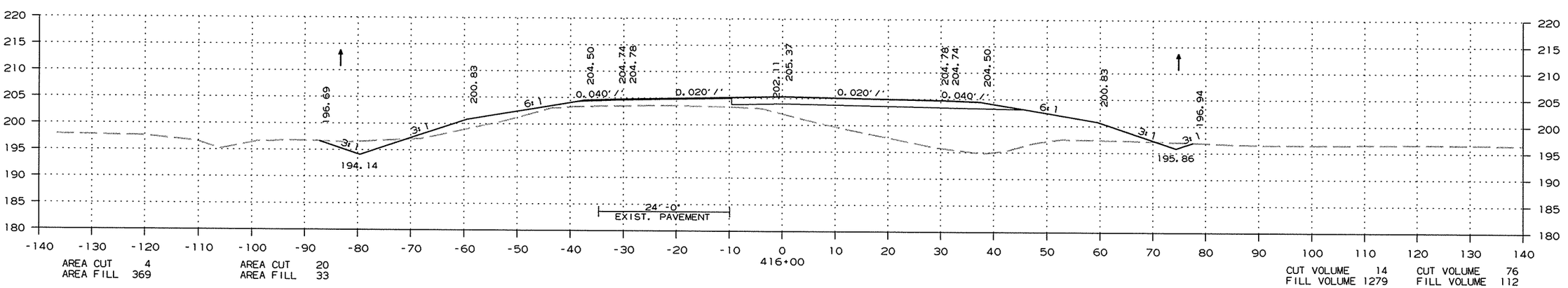
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	332	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







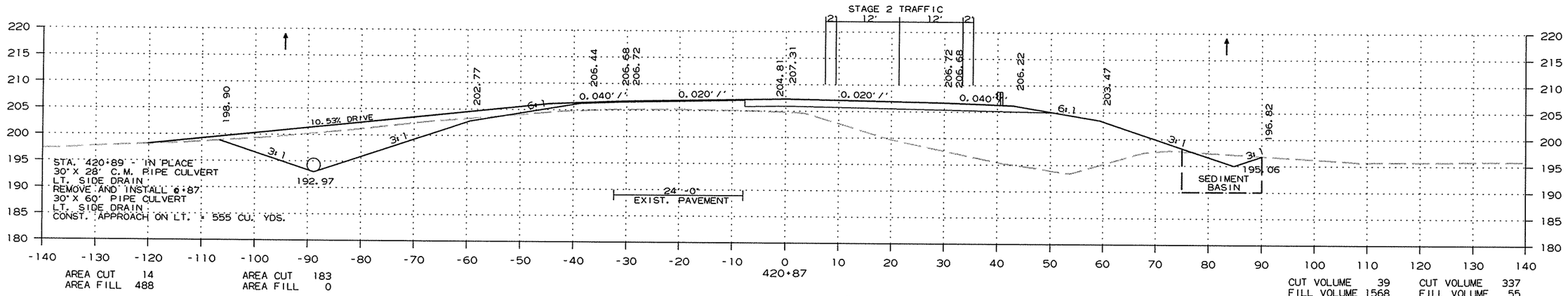
CROSS SECTION STA. 416+00 TO STA. 418+00

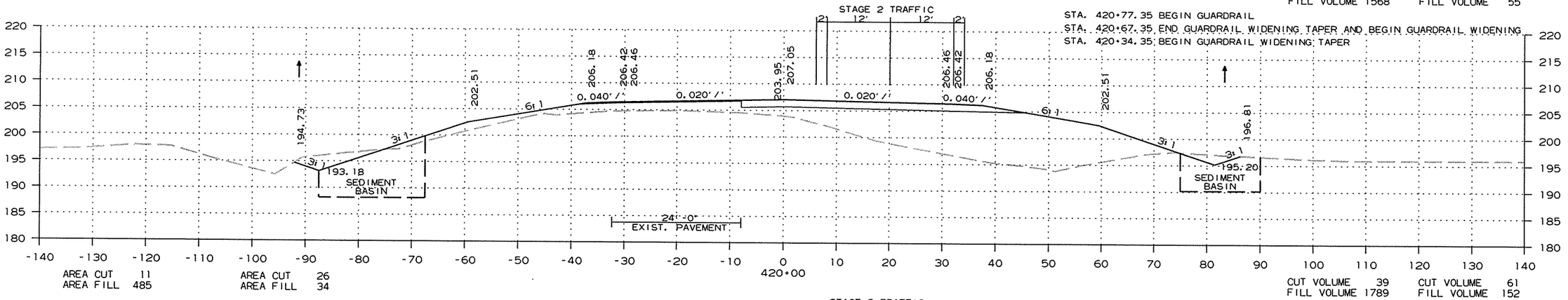
9/30/2013

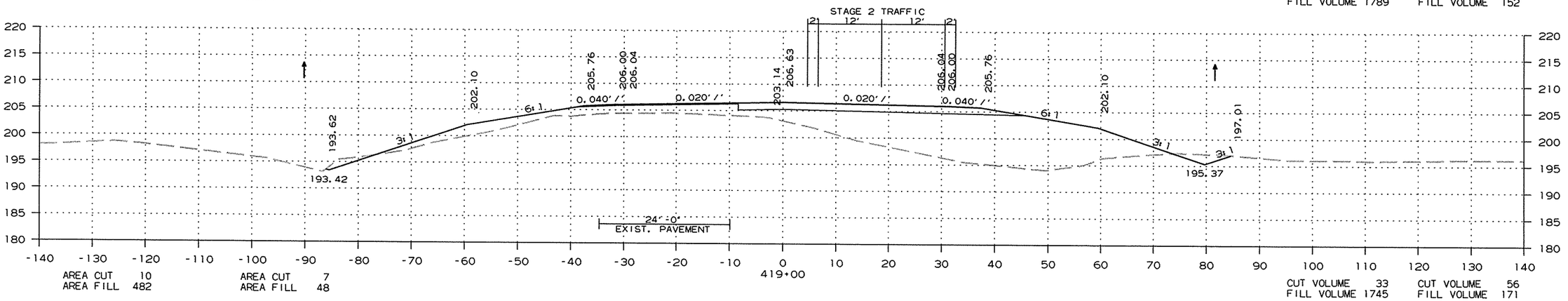
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	333	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 419+00 TO STA. 420+87

9/30/2013

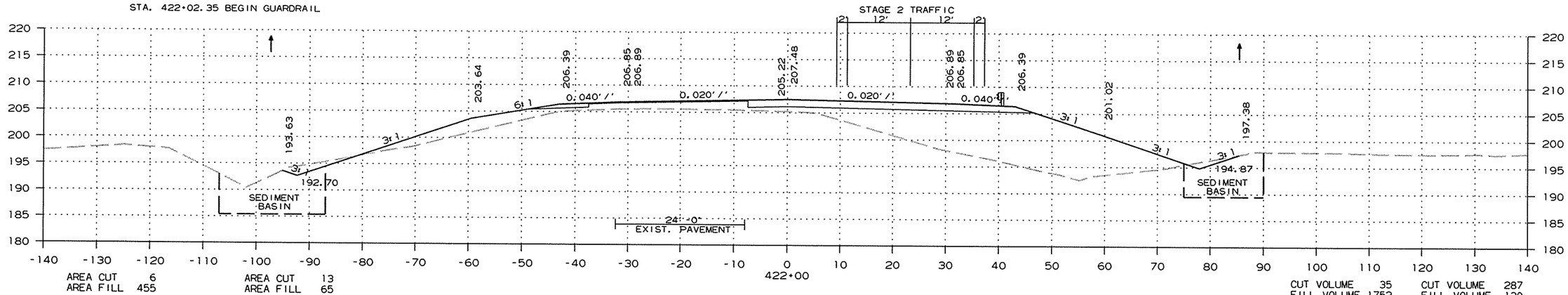
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	334	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 421+00 TO STA. 422+00

9/30/2013

R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	335	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

