DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	1	176

(2) HWY. 350 STRS. & APPRS. (S)

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 350 STRS. & APPRS. (S)

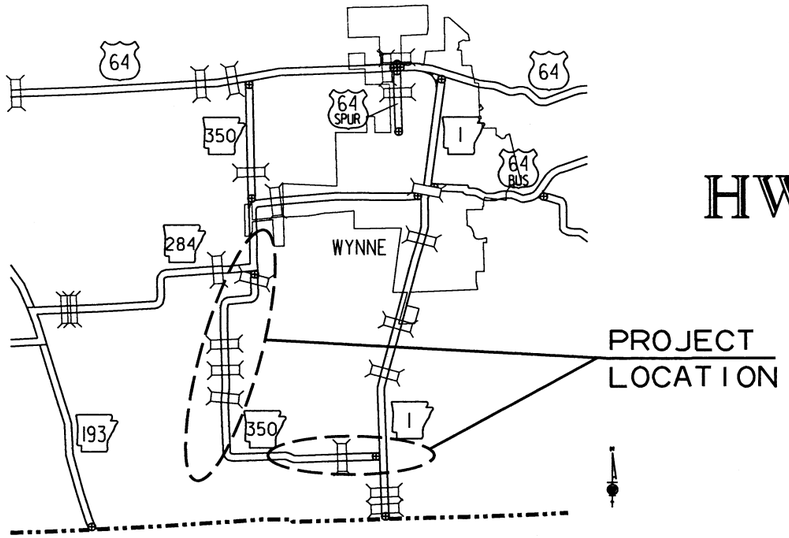
CROSS COUNTY

ROUTE 350 SECTION 1

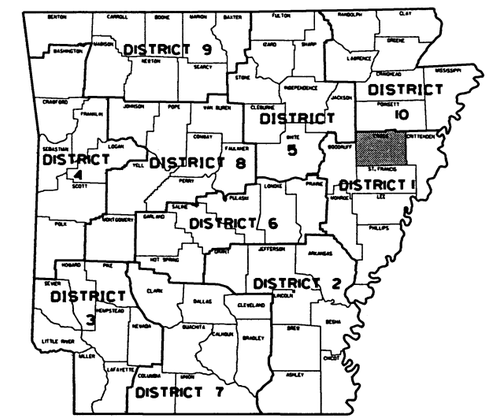
JOB 110574

FED. AID PROJ. NHPP-0019(47)

NOT TO SCALE



VICINITY MAP



ARK. HWY. DIST. NO. 1

BRIDGE DATA

(1) STA. 109+50.00 BR. END
175'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
175'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35', 35', 35')
BR. NO. 07444
STA. 111+25.00 BR. END

(2) STA. 210+14.00 BR. END
105'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
105'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35')
BR. NO. 07445
STA. 211+19.00 BR. END

(3) STA. 408+58.00 BR. END
105'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
105'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35')
BR. NO. 07446
STA. 409+63.00 BR. END

(4) STA. 510+43.00 BR. END
105'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
105'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35')
BR. NO. 07447
STA. 511+48.00 BR. END

STRUCTURES OVER 20'-0" SPAN

[1] STA. 306+50.50 CONSTRUCT
DBL. 12' x 7' x 83' R.C. BOX CULVERT
ON 45° LT. FWD. SKEW
025 = 290 CFS. D.A. = 570 ACRES
SPAN = 25'-10"

△A STATION EQUATION
STA. 100+70.00 BACK =
STA. 100+72.99 AHEAD

DESIGN TRAFFIC DATA

DESIGN YEAR	2039
2019 ADT	400
2039 ADT	400
2039 DHV	44
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	11%
DESIGN SPEED	55 MPH

STA. 424+06.10
END SITE 4

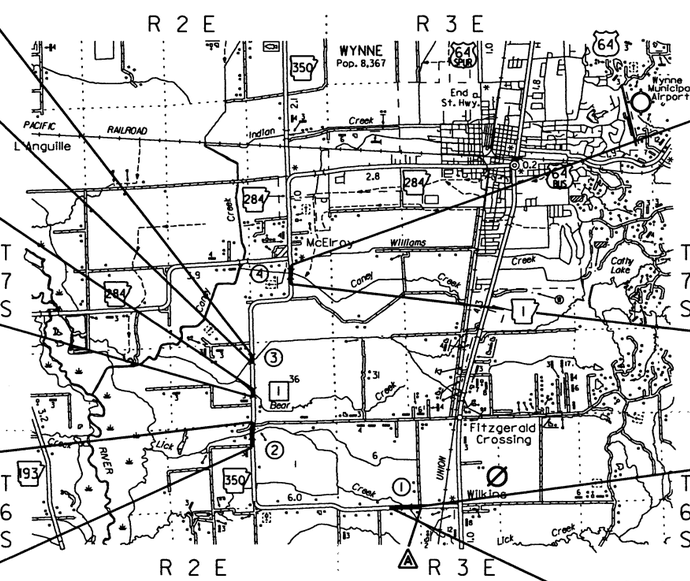
STA. 394+78.40
BEGIN SITE 4
LOG MILE 4.00

STA. 309+80.00
END SITE 3

STA. 305+50.00
BEGIN SITE 3
LOG MILE 3.75

STA. 221+14.80
END SITE 2

STA. 202+51.81
BEGIN SITE 2
LOG MILE 3.25



STA. 517+00.00
END JOB 110574
AND SITE 5

STA. 500+98.84
BEGIN SITE 5
LOG MILE 5.50

STA. 100+75.63
BEGIN JOB NO. 110574
AND SITE 1
LOG MILE 0.25

STA. 120+31.07
END SITE 1

N

APPROVED

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER N.E. BANES

10-3-19

DEPUTY DIRECTOR
AND CHIEF ENGINEER

BEGINNING OF PROJECT	MID POINT OF PROJECT	END OF PROJECT
LATITUDE = N 35°09'46.59"	LATITUDE = N 35°11'01.02"	LATITUDE = N 35°12'27.39"
LONGITUDE = W 90°50'47.47"	LONGITUDE = W 90°50'47.47"	LONGITUDE = W 90°50'13.54"

GROSS LENGTH OF PROJECT	8777.29	FEET	OR	1.662	MILES
NET " " ROADWAY	8261.46	"	"	1.564	"
NET " " BRIDGES	515.83	"	"	0.098	"
NET " " PROJECT	8777.29	"	"	1.662	"

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.		110574	2	176

(2) INDEX OF SHEETS AND STANDARD DRAWINGS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.
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2	INDEX OF SHEETS AND STANDARD DRAWINGS		
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES		
4 - 7	TYPICAL SECTIONS OF IMPROVEMENT		
8 - 15	SPECIAL DETAILS		
16 - 35	TEMPORARY EROSION CONTROL DETAILS		
36 - 47	MAINTENANCE OF TRAFFIC DETAILS		
48	PERMANENT PAVEMENT MARKING DETAILS		
49 - 58	QUANTITIES		
59	SCHEDULE OF BRIDGE QUANTITIES	07444, 07445, 07446, 07447	60714
60	SUMMARY OF QUANTITIES AND REVISIONS		
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80	LAYOUT OF BRIDGE HIGHWAY 350 OVER LICK CREEK (SHEET 2 OF 2)	07444	60716
81	DETAILS OF BENTS (SHEET 1 OF 2)	07444	60717
82	DETAILS OF BENTS (SHEET 2 OF 2)	07444	60718
83	DETAILS OF 175'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 1 OF 2)	07444	60719
84	DETAILS OF 175'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 2 OF 2)	07444	60720
85	COMMON DETAILS OF CONTINUOUS R.C. SLAB UNITS	07444, 07445, 07446, 07447	60721
86	DETAILS OF TYPE SPECIAL APPROACH GUTTERS	07444, 07445, 07446, 07447	60722
87	LAYOUT OF BRIDGE HIGHWAY 350 OVER LICK CREEK (SHEET 1 OF 2)	07445	60723
88	LAYOUT OF BRIDGE HIGHWAY 350 OVER LICK CREEK (SHEET 2 OF 2)	07445	60724
89	DETAILS OF BENTS (SHEET 1 OF 2)	07445	60725
90	DETAILS OF BENTS (SHEET 2 OF 2)	07445	60726
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93	LAYOUT OF BRIDGE HIGHWAY 350 OVER DRAINAGE DITCH (SHEET 1 OF 2)	07446	60729
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95	DETAILS OF BENTS (SHEET 1 OF 2)	07446	60731
96	DETAILS OF BENTS (SHEET 2 OF 2)	07446	60732
97	DETAILS OF 105'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 1 OF 2)	07446	60733
98	DETAILS OF 105'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 2 OF 2)	07446	60734
99	LAYOUT OF BRIDGE HIGHWAY 350 OVER CREEK (SHEET 1 OF 2)	07447	60735
100	LAYOUT OF BRIDGE HIGHWAY 350 OVER CREEK (SHEET 2 OF 2)	07447	60736
101	DETAILS OF BENTS (SHEET 1 OF 2)	07447	60737
102	DETAILS OF BENTS (SHEET 2 OF 2)	07447	60738
103	DETAILS OF 105'-0" CONTINUOUS R.C. SLAB UNIT (SHEET 1 OF 2)	07447	60739
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105 - 176	CROSS SECTIONS		

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

BRIDGE STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02-27-14
55001	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES	02-27-14
55010	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE	01-15-19
55021	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	03-24-16
55040E	STANDARD DETAILS FOR TYPE E APPROACH SLAB	02-27-14

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
GR-8	GUARD RAIL DETAILS	11-16-17
GR-8A	GUARD RAIL DETAILS	11-16-17
GR-9	GUARD RAIL DETAILS	04-17-08
GR-9A	GUARD RAIL DETAILS	04-17-08
GR-11	GUARD RAIL DETAILS	11-16-17
MB-1	MAILBOX DETAILS	11-18-04
PBC-1	PRECAST CONCRETE BOX CULVERTS	01-28-15
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PCP-1	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	02-27-14
PCP-2	PLASTIC PIPE CULVERT (PVC F949)	02-27-14
PM-1	PAVEMENT MARKING DETAILS	06-01-17
RCB-1	REINFORCED CONCRETE BOX CULVERT DETAILS	07-26-12
RCB-2	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	11-20-03
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	10-18-96
SES-1	SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES	10-18-96
SHS-1	STANDARD HIGHWAY SIGNS AND SUPPORTS ASSEMBLIES	09-12-13
SI-1	DETAILS OF SPECIAL ITEMS	10-25-18
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	04-13-17
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	09-02-15
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	07-25-19
TC-4	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	02-27-14
TC-5	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	10-15-09
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
TEC-4	TEMPORARY EROSION CONTROL DEVICES	07-26-12
WF-2	WIRE FENCE WATER GAPS	04-20-79
WF-4	WIRE FENCE TYPE C AND D	08-22-02

dwbc553 6/20/2019
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STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
11-1-19

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA_____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____	CONTRACTOR'S LICENSE
100-4_____	DEPARTMENT NAME CHANGE
102-2_____	ISSUANCE OF PROPOSALS
108-1_____	LIQUIDATED DAMAGES
108-2_____	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1_____	PROTECTION OF WATER QUALITY AND WETLANDS
303-1_____	AGGREGATE BASE COURSE
306-1_____	QUALITY CONTROL AND ACCEPTANCE
400-1_____	TACK COATS
400-4_____	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5_____	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6_____	LIQUID ANTI-STRIP ADDITIVE
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2_____	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
600-2_____	INCIDENTAL CONSTRUCTION
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
605-1_____	CONCRETE DITCH PAVING
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
617-1_____	GUARDRAIL TERMINAL (TYPE 2)
620-1_____	MULCH COVER
621-1_____	FILTER SOCKS
800-1_____	STRUCTURES
802-3_____	CONCRETE FOR STRUCTURES
804-2_____	REINFORCING STEEL FOR STRUCTURES
JOB 110574__	AIRPORT CLEARANCE REQUIREMENTS
JOB 110574__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 110574__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110574__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 110574__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 110574__	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 110574__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 110574__	COORDINATION OF WORK
JOB 110574__	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 110574__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 110574__	FLEXIBLE BEGINNING OF WORK
JOB 110574__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 110574__	MANDATORY ELECTRONIC CONTRACT
JOB 110574__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 110574__	NESTING SITES OF MIGRATORY BIRDS
JOB 110574__	PARTNERING REQUIREMENTS
JOB 110574__	PLASTIC PIPE
JOB 110574__	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 110574__	REMOVING AND STOCKPILING EXISTING AGGREGATE BASE COURSE (CLASS 7)
JOB 110574__	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 110574__	SHORING
JOB 110574__	SHORING FOR CULVERTS
JOB 110574__	SOIL STABILIZATION
JOB 110574__	STORM WATER POLLUTION PREVENTION PLAN
JOB 110574__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110574__	UTILITY ADJUSTMENTS
JOB 110574__	VALUE ENGINEERING
JOB 110574__	WARM MIX ASPHALT
JOB 110574__	WATER POLLUTION CONTROL
JOB 110574__	WELLHEAD PROTECTION

GENERAL NOTES

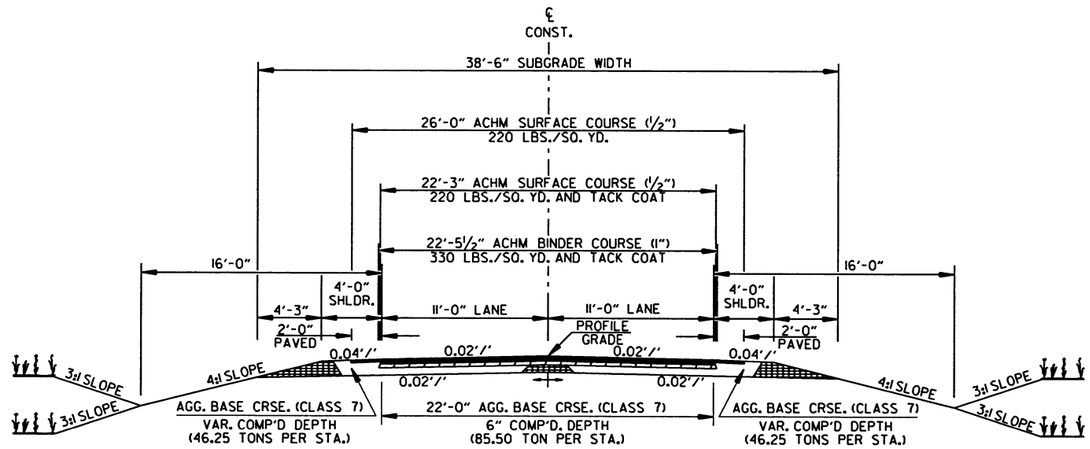
1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY 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.
10. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EEVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	4	176

(2) TYPICAL SECTIONS OF IMPROVEMENT

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

10-3-19



HWY. 350 - FULL DEPTH SECTION

STA. 402+00.00 TO STA. 408+38.00
STA. 409+83.00 TO STA. 417+11.00

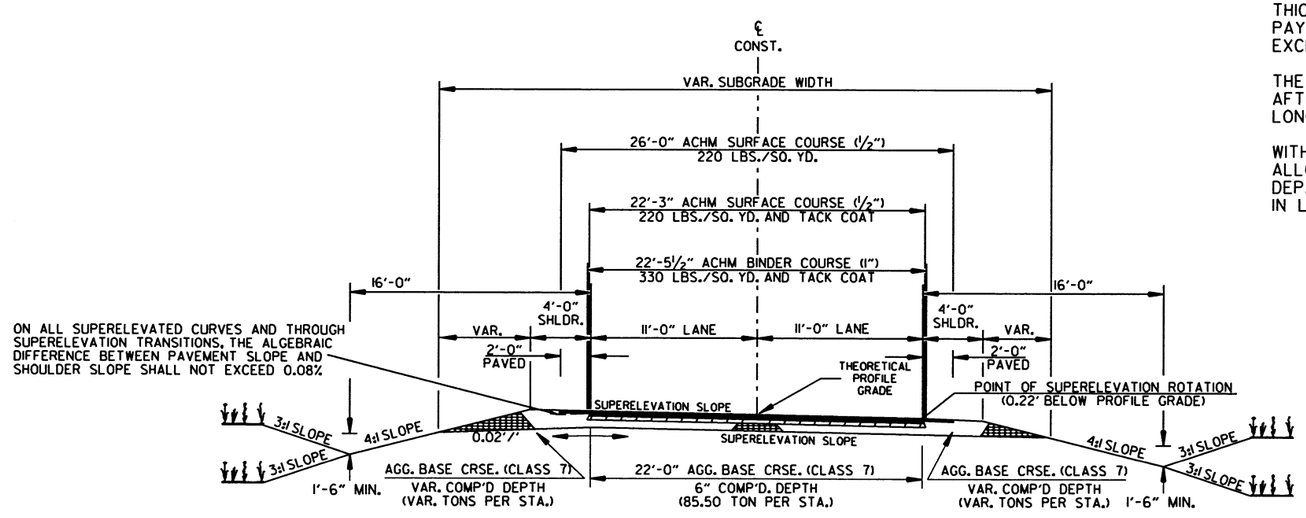
NOTES:

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

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

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

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



HWY. 350 - FULL DEPTH SECTION (SUPERELEVATION)

STA. 105+92.00 TO STA. 108+97.00
STA. 111+56.00 TO STA. 115+50.00
STA. 205+28.00 TO STA. 209+88.87
STA. 211+39.13 TO STA. 215+05.00
STA. 506+85.00 TO STA. 510+23.00
STA. 511+68.00 TO STA. 513+75.00

2/28/2019

R110574.DGN

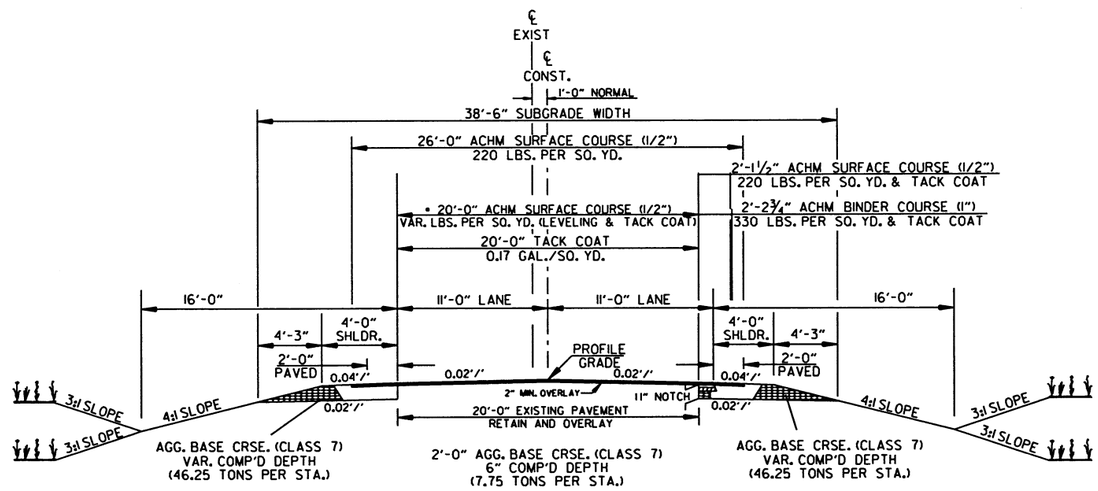
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	5	176

(2) TYPICAL SECTIONS OF IMPROVEMENT

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

10-3-19



HWY. 350 - NOTCH AND WIDEN SECTION RIGHT

STA. 105+20.75 TO STA. 105+92.00
STA. 120+31.00 TO STA. 121+28.00
STA. 201+52.00 TO STA. 202+51.00
STA. 221+15 TO STA. 222+08.00
STA. 305+50.00 TO STA. 310+80.00
STA. 393+78.00 TO STA. 397+76.00
STA. 422+70.00 TO STA. 425+06.00
STA. 515+96.00 TO STA. 517+44.00

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

NOTES:

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

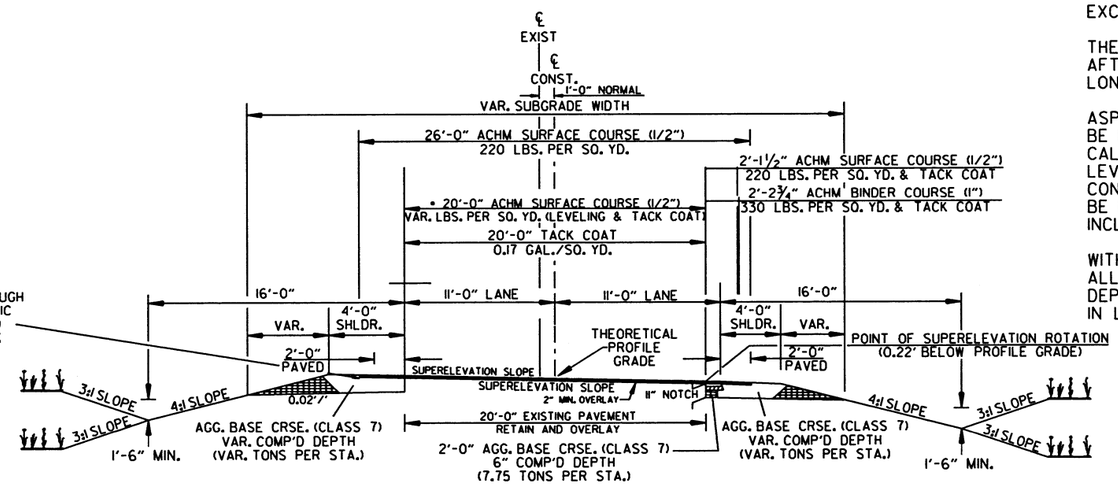
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

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.

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

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



HWY. 350 - NOTCH AND WIDEN SECTION RIGHT (SUPERELEVATION)

STA. 100+75.63 TO STA. 103+20.75
STA. 119+35.00 TO STA. 120+31.00
STA. 202+52.00 TO STA. 203+85.00
STA. 217+30.00 TO STA. 221+15.00
STA. 500+99.00 TO STA. 504+00.00
STA. 515+80.00 TO STA. 515+96.00

R110574.DGN 2/28/2019

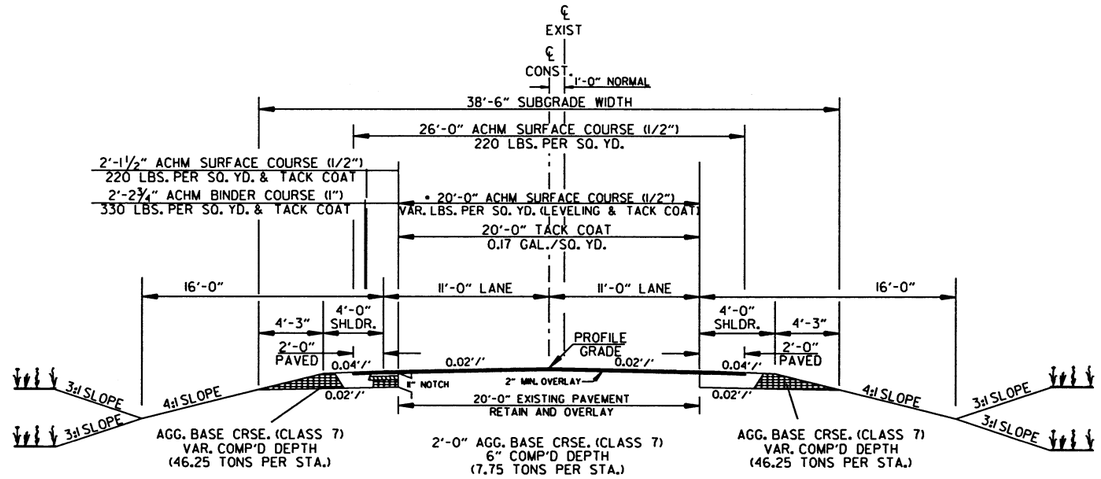
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		R10574	6	176

(2) TYPICAL SECTIONS OF IMPROVEMENT

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

10-3-19



HWY. 350 - NOTCH AND WIDEN SECTION LEFT

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

NOTES:

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

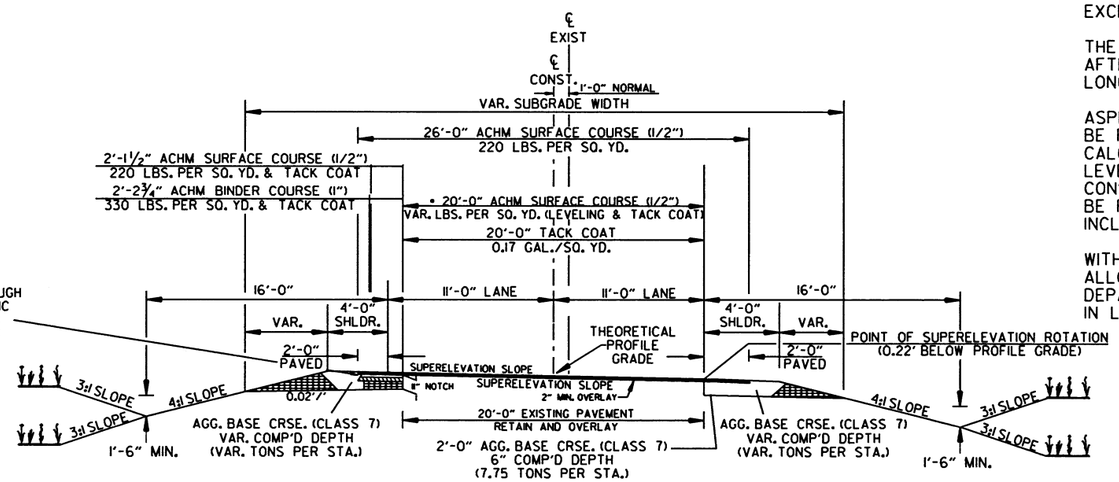
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

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.

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

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



HWY. 350 - NOTCH AND WIDEN SECTION LEFT (SUPERELEVATION)

2/28/2019

R110574.DGN

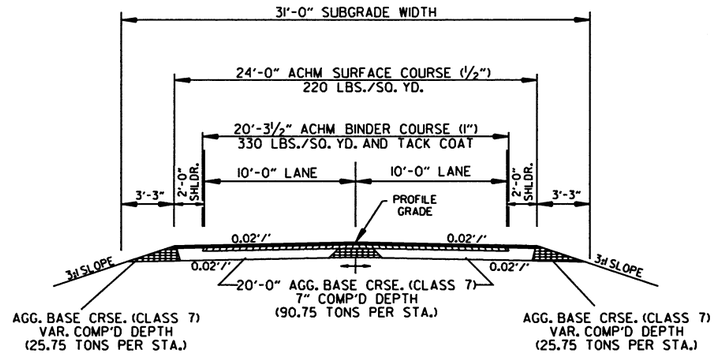
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		H0574	7	176

(2) TYPICAL SECTIONS OF IMPROVEMENT

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

10-3-19



DETOUR - FULL DEPTH SECTION

STA. 13+00 TO STA. 13+76

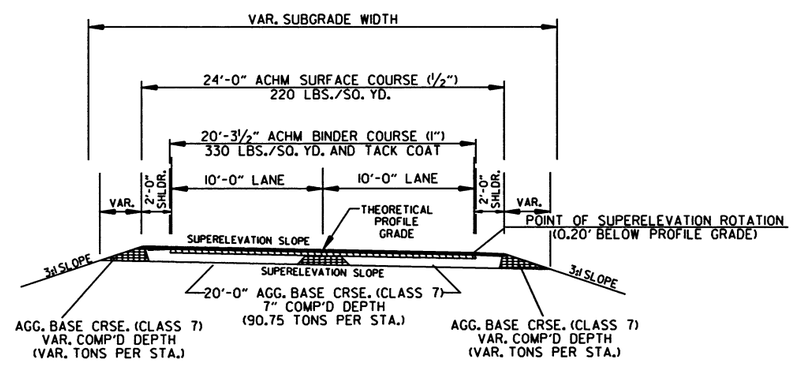
NOTES:

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

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

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

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



DETOUR - FULL DEPTH SECTION (SUPERELEVATION)

STA. 13+77 TO STA. 20+45

2/28/2019

R110574.DGN

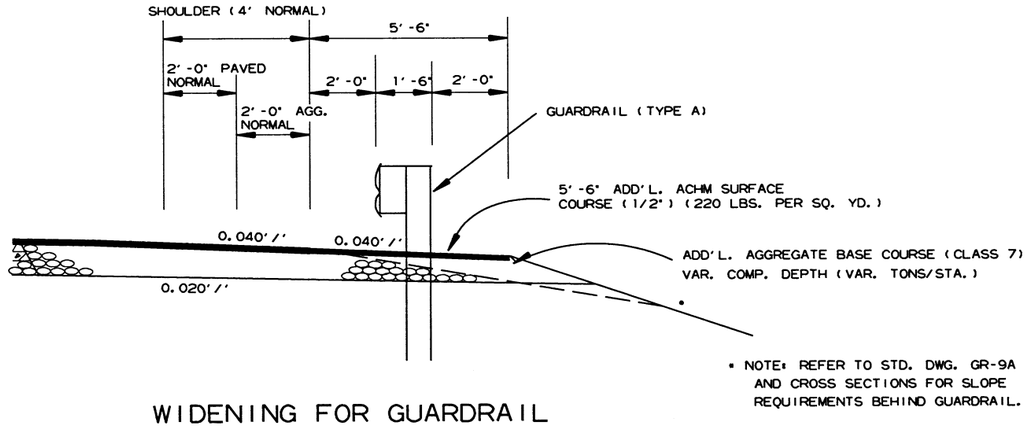
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	8	176

(2) SPECIAL DETAILS

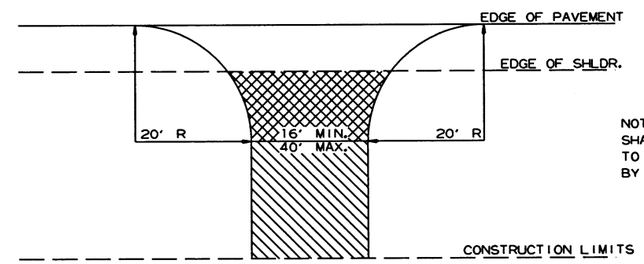
STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH

10-3-19



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

WIDENING FOR GUARDRAIL

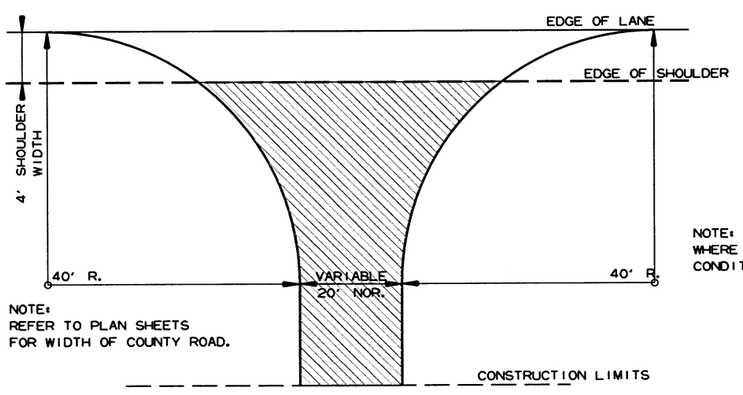


NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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

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

DETAIL FOR DRIVEWAY TURNOUTS



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

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

ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH

DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

2/28/2019

R110574.DGN

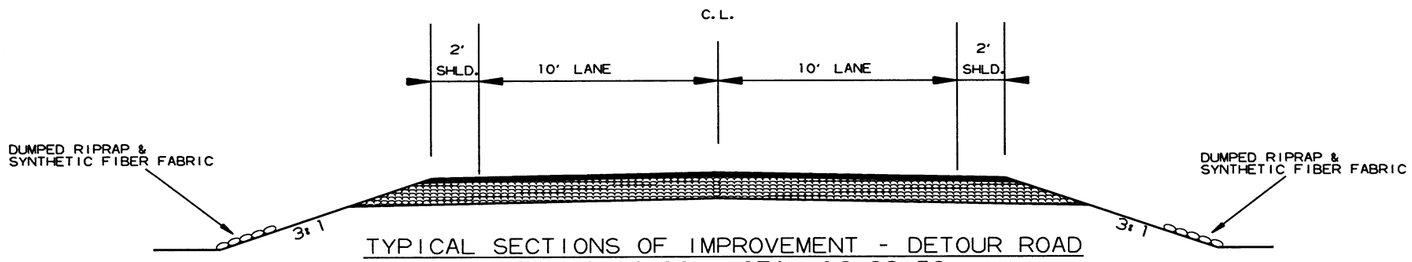
SPECIAL DETAILS

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.		110574	9	176

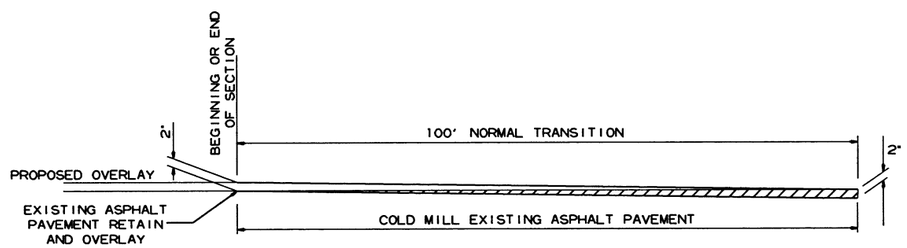
(2) SPECIAL DETAILS

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

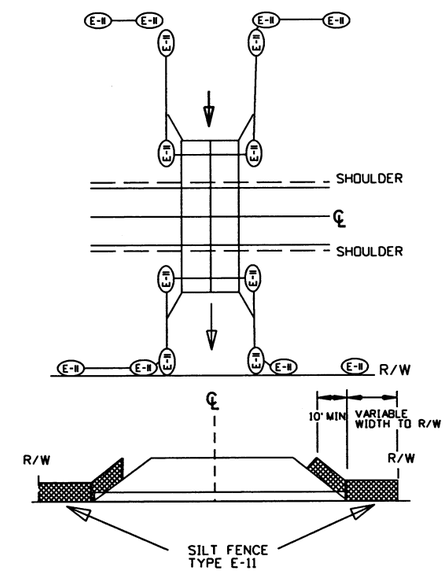
10-3-19



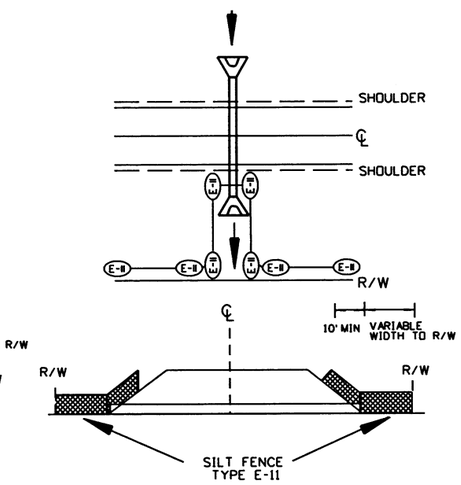
TYPICAL SECTIONS OF IMPROVEMENT - DETOUR ROAD
STA. 16+06.10 - STA. 16+82.58



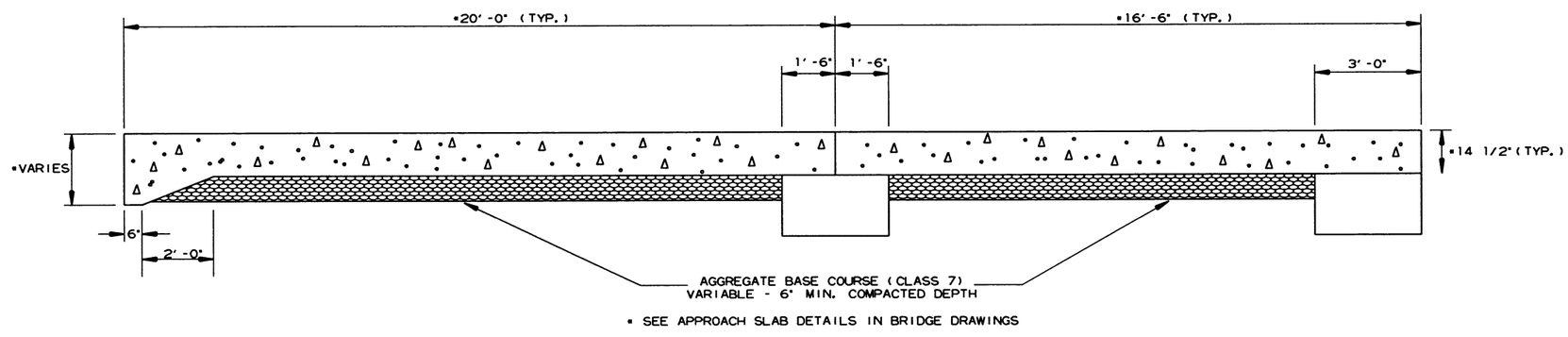
DETAIL FOR TRANSITIONS



DETAIL OF SILT FENCE
AT R.C. BOX



DETAIL OF SILT FENCE
AT CROSS DRAINS



* SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS

SECTION OF APPROACH SLAB

2/28/2019

R110574.DGN

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	10	176

(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.
25'-10"	7'-0"	0'-9"	0'-8"	45	3:1	34'-10 5/8"	2'-0"	7'-10"	2'-4"	0	60	3'-2"	3'-5 3/4"	4'-2 1/4"	0'-9 3/4"	1'-3 5/8"	16'-6"	33'-0"	18'-4 1/8"	40'-8 3/8"	14.83	1451

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	17	L Min 3'-4" Max 9'-0" X Min 0'-9" Max 1'-1" Y Min 2'-8" Max 8'-0"	4	12	3	L 3'-5" X 1'-0" Y 2'-6"	-	-	-	L - X - Y -	4	18	6	Min 3'-4" Max 12'-4"	4	18	4	16'-2"	4	18	11	L Min 5'-3" Max 10'-3" X Min 2'-4" Max 2'-4" Y Min 3'-0" Max 8'-0"	4	8	19'-2"	6	18	11	Min 2'-8" Max 3'-0"	-	-	-	Min - Max -	4	2	16'-11"	4	2	17'-4"	6	12	7	L 3'-4" X 1'-8"	463
WING B	4	12	33	L Min 3'-4" Max 9'-8" X Min 0'-9" Max 1'-9" Y Min 2'-8" Max 8'-0"	4	12	6	L 4'-0" X 1'-7" Y 2'-6"	-	-	-	L - X - Y -	4	18	6	Min 6'-10" Max 24'-10"	4	18	4	32'-8"	4	18	22	L Min 5'-1" Max 10'-3" X Min 2'-4" Max 2'-4" Y Min 2'-10" Max 8'-0"	4	8	41'-6"	6	18	23	Min 2'-8" Max 3'-8"	4	18	2	Min 52'-2" Max 52'-2"	4	2	33'-0"	4	2	36'-7"	6	12	7	L 3'-4" X 1'-8"	988

MID-SECTION BAR LAP TABLE

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

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

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

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 9235 CHARLES R. ELLIS 7/8/19

TABULAR DATA BY: KAP DATE: 06/19/2019
CHECKED BY: JSQ DATE: 6/25/19

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

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

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH
45	3:1	5	12	7	14'-11"	11.5	5	11.5	7	8	25'-10"	8'-11"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
7	9	Max 25'-6" Min 2'-2"	32	8	8	Max 25'-6" Min 2'-2"	36	5	4.5	Max 25'-6" Min 2'-2"	63	4	5.5	Max 25'-6" Min 2'-2"	51
		25'-6"	3			25'-6"	3			25'-6"	6			25'-6"	5

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	CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	(1) REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
6	8	45	8'-7"	4	12	30	8'-7"	4	9	67	Max 27'-8" Min 1'-10"	4	9	67	Max 27'-8" Min 1'-10"	4	12	7 7	LONG 27'-3" SHORT 2'-3"	4	12	14	14'-9"	35.67	7778

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D	"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D	"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D
8	36'-2"	6	8	36'-2"	6	4	2'-0"	1'-0"	38

INLET SLOPE SECTION(S)

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

SIDE WALL REINFORCING STEEL "f0" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" (LENGTH = OH - 4") SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" (LENGTH = SL) SIZE	SPACING	NO. REQ'D

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
TOTAL	

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

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.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	TOP SLAB REINFORCING STEEL (LENGTH = OW - 4" + BENDS) "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL (LENGTH = OW - 4" + BENDS) "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D
A	5	12	7	11.5	11.5	7.0	8	25'-10"	8'-11"	53.1667	4	25'-6"	8	25'-10"	7	25'-6"	14	45	4	25'-6"	5	25'-10"	5	25'-6"	9	70

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 STEEL "d1" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION STEEL "d2" (LENGTH = SL) SIZE	SPACING	NO. REQ'D	CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
6	8	158	8'-7"	4	12	106	8'-7"	4	9	67	4	9	67	4	12	14	4	12	14	122.77	19907

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL BOX CULVERT
Sta. 306+50.50
SPECIAL DETAILS

LRFD

Ver. 1.115 bl10574x3_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.		110574	11	176

① SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
7/8/19
CHARLES R. ELLIS

TABULAR DATA BY: KAP DATE: 06/19/2019
CHECKED BY: JSQ DATE: 6/25/19

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
25'-10"	7'-0"	0'-9"	0'-8"	45	3:1	34'-10 5/8"	2'-0"	7'-10"	2'-4"	0	60	3'-2"	3'-5 3/4"	4'-2 1/4"	0'-9 3/4"	1'-3 5/8"	16'-6"	33'-0"	18'-4 1/8"	40'-8 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
16.25	1451

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY		F1	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS		F2	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS		F3	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F4	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	17	L	Min	3'-4"	4	12	3	L	3'-5"		-	-	-	L	-		4	18	6	Min	3'-4"	4	18	4	16'-2"
					Max	9'-0"																Max	12'-4"				
				X	Min	0'-9"				X	1'-0"					X	-										
					Max	1'-1"																					
				Y	Min	2'-8"				Y	2'-6"					Y	-										
					Max	8'-0"																					
WING B	4	12	33	L	Min	3'-4"	4	12	6	L	4'-0"		-	-	-	L	-		4	18	6	Min	6'-10"	4	18	4	32'-8"
					Max	9'-8"																Max	24'-10"				
				X	Min	0'-9"				X	1'-7"					X	-										
					Max	1'-9"																					
				Y	Min	2'-8"				Y	2'-6"					Y	-										
					Max	8'-0"																					

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY		F6	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY		F8	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS		F9	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		F12	REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	11	L	Min	5'-3"	4	8	19'-2"	6	18	11	Min			-	-	-	Min			4	2	16'-11"	4	2	17'-4"	6	12	7	L	3'-4"		463
					Max	10'-3"							2'-8"						-															
				X	Min	2'-4"																									X	1'-8"		
					Max	2'-4"							Max						Max															
				Y	Min	3'-0"							3'-0"						-															
					Max	8'-0"																												
WING B	4	18	22	L	Min	5'-1"	4	8	41'-6"	6	18	23	Min			4	18	2	Min			4	2	33'-0"	4	2	36'-7"	6	12	7	L	3'-4"		988
					Max	10'-3"							2'-8"						52'-2"															
				X	Min	2'-4"																									X	1'-8"		
					Max	2'-4"							Max						Max															
				Y	Min	2'-10"							3'-8"						52'-2"															
					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)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH
45	3:1	5	12	7	14'-11"	11.5	5	11.5	7	8	25'-10"	8'-11"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
7	9	Max	32	8	8	Max	36	5	4.5	Max	63	4	5.5	Max	51
		25'-6"				25'-6"				25'-6"				25'-6"	
		Min				Min				Min				Min	
		2'-2"				2'-2"				2'-2"				2'-2"	
		25'-6"	3			25'-6"	3			25'-6"	6			25'-6"	5

SIDE WALL REINFORCING STEEL "f0" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	SPACING	NO. REQ'D	LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	SPACING	NO. REQ'D	LENGTHS VARY
6	8	45	8'-7"	4	12	30	8'-7"	4	9	67	Max	4	9	67	Max
											27'-8"				27'-8"
											Min				Min
											1'-10"				1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	SPACING	NO. REQ'D	LENGTH	CLASS "S" CONCRETE (Includes HDWL)	① REINFORCING STEEL (GR 60) (Includes HDWL)
4	12	7	LONG	4	12	14	14'-9"	CU. YDS.	LBS.
			27'-3"					35.67	7778
		7	SHORT						
			2'-3"						

"k1" HDWL BARS SIZE	LENGTH	NO. REQ'D	"k2" HDWL BARS SIZE	LENGTH	NO. REQ'D	"h" HDWL BARS SIZE	LENGTH	Y	NO. REQ'D
8	36'-2"	6	8	36'-2"	6	4	2'-0"	1'-0"	38

OUTLET SLOPE SECTION(S)

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

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

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D	CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
						TOTAL	

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

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

DOUBLE BARREL BOX CULVERT
Sta. 306+50.50

SPECIAL DETAILS

Ver. LJ15 bll0574x3_cl.dgn

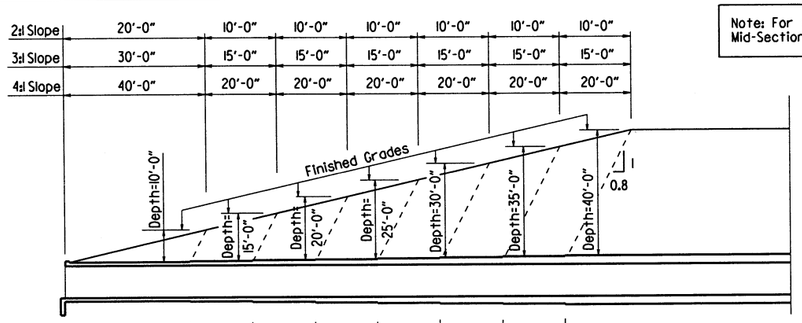
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110574	12	176

1 SPECIAL DETAILS

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

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

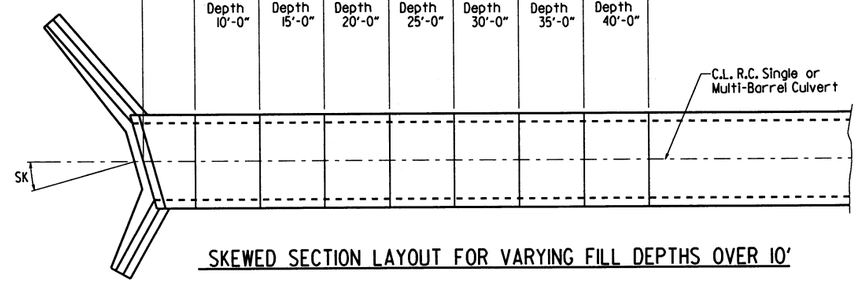


Slope Section Length @ 2:1 Slope	A=12'-0"	B=6'-0"	C=6'-0"	D=6'-0"	E=6'-0"	F=6'-0"	G=6'-0"	Mid-Section Length - Varies
Slope Section Length @ 3:1 Slope	A=22'-0"	B=11'-0"	C=11'-0"	D=11'-0"	E=11'-0"	F=11'-0"	G=11'-0"	Mid-Section Length - Varies
Slope Section Length @ 4:1 Slope	A=32'-0"	B=16'-0"	C=16'-0"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

LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

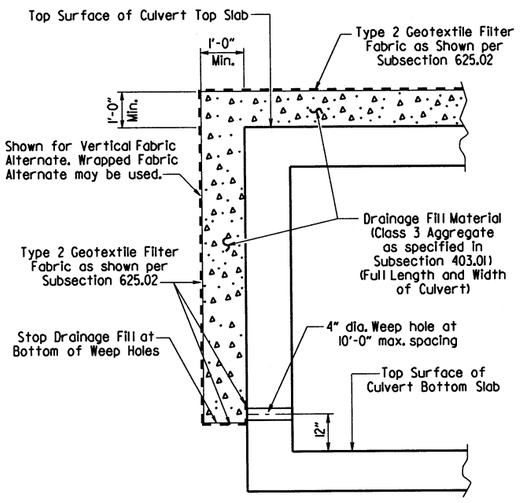
Lengths for Non-Skewed Boxes

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"	



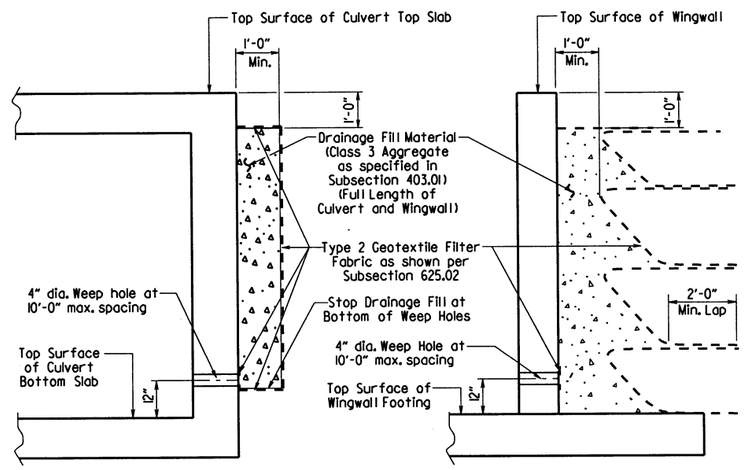
SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
7/8/19
CHARLES R. ELLIS



CULVERT DRAINAGE DETAIL FOR ROCK FILL

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

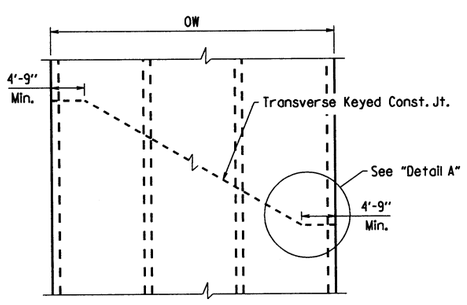


For Details of Excavation and Pay Limits, see Standard Drawing RCB-2.

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

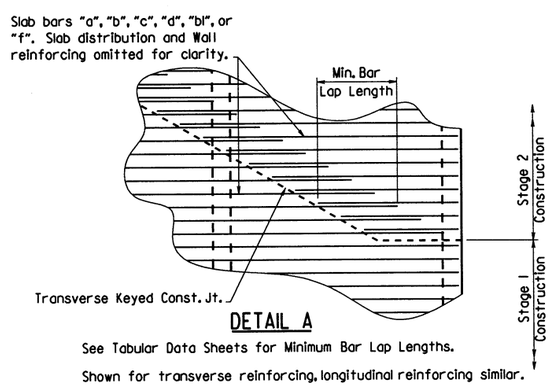
WRAPPED FABRIC ALTERNATE
(Shown for Wingwall, Similar for Culvert)

WINGWALL & CULVERT DRAINAGE DETAIL



SKEWED TRANSVERSE JOINT DETAIL

This detail shall be used to construct a skewed transverse joint only for Multi-Barrel Culverts and only when required by the Maintenance of Traffic Plans. Otherwise, transverse joints should be made normal to the centerline of the barrel.



DETAIL A

See Tabular Data Sheets for Minimum Bar Lap Lengths.

Shown for transverse reinforcing, longitudinal reinforcing similar.

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 keyed and shall be normal to the centerline of barrel except as noted. Reinforcing shall be continuous through joints unless noted otherwise. Reinforcing through stage construction joints shall provide the minimum bar lap length shown on the Tabular Data Sheets. All longitudinal construction joints shall be submitted to the Engineer for approval.

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

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

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

SHEET 1 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES &
LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS

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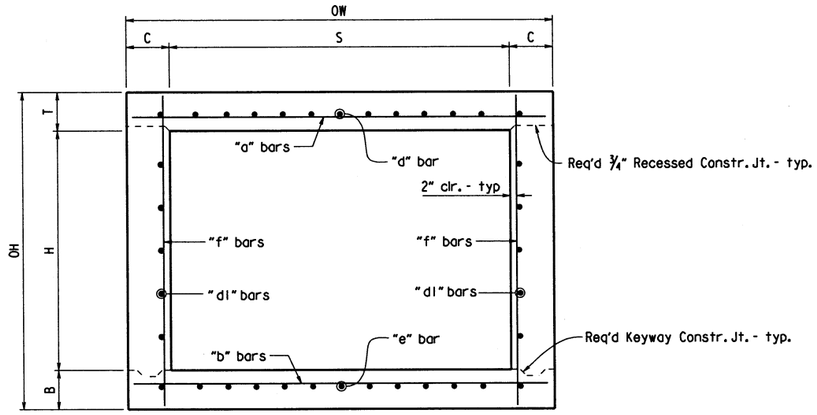
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	13	17

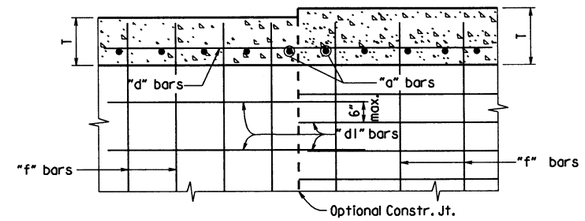
1 SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
7/8/14
CHARLES R. ELLIS

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



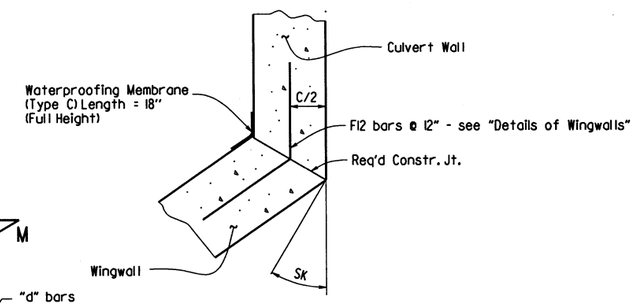
TYPICAL SECTION M-M



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

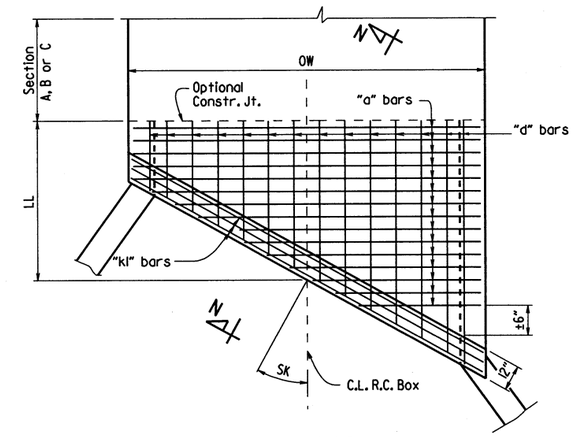
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

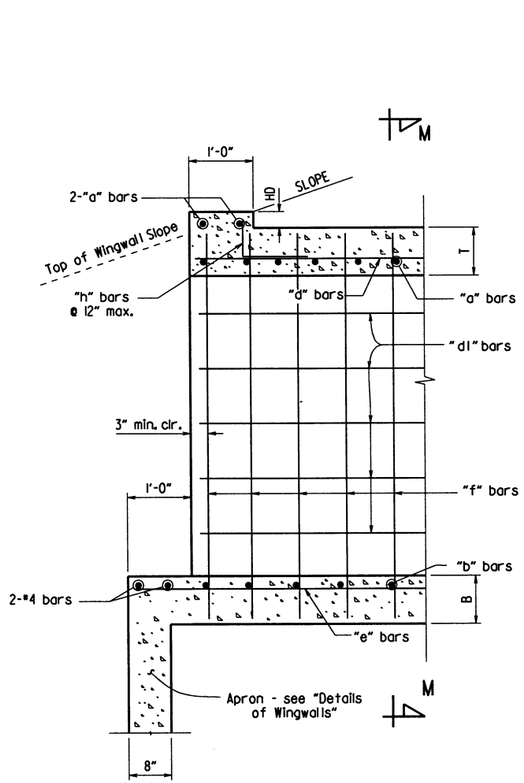


WINGWALL ATTACHMENT

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

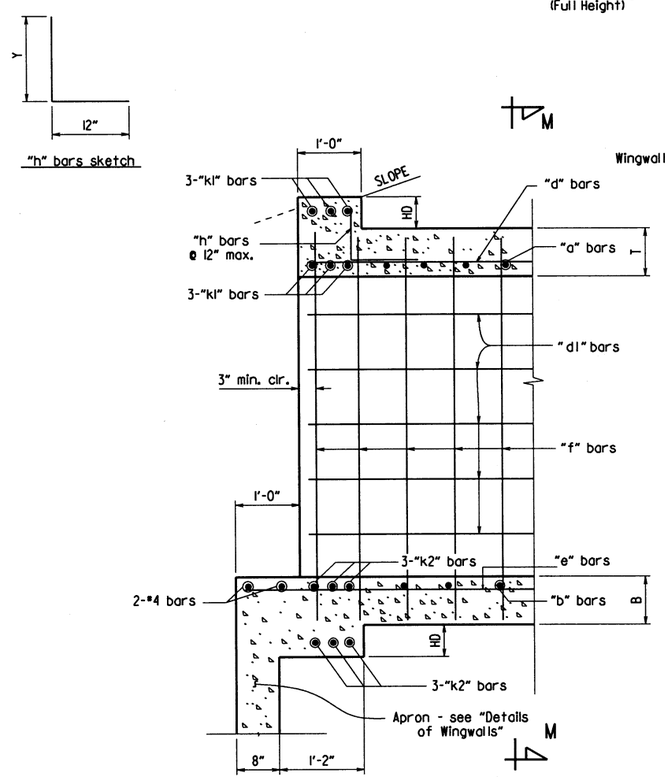


TOP SLAB REINFORCEMENT



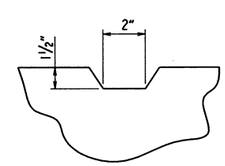
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



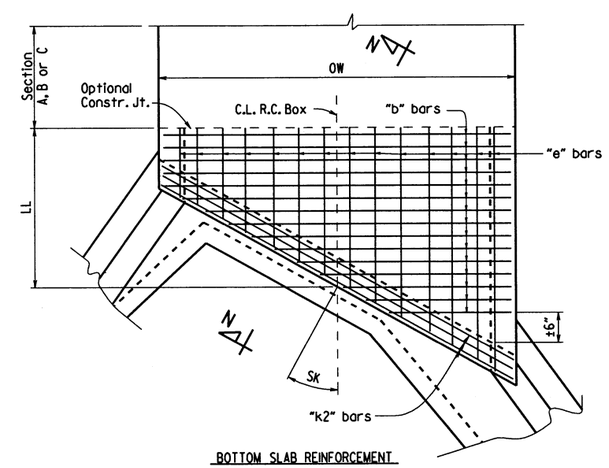
PART LONGITUDINAL SECTION N-N

(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

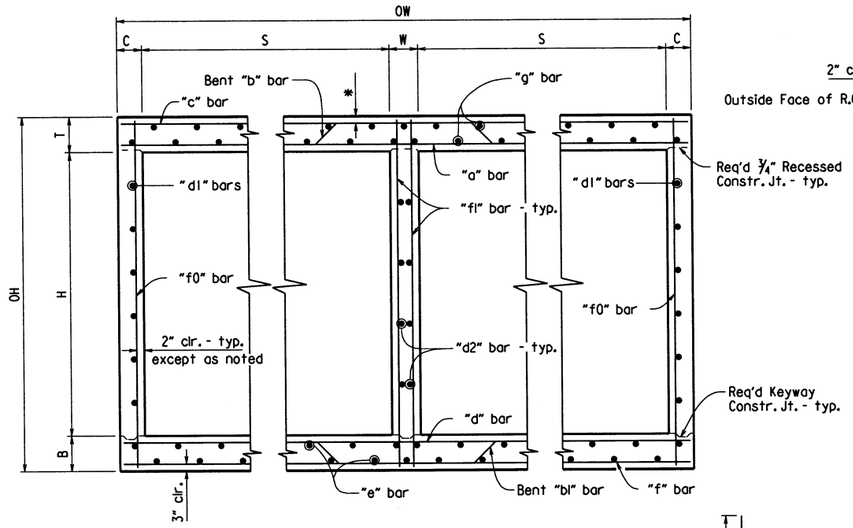
V 1.15 b110574_culvert.dgn

DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	14	176

1 SPECIAL DETAILS

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

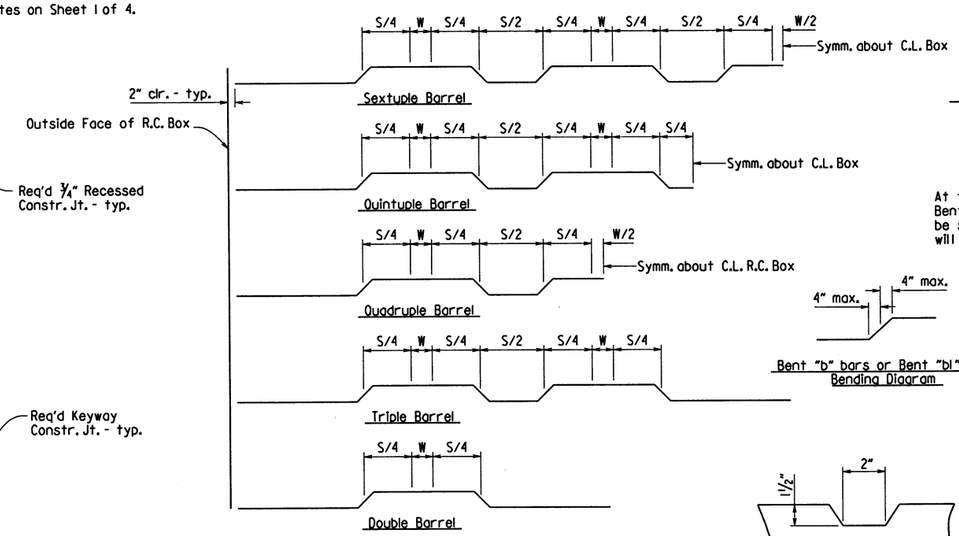
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



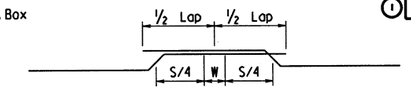
TYPICAL SECTION M-M

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

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

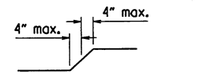


Bent "b" bars or Bent "b1" bars sketch

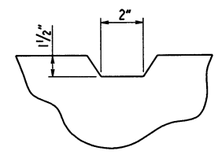


Lap Detail
For Bent "b" bars and Bent "b1" bars

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.

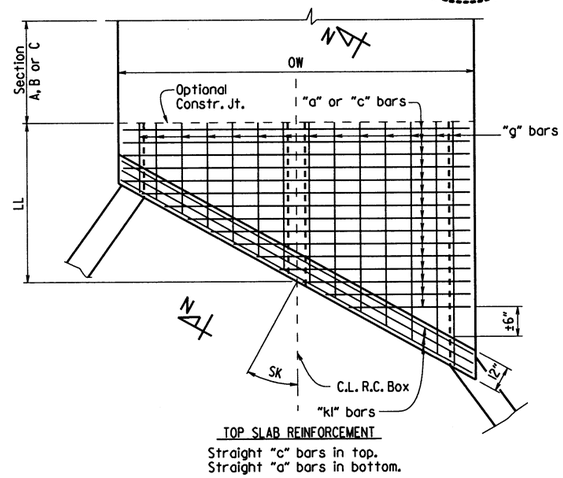


Bent "b" bars or Bent "b1" bars
Bending Diagram

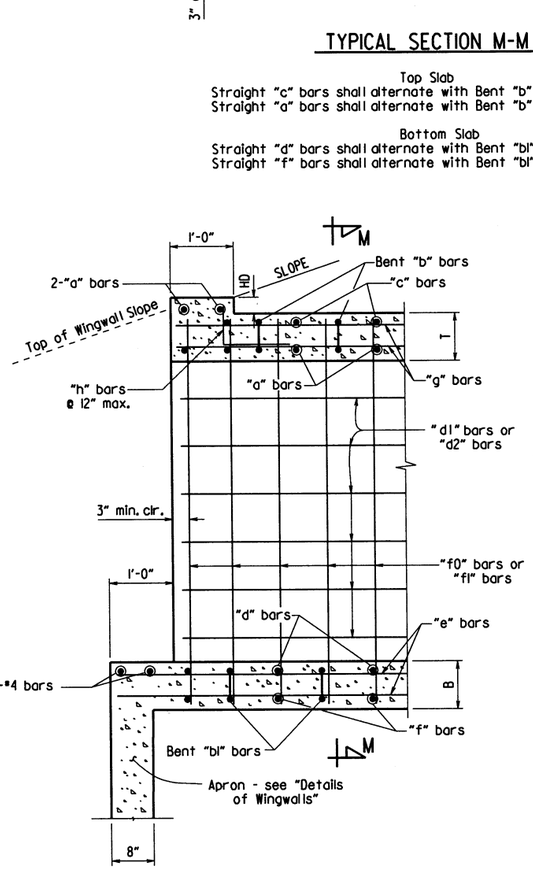


TYPICAL KEYWAY DETAIL

(All Construction Joints)



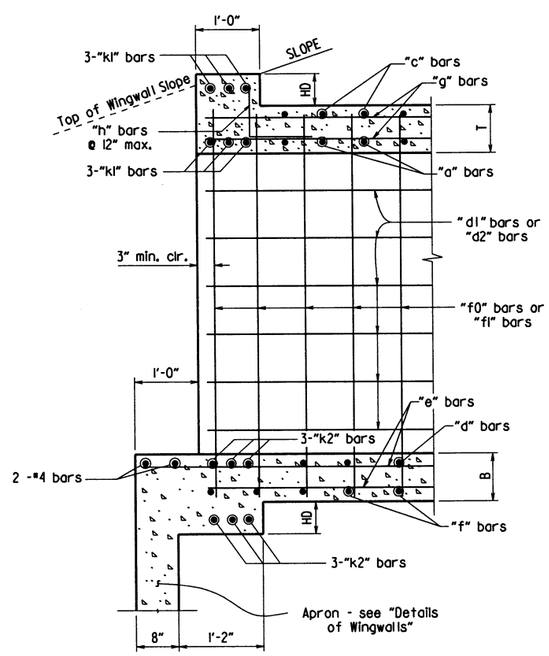
TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



PART LONGITUDINAL SECTION

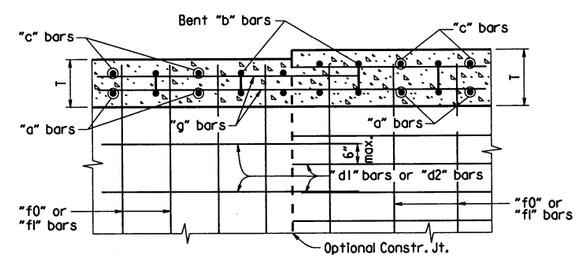
(Non-Skewed Ends)

"h" bars sketch



PART LONGITUDINAL SECTION N-N

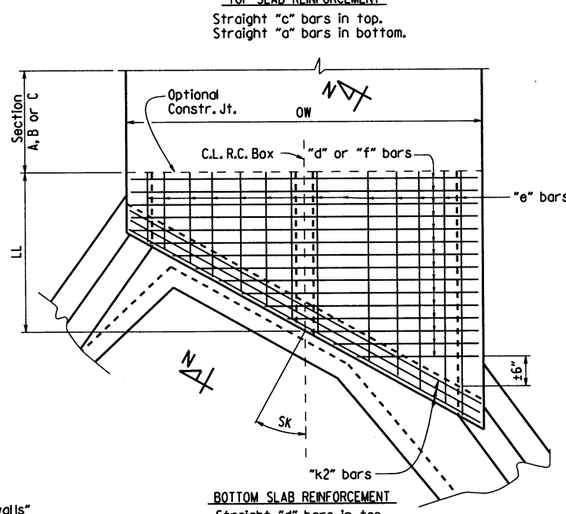
(Skewed Ends)



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

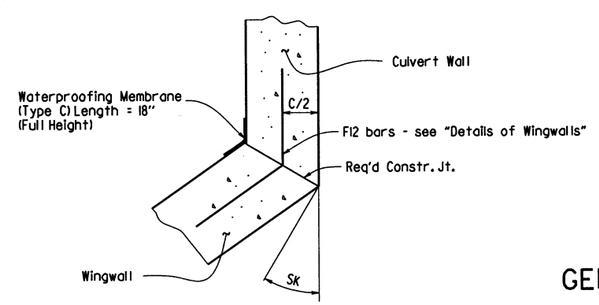
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



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

SKEWED END SECTION DETAILS



WINGWALL ATTACHMENT

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
7/8/19
CHARLES R. ELLIS

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

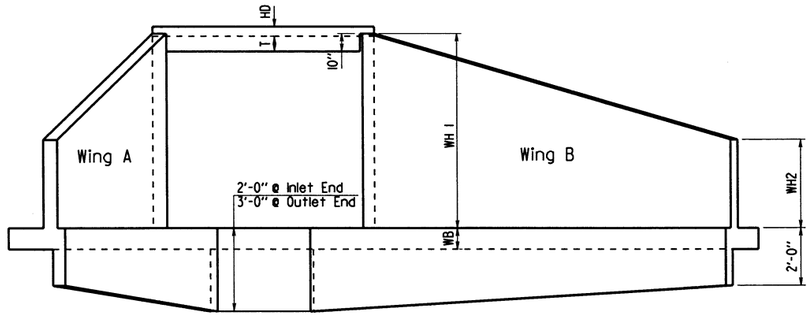
DETAILS OF MULTI-BARREL R.C. BOX CULVERT

SPECIAL DETAILS

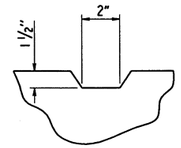
V 1.1.15 bil0574_culvert.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	15	176

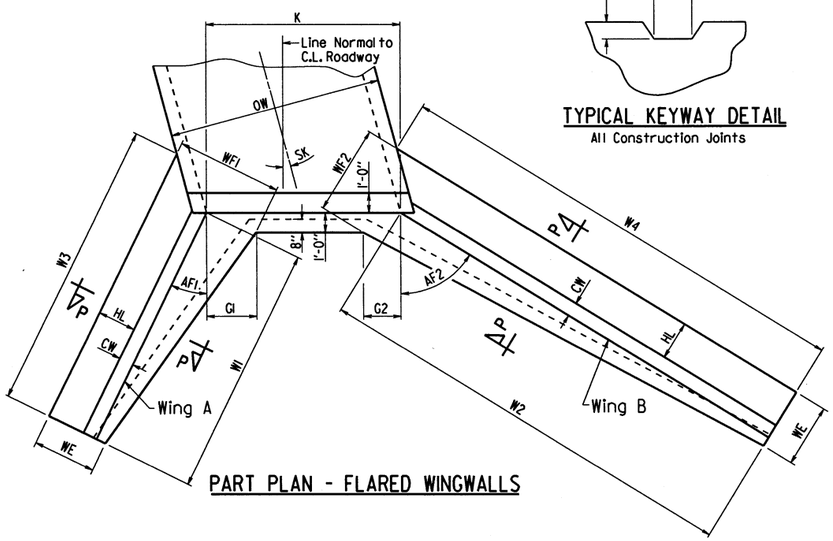
1 SPECIAL DETAILS



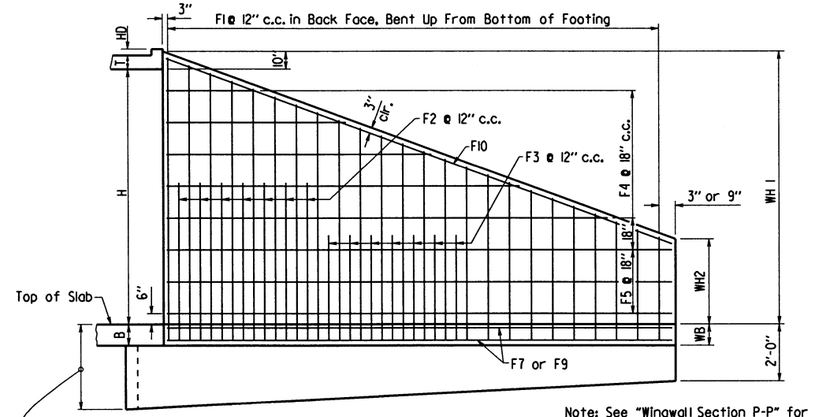
END ELEVATION
Flared Wingwalls Shown



TYPICAL KEYWAY DETAIL
All Construction Joints

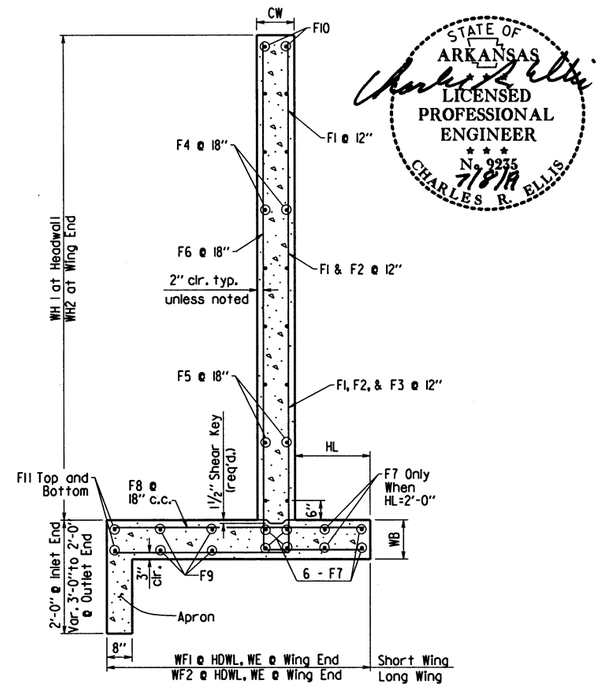


PART PLAN - FLARED WINGWALLS

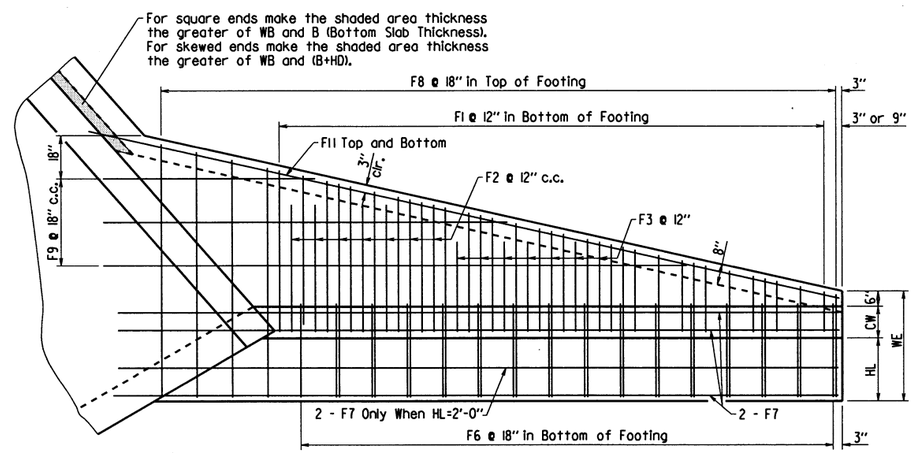


WINGWALL ELEVATION
Showing Back Face Reinforcement

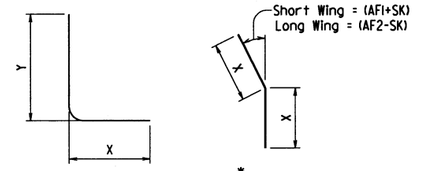
Note: See "Wingwall Section P-P" for additional details and reinforcing.



WINGWALL SECTION P-P



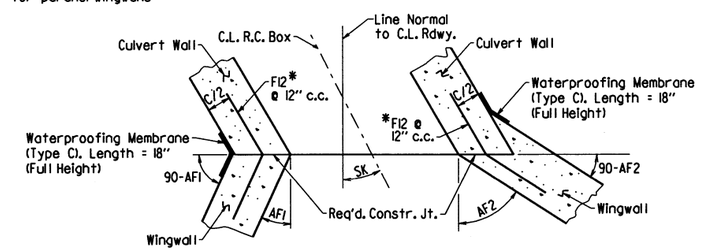
PLAN - FLARED WINGWALLS
Showing Footing Reinforcement



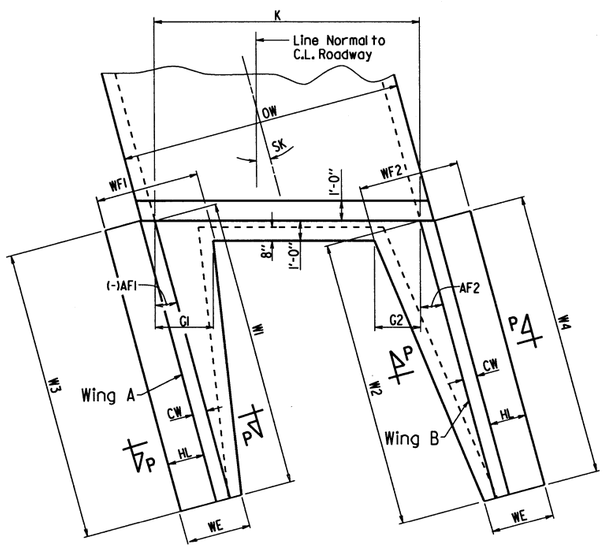
F1, F2, F3, & F6 BARS

*F12 BAR

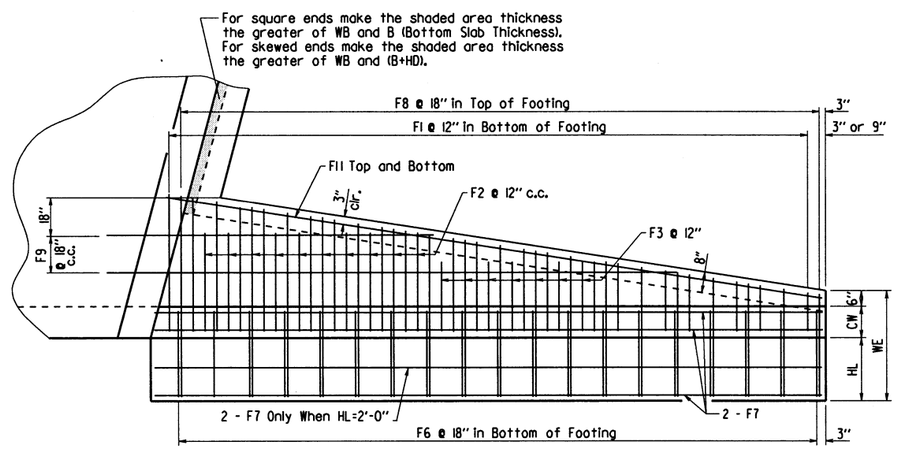
*F12 is a straight bar for parallel wingwalls



CONSTRUCTION JOINTS
Flared Wingwalls Shown



PART PLAN - PARALLEL WINGWALLS



PLAN - PARALLEL WINGWALLS
Showing Footing Reinforcement

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
7/18/19
CHARLES R. ELLIS

SHEET 4 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF WINGWALLS

SPECIAL DETAILS

LRFD

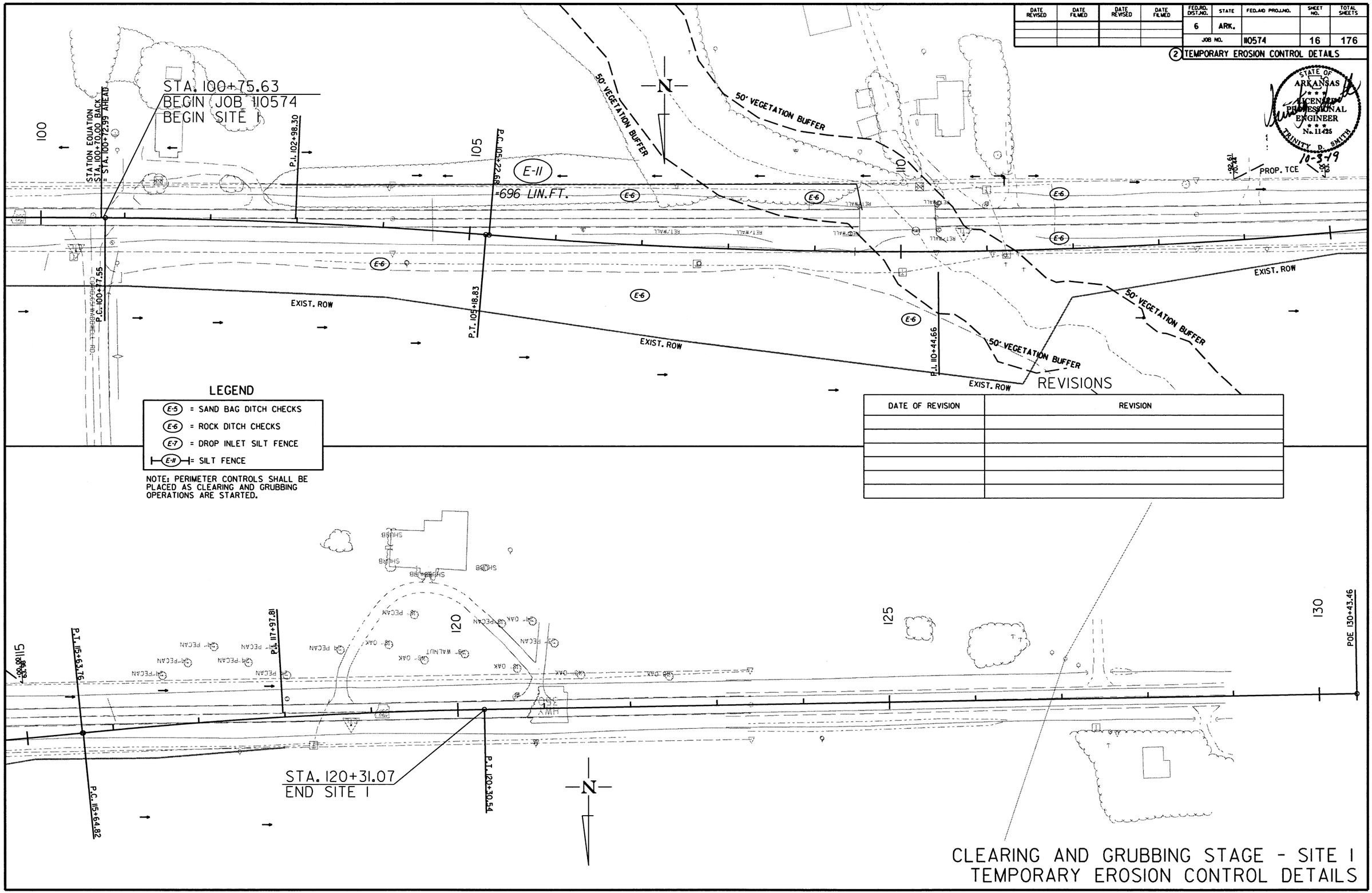
V 1.15 bll0574_culvert.dgn

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.		110574	16	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19



DATE OF REVISION	REVISION

CLEARING AND GRUBBING STAGE - SITE 1
TEMPORARY EROSION CONTROL DETAILS

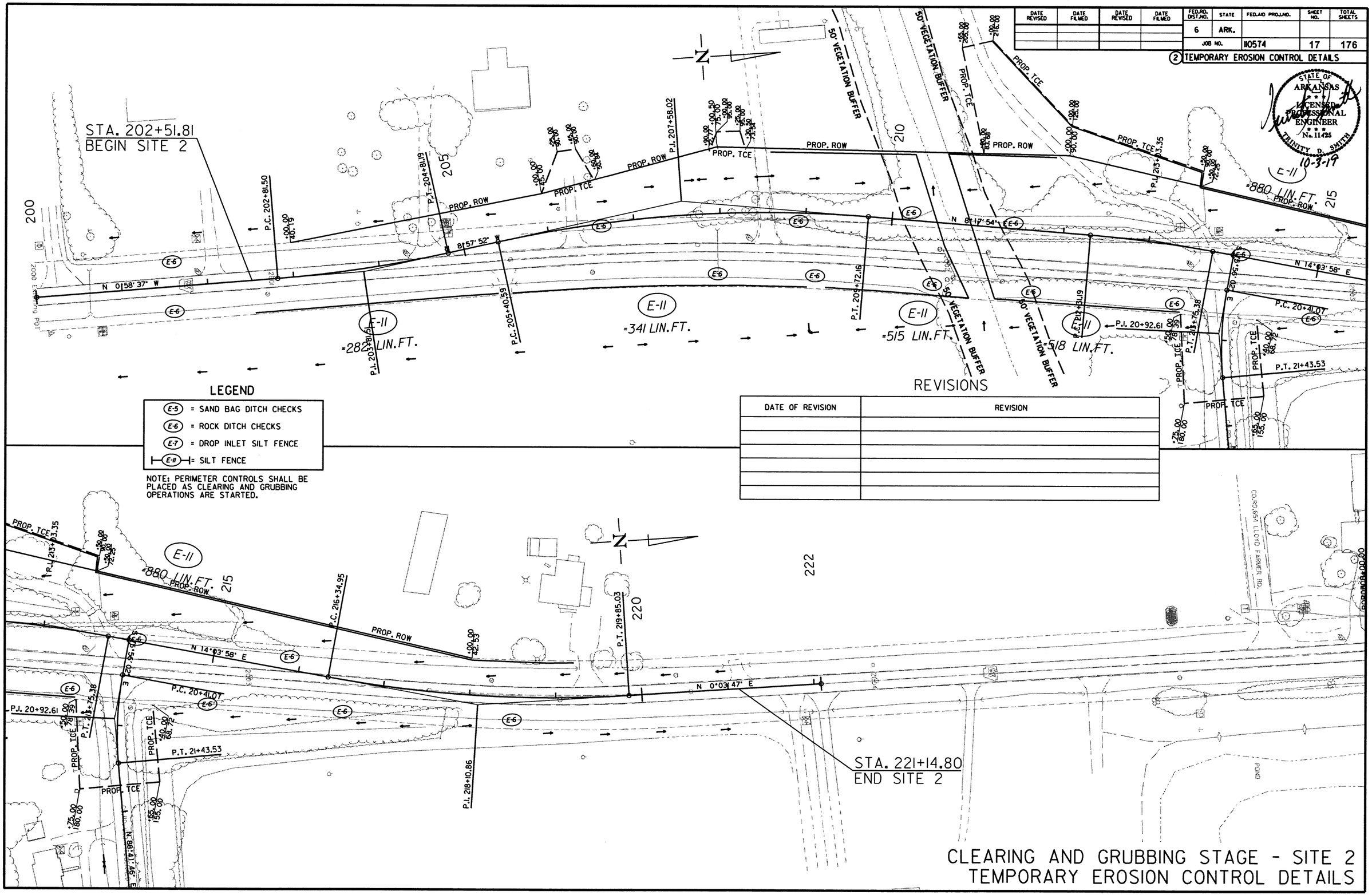
10/3/2019

R110574.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.		H0574	17	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

CLEARING AND GRUBBING STAGE - SITE 2
TEMPORARY EROSION CONTROL DETAILS

10/2/2019

R110574.DGN

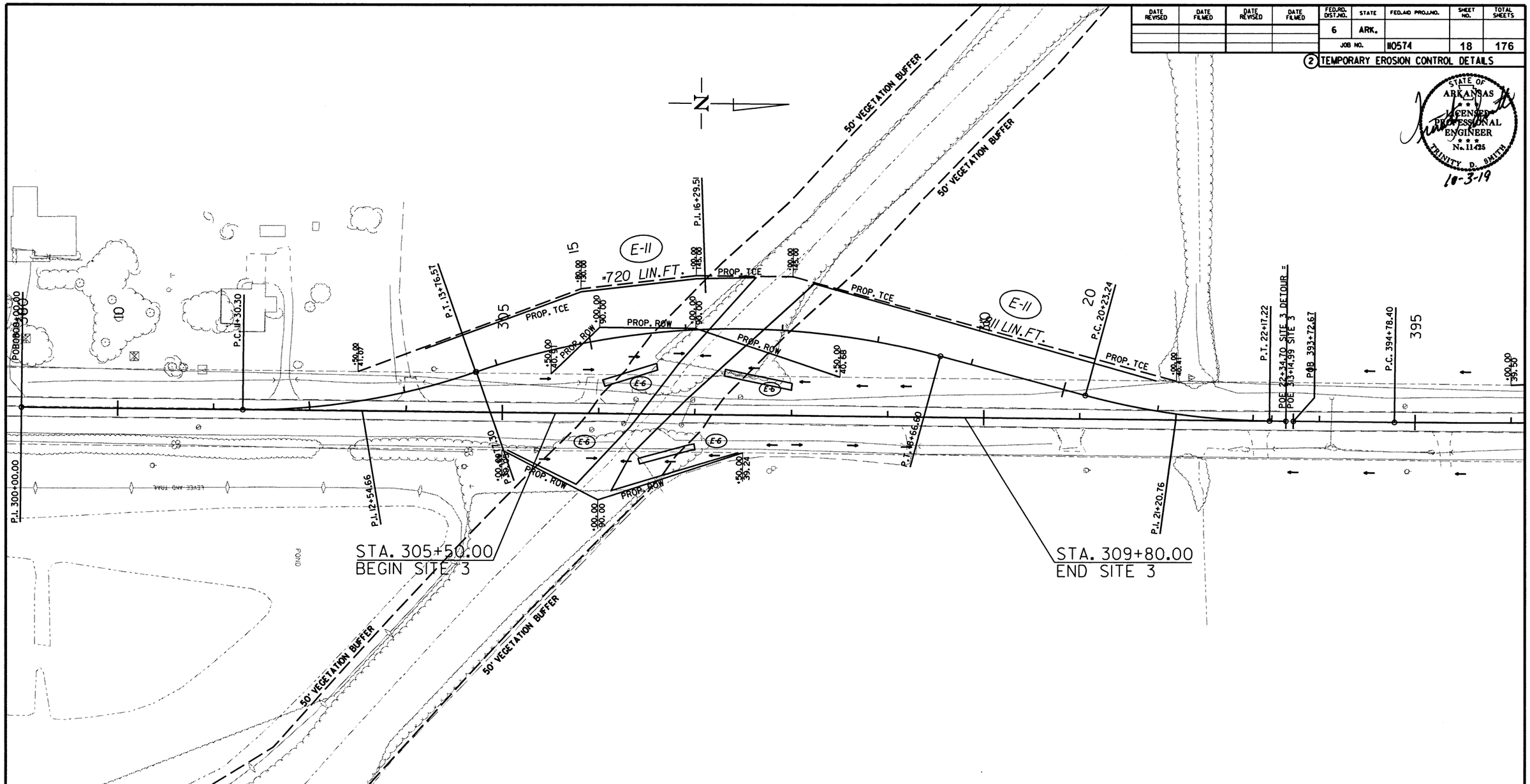
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110574	18	176

(2) TEMPORARY EROSION CONTROL DETAILS

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

10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

CLEARING AND GRUBBING STAGE - SITE 3
TEMPORARY EROSION CONTROL DETAILS

10/2/2019

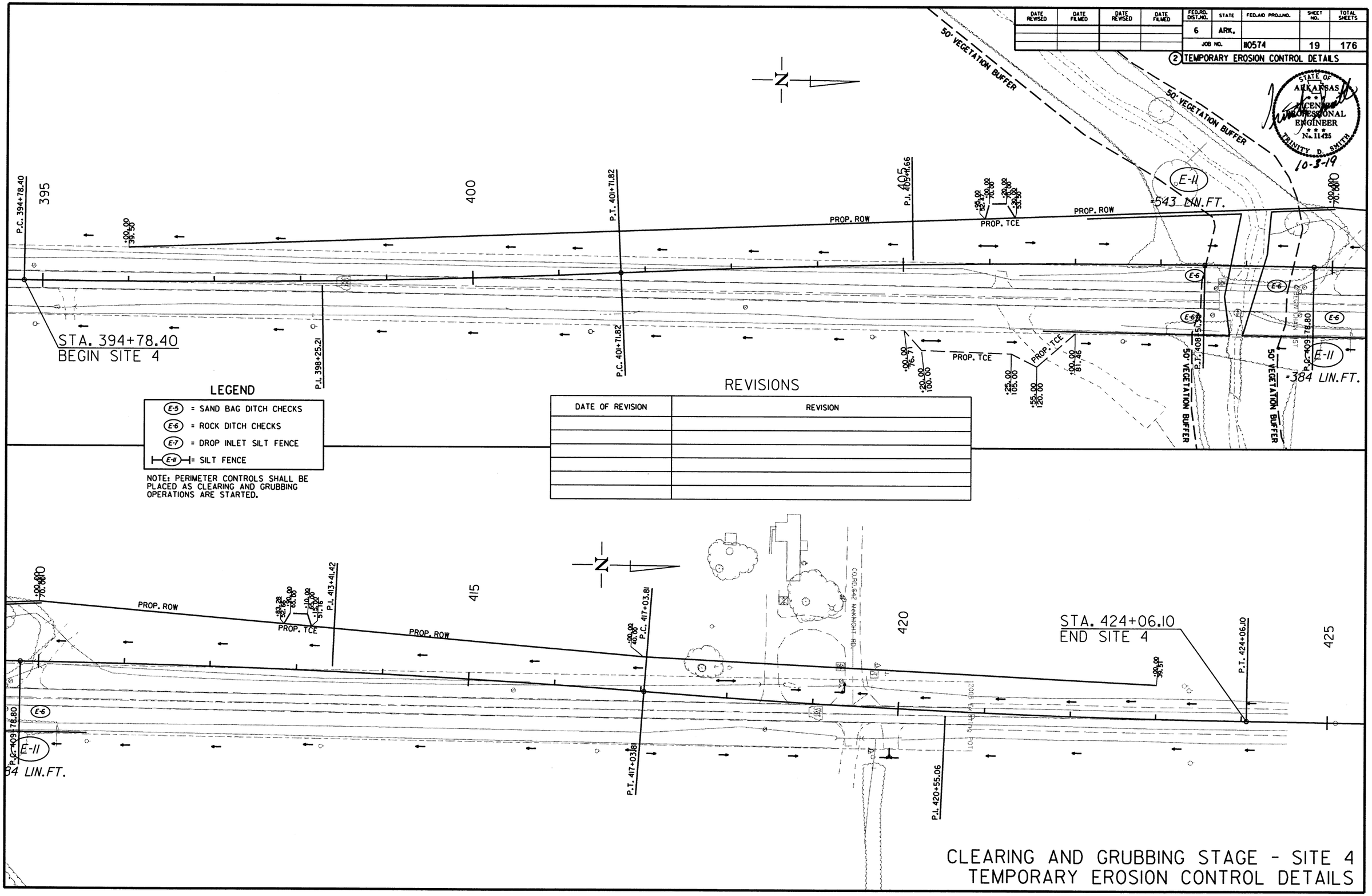
R110574.DGN

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.		H0574	19	176

(2) TEMPORARY EROSION CONTROL DETAILS

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

10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

CLEARING AND GRUBBING STAGE - SITE 4
TEMPORARY EROSION CONTROL DETAILS

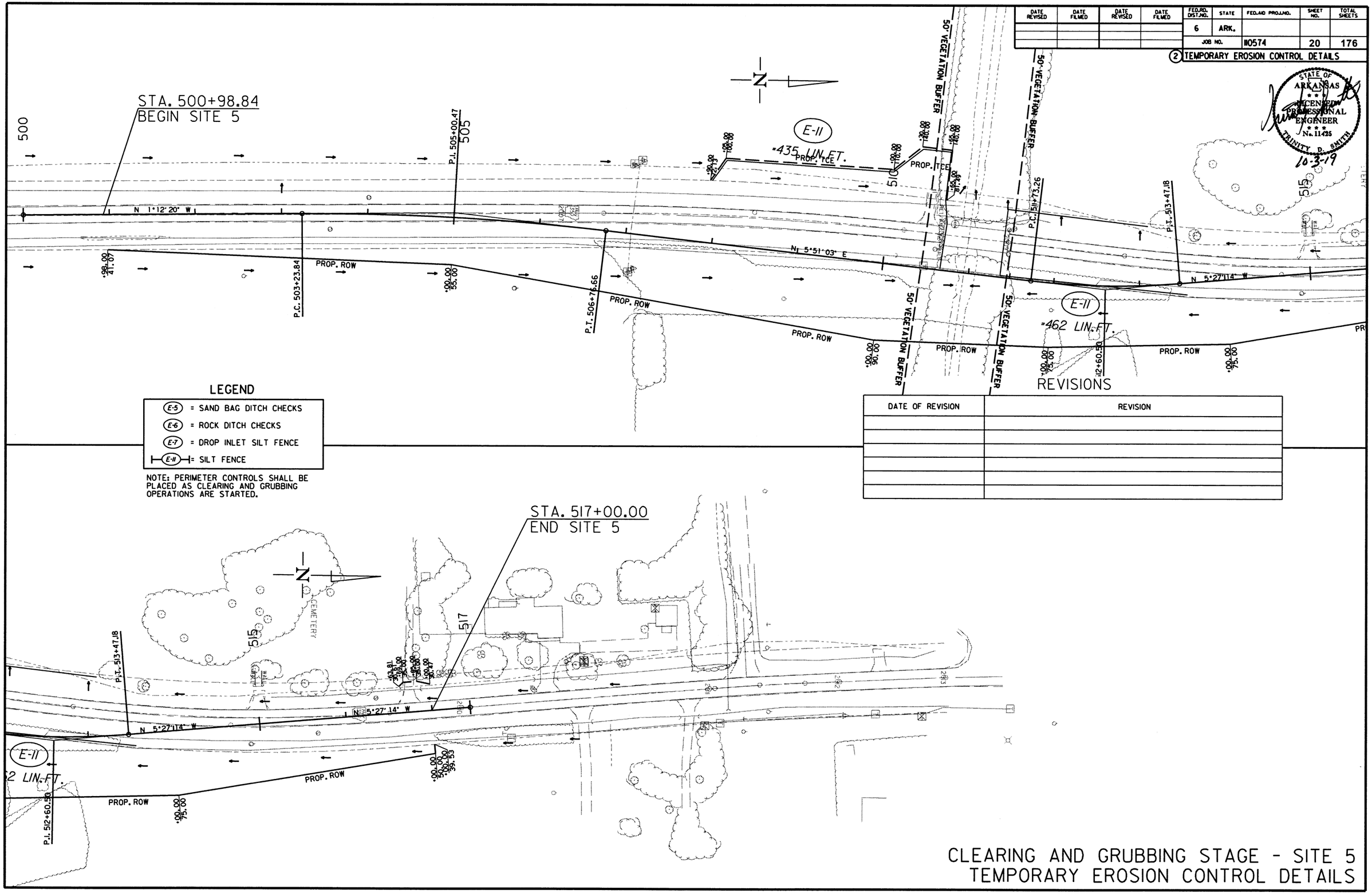
10/2/2019

R110574.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.		110574	20	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

CLEARING AND GRUBBING STAGE - SITE 5
TEMPORARY EROSION CONTROL DETAILS

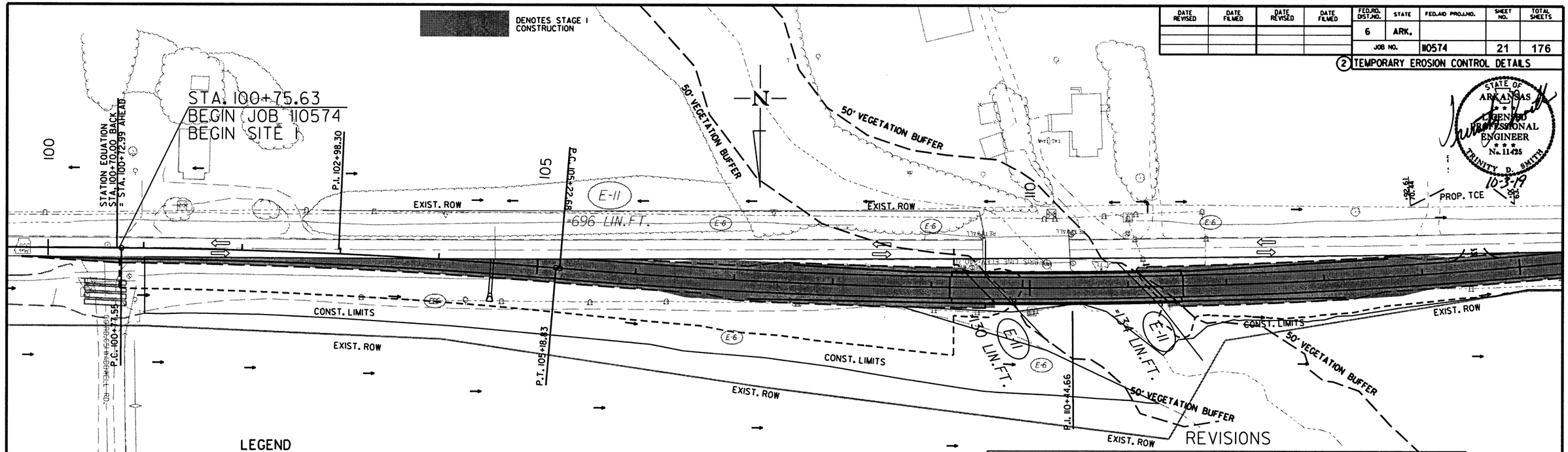
10/2/2019

R110574.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.		110574	21	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19



LEGEND

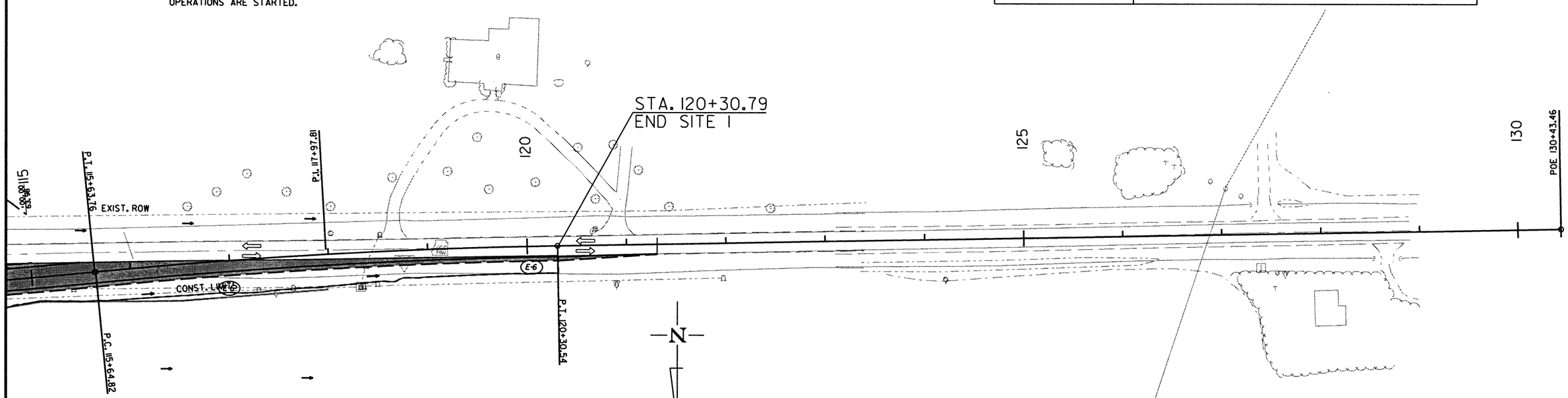
- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

DENOTES STAGE I CONSTRUCTION

REVISIONS

DATE OF REVISION	REVISION



10/1/2019

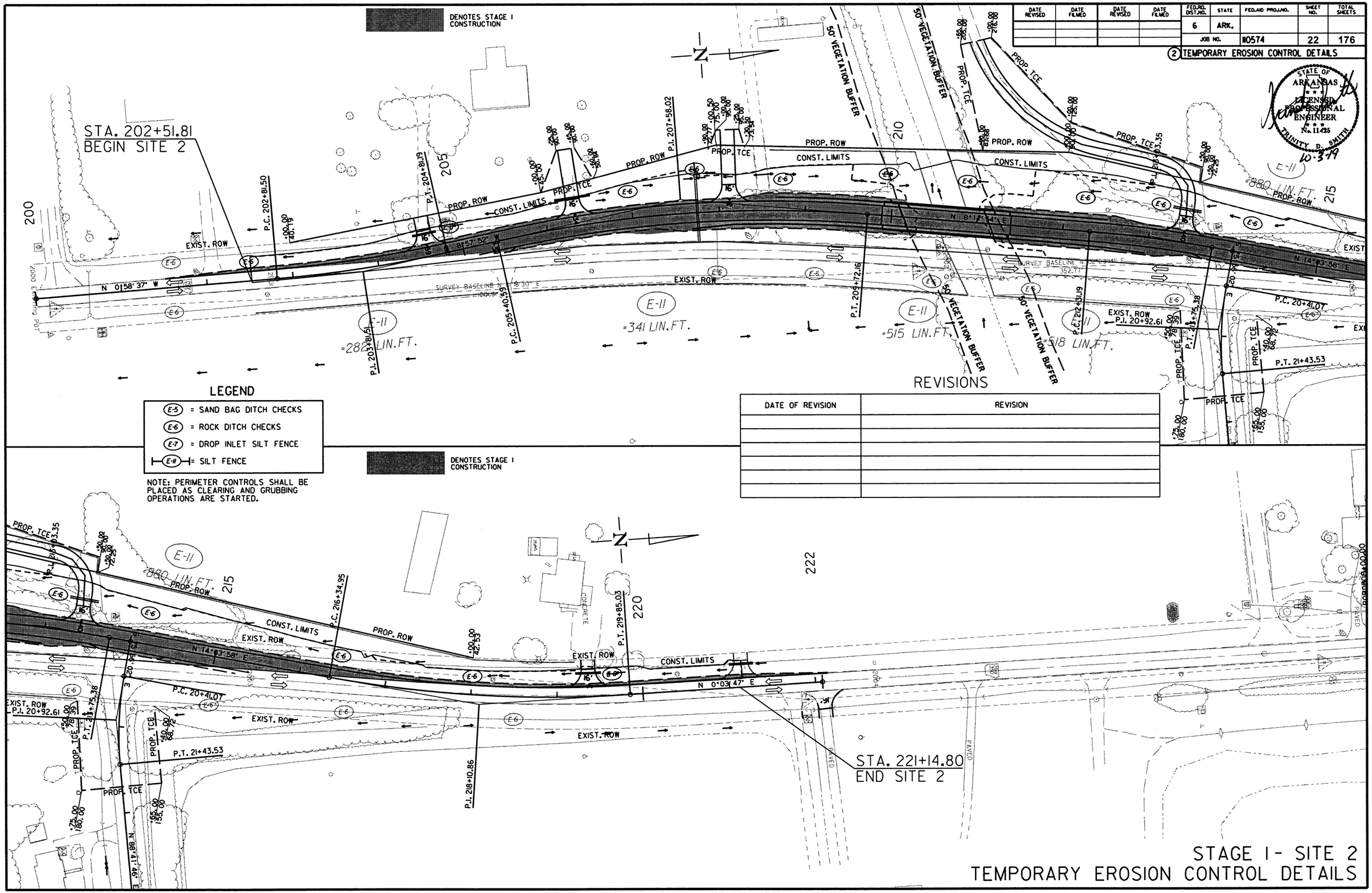
R110574.DGN

STAGE I - SITE I
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	R110574		22	176

2 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

STAGE I - SITE 2
TEMPORARY EROSION CONTROL DETAILS

10/1/2019

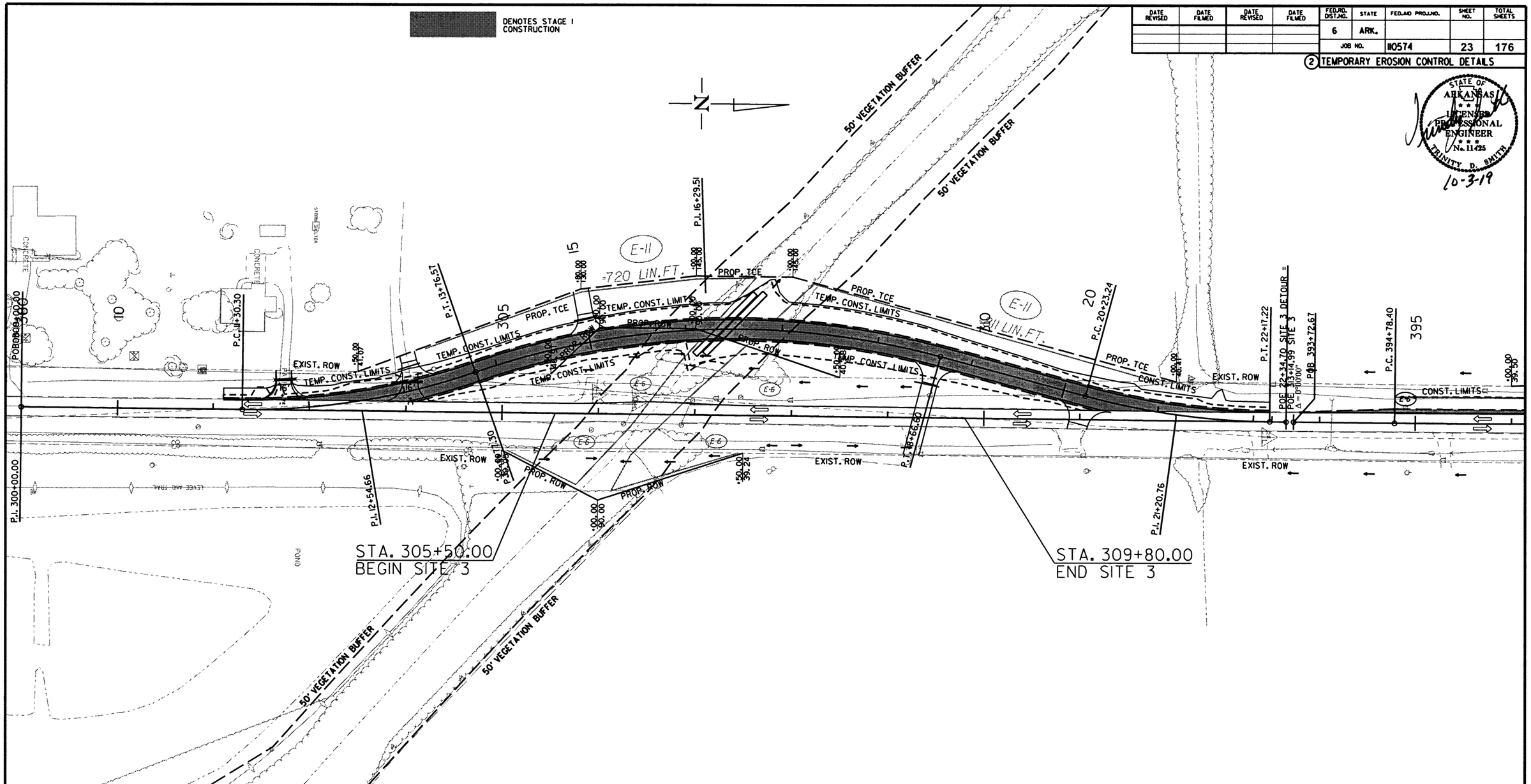
R110574.DGN

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.		110574	23	176

(2) TEMPORARY EROSION CONTROL DETAILS

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

10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

STAGE I - SITE 3
TEMPORARY EROSION CONTROL DETAILS

10/1/2019

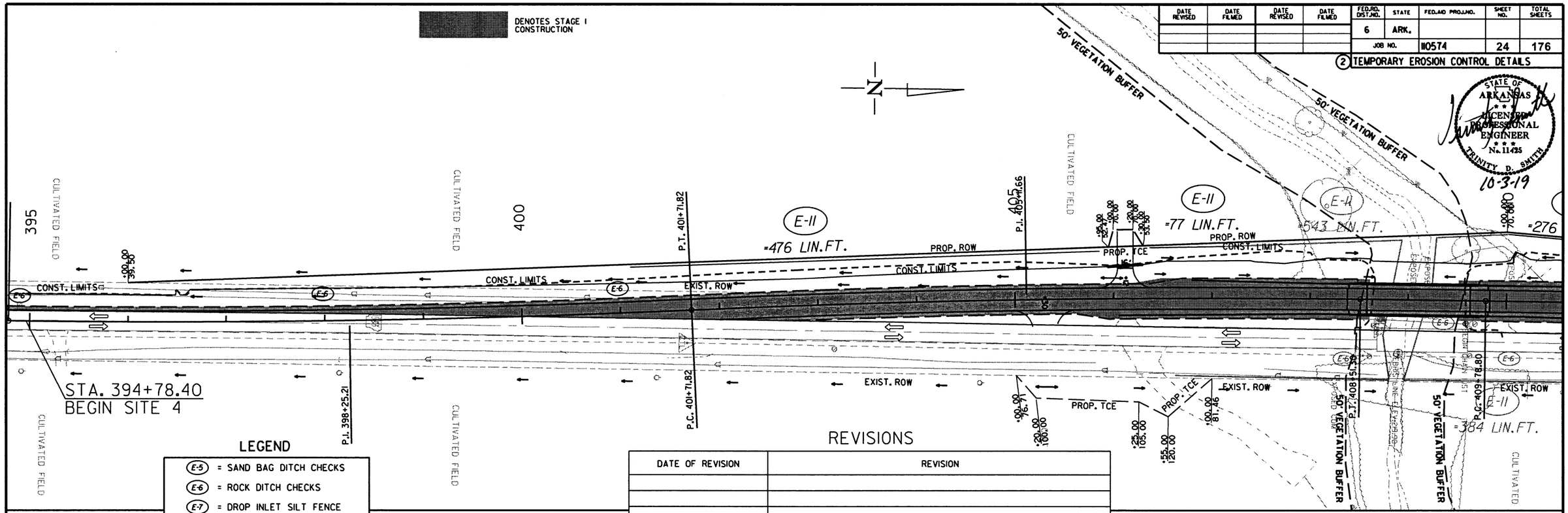
R110574.DGN

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.		H0574	24	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

DENOTES STAGE I CONSTRUCTION



LEGEND

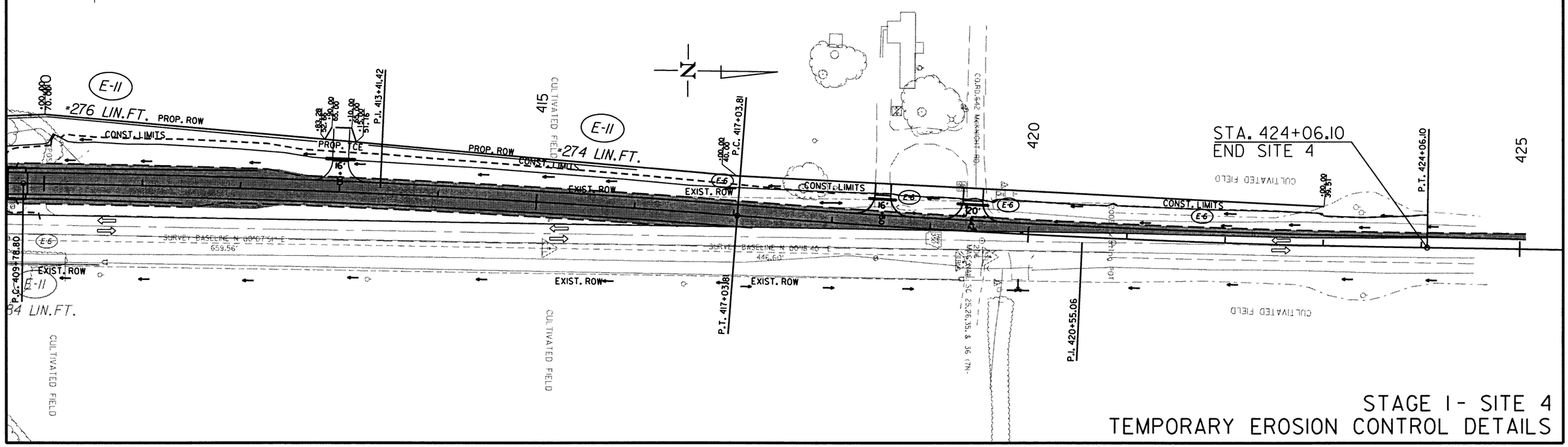
- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

DENOTES STAGE I CONSTRUCTION



10/1/2019

R110574.DGN

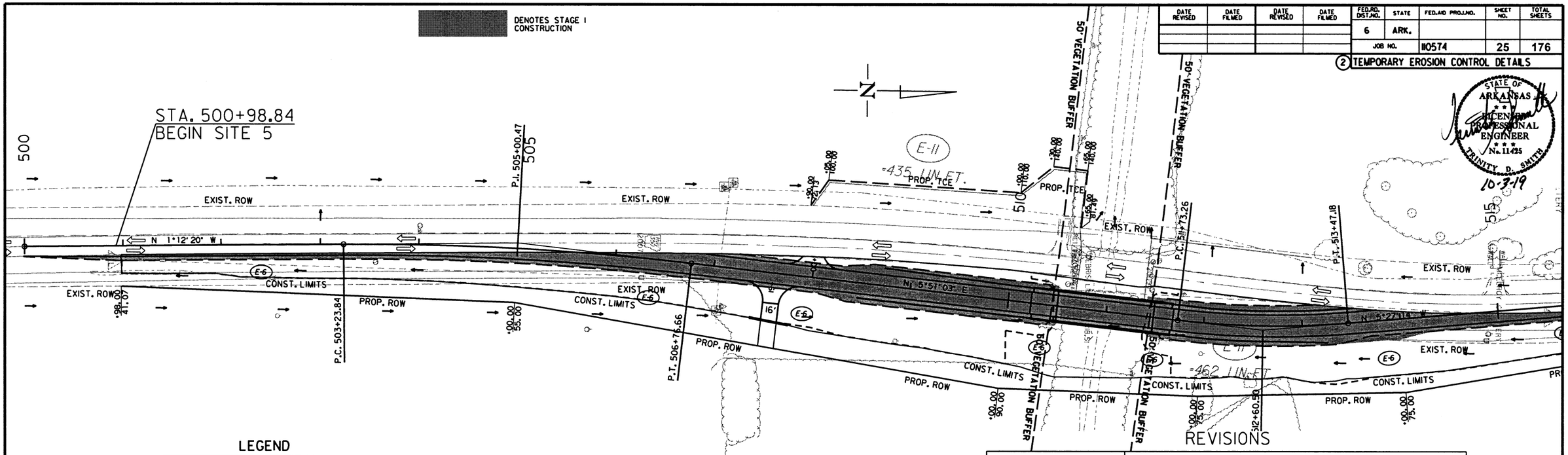
STAGE I - SITE 4
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	25	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

DENOTES STAGE I CONSTRUCTION



LEGEND

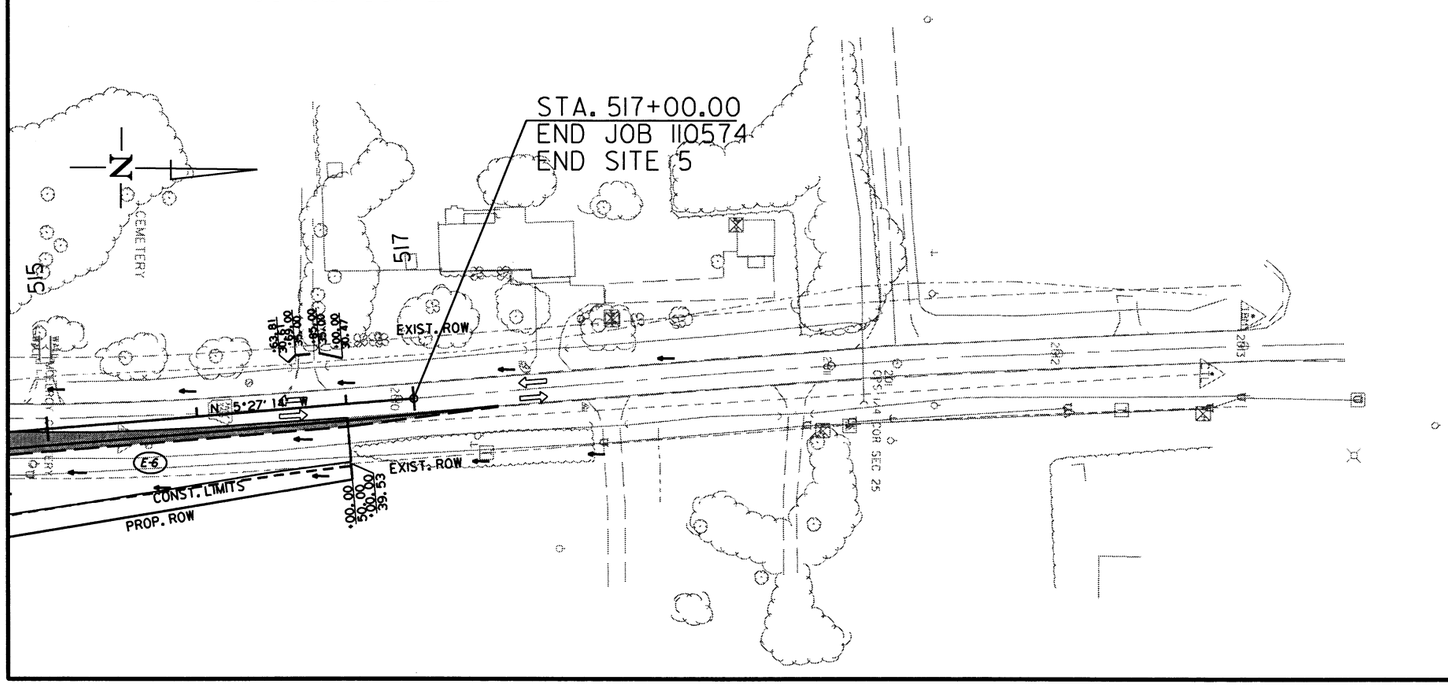
- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

DENOTES STAGE I CONSTRUCTION

REVISIONS

DATE OF REVISION	REVISION



10/1/2019

R110574.DGN

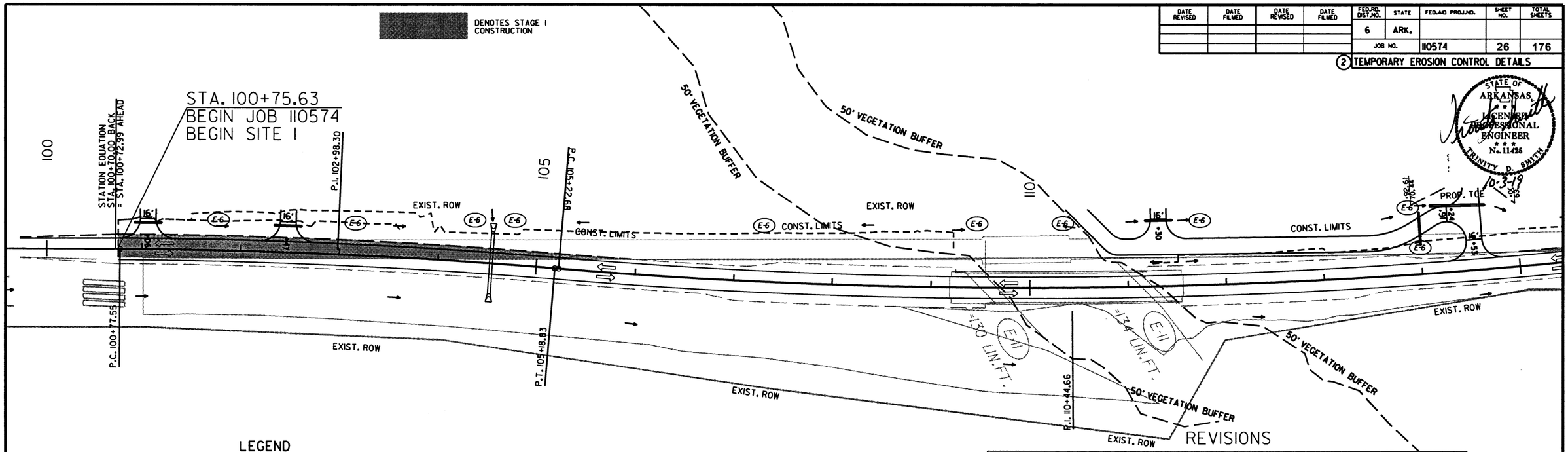
STAGE I - SITE 5
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110574	26	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19



LEGEND

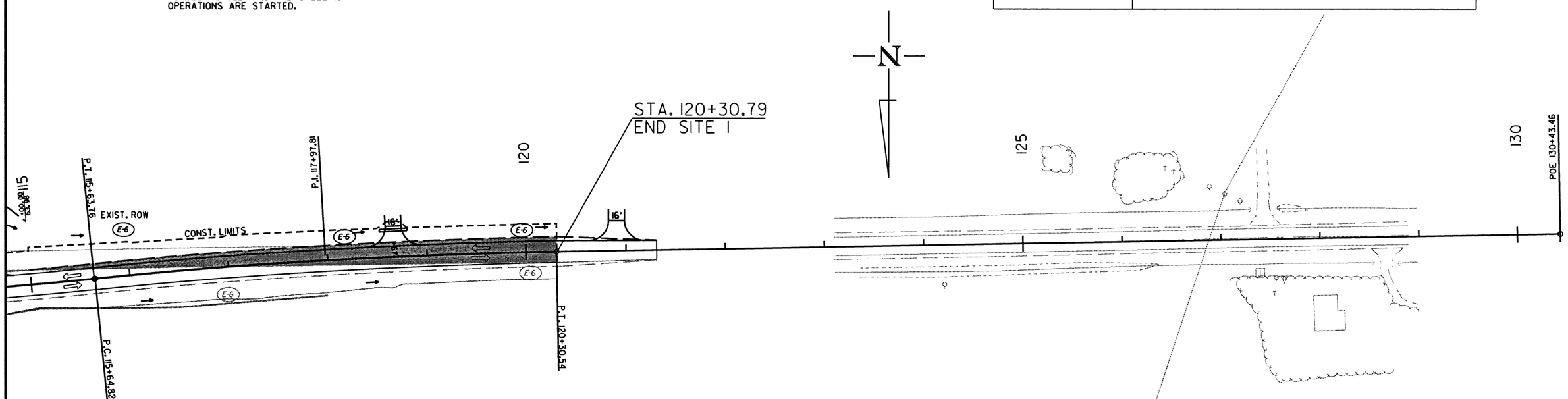
- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

DENOTES STAGE I CONSTRUCTION

REVISIONS

DATE OF REVISION	REVISION



STAGE 2 - SITE I
TEMPORARY EROSION CONTROL DETAILS

9/30/2019

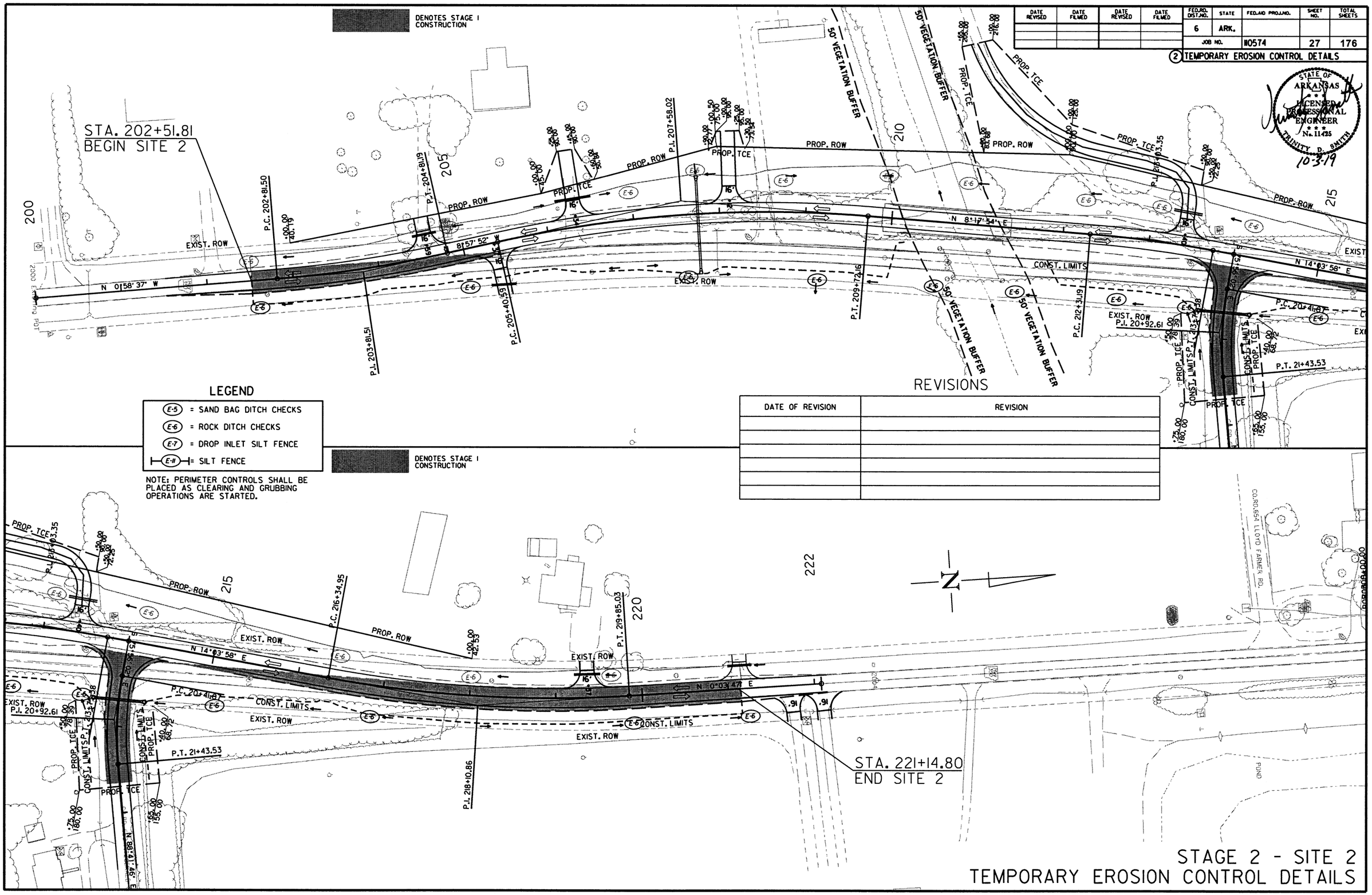
R110574.DGN

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.		H0574	27	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