AREA CUT 0
AREA FILL 0

AREA CUT 0
AREA FILL 0

STA. 424+35 END
0.46% LT. DITCH GRADE
ELEV. = 190.35

STA. 424+67.50 TOE OF SLOPE

CUT VOLUME 0
FILL VOLUME 0

CUT VOLUME 0
FILL VOLUME 0

STA. 424+45 BEGIN
0.17% RT. DITCH GRADE
ELEV. = 193.08

AREA CUT 0
AREA FILL 0

AREA CUT 0
AREA FILL 0

STA. 423+23 END
-0.24% LT. DITCH GRADE
ELEV. = 192.40

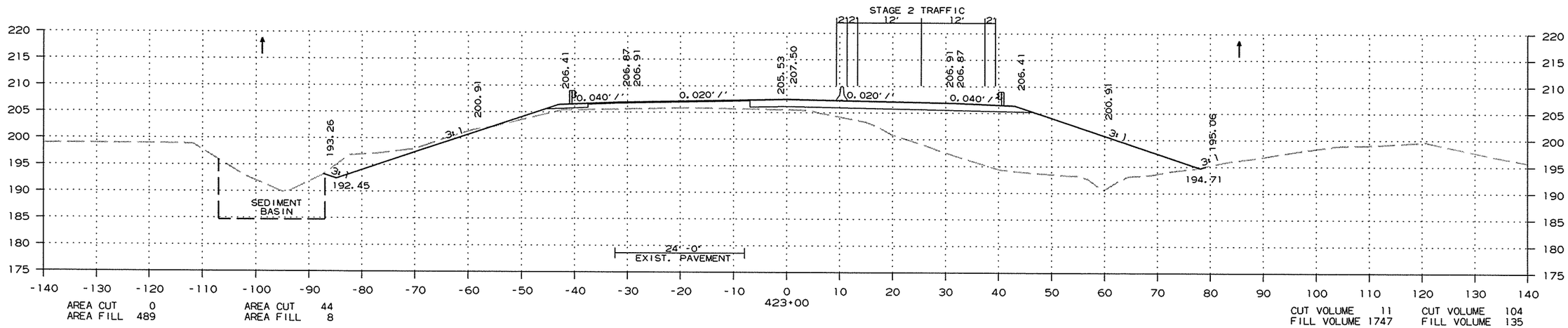
STA. 423+38.50 TOE OF SLOPE

CUT VOLUME 0
FILL VOLUME 348

CUT VOLUME 31
FILL VOLUME 6

STA. 423+14 END
-0.17% RT. DITCH GRADE
ELEV. = 194.68

STA. 423+05.50 BRIDGE END



AREA CUT 0
AREA FILL 489

AREA CUT 44
AREA FILL 8

CUT VOLUME 11
FILL VOLUME 1747

CUT VOLUME 104
FILL VOLUME 135

CROSS SECTION STA. 423+00 TO STA. 424+68

9/30/2013

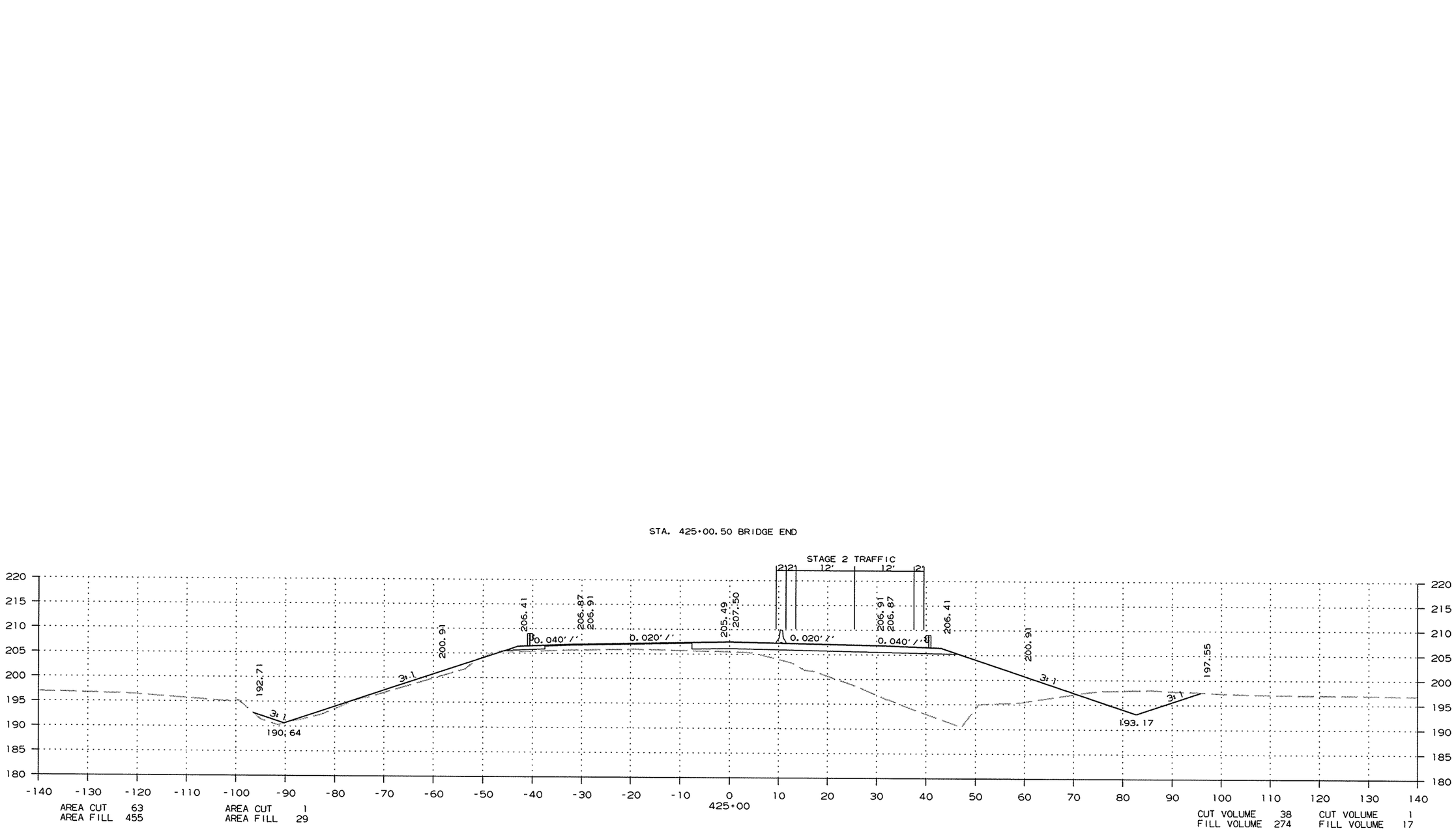
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	336	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



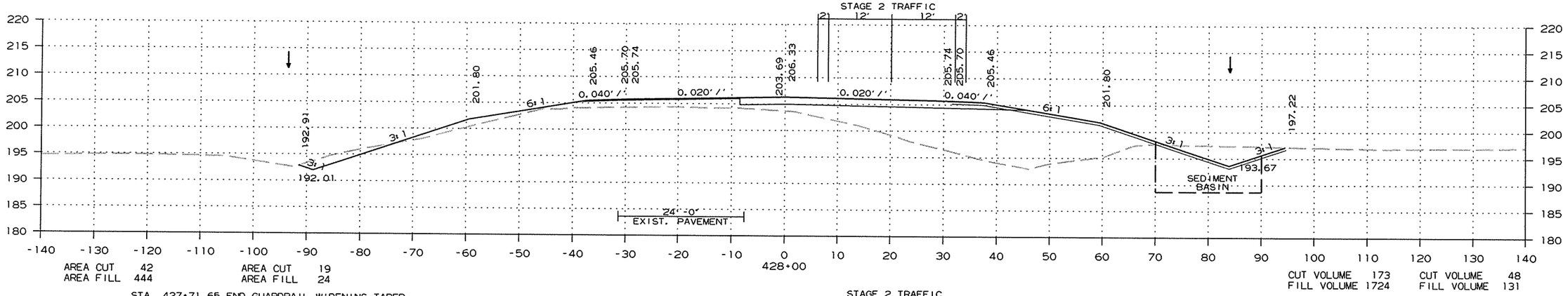
CROSS SECTION STA. 425+00 TO STA. 425+00