STAGE 2 - SITE 2
TEMPORARY EROSION CONTROL DETAILS

9/30/2019

R110574.DGN

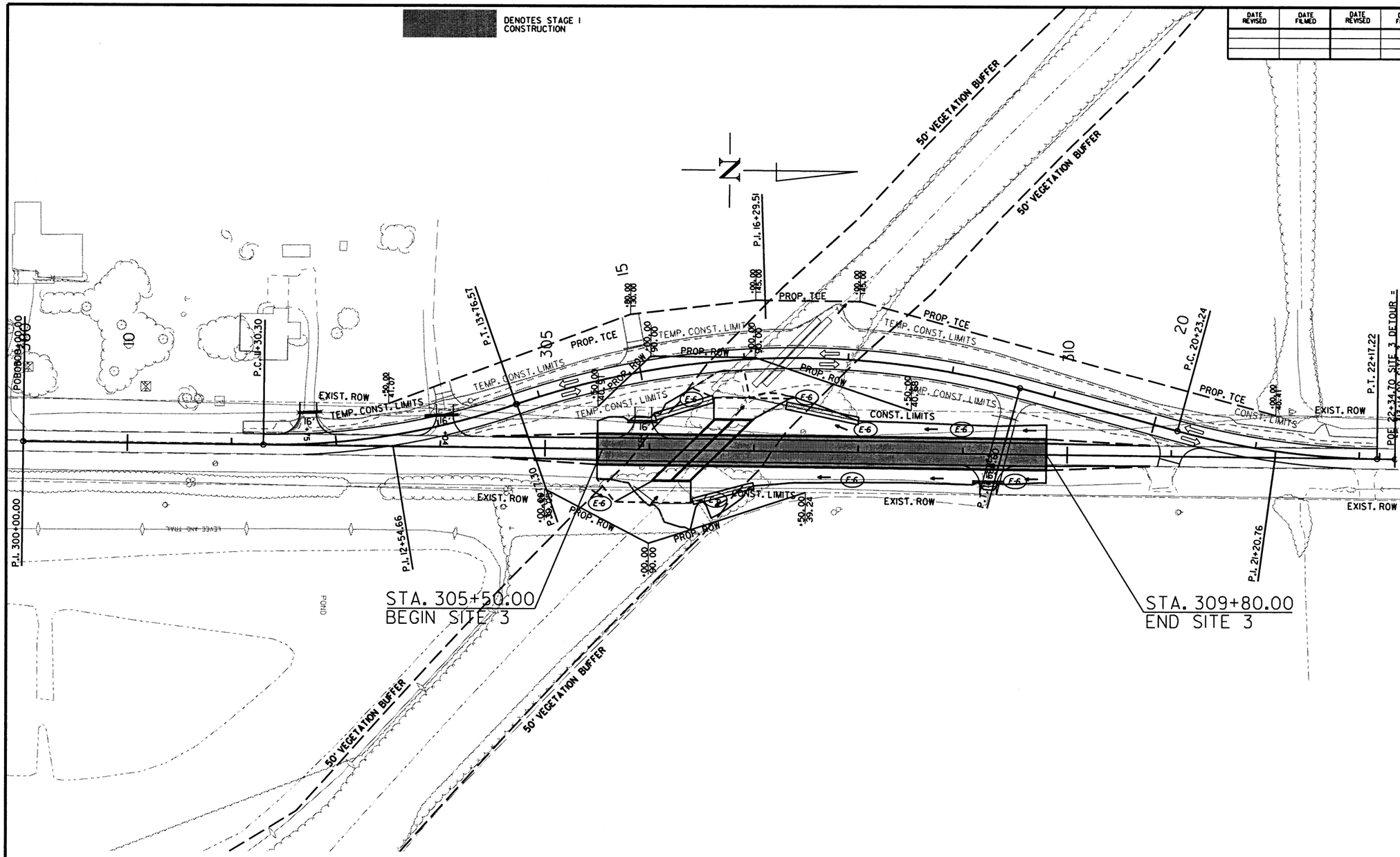
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		H0574	28	176

(2) TEMPORARY EROSION CONTROL DETAILS

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

10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

STAGE 2 - SITE 3
TEMPORARY EROSION CONTROL DETAILS

9/30/2019

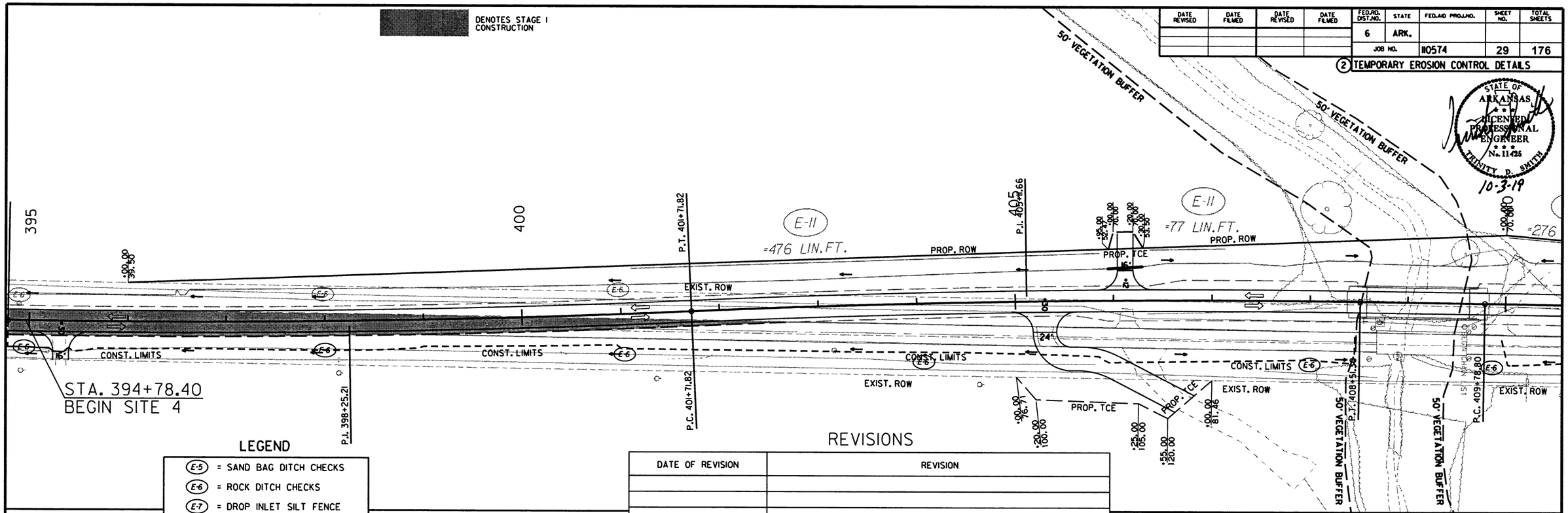
R110574.DGN

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.		R10574	29	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

DENOTES STAGE I CONSTRUCTION



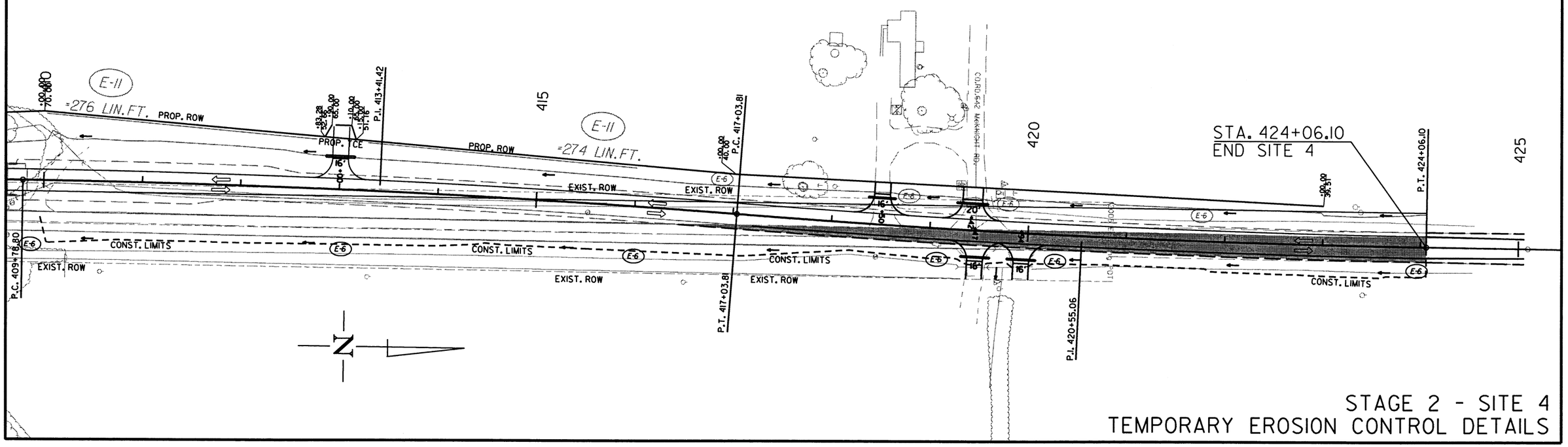
LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION



STAGE 2 - SITE 4
TEMPORARY EROSION CONTROL DETAILS

9/30/2019

R110574.DGN

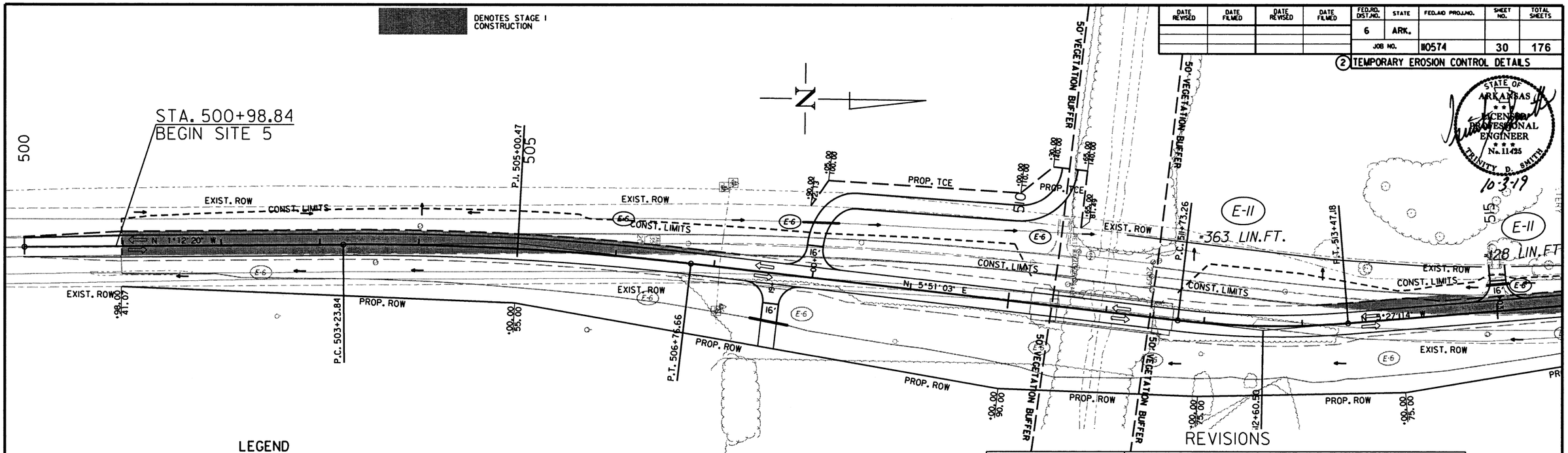
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110574	30	176

(2) TEMPORARY EROSION CONTROL DETAILS

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

10-3-19



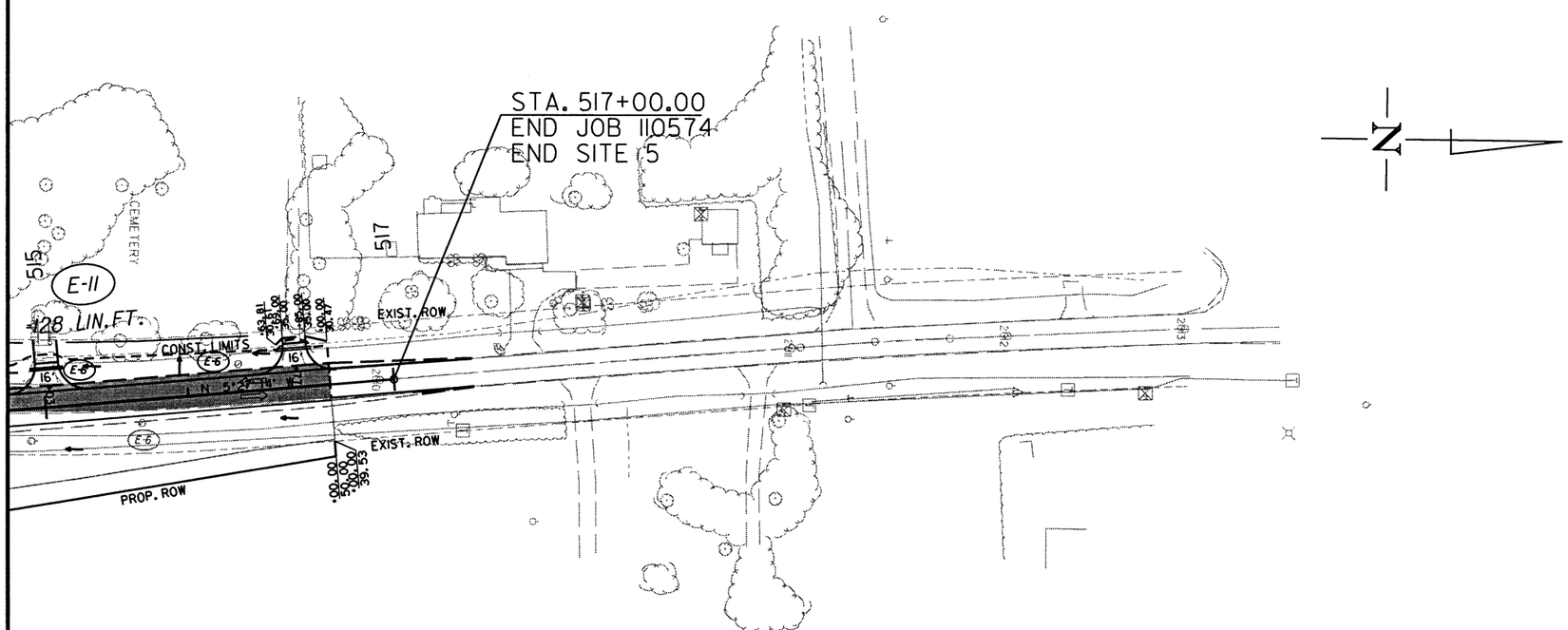
LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

DENOTES STAGE I CONSTRUCTION

DATE OF REVISION	REVISION



9/30/2019

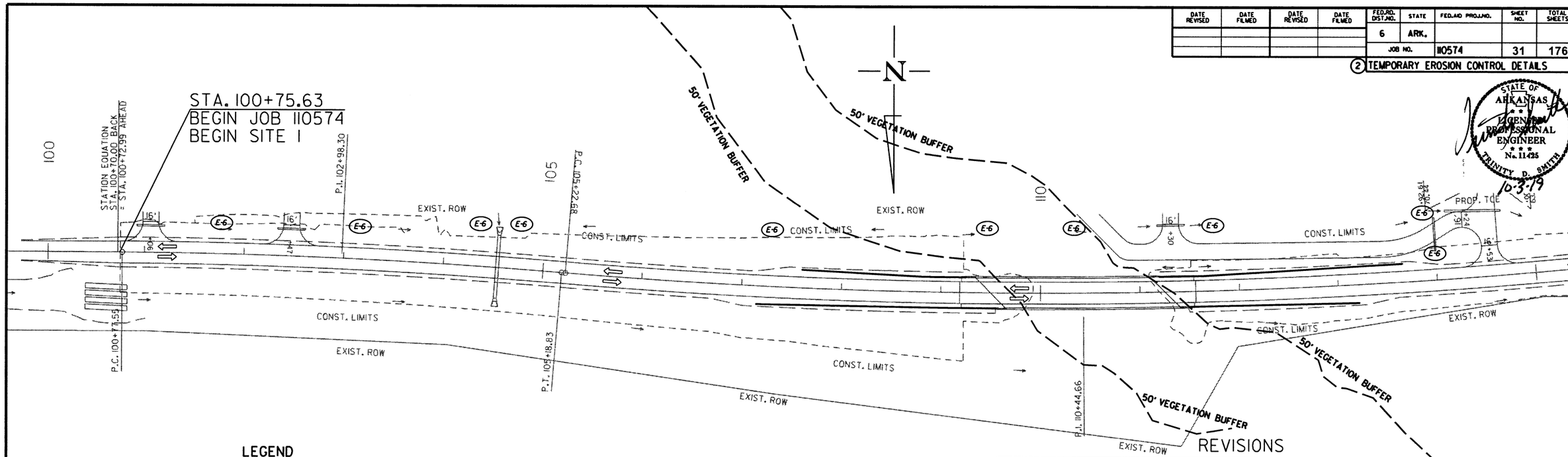
R110574.DGN

STAGE 2 - SITE 5
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	31	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



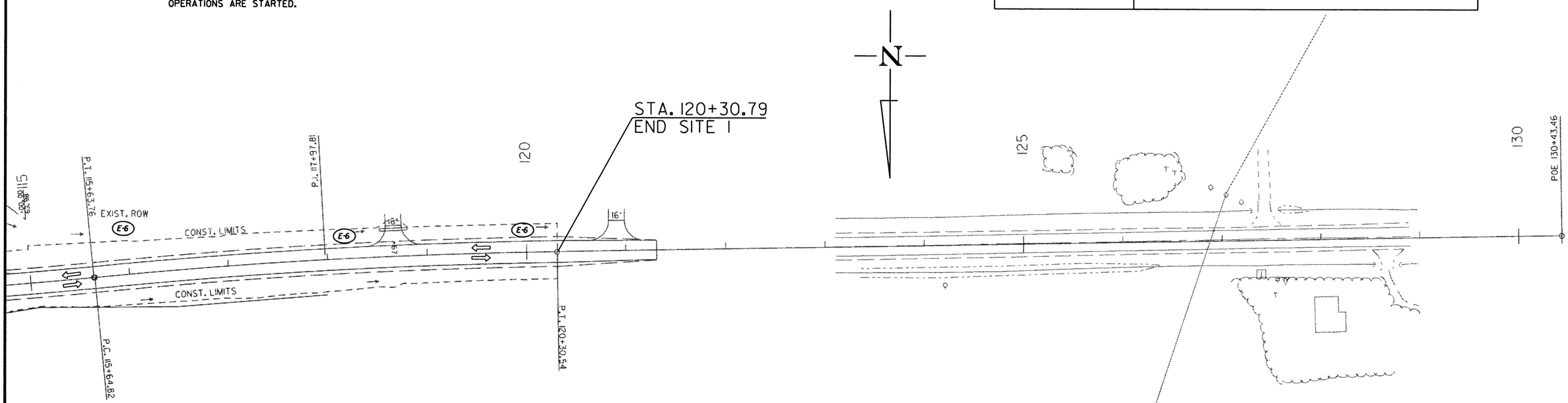
LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION



STAGE 3 - SITE 1
TEMPORARY EROSION CONTROL DETAILS

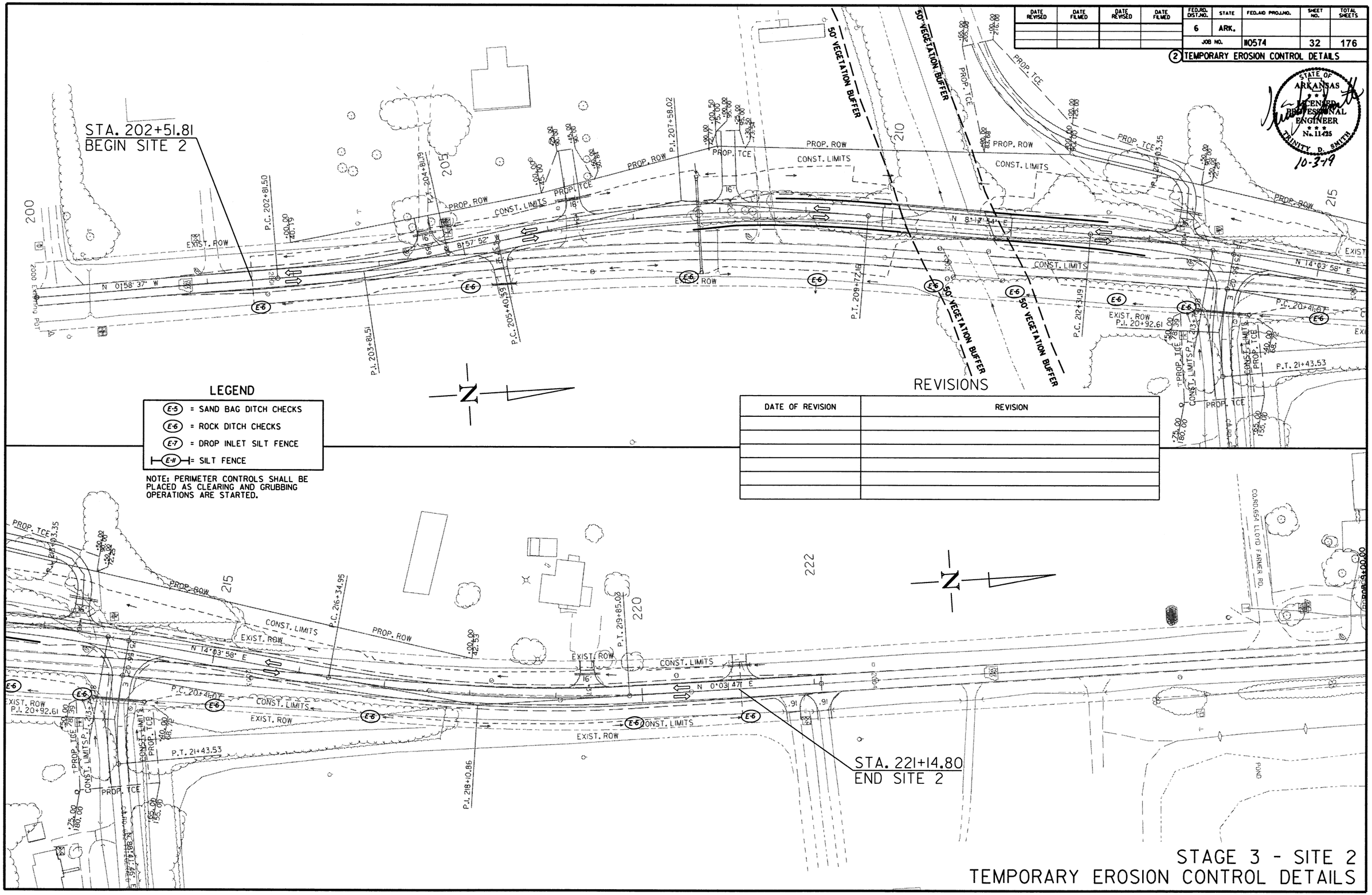
9/27/2019

R110574.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.		R10574	32	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

STAGE 3 - SITE 2
TEMPORARY EROSION CONTROL DETAILS

9/27/2019

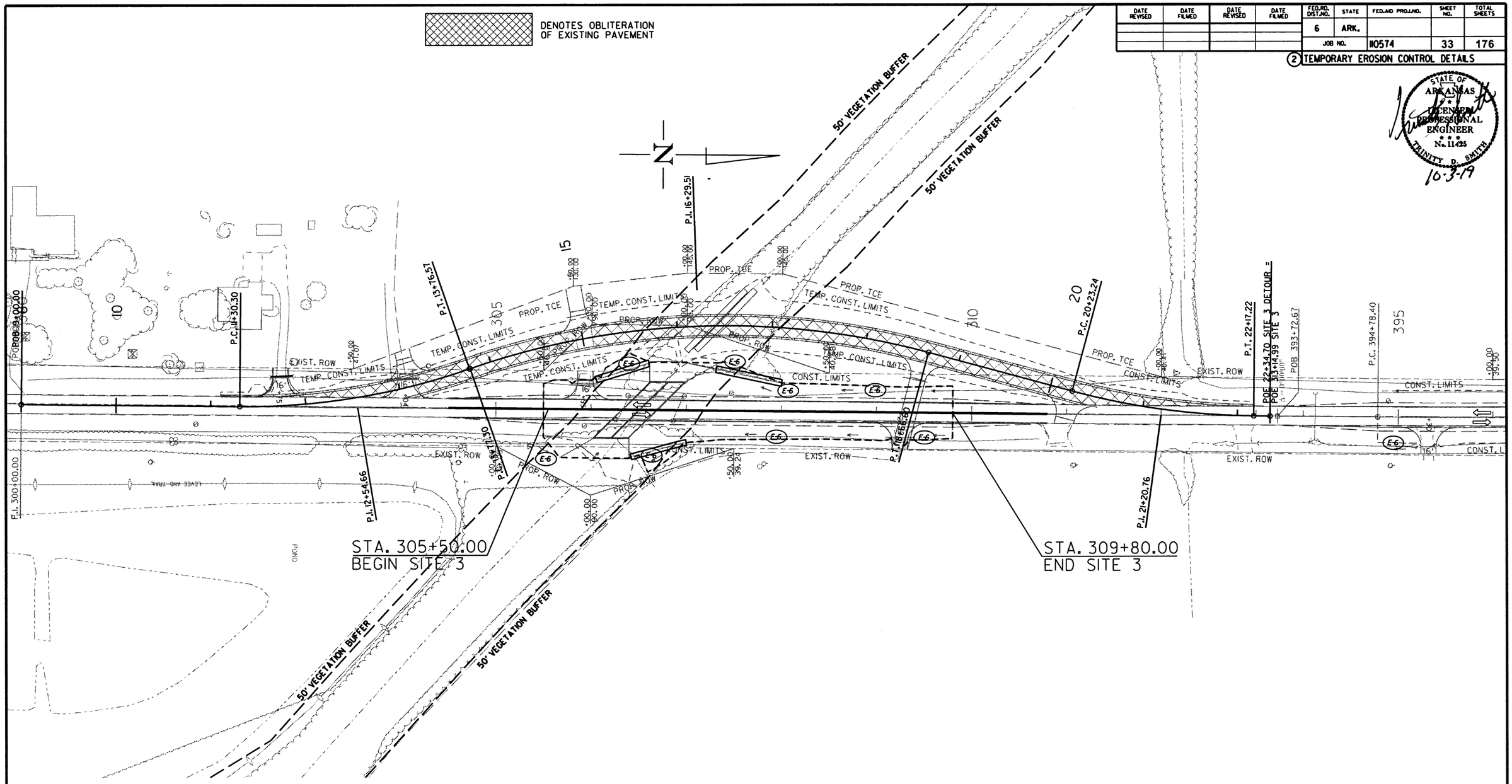
R110574.DGN

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.		110574	33	176

(2) TEMPORARY EROSION CONTROL DETAILS

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

10-3-19



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION

STAGE 3 - SITE 3
TEMPORARY EROSION CONTROL DETAILS

9/27/2019

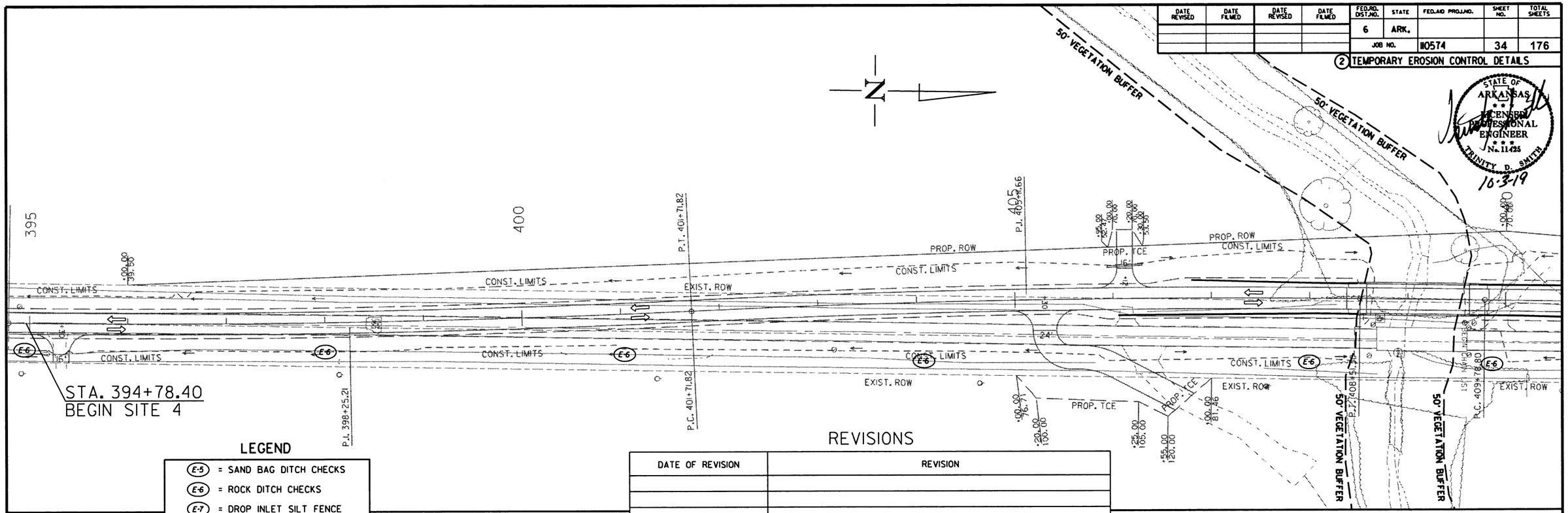
R110574.DGN

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.		110574	34	176

(2) TEMPORARY EROSION CONTROL DETAILS

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

10-3-19



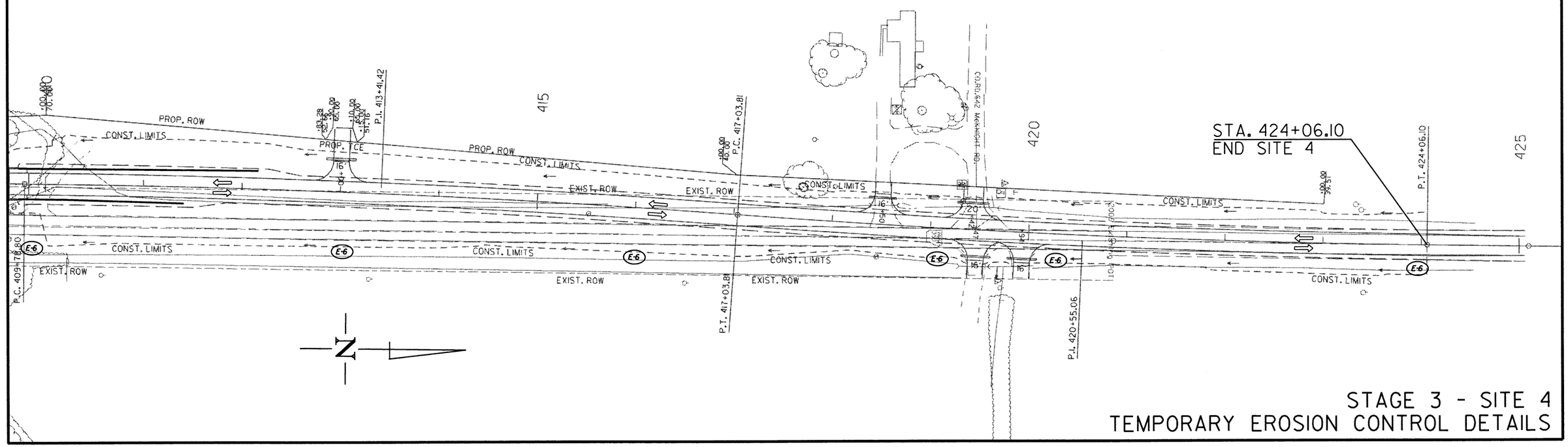
LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION



STAGE 3 - SITE 4
TEMPORARY EROSION CONTROL DETAILS

9/27/2019

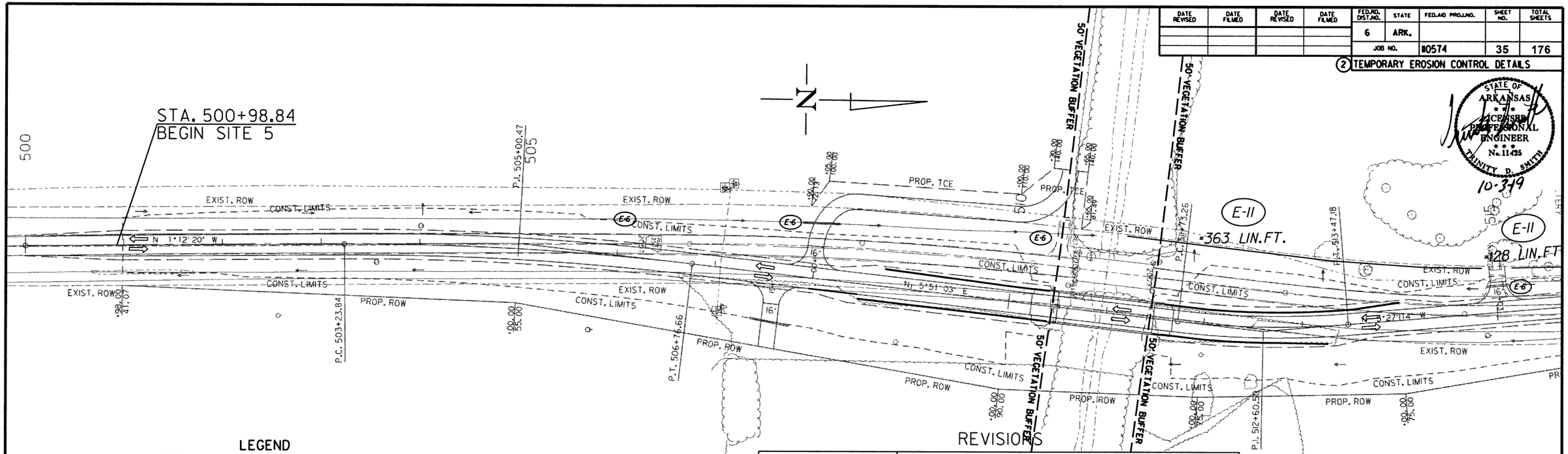
R110574.DGN

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.		110574	35	176

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



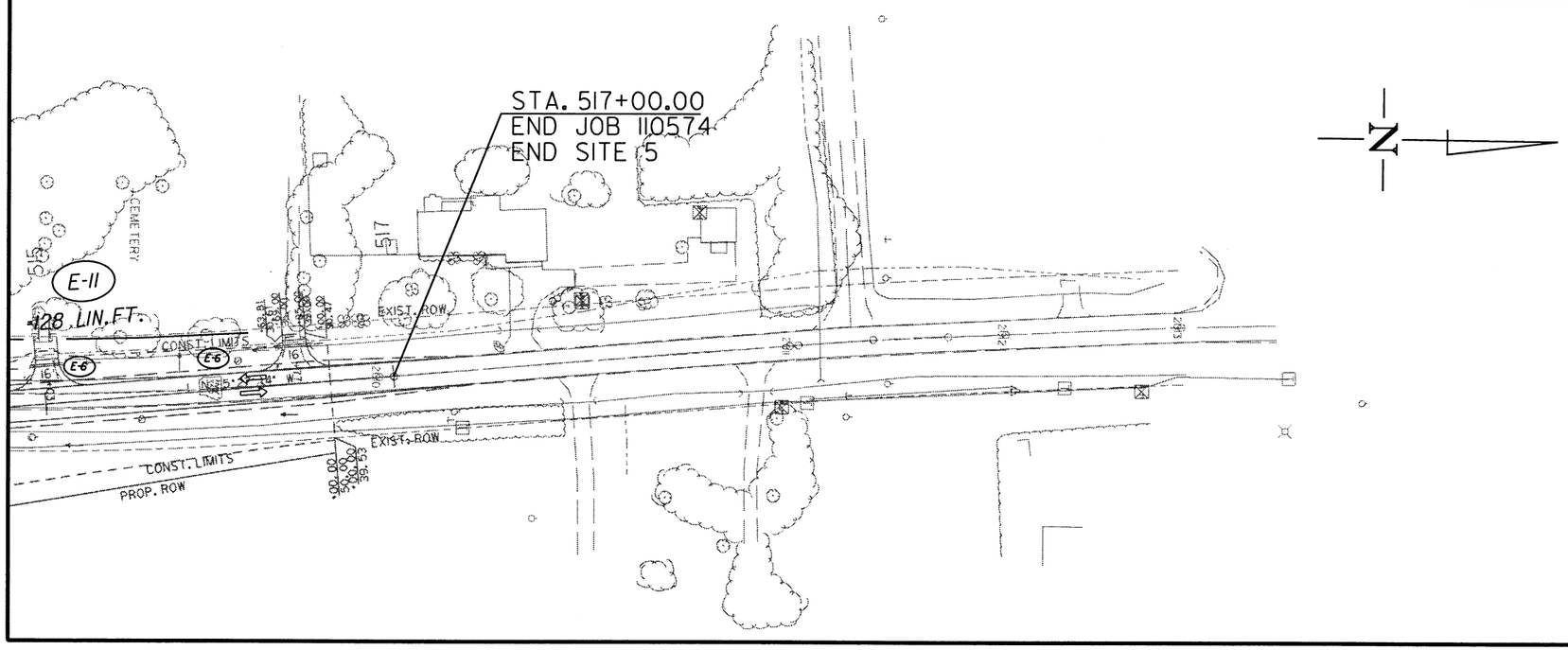
LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION	REVISION



9/27/2019

R110574.DGN

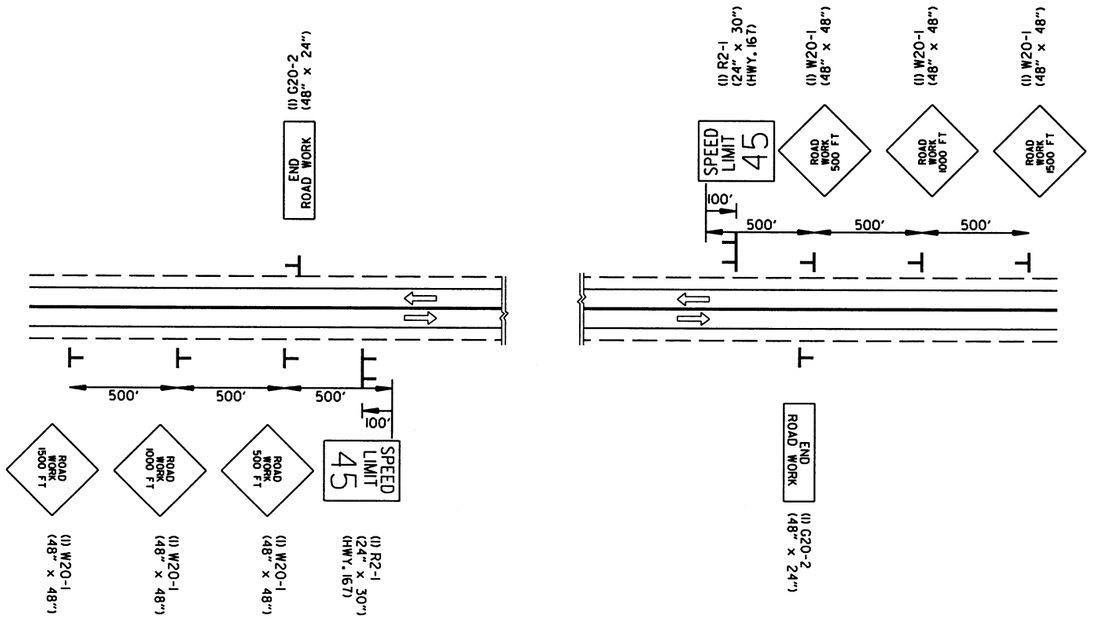
STAGE 3 - SITE 5
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		R10574	36	176

(2) MAINTENANCE OF TRAFFIC DETAILS

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

10-3-19



ADVANCE WARNING (DETOUR)

SITE 1

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

CONSTRUCT BRIDGE NO. 07444 AND PROPOSED ROADWAY THROUGH FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.

STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 1MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2"LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

SITE 2

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND THE NECESSARY DRIVEWAYS.

CONSTRUCT BRIDGE NO. 07445 AND PROPOSED ROADWAY THROUGH FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.

STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 2 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

SITE 4

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

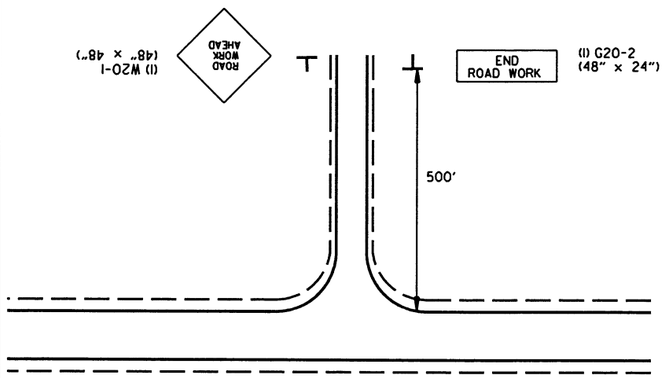
CONSTRUCT BRIDGE NO. 07446 AND PROPOSED ROADWAY THROUGH FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.

STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 4 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS FO JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.



ADVANCE WARNING - SIDE ROADS (ALL STAGES)

RIGHT SHOULDER CLOSED	(2) W21-5a 36"X36"	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
DO NOT PASS	(2) R4-1 (24" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
BUMP	(2) W8-1 (30" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
ROAD WORK AHEAD	(2) W20-1 (48" x 48")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

SITE 3

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

CONSTRUCT DETOUR FROM STA. 302+10.77 TO STA. 312+97.82 AS SHOWN ON STAGE 1- SITE 3 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, INSTALL TRAFFIC DRUMS AND STRIPING AS SHOWN ON STAGE 2 - SITE 3 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO DETOUR.

REMOVE EXISTING BRIDGE STRUCTURE AND CONSTRUCT 12' X 7' X 83' R.C. BOX CULVERT WITH WING WALLS AS SHOWN AT STA. 306+50.50.

NOTCH AND WIDEN EXISTING ROADWAY FROM STA. 305+50.00 TO STA. 309+80.00

STAGE 3:

OBLITERATE DETOUR AND INSTALL CONCRETE DITCH PAVING AS SHOWN ON STAGE 3 - SITE 3 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC BACK ONTO EXISTING ROADWAY.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN TEH PERMANENT PAVEMENT MARKINGS DETAILS

SITE 5

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

CONSTRUCT BRIDGE NO. 07447 AND PROPOSED ROADWAY THROUGH THE FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.

STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 5 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANET PAVEMNET MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

10/2/2019

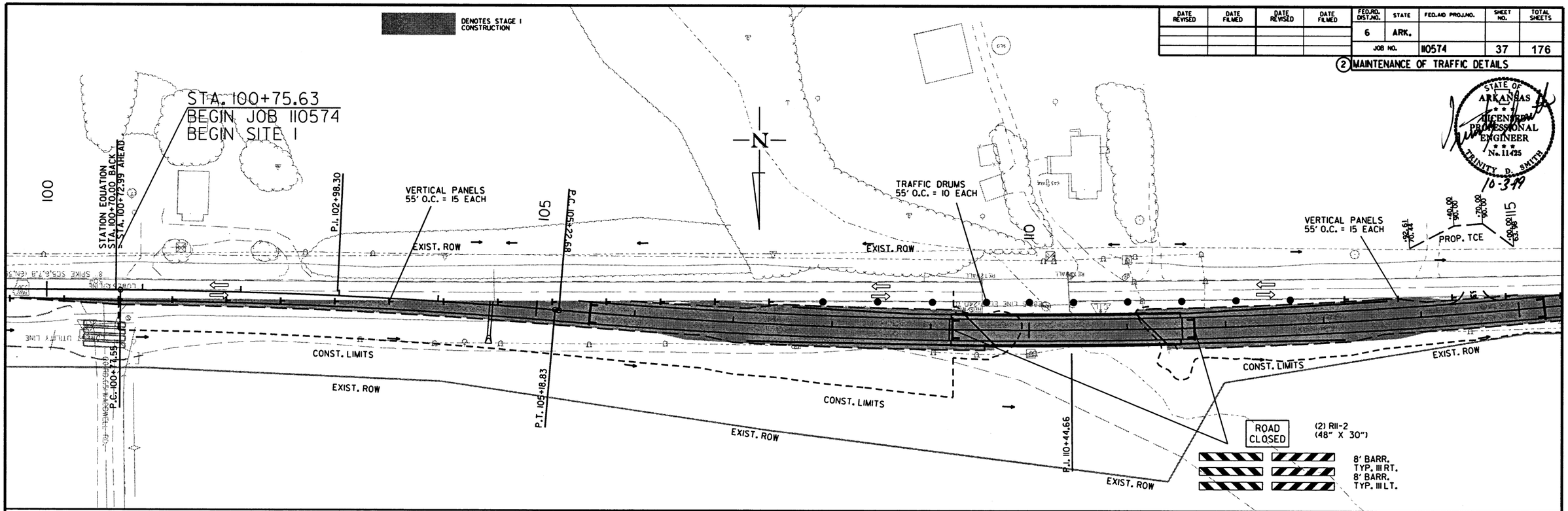
R110574.DGN

ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	37	176

(2) MAINTENANCE OF TRAFFIC DETAILS

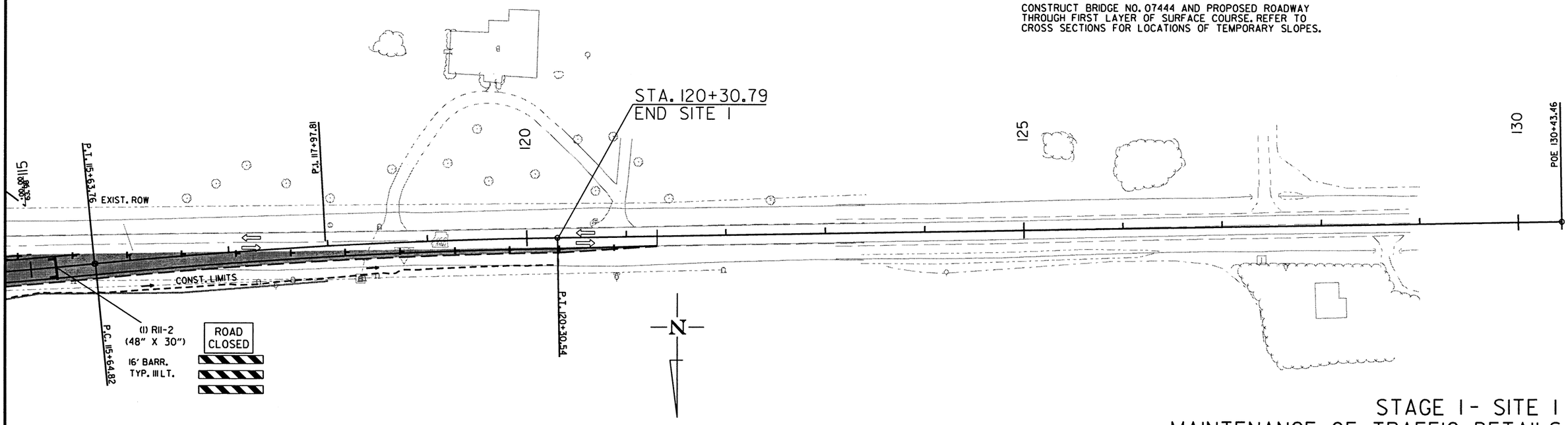
STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19



STAGE I:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

CONSTRUCT BRIDGE NO. 07444 AND PROPOSED ROADWAY THROUGH FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.



10/2/2019

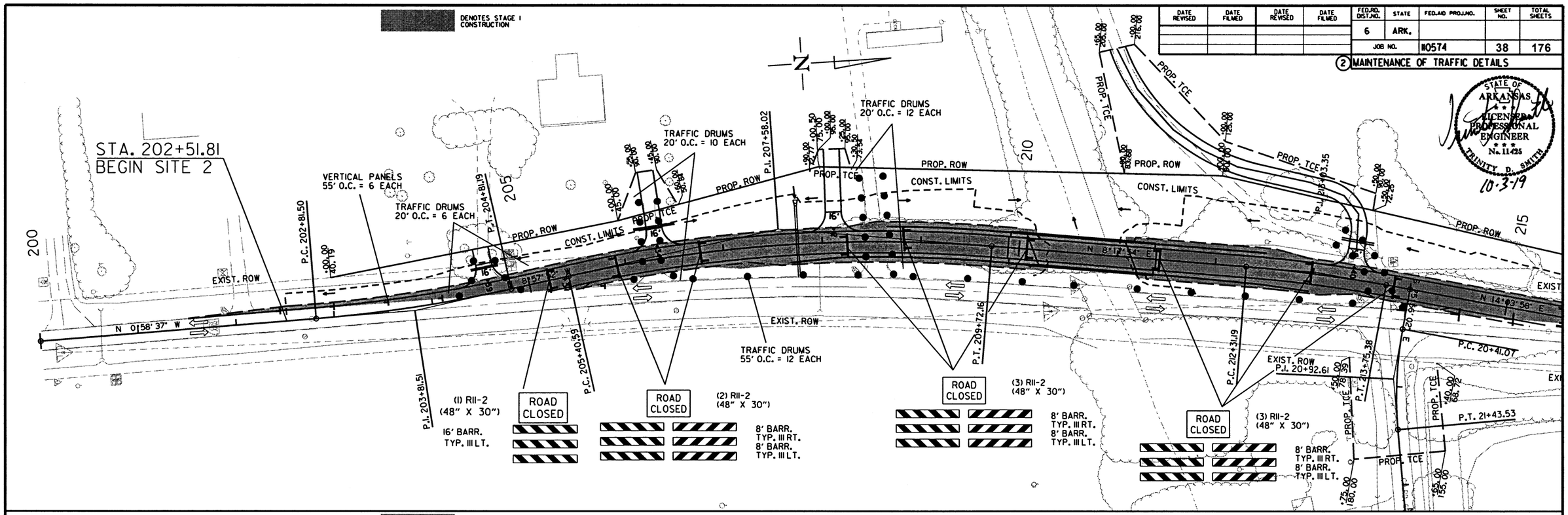
R110574.DGN

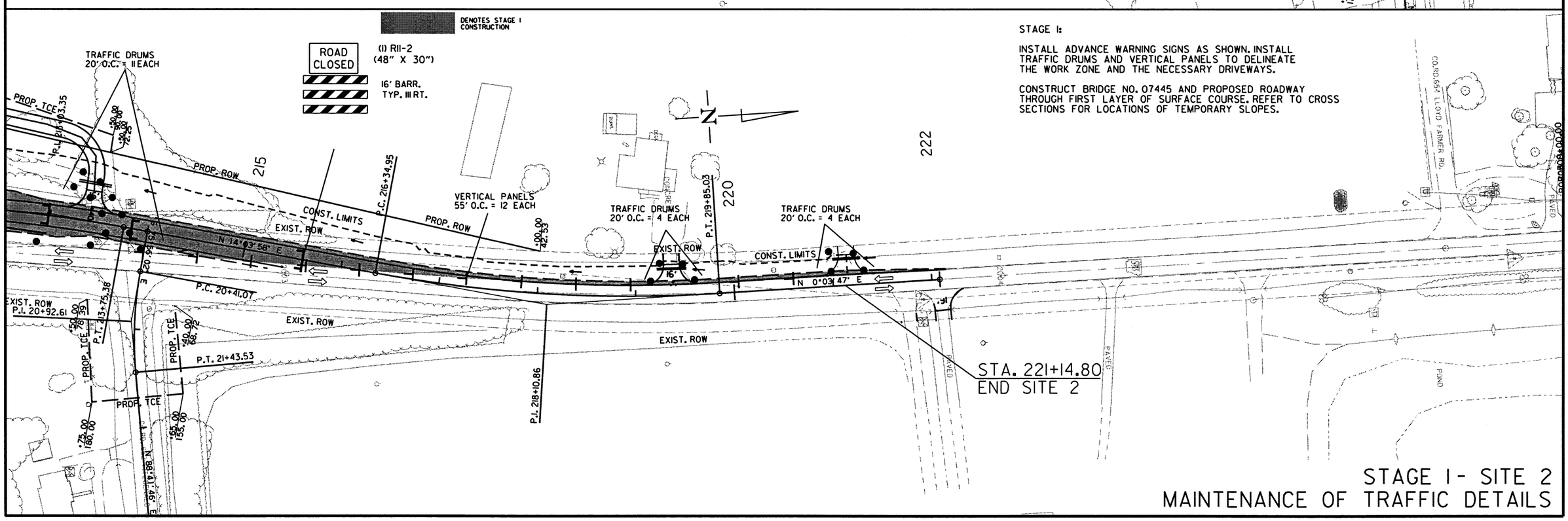
STAGE I - SITE I
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		H0574	38	176

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19





STAGE I:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND THE NECESSARY DRIVEWAYS.

CONSTRUCT BRIDGE NO. 07445 AND PROPOSED ROADWAY THROUGH FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.

STAGE I - SITE 2
MAINTENANCE OF TRAFFIC DETAILS

10/2/2019

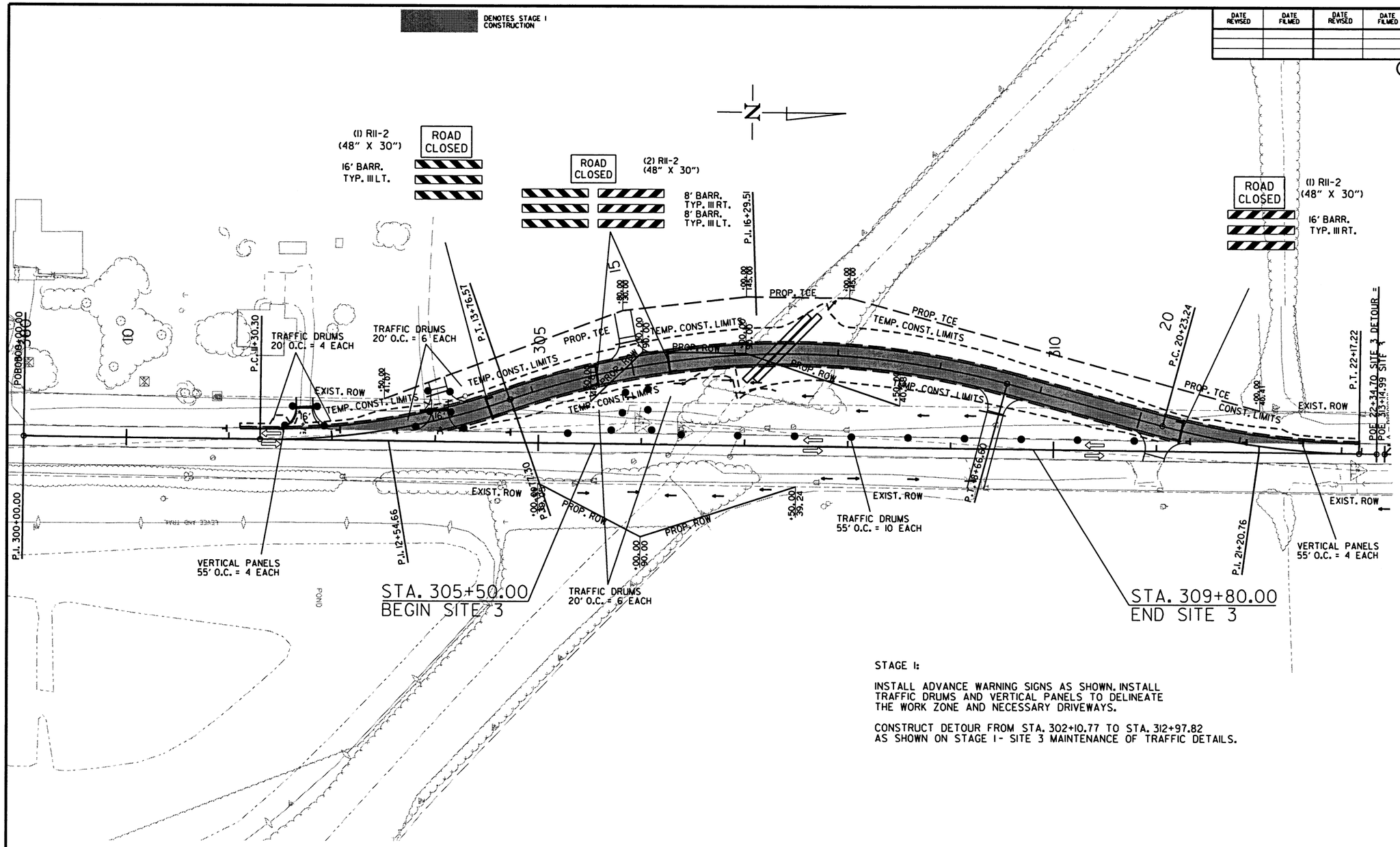
R110574.DGN

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.		110574	39	176

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



STAGE 1:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

CONSTRUCT DETOUR FROM STA. 302+10.77 TO STA. 312+97.82 AS SHOWN ON STAGE 1- SITE 3 MAINTENANCE OF TRAFFIC DETAILS.

R110574.DGN 10/2/2019

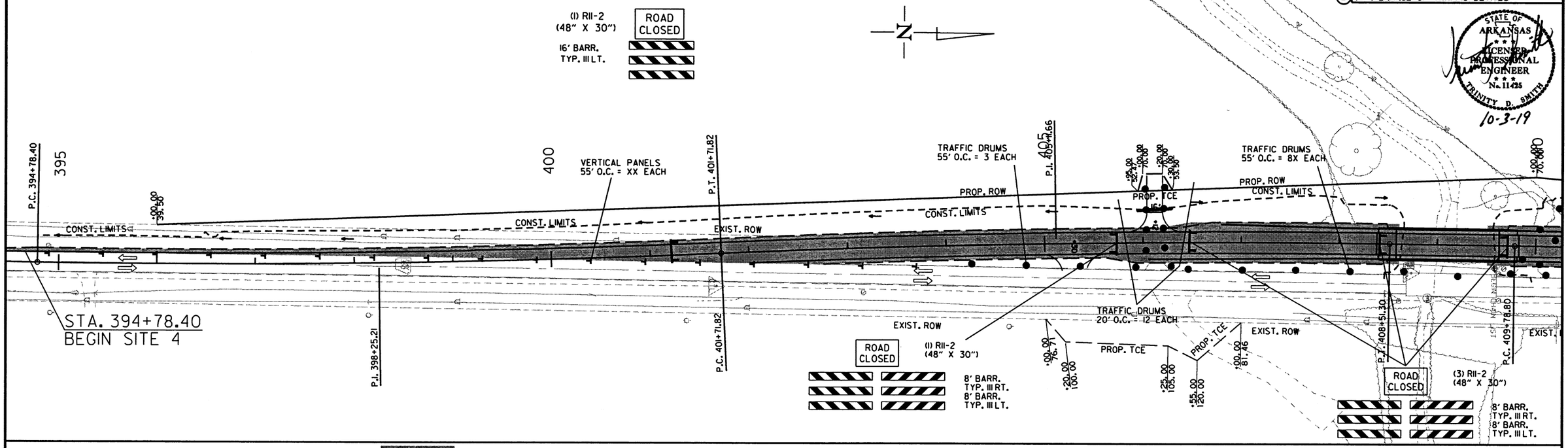
STAGE 1- SITE 3
MAINTENANCE OF TRAFFIC DETAILS

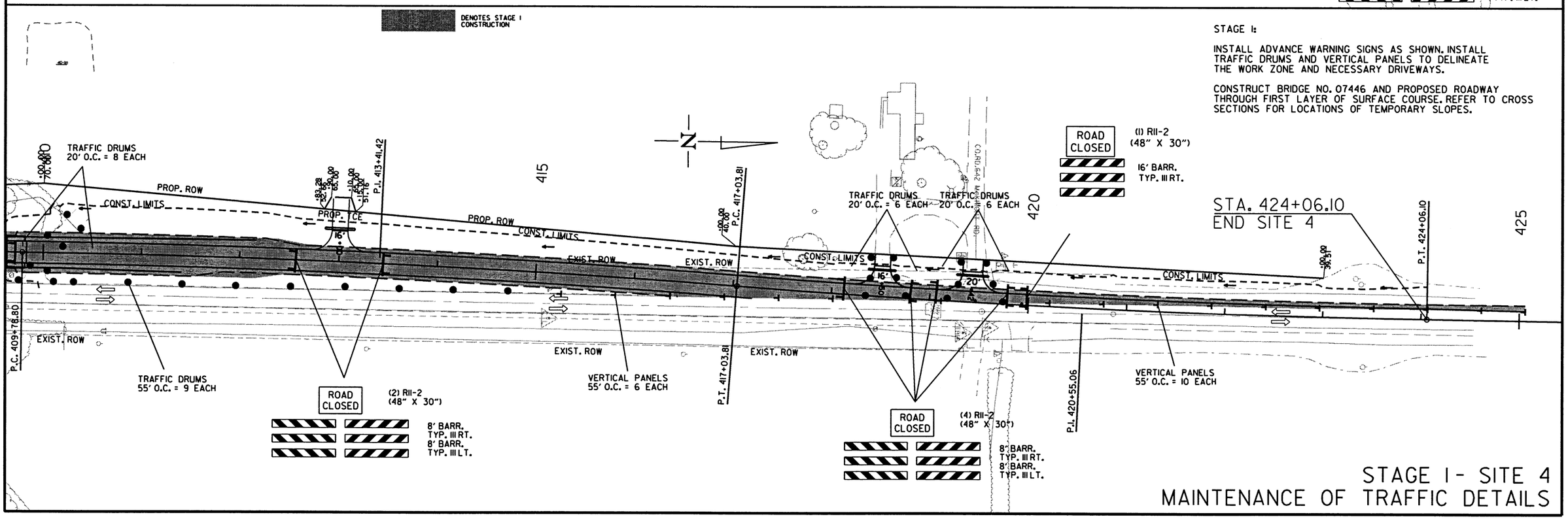
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		H0574	40	176

(2) MAINTENANCE OF TRAFFIC DETAILS

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

10-3-19





STAGE I:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

CONSTRUCT BRIDGE NO. 07446 AND PROPOSED ROADWAY THROUGH FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.

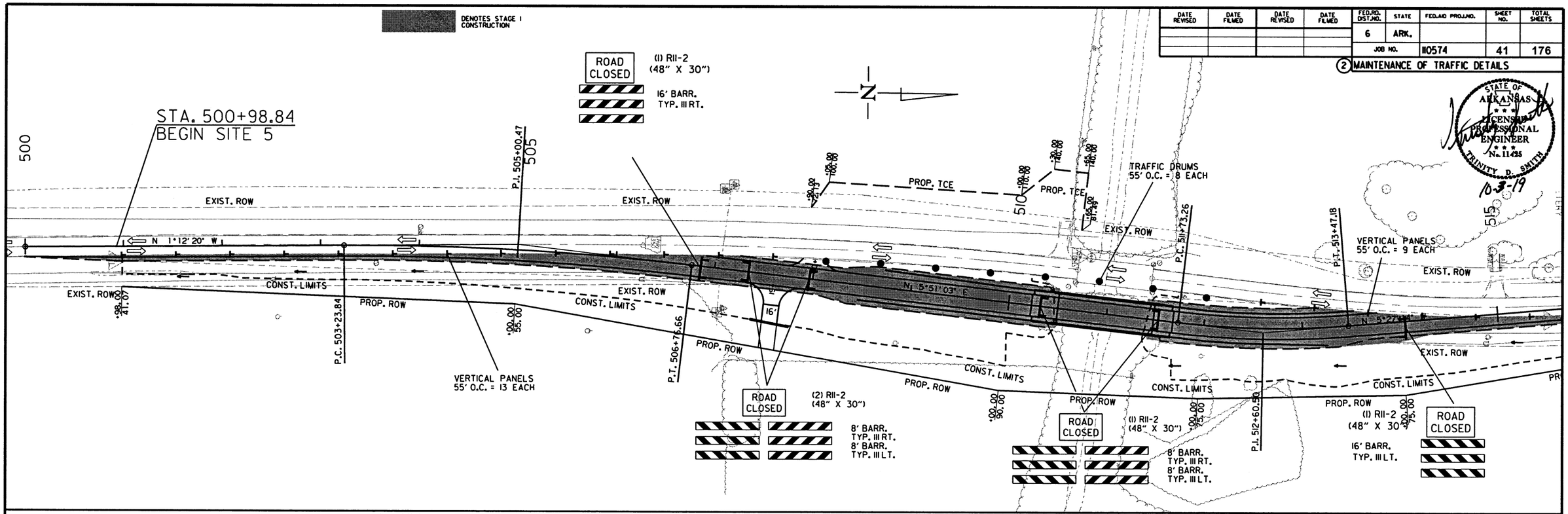
STAGE I - SITE 4
MAINTENANCE OF TRAFFIC DETAILS

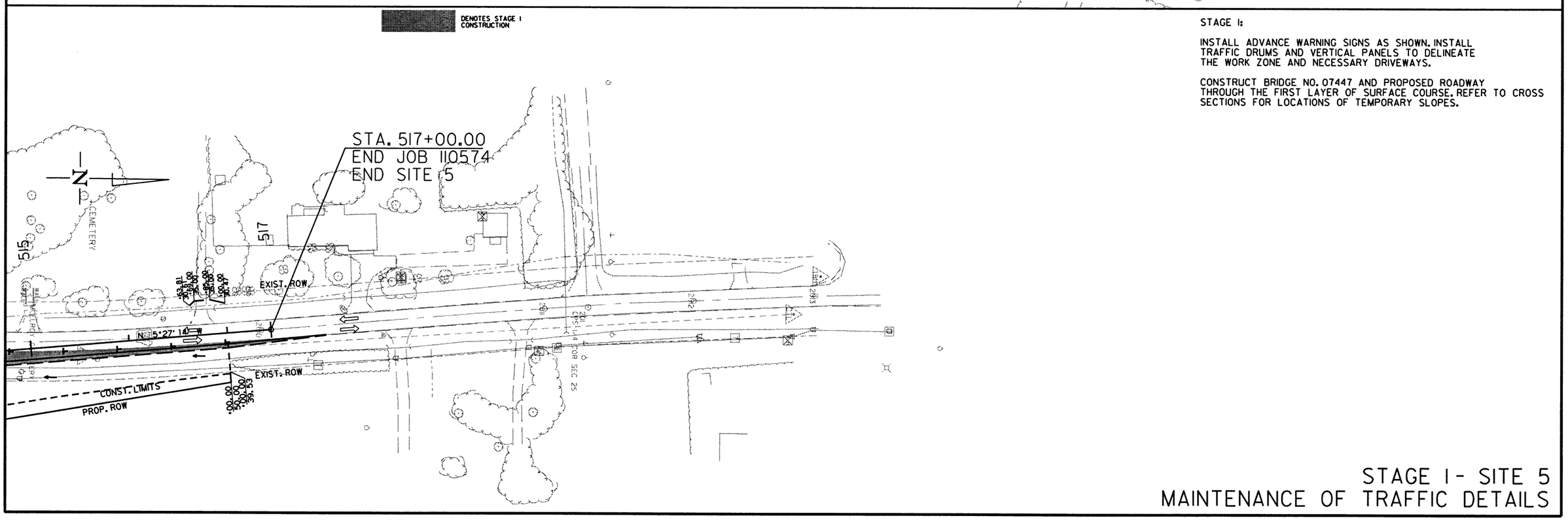
10/2/2019

R110574.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.		110574	41	176

(2) MAINTENANCE OF TRAFFIC DETAILS





STAGE I:

INSTALL ADVANCE WARNING SIGNS AS SHOWN. INSTALL TRAFFIC DRUMS AND VERTICAL PANELS TO DELINEATE THE WORK ZONE AND NECESSARY DRIVEWAYS.

CONSTRUCT BRIDGE NO. 07447 AND PROPOSED ROADWAY THROUGH THE FIRST LAYER OF SURFACE COURSE. REFER TO CROSS SECTIONS FOR LOCATIONS OF TEMPORARY SLOPES.

STAGE I - SITE 5
MAINTENANCE OF TRAFFIC DETAILS

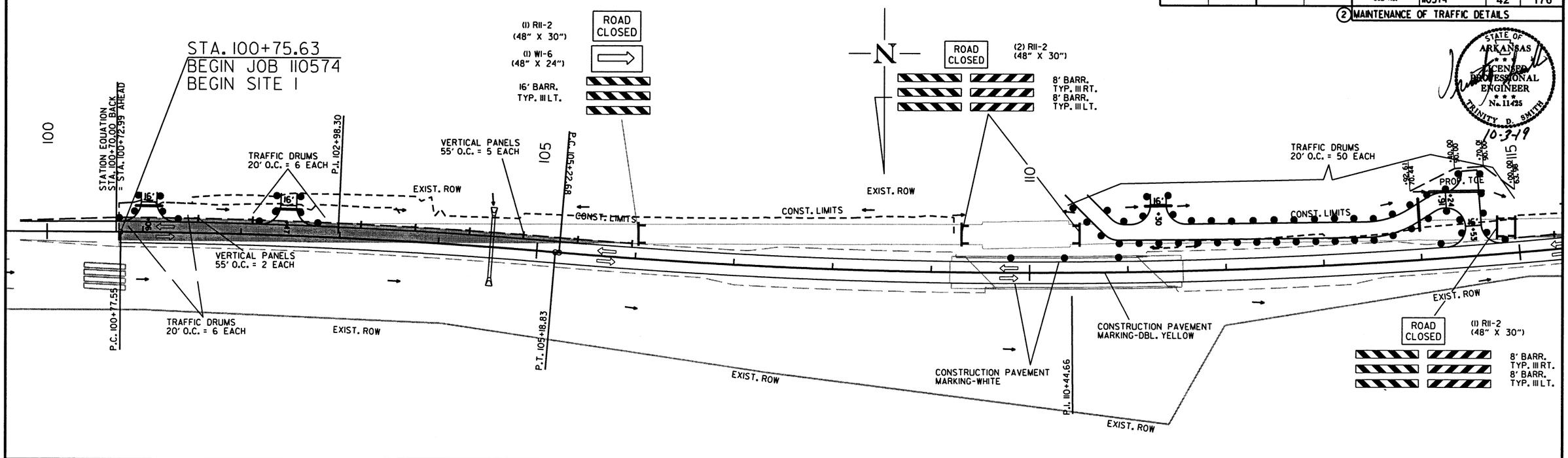
10/2/2019

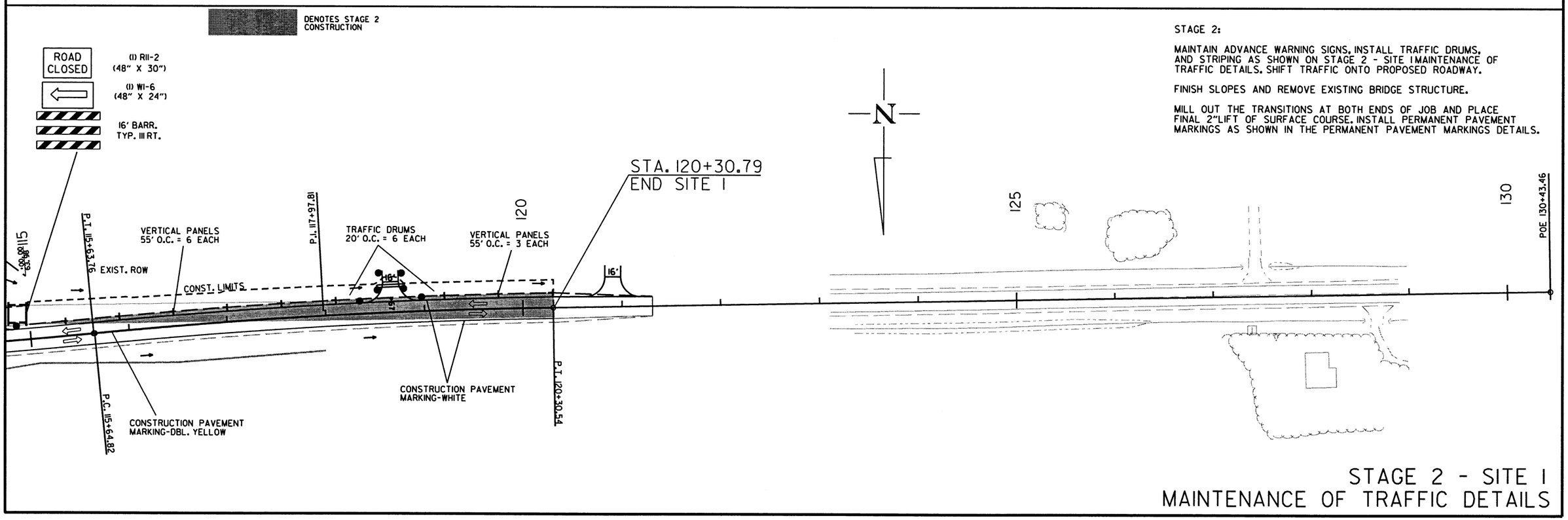
R110574.DGN

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.		110574	42	176

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19





STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, INSTALL TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 1 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2"LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 2 - SITE 1
MAINTENANCE OF TRAFFIC DETAILS

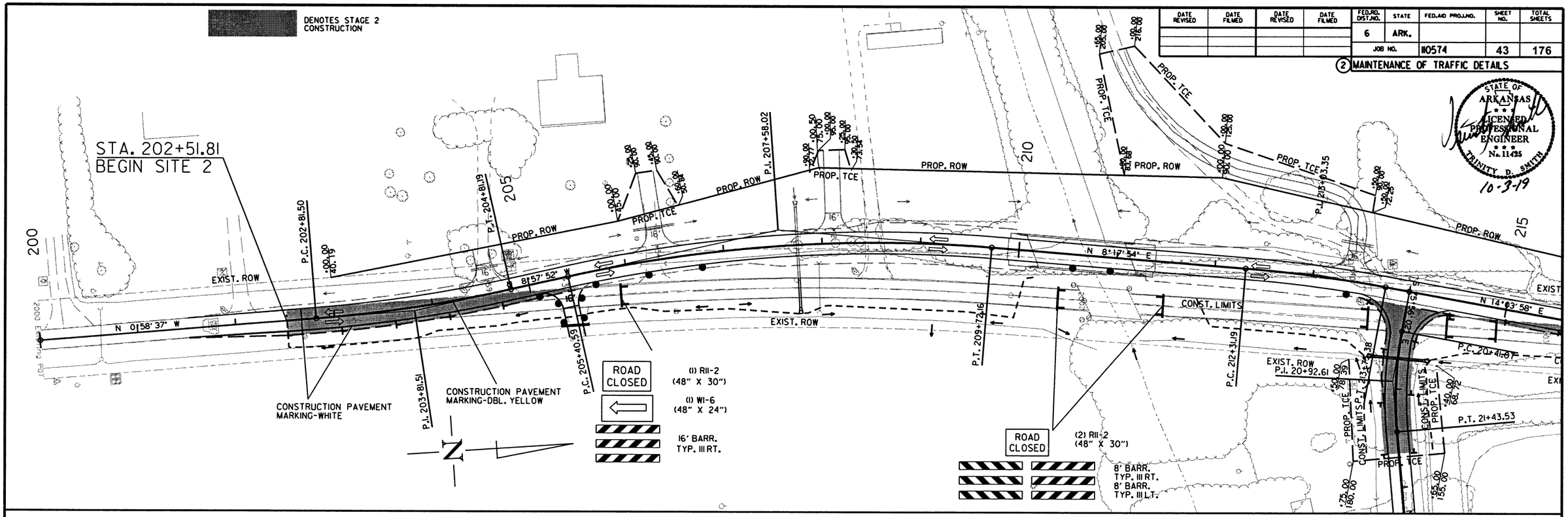
10/1/2019

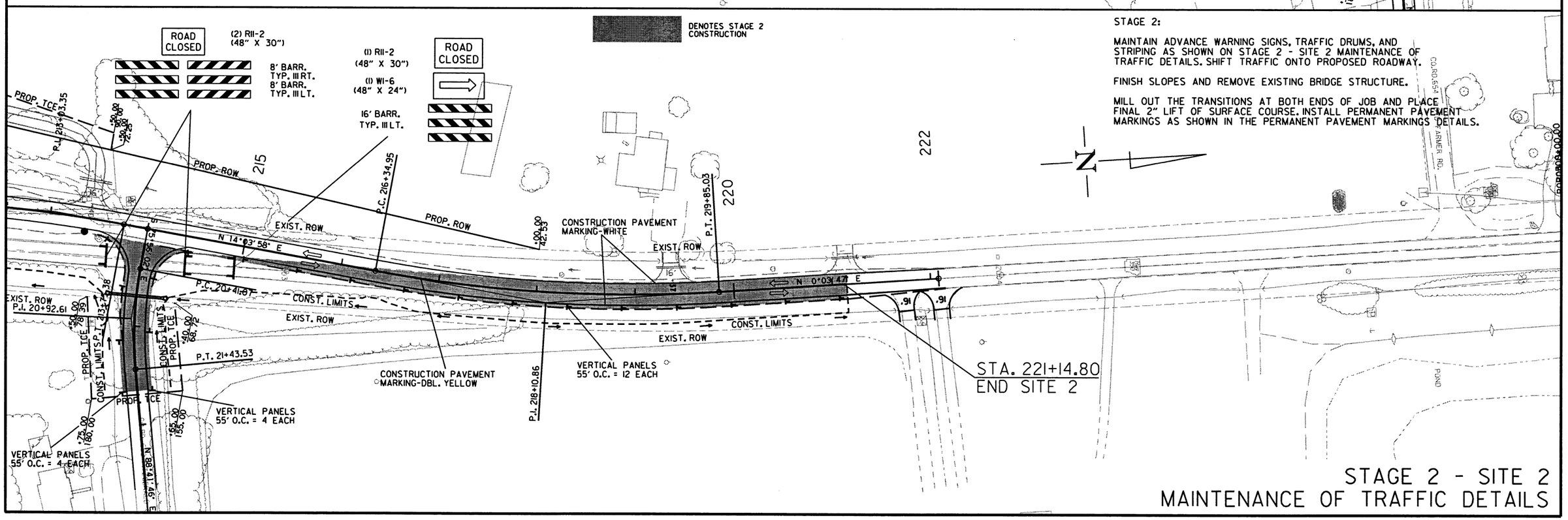
R110574.DGN

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.		110574	43	176

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19





STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 2 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 2 - SITE 2
MAINTENANCE OF TRAFFIC DETAILS

10/1/2019

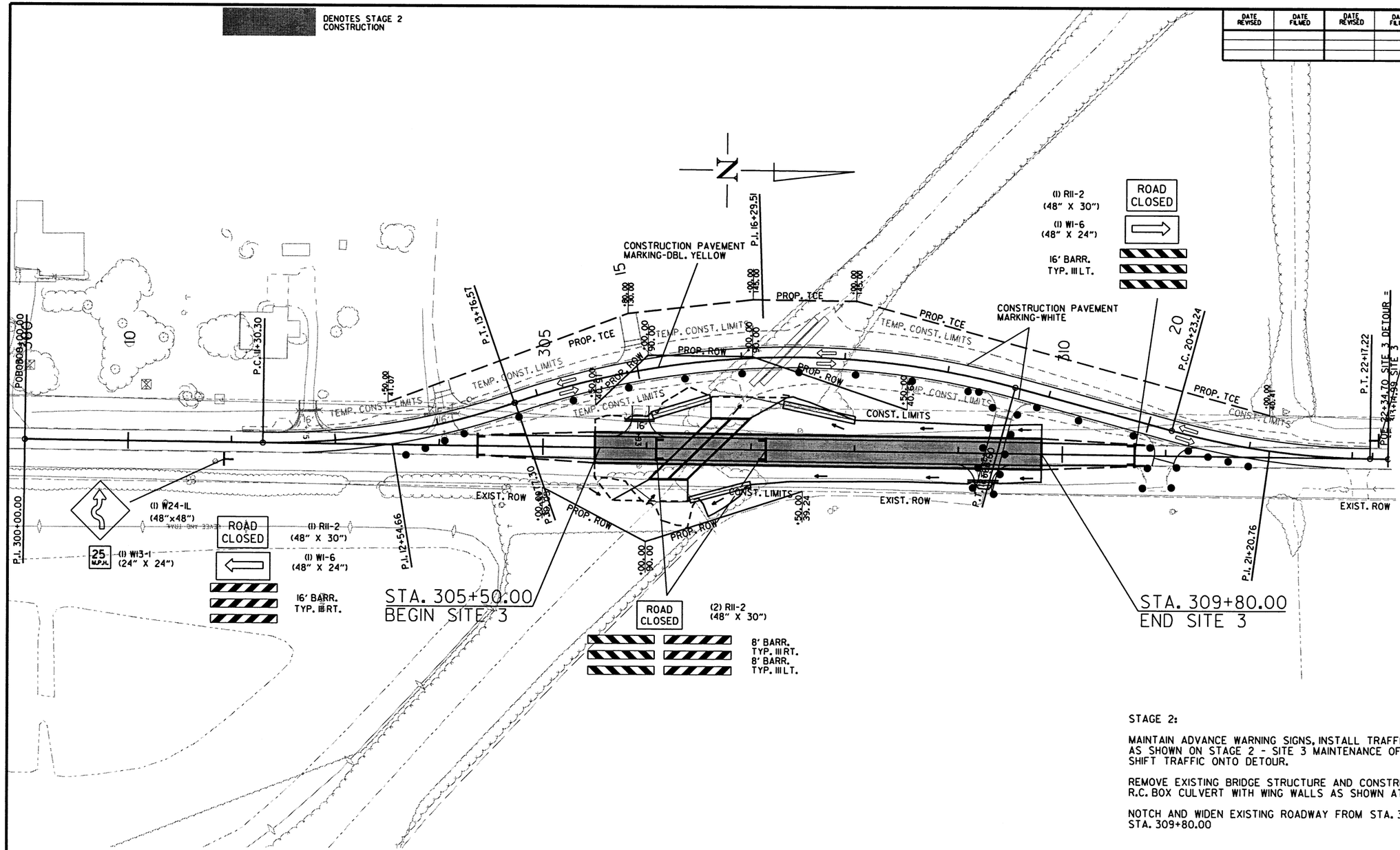
R110574.DGN

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.		110574	44	176

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, INSTALL TRAFFIC DRUMS AND STRIPING AS SHOWN ON STAGE 2 - SITE 3 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO DETOUR.

REMOVE EXISTING BRIDGE STRUCTURE AND CONSTRUCT 12' X 7' X 83' R.C. BOX CULVERT WITH WING WALLS AS SHOWN AT STA. 306+50.50.

NOTCH AND WIDEN EXISTING ROADWAY FROM STA. 305+50.00 TO STA. 309+80.00

STAGE 2 - SITE 3
MAINTENANCE OF TRAFFIC DETAILS

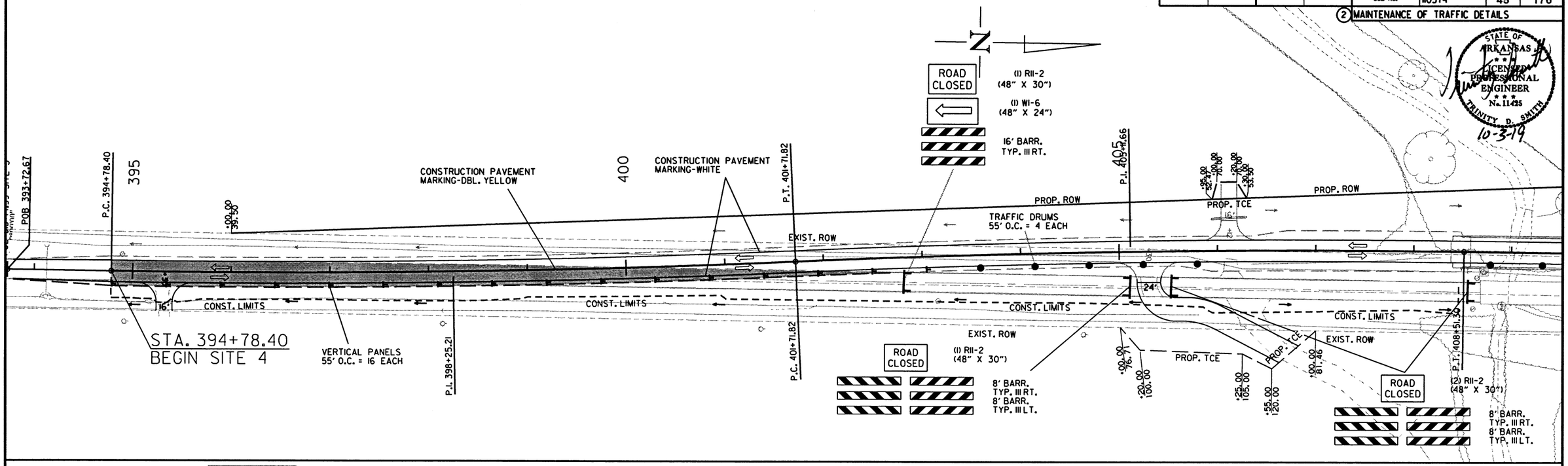
10/1/2019

R110574.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.		R110574	45	176

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

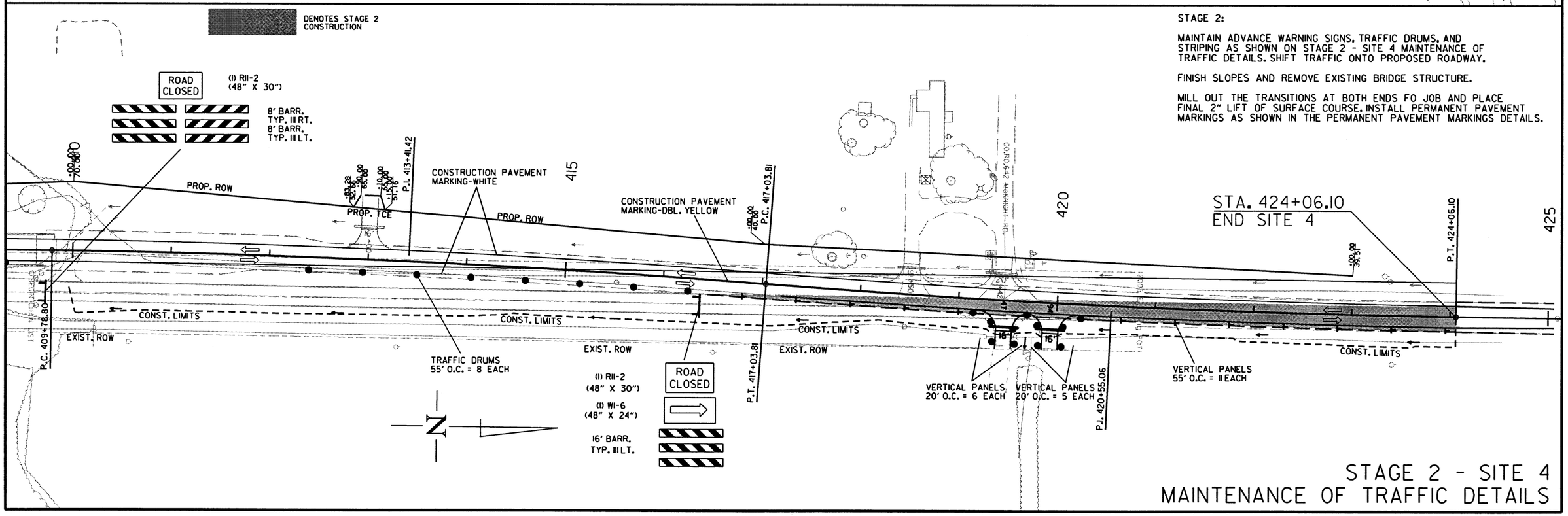


STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 4 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS FO JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.



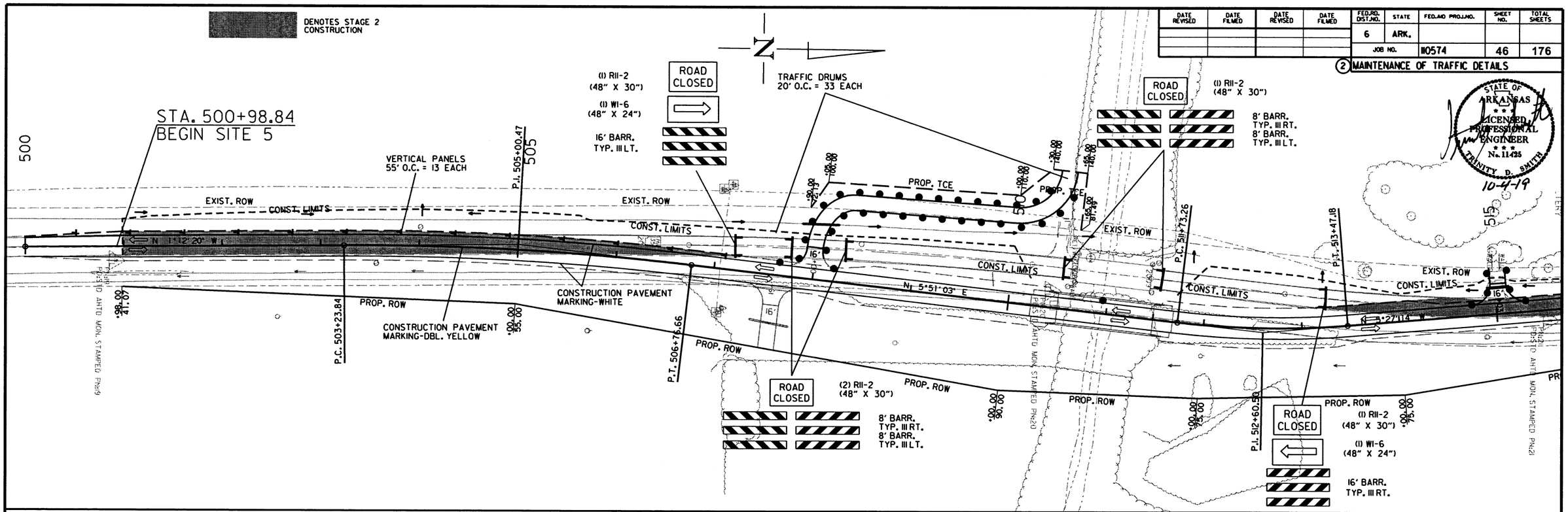
STAGE 2 - SITE 4
MAINTENANCE OF TRAFFIC DETAILS

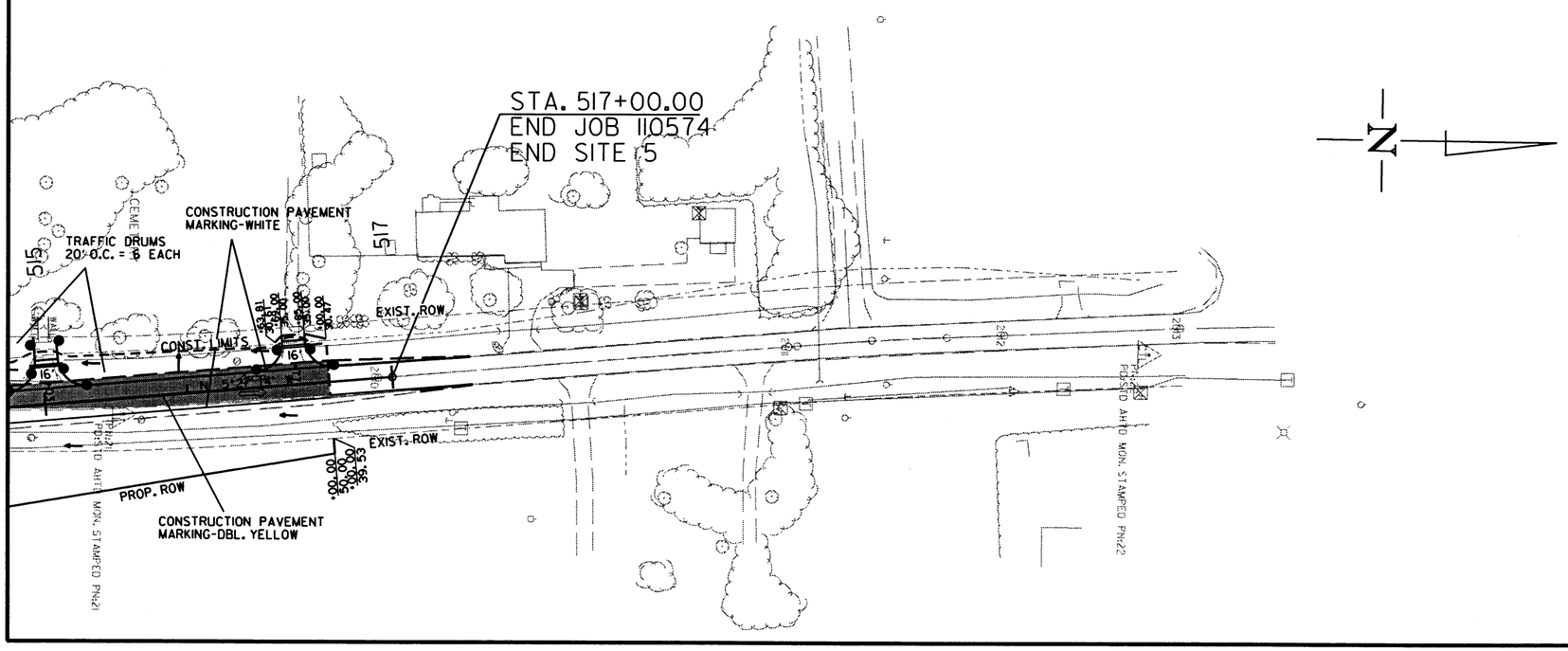
10/1/2019

R110574.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.	110574		46	176

2 MAINTENANCE OF TRAFFIC DETAILS





STAGE 2:

MAINTAIN ADVANCE WARNING SIGNS, TRAFFIC DRUMS, AND STRIPING AS SHOWN ON STAGE 2 - SITE 5 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC ONTO PROPOSED ROADWAY.

FINISH SLOPES AND REMOVE EXISTING BRIDGE STRUCTURE.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 2 - SITE 5
MAINTENANCE OF TRAFFIC DETAILS

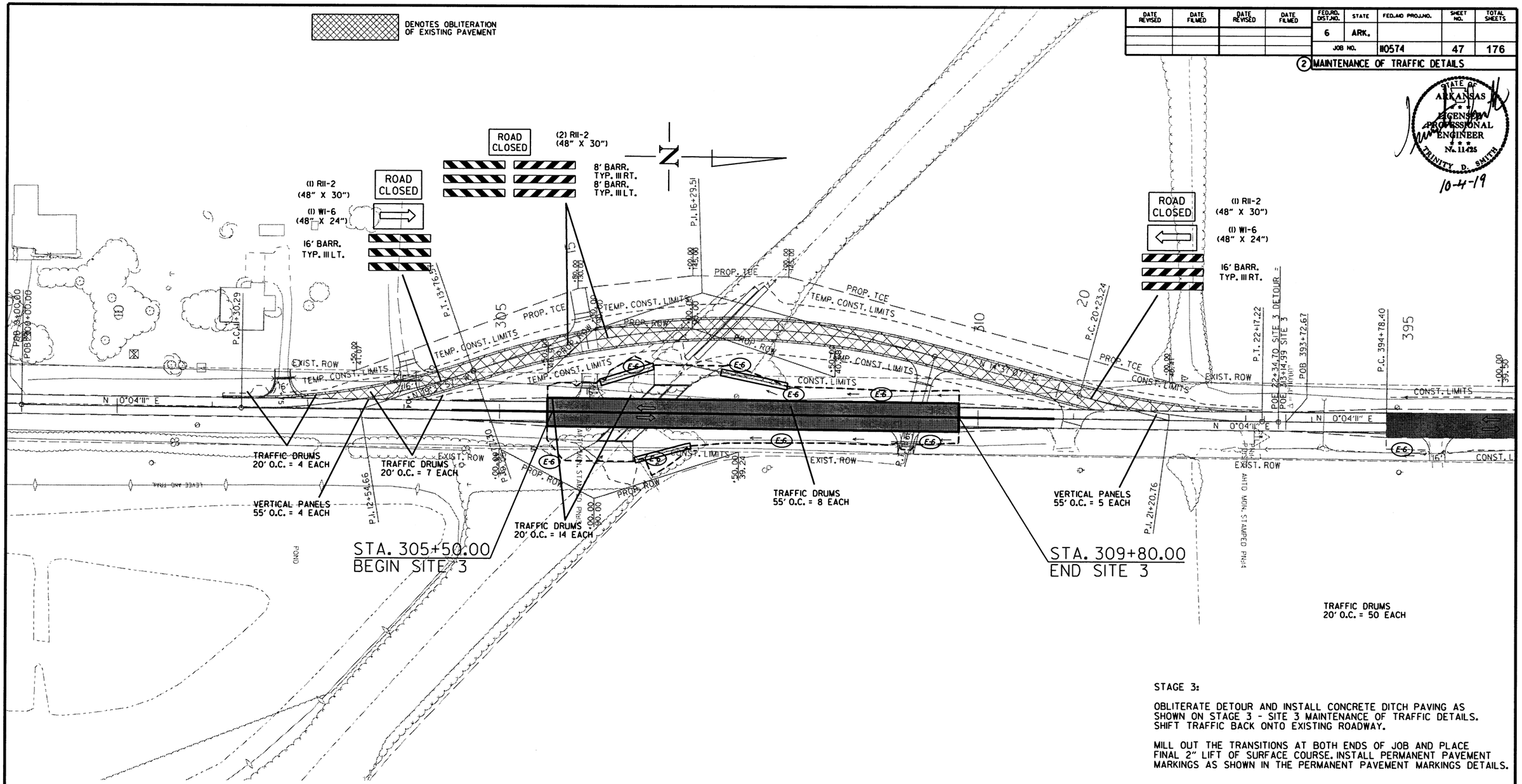
10/3/2019

R110574.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.	R110574		47	176

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-4-19



STAGE 3:

OBLITERATE DETOUR AND INSTALL CONCRETE DITCH PAVING AS SHOWN ON STAGE 3 - SITE 3 MAINTENANCE OF TRAFFIC DETAILS. SHIFT TRAFFIC BACK ONTO EXISTING ROADWAY.

MILL OUT THE TRANSITIONS AT BOTH ENDS OF JOB AND PLACE FINAL 2" LIFT OF SURFACE COURSE. INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

STAGE 3 - SITE 3
MAINTENANCE OF TRAFFIC DETAILS

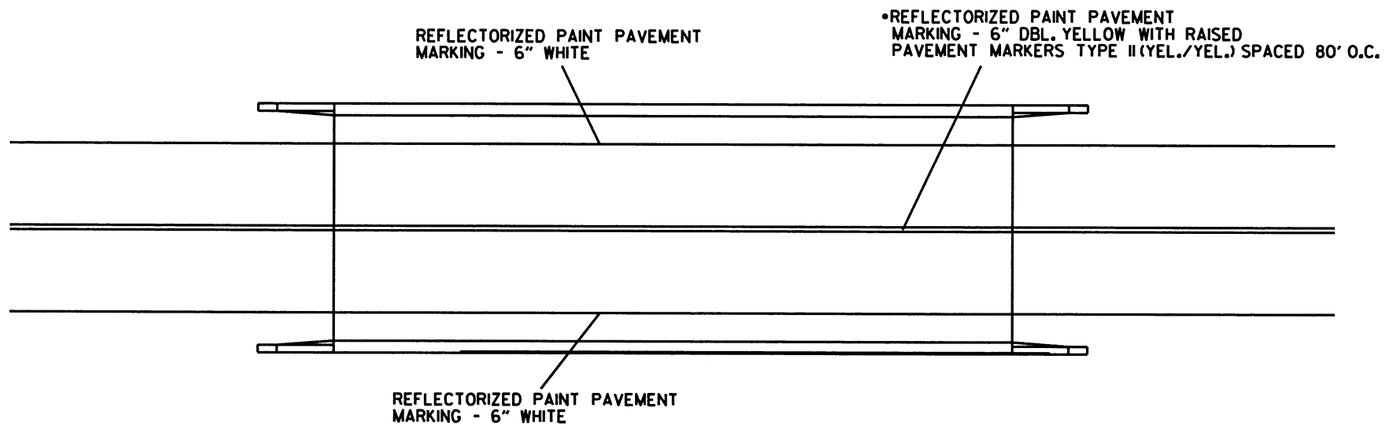
R110574.DGN 10/4/2019

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	48	176

(2) PERMANENT PAVEMENT MARKING DETAILS

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

10-3-19



SITE 1

REFLECTORIZED PAINT PAVEMENT MARKING
DBL. YELLOW = 4310 LIN. FT.
WHITE = 4310 LIN. FT.

RAISED PAVEMENT MARKERS TYPE II
(YEL/YEL) (80' O.C.) = 27 EACH

SITE 2

REFLECTORIZED PAINT PAVEMENT MARKING
DBL. YELLOW = 4478 LIN. FT.
WHITE = 4379 LIN. FT.

RAISED PAVEMENT MARKERS TYPE II
(YEL/YEL) (80' O.C.) = 28 EACH

SITE 3

REFLECTORIZED PAINT PAVEMENT MARKING
DBL. YELLOW = 1260 LIN. FT.
WHITE = 1260 LIN. FT.

RAISED PAVEMENT MARKERS TYPE II
(YEL/YEL) (80 O.C.) = 8 EACH

SITE 4

REFLECTORIZED PAINT PAVEMENT MARKING
DBL. YELLOW = 6256 LIN. FT.
WHITE = 6256 LIN. FT.

RAISED PAVEMENT MARKERS TYPE II
(YEL/YEL) (80 O.C.) = 39 EACH

SITE 5

REFLECTORIZED PAINT PAVEMENT MARKING
DBL. YELLOW = 3600 LIN. FT.
WHITE = 3600 LIN. FT.

RAISED PAVEMENT MARKERS TYPE II
(YEL/YEL) (80 O.C.) = 23 EACH

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

PERMANENT PAVEMENT MARKING DETAILS

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

10-3-19

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 2	STAGE 3	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKING TYPE II (YEL/YEL)	REFLECTORIZED PAINT PAVEMENT MARKING 6" WHITE	REFLECTORIZED PAINT PAVEMENT MARKING 6" YELLOW
	LIN. FT.					LIN. FT.	EACH	LIN. FT.	
SITE 1									
REMOVAL OF PERMANENT PAVEMENT MARKINGS	2204			2204					
CONSTRUCTION PAVEMENT MARKINGS	7816	8620			16436				
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			27				27		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")			4310					4310	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")			4310						4310
SITE 2									
REMOVAL OF PERMANENT PAVEMENT MARKINGS	2491			2491					
CONSTRUCTION PAVEMENT MARKINGS	8404	8857			17261				
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			26				26		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")			4379					4379	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")			4478						4478
SITE 3									
REMOVAL OF PERMANENT PAVEMENT MARKINGS	922			922					
CONSTRUCTION PAVEMENT MARKINGS	3724	2520			6244				
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	1226					1226			
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			8				8		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")			1260					1260	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")			1260						1260
SITE 4									
REMOVAL OF PERMANENT PAVEMENT MARKINGS	3160			3160					
CONSTRUCTION PAVEMENT MARKINGS	11760	12512			24272				
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			39				39		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")			6256					6256	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")			6256						6256
SITE 5									
REMOVAL OF PERMANENT PAVEMENT MARKINGS	2018			2018					
CONSTRUCTION PAVEMENT MARKINGS	6400	7200			13600				
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			23				23		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")			3600					3600	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")			3600						3600
TOTALS:				**10795**	**77813**	**1226**	**123**	**19805**	**19904**

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

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	R10574		50	176

(2) QUANTITES

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

10-3-19

ADVANCE WARNING SIGNS AND DEVICES (BOX 1 OF 3)

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)	
											RIGHT	LEFT
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.	
SITE 1												
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK AHEAD	48"x48"	1	1	1	1	1	16.0				
G20-2	END ROAD WORK	48"x24"	2	2	2	2	2	16.0				
R11-2	ROAD CLOSED	48"x30"	4	5		5	5	50.0				
W1-6	LARGE ARROW	48"x24"	2	2		2	2	16.0				
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0				
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2	2	2	2	18.0				
W8-1	BUMP	30"x30"	2	2	2	2	2	12.5				
	VERTICAL PANELS		30	17		30			30			
	TRAFFIC DRUMS		10	71		71				71		
	TYPE III BARRICADE-RT. (8')		2	3		3					24	
	TYPE III BARRICADE-LT. (8')		2	3		3						24
	TYPE III BARRICADE-RT. (16')		1	1		1					16	
	TYPE III BARRICADE-LT. (16')		1	1		1						16
SITE 2												
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK AHEAD	48"x48"	1	1	1	1	1	16.0				
G20-2	END ROAD WORK	48"x24"	1	1	1	1	1	8.0				
R11-2	ROAD CLOSED	48"x30"	10	6		10	10	100.0				
W1-6	LARGE ARROW	48"x24"	2	2		2	2	16.0				
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0				
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2	2	2	2	18.0				
W8-1	BUMP	30"x30"	2	2	2	2	2	12.5				
W8-9	LOW SHOULDER	36"X36"										
W24-1R	DOUBLE REVERSE CURVE RT.	48"x48"										
W24-1L	DOUBLE REVERSE CURVE LT.	48"x48"										
	VERTICAL PANELS		18	25		25			25			
	TRAFFIC DRUMS		58	11		58				58		
	TYPE III BARRICADE-RT. (8')		8	4		8					64	
	TYPE III BARRICADE-LT. (8')		8	4		8						64
	TYPE III BARRICADE-RT. (16')		1	1		1					16	
	TYPE III BARRICADE-LT. (16')		1	1		1						16
SUBTOTALS (BOX 1 OF 3):								511.0	55	129	120	120

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

2/28/2019

R110574.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.		R10574	51	176

(2) QUANTITIES

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

10-3-19

ADVANCE WARNING SIGNS AND DEVICES (BOX 2 OF 3)

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)	
											RIGHT	LEFT
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.	
SITE 3												
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK AHEAD	48"x48"	1	1	1	1	1	16.0				
G20-2	END ROAD WORK	48"x24"	1	1	1	1	1	8.0				
W13-1	SPEED LIMIT (ADVISORY)	24"x24"		2		2	2	8.0				
R11-2	ROAD CLOSED	48"x30"	4	4		4	4	40.0				
W1-6	LARGE ARROW	48"x24"	2	2		2	2	16.0				
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0				
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2	2	2	2	18.0				
W8-1	BUMP	30"x30"	2	2	2	2	2	12.5				
W24-1R	DOUBLE REVERSE CURVE RT.	48"x48"		1		1	1	16.0				
W24-1L	DOUBLE REVERSE CURVE LT.	48"x48"		1		1	1	16.0				
	VERTICAL PANELS		9		9	9			9			
	TRAFFIC DRUMS		26	36	33	36				36		
	TYPE III BARRICADE-RT. (8')		2	2		2					16	
	TYPE III BARRICADE-LT. (8')		2	2		2						16
	TYPE III BARRICADE-RT. (16')		1	1		1					16	
	TYPE III BARRICADE-LT. (16')		1	1		1						16
SITE 4												
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK AHEAD	48"x48"	1	1	1	1	1	16.0				
G20-2	END ROAD WORK	48"x24"	1	1	1	1	1	8.0				
R11-2	ROAD CLOSED	48"x30"	12	6		12	12	120.0				
W1-6	LARGE ARROW	48"x24"	2	2		2	2	16.0				
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0				
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2	2	2	2	18.0				
W8-1	BUMP	30"x30"										
	VERTICAL PANELS		36	28		36			36			
	TRAFFIC DRUMS		48	26		48				48		
	TYPE III BARRICADE-RT. (8')		10	4		10					80	
	TYPE III BARRICADE-LT. (8')		10	4		10						80
	TYPE III BARRICADE-RT. (16')		1	1		1					16	
	TYPE III BARRICADE-LT. (16')		1	1		1						16
SUBTOTALS (BOX 2 OF 3):								540.5	45	84	128	128

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		R10574	52	176

(2) QUANTITIES

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

10-3-19

ADVANCE WARNING SIGNS AND DEVICES (BOX 3 OF 3)

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)	
											RIGHT	LEFT
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.	
SITE 5												
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0				
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0				
G20-2	END ROAD WORK	48"x24"	1	1	1	1	1	8.0				
R11-2	ROAD CLOSED	48"x30"	6	6		6	6	60.0				
W1-6	LARGE ARROW	48"x24"	2	2		2	2	16.0				
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0				
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2	2	2	2	18.0				
W8-1	BUMP	30"x30"	2	2	2	2	2	12.5				
	VERTICAL PANELS		22	19		22			22			
	TRAFFIC DRUMS		8	44		44				44		
	TYPE III BARRICADE-RT. (8')		4	4		4					32	
	TYPE III BARRICADE-LT. (8')		4	4		4						32
	TYPE III BARRICADE-RT. (16')		1	1		1					16	
	TYPE III BARRICADE-LT. (16')		1	1		1						16
SUBTOTALS (BOX 3 OF 3):								220.5	22	44	48	48
SUBTOTALS (BOX 1 OF 3):								511.0	55	129	120	120
SUBTOTALS (BOX 2 OF 3):								540.5	45	84	128	128
TOTALS:								**1272.0**	**122**	**257**	**296**	**296**

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

R110574.DGN 2/28/2019

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		M0574	53	176

(2) QUANTITIES

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-31-19

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	50
DIRECTED BY THE ENGINEER	
TOTAL:	50

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
SITE 2				
204+00	207+00	HWY. 350 - SITE 2	3	3
SITE 3				
306+00	308+00	HWY. 350 - SITE 3	2	2
SITE 4				
407+00	411+00	HWY. 350 - SITE 4	4	4
417+00	418+00	HWY. 350 - SITE 4	1	1
SITE 5				
510+00	512+00	HWY. 350 - SITE 5	2	2
TOTALS:			12	12

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
SITE 1		
101+03	24" x 24' SIDE DRAIN	1
102+54	24" x 26' SIDE DRAIN	1
104+57	36" x 50' PIPE CULVERT	1
111+32	18" x 22' SIDE DRAIN	1
114+16	18" x 24' SIDE DRAIN	1
118+66	24" x 26' SIDE DRAIN	1
SITE 2		
204+59	18" x 24' SIDE DRAIN	1
205+37	18" x 24' SIDE DRAIN	1
206+28	18" x 24' SIDE DRAIN	1
208+55	24" x 24' SIDE DRIAN	1
213+68	24" x 24' SIDE DRIAN	1
219+37	24" x 24' SIDE DRIAN	1
221+15	24" x 24' SIDE DRIAN	1
20+69	24" x 50' PIPE CULVERT	1
SITE 3		
302+82	18" x 24' SIDE DRAIN	1
304+04	18" x 24' SIDE DRAIN	1
304+94	18" x 24' SIDE DRAIN	1
309+25	18" x 24' SIDE DRAIN	1
SITE 4		
410+01	24" x 30' SIDE DRAIN	1
418+50	14" x 28' SIDE DRAIN	1
419+14	18" x 32' SIDE DRAIN	1
419+47	18" x 30' SIDE DRAIN	1
419+94	18" x 24' SIDE DRAIN	1
SITE 5		
510+48	18" x 57' SIDE DRAIN	1
515+03	18" x 30 SIDE DRAIN	1
516+77	12" x 22' SIDE DRAIN	1
TOTAL:		26

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
SITE 1					
100+75.63	120+30.97	STAGE 1-MAIN LANES	936	6104	
100+75.63	120+30.97	STAGE 2-MAIN LANES	2549	249	
100+75.63	120+30.97	APPROACHES		165	
109+50.00	111+25.00	BRIDGE EXCAVATION	1120		
SITE 2					
202+51.81	221+14.80	STAGE 1-MAIN LANES	1598	10988	
202+51.81	221+14.80	STAGE 2-MAIN LANES	698	510	
20+11.00	21+65.64	STAGE 2-CO. RD. 652	74	470	
202+51.81	221+14.80	APPROACHES		1155	
SITE 3					
11+10.67	22+17.23	STAGE 1-MAIN LANES -DETOUR	61	2838	
305+50.00	309+80.00	STAGE 2-MAIN LANES	402	1228	
11+10.67	22+17.23	STAGE 3-MAIN LANES - DETOUR OBLITERATION	2401	61	
305+50.00	309+80.00	APPROACHES		70	
11+10.67	22+17.23	TEMPORARY APPROACHES		195	
SITE 4					
394+78.40	424+06.10	STAGE 1-MAIN LANES	555	11808	
394+78.40	424+06.10	STAGE 2-MAIN LANES	1172	368	
394+78.40	424+06.10	APPROACHES		330	
210+14.00	211+19.00	BRIDGE EXCAVATION	30		
SITE 5					
500+98.84	517+00.00	STAGE 1-MAIN LANES	1818	5046	
500+98.84	517+00.00	STAGE 2-MAIN LANES	395	884	
500+98.84	517+00.00	APPROACHES		245	
510+43.00	511+48.00	BRIDGE EXCAVATION	290		
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			250
		DIRECTED BY THE ENGINEER			
TOTALS:			14099	42714	250

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

NOTE: EARTHWORK QUANTITIES SHOWN ABOVE SHALL BE PAID AS PLAN QUANTITY.

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE SPECIAL)	APPROACH SLABS (TYPE E)	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE COURSE (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
SITE 1						
109+20.75	109+39.00	LT. HWY. 350	8.52		903	
109+20.75	109+61.00	RT. OF HWY. 350	8.52		903	
108+97.00	109+39.00	HWY 350		17.20	1325	17
111+14.00	111+56.00	HWY 350		17.20	1325	17
111+14.00	111+54.25	LT. HWY. 350	8.52		903	
111+36.00	111+54.25	RT. OF HWY. 350	8.52		903	
SITE 2						
209+90.62	210+08.87	LT. HWY. 350	8.52		903	
209+90.62	210+19.13	RT. OF HWY. 350	8.52		903	
209+88.87	210+14.00	HWY 350		17.20	1325	17
211+14.00	211+39.13	HWY 350		17.20	1325	17
211+08.87	211+37.38	LT. HWY. 350	8.52		903	
211+19.13	211+37.38	RT. OF HWY. 350	8.52		903	
SITE 4						
408+39.75	408+58.00	LT. HWY. 350	8.52		903	
408+39.75	408+58.00	RT. OF HWY. 350	8.52		903	
408+38.00	408+58.00	HWY 350		17.20	1325	17
409+63.00	409+83.00	HWY. 350		17.20	1325	17
409+63.00	409+81.25	LT. HWY. 350	8.52		903	
409+63.00	409+81.25	RT. OF HWY. 350	8.52		903	
SITE 5						
510+24.75	510+50.00	LT. OF HWY. 350	8.52		903	
510+24.75	510+50.00	RT. OF HWY. 350	8.52		903	
510+23.00	510+50.00	HWY. 350		17.20	1325	17
511+48.00	511+68.00	HWY. 350		17.20	1325	17
511+48.00	511+66.25	LT. OF HWY. 350	8.52		903	
511+48.00	511+66.25	RT. OF HWY. 350	8.52		903	
TOTALS:			136.32	137.60	25048	136

NOTE: USE T =13" FOR 4' SHOULDER.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	100
ENGINEER	
TOTAL:	100

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	42	84
DIRECTED BY THE ENGINEER		
TOTALS:	42	84

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

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE D)	* 16'-0" GATES
			LIN. FT.	EACH
210+70	214+00	LT. OF HWY. 350 SITE 2	450	
213+50	214+00	LT. OF HWY. 350 SITE 2		3
TOTALS:			450	3

* DENOTES ALTERNATE BID ITEM.

2/28/2019

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QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		R10574	54	176

(2) QUANTITIES

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-3-19

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
SITE 1					
107+11.80	109+54.95	HWY. 350 ON RT.	150	1	1
107+56.79	109+24.94	HWY. 350 ON LT.	75	1	1
111+49.90	113+18.05	HWY. 350 ON RT.	75	1	1
111+19.99	113+63.14	HWY. 350 ON LT.	150	1	1
SITE 2					
207+67.84	210+10.99	HWY. 350 ON RT.	150	1	1
208+65.10	209+97.01	HWY. 350 ON LT.	75	1	1
211+30.99	212+99.14	HWY. 350 ON RT.	75	1	1
211+17.01	212+50.16	HWY. 350 ON LT.	75	1	1
SITE 4					
406+04.85	408+48.00	HWY. 350 ON RT.	150	1	1
406+79.85	408+48.00	HWY. 350 ON LT.	75	1	1
409+73.00	411+41.15	HWY. 350 ON RT.	75	1	1
409+73.00	412+16.15	HWY. 350 ON LT.	150	1	1
SITE 5					
507+46.86	510+40.00	HWY. 350 ON RT.	100	1	1
508+71.85	510+40.00	HWY. 350 ON LT.	75	1	1
511+57.40	513+25.55	HWY. 350 ON RT.	75	1	1
511+57.40	514+00.55	HWY. 350 ON LT.	150	1	1
TOTALS:			1675	16	16

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
SITE 1				
99+75.63	100+70.00	HWY. 350	20.00	209.71
100+72.99	100+75.63	HWY. 350	20.00	5.87
120+30.97	121+30.97	HWY. 350	20.00	222.22
SITE 2				
201+51.81	202+51.81	HWY. 350	20.00	222.22
221+14.80	222+14.80	HWY. 350	20.00	222.22
21+65.64	22+65.64	CO. RD. 652	20.00	222.22
SITE 3				
304+50.00	305+50.00	HWY. 350	20.00	222.22
309+80.00	310+80.00	HWY. 350	20.00	222.22
SITE 4				
393+78.40	394+78.40	HWY. 350	20.00	222.22
424+06.10	425+06.10	HWY. 350	20.00	222.22
SITE 5				
499+98.84	500+98.84	HWY. 350	20.00	222.22
517+00.00	518+00.00	HWY. 350	20.00	222.22
TOTAL:				2437.78

NOTE: AVERAGE MILLING DEPTH 1".

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.
306+41.31	307+00.49	RT. HWY. 350 - SITE 3	59.52	5.96	39.42	26.45	0.33
306+03.77	306+60.87	LT. HWY. 350 - SITE 3	58.11	7.00	45.20	25.83	0.33
307+30.31	308+00.41	LT. HWY. 350 - SITE 3	70.60	7.00	54.91	31.38	0.40
TOTALS:					139.53	83.66	1.06

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

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	FENCE	GATES	CATTLE GUARD	GUARDRAIL
			LIN. FT.	EACH	EACH	LIN. FT.
109+52	110+41	RT. OF HWY. 350 SITE 1				89
109+52	110+40	LT. OF HWY. 350 SITE 1				88
210+70	214+00	LT. OF HWY. 350 SITE 2	450			
213+50	214+00	LT. OF HWY. 350 SITE 2		3		
213+50	241+00	LT. OF HWY. 350 SITE 2			1	
210+79	211+30	RT. OF HWY. 350 SITE 2				51
210+62	211+13	LT. OF HWY. 350 SITE 2				51
306+29	306+86	RT. OF HWY. 350 SITE 3				57
306+39	306+96	LT. OF HWY. 350 SITE 3				57
408+69	409+61	RT. OF HWY. 350 SITE 4				92
408+69	409+61	LT. OF HWY. 350 SITE 4				92
510+66	511+42	RT. OF HWY. 350 SITE 5				76
510+66	511+42	LT. OF HWY. 350 SITE 5				76
TOTALS:			450	3	1	729

STRUCTURES

STATION	DESCRIPTION	PIPE CULVERT ALTERNATES ALT. 1 (CLASS III) 24"	ALT. 1 (CLASS III) 36"	ALT. 2, 3, 4, 5, AND 6 24"	ALT. 2, 3, 4, 5, AND 6 36"	FLARED END SECTION ALTERNATES FOR PIPE CULVERT ALTERNATES 24"	36"	TEMPORARY CULVERTS 18"	72"	22" X 14"	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		LIN. FT.									LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL.	
SITE 1																			
104+57	36" x 56' PIPE CULVERT		56		60		2												FES-1, FES-2, PCC-1, PCM-1, PCP-1, PCP-2
SITE 2																			
207+75	24" x 102' PIPE CULVERT	102		106		2													FES-1, FES-2, PCC-1, PCM-1, PCP-1, PCP-2
SITE 3																			
11+75	22" X 14" X 28' TEMP. PIPE CULVERT - DETOUR									28									PCC-1, PCM-1, PCP-1, PCP-2
13+12	22" X 14" X 28' TEMP. PIPE CULVERT - DETOUR									28									
15+00	18" X 32' TEMP. PIPE CULVERT - DETOUR							32											
16+40	DBL. 72" x 104' TEMP. PIPE CULVERT - DETOUR								208										PCC-1, PCM-1
18+63	18" X 34' TEMP. PIPE CULVERT - DETOUR							34											PCC-1, PCM-1, PCP-1, PCP-2
SUBTOTALS:		102	56	106	60	2	2	66	208	56									
STRUCTURES OVER 20' - 0" SPAN																			
SITE 3																			
306+51	DBL. 12' x 7' x 83' R.C. BOX CULVERT ON A 45° LT. FWD. SKEW										24	7	83	225.19	38365	1913	38	0.48	PBC-1, RCB-1, RCB-2, SPECIAL DETAILS
SUBTOTALS:														225.19	38365	1913	38	0.48	
TOTALS:		102	56	106	60	2	2	66	208	56				225.19	38365	1913	38	0.48	

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.

2/28/2019

R110574.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		H0574	55	176

(2) QUANTITIES

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-31-19

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL											
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	WATTLE (20") DITCH CHECKS (E-1)	18 " FILTER SOCK E-3	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	TRIANGULAR SILT DIKE	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	LIN. FT.	LIN. FT.	BAG	CU.YD.	LIN. FT.	LIN. FT.	CU. YD.	CU. YD.	CU. YD.
HWY. 350 - SITE 1																			
100+76	120+31	CLEARING AND GRUBBING / STAGE 1						8.06	8.06	164.4				27		960			39
100+76	120+31	STAGE 2						0.46	0.46	9.4				39					13
100+76	120+31	STAGE 3	5.64	11.28	5.64	575.3	5.64							39					13
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.41	2.82	1.41	143.8	1.41	2.13	2.13	43.5	81	400	198	27	400	240	200	200	36
HWY. 350 - SITE 2																			
202+52	221+15	CLEARING AND GRUBBING / STAGE 1						6.82	6.82	139.1				87		2536			123
202+52	221+15	STAGE 2						0.49	0.49	10.0				36					12
202+52	221+15	STAGE 3	2.26	4.52	2.26	230.5	2.26							36					12
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.57	1.13	0.57	58.1	0.57	1.83	1.83	37.3	117	400	286	39	400	634	200	200	62
HWY. 350 - SITE 3																			
305+50	309+80	CLEARING AND GRUBBING / STAGE 1 - DETOUR						2.46	2.46	50.2				12		1531			61
305+50	309+80	STAGE 2						0.43	0.43	8.8				24					8
305+50	309+80	STAGE 3 - DETOUR OBLITERATION	0.53	1.06	0.53	54.1	0.53							27					9
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.13	0.27	0.13	13.3	0.13	0.72	0.72	14.7	47	400	116	16	400	383	200	200	30
HWY. 350 - SITE 4																			
394+78	424+06	CLEARING AND GRUBBING / STAGE 1						9.06	9.06	184.8				33		2030			86
394+78	424+06	STAGE 2						0.50	0.50	10.2				33					11
394+78	424+06	STAGE 3	1.59	3.18	1.59	162.2	1.59							30					10
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.40	0.80	0.40	40.8	0.40	2.39	2.39	48.8	72	400	176	24	400	508	200	200	43
HWY. 350 - SITE 5																			
500+99	517+00	CLEARING AND GRUBBING / STAGE 1						5.96	5.96	121.6				21		897			40
500+99	517+00	STAGE 2						0.37	0.37	7.5				15		491			23
500+99	517+00	STAGE 3	1.90	3.80	1.90	193.8	1.90							15		491			23
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.48	0.95	0.48	49.0	0.48	1.58	1.58	32.2	36	400	88	12	400	470	200	200	29
TOTALS:			**14.91**	**29.81**	**14.91**	**1520.9**	**14.91**	**43.26**	**43.26**	**882.5**	**353**	**2000**	**864**	**592**	**2000**	**11171**	**1000**	**1000**	**683**

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

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

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

2/28/2019

RI10574.DGN

QUANTITIES

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

10-3-19

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
100+75.63	101+00.00	RT. HWY. 350. - SITE 1	24.37	21.66
114+55.00	120+30.97	RT. HWY. 350. - SITE 1	575.97	511.97
100+75.63	104+00.00	LT. HWY. 350. - SITE 1	324.37	288.33
111+32.00	115+00.00	LT. HWY. 350. - SITE 1	368.00	327.11
118+67.00	120+30.97	LT. HWY. 350. - SITE 1	163.97	145.75
205+37.00	206+00.00	RT. HWY. 350. - SITE 2	63.00	56.00
217+00.00	221+14.00	RT. HWY. 350. - SITE 2	414.00	368.00
202+51.81	206+00.00	LT. HWY. 350. - SITE 2	348.19	309.50
207+00.00	208+00.00	LT. HWY. 350. - SITE 2	100.00	88.89
208+52.70	210+24.00	LT. HWY. 350. - SITE 2	171.30	152.27
211+00.00	221+14.80	LT. HWY. 350. - SITE 2	1014.80	902.04
302+82.00	304+94.00	RT. HWY. 350. - SITE 3	212.00	188.44
308+00.00	309+25.30	LT. HWY. 350. - SITE 3	125.30	111.38
400+00.00	401+00.00	RT. HWY. 350. - SITE 4	100.00	88.89
419+42.00	424+06.10	RT. HWY. 350. - SITE 4	464.10	412.53
397+00.00	403+00.00	LT. HWY. 350. - SITE 4	600.00	533.33
409+51.00	410+00.00	LT. HWY. 350. - SITE 4	49.00	43.56
419+42.00	424+06.10	LT. HWY. 350. - SITE 4	464.10	412.53
503+00.00	510+50.00	RT. HWY. 350. - SITE 5	750.00	666.67
511+40.00	517+00.00	RT. HWY. 350. - SITE 5	560.00	497.78
515+00.00	517+00.00	LT. HWY. 350. - SITE 5	200.00	177.78
TOTAL:				6304.41

NOTE: AVERAGE WIDTH = 8'-0"

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
106+00	35	9	46.60	90	48	46.50	06 LT	0-5	ND	NP	A-4(0)	BR/GR
106+00	35	9	46.50	90	48	46.50	18 LT	0-5	ND	NP	A-4(0)	BR/GR
106+10	35	9	46.60	90	48	46.70	18 LT	0-5	ND	NP	A-4(0)	BROWN
113+00	35	9	46.60	90	48	55.00	06 LT	0-5	27	7	A-4(4)	BROWN
113+00	35	9	46.70	90	48	55.00	18 LT	0-5	ND	NP	A-4(0)	BROWN
204+00	35	10	37.50	90	50	49.50	06 RT	0-5	38	20	A-6(17)	BROWN
204+00	35	10	37.50	90	50	49.40	19 RT	0-5	33	12	A-6(12)	BROWN
211+00	35	10	44.20	90	50	48.70	06 LT	0-5	36	17	A-6(10)	BROWN
211+00	35	10	44.20	90	50	48.70	18 LT	0-5	32	13	A-6(9)	BROWN
211+10	35	10	44.20	90	50	48.70	18 LT	0-5	37	17	A-6(13)	BROWN
304+00	35	11	1.30	90	50	47.50	06 RT	0-5	33	16	A-6(12)	BROWN
304+00	35	11	1.30	90	50	47.30	18 RT	0-5	36	18	A-6(15)	BROWN
311+00	35	11	8.20	90	50	47.50	06 LT	0-5	35	18	A-6(10)	BROWN
311+00	35	11	8.20	90	50	47.50	18 LT	0-5	36	17	A-6(14)	BROWN
311+10	35	11	8.20	90	50	47.60	18 LT	0-5	34	14	A-6(10)	BROWN
404+00	35	11	23.00	90	50	47.00	06 RT	0-5	37	20	A-6(17)	BROWN
404+00	35	11	23.00	90	50	47.00	18 RT	0-5	33	16	A-6(11)	BROWN
411+00	35	11	29.90	90	50	47.10	06 LT	0-5	29	10	A-4(6)	BROWN
411+00	35	11	29.90	90	50	47.20	18 LT	0-5	36	17	A-6(11)	BROWN
411+10	35	11	29.90	90	50	47.20	18 LT	0-5	ND	NP	A-4(0)	BROWN
505+00	35	12	17.60	90	50	13.90	06 RT	0-5	ND	NP	A-4(0)	BROWN
505+00	35	12	17.60	90	50	13.80	18 RT	0-5	29	8	A-4(8)	BROWN
512+00	35	12	24.50	90	50	13.50	06 LT	0-5	34	16	A-6(15)	BROWN
512+00	35	12	24.50	90	50	13.50	18 LT	0-5	37	17	A-6(17)	BROWN
512+10	35	11	38.90	90	50	38.00	18 LT	0-5	37	17	A-6(15)	BROWN

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.