9/30/2013

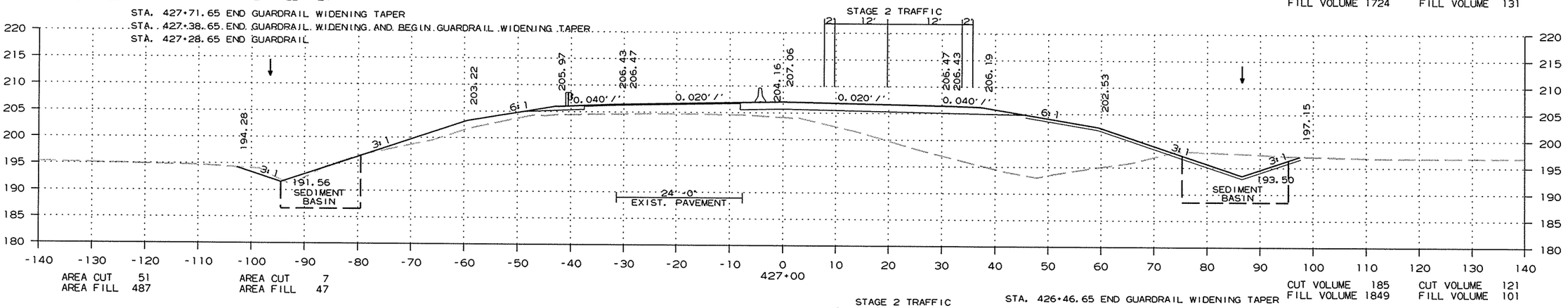
R110217.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	337	348
				(2) CROSS SECTIONS				

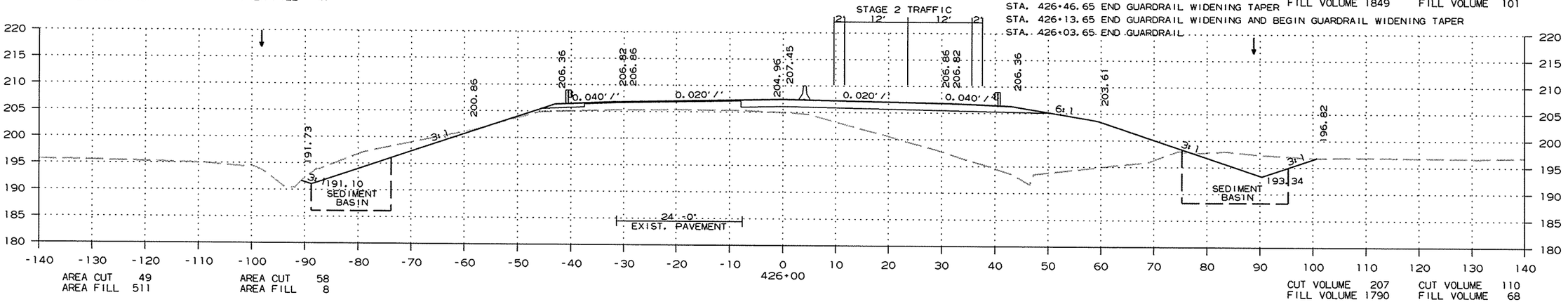
STAGE 1 STAGE 2



STA. 427+71.65 END GUARDRAIL WIDENING TAPER
STA. 427+38.65 END GUARDRAIL WIDENING AND BEGIN GUARDRAIL WIDENING TAPER
STA. 427+28.65 END GUARDRAIL



STA. 426+46.65 END GUARDRAIL WIDENING TAPER
STA. 426+13.65 END GUARDRAIL WIDENING AND BEGIN GUARDRAIL WIDENING TAPER
STA. 426+03.65 END GUARDRAIL



CROSS SECTION STA. 426+00 TO STA. 428+00

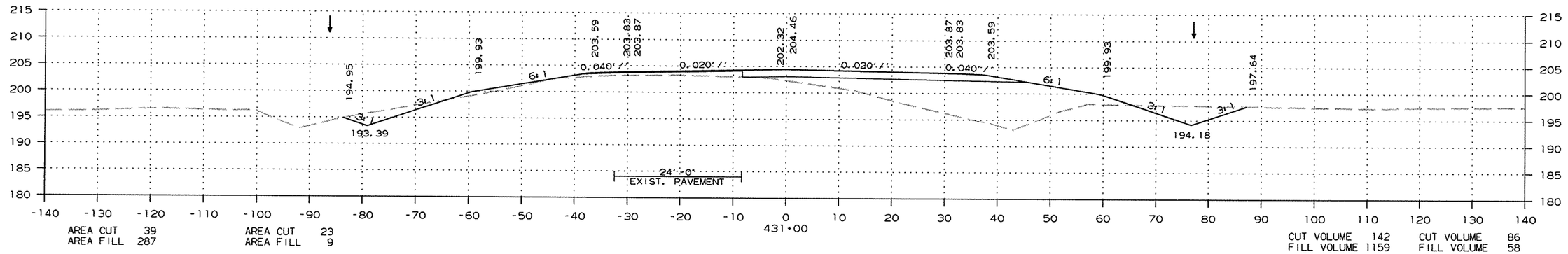
9/30/2013

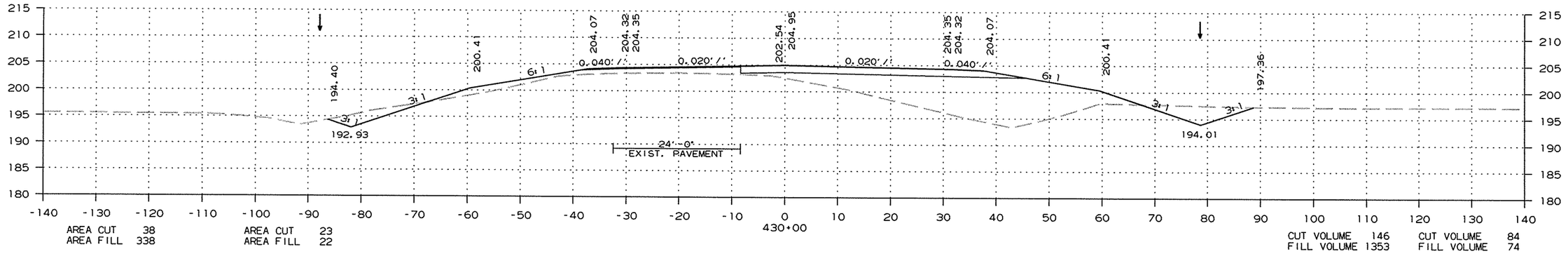
R110217.DGN

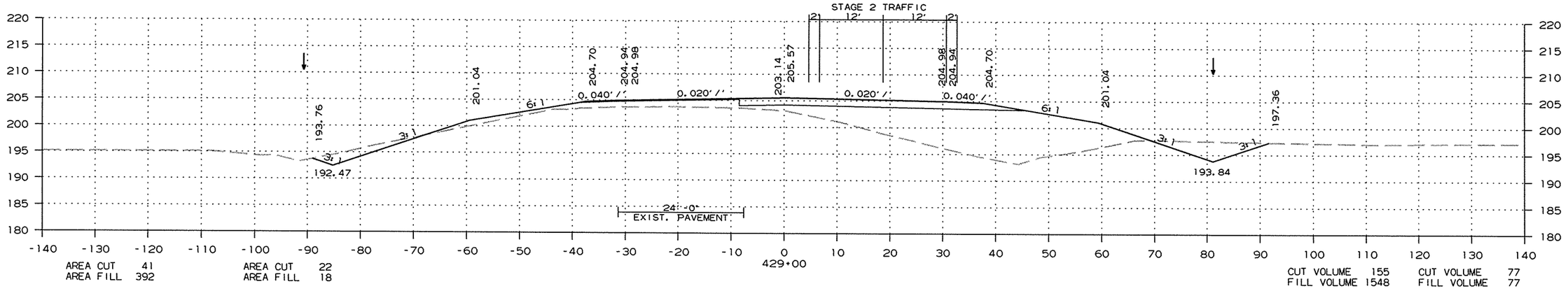
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	338	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 429+00 TO STA. 431+00