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
	EACH	
HWY. 350 - SITE 1	3	3
HWY. 350 - SITE 2	4	4
HWY. 350 - SITE 3	1	1
TOTALS:	8	8

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
SITE 1		
109+50	HWY. 350 ON LT.	1
SITE 2		
210+70	HWY. 350 ON LT.	1
SITE 3		
306+50	HWY. 350 ON LT.	1
SITE 4		
408+61	HWY. 350 ON LT.	1
SITE 5		
510+50	HWY. 350 ON LT.	1
TOTAL:		5

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.
		FEET		
104+57	36" x 50' R.C. PIPE CULVERT	22.00	9.67	5.9
TOTAL:				5.9

AVG. DEPTH = 9"

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			2500	20
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			2500	20

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		H0574	57	176

(2) QUANTITIES

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

10-4-19

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS LIN.FT.
SITE 1			
99+73	100+73	LT. HWY. 350 - SITE 1	100
101+39	102+14	LT. HWY. 350 - SITE 1	75
102+80	110+99	LT. HWY. 350 - SITE 1	819
111+65	114+22	LT. HWY. 350 - SITE 1	257
114+88	118+34	LT. HWY. 350 - SITE 1	346
119+00	121+31	LT. HWY. 350 - SITE 1	231
99+73	121+31	RT. HWY. 350 - SITE 1	2158
SITE 2			
201+52	204+26	LT. HWY. 350 - SITE 2	274
204+92	205+04	LT. HWY. 350 - SITE 2	12
205+70	206+01	LT. HWY. 350 - SITE 2	31
206+67	207+79	LT. HWY. 350 - SITE 2	112
208+88	213+03	LT. HWY. 350 - SITE 2	415
214+33	219+04	LT. HWY. 350 - SITE 2	471
219+70	220+82	LT. HWY. 350 - SITE 2	112
221+48	222+08	LT. HWY. 350 - SITE 2	60
201+52	213+49	RT. HWY. 350 - SITE 2	1197
214+51	222+08	RT. HWY. 350 - SITE 2	757
SITE 3			
302+11	302+40	LT. HWY. 350 - SITE 3	29
303+06	303+71	LT. HWY. 350 - SITE 3	65
304+37	315+00	LT. HWY. 350 - SITE 3	1063
302+11	308+92	RT. HWY. 350 - SITE 3	681
309+58	315+00	RT. HWY. 350 - SITE 3	542
SITE 4			
395+50	405+79	LT. HWY. 350 - SITE 4	1029
406+45	412+67	LT. HWY. 350 - SITE 4	622
413+33	418+17	LT. HWY. 350 - SITE 4	484
418+83	419+07	LT. HWY. 350 - SITE 4	24
419+75	425+00	LT. HWY. 350 - SITE 4	525
395+50	404+97	RT. HWY. 350 - SITE 4	947
405+63	419+14	RT. HWY. 350 - SITE 4	1351
420+27	425+00	RT. HWY. 350 - SITE 4	473
SITE5			
500+00	507+67	LT. HWY. 350 - SITE 5	767
508+33	514+70	LT. HWY. 350 - SITE 5	637
515+36	516+44	LT. HWY. 350 - SITE 5	108
517+10	517+44	LT. HWY. 350 - SITE 5	34
500+00	507+28	RT. HWY. 350 - SITE 5	728
507+94	517+44	RT. HWY. 350 - SITE 5	950
TOTAL:			**18486**

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

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH FEET	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22) SQ. YD.	TON	AGGREGATE BASE COURSE (CLASS 7) TON	SIDE DRAINS 18" LIN. FT.	24"	22"X14"	STANDARD DRAWINGS
SITE 1										
101+06	LT.	HWY. 350 - SITE 1	16	44.77	4.92	27.47			28	PCC-1, PCM-1, PCP-1, PCP-2
102+47	LT	HWY. 350 - SITE 1	16	44.77	4.92	29.85			28	PCC-1, PCM-1, PCP-1, PCP-2
111+32	LT	HWY. 350 - SITE 1	16	44.77	4.92	32.19	28			PCC-1, PCM-1, PCP-1, PCP-2
114+00	LT	HWY. 350 - SITE 1	16	44.77	4.92	70.48	28			PCC-1, PCM-1, PCP-1, PCP-2
114+53	LT	HWY. 350 - SITE 1	16	192.96	21.23	78.79	30			PCC-1, PCM-1, PCP-1, PCP-2
118+67	LT	HWY. 350 - SITE 1	16	44.77	4.92	29.01			28	PCC-1, PCM-1, PCP-1, PCP-2
120+91	LT	HWY. 350 - SITE 1	16	44.77	4.92	18.28			28	PCC-1, PCM-1, PCP-1, PCP-2
SITE 2										
204+59	LT	HWY. 350 - SITE 2	16	44.77	4.92	33.50	28			PCC-1, PCM-1, PCP-1, PCP-2
205+37	RT	HWY. 350 - SITE 2	16	44.77	4.92	46.75	28			PCC-1, PCM-1, PCP-1, PCP-2
206+34	LT	HWY. 350 - SITE 2	16	44.77	4.92	73.77	44			PCC-1, PCM-1, PCP-1, PCP-2
208+12	LT	HWY. 350 - SITE 2	16	44.77	4.92	78.03		60		PCC-1, PCM-1, PCP-1, PCP-2
213+40	LT	HWY. 350 - SITE 2	16	44.77	4.92	344.58		56		PCC-1, PCM-1, PCP-1, PCP-2
213+97	RT	CO. RD. 652	22				50			PCC-1, PCM-1, PCP-1, PCP-2
219+37	LT	HWY. 350 - SITE 2	16	44.77	4.92	28.46	30			PCC-1, PCM-1, PCP-1, PCP-2
221+15	LT	HWY. 350 - SITE 2	16	44.77	4.92	26.54	28			PCC-1, PCM-1, PCP-1, PCP-2
221+75	RT	HWY. 350 - SITE 2	16	44.77	4.92	18.28	24			PCC-1, PCM-1, PCP-1, PCP-2
222+09	RT	HWY. 350 - SITE 2	16	44.77	4.92	18.28	22			PCC-1, PCM-1, PCP-1, PCP-2
SITE 3										
302+73	LT	HWY. 350 - SITE 3	16	44.77	4.92	28.10	28			PCC-1, PCM-1, PCP-1, PCP-2
304+04	LT	HWY. 350 - SITE 3	16	44.77	4.92	28.11	28			PCC-1, PCM-1, PCP-1, PCP-2
305+93	LT	HWY. 350 - SITE 3	16	44.77	4.92	27.50			28	PCC-1, PCM-1, PCP-1, PCP-2
309+25	RT	HWY. 350 - SITE 3	16	44.77	4.92	26.09			28	PCC-1, PCM-1, PCP-1, PCP-2
11+75	LT	HWY. 350 - SITE 3 DETOUR	16	44.77	4.92	27.86				
13+12	LT	HWY. 350 - SITE 3 DETOUR	16	44.77	4.92	26.44				
15+00	LT	HWY. 350 - SITE 3 DETOUR	16	44.77	4.92	42.84				
18+63	RT	HWY. 350 - SITE 3 DETOUR	16	44.77	4.92	43.11				
22+23	RT	HWY. 350 - SITE 3 DETOUR	16	44.77	4.92	23.38				
SITE 4										
395+30	RT	HWY. 350 - SITE 4	16	44.77	4.92	26.81		34		PCC-1, PCM-1, PCP-1, PCP-2
405+30	RT	HWY. 350 - SITE 4	24	61.59	6.77	237.85	36			PCC-1, PCM-1, PCP-1, PCP-2
406+12	LT	HWY. 350 - SITE 4	16	44.77	4.92	53.09	36			PCC-1, PCM-1, PCP-1, PCP-2
413+00	LT	HWY. 350 - SITE 4	16	44.77	4.92	49.98		34		PCC-1, PCM-1, PCP-1, PCP-2
418+50	LT	HWY. 350 - SITE 4	16	44.77	4.92	30.97	28			PCC-1, PCM-1, PCP-1, PCP-2
419+42	LT	HWY. 350 - SITE 4	20	52.67	5.79	39.61	32			PCC-1, PCM-1, PCP-1, PCP-2
419+47	RT	HWY. 350 - SITE 4	16	44.77	4.92	35.70	30			PCC-1, PCM-1, PCP-1, PCP-2
419+94	RT	HWY. 350 - SITE 4	16	44.77	4.92	33.99	30			PCC-1, PCM-1, PCP-1, PCP-2
SITE 5										
507+61	LT	HWY. 350 - SITE 5	16	44.77	4.92	59.99	40			PCC-1, PCM-1, PCP-1, PCP-2
508+00	LT	HWY. 350 - SITE 5	16	47.54	5.23	306.88	32			PCC-1, PCM-1, PCP-1, PCP-2
515+03	LT	HWY. 350 - SITE 5	16	44.77	4.92	33.34	30			PCC-1, PCM-1, PCP-1, PCP-2
516+77	LT	HWY. 350 - SITE 5	16	44.77	4.92	27.20	30			PCC-1, PCM-1, PCP-1, PCP-2
* ENTIRE PROJECT TEMPORARY DRIVES						330.00				
TOTALS:				**1832.17**	**201.38**	**2493.10**	**720**	**184**	**168**	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	R110574		58	176

(2) QUANTITIES

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-3-19

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	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	TOTAL PG 64-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES - SITE 1																						
99+75.63	100+75.63	TRANSITION	100.00			VAR.	281.15	0.17	47.80									VAR.	281.15	220.00	30.93	30.93
100+75.63	102+00.00	NOTCH & WIDEN	124.37	VAR.	102.56	VAR.	276.38	0.05	13.82	VAR.	65.50	330.00	10.81	VAR.	70.61	220.00	7.77	VAR.	215.71	220.00	23.73	31.50
102+00.00	105+92.00	NOTCH & WIDEN RT	392.00	VAR.	281.40	VAR.	855.87	0.05	42.79	VAR.	430.33	330.00	71.00	VAR.	425.55	220.00	46.81	VAR.	172.04	220.00	18.92	65.73
105+92.00	108+97.00	FULL DEPTH	305.00	178.00	542.90	44.71	1515.17	0.05	75.76	22.46	761.14	330.00	125.59	22.25	754.03	220.00	82.94	26.00	881.11	220.00	96.92	179.86
111+56.00	115+50.00	FULL DEPTH	394.00	178.00	701.32	44.71	1957.30	0.05	97.87	22.46	983.25	330.00	162.24	22.25	974.06	220.00	107.15	26.00	1138.22	220.00	125.20	232.35
115+50.00	120+31.07	NOTCH & WIDEN RT	481.07	VAR.	349.44	VAR.	1072.25	0.05	53.61	VAR.	538.26	330.00	88.81	VAR.	533.99	220.00	58.74	VAR.	212.21	220.00	23.34	82.08
120+31.07	121+31.07	TRANSITION	100.00			VAR.	277.94	0.17	47.25									VAR.	277.94	220.00	30.57	30.57
ADDITIONAL FOR LEVELING - SITE 1																						
100+75.63	105+92.00	LEVELING	516.37			VAR.	917.99	0.17	156.06					VAR.	917.99	VAR.	52.13					52.13
115+50.00	121+31.07	LEVELING	581.07			VAR.	1089.18	0.17	185.16					VAR.	1089.18	VAR.	42.26					42.26
ADDITIONAL FOR SUPERELEVATION - SITE 1																						
100+75.63	102+98.19	SUPERELEVATION TRANSITION	222.56	18.00	40.06																	
102+98.19	105+20.74	SUPERELEVATION TRANSITION	222.55	18.00	40.06																	
105+20.75	108+20.75	SUPERELEVATION TRANSITION	300.00	17.75	53.25																	
108+20.75	112+64.19	MAXIMUM SUPERELEVATION	443.44	35.50	157.42																	
112+64.19	115+64.29	SUPERELEVATION TRANSITION	300.10	17.75	53.27																	
115+64.29	117+97.68	SUPERELEVATION TRANSITION	233.39	18.00	42.01																	
117+97.68	120+30.97	SUPERELEVATION TRANSITION	233.29	18.00	41.99																	
MAIN LANES - SITE 2																						
201+51.81	202+51.81	TRANSITION	100.00			VAR.	279.95	0.17	47.59									VAR.	279.95	220.00	30.79	30.79
202+51.81	203+85.00	NOTCH & WIDEN	133.19	VAR.	108.54	VAR.	116.02	0.05	5.80	VAR.	60.74	330.00	10.02	VAR.	55.35	220.00	6.09	VAR.	204.22	220.00	22.46	28.55
203+85.00	205+28.00	NOTCH & WIDEN LT	143.00	VAR.	117.02	VAR.	396.11	0.05	19.81	VAR.	198.99	330.00	32.83	VAR.	197.18	220.00	21.69	VAR.	67.37	220.00	7.41	29.10
205+28.00	209+88.87	FULL DEPTH	460.87	178.00	820.35	44.71	2289.50	0.05	114.48	22.46	1150.13	330.00	189.77	22.25	1139.37	220.00	125.33	26.00	1331.40	220.00	146.45	271.78
211+39.13	215+05.00	FULL DEPTH	365.87	178.00	651.25	44.71	1817.56	0.05	90.88	22.46	913.05	330.00	150.65	22.25	904.51	220.00	99.50	26.00	1056.96	220.00	116.27	215.77
215+05.00	217+30.00	NOTCH AND WIDEN LT	225.00	VAR.	175.13	VAR.	569.00	0.05	28.45	VAR.	285.83	330.00	47.16	VAR.	283.25	220.00	31.16	VAR.	103.00	220.00	11.33	42.49
217+30.00	221+14.80	NOTCH & WIDEN	384.80	VAR.	308.39	VAR.	287.32	0.05	14.37	VAR.	138.96	330.00	22.93	VAR.	148.36	220.00	16.32	VAR.	456.20	220.00	50.18	66.50
221+14.80	222+14.80	TRANSITION	100.00			VAR.	282.65	0.17	48.05									VAR.	282.65	220.00	31.09	31.09
ADDITIONAL FOR LEVELING - SITE 2																						
202+51.81	205+28.00	LEVELING	276.19			15.21	466.76	0.17	79.35					15.21	466.76	VAR.	86.33					86.33
215+05.00	222+08.00	LEVELING	703.00			18.20	1421.62	0.17	241.68					18.20	1421.62	VAR.	270.19					270.19
ADDITIONAL FOR SUPERELEVATION - SITE 2																						
202+51.81	203+81.35	SUPERELEVATION TRANSITION	129.54	18.50	23.96																	
203+81.35	205+10.89	SUPERELEVATION TRANSITION	129.54	18.50	23.96																	
205+10.89	207+56.37	SUPERELEVATION TRANSITION	245.48	20.00	49.10																	
207+56.37	210+01.86	SUPERELEVATION TRANSITION	245.49	20.00	49.10																	
211+01.42	213+03.29	SUPERELEVATION TRANSITION	201.87	19.50	39.36																	
213+03.29	215+05.16	SUPERELEVATION TRANSITION	201.87	19.50	39.36																	
215+05.16	218+05.16	SUPERELEVATION TRANSITION	300.00	21.00	63.00																	
218+05.16	218+14.80	MAXIMUM SUPERELEVATION	9.64	42.25	4.07																	
218+14.80	221+14.80	SUPERELEVATION TRANSITION	300.00	21.00	63.00																	
MAIN LANES - SITE 3																						
304+50.00	305+50.00	TRANSITION	100.00			VAR.	281.31	0.17	47.82									VAR.	281.31	220.00	30.94	30.94
305+50.00	309+80.00	NOTCH & WIDEN	430.00	VAR.	395.58	13.14	627.80	0.05	31.39	6.40	305.67	330.00	50.44	6.74	321.96	220.00	35.42	12.06	576.24	220.00	63.39	98.81
309+80.00	310+80.00	TRANSITION	100.00			VAR.	280.34	0.17	47.66									VAR.	280.34	220.00	30.84	30.84
DETOUR - SITE 3																						
11+10.67	13+00.00	TRANSITION	189.33	VAR.	87.01	VAR.	268.01	0.05	13.40	VAR.	118.86	330.00	19.61	VAR.	149.15	220.00	16.41					16.41
13+00.00	20+45.00	FULL DEPTH	745.00	142.25	1059.76	44.29	3666.23	0.05	183.31	20.29	1679.56	330.00	277.13	24.00	1986.67	220.00	218.53					218.53
20+45.00	22+17.22	TRANSITION	172.22	VAR.	88.94	VAR.	301.98	0.05	15.10	VAR.	133.38	330.00	22.01	VAR.	168.59	220.00	18.54					18.54
ADDITIONAL FOR LEVELING - SITE 3																						
305+50.00	309+80.00		430.00			18.87	901.57	0.17	153.27					18.87	901.57	VAR.	103.65					103.65
ADDITIONAL FOR SUPERELEVATION - SITE 3 DETOUR																						
13+76.89	16+21.96	SUPERELEVATION TRANSITION	245.07	12.25	30.02																	
16+21.96	18+76.03	SUPERELEVATION TRANSITION	254.07	12.25	31.12																	
MAIN LANES - SITE 4																						
393+78.40	394+78.40	TRANSITION	100.00			VAR.	281.36	0.17	47.83									VAR.	281.36	220.00	30.95	30.95
394+78.40	397+76.00	NOTCH & WIDEN	297.60	VAR.	238.83	VAR.	230.81	0.05	11.54	VAR.	110.77	330.00	18.28	VAR.	119.70	220.00	13.17	VAR.	374.31	220.00	41.17	54.34
397+76.00	402+00.00	NOTCH & WIDEN LT	424.00	VAR.	327.71	VAR.	1059.53	0.05	52.98	VAR.	532.36	330.00	87.84	VAR.	527.17	220.00	57.99	VAR.	193.63	220.00	21.30	79.29
402+00.00	408+38.00	FULL DEPTH	638.00	178.00	1135.64	44.71	3169.44	0.05	158.47	22.46	1592.16	330.00	262.71	22.25	1577.28	220.00	173.50	26.00	1843.11	220.00	202.74	376.24
409+83.00	417+11.00	FULL DEPTH	728.00	178.00	1295.84	44.71	3616.54	0.05	180.83	22.46	1816.76	330.00	299.77	22.25	1799.78	220.00	197.98	26.00	2103.11	220.00	231.34	429.32
417+11.00	422+70.00	NOTCH & WIDEN LT	559.00	VAR.	404.67	VAR.	1240.36	0.05	62.02	VAR.	623.60	330.00	102.89	VAR.	616.76	220.00	67.84	VAR.	246.58	220.00	27.12	94.96
422+70.00	424+06.04	NOTCH & WIDEN	136.04	VAR.	108.11	VAR.	103.39	0.05	5.17	VAR.	48.97	330.00	8.08	VAR.	54.42	220.00	5.99	VAR.	205.27	220.00	22.58	28.57
424+06.04	425+06.04	TRANSITION	100.00			VAR.	339.03	0.17	57.64									VAR.	339.03	220.00	37.29	37.29
ADDITIONAL FOR LEVELING - SITE 4																						
393+78.00	402+10.00	LEVELING	832.00			15.58	1440.28	0.17	244.85					15.58	1440.28	VAR.	95.08					95.08
412+70.00	422+70.00	LEVELING	1000.00			12.61	1401.11	0.17	238.19					12.61	1401.11	VAR.	41.58					41.58
MAIN LANES - SITE 5																						
499+99.00	500+99.00	TRANSITION	100.00			VAR.	280.42	0.17	47.67									VAR.	280.42	220.00	30.85	30.85
500+99.00	504+00.00	NOTCH & WIDEN	301.00	VAR.	248.91	VAR.	275.58	0.05	13.78	VAR.	132.99	330.00	21.94	VAR.	142.57	220.00	15.68	VAR.	398.13	220.00	43.79	59.47
504+00.00	506+85.00	NOTCH & WIDEN RT	285.00	VAR.	214.51	VAR.	679.25	0.05	33.96	VAR.	341.42	330.00	56.33	VAR.	337.97	220.00	37.18	VAR.	128.22	220.00	14.10	51.28
506+85.00	510+23.00	FULL DEPTH	338.00	178.00	601.64	44.71	1679.11	0.05	83.96	22.46	843.50	330.00	139.18	22.25	835.61	220.00	91.92	26.00	976.44	220.00	107.41	199.33
511+68.00	513+75.00	FULL DEPTH	207.00	178.00	368.46	44.71	1028.33	0.05	51.42	22.46	516.58	330.00	85.24	22.25	511.75	220.00	56.29	26.00	598.00	220.00	65.78	122.07
513+75.00	515+80.00	NOTCH & WIDEN RT	205.00	VAR.	157.60	VAR.	507.49	0.05	25.37	VAR.	254.92	330.00	42.06	VAR.	252.53	220.00	27.78	VAR.	93.27	220.00	10.26	38.04
515+80.00	517+00.00	NOTCH & WIDEN	120.00	VAR.	102.10	VAR.	130.00	0.05	6.50	VAR.	62.63	330.00	10.33	VAR.	67.37	220.00	7.41	VAR.	172.15	220.00	18.94	26.35
517+00.00	518+00.00	TRANSITION	100.00			VAR.	278.84	0.17	47.40									VAR.	278.84	220.00	30.67	30.67
ADDITIONAL FOR LEVELING - SITE 5																						
500+00.00	507+25.00	LEVELING	725.00			18.06	1454.83	0.17	247.32					18.06	1454.83	VAR.	263.36					263.36
513+32.00	517+44.00	LEVELING	412.00			14.08	644.55	0.17	109.57					14.08	644.55	VAR.	73.34					73.34
ADDITIONAL FOR SUPERELEVATION - SITE 5																						
500+98.84	503+98.84	SUPERELEVATION TRANSITION	300.00	19.50	58.50																	
503+98.84	506+01.66	SUPERELEVATION TRANSITION	202.82	19.50	39.55																	
506+01.66	509+01.66	SUPERELEVATION TRANSITION	300.00	21.75	65.25																	
509+24.96	512+60.22	MAXIMUM SUPERELEVATION	335.26	43.75	146.68																	
ADDITIONAL FOR GUARDRAIL																						
106+68.80	107+01.80	RT. OF HWY. 350 - TRANSITION / SITE 1	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
107+13.79	107+46.79	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
107+01.80	109+54.95	RT. OF HWY. 350	253.15	34.25	86.70													7.50	210.96	220.00	23.21	23.21
107+46.79	109+24.94	LT. OF HWY. 350	178.15	34.25	61.02													7.50	148.46	220.00	16.33	16.33
111+49.90	113+28.05	RT. OF HWY. 350	178.15	34.25	61.02													7.50	148.46	220.00	16.33	16.33
111+19.99	113+73.14	LT. OF HWY. 350	253.15	34.25	86.70													7.50	210.96	220.00	23.21	23.21
113+28.05	113+61.05	RT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
113+73.14	114+06.14	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
207+24.84	207+57.84	RT. OF HWY. 350 - TRANSITION / SITE 2	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
208+20.86	208+53.86	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
207+57.84	210+10.99	RT. OF HWY. 350	253.15	34.25	86.70													7.50	210.96	220.00	23.21	23.21
208+53.86	209+97.01	LT. OF HWY. 350	143.15	34.25	49.03													7.50	119.29	220.00	13.12	13.12
211+30.99	213+09.14	RT. OF HWY. 350	178.15	34.25	61.02													7.50	148.46	220.00	16.33	16.33
211+17.01	212+60.16	LT. OF HWY. 350	143.15	34.25	49.03													7.50	119.29	220.00	13.12	13.12
213+09.14	213+42.14	RT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
212+60.16	212+93.16	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
405+61.85	405+94.85	RT. OF HWY. 350 - TRANSITION / SITE 4	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
406+36.85	406+69.85	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
405+94.85	408+48.00	RT. OF HWY. 350	253.15	34.25	86.70													7.50	210.96	220.00	23.21	23.21
406+69.85	408+48.00	LT. OF HWY. 350	178.15	34.25	61.02													7.50	148.46	220.00	16.33	16.33
409+73.00	411+51.15	RT. OF HWY. 350	178.15	34.25	61.02													7.50	148.46	220.00	16.33	16.33
409+73.00	412+26.15	LT. OF HWY. 350	253.15	34.25	86.70													7.50	210.96	220.00	23.21	23.21
411+51.15	411+84.15	RT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
412+26.15	412+59.15	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
508+03.85	508+36.85	RT. OF HWY. 350 - TRANSITION / SITE 5	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
508+28.85	508+61.85	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
508+36.85	510+40.00	RT. OF HWY. 350	203.15	34.25	69.58													7.50	169.29	220.00	18.62	18.62
508+61.85	510+40.00	LT. OF HWY. 350	178.15	34.25	61.02													7.50	148.46	220.00	16.33	16.33
511+57.40	513+35.55	RT. OF HWY. 350	178.15	34.25	61.02													7.50	148.46	220.00	16.33	16.33
511+57.40	514+10.55	LT. OF HWY. 350	253.15	34.25	86.70													7.50	210.96	220.00	23.21	23.21
513+35.55	513+68.55	RT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
514+10.55	514+43.55	LT. OF HWY. 350 - TRANSITION	33.00	VAR.	6.10													4.75	17.42	220.00	1.92	1.92
TOTALS:					13360.28		42337.21		3629.00		14640.31		2415.65		24693.43		2673.05		19601.46		2156.20	4829.25

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

R110574.DGN 2/28/2019

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	59	176

(1) 07444, 07445, 07446 & 07447 - QUANTITIES - 60714

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 110574

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE / ITEM NO.	205	801	SS & 802	SP, SS, & 802	803	SS & 804	SS & 804	SS & 805	SS & 805	SS & 805	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 (18'' DIA.)	(1) STEEL SHELL PILING (24'' DIA.)	PILE ENCASEMENT	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.	EACH	SQ. YD.	CU. YD.
07444	HIGHWAY 350 OVER LICK CREEK	BENT 1			22.32			3,548	253	335				240	135
		BENT 2			23.14			3,346	523		360	69			
		BENT 3			23.14			3,346	523		360	89			
		BENT 4			23.14			3,346	523		360	94			
		BENT 5			23.14			3,346	523		360	38			
		BENT 6		12	22.32			3,548	253	330				278	160
		175'-0" CONTINUOUS R.C. SLAB UNIT				429.60	15.7		108,282				1		
		SITE NO. 1 (EXISTING BR. NO. M3273)	1												
		TOTALS FOR BRIDGE NO. 07444		12	137.20	429.60	15.7	20,480	110,880	665	1,440	290	1	518	295
07445	HIGHWAY 350 OVER LICK CREEK	BENT 1			18.99			3,097	204	355				81	48
		BENT 2			17.51			2,523	409		355	49			
		BENT 3			17.51			2,523	409		355	64			
		BENT 4			18.99			3,097	204	265				66	41
		105'-0" CONTINUOUS R.C. SLAB UNIT				260.30	9.4		61,484				1		
		SITE NO. 2 (EXISTING BR. NO. M3274)	1												
		TOTALS FOR BRIDGE NO. 07445			73.00	260.30	9.4	11,240	62,710	620	710	113	1	147	89
07446	HIGHWAY 350 OVER DRAINAGE DITCH	BENT 1		1	16.56			2,600	217	284				72	43
		BENT 2			15.19			2,195	434		284	55			
		BENT 3			15.19			2,195	434		284	43			
		BENT 4		6	16.56			2,600	217	228				60	37
		105'-0" CONTINUOUS R.C. SLAB UNIT				259.90	9.4		61,348				1		
		SITE NO. 4 (EXISTING BR. NO. M2932)	1												
		TOTALS FOR BRIDGE NO. 07446		7	63.50	259.90	9.4	9,590	62,650	512	568	98	1	132	80
07447	HIGHWAY 350 OVER CREEK	BENT 1		8	16.56			2,600	217	224				60	35
		BENT 2			15.19			2,195	434		232	48			
		BENT 3			15.19			2,195	434		232	50			
		BENT 4			16.56			2,600	217	196				74	42
		105'-0" CONTINUOUS R.C. SLAB UNIT				259.90	9.4		61,348				1		
		SITE NO. 5 (EXISTING BR. NO. M2934)	1												
		TOTALS FOR BRIDGE NO. 07447		8	63.50	259.90	9.4	9,590	62,650	420	464	98	1	134	77
		(2) SITE NO. 3 (EXISTING BR. NO. M2931)	1												
TOTALS FOR JOB NO. 110574				27	337.20	1,209.70	43.9	50,900	298,890	2,217	3,182	599	4	931	541

(1) STEEL SHELL PILES SHALL CONFORM TO ASTM A252, Grade 3 (Fy = 45,000 psi)

(2) EXISTING BRIDGE NO. M2931 (LOG MILE 3.94) IS 23.5' WIDE (22.6' CLEAR ROADWAY) AND 57' LONG AND CONSISTS OF A CONCRETE DECK AND TIMBER SUBDECK ON TIMBER BEAMS SUPPORTED BY TIMBER PILE BENTS. THE EXISTING BRIDGE SHALL BE REMOVED IN ACCORDANCE WITH SECTION 205. ADDITIONAL DEBRIS AND EXPOSED REMNANT TIMBER PILING FROM A PREVIOUS STRUCTURE SHALL ALSO BE REMOVED. REMOVAL OF REMNANT TIMBER PILING SHALL BE TO A DEPTH OF 2' BELOW SUBGRADE OR FINAL GROUND SURFACE. THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM ''REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. _).'' ALL MATERIAL, INCLUDING ADDITIONAL DEBRIS, FROM THE EXISTING BRIDGE AND PREVIOUS STRUCTURE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

JIM POOL
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JSO DATE: 05/23/19 FILENAME: bll0574_ql.dgn
CHECKED BY: CRE DATE: 9/13/19 SCALE: No Scale
DESIGNED BY: — DATE: —

BRIDGE NOS. 07444, 07445, 07446 & 07447 DRAWING NO. 60714

PRINT DATE: 9/13/2019

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		12	STATION
201	GRUBBING		12	STATION
202	REMOVAL AND DISPOSAL OF FENCE		450	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES		3	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		26	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL		729	LIN. FT.
202	REMOVAL AND DISPOSAL OF CATTLE GUARD		1	EACH
210	UNCLASSIFIED EXCAVATION		14099	CU. YD.
210	COMPACTED EMBANKMENT		42714	CU. YD.
SP & 210	SOIL STABILIZATION		250	TON
SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)		15989	TON
SS & 401	TACK COAT		3713	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		2312	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		104	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		4764	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		267	TON
412	COLD MILLING ASPHALT PAVEMENT		2438	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		42	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		50	TON
504	APPROACH SLABS		137.60	CU. YD.
504	APPROACH GUTTERS		136.32	CU. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	18" TEMPORARY CULVERT		66	LIN. FT.
603	72" TEMPORARY CULVERT		208	LIN. FT.
603	22" X 14" TEMPORARY CULVERT		56	LIN. FT.
SS & 604	SIGNS		1272	SQ. FT.
SS & 604	BARRICADES		592	LIN. FT.
SS & 604	TRAFFIC DRUMS		257	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		77813	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		1226	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		10795	LIN. FT.
SS & 604	VERTICAL PANELS		122	EACH
SS & 605	CONCRETE DITCH PAVING (TYPE B)		140	SQ. YD.
* 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	102	LIN. FT.
* 606	24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	106	LIN. FT.
* 606	24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	106	LIN. FT.
* 606	24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 4)	106	LIN. FT.
* SP & 606	24" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 5)	106	LIN. FT.
* SP & 606	24" PVC PIPE	(ALTERNATE NO. 6)	106	LIN. FT.
* 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	56	LIN. FT.
* 606	36" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	(ALTERNATE NO. 2)	60	LIN. FT.
* 606	36" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	(ALTERNATE NO. 3)	60	LIN. FT.
* 606	36" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (14 GAUGE)	(ALTERNATE NO. 4)	60	LIN. FT.
* SP & 606	36" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 5)	60	LIN. FT.
* SP & 606	36" PVC PIPE	(ALTERNATE NO. 6)	60	LIN. FT.
SP, SS, & 606	18" SIDE DRAIN		720	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN		184	LIN. FT.
SS & 606	22" X 14" SIDE DRAIN		168	LIN. FT.
* 606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	2	EACH
* 606	24" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	2	EACH
* 606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	2	EACH
* 606	36" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	2	EACH
606	SELECTED PIPE BEDDING		100	CU. YD.
SS & 611	4" PIPE UNDERDRAINS		2500	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS		20	EACH
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		5.9	CU. YD.
SS & 617	GUARDRAIL (TYPE A)		1675	LIN. FT.
SS & 617	GUARDRAIL TERMINAL (TYPE 2)		16	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL		16	EACH
619	WIRE FENCE (TYPE D)		450	LIN. FT.
* 619	16' STEEL GATES	(ALTERNATE NO. 1)	3	EACH
* 619	16' ALUMINUM GATES	(ALTERNATE NO. 2)	3	EACH
620	LIME		30	TON
620	SEEDING		14.91	ACRE
SS & 620	MULCH COVER		58.17	ACRE
620	WATER		2404.9	M. GAL.
621	TEMPORARY SEEDING		43.26	ACRE
621	SILT FENCE		11171	LIN. FT.
621	SAND BAG DITCH CHECKS		864	BAG
621	SEDIMENT BASIN		1000	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		1000	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		683	CU. YD.
621	ROCK DITCH CHECKS		592	CU. YD.
SS & 621	FILTER SOCK (18")		2000	LIN. FT.
621	WATTLE (20")		353	LIN. FT.
621	TRIANGULAR SILT DIKE		2000	LIN. FT.
623	SECOND SEEDING APPLICATION		14.91	ACRE
624	SOLID SODDING		122	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)		6304	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
637	MAILBOXES		8	EACH
637	MAILBOX SUPPORTS (SINGLE)		8	EACH
642	RUMBLE STRIPS IN ASPHALT SHOULDERS		18486	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")		19805	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")		19904	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		123	EACH
SS &804	REINFORCING STEEL-ROADWAY (GRADE 60)		25048	POUND
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 4)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 5)		1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		27	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		1913	CU. YD.
SS & 802	CLASS S CONCRETE-ROADWAY		225.19	CU. YD.
SS & 802	CLASS S CONCRETE-BRIDGE		337.20	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE		1209.70	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		43.9	GAL.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		38365	POUND
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)		50900	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)		298890	POUND
SS & 805	STEEL SHELL PILING (18" DIAMETER)		2217	LIN. FT.
SS & 805	STEEL SHELL PILING (24" DIAMETER)		3182	LIN. FT.
SS & 805	PILE ENCASEMENT		599	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)		4	EACH
816	FILTER BLANKET		931	SQ. YD.
816	DUMPED RIPRAP		541	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
10/31/2019	REVISED GENERAL NOTES, REVISED GENERAL NOTES FOR REMOVAL AND SALVAGE OF EXISTING SITE 1 BRIDGE STRUCTURE, REVISED "COORDINATION OF WORK" SPECIAL PROVISION, REVISED "STORM WATER POLLUTION PREVENTION PLAN" SPECIAL PROVISION, REVISED "FLEXIBLE BEGINNING OF WORK" SPECIAL PROVISION, ADDED "REMOVING AND STOCKPILING EXISTING AGGREGATE BASE COURSE (CLASS 7)" SPECIAL PROVISION, ADDED "SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS" SPECIAL PROVISION, REMOVED "PERCENT WITHIN LIMITS / PAVEMENT SMOOTHNESS (IRI)" SPECIAL PROVISION, REVISED COMPACTED EMBANKMENT QUANTITY, ADDED QUANTITIES FOR SEDIMENT BASIN AND OBLITERATION OF SEDIMENT BASIN.	3, 53, 55, 60, 80, 106-112

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11435 TIMOTHY D. SMITH 10-31-19

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED	FEDERAL DISTRICT NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.	RI0574	60	176

2 SUMMARY OF QUANTITIES AND REVISIONS

SUMMARY OF QUANTITIES AND 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.		110574	61	176

(2) SURVEY CONTROL DETAILS

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

10-3-19

SURVEY CONTROL COORDINATES

Project Name: s110574
Date: 6/8/2017
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	304130.4137	1670316.0886	250.70	CTL	STD AHTD MON. STAMPED PN: 1
2	304126.9113	1669784.3077	249.59	CTL	STD AHTD MON. STAMPED PN: 2
3	304135.0186	1669211.5744	249.35	CTL	STD AHTD MON. STAMPED PN: 3
4	304136.4511	1668422.5675	246.63	CTL	STD AHTD MON. STAMPED PN: 4
5	304164.7886	1667802.9575	245.17	CTL	STD AHTD MON. STAMPED PN: 5
6	304145.7357	1666774.7998	247.57	CTL	STD AHTD MON. STAMPED PN: 6 JOB 110574
7	304127.7264	1665972.8572	242.47	CTL	STD AHTD MON. STAMPED PN: 7
8	308441.5711	1656975.3023	223.03	CTL	STD AHTD MON. STAMPED PN: 8
9	309442.9209	1656998.1697	226.85	CTL	STD AHTD MON. STAMPED PN: 9
10	309795.4423	1657011.4284	223.47	CTL	STD AHTD MON. STAMPED PN: 10
11	310588.5658	1657119.2097	223.72	CTL	STD AHTD MON. STAMPED PN: 11
12	311191.7423	1657117.1046	224.40	CTL	STD AHTD MON. STAMPED PN: 12
13	311851.3077	1657082.8056	221.34	CTL	STD AHTD MON. STAMPED PN: 13
14	312547.0875	1657120.5648	220.33	CTL	STD AHTD MON. STAMPED PN: 14
15	313367.3513	1657117.9336	222.12	CTL	STD AHTD MON. STAMPED PN: 15
16	314053.8496	1657121.4788	222.77	CTL	STD AHTD MON. STAMPED PN: 16
17	314713.4096	1657122.9859	222.11	CTL	STD AHTD MON. STAMPED PN: 17
18	315160.0071	1657125.4111	223.31	CTL	STD AHTD MON. STAMPED PN: 18
19	318642.6174	1659812.7502	222.23	CTL	STD AHTD MON. STAMPED PN: 19
20	319592.4350	1659828.2671	224.34	CTL	STD AHTD MON. STAMPED PN: 20
21	320100.1163	1659850.1514	227.50	CTL	STD AHTD MON. STAMPED PN: 21
22	320817.7497	1659796.8783	229.13	CTL	STD AHTD MON. STAMPED PN: 22
100	309829.5737	1671426.4251	251.26	GPS	AHTD GPS MON 190006
101	309890.9456	1669457.0826	249.01	GPS	AHTD GPS MON 190006A
102	309918.1024	1664308.8905	235.56	GPS	AHTD GPS MON 190013
103	312160.8961	1664329.3467	233.50	GPS	AHTD GPS MON 190013A
902	304243.8332	1662467.3295	236.43	TBM	15' N OF CL HWY 350
903	304381.4191	1658712.4603	225.81	TBM	16' N OF CL HWY 350
904	306373.3869	1656986.8990	224.38	TBM	16' E OF CL HWY 350
905	317845.5775	1658321.6306	224.52	TBM	18' S OF CL HWY 350
909	308102.7374	1657001.4999	223.20	TBM	RBR AL CAP
910	309472.0390	1656972.8902	228.18	TBM	CHIS SQR SW BR CORNER
911	311892.7976	1657090.7051	222.71	TBM	CHIS SQR SW BR COR
912	314072.9773	1657093.5212	224.01	TBM	CHIS SQR SW BR COR
913	315132.7909	1657130.9324	223.04	TBM	RBR AL CAP 20' W OF 350 S OF DR
914	318186.1193	1659792.2660	224.86	TBM	RBR AL CAP 914
915	319618.7306	1659793.4711	224.73	TBM	CHIS SQ SW COR
916	320844.3448	1659758.2891	229.95	TBM	RBR AL CAP 916 20 FT W OF CENTE
990	302270.6014	1668992.4546	254.29	BM	NGS BM J175 PN: 900
991	304209.9086	1669312.2892	249.09	BM	NGS BM 220 PN: 901

*Note - Rebar and Cap - Standard - 5/8' Rebar with 2' Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999418915 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME s110574gi.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 190006-190006A, 190013 - 190013A
CONVERGENCE ANGLE: 00-40-17 RIGHT AT LAT N 35-11-11 LON W090-50-47
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 350 - SITE 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	74+15.10	304114.3969	1670428.3307
8001	PC	75+13.57	304113.4416	1670329.8663
8003	PT	79+18.93	304113.0938	1669924.5127
8004	PI	92+63.57	304123.8314	1668579.9138
8005	PI	98+08.12	304124.6699	1668035.3611
8068	STA. EQ.	100+70.00	304126.0653	1667773.483
8006	PC	100+77.55	304126.0896	1667768.9213
8008	PT	105+18.83	304145.4228	1667328.1775
8009	PC	105+22.68	304145.7395	1667324.3402
8011	PT	115+63.76	304136.8954	1666284.7173
8012	PC	115+64.82	304136.7920	1666283.6806
8014	PT	120+30.54	304109.4690	1665818.8731
8015	POE	130+43.46	304091.1641	1664806.1302

HWY. 350 - SITE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8016	POB	200+00.50	308418.5082	1656962.2309
8017	PC	202+81.51	308699.4749	1656957.4401
8019	PT	204+81.19	308898.2500	1656940.1523
8020	PC	205+40.59	308956.9224	1656930.8969
8022	PT	209+72.16	309386.8535	1656928.3984
8023	PC	212+31.19	309643.1676	1656965.7833
8025	PT	213+75.38	309784.5655	1656993.7355
8026	PC	216+34.95	310036.3466	1657056.8207
8028	PT	219+85.02	310382.9007	1657099.7695
8029	POE	222+08.21	310606.0919	1657100.0156

SITE 3

POINT NO.	TYPE	STATION	NORTHING	EASTING
8030	POB	300+00.00	311249.8240	1657102.9093
8031	POE	313+14.99	312564.8124	1657104.5090

SITE 4

POINT NO.	TYPE	STATION	NORTHING	EASTING
8033	POB	393+72.67	312572.8203	1657104.5188
8034	PC	394+78.40	312678.5473	1657104.6474
8037	PT	401+71.82	313371.5685	1657084.5166
8038	PC	401+71.82	313371.5733	1657084.5164
8040	PT	408+51.30	314050.6570	1657064.3772
8041	PC	409+78.80	314178.1536	1657064.3772
8043	PT	417+03.81	314902.6769	1657087.3049
8044	PC	417+03.81	314902.6783	1657087.3050
8066	PT	424+06.10	315604.4851	1657110.2102
8067	POE	426+28.61	315826.9960	1657110.6514

HWY. 350 - SITE 5

POINT NO.	TYPE	STATION	NORTHING	EASTING
8046	POB	500+00.00	318549.3406	1659800.1136
8047	PC	503+23.84	318873.1112	1659793.3002
8049	PT	506+76.66	319225.4121	1659807.5891
8050	PC	511+73.26	319719.4262	1659858.2110
8052	PT	513+47.18	319893.0623	1659858.8121
8053	POE	517+44.46	320288.5439	1659821.0518

SITE 3 DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8030	POB	9+00.00	311249.8240	1657102.9093
8032	PC	11+30.29	311480.1210	1657103.1895
8059	PT	13+76.57	311721.6231	1657061.5558
8060	PC	13+77.30	311722.3122	1657061.3100
8062	PT	18+66.60	312203.8963	1657040.2252
8063	PC	20+23.24	312355.4634	1657079.7577
8065	PT	22+17.22	312547.3397	1657104.4878
8031	POE	22+34.70	312564.8124	1657104.5090

COUNTY RD. 652 - SITE 2

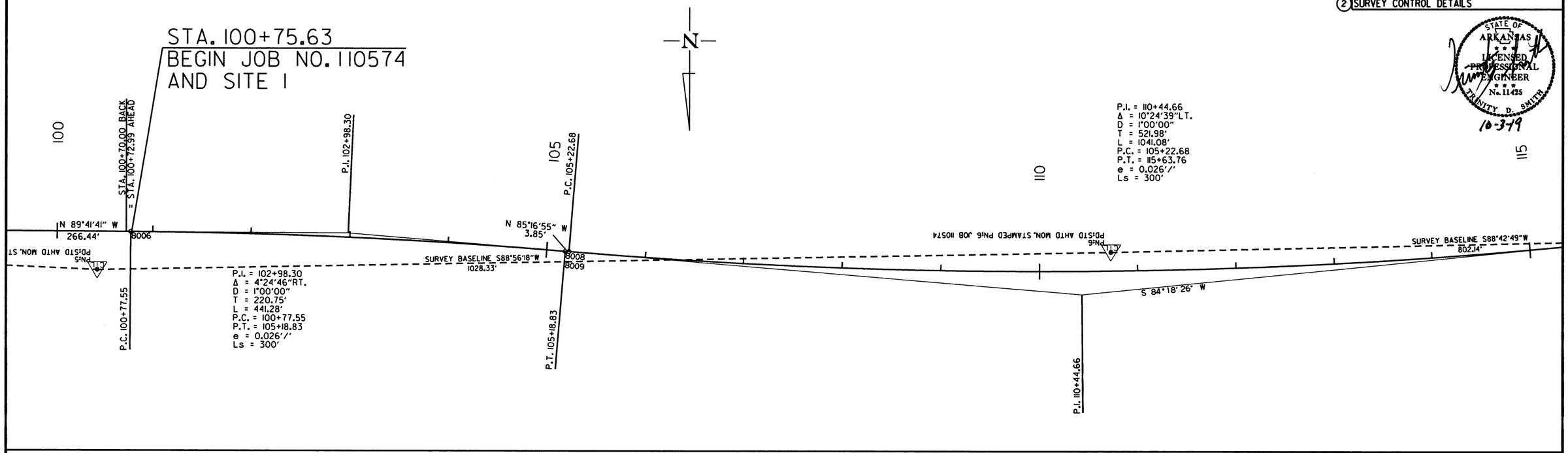
POINT NO.	TYPE	STATION	NORTHING	EASTING
8054	POB	20+00.00	309808.4468	1656999.7191
8055	PC	20+41.07	309798.4659	1657039.5540
8057	PT	21+43.53	309787.1116	1657141.0818
8058	POE	23+68.91	309792.2403	1657366.4029

R110574.DGN 2/26/2019

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	62	176

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



SURVEY CONTROL DETAILS

2/26/2019

R110574.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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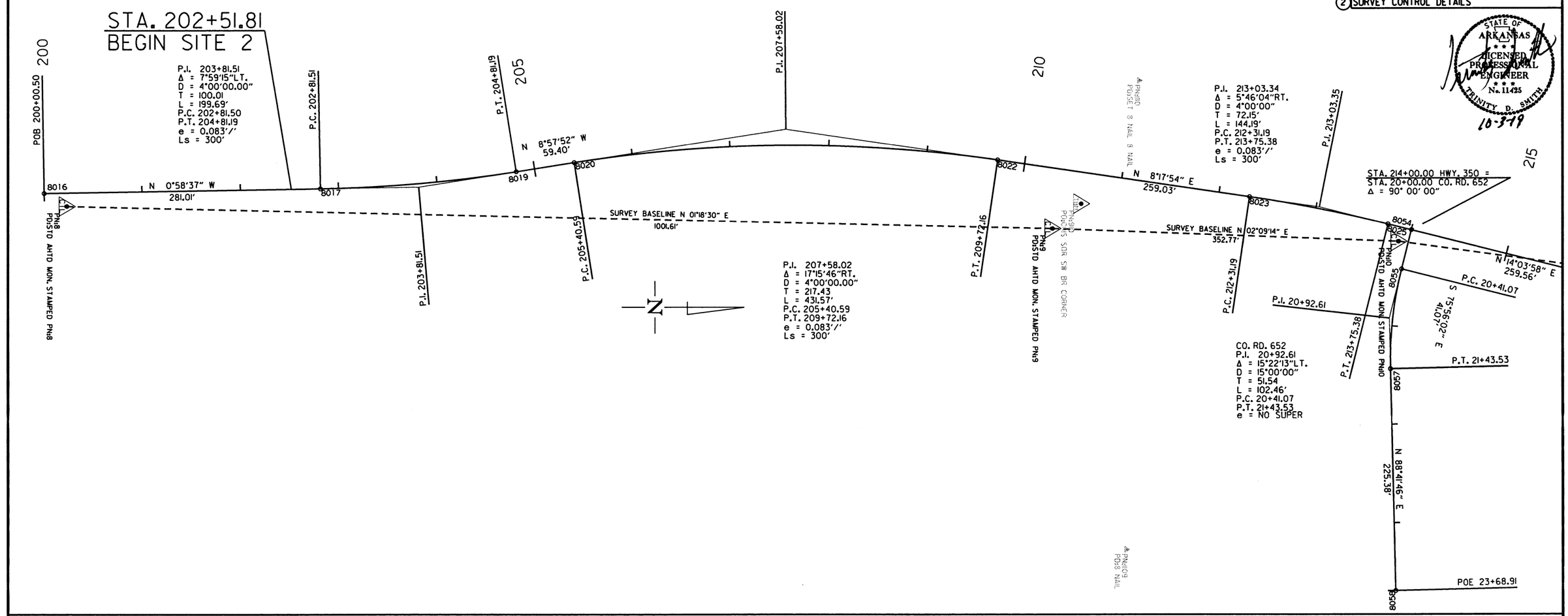
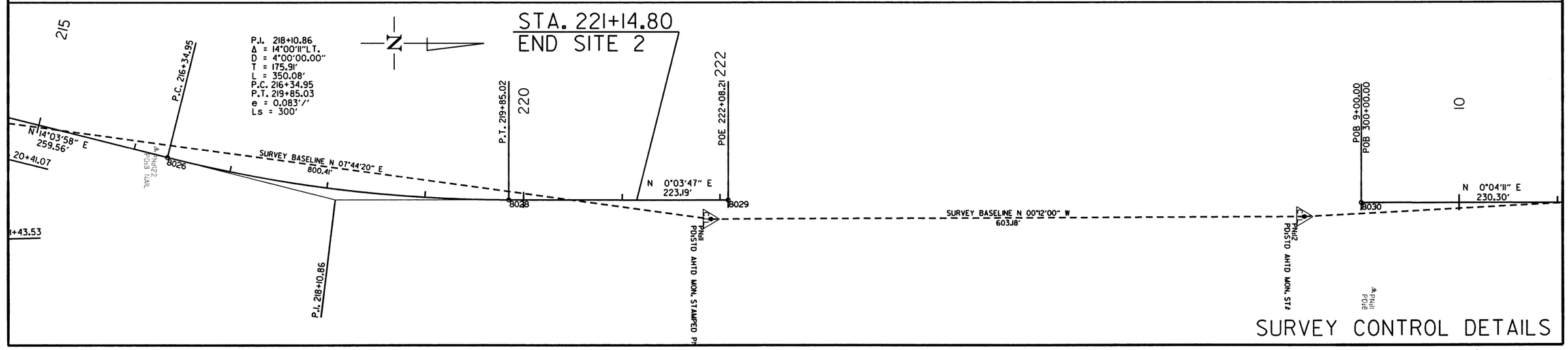
(2) SURVEY CONTROL DETAILS

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

10-3-19





SURVEY CONTROL DETAILS

2/26/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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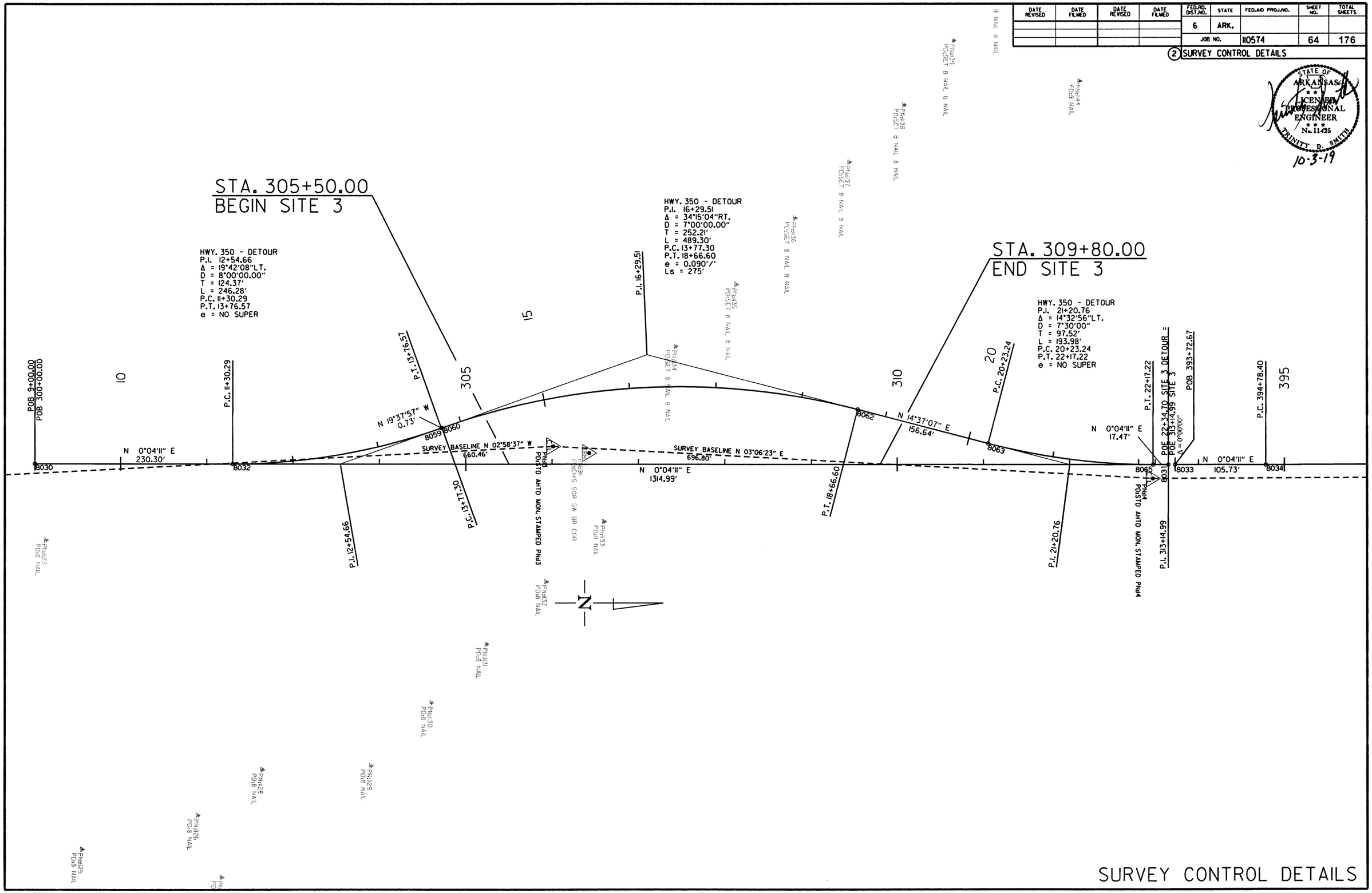
				JOB NO.		110574	64	176

2 SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



SURVEY CONTROL DETAILS

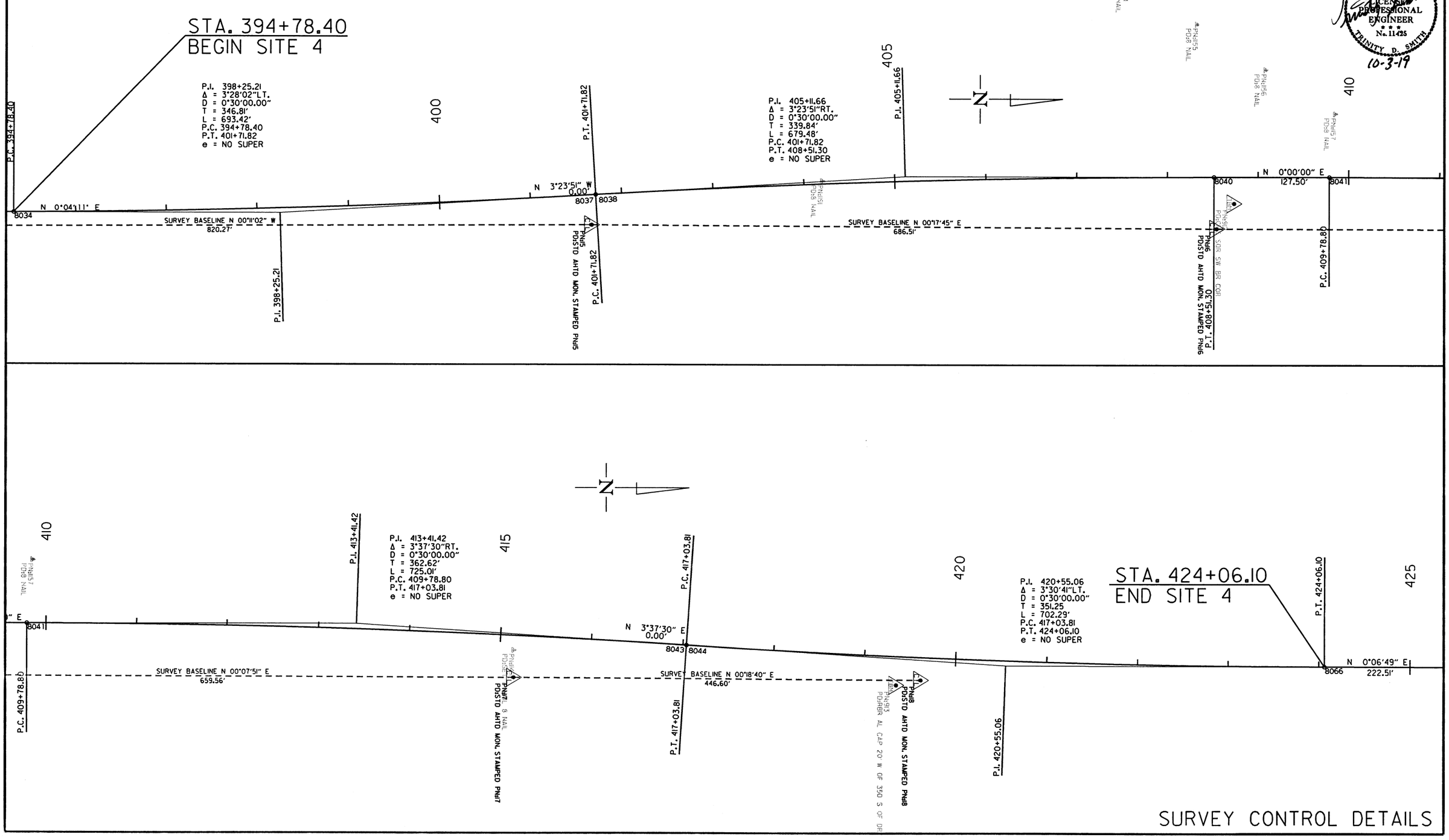
2/26/2019

R110574.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.		110574	65	176

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



SURVEY CONTROL DETAILS

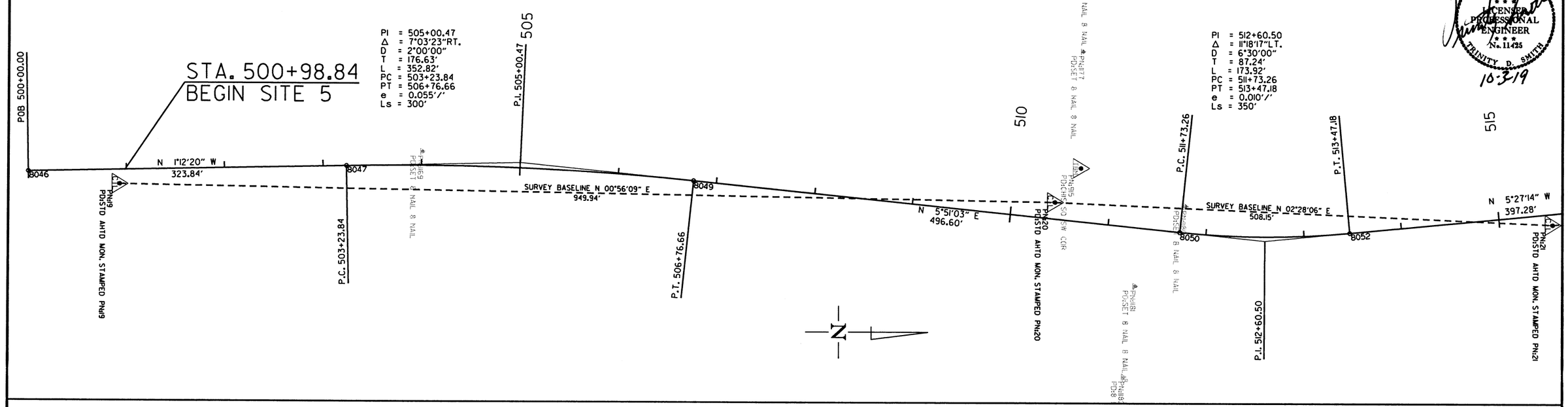
2/26/2019

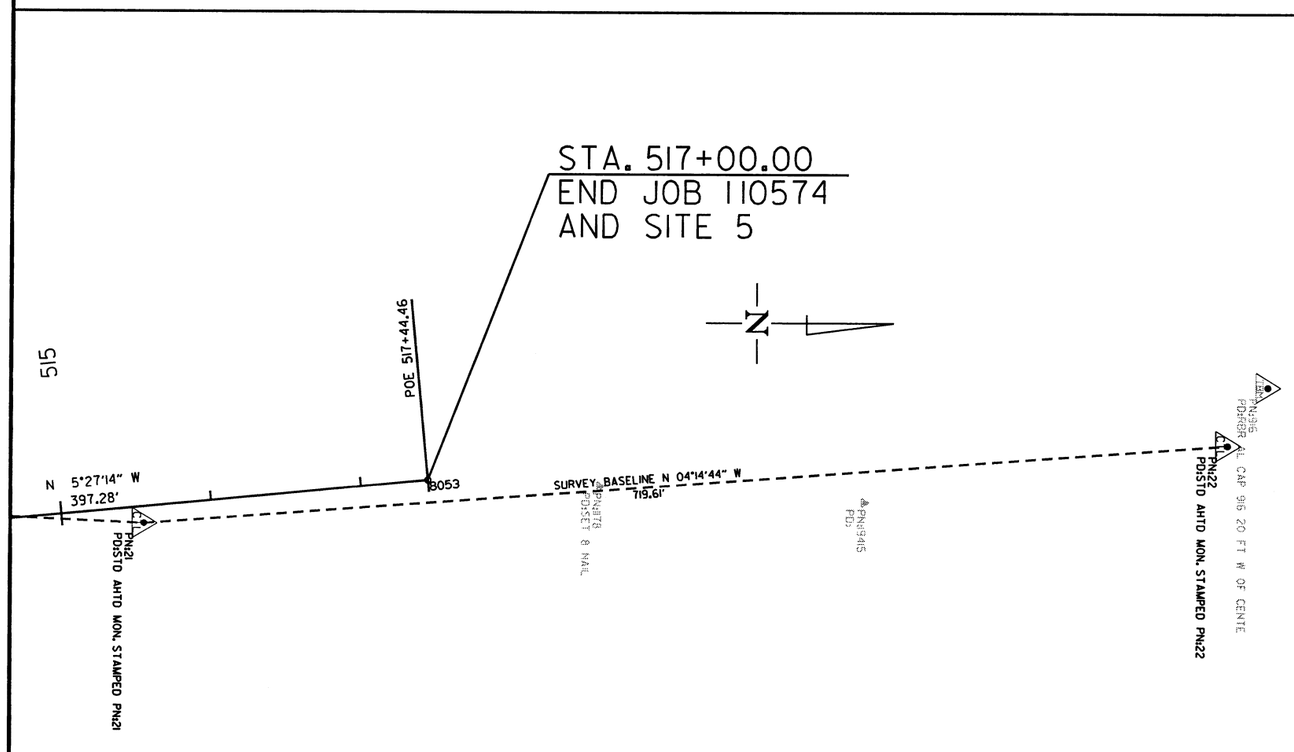
R110574.DGN

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.		110574	66	176

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-2-19





SURVEY CONTROL DETAILS

2/26/2019

R110574.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.	110574		67	176

(2) PLAN AND PROFILE SHEETS

STA. 101+06 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
29" x 18" x 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 102+54 IN PLACE
24" x 26' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL STA. 102+47
29" x 18" x 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 104+57 IN PLACE
36" X 50' R.C.
PIPE CULVERT LT./RT. SIDE DRAIN
REMOVE

STA. 104+54 CONSTRUCT
36" X 50' PIPE CULVERT
WITH FES LT. & RT.
Q25 = 12.7 CFS D.A. = 15 ACRES
R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 56 LIN. FT.

STA.	STA.	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
107+11.80	109+54.95	RT.	150 LIN. FT.	1 EA.	1 EA.
107+56.79	109+24.94	LT.	75 LIN. FT.	1 EA.	1 EA.
111+49.90	113+18.05	LT.	75 LIN. FT.	1 EA.	1 EA.
111+19.99	113+63.14	RT.	150 LIN. FT.	1 EA.	1 EA.

STA. 109+51.92 - STA. 110+40.71 IN PLACE
BR. NO. M3273
90.0' X 28.0' STEEL MULTI-BEAM
REMOVE AS EXISTING BRIDGE STR. (SITE NO. 1) = 1.00 LUMP SUM

STA. 109+50.00 BR. END
175'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
175'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35', 35', 35')
BR. NO. 07444
STA. 111+25.00

P.I. = 110+44.66
Δ = 10°24'39"LT.
D = 1°00'00"
T = 521.98'
L = 1041.08'
P.C. = 105+22.68
P.T. = 115+63.76
e = 0.026'/'
Ls = 300'

STA. 111+32 IN PLACE
18" x 22' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 114+00 INSTALL
18" x 34' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-4-19

STATION EQUATION
STA. 100+70.00 BACK = STA. 100+72.99 AHEAD

100' TRANSITION

N 89°41'41" W

P.I. 102+98.30

P.C. 100+77.55

P.T. 105+18.83

N 85°16'55" W

P.C. 105+22.68

BRIDGE END STA. 109+50.00

BRIDGE END STA. 111+25.00

P.I. 110+44.66

S 84°18'26" W

PROP. TOE

EXIST. ROW

CONST. LIMITS

LICK CREEK

RETAIN EXISTING DRIVEWAY

STA. 2109+00.00 IN PLACE
QUAD. 60" X 44' R.C. PIPE CULVERT
RETAIN

P.I. = 102+98.30
Δ = 4°24'46"RT.
D = 1°00'00"
T = 220.75'
L = 441.28'
P.C. = 100+77.55
P.T. = 105+18.83
e = 0.026'/'
Ls = 300'

STA. 114+13 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
22" x 14" x 38' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 55 CU. YDS.

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

HWY. 350 - SITE 1

STA. 100+75.63 BEGIN SUPERELEVATION
STA. 102+98.19 MAX. SUPERELEVATION (0.019'/')
STA. 105+20.75 END SUPERELEVATION

STA. 105+20.75 BEGIN SUPERELEVATION
STA. 108+20.75 MAX. SUPERELEVATION (0.026'/')
STA. 112+64.29 MAX. SUPERELEVATION (0.026'/')
STA. 115+64.29 END SUPERELEVATION

STA. 100+75.63
BEGIN JOB 110574
AND SITE 1

STA. 102+79.98
BEGIN P.C.
ELEV. 247.00

K=757.21
VC=500'
e=0.41'

0.66%

STA. 109+50.00
BRIDGE END

STA. 111+25.00
BRIDGE END

K=233.14
VC=400'
e=-0.86'

-1.06%

K=391.37
VC=400'
e=0.51'

-0.38% LT.DT.GR.

-0.18% RT.DT.GR.

-2.50% RT.DT.GR.

-0.82% LT.DT.GR.

2:1

Q25 DESIGN H.W.
ELEV. 241.7'

+54
F.L. INLET ELEV. = 240.62 (LT.)
F.L. OUTLET ELEV. = 238.16 (RT.)