9/30/2013

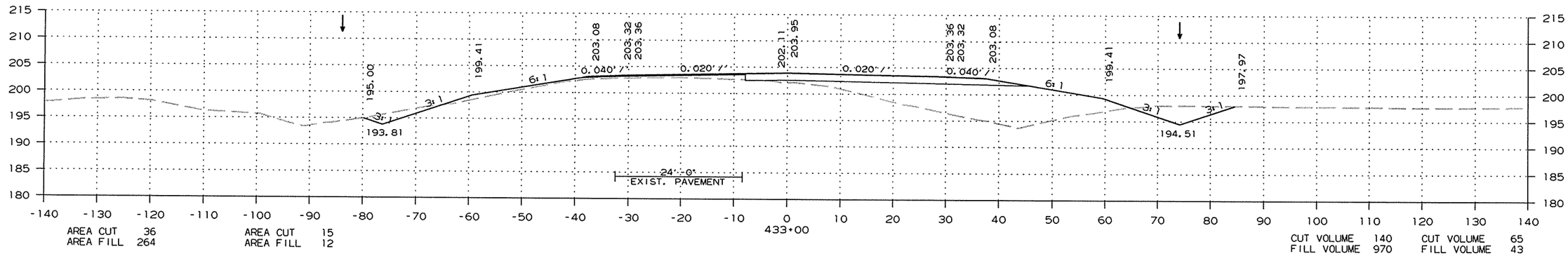
R110217.DGN

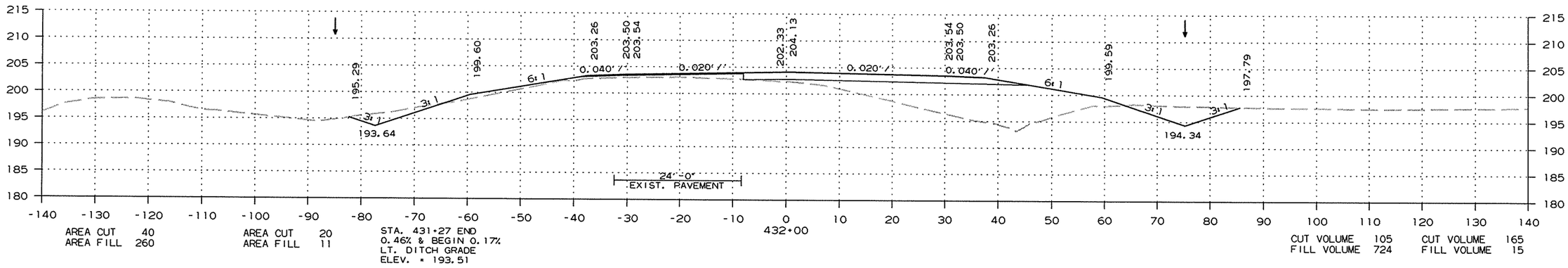
STAGE 1 STAGE 2

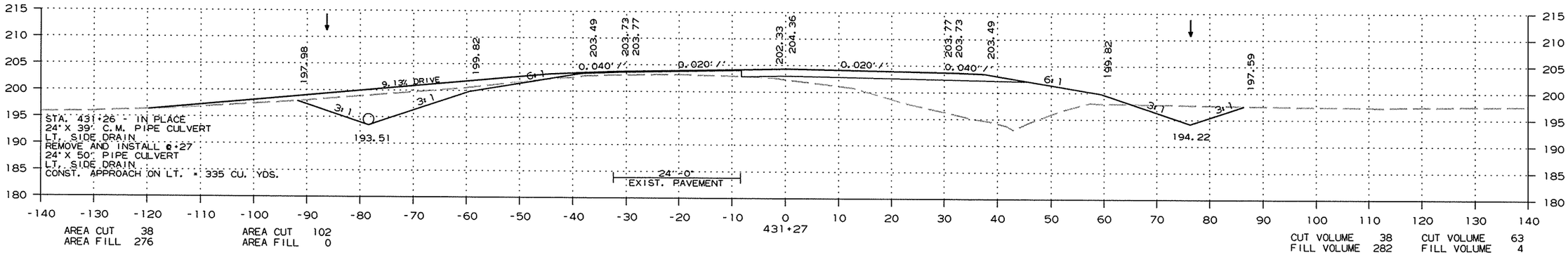
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	339	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 431+27 TO STA. 433+00

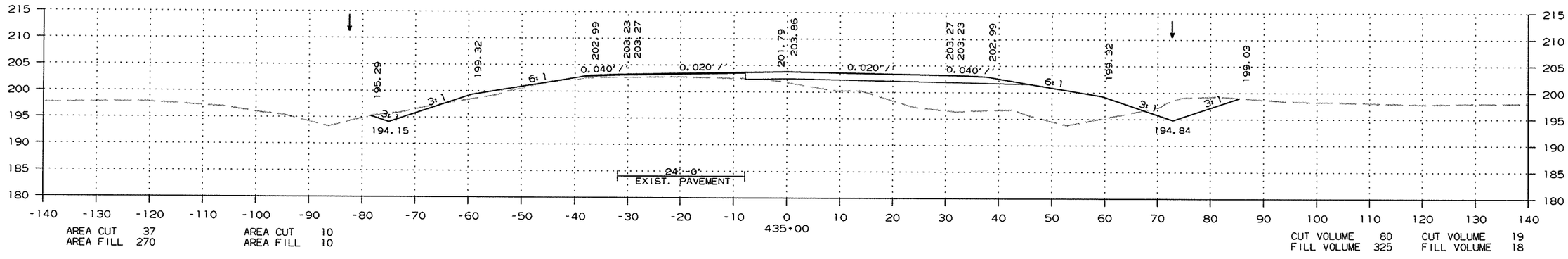
9/30/2013

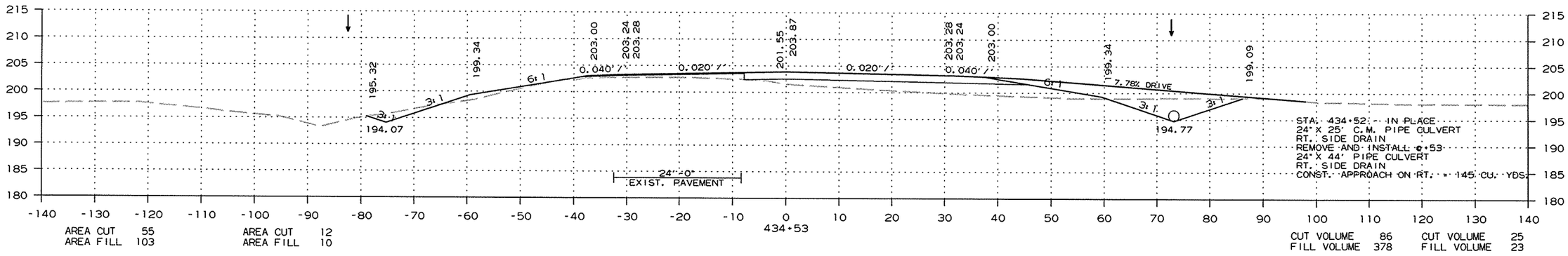
R110217.DGN

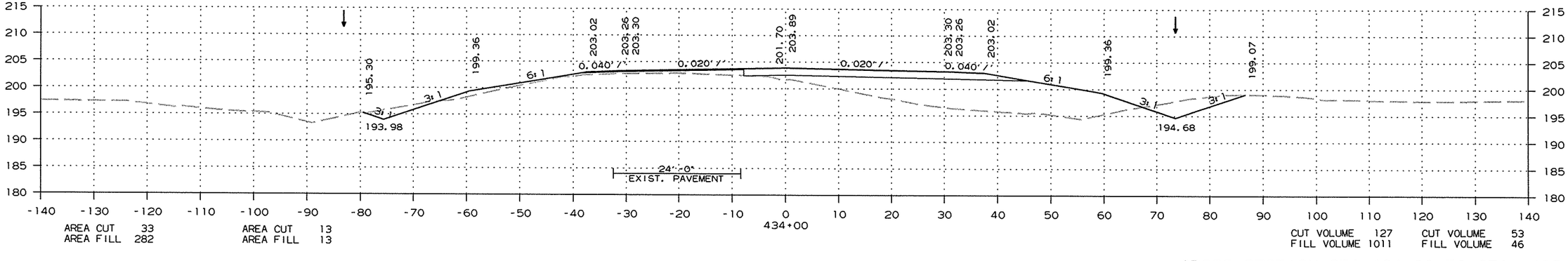
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	340	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 434+00 TO STA. 435+00

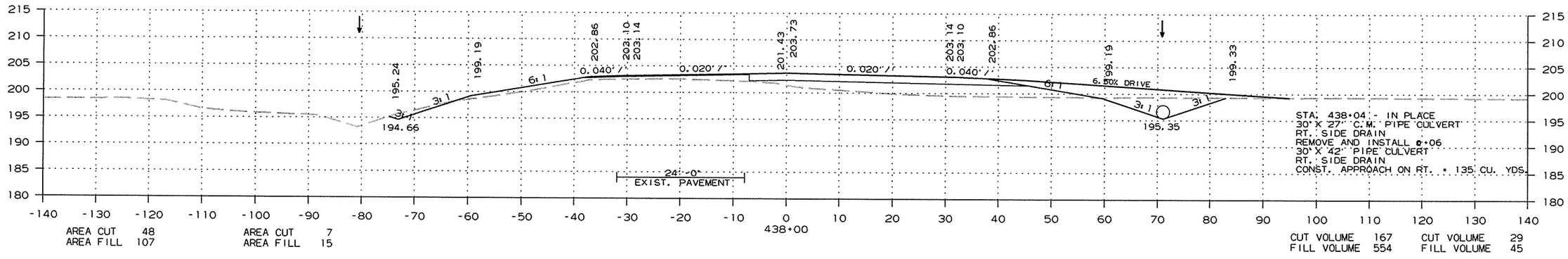
9/30/2013

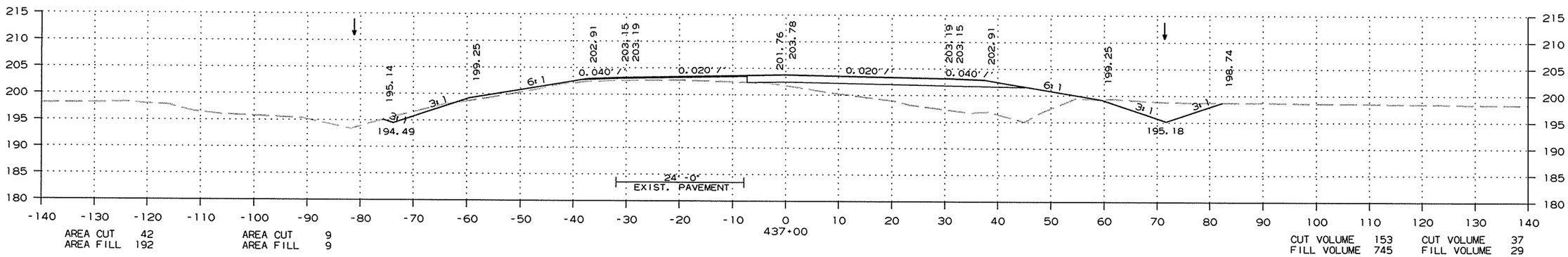
R110217.DGN

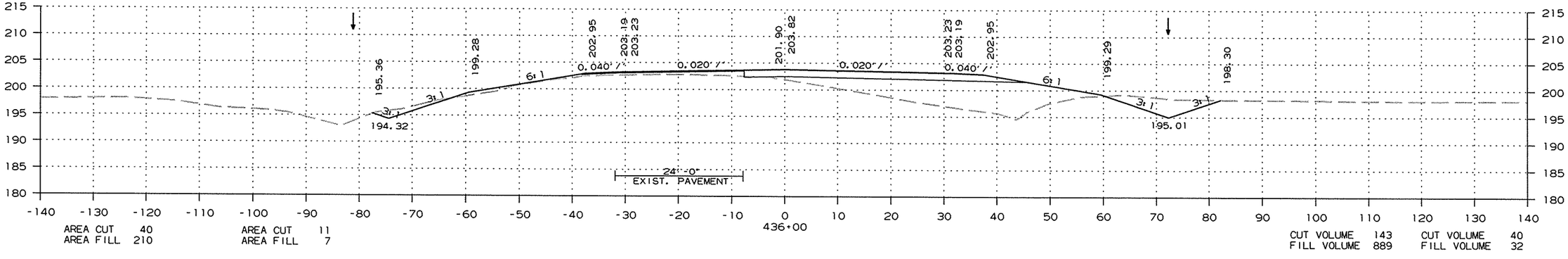
STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	341	348
				(2) CROSS SECTIONS				