NOTE:
THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM.
THE STREAM BANK ELEVATION IS 240 FT. MSL. BETWEEN STATIONS 109+50 AND 110+90. REFER TO SECTION 110.06(C) OF THE 2014 STANDARD SPECIFICATIONS.

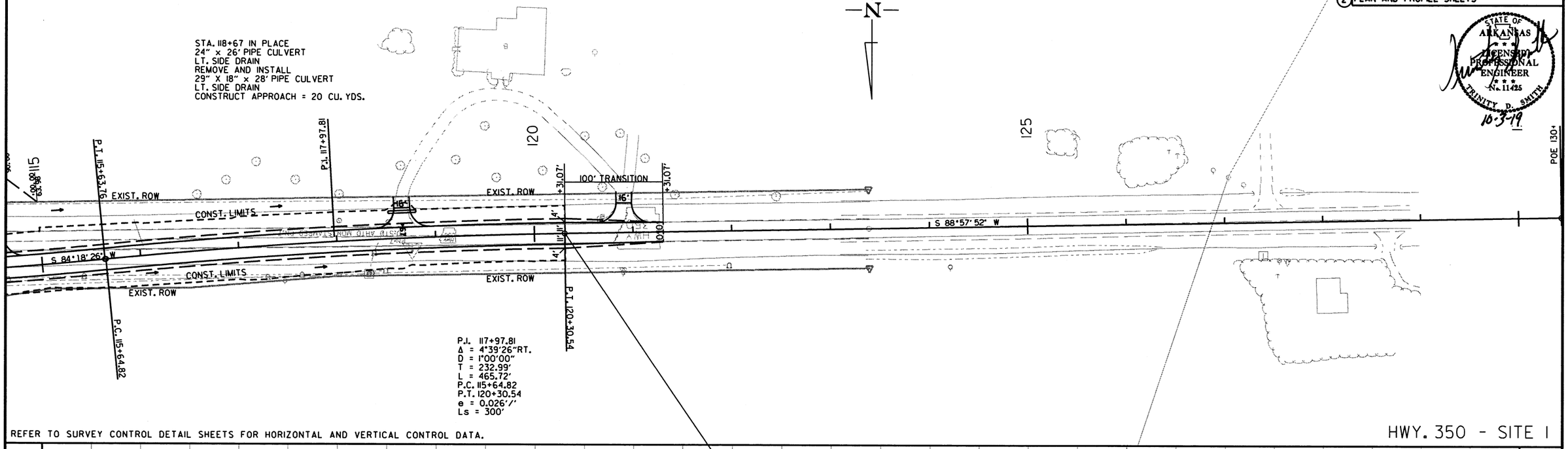
1/31/2018

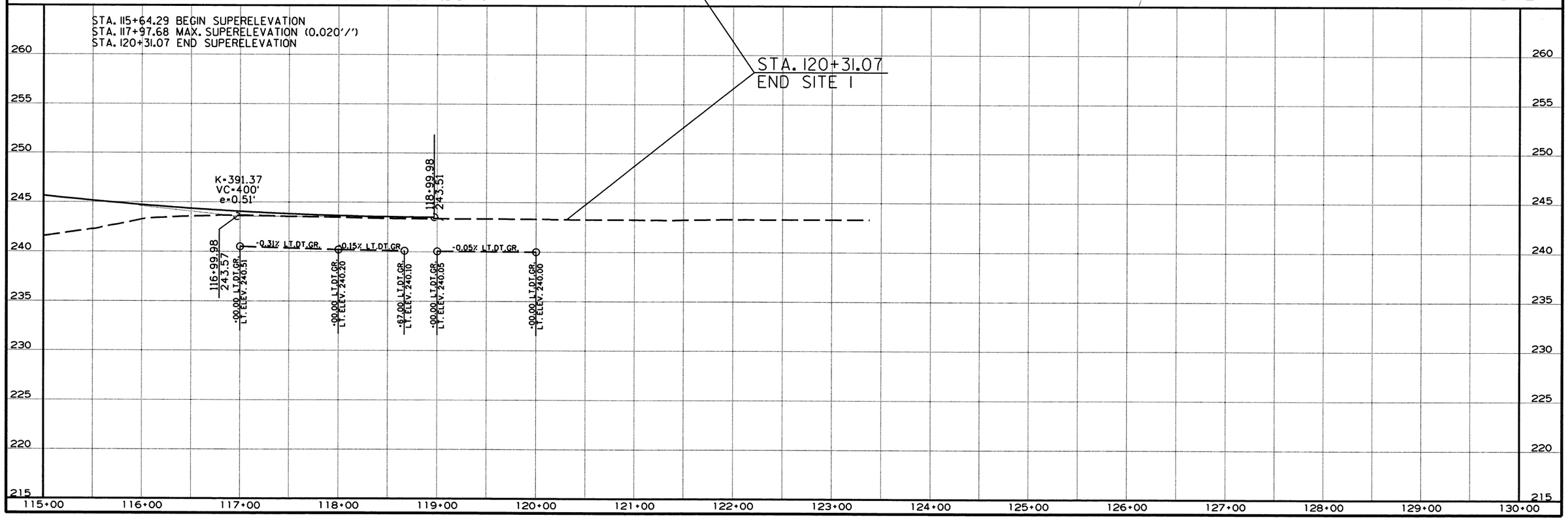
R110574.DGN

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.		110574	68	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19





R110574.DGN 1/31/2018

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	69	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

STA. 204+59 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 206+34 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 245 CU. YDS.

STA. 207+96 IN PLACE
24" x 50' R.C. PIPE CULVERT
REMOVE

STA. 208+55 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL STA. 208+12
CONSTRUCT APPROACH = 570 CU. YDS.

STA. 207+75 CONSTRUCT
24" X 102' PIPE CULVERT
WITH FES LT. & RT.
025 = 0.5 CFS D.A. = 1.6 ACRES
R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 102 LIN. FT.

STA. 210+70.43 - STA. 211+21.20 IN PLACE
BR. NO. M3274
50.0' X 29.3' STEEL MULTI-BEAM
REMOVE AS EXISTING BRIDGE STR. (SITE NO. 2) = 1.00 LUMP SUM

REMOVE AND INSTALL STA. 213+40
24" x 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 250 CU. YDS.

STA. 213+68 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN

STA. 210+14.00 BR. END
105'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
105'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35')
BR. NO. 07446
STA. 211+19.00 BR. END

P.I. 203+81.51
Δ = 7°59'15"LT.
D = 4°00'00"
T = 100.01
L = 199.69'
P.C. 202+81.50
P.T. 204+81.19
e = 0.083'/'
Ls = 300'

P.I. 213+03.35
Δ = 5°46'04"RT.
D = 4°00'00"
T = 72.16'
L = 144.19'
P.C. 212+31.19
P.T. 213+75.38
e = 0.083'/'
Ls = 300'

STA. 214+00.00 HWY. 350 =
STA. 20+00.00 CO. RD. 652
Δ = 90° 00' 00"

P.I. 207+58.02
Δ = 17°15'46"RT.
D = 4°00'00"
T = 217.43
L = 431.57'
P.C. 205+40.59
P.T. 209+72.16
e = 0.083'/'
Ls = 300'

STA. 205+37 IN PLACE
18" x 24' PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.

REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.	GATE
210+70	214+00	LT.	450	3

STA.	STA.	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
207+67.84	210+10.99	RT.	150 LIN. FT.	1 EA.	1 EA.
208+65.10	209+97.01	LT.	75 LIN. FT.	1 EA.	1 EA.
211+30.99	212+99.14	RT.	75 LIN. FT.	1 EA.	1 EA.
211+17.01	212+50.16	LT.	75 LIN. FT.	1 EA.	1 EA.

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

HWY. 350 - SITE 2

STA. 202+51.81 BEGIN SUPERELEVATION
STA. 203+81.35 MAX. SUPERELEVATION (0.036'/')
STA. 205+10.89 END SUPERELEVATION

STA. 205+10.89 BEGIN SUPERELEVATION
STA. 207+56.38 MAX. SUPERELEVATION (0.068'/')
STA. 210+01.86 END SUPERELEVATION

STA. 211+01.42 BEGIN SUPERELEVATION
STA. 213+03.29 MAX. SUPERELEVATION (0.056 '/')
STA. 215+05.16 END SUPERELEVATION

STA. 202+51.81
BEGIN SITE 2

202+51.81 224.28
203+50.50 224.29
K-174.42 VC-300' e-0.64'
PVRC 206+50.50 Elev 226.91
208+00.50 229.50
K-173.41 VC-300' e-0.65'
209+50.50 229.50
211+25.50 229.50
212+75.50 229.50
K-197.37 VC-300' e-0.57'
PVRC 214+25.50 Elev 227.22
K-208.33 VC-300' e-0.54'
0.01% 1.73% 0.00% -1.52%
205+00.50 224.31
-0.35% RT.DT.GR. -1.46% LT.DT.GR. -1.87% LT.DT.GR. 0.56% LT.DT.GR.
-00.00 RT.DT.GR. RT.ELEV. 220.53
-00.00 RT.DT.GR. RT.ELEV. 220.18
+55.00 LT.DT.GR. LT. ELEV. 222.26
+75.00 LT.DT.GR. LT. ELEV. 220.50
+40.00 LT.DT.GR. LT. ELEV. 221.99
-25.00 LT.DT.GR. LT. ELEV. 218.53
-60.00 LT.DT.GR. LT. ELEV. 217.61
2:1 2:1
DESIGN HW ELEV. 224.31
+75
F.L. INLET ELEV. = 220.50 FT. (LT.)
F.L. OUTLET ELEV. = 220.13 FT. (RT.)

NOTE:
THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAM BANK ELEVATION IS 222 FT. MSL. BETWEEN STATIONS 210+30 AND 211+00. REFER TO SECTION 110.06(C) OF THE 2014 STANDARD SPECIFICATIONS.

200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00 209+00 210+00 211+00 212+00 213+00 214+00 215+00

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		R10574	70	176

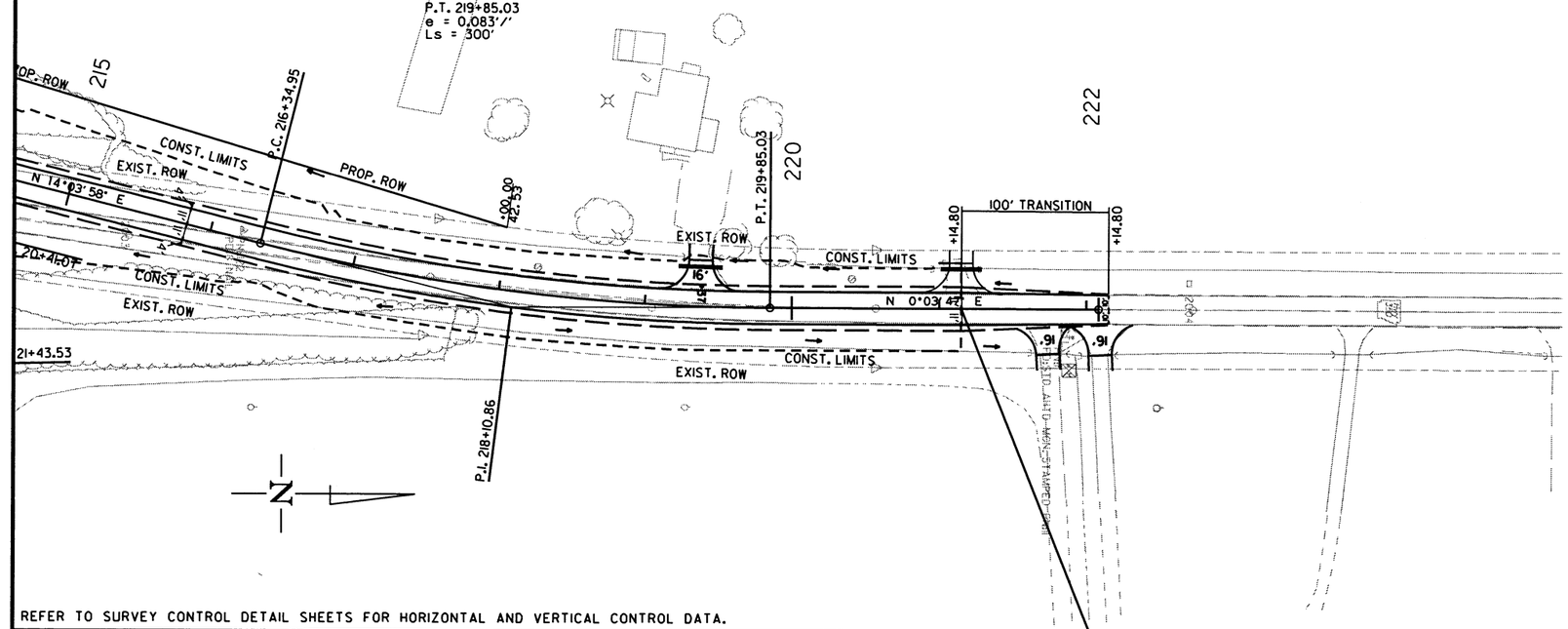
(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19

P.I. 218+10.86
Δ = 14°00'11"LT.
D = 4°00'00"
T = 175.91'
L = 350.08'
P.C. 216+34.95
P.T. 219+85.03
e = 0.083'/'
Ls = 300'

STA. 219+37 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" x 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.

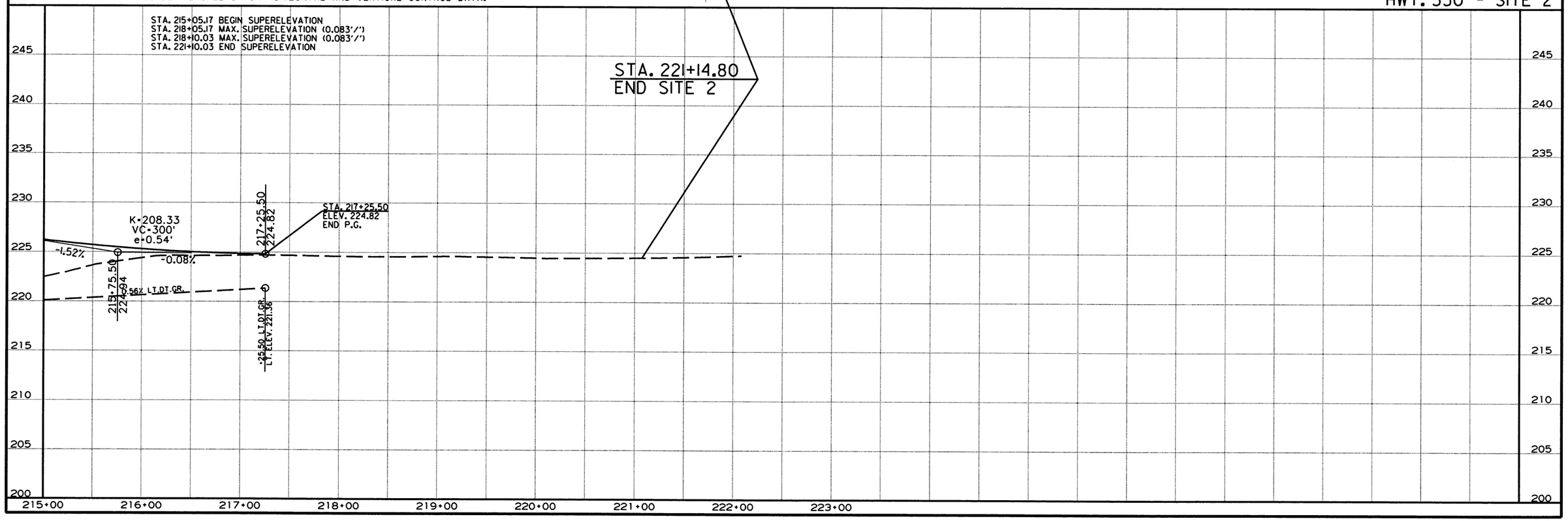
STA. 221+15 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.



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

HWY. 350 - SITE 2

STA. 215+05.17 BEGIN SUPERELEVATION
STA. 218+05.17 MAX. SUPERELEVATION (0.083'/')
STA. 218+10.03 MAX. SUPERELEVATION (0.083'/')
STA. 221+10.03 END SUPERELEVATION



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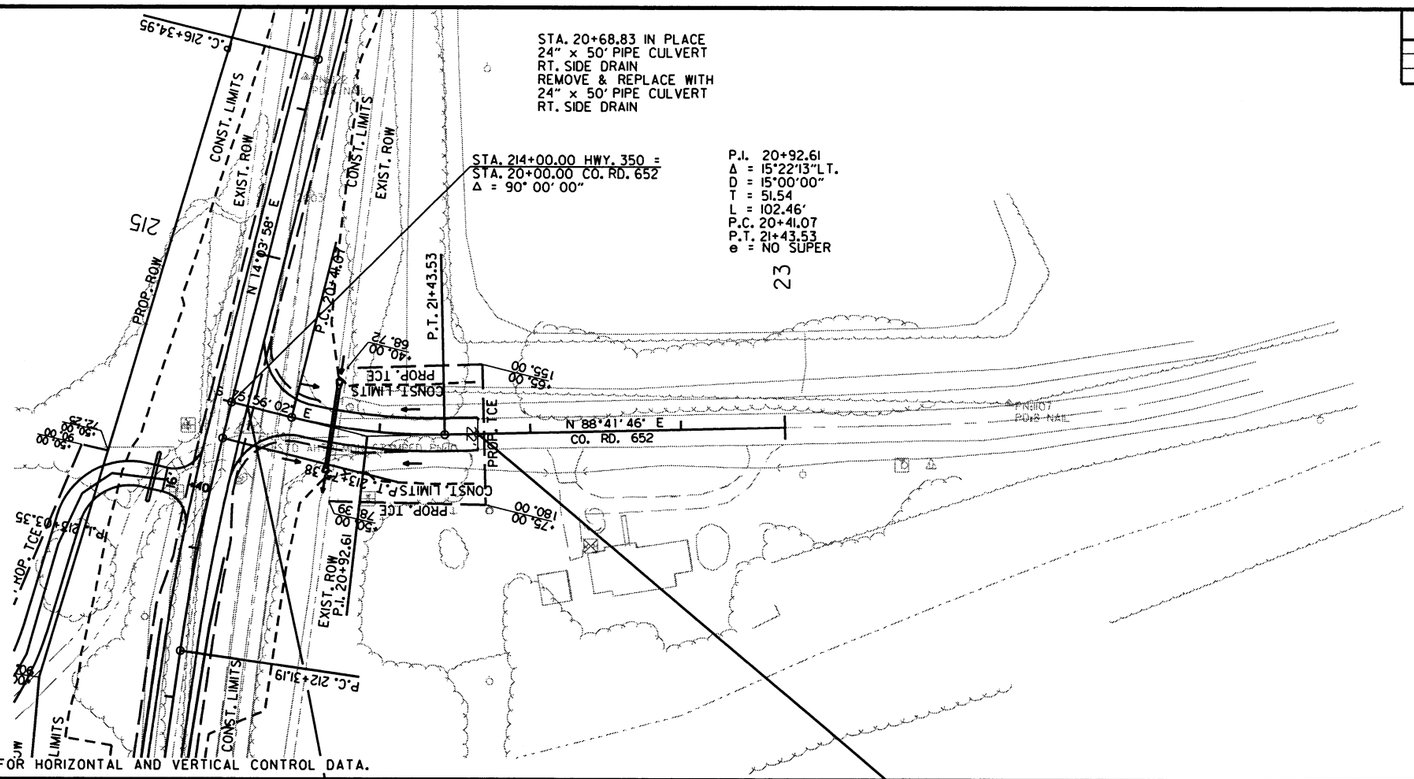
R110574.DGN

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.		H0574	71	176

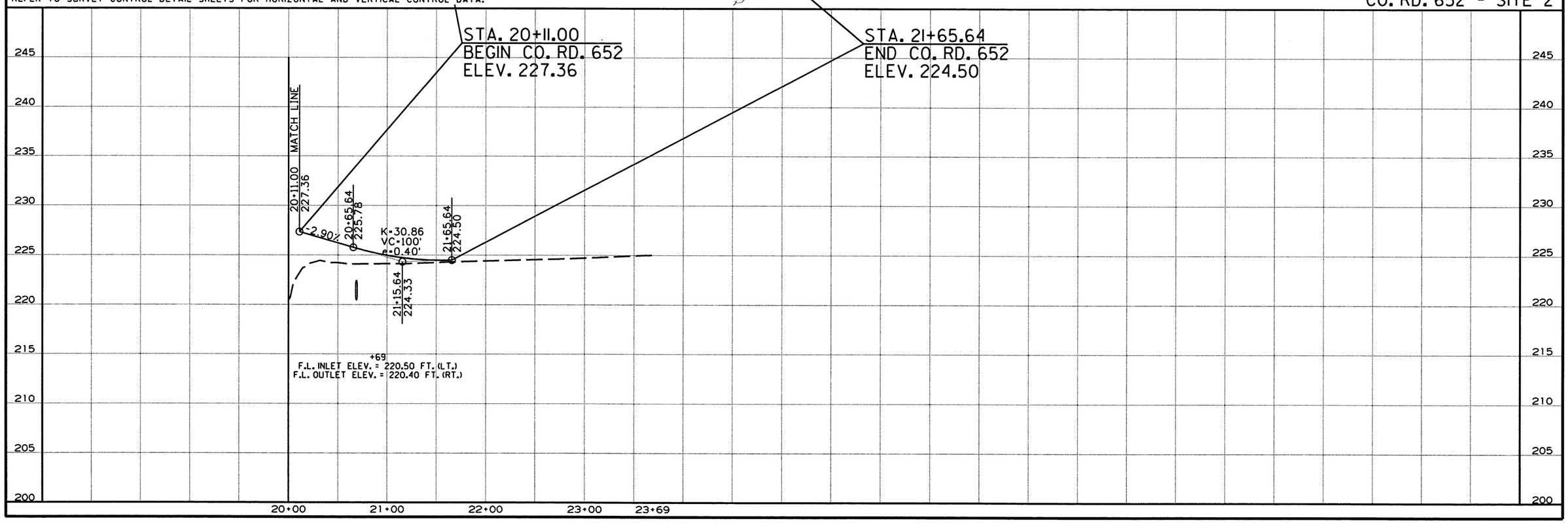
(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



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

CO. RD. 652 - SITE 2



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R110574.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.		H10574	72	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

STA. 302+82 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

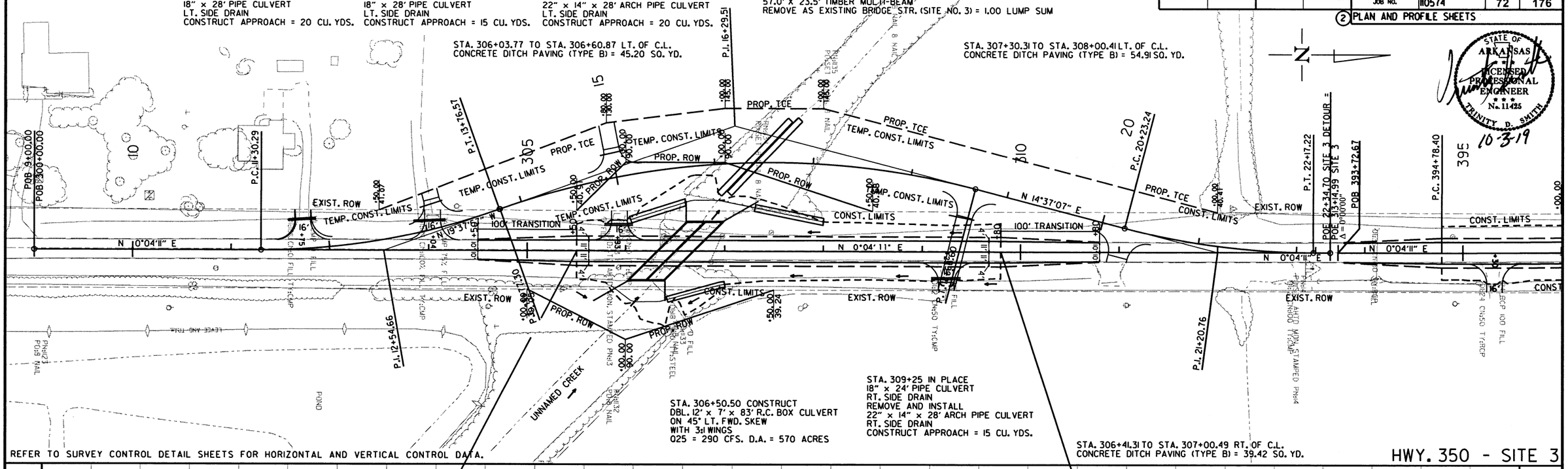
STA. 304+04 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 15 CU. YDS.

STA. 305+93 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
22" x 14" x 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 306+33.34 - STA. 306+90.38 IN PLACE
BR. NO. M2931
57.0' X 23.5' TIMBER MULTI-BEAM
REMOVE AS EXISTING BRIDGE STR. (SITE NO. 3) = 1.00 LUMP SUM

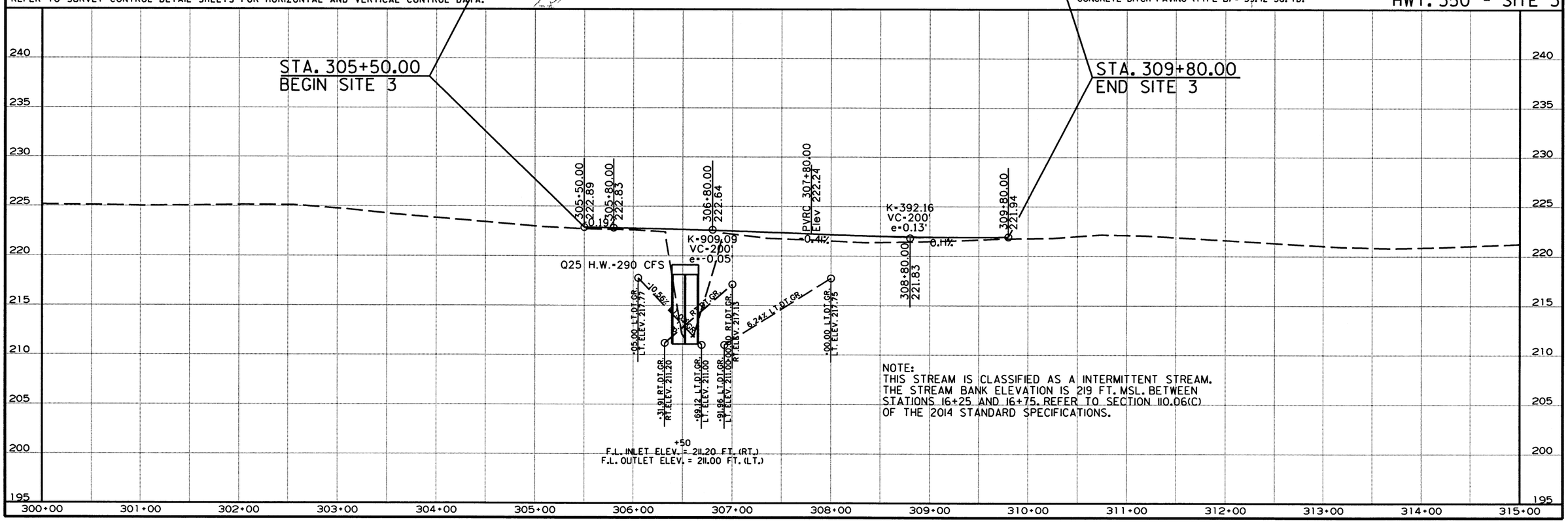
STA. 306+03.77 TO STA. 306+60.87 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 45.20 SQ. YD.

STA. 307+30.31 TO STA. 308+00.41 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 54.91 SQ. YD.



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

HWY. 350 - SITE 3



NOTE:
THIS STREAM IS CLASSIFIED AS A INTERMITTENT STREAM. THE STREAM BANK ELEVATION IS 219 FT. MSL. BETWEEN STATIONS 16+25 AND 16+75. REFER TO SECTION 110.06(C) OF THE 2014 STANDARD SPECIFICATIONS.

1/31/2018

R110574.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.		110574	73	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19

STA. 11+75 INSTALL
TEMP. 22" x 14" x 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 10 CU. YDS.

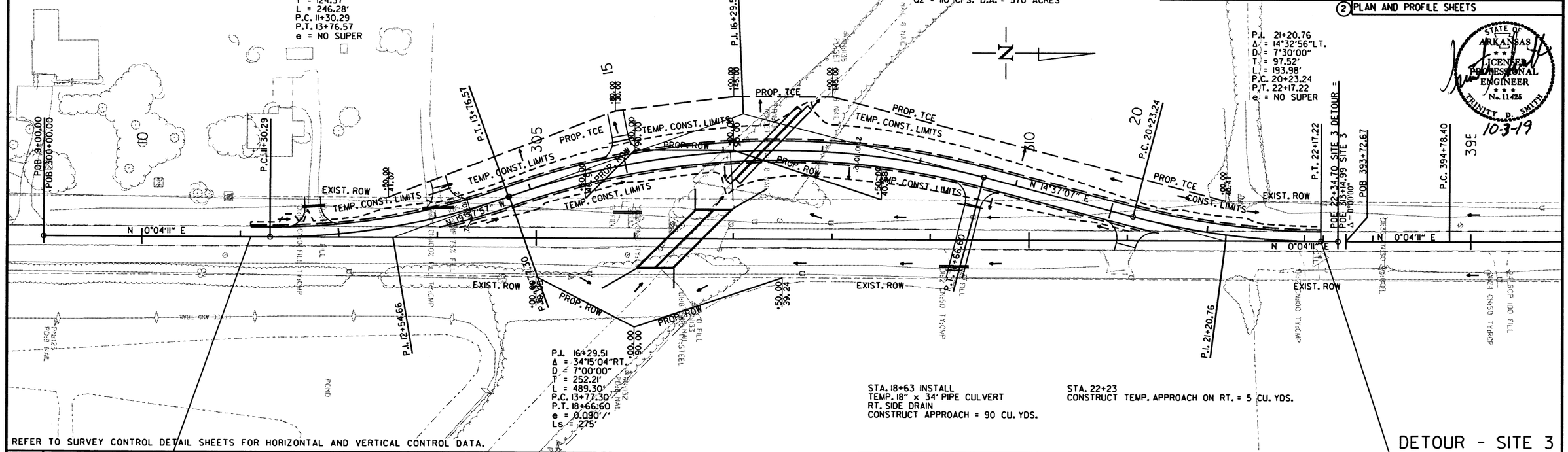
P.I. 12+54.66
Δ = 19°42'08"LT.
D = 8°00'00"
T = 124.37'
L = 246.28'
P.C. 11+30.29
P.T. 13+76.57
e = NO SUPER

STA. 13+12 INSTALL
TEMP. 22" x 14" x 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 10 CU. YDS.

STA. 15+00 INSTALL
TEMP. 18" x 32' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 80 CU. YDS.

STA. 16+40.20 INSTALL
DBL. 72" x 104' TEMPORARY PIPE CULVERT
ON A 45° LT. FWD. SKEW
Q2 = 110 CFS. D.A. = 570 ACRES

P.I. 21+20.76
Δ = 14°32'56"LT.
D = 7°30'00"
T = 97.52'
L = 193.98'
P.C. 20+23.24
P.T. 22+17.22
e = NO SUPER



STA. 18+63 INSTALL
TEMP. 18" x 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 90 CU. YDS.

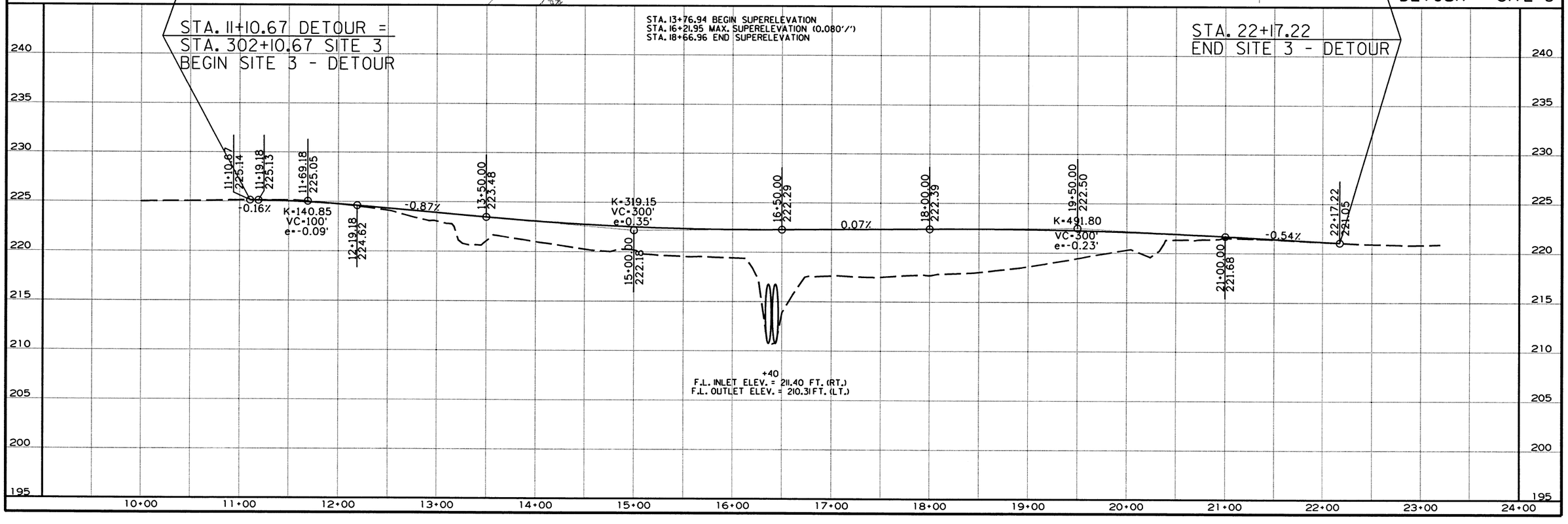
STA. 22+23
CONSTRUCT TEMP. APPROACH ON RT. = 5 CU. YDS.

DETOUR - SITE 3

STA. 11+10.67 DETOUR =
STA. 302+10.67 SITE 3
BEGIN SITE 3 - DETOUR

STA. 13+76.94 BEGIN SUPERELEVATION
STA. 16+21.95 MAX. SUPERELEVATION (0.080'/')
STA. 18+66.96 END SUPERELEVATION

STA. 22+17.22
END SITE 3 - DETOUR

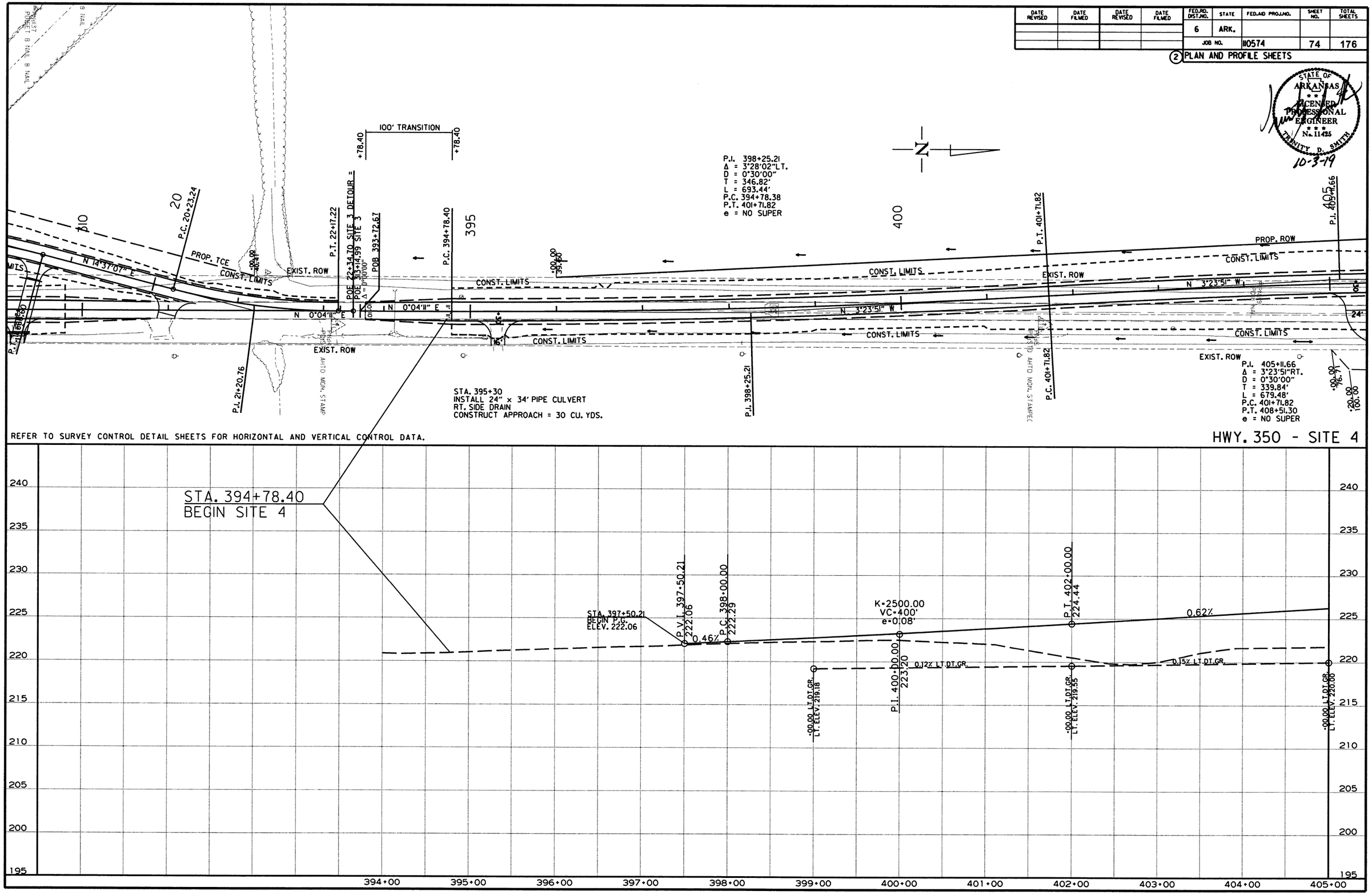


R110574.DGN 1/31/2018

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		H0574	74	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19



1/31/2018

R110574.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.		110574	75	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

STA. 406+12 IN PLACE
INSTALL 18" x 36' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH ON LT. = 95 CU. YDS.

STA.	STA.	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
406+04.85	408+48.00	RT.	150 LIN. FT.	1 EA.	1 EA.
406+79.85	408+48.00	LT.	75 LIN. FT.	1 EA.	1 EA.
409+73.00	411+41.15	RT.	75 LIN. FT.	1 EA.	1 EA.
409+73.00	412+16.15	LT.	150 LIN. FT.	1 EA.	1 EA.

STA. 408+68.57 - STA. 409+60.96 IN PLACE
BR. NO. M2932
92.0' X 24.2' TIMBER MULTI-BEAM
REMOVE AS EXISTING BRIDGE STR. (SITE NO. 4) = 1.00 LUMP SUM

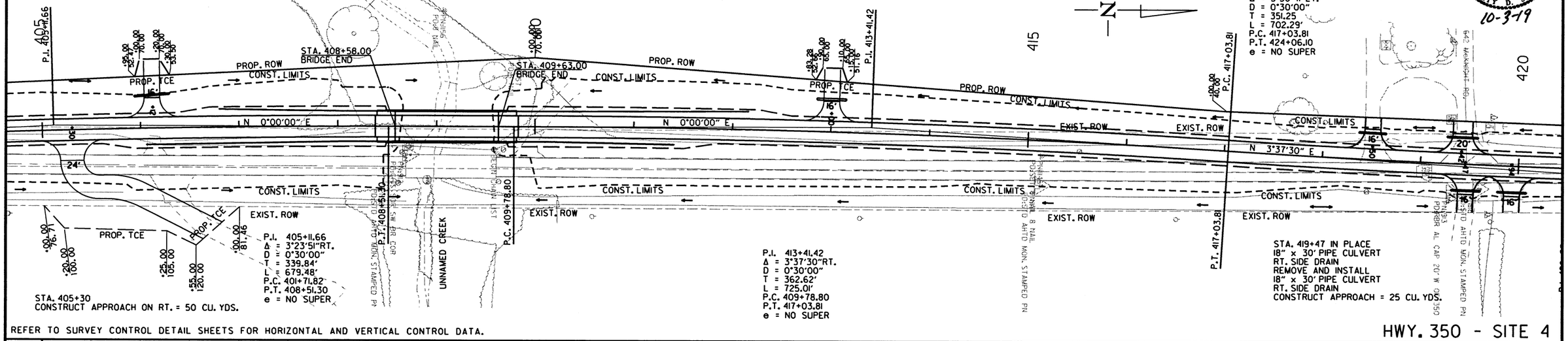
STA. 408+58.00 BR. END
105'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
105'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35')
BR. NO. 07446
STA. 409+63.00 BR. END

STA. 410+01 IN PLACE
REMOVE 24" x 30' PIPE CULVERT
LT. SIDE DRAIN

STA. 413+00
INSTALL 24" x 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 90 CU. YDS.

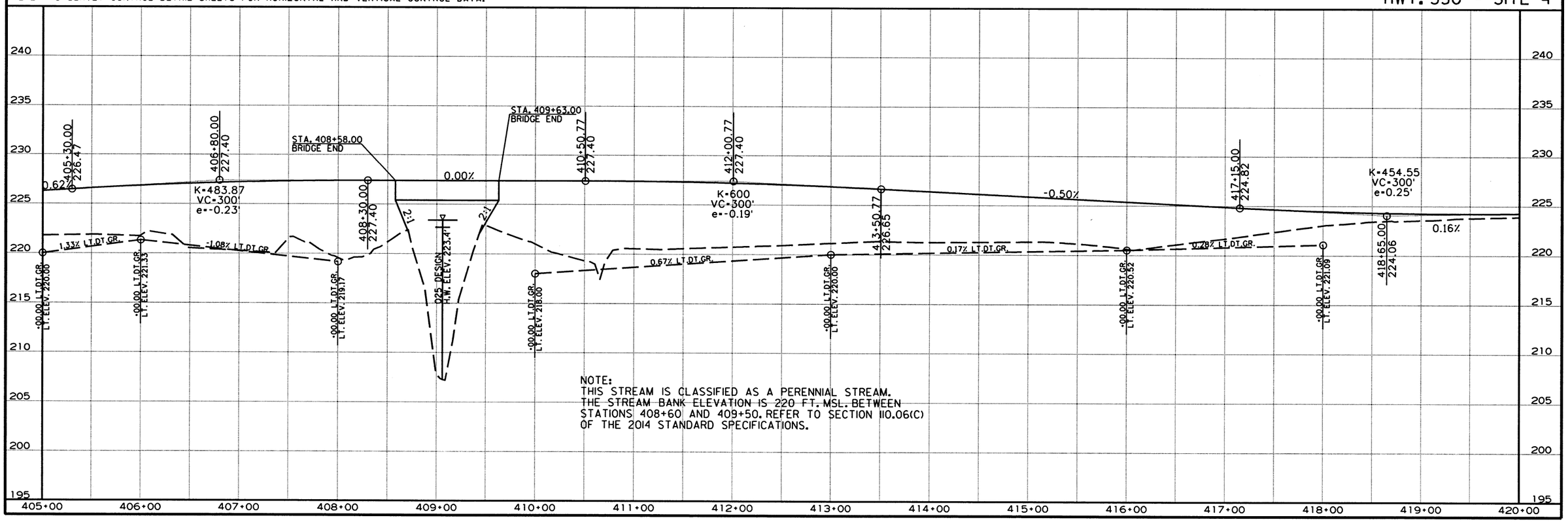
STA. 418+50 IN PLACE
15" x 28' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 419+42 IN PLACE
18" x 32' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 32' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.



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

HWY. 350 - SITE 4



NOTE:
THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM.
THE STREAM BANK ELEVATION IS 220 FT. MSL. BETWEEN STATIONS 408+60 AND 409+50. REFER TO SECTION 110.06(C) OF THE 2014 STANDARD SPECIFICATIONS.

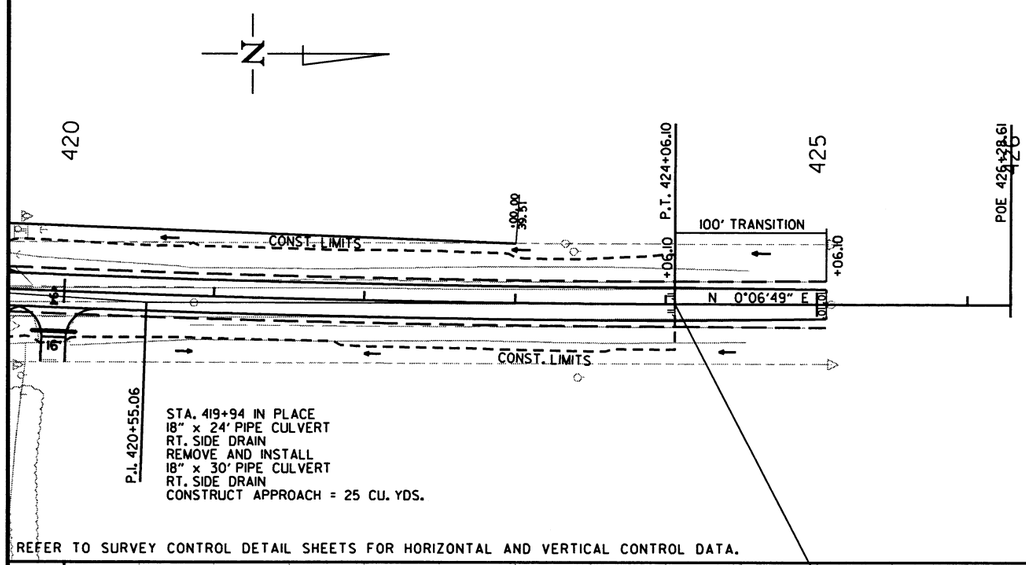
R110574.DGN 1/31/2018

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		R10574	76	176

(2) PLAN AND PROFILE SHEETS

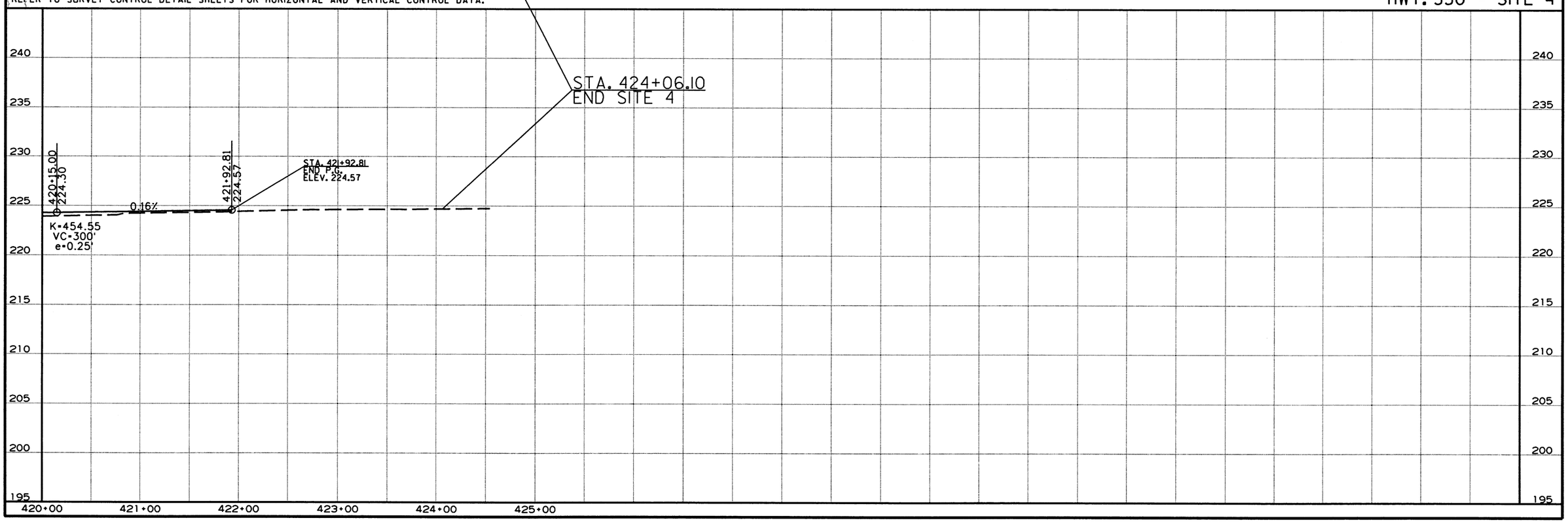
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19

P.I. 420+55.06
Δ = 3°30'41" LT.
D = 0°30'00"
T = 351.25
L = 702.29'
P.C. 417+03.81
P.T. 424+06.10
e = NO SUPER



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

HWY. 350 - SITE 4



R110574.DGN 1/31/2018

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	77	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-3-19

PI = 505+00.47
Δ = 7°03'23"RT.
D = 2°00'00"
T = 176.63'
L = 352.82'
PC = 503+23.84
PT = 506+76.66
e = 0.048'/'
Ls = 300'

STA. 508+00 IN PLACE
18" x 57' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 32' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 105 CU. YDS.

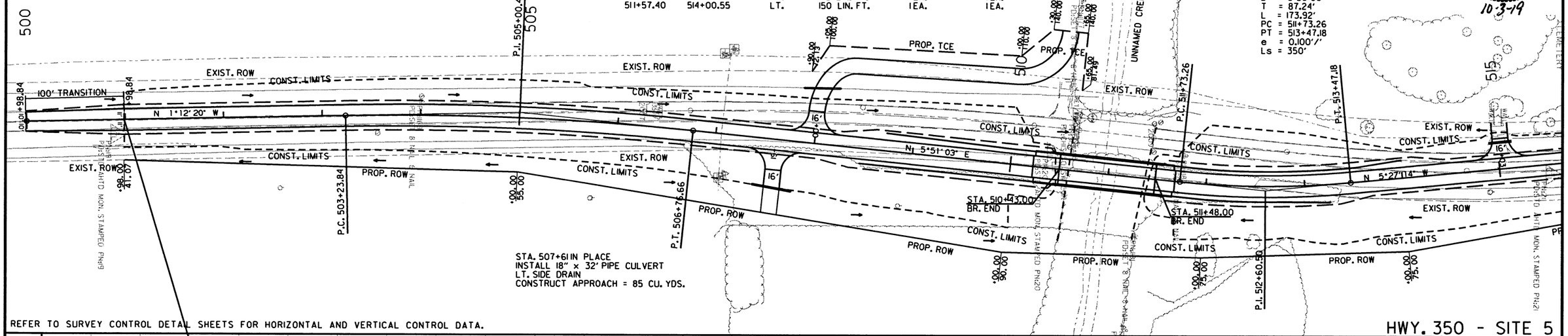
STA. 510+48 IN PLACE
18" x 57' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 32' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 105 CU. YDS.

STA. 510+65.89 - STA. 511+41.68 IN PLACE
BR. NO. M2934
76.0' X 25.8' TIMBER MULTI-BEAM
REMOVE AS EXISTING BRIDGE STR. (SITE NO. 5) = 1.00 LUMP SUM

STA.	STA.	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
507+96.85	510+40.00	RT.	150 LIN. FT.	1 EA.	1 EA.
508+71.85	510+40.00	LT.	75 LIN. FT.	1 EA.	1 EA.
511+57.40	513+25.55	RT.	75 LIN. FT.	1 EA.	1 EA.
511+57.40	514+00.55	LT.	150 LIN. FT.	1 EA.	1 EA.

STA. 510+43.00 BR. END
105'-0" BRIDGE LENGTH
30'-0" CLEAR ROADWAY
105'-0" CONTINUOUS R.C. SLAB UNIT (35', 35', 35')
BR. NO. 07447
STA. 511+48.00 BR. END

PI = 512+60.50
Δ = 11°18'17"LT.
D = 6°30'00"
T = 87.24'
L = 173.92'
PC = 511+73.26
PT = 513+47.18
e = 0.100'/'
Ls = 350'

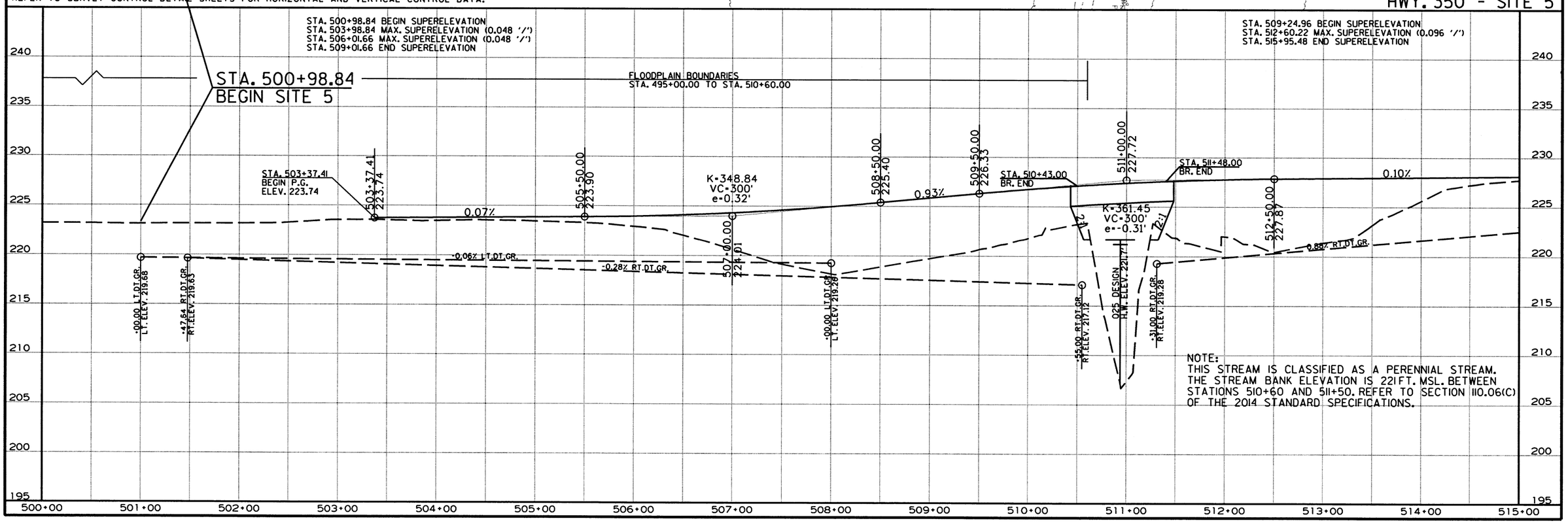


REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

HWY. 350 - SITE 5

STA. 500+98.84 BEGIN SUPERELEVATION
STA. 503+98.84 MAX. SUPERELEVATION (0.048 '/')
STA. 506+01.66 MAX. SUPERELEVATION (0.048 '/')
STA. 509+01.66 END SUPERELEVATION

STA. 509+24.96 BEGIN SUPERELEVATION
STA. 512+60.22 MAX. SUPERELEVATION (0.096 '/')
STA. 515+95.48 END SUPERELEVATION



NOTE:
THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAM BANK ELEVATION IS 221 FT. MSL. BETWEEN STATIONS 510+60 AND 511+50. REFER TO SECTION 110.06(C) OF THE 2014 STANDARD SPECIFICATIONS.

1/31/2018

R110574.DGN

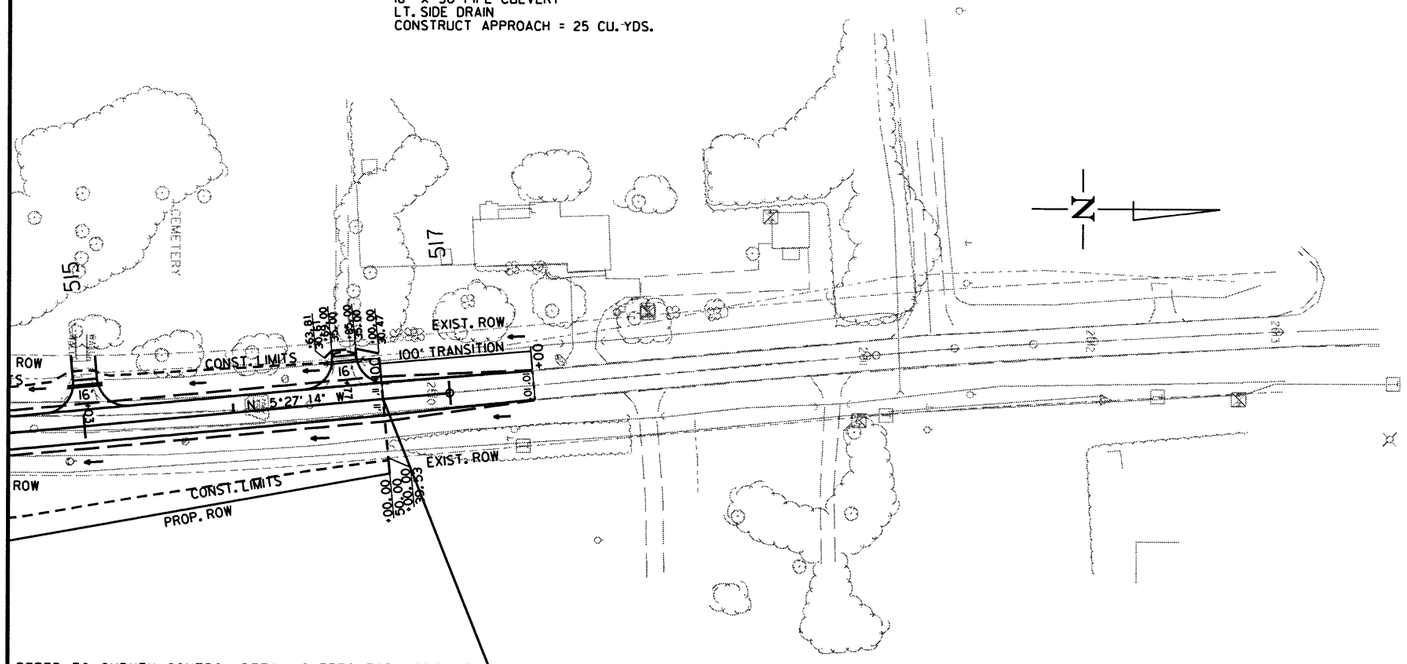
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	78	176

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-19

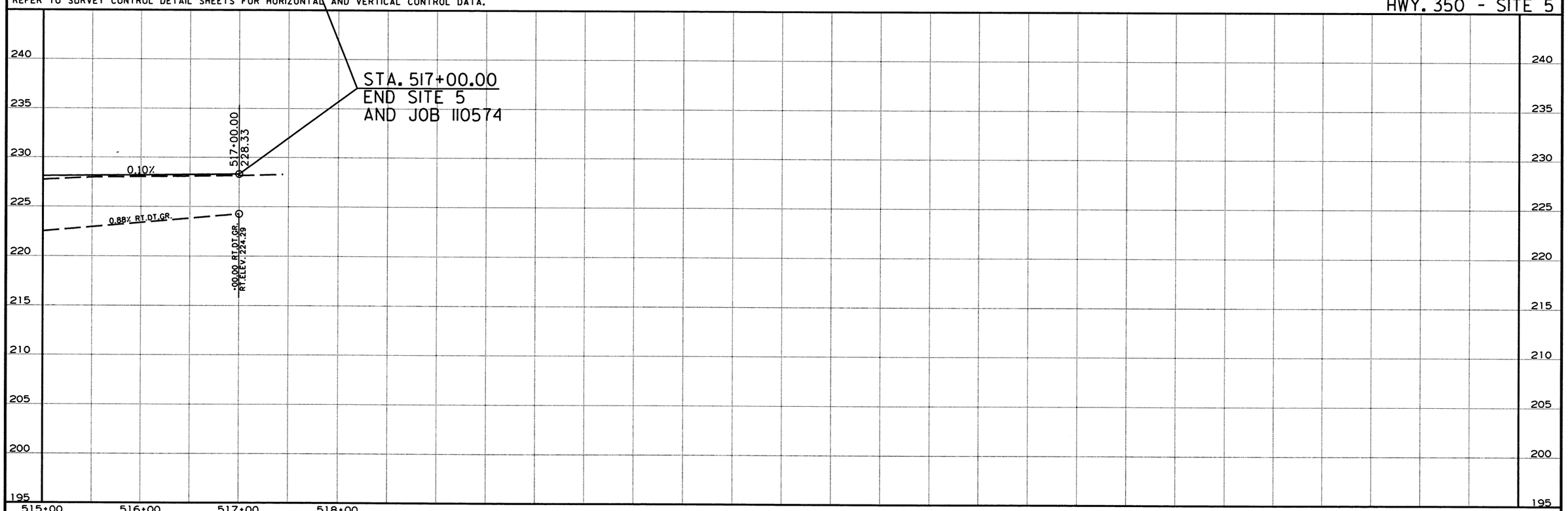
STA. 515+03 IN PLACE
INSTALL 18" x 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS.

STA. 516+77 IN PLACE
12" x 22' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.



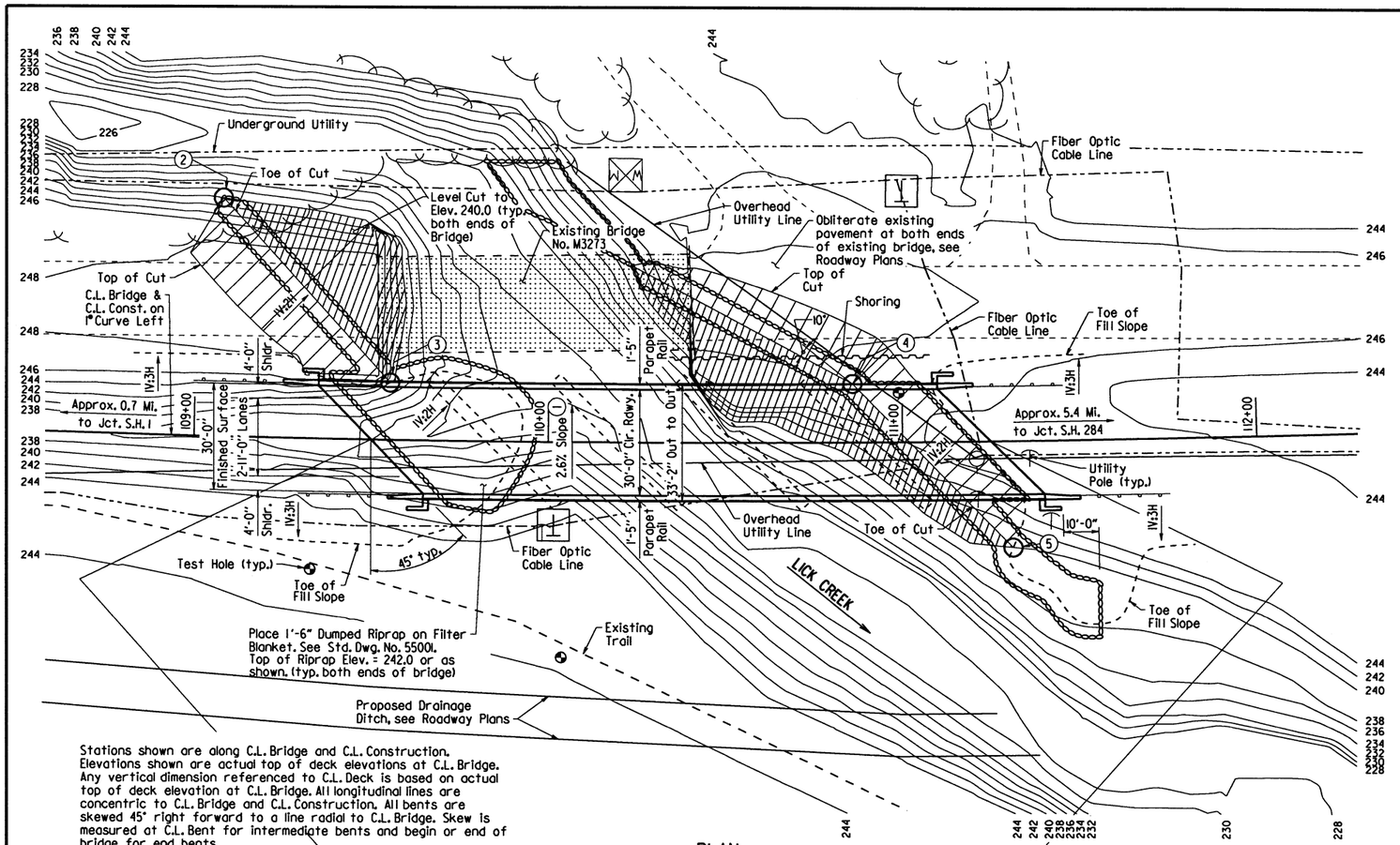
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

HWY. 350 - SITE 5



R110574.DGN 1/31/2018

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.		110574	79	176
				①	07444 - LAYOUT - 60715			



Stations shown are along C.L. Bridge and C.L. Construction. Elevations shown are actual top of deck elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on actual top of deck elevation at C.L. Bridge. All longitudinal lines are concentric to C.L. Bridge and C.L. Construction. All bents are skewed 45° right forward to a line radial to C.L. Bridge. Skew is measured at C.L. Bent for intermediate bents and begin or end of bridge for end bents.

PLAN

For R/W Data, See Roadway Plans.