STAGE 1 STAGE 2







CROSS SECTION STA. 436+00 TO STA. 438+00

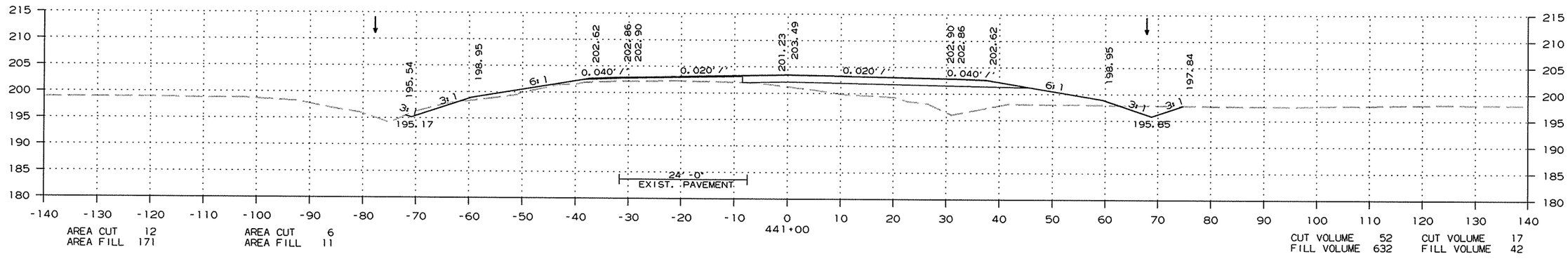
9/30/2013

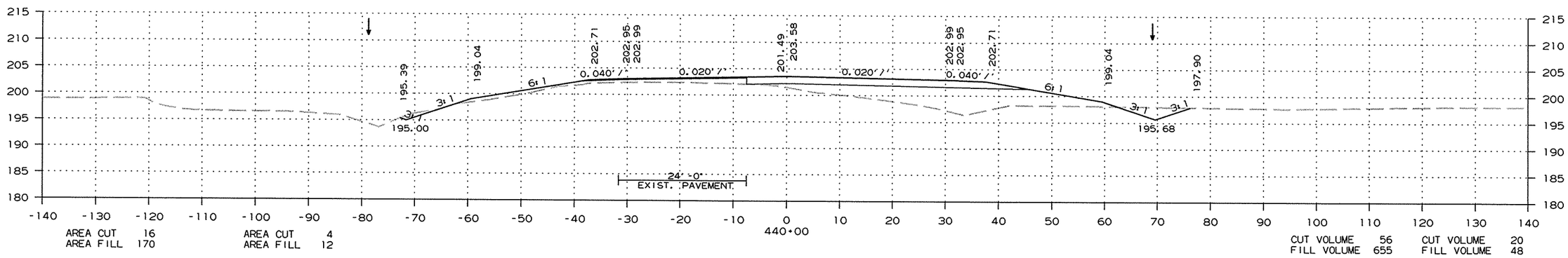
R110217.DGN

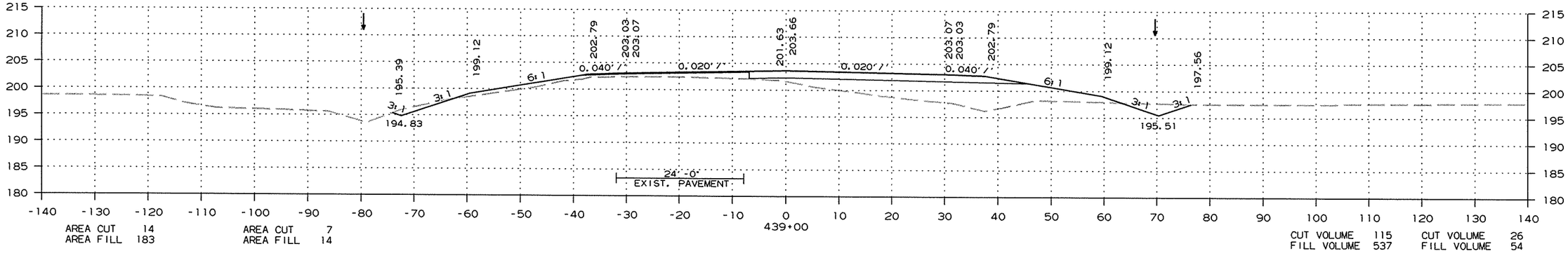
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	342	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 439+00 TO STA. 441+00

9/30/2013

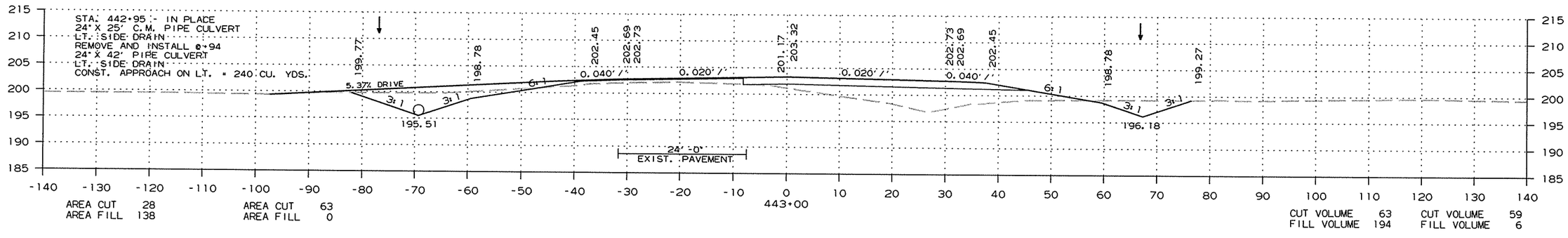
R110217.DGN

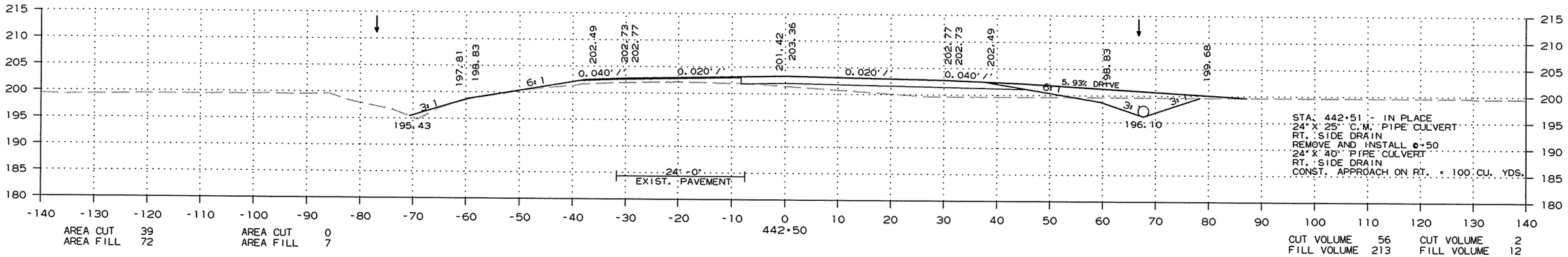
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	343	348

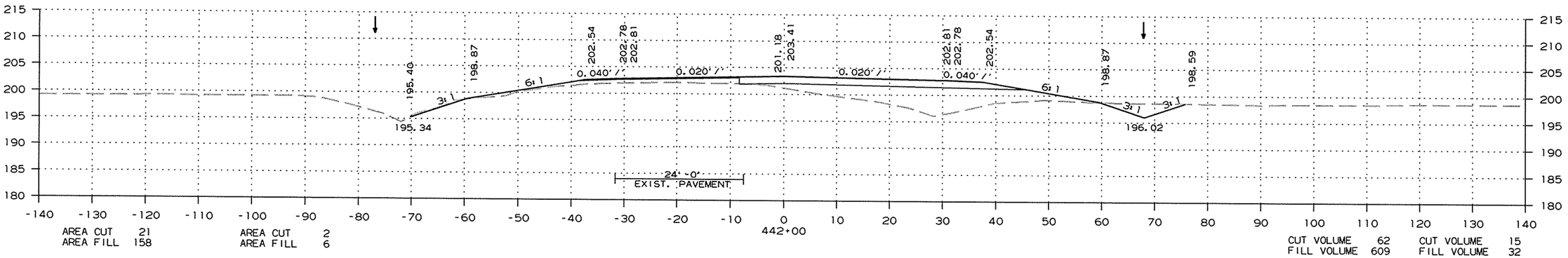
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 442+00 TO STA. 443+00