Use Type Special Approach Gutters ("W" = 4'-0") and Type E Approach Slab (width = 22'-0") at both ends of bridge. See Std. Dwg. Nos. 60722 & 55040E, respectively.

The Contractor shall excavate the existing embankment as shown at both ends of bridge. Approx. 1120 cubic yards of excavation.

For Soil Boring Information and General Notes, see Dwg. No. 60716.

(1) See "Superelevation Sketch".

(2) Approx. Sta. 109+07.50
67'-5" Lt of C.L. Construction

(3) Approx. Sta. 109+55.50
16'-2" Lt of C.L. Construction

(4) Approx. Sta. 110+85.70
16'-7" Lt of C.L. Construction

(5) Approx. Sta. 111+32.60
28'-0" Rt of C.L. Construction

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(7) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
DESIGN	25	2830	241.4	241.7
BASE	100	3890	243.6	243.7
EXTREME	500	5200	244.4	244.7
OVERTOPPING	>500	-	-	

(7) Unconstricted water surface elevation without structure or roadway approaches.
Q100 backwater elevation for existing structure = 243.7 ft.
Proposed Low Bridge Chord Elevation = 247.19 ft.

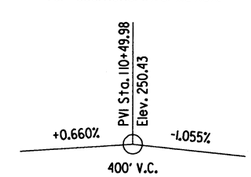
Drainage Area = 8.1 square miles
Historical H.W. Elevation = N/A

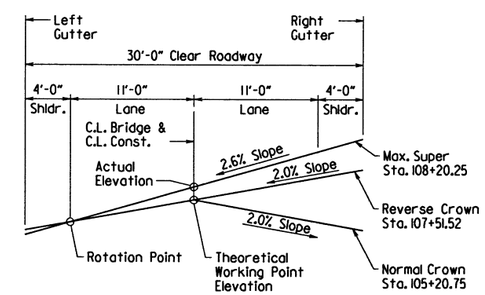
HORIZONTAL CURVE DATA

Along C.L. Construction
PI Sta. 110+44.66
Delta = 10°24'39" Lt.
D = 1°00'00"
L = 1041.08'
T = 521.98'
R = 5729.58'
P.C. Sta. 105+22.68
P.T. Sta. 115+63.77

VERTICAL CURVE DATA

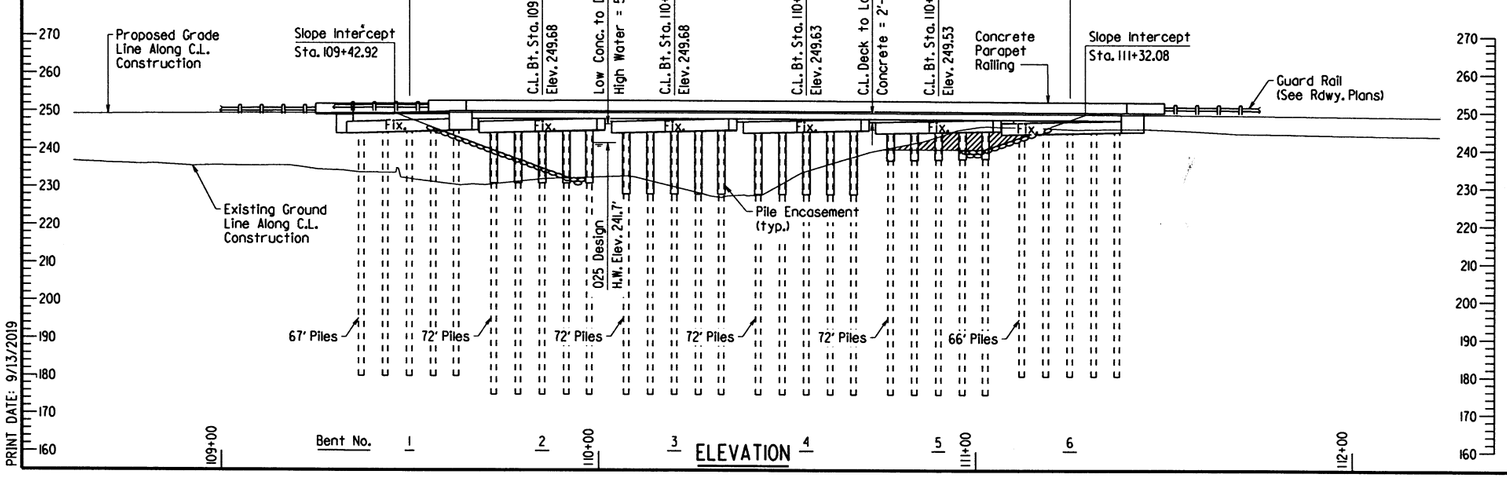
Elevation at Theoretical Working Point along C.L. Bridge. See "Superelevation Sketch" for additional information.





SUPERELEVATION SKETCH

Looking Ahead
No Scale



ELEVATION

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER LICK CREEK
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DKS DATE: 1/12/18 FILENAME: bll0574xl_ll
CHECKED BY: KAP DATE: 9/13/19 SCALE: 1" = 20'
DESIGNED BY: DKS DATE: 11/2017

BRIDGE NO. 07444 DRAWING NO. 60715

PRINT DATE: 9/13/2019

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/29/19				6	ARK.			
				JOB NO.		110574	80	176
				1	07444 - LAYOUT - 60716			

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown on the Survey Control Data Sheets.

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, Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014) with 2015 Interim Revisions.

LIVE LOADING: HL-93

SEISMIC PERFORMANCE ZONE: 4 S_{D1}: 0.725 Site Class: E

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi
Structural Steel (ASTM A709, Gr. 50)	Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W)	Fy = 50,000 psi

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

STEEL SHELL PILING: Piling in Bents 1 and 6 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 178 tons per pile. Piling in Bents 2 thru 5 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 338 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 180' or lower at Bents 1 and 6, and 175' or lower at Bents 2 thru 5. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g).

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling (__" Dia.)."

PILE ENCASEMENT: Pile encasement for Bents 2 thru 5 shall extend from bottom of cap to 3' below natural or finished ground. See Std. Dwg. No. 55021 for additional information.

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b) "Method B-Wave Equation Analysis (WEAP)". It is estimated that a minimum rated hammer energy required to obtain the ultimate bearing capacity will be 33,000 ft.-lbs. per blow for all piles at Bents 1 and 6 and 73,000 ft.-lbs. per blow for all piles at Bents 2 thru 5.

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.

PROTECTIVE SURFACE TREATMENT: Class 1 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail in accordance with Section 803.

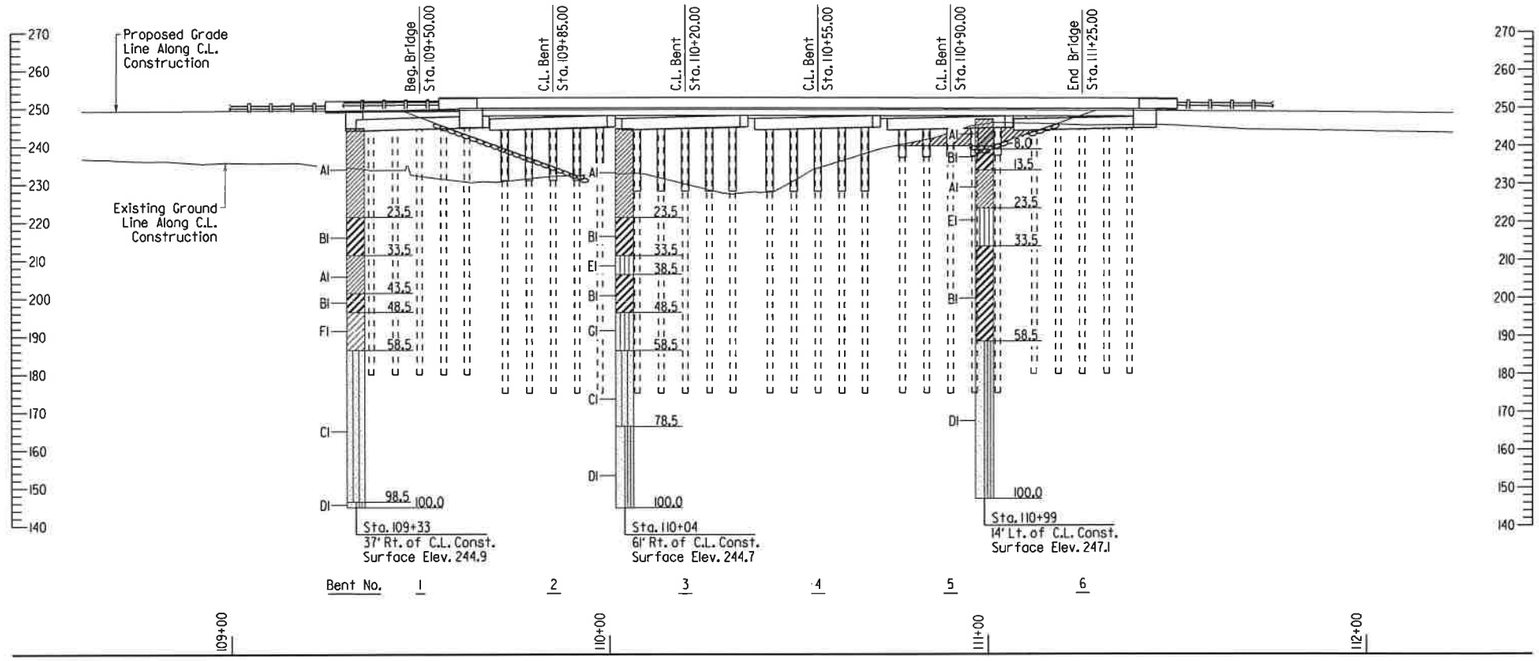
DETAIL DRAWINGS:	DRAWING NOS.
End Bents	60717-60718
Intermediate Bents	60717-60718
175' Continuous R.C. Slab Unit	60719-60721
Type Special Approach Gutters	60722
Concrete Filled Steel Shell Piling	55021
Type E Approach Slab	55040E

EXISTING BRIDGE: Existing Bridge No. M3273 (Log Mile 0.661) is 28.0' wide (26.9' clear roadway) and 90.0' long and consists of a concrete deck and timber subdeck with timber beams for the approach spans and steel beams for the main span supported by timber pile bents. The existing bridge is located approximately 40' upstream from the proposed new bridge.

REMOVAL AND SALVAGE: After the new bridge is opened to traffic, existing Bridge No. M3273 shall be removed in accordance with Section 205. Additional debris within ARDOT right of way, consisting of precast concrete channel beams, concrete slabs, and concrete posts located in the channel and on the banks, shall also be removed. This work shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No. _)". All material, including additional debris, from the existing bridge shall become the property of the Contractor ~~except the steel beams which shall remain the property of the state. The Contractor shall notify the Department prior to removal to determine the specific pieces deemed salvageable. The Contractor shall provide temporary storage and on site loading onto ARDOT equipment for removal of salvage items from the site. This work shall be considered incidental to the item "Removal of Existing Bridge Structure (Site No. _)".~~ △1

SHORING: Shoring may be required at end of bridge. No direct payment will be made for shoring. See Special Provision Job No. 110574 "Shoring".

MAINTENANCE OF TRAFFIC: See Roadway Plans.



ELEVATION OF SOIL BORINGS

BORING LEGEND

AI-Lean Clay
BI-Fat Clay
CI-Silty Sand
DI-Sand with Silt
EI-Silt
FI-Sandy Lean Clay
GI-Silt with Sand

"N" VALUES

Sta. 109+33 - 37' Rt. of C.L. Const.
1.0-2.5, N=10
3.5-5.0, N=2
8.5-10.0, N=6
13.5-15.0, N=4
18.5-20.0, N=7
23.5-25.0, N=9
28.5-30.0, N=9
33.5-35.0, N=12
38.5-40.0, N=4
43.5-45.0, N=6
48.5-50.0, N=6
58.5-60.0, N=16
68.5-70.0, N=21
78.5-80.0, N=22
88.5-90.0, N=92
98.5-100.0, N=20

Sta. 110+04 - 61' Rt. of C.L. Const.
1.0-2.5, N=5
3.5-5.0, N=2
6.0-7.5, N=6
8.5-10.0, N=5
13.5-15.0, N=5
18.5-20.0, N=4
23.5-25.0, N=15
28.5-30.0, N=11
33.5-35.0, N=10
38.5-40.0, N=2
43.5-45.0, N=5
48.5-50.0, N=14
58.5-60.0, N=21
68.5-70.0, N=21
78.5-80.0, N=24
88.5-90.0, N=32
98.5-100.0, N=41

Sta. 110+99 - 14' Lt. of C.L. Const.
1.0-2.5, N=6
3.5-5.0, N=3
6.0-7.5, N=2
13.5-15.0, N=6
23.5-25.0, N=6
28.5-30.0, N=10
33.5-35.0, N=8
38.5-40.0, N=1
43.5-45.0, N=11
48.5-50.0, N=3
58.5-60.0, N=15
68.5-70.0, N=33
78.5-80.0, N=32
88.5-90.0, N=42
98.5-100.0, N=31

△1 The State no longer wants to salvage the steel beams from existing Bridge No. M3273.
By: KAP 10/29/19
Checked By: JYP 10/29/19

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
10-29-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER LICK CREEK
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DKS DATE: 1/12/18
CHECKED BY: KAP DATE: 9/13/19
DESIGNED BY: DKS DATE: 11/2017
FILENAME: b110574xl_ll
SCALE: 1" = 20'

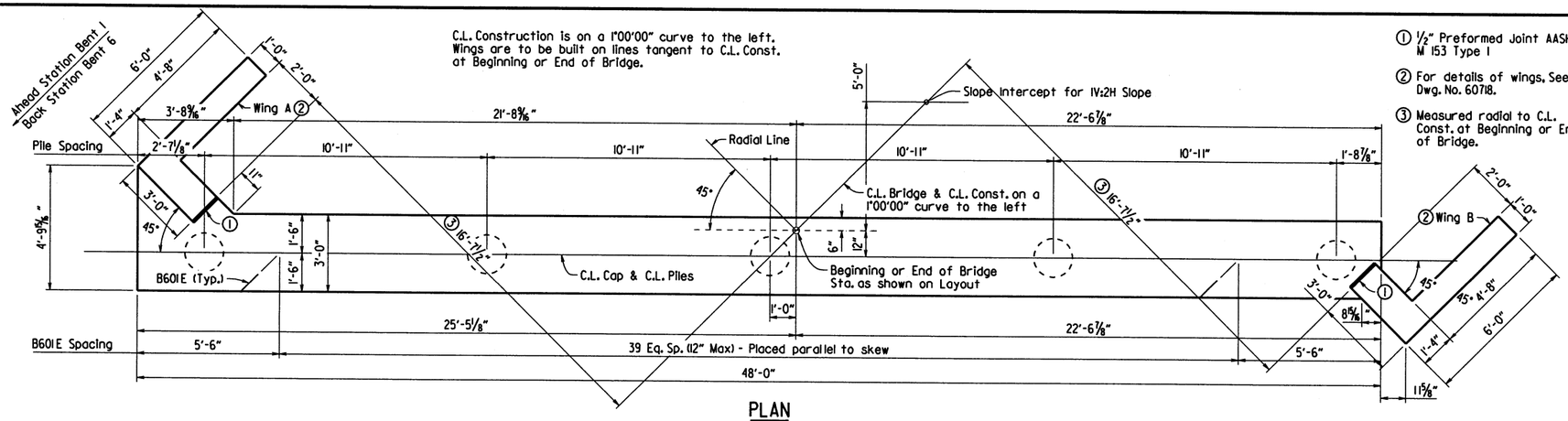
BRIDGE NO. 07444 DRAWING NO. 60716

PRINT DATE: 10/29/2019

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.		110574	81	176

(1) 07444 - BENTS - 60717

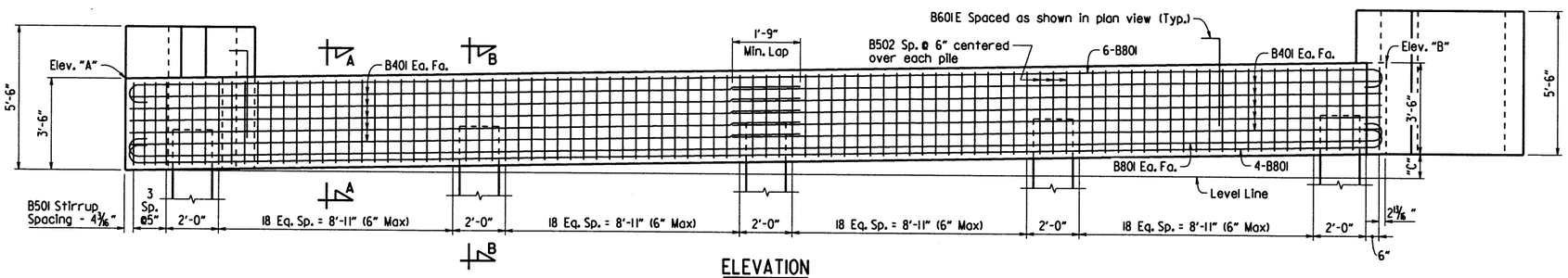


(1) 1/2" Preformed Joint AASHTO M 153 Type I

(2) For details of wings, See Dwg. No. 60718.

(3) Measured radial to C.L. Const. at Beginning or End of Bridge.

PLAN
Bents 1 and 6



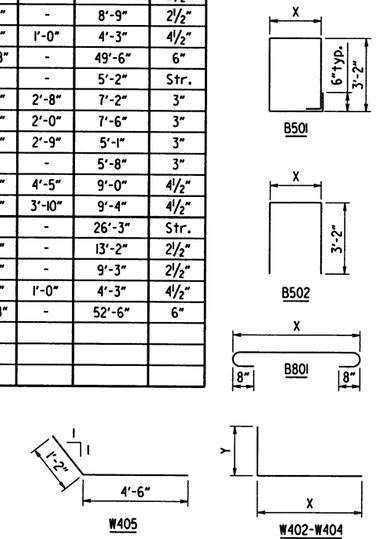
ELEVATION
Bent 6 Looking Ahead Shown
Bent 1 Similar

BAR LIST-PER BENT

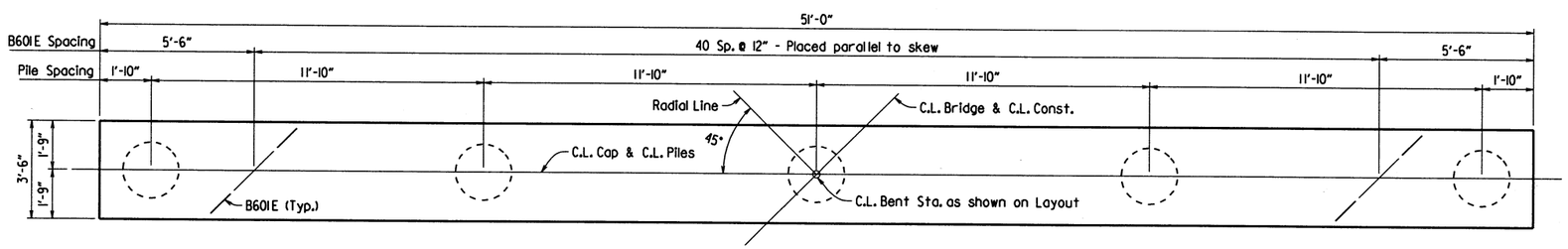
	MARK	NO. REQ'D.	"X"	"Y"	LENGTH	P.D.
Bent 1 or 6	B401	20	-	-	24'-9"	Str.
	B501	82	2'-8"	-	12'-2"	2 1/2"
	B502	15	2'-8"	-	8'-9"	2 1/2"
	B601E	40	3'-4"	1'-0"	4'-3"	4 1/2"
	B801	12	47'-8"	-	49'-6"	6"
	W401	40	-	-	5'-2"	Str.
	W402	4	4'-8"	2'-8"	7'-2"	3"
	W403	4	5'-8"	2'-0"	7'-6"	3"
	W404	12	2'-5"	2'-9"	5'-1"	3"
	W405	4	-	-	5'-8"	3"
	W601	8	4'-8"	4'-5"	9'-0"	4 1/2"
	W602	8	5'-8"	3'-10"	9'-4"	4 1/2"
Bents 2 - 5	B401	20	-	-	26'-3"	Str.
	B501	78	3'-2"	-	13'-2"	2 1/2"
	B502	25	3'-2"	-	9'-3"	2 1/2"
	B601E	82	3'-4"	1'-0"	4'-3"	4 1/2"
	B801	12	50'-8"	-	52'-6"	6"

BENDING DIAGRAMS

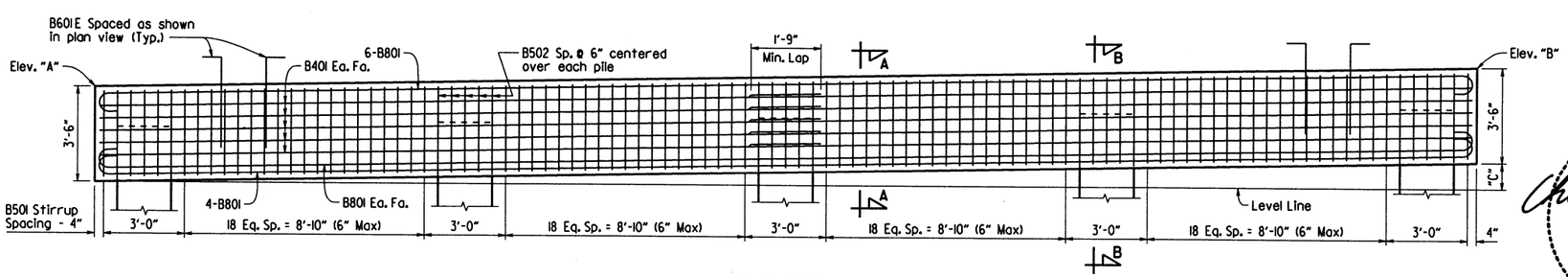
Dimensions are out to out of bars.



All Bars with an "E" suffix shall be Epoxy Coated.



PLAN
Bents 2 - 5



ELEVATION
Bents 2 - 5
Looking Ahead

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 M 31 or M 322, Type A, with mill test reports.

Preformed joint filler shall be subsidiary to the item "Class S Concrete - Bridge."

All piling shall be Grade 3, Fy = 45 ksi, and shall conform to Std. Dwg. No. 55021.

For "Section A-A" and "Section B-B", See Dwg. No. 60718.

For additional information, See Layout.

TABLE OF VARIABLES

Bent	Elev. "A"	Elev. "B"	"C"
1	248.21	247.25	11 1/2"
2	247.29	248.26	11 5/8"
3	247.32	248.23	10 5/16"
4	247.30	248.16	10 5/16"
5	247.22	248.03	9 3/4"
6	247.12	247.82	8 3/8"

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 9235 9-13-19 CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

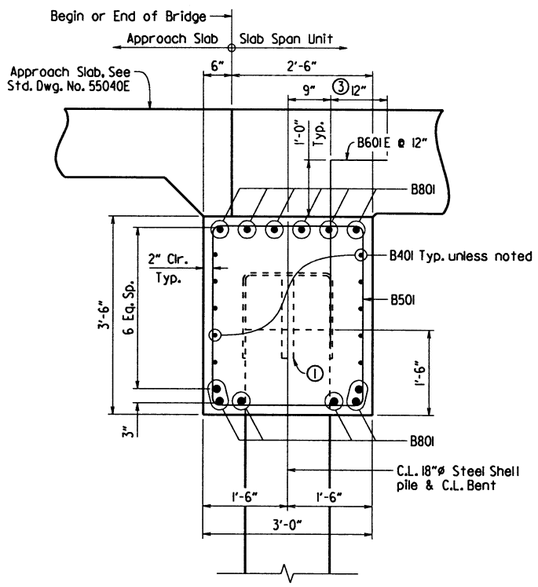
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 6/10/2019 FILENAME: bll0574xl_bt.dgn
CHECKED BY: JNP DATE: 8/5/19 SCALE: 3/8" = 1'-0" or As Shown
DESIGNED BY: JSQ DATE: 5/2019

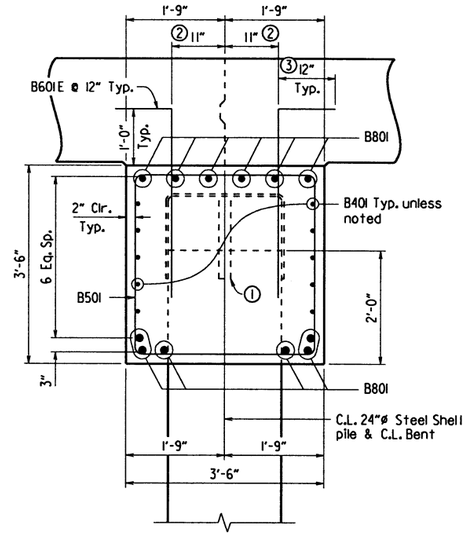
BRIDGE NO. 07444 DRAWING NO. 60717

PRINT DATE: 8/5/2019

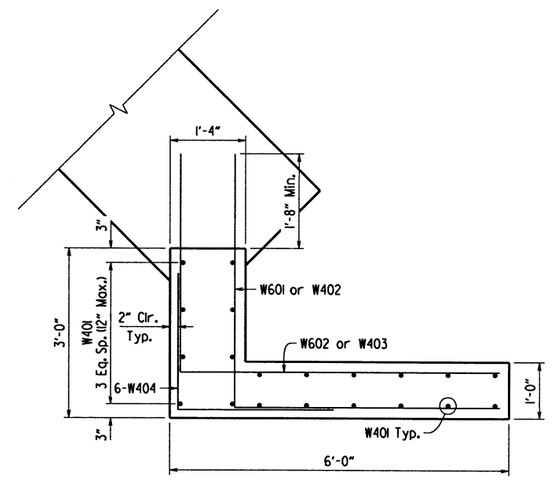
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	82	176
				①	07444 - BENTS - 60718			



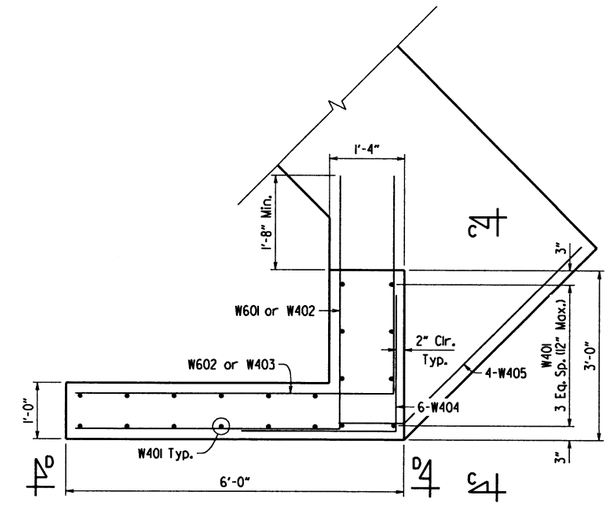
SECTION A-A
Bents 1 and 6



SECTION A-A
Bents 2 - 5



PLAN OF WING B
Bents 1 and 6

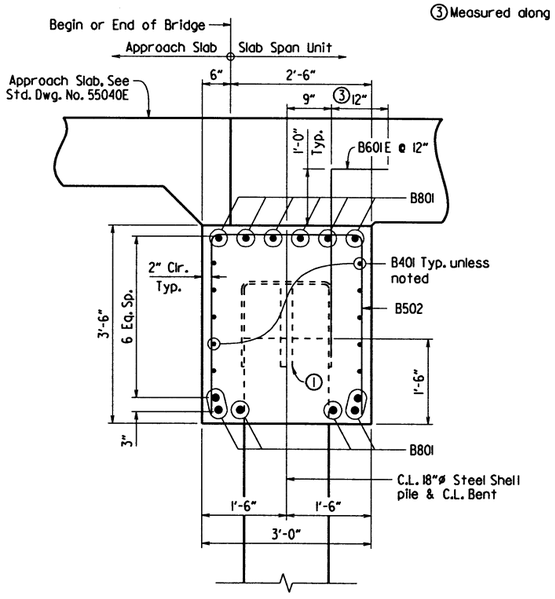


PLAN OF WING A
Bents 1 and 6

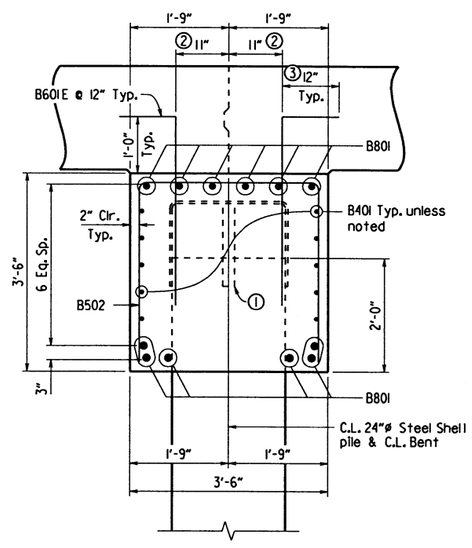
① Pile anchorage, See Std. Dwg. No. 55021 for additional information.

② Adjust position of B601E as necessary to avoid interference with piles.

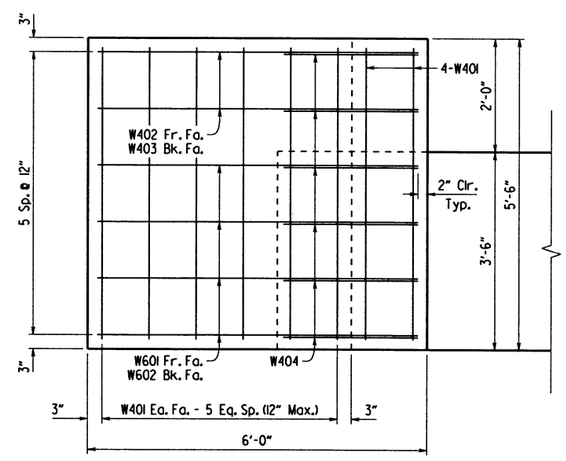
③ Measured along bar.



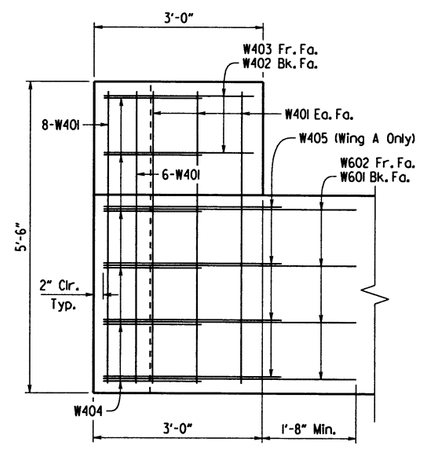
SECTION B-B
Bents 1 and 6



SECTION B-B
Bents 2 - 5



VIEW D-D
Bents 1 and 6
Wing A Shown, Wing B Similar



VIEW C-C
Bents 1 and 6
Wing A Shown, Wing B Similar

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

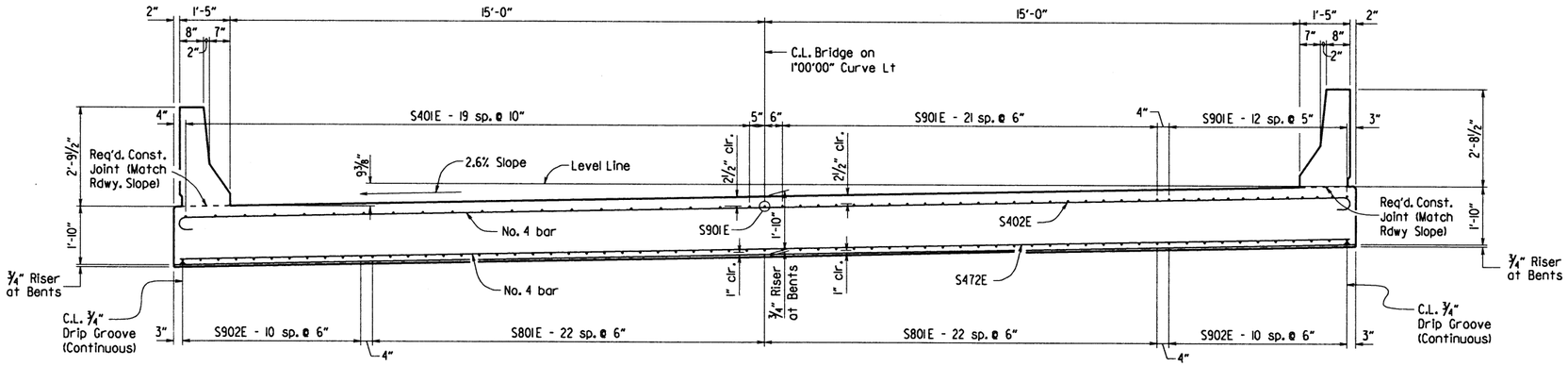
DRAWN BY: BHS DATE: 6/10/2019 FILENAME: bl07574xl_bl.dgn
CHECKED BY: JHP DATE: 9/13/19 SCALE: 3/4" = 1'-0" or
DESIGNED BY: JSQ DATE: 5/2019 As Shown
BRIDGE NO. 07444 DRAWING NO. 60718

PRINT DATE: 9/13/2019

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.		110574	83	176

(1) 07444 - 175'-0" Unit - 60719



TYP. HALF-SECTION THROUGH ROADWAY NEAR BRIDGE ENDS

Looking Ahead
½" = 1'-0"

TYP. HALF-SECTION THROUGH ROADWAY @ INT. BENTS

Looking Ahead
½" = 1'-0"

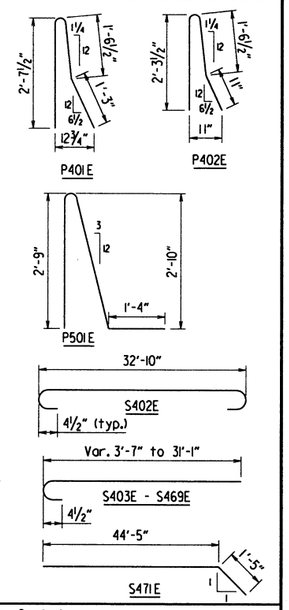
Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Roadway Face & Top of the Concrete Parapet Rail.

BAR LIST

	MARK	NO. REQ'D.	LENGTH	P.D.
RAILS	P401E	620	5'-6"	3"
	P402E	40	4'-10"	3"
	P403E	80	5'-9"	Str.
	P404E	140	9'-8"	Str.
	P405E	70	14'-8"	Str.
	P501E	620	7'-0"	3¾"
TOP	S401E	80	16'-5"	Str.
	S402E	347	33'-10"	3"
	S403E - S469E	2 each	4'-1" - 31'-7"	3"
	S470E	8	5'-5"	3"
	S471E	2	45'-10"	3"
	S901E	213	56'-6"	Str.
	D601E	64	5'-0"	Str.
BOTTOM	S470E	8	5'-5"	3"
	S471E	2	45'-10"	3"
	S472E	347	32'-10"	Str.
	S473E - S4139E	2 each	3'-7" - 31'-1"	Str.
	S801E	180	48'-6"	Str.
	S902E	88	50'-0"	Str.

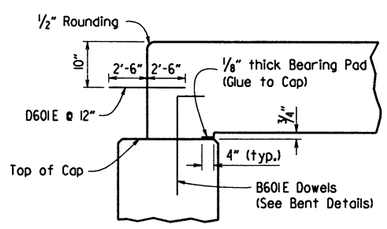
BENDING DIAGRAMS

Dimensions are out to out of bars.



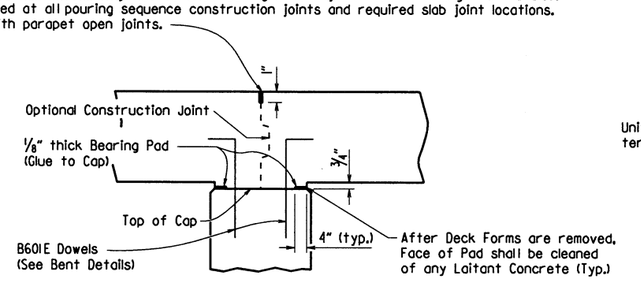
Bars with an "E" suffix are to be Epoxy Coated.

½" 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." Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the falsework is removed and before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. Slab joints shall align with parapet open joints.



DETAIL A

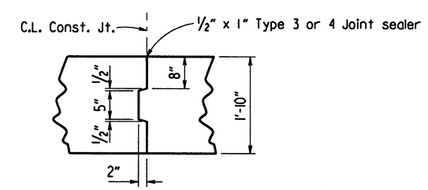
No Scale



Joint to be cleaned by sandblasting or other approved method before pouring joint.

DETAIL B

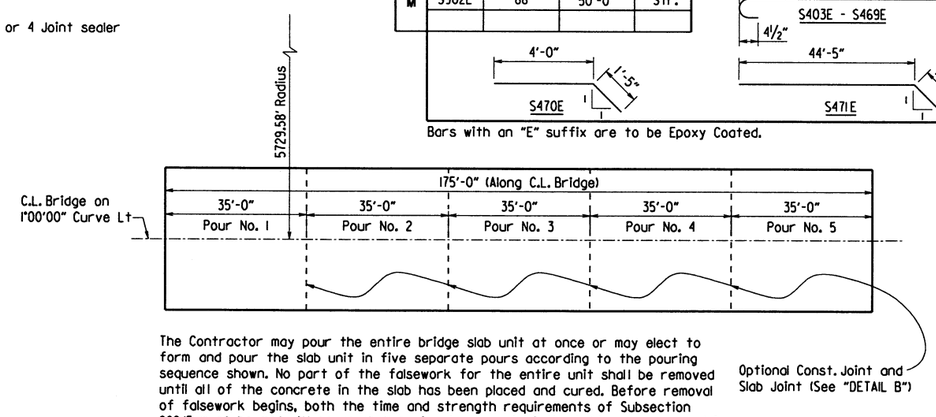
No Scale



Unit can be built with partial pours terminating at ends of spans only.

OPTIONAL DECK SLAB CONST. JT. DETAIL

No Scale



The Contractor may pour the entire bridge slab unit at once or may elect to form and pour the slab unit in five separate pours according to the pouring sequence shown. No part of the falsework for the entire unit shall be removed until all of the concrete in the slab has been placed and cured. Before removal of falsework begins, both the time and strength requirements of Subsection 802.15 must be met. All pours shall begin at one end of the bridge and proceed in sequence to the other end of the bridge. 72 hours shall elapse between the end of a pour and the start of the next pour.

Concrete in the bridge superstructure shall be placed and consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence shown and for any railing pours made before the entire bridge slab has been poured.

POURING SEQUENCE FOR CONTINUOUS R.C. SLAB UNITS

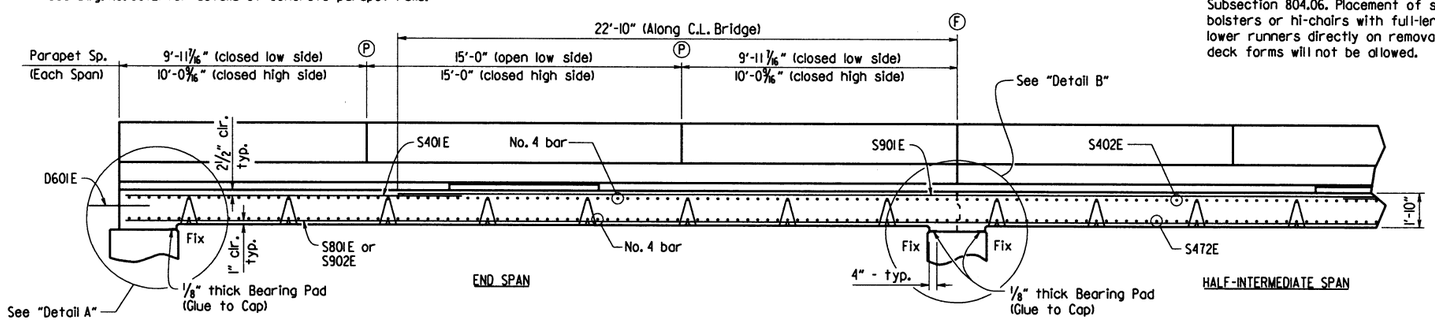
No Scale

See Dwg. No. 60721 for details of concrete parapet rails.

Ⓟ C.L. Partial-Depth Parapet Joint (1¼" to 1" max.). Stop 1'-2" from top of slab.

Ⓕ C.L. Full-Depth Parapet Joint (1¼" to 1" max.). Stop 4" from top of slab.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06. Placement of slab bolsters or hi-chairs with full-length lower runners directly on removable deck forms will not be allowed.



LONGITUDINAL SECTION ALONG C.L. BRIDGE

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF 175'-0" CONTINUOUS R.C. SLAB UNIT
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

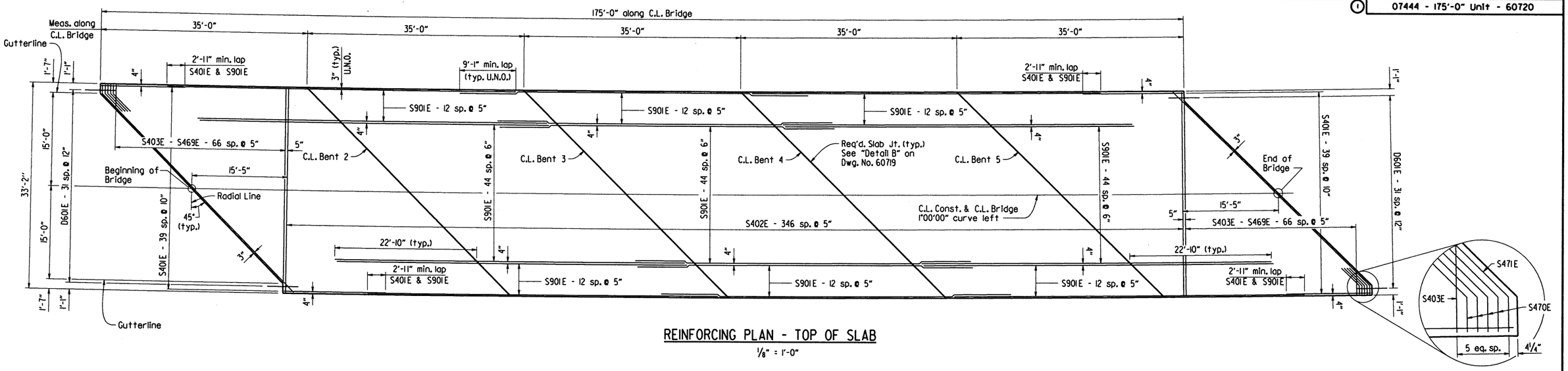
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 4/15/2019 FILENAME: bll0574xl.sl.dgn
CHECKED BY: JSQ DATE: 9/4/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2016

BRIDGE NO. 07444 DRAWING NO. 60719

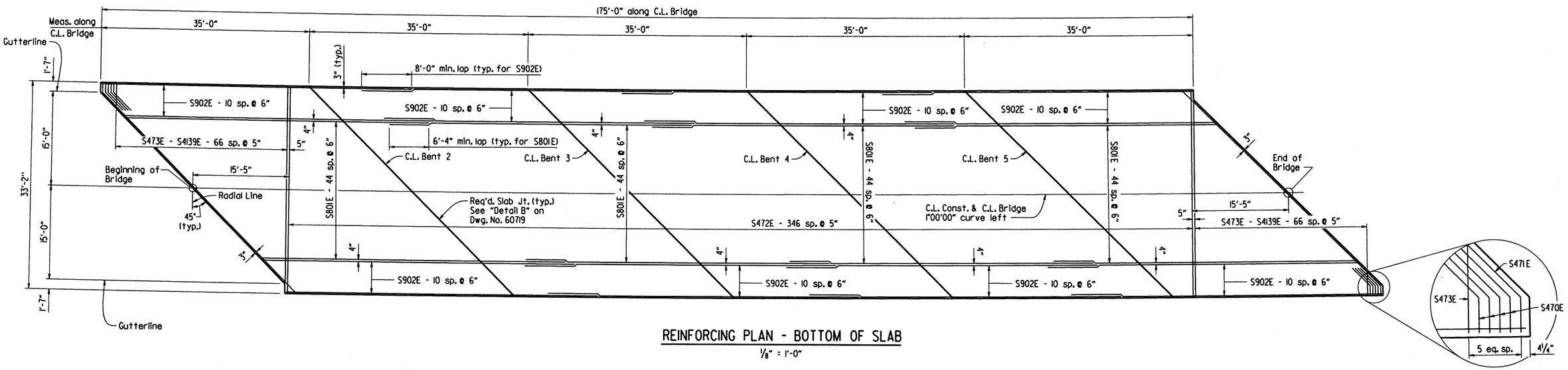
PRINT DATE: 9/4/2019

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.		110574	84	176
				07444 - 175'-0" Unit - 60720				



REINFORCING PLAN - TOP OF SLAB

1/8" = 1'-0"

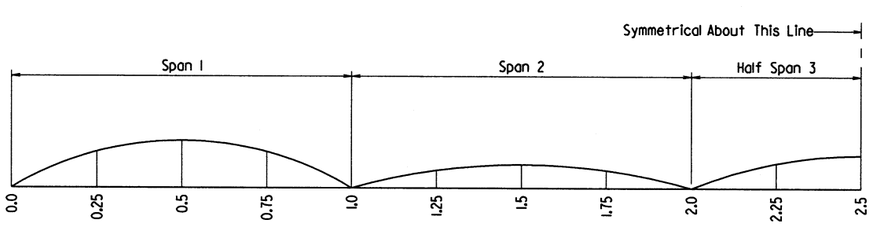


REINFORCING PLAN - BOTTOM OF SLAB

1/8" = 1'-0"

Note: Longitudinal lines of concrete bridge deck and longitudinal reinforcing bars are curved and concentric to a 1°00'00" curve left which is located along centerline of bridge. Transverse reinforcing bars are placed on radial lines. Spacing shown for transverse reinforcing bars is measured along centerline of bridge.

Deflections shown are from a chord from C.L. Bent to C.L. Bent. Vertical curve corrections are not included. Tolerance + 1/4" for camber and vertical alignment.



DEAD LOAD CAMBER DIAGRAM

DEAD LOAD DEFLECTIONS

POINT	TOTAL DEFLECTION
0.0	0"
0.25	0.148"
0.5	0.187"
0.75	0.102"
1.0	0"
1.25	0.013"
1.5	0.043"
1.75	0.024"
2.0	0"
2.25	0.054"
2.5	0.092"

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF 175'-0" CONTINUOUS R.C. SLAB UNIT
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

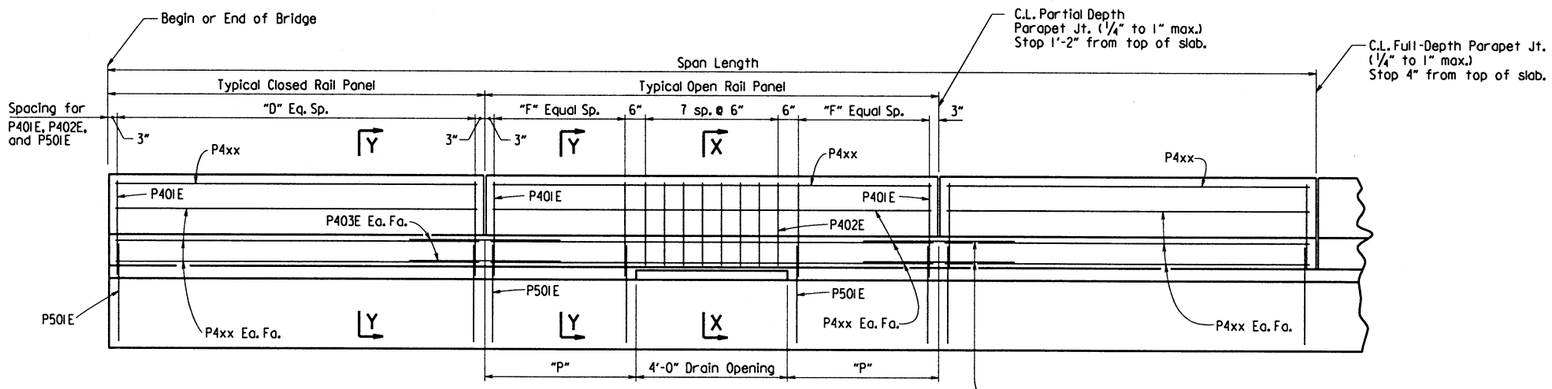
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 4/15/2019 FILENAME: b110574xl_sl.dgn
CHECKED BY: JSQ DATE: 9/4/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2018

BRIDGE NO. 07444 DRAWING NO. 60720

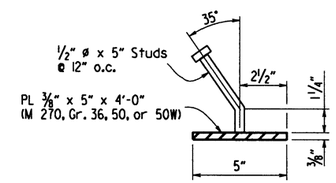
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	85	176

(1) 07444, 07445, 07446 & 07447 - Common Details - 60721



ELEVATION - CONCRETE PARAPET RAIL

No Scale

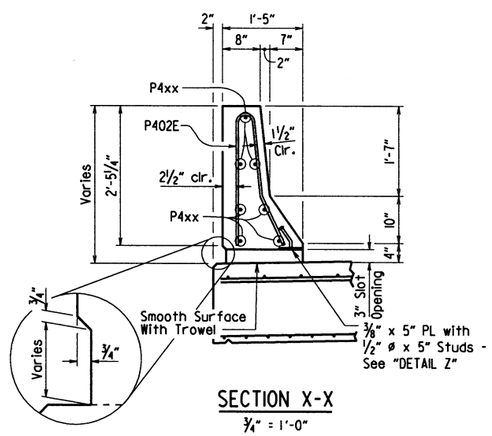


DETAIL Z

No Scale

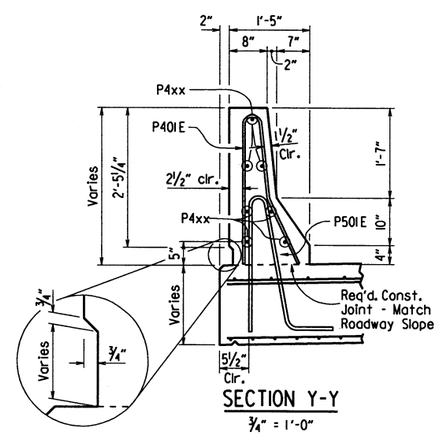
Parapet studs shall be 5" long, granular flux filled, solid fluxed, or equal and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plates shall be measured and paid for as "Class S(AE) Concrete-Bridge".

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 considered subsidiary to "Class S(AE) Concrete-Bridge."



SECTION X-X

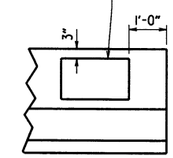
3/4" = 1'-0"



SECTION Y-Y

3/4" = 1'-0"

Place Type D Bridge Name Plate on right parapet rail approx. 1'-0" from beg. of bridge.



NAME PLATE DETAIL

No Scale

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, Seventh Edition (2014) with 2015 interim revisions.

LIVE LOADING: HL93

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi
Structural Steel (ASTM A709, Gr. 50)	Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W)	Fy = 50,000 psi

CONCRETE: All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered 3/4" unless otherwise noted.

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.

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.

BEARING PAD: The 1/8" bearing pad shall be an unreinforced pad meeting the requirements of Section 808, or shall be nylon reinforced neoprene meeting the requirements of Subsection 807.20. The pad shall be furnished in one piece for the required width and full length of the bearing and glued to the bent cap with an adhesive approved by the Engineer. Pads and adhesive will not be paid for directly, but will be considered subsidiary to the item "Class S(AE) Concrete-Bridge".

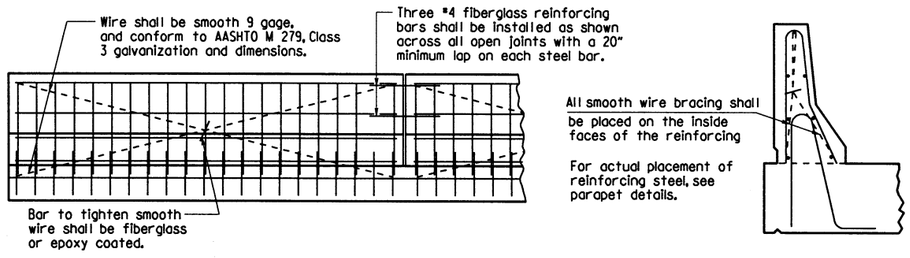
REINFORCING STEEL: All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports and shall be epoxy coated. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL: All structural steel shall be ASTM A709, Gr. 36, 50, or 50W and will not be paid for directly, but will be considered subsidiary to the item "Class S(AE) Concrete-Bridge". All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

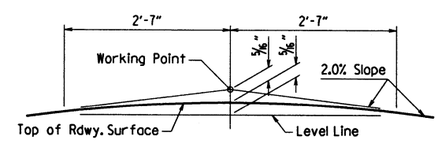
All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval. All welding shall conform to Subsection 807.26.



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.

DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale



Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

BRIDGES IN NORMAL CROWN

TABLE OF VARIABLES

Closed Rail Panel			Open Rail Panel			
Panel Length	"D"	P4xx Bar	Panel Length	"F"	"P"	P4xx Bar
10'-0"	19	P404E	15'-0"	10	5'-6"	P405E
15'-0"	29	P404E				
9'-11 7/16"	19	P404E				
10'-0 9/16"	19	P404E				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

COMMON DETAILS OF CONTINUOUS R.C. SLAB UNITS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

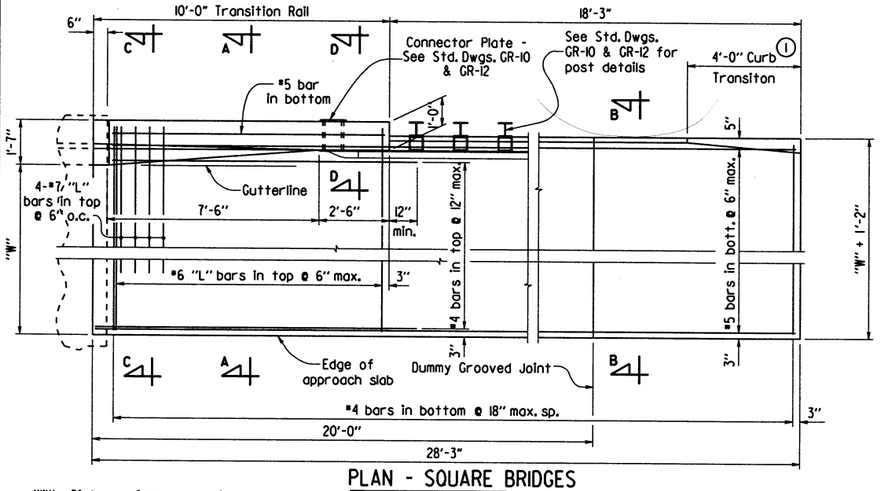
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 4/9/2019 FILENAME: b110574_cl.dgn
CHECKED BY: JSQ DATE: 9/4/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2016
BRIDGE NO. 07444, 07445, 07446 & 07447 DRAWING NO. 60721

PRINT DATE: 9/4/2019

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.		110574	86	176

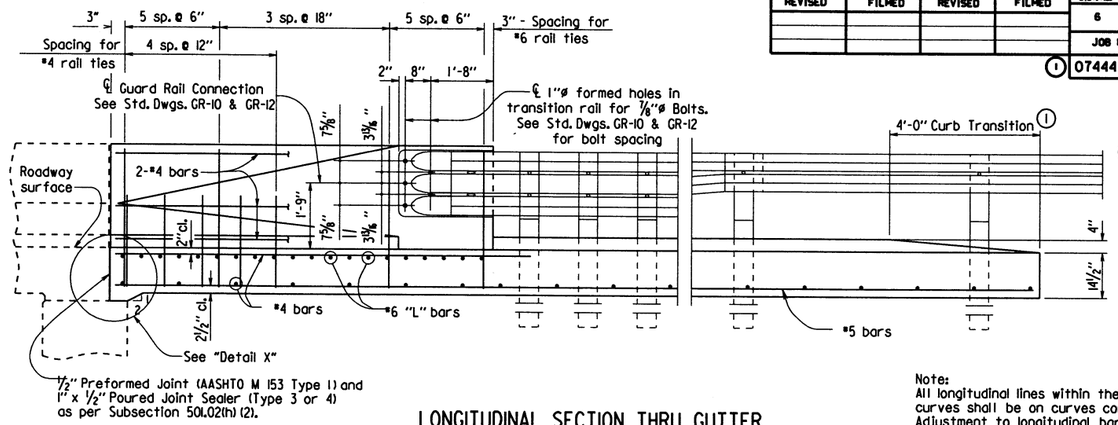
(1) 07444-07447 - APPR. GUTTER - 60722



PLAN - SQUARE BRIDGES

"W" = Distance from gutterline to edge of pavement or edge of approach slab, if present, but in no case less than 3'-0".

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



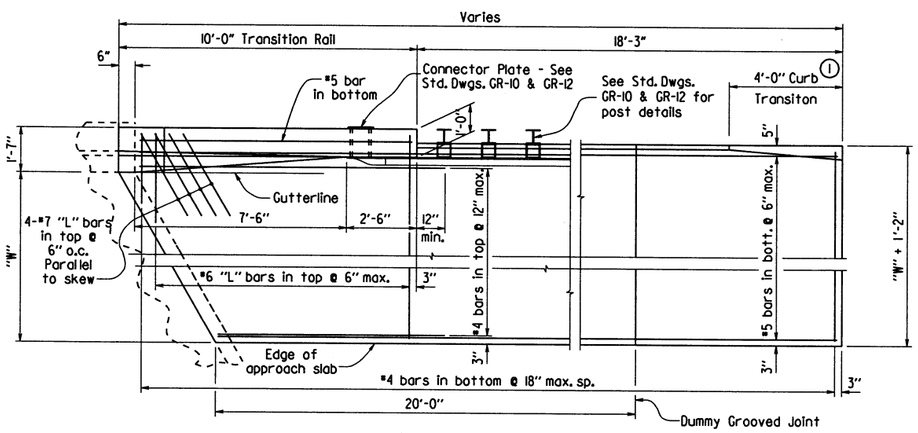
(1) Construct curb with height-transition as shown if drop inlet is not used at end of gutter.

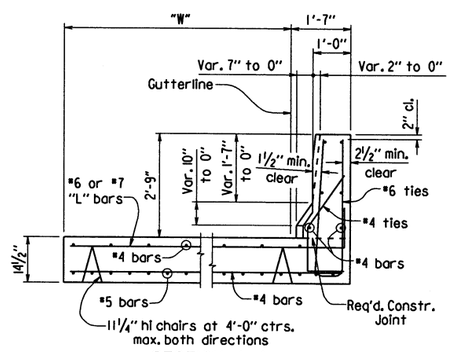
Construct curb full height (no height-transition) if drop inlet is used at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.

LONGITUDINAL SECTION THRU GUTTER

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

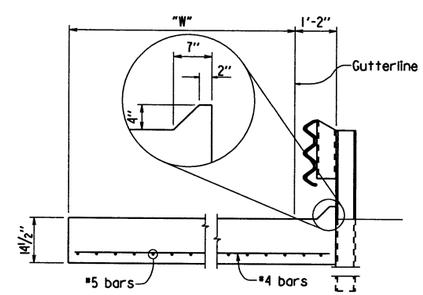
Note:
All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.





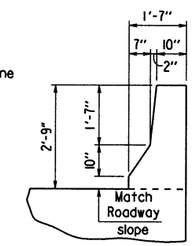
SECTION A-A

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



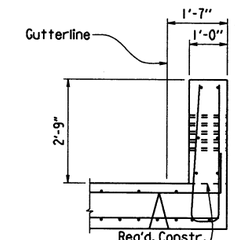
SECTION B-B

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



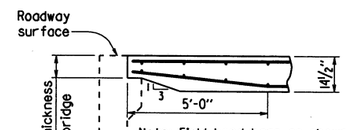
SECTION C-C

At End of Transition Rail
Scale: 1/2" = 1'-0"



SECTION D-D

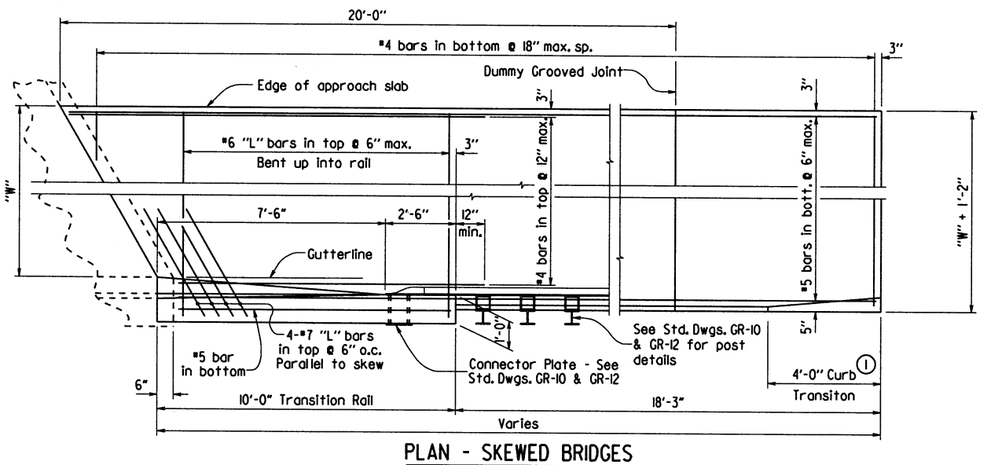
Scale: 1/2" = 1'-0"



Note: Field bend bars as shown when "D" is less than 14½"

DETAIL X

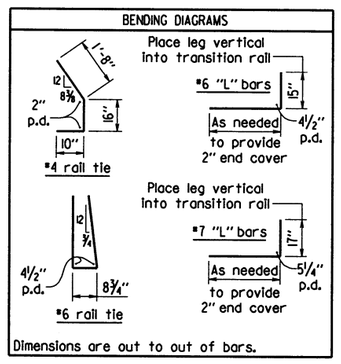
Scale: 3/8" = 1'-0"



PLAN - SKEWED BRIDGES

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

BENDING DIAGRAMS



Dimensions are out to out of bars.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

"W"	Concrete	Reinforcing Steel
4'-0"	8.52 cu.yd.	865 lb.

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.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

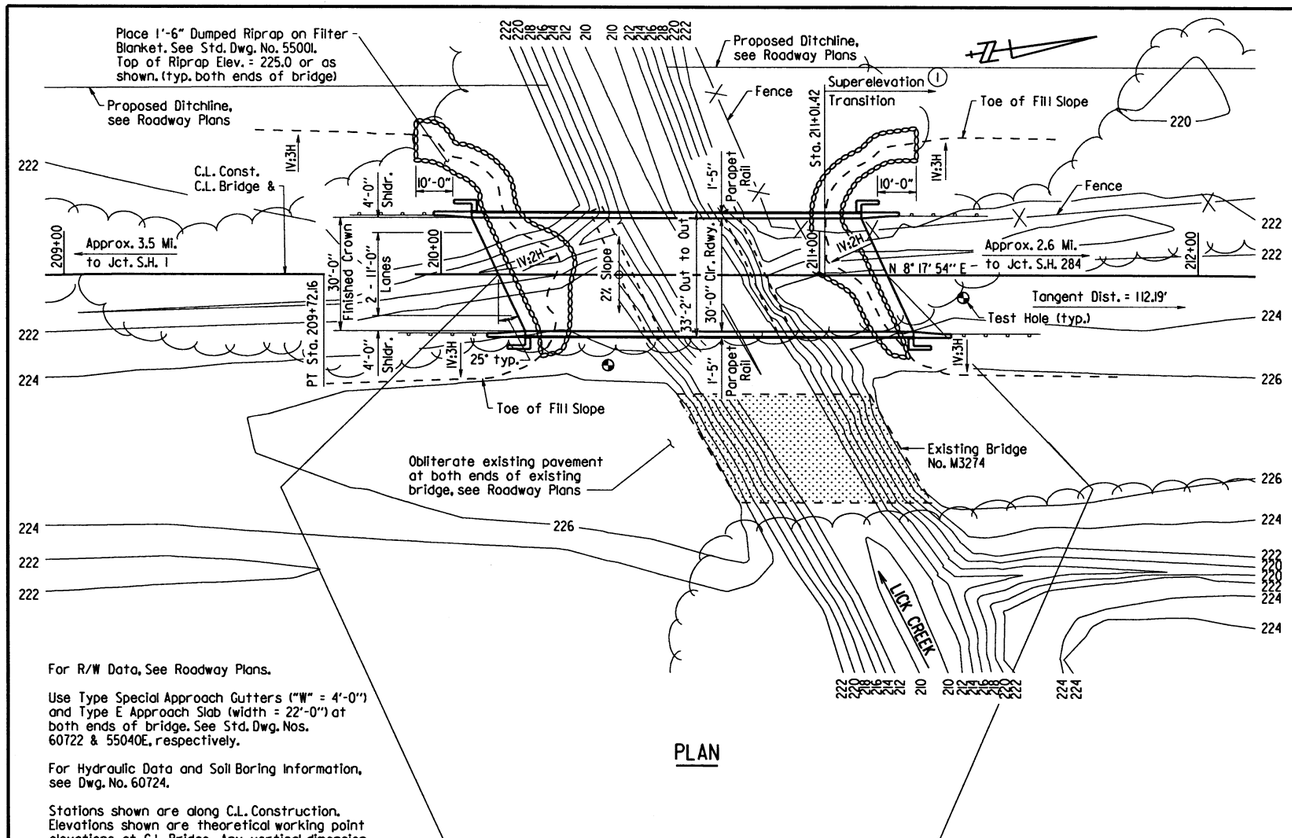
DRAWN BY: JSO DATE: 5/22/19 FILENAME: b110574_agl.dgn
CHECKED BY: JYP DATE: 8/5/19 SCALE: As Shown
DESIGNED BY: STD. DATE: --

BRIDGE NO. 07444-07447 DRAWING NO. 60722

PRINT DATE: 8/1/2019

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.		110574	87	176
①	07445 - LAYOUT - 60723			



PLAN

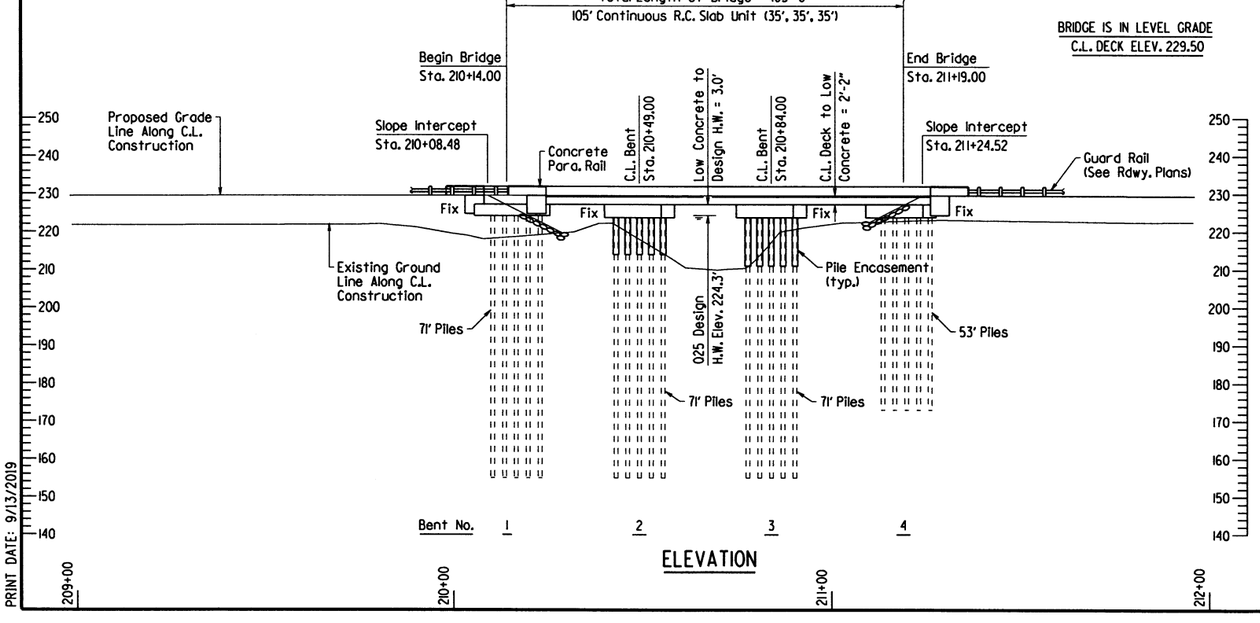
For R/W Data, See Roadway Plans.