9/30/2013

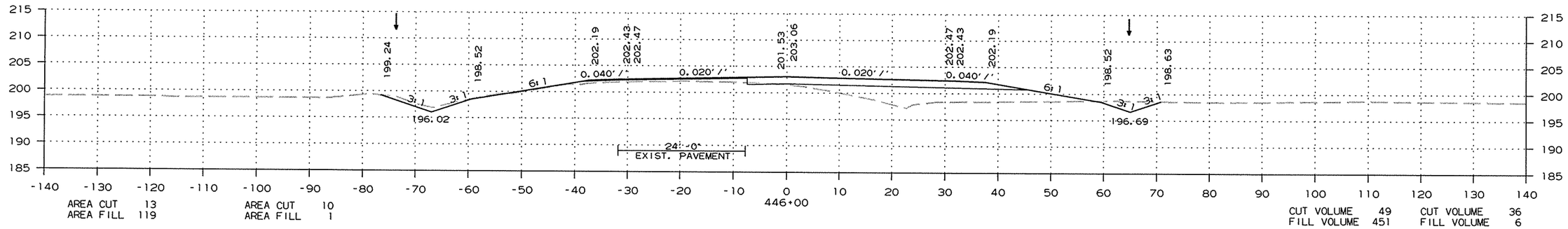
R110217.DGN

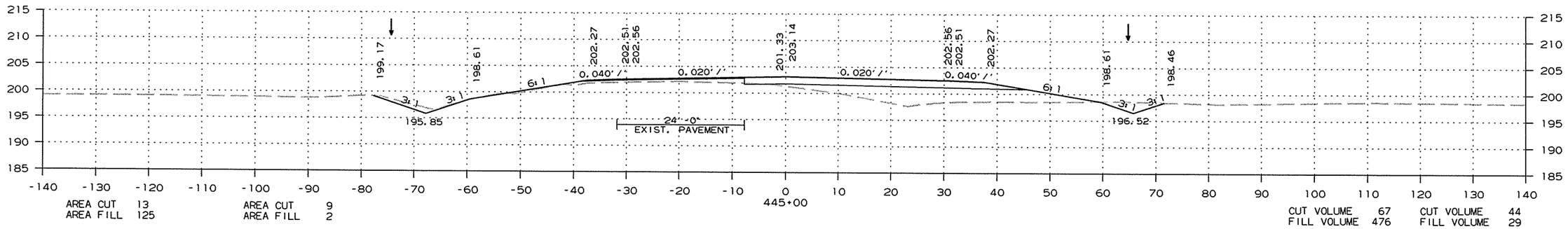
STAGE 1 STAGE 2

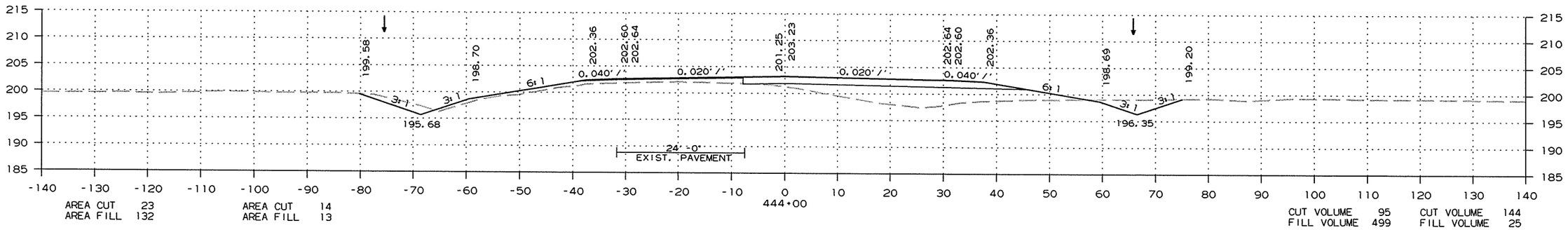
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RO. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	344	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 444+00 TO STA. 446+00

9/30/2013

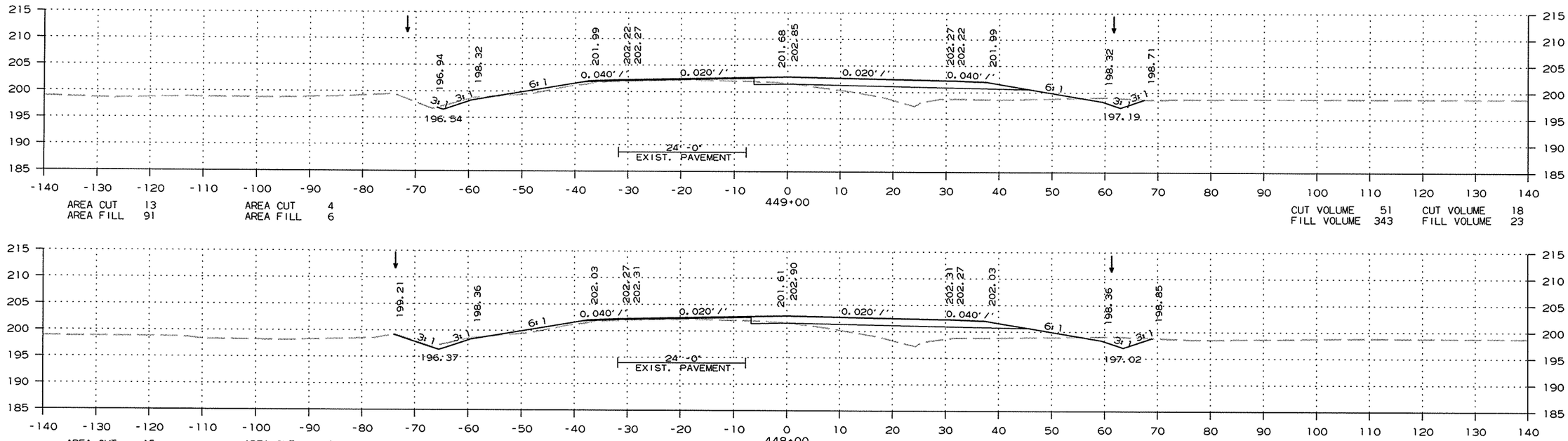
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	345	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 447+00 TO STA. 449+00

9/30/2013

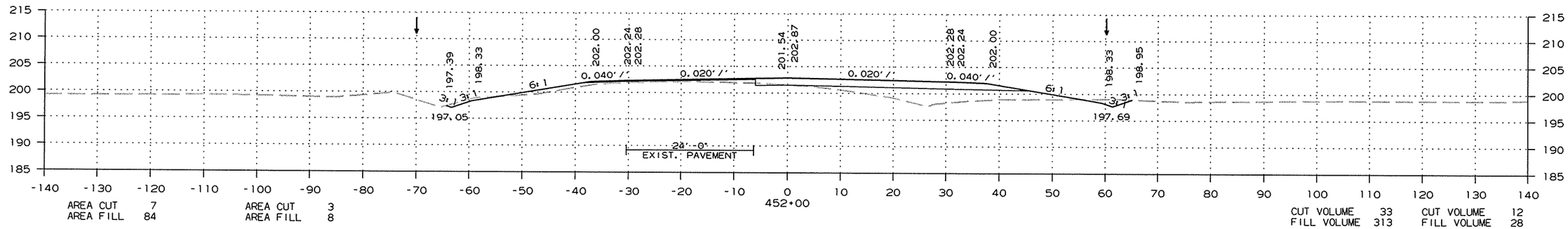
R110217.DGN

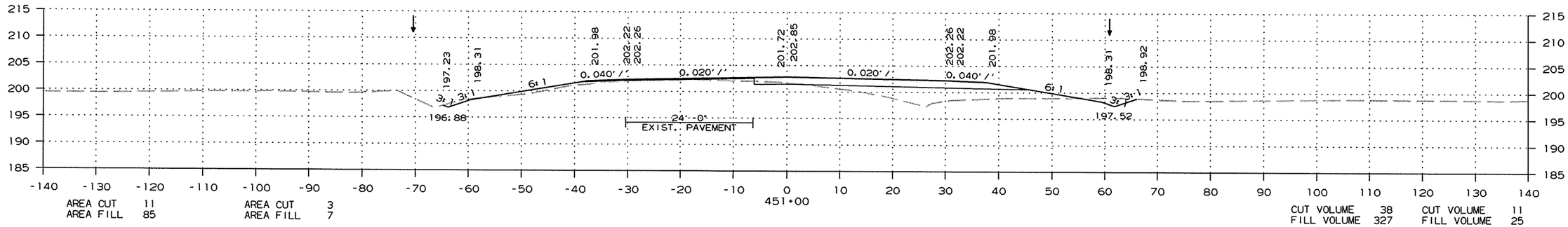
STAGE 1 STAGE 2

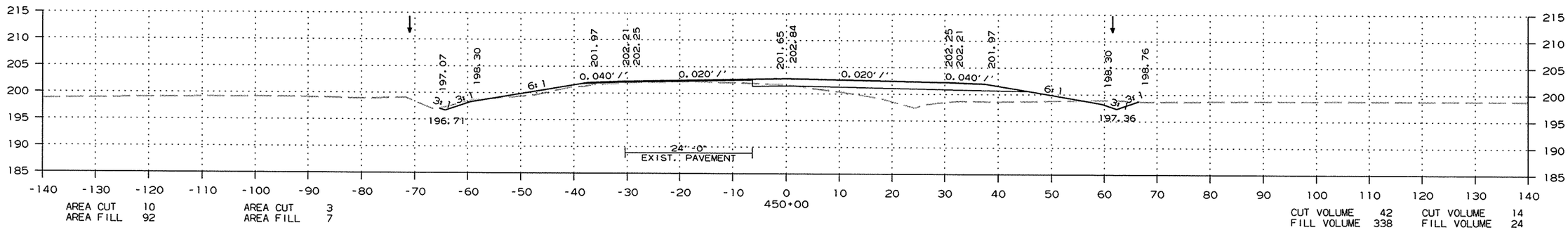
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	346	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2







CROSS SECTION STA. 450+00 TO STA. 452+00

9/30/2013

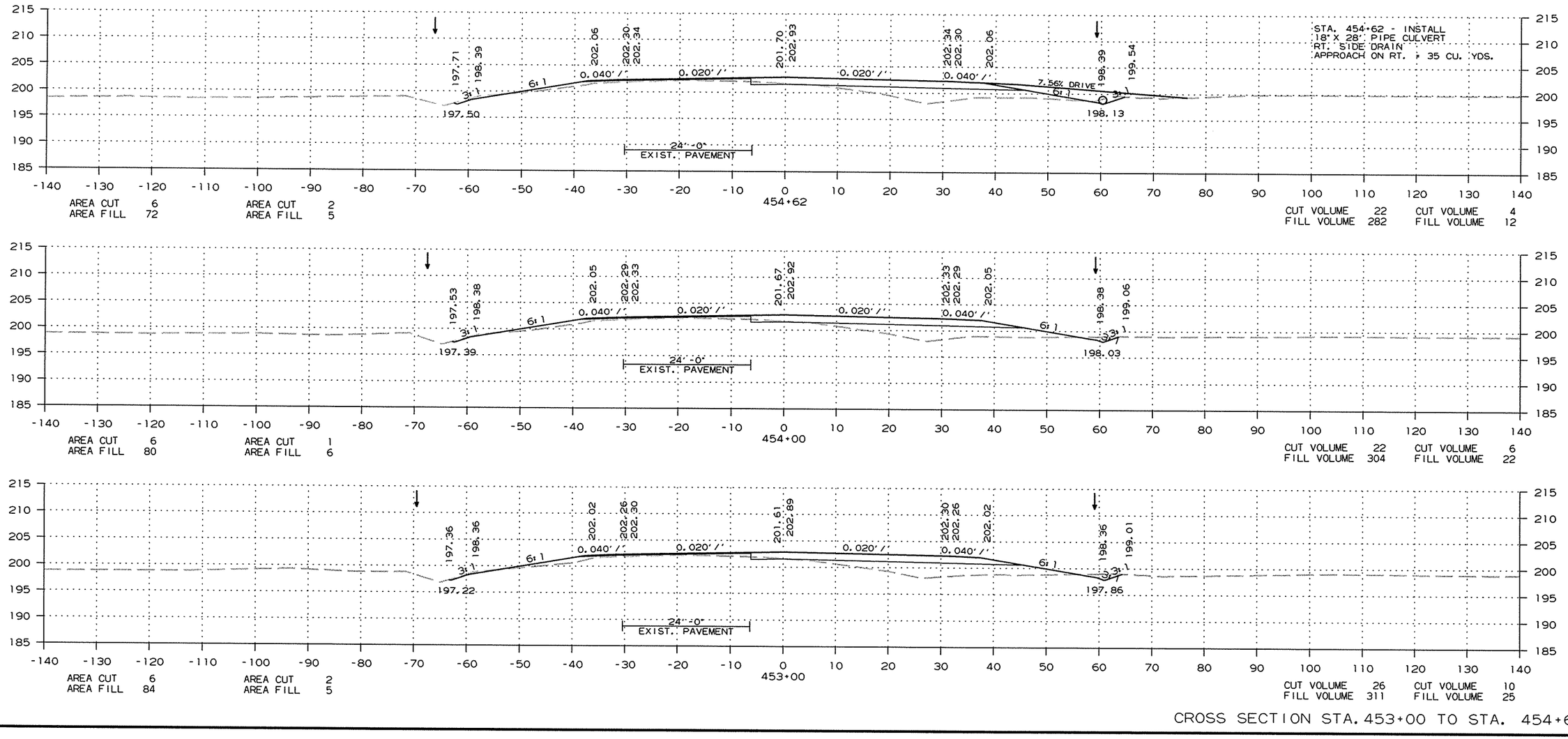
R110217.DGN

STAGE 1 STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	347	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 453+00 TO STA. 454+62

9/30/2013

R110217.DGN

STAGE 1 STAGE 2

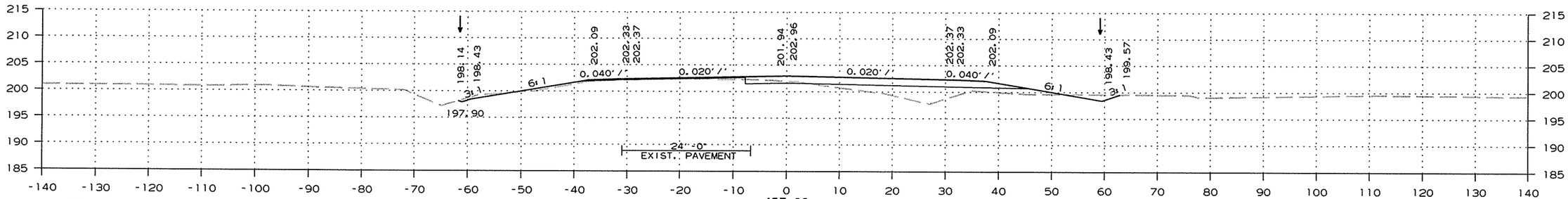
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-6-16				6	ARK.			
				JOB NO.		110217	348	348

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STA. 457.67 END
0.17% LT. DITCH GRADE
ELEV. = 198.02

STA. 457+67.70 END JOB = BEGIN JOB 110502 STA. 115+00.00



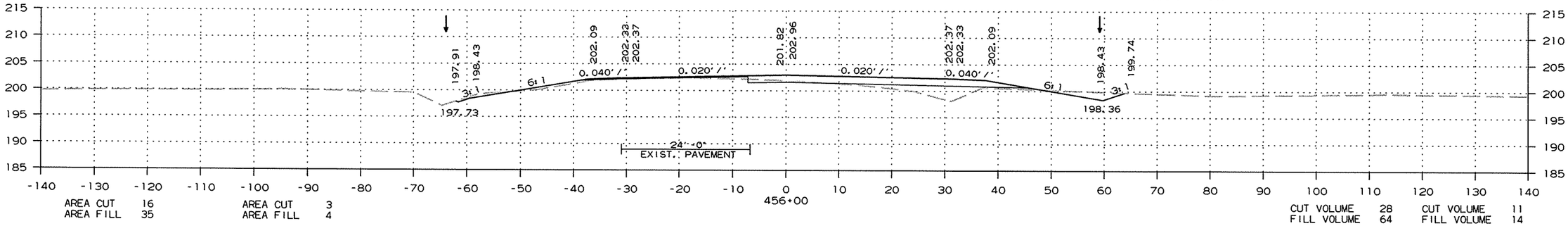
AREA CUT 11
AREA FILL 62

AREA CUT 3
AREA FILL 3

STA. 456+46 END
0.17% RT. DITCH GRADE
ELEV. = 198.44

CUT VOLUME 50
FILL VOLUME 180

CUT VOLUME 12
FILL VOLUME 14

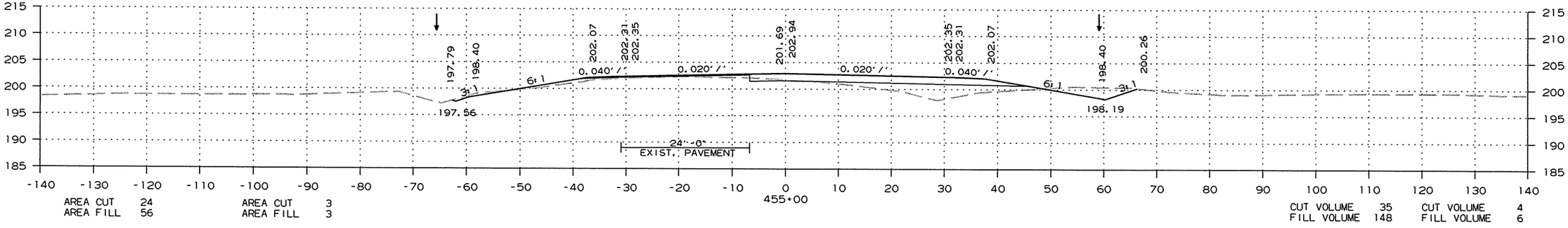


AREA CUT 16
AREA FILL 35

AREA CUT 3
AREA FILL 4

CUT VOLUME 28
FILL VOLUME 64

CUT VOLUME 11
FILL VOLUME 14



AREA CUT 24
AREA FILL 56

AREA CUT 3
AREA FILL 3

CUT VOLUME 35
FILL VOLUME 148

CUT VOLUME 4
FILL VOLUME 6

CROSS SECTION STA. 455+00 TO STA. 457+00

9/30/2013

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