Use Type Special Approach Gutters ("W" = 4'-0") and Type E Approach Slab (width = 22'-0") at both ends of bridge. See Std. Dwg. Nos. 60722 & 55040E, respectively.

For Hydraulic Data and Soil Boring Information, see Dwg. No. 60724.

Stations shown are along C.L. Construction. Elevations shown are theoretical working point elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on theoretical working point elevation at C.L. Bridge. See "Rounding Detail" on Drawing Number 60721 for additional information.

① For details of superelevation transition, see "Superelevation Sketch".



ELEVATION

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown on the Survey Control Data Sheets.

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, Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014) with 2015 Interim Revisions.

LIVE LOADING: HL-93

SEISMIC PERFORMANCE ZONE: 4 S_{D1}: 0.725 Site Class: E

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi
Structural Steel (ASTM A709, Gr. 50)	Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W)	Fy = 50,000 psi

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

STEEL SHELL PILING: Piling in Bents 1 and 4 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 178 tons per pile. Piling in Bents 2 and 3 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 338 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 155' or lower at Bents 1 thru 3 and to a minimum tip elevation of 173' or lower at Bent 4. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g).

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling (__" Dia.)".

PILE ENCASEMENT: Pile encasement for Bents 2 and 3 shall extend from bottom of cap to 3' below natural ground. See Std. Dwg. No. 55021 for additional information.

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b) "Method B-Wave Equation Analysis (WEAP)". It is estimated that a minimum rated hammer energy required to obtain the ultimate bearing capacity will be 33,000 ft.-lbs. per blow for all piles at Bents 1 and 4 and 73,000 ft.-lbs. per blow for all piles at Bents 2 and 3.

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.

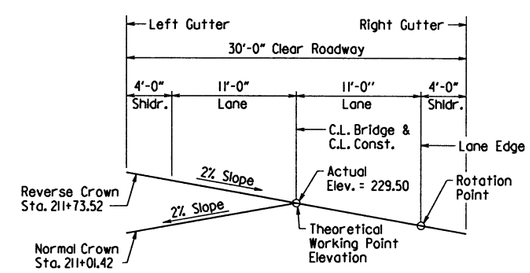
PROTECTIVE SURFACE TREATMENT: Class 1 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

DETAIL DRAWINGS:	DRAWING NOS.
End Bents	60725-60726
Intermediate Bents	60725-60726
105' Continuous R.C. Slab Unit	60721, 60727-60728
Type Special Approach Gutters	60722
Concrete Filled Steel Shell Piling	55021
Type E Approach Slab	55040E

EXISTING BRIDGE: Existing Bridge No. M3274 (Log Mile 3.48) is 29.3' wide (28.2' clear roadway) and 50.0' long and consists of a concrete deck and timber subdeck with W-Beams supported by timber pile bents. The existing bridge is located approximately 45' upstream from the proposed new bridge.

REMOVAL AND SALVAGE: After the new bridge is opened to traffic, existing Bridge No. M3274 shall be removed in accordance with Section 205. Exposed timber piling from a previous structure shall also be removed to a depth of 2' below natural ground. Additional debris, consisting of concrete slabs and concrete posts, shall also be removed. This work shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No. _)". All material, including additional debris, from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.



SUPERELEVATION SKETCH

Looking Ahead
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER LICK CREEK
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

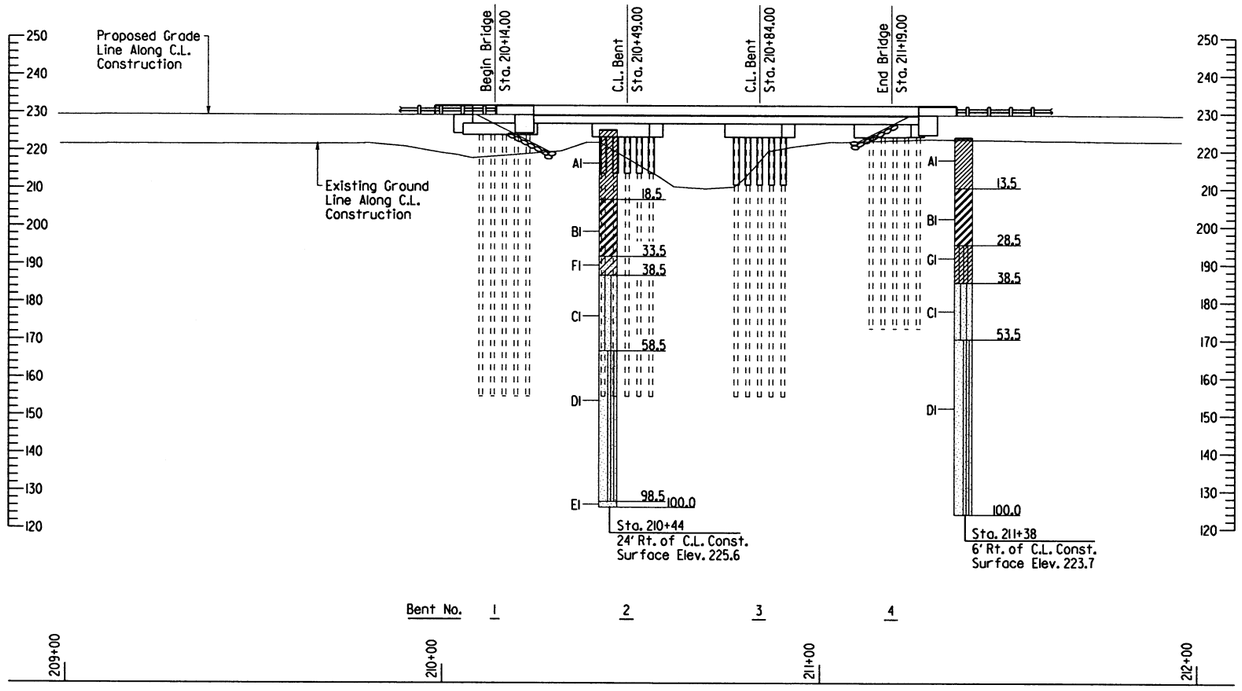
LITTLE ROCK, ARK.

DRAWN BY: DKS	DATE: 1/12/18	FILENAME: b110574x2_11	
CHECKED BY: KAP	DATE: 9/13/19	SCALE: 1" = 20'	
DESIGNED BY: DKS	DATE: 11/2017		

BRIDGE NO. 07445 DRAWING NO. 60723

PRINT DATE: 9/13/2019

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.		110574	88	176
				(1)		07445 - LAYOUT - 60724		



ELEVATION OF SOIL BORINGS

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(2) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	25	3100	223.1	224.3
Base	100	4220	223.5	224.7
Extreme	500	5600	223.8	225.0
Overtopping	>500	-	-	-

(2) Unconstricted water surface without structure or roadway approaches.

Q100 Backwater Elevation for Existing Structure = 224.7 ft.
Proposed Low Bridge Chord Elevation = 227.33 ft.

Drainage Area = 11.3 square miles
Historical H.W. Elevation = N/A

BORING LEGEND

A1-Lean Clay
B1-Fat Clay
C1-Silty Sand
D1-Sand with Silt
E1-Sand
F1-Sandy Lean Clay
G1-Clayey Silty Sand

"N" VALUES

Sta. 210+44 - 24' Rt. of C.L. Const.

1.0-2.5, N=3
3.5-5.0, N=10
8.5-10.0, N=7
18.5-20.0, N=5
23.5-25.0, N=8
28.5-30.0, N=10
33.5-35.0, N=9
38.5-40.0, N=14
43.5-45.0, N=18
48.5-50.0, N=26
58.5-60.0, N=22
68.5-70.0, N=38
78.5-80.0, N=29
88.5-90.0, N=37
98.5-100.0, N=46

Sta. 211+38 - 6' Rt. of C.L. Const.

1.0-2.5, N=5
3.5-5.0, N=6
6.0-7.5, N=9
13.5-15.0, N=16
23.5-25.0, N=13
28.5-30.0, N=11
33.5-35.0, N=8
38.5-40.0, N=22
43.5-45.0, N=27
48.5-50.0, N=41
53.5-55.0, N=15
58.5-60.0, N=23
68.5-70.0, N=25
78.5-80.0, N=30
88.5-90.0, N=36
98.5-100.0, N=36

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER LICK CREEK
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

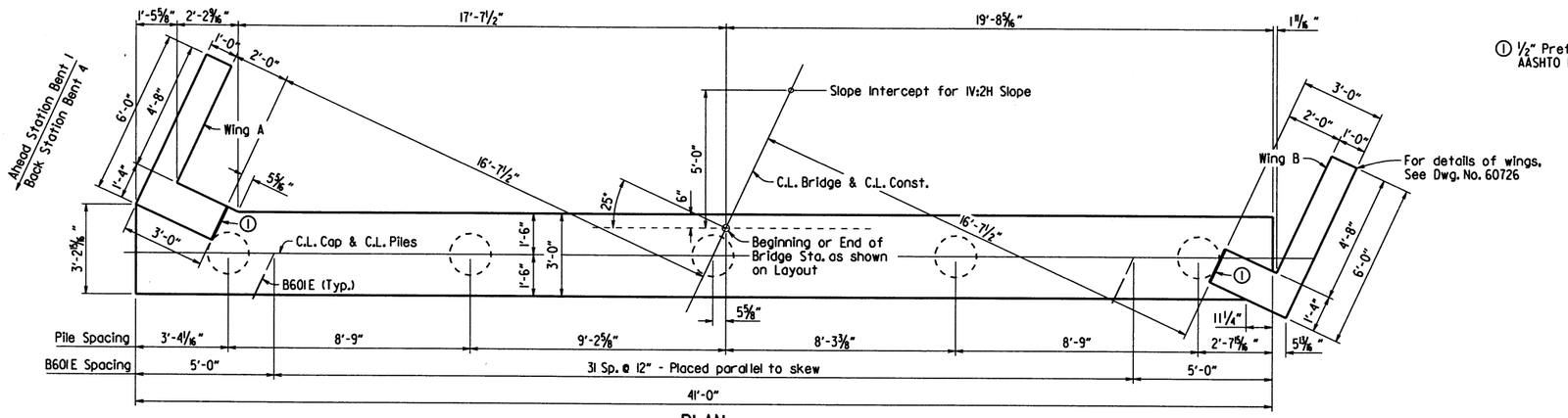
DRAWN BY: DKS DATE: 1/12/18 FILENAME: bll0574x2_ll
CHECKED BY: KAP DATE: 9/13/19 SCALE: 1" = 20'
DESIGNED BY: DKS DATE: 1/12/2017

BRIDGE NO. 07445 DRAWING NO. 60724

PRINT DATE: 9/13/2019

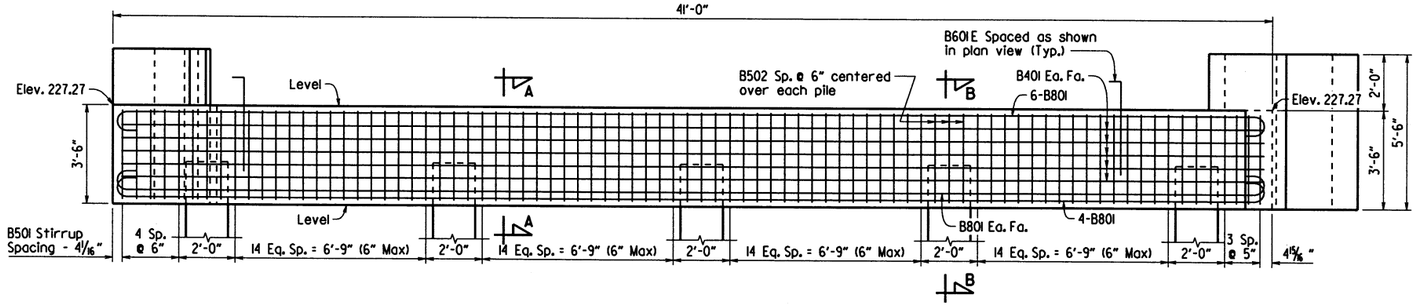
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	89	176
				①	07445 - BENTS - 60725			

① 1/2" Preformed Joint AASHTO M 153 Type I



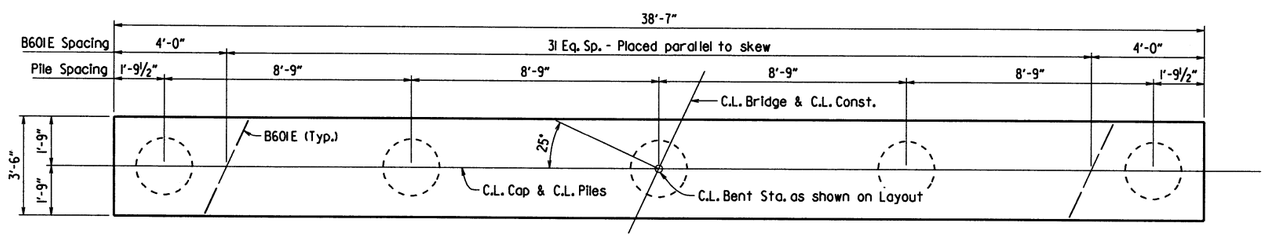
PLAN

Bents 1 and 4



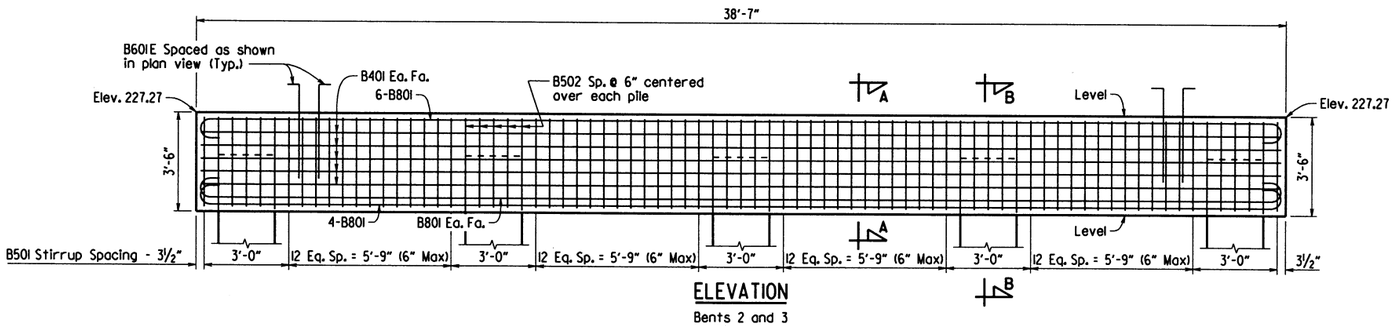
ELEVATION

Looking Ahead Bent 4 Shown
Bent 1 Similar



PLAN

Bents 2 and 3



ELEVATION

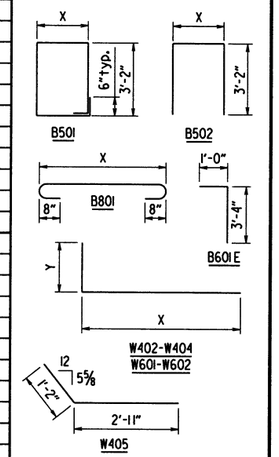
Bents 2 and 3
Looking Ahead

BAR LIST-PER BENT

	MARK	NO. REQ'D.	"X"	"Y"	LENGTH	P.D.
Bent 1 or 4	B401	10	-	-	40'-8"	Str.
	B501	69	2'-8"	-	12'-2"	2½"
	B502	15	2'-8"	-	8'-9"	2½"
	B601E	32	-	-	4'-3"	4½"
	B801	12	40'-8"	-	42'-6"	6"
	W401	40	-	-	5'-2"	Str.
	W402	4	4'-8"	2'-8"	7'-2"	3"
	W403	4	5'-8"	2'-0"	7'-6"	3"
	W404	12	2'-5"	2'-9"	5'-1"	3"
	W405	4	-	-	4'-1"	3"
	W601	8	4'-8"	4'-5"	9'-0"	4½"
	W602	8	5'-8"	3'-10"	9'-4"	4½"
Bent 2 or 3	B401	10	-	-	38'-3"	Str.
	B501	54	3'-2"	-	13'-2"	2½"
	B502	25	3'-2"	-	9'-3"	2½"
	B601E	64	-	-	4'-3"	4½"
	B801	12	38'-3"	-	40'-1"	6"

BENDING DIAGRAMS

Dimensions are out to out of bars.



All bars with an "E" suffix shall be Epoxy Coated.

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 ¾" unless otherwise noted.

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.

Preformed joint filler shall be subsidiary to the item "Class S Concrete - Bridge."

All piling shall be Grade 3, Fy = 45 ksi, and shall conform to Std. Dwg. No. 55021.

For "Section A-A" and "Section B-B", See Dwg. No. 60726.

For additional information, See Layout.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 9235 9-13-19 CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

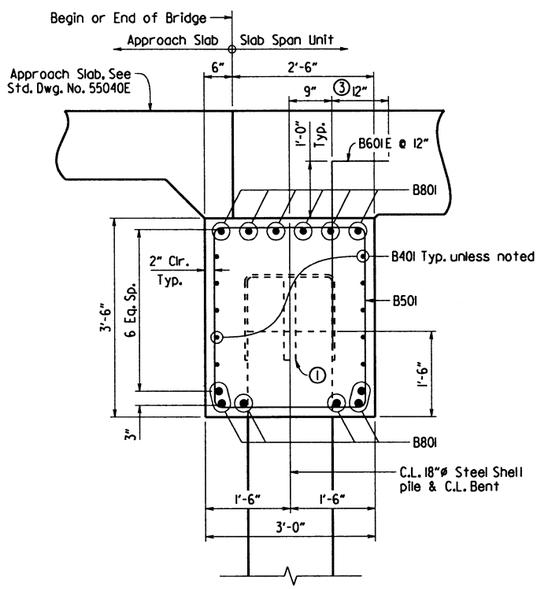
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 6/10/2019 FILENAME: bl10574x2_bl.dgn
CHECKED BY: JHP DATE: 8/5/19 SCALE: ⅜" = 1'-0" or As Shown
DESIGNED BY: JSQ DATE: 5/2019

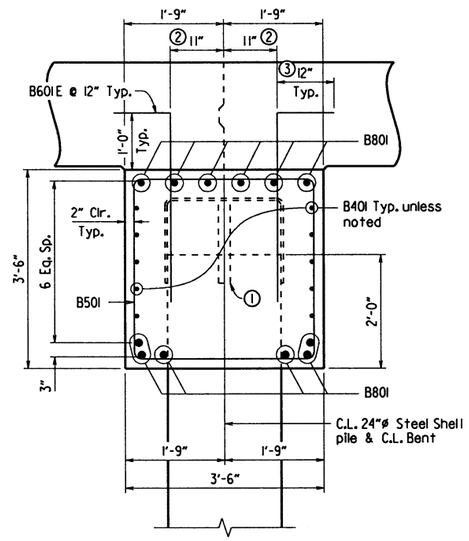
BRIDGE NO. 07445 DRAWING NO. 60725

PRINT DATE: 8/5/2019

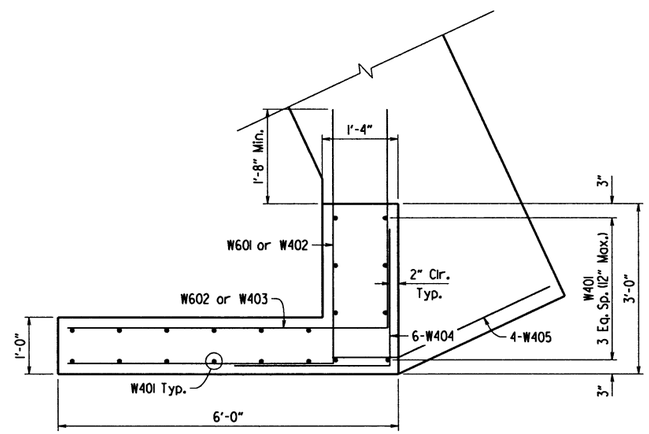
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	90	176
				① 07445 - BENTS - 60726				



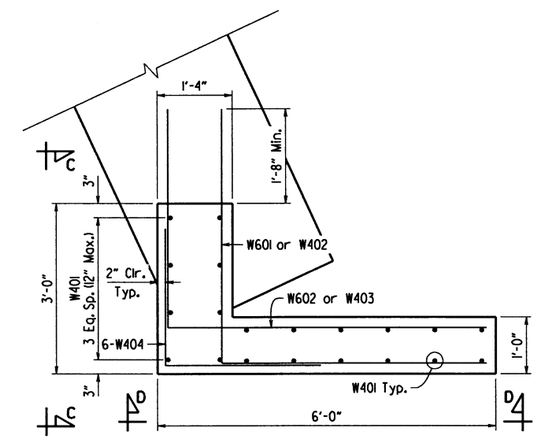
SECTION A-A
Bents 1 and 6



SECTION A-A
Bents 2 - 5



PLAN OF WING A
Bents 1 and 4

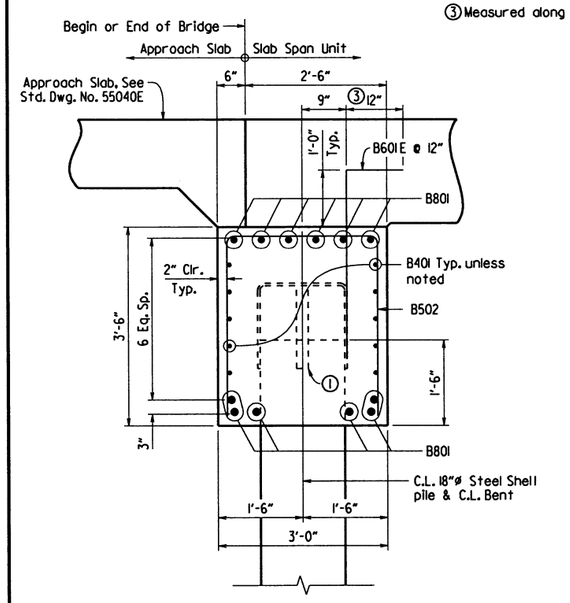


PLAN OF WING B
Bents 1 and 4

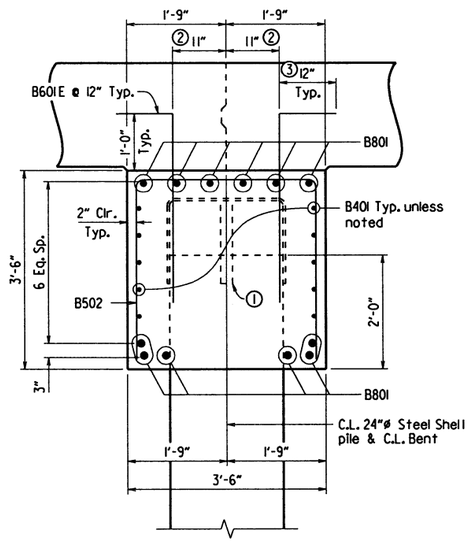
① Pile anchorage, See Std. Dwg. No. 55021 for additional information.

② Adjust position of B601E as necessary to avoid interference with piles.

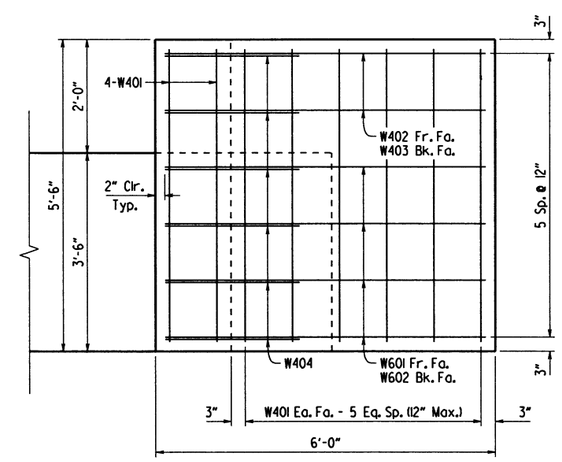
③ Measured along bar.



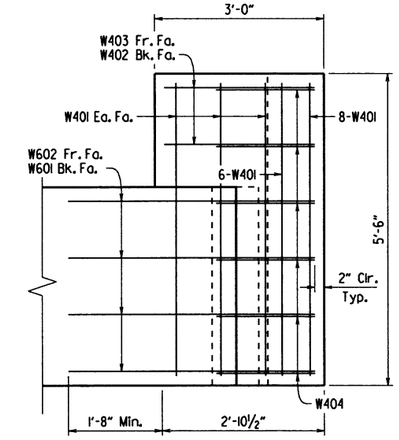
SECTION B-B
Bents 1 and 6



SECTION B-B
Bents 2 - 5



VIEW D-D
Bents 1 and 4



VIEW C-C
Bents 1 and 4

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 6/10/2019 FILENAME: b110574x2.bl.dgn
CHECKED BY: JHP DATE: 9/13/19 SCALE: 3/4" = 1'-0" or As Shown
DESIGNED BY: JSQ DATE: 5/2019

BRIDGE NO. 07445 DRAWING NO. 60726

PRINT DATE: 9/13/2019

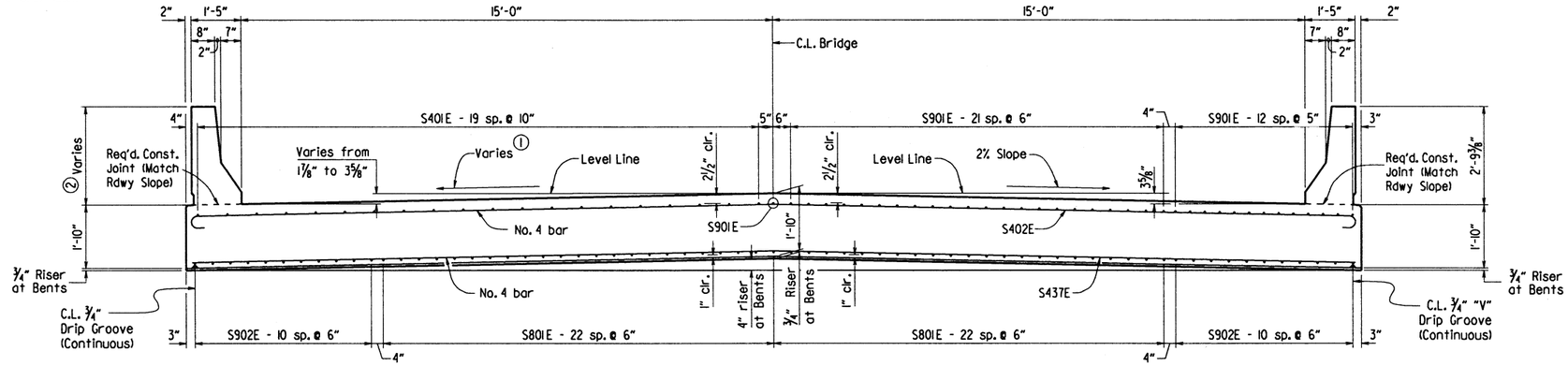
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		110574	91	176

(1) 07445 - 105'-0" Unit - 60727

(1) 2% Slope from Sta. 210+14.00 to Sta. 211+01.42. Transitions from 2% at Sta. 211+01.42 to 0.98% at Sta. 211+19.00.

(2) 2'-9⅜" from Sta. 210+07.01 to Sta. 211+01.42 Varies from 2'-9⅜" at Sta. 211+01.42 to 2'-9¼" at Sta. 211+12.01.



TYP. HALF-SECTION THROUGH ROADWAY NEAR BRIDGE ENDS

½" = 1'-0"

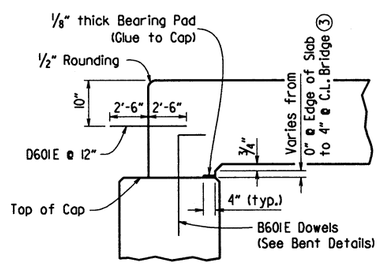
TYP. HALF-SECTION THROUGH ROADWAY @ INT. BENTS

½" = 1'-0"

Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Roadway Face & Top of the Concrete Parapet Rail.

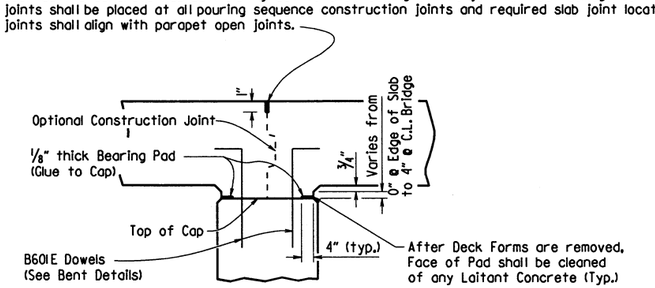
½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as "Class S(AE) Concrete-Bridge." Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the falsework is removed and before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. Slab joints shall align with parapet open joints.

(3) At Bent 4 left side looking ahead station, Varies from 1" @ Edge of Slab to 4" @ C.L. Bridge



DETAIL A

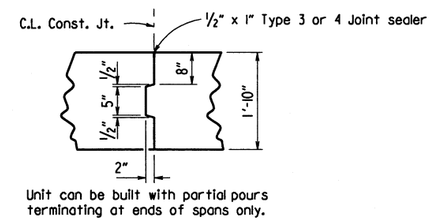
No Scale



Joint to be cleaned by sandblasting or other approved method before pouring joint.

DETAIL B

No Scale



Unit can be built with partial pours terminating at ends of spans only.

OPTIONAL DECK SLAB CONST. JT. DETAIL

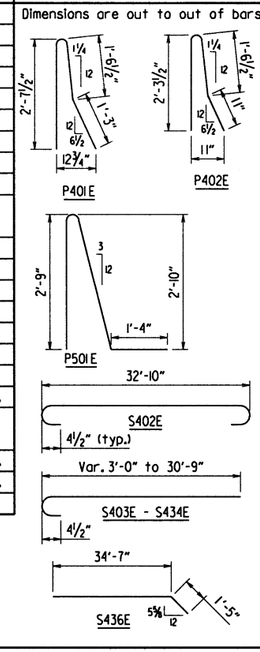
No Scale

BAR LIST

	MARK	NO. REQ'D.	LENGTH	P.D.
RAILS	P401E	372	5'-6"	3"
	P402E	48	4'-10"	3"
	P403E	48	5'-9"	Str.
	P404E	84	9'-8"	Str.
	P405E	42	14'-8"	Str.
	P501E	372	7'-0"	3¾"
TOP	S401E	80	15'-7"	Str.
	S402E	218	33'-10"	3"
	S403E - S434E	2 each	3'-6" - 31'-3"	3"
	S435E	2	3'-9"	3"
	S436E	2	36'-0"	3"
	S901E	142	45'-0"	Str.
	D601E	64	5'-0"	Str.
BOTTOM	S435E	2	3'-9"	3"
	S436E	2	36'-0"	3"
	S437E	218	32'-10"	Str.
	S438E - S469E	2 each	3'-0" - 30'-9"	Str.
	S801E	90	55'-6"	Str.
	S902E	44	56'-6"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



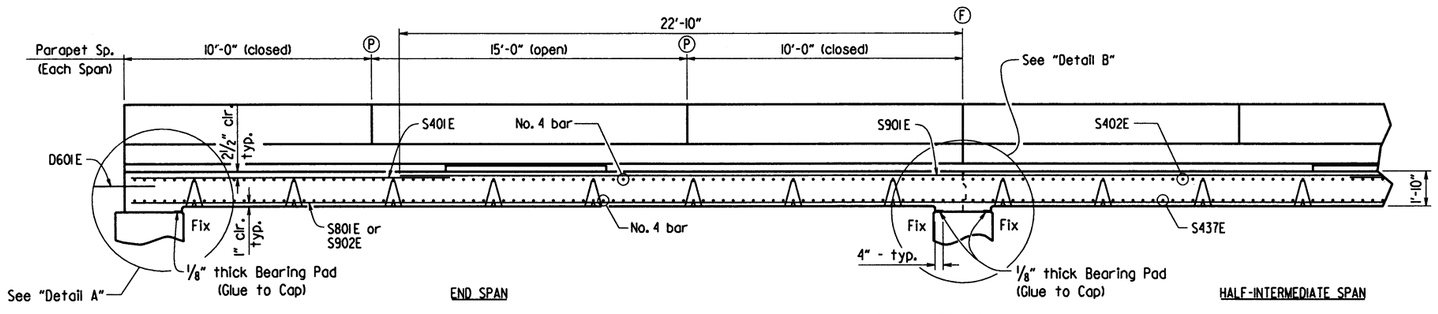
Bars with an "E" suffix are to be Epoxy Coated.

See Dwg. No. 60721 for details of concrete parapet rails.

Ⓟ C.L. Partial-Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of slab.

Ⓕ C.L. Full-Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of slab.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.0. Placement of slab bolsters or hi-chairs with full-length lower runners directly on removable deck forms will not be allowed.



LONGITUDINAL SECTION ALONG C.L. BRIDGE

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF 105'-0"
CONTINUOUS R.C. SLAB UNIT
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

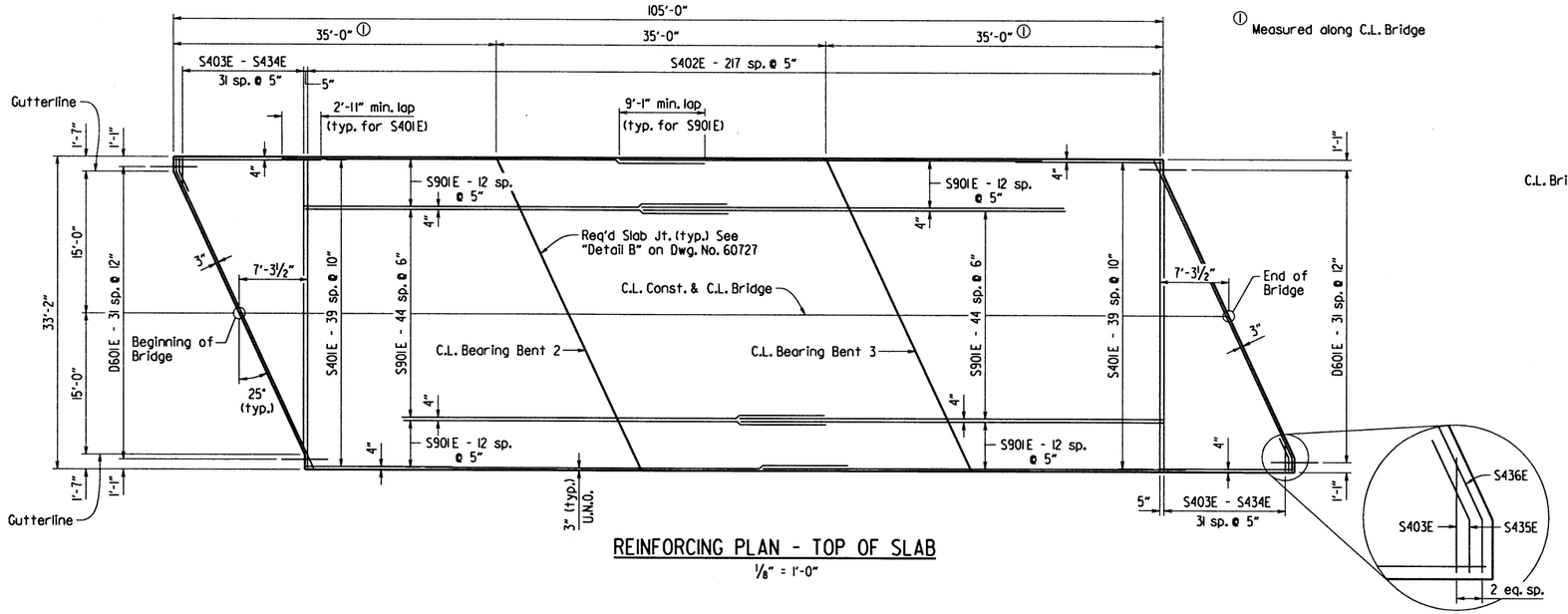
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 4/15/2019 FILENAME: b110574x2_sl.dgn
CHECKED BY: JSQ DATE: 9/4/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2018

BRIDGE NO. 07445 DRAWING NO. 60727

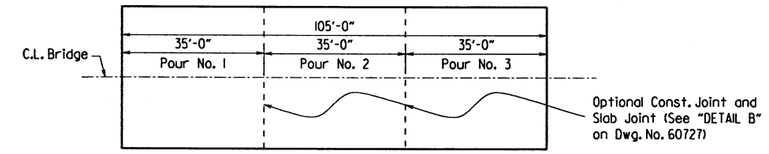
PRINT DATE: 9/4/2019

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.		110574	92	176
				①	07445 - 105'-0" Unit - 60728			



REINFORCING PLAN - TOP OF SLAB

⅛" = 1'-0"

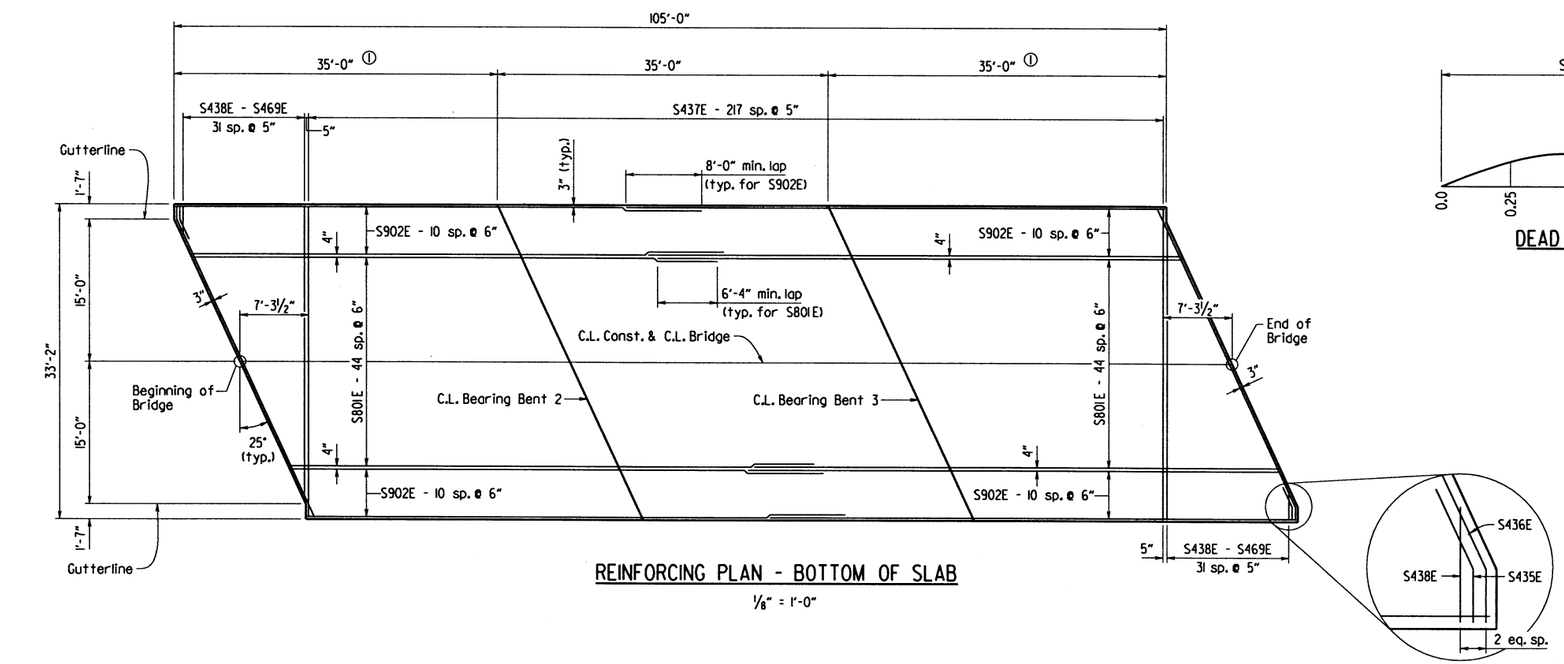


The Contractor may pour the entire bridge slab unit at once or may elect to form and pour the slab unit in three separate pours according to the pouring sequence shown. No part of the falsework for the entire unit shall be removed until all of the concrete in the slab has been placed and cured. Before removal of falsework begins, both the time and strength requirements of Subsection 802.15 must be met. All pours shall begin at one end of the bridge and proceed in sequence to the other end of the bridge. 72 hours shall elapse between the end of a pour and the start of the next pour.

Concrete in the bridge superstructure shall be placed and consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence shown and for any railing pours made before the entire bridge slab has been poured.

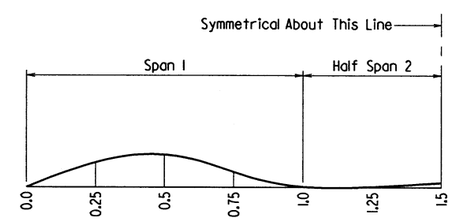
POURING SEQUENCE FOR CONTINUOUS R.C. SLAB UNITS

No Scale



REINFORCING PLAN - BOTTOM OF SLAB

⅛" = 1'-0"



DEAD LOAD CAMBER DIAGRAM

No Scale

DEAD LOAD DEFLECTIONS

POINT	TOTAL DEFLECTION
0.0	0"
0.25	0.293"
0.5	0.375"
0.75	0.210"
1.0	0"
1.25	0"
1.5	0.028"

Symmetrical About This Point

Deflections shown are from a chord from C.L. Bent to C.L. Bent. Vertical curve corrections are not included. Tolerance + ¼" for camber and vertical alignment.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF 105'-0"
CONTINUOUS R.C. SLAB UNIT
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

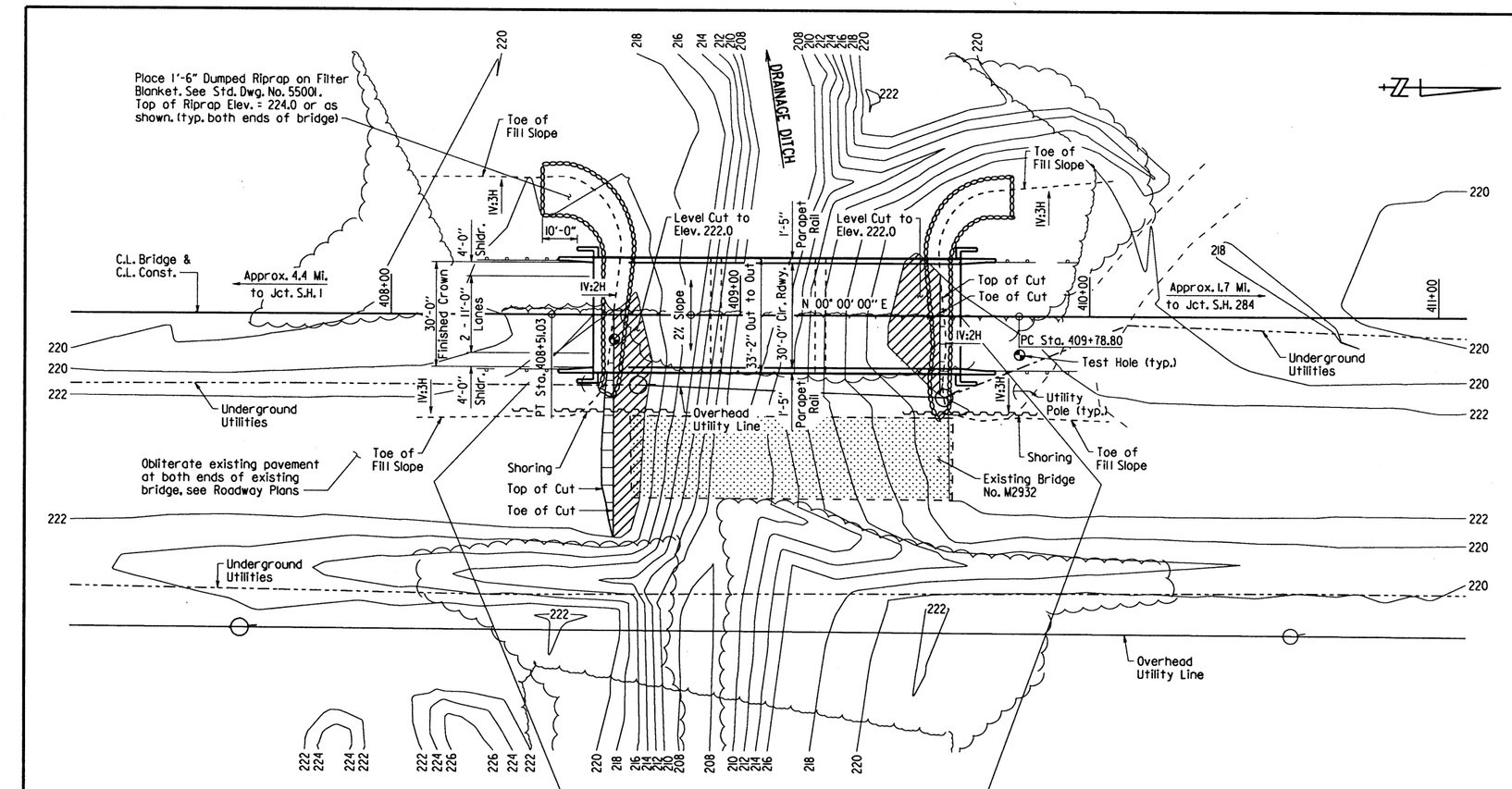
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 4/15/2019 FILENAME: b110574x2_sl.dgn
CHECKED BY: JSQ DATE: 9/9/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2018

BRIDGE NO. 07445 DRAWING NO. 60728

PRINT DATE: 9/9/2019

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.		110574	93	176
				(1) 07446 - LAYOUT - 60729				



PLAN

For R/W Data, See Roadway Plans.

Use Type Special Approach Gutters ("W" = 4'-0") and Type E Approach Slab (width = 22'-0") at both ends of bridge. See Std. Dwg. Nos. 60722 & 55040E, respectively.

The Contractor shall excavate the existing embankment as shown to elevation 222.0. Approx. 30 cubic yards of excavation.

Stations shown are along C.L. Construction. Elevations shown are theoretical working point elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on theoretical working point elevation at C.L. Bridge. See "Rounding Detail" on Drawing Number 60721 for additional information.

For Soil Borings and General Notes, See Dwg. No. 60730.

BRIDGE IS IN LEVEL GRADE
C.L. DECK ELEV. 227.40

Total Length of Bridge = 105'-0"
105' Continuous R.C. Slab Unit (35', 35', 35')

Begin Bridge Sta. 408+58.00
End Bridge Sta. 409+63.00
Slope Intercept Sta. 408+53.00
Slope Intercept Sta. 409+68.00
C.L. Bent Sta. 408+93.00
C.L. Bent Sta. 409+28.00
Low Concrete to Design H.W. = 1.8'
C.L. Deck to Low Concrete = 2'-2"
Concrete Para. Rail
Proposed Grade Line Along C.L. Construction
Existing Ground Line Along C.L. Construction
Guard Rail (See Rdwy. Plans)
Pile Encasement (typ.)
025 Design H.W. Elev. 223.4'
71' Piles
57' Piles
Fix
Bent No. 1 2 3 4

ELEVATION

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(1) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	25	3980	222.1	223.0
Base	100	5700	222.9	225.1
Extreme	500	7900	223.5	227.6
Overtopping	90	5550	222.8	224.9

(1) Unconstricted water surface without structure or roadway approaches.
Q100 Backwater Elevation for Existing Structure = 224.9 ft.
Proposed Low Bridge Chord Elevation = 225.23 ft.

Drainage Area = 11.7 square miles
Historical H.W. Elevation = N/A

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER DRAINAGE DITCH
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DKS DATE: 1/12/18
CHECKED BY: KAP DATE: 9/13/19
DESIGNED BY: DKS DATE: 11/2017
FILENAME: bll0574x4_ll
SCALE: 1" = 20'
BRIDGE NO. 07446 DRAWING NO. 60729

PRINT DATE: 9/6/2019

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.		110574	94	176
				(1)	07446 - LAYOUT - 60730			

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown on the Survey Control Data Sheets.

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, Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014) with 2015 Interim Revisions.

LIVE LOADING: HL-93

SEISMIC PERFORMANCE ZONE: 4 S_{D1}: 0.730 Site Class: E

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi
Structural Steel (ASTM A709, Gr. 50)	Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W)	Fy = 50,000 psi

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

STEEL SHELL PILING: Piling in Bents 1 and 4 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 188 tons per pile. Piling in Bents 2 and 3 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 364 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 153' or lower at Bents 1 thru 3 and to a minimum tip elevation of 167' or lower at Bent 4. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g).

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling (_." Dia.)".

PILE ENCASEMENT: Pile encasement for Bents 2 and 3 shall extend from bottom of cap to 3' below natural ground. See Std. Dwg. No. 55021 for additional information.

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b) "Method B-Wave Equation Analysis (WEAP)". It is estimated that a minimum rated hammer energy required to obtain the ultimate bearing capacity will be 33,000 ft.-lbs. per blow for all piles at Bents 1 and 4 and 73,000 ft.-lbs. per blow for all piles at Bents 2 and 3.

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.

PROTECTIVE SURFACE TREATMENT: Class I Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

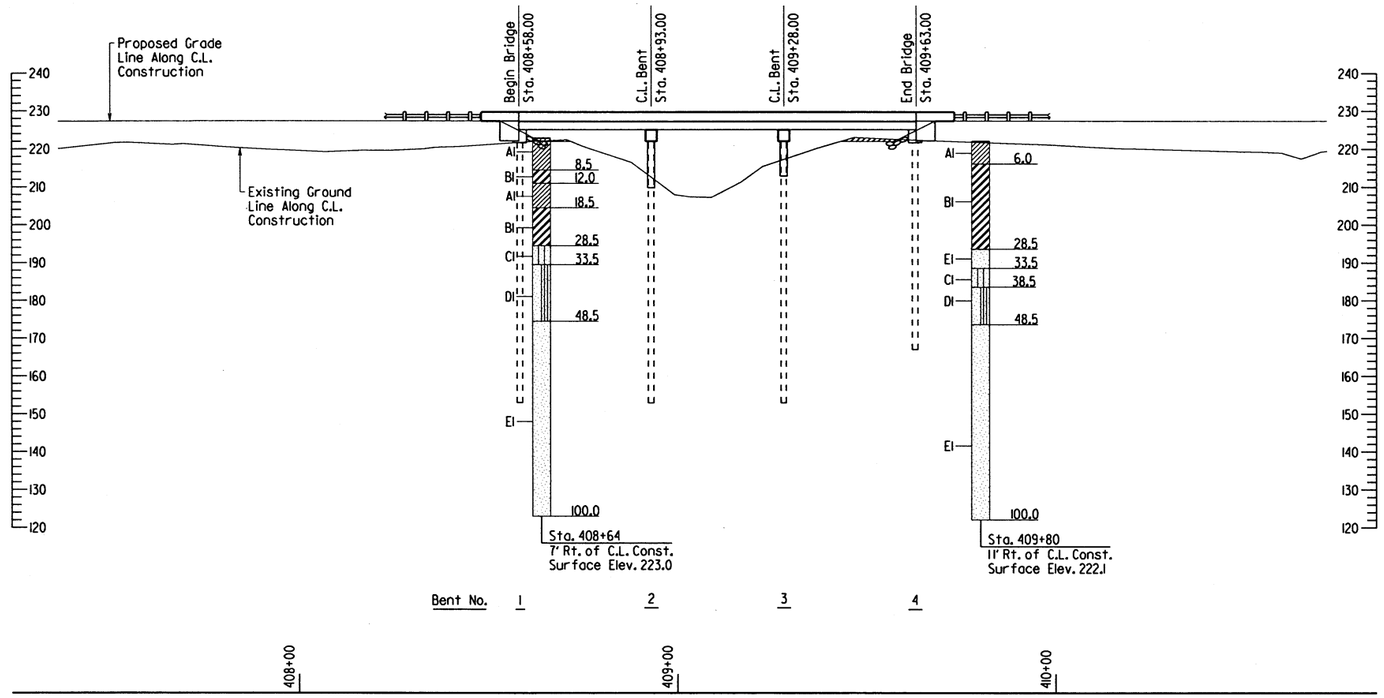
DETAIL DRAWINGS:	DRAWING NOS.
End Bents	60731-60732
Intermediate Bents	60731-60732
105' Continuous R.C. Slab Unit	60721, 60733-60734
Type Special Approach Gutters	60722
Concrete Filled Steel Shell Piling	55021
Type E Approach Slab	55040A

EXISTING BRIDGE: Existing Bridge No. M2932 (Log Mile 4.35) is 24.2' wide (23.3' clear roadway) and 92.0' long and consists of a concrete deck and timber subdeck with timber beams supported by timber pile bents. The existing bridge is located approximately 40' upstream from the proposed new bridge.

REMOVAL AND SALVAGE: After the new bridge is opened to traffic, existing Bridge No. M2932 shall be removed in accordance with Section 205. Additional debris, consisting of exposed remnant timber piling, shall also be removed. Removal of remnant timber piling shall be to a depth of 2' below subgrade or final ground surface. This work shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No. _)". All material, including remnant timber piling, from the existing bridge shall become the property of the Contractor.

SHORING: Shoring may be required at beginning and end of bridge. No direct payment will be made for shoring. See Special Provision Job No. 110574 "Shoring".

MAINTENANCE OF TRAFFIC: See Roadway Plans.



ELEVATION OF SOIL BORINGS

BORING LEGEND

A1-Lean Clay
B1-Fat Clay
C1-Silty Sand
D1-Sand with Silt
E1-Sand

"N" VALUES

Sta. 408+64 - 7' Rt. of C.L. Const.

1.0-2.5, N=7
3.5-5.0, N=4
8.5-10.0, N=8
18.5-20.0, N=11
23.5-25.0, N=12
28.5-30.0, N=12
33.5-35.0, N=11
38.5-40.0, N=16
43.5-45.0, N=19
48.5-50.0, N=19
53.5-55.0, N=22
58.5-60.0, N=35
68.5-70.0, N=42
78.5-80.0, N=35
88.5-90.0, N=31
98.5-100.0, N=26

Sta. 409+80 - 11' Rt. of C.L. Const.

1.0-2.5, N=12
3.5-5.0, N=4
8.5-10.0, N=4
13.5-15.0, N=8
23.5-25.0, N=10
28.5-30.0, N=9
33.5-35.0, N=15
38.5-40.0, N=12
43.5-45.0, N=19
48.5-50.0, N=6
53.5-55.0, N=50
58.5-60.0, N=41
68.5-70.0, N=28
78.5-80.0, N=32
88.5-90.0, N=50 (5")
98.5-100.0, N=37

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER DRAINAGE DITCH
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

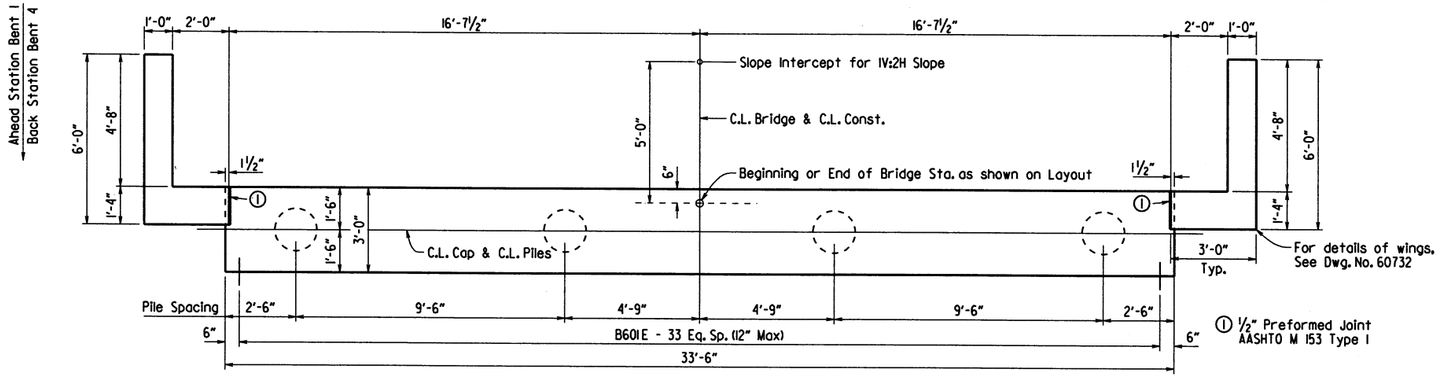
LITTLE ROCK, ARK.

DRAWN BY: DKS DATE: 1/12/18 FILENAME: b110574x4_11
CHECKED BY: KAT DATE: 9/13/19 SCALE: 1" = 20'
DESIGNED BY: DKS DATE: 11/2017

BRIDGE NO. 07446 DRAWING NO. 60730

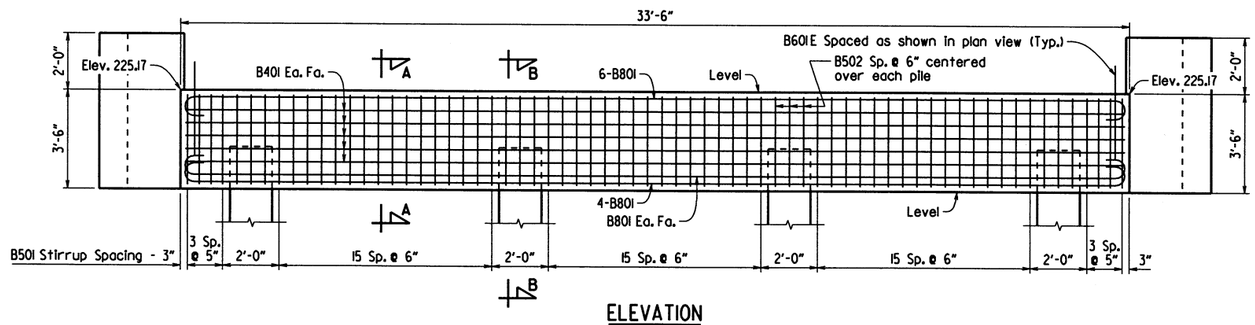
PRINT DATE: 9/6/2019

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.		110574	95	176
				①	07446 - BENTS - 60731			



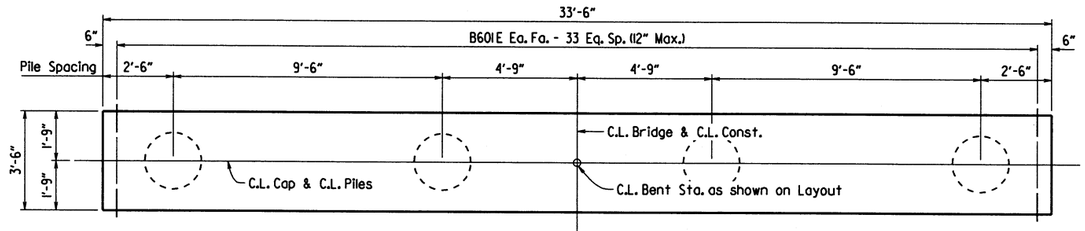
PLAN

Bents 1 and 4



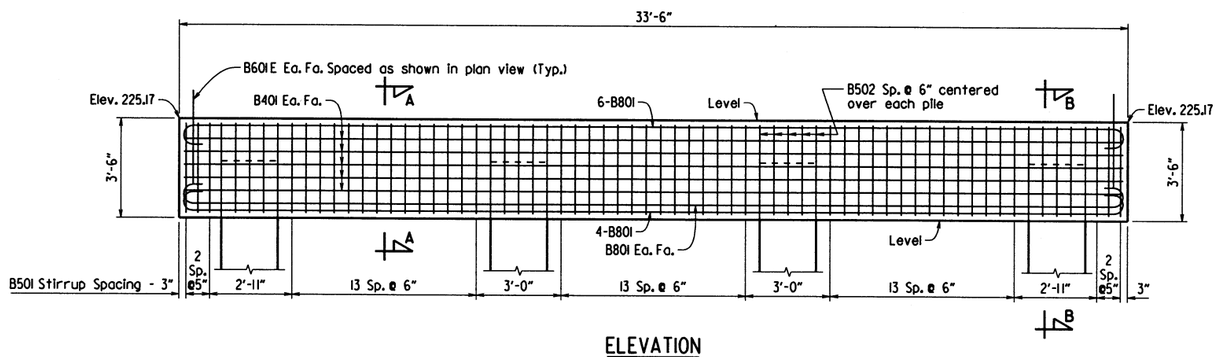
ELEVATION

Looking Back Bent 1
Looking Ahead Bent 4



PLAN

Bents 2 and 3



ELEVATION

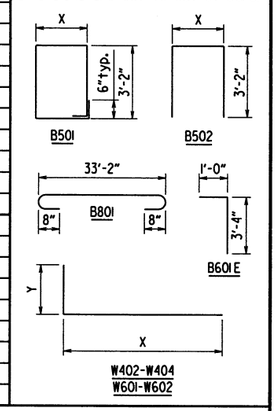
Bents 2 and 3
Looking Ahead

BAR LIST-PER BENT

	MARK	NO. REQ'D.	"X"	"Y"	LENGTH	P.D.
Bent 1 or 4	B401	10	-	-	33'-2"	Str.
	B501	56	2'-8"	-	12'-2"	2½"
	B502	12	2'-8"	-	8'-9"	2½"
	B601E	34	-	-	4'-3"	4½"
	B801	12	-	-	35'-0"	6"
	W401	40	-	-	5'-2"	Str.
	W402	4	4'-8"	2'-8"	7'-2"	3"
	W403	4	5'-8"	2'-0"	7'-6"	3"
	W404	12	2'-5"	2'-9"	5'-1"	3"
	W601	8	4'-8"	4'-5"	9'-0"	4½"
	W602	8	5'-8"	3'-10"	9'-4"	4½"
Bent 2 or 3	B401	10	-	-	33'-2"	Str.
	B501	48	3'-2"	-	13'-2"	2½"
	B502	20	3'-2"	-	9'-3"	2½"
	B601E	68	-	-	4'-3"	4½"
	B801	12	-	-	35'-0"	6"

BENDING DIAGRAMS

Dimensions are out to out of bars.



All bars with an "E" suffix shall be Epoxy Coated.

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 ¾" unless otherwise noted.

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.

Preformed joint filler shall be subsidiary to the item "Class S Concrete - Bridge."

All piling shall be Grade 3, Fy = 45 ksi, and shall conform to Std. Dwg. No. 55021.

For "Section A-A" and "Section B-B", See Dwg. No. 60732.

For additional information, See Layout.

STATE OF ARKANSAS
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9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS
DRAINAGE DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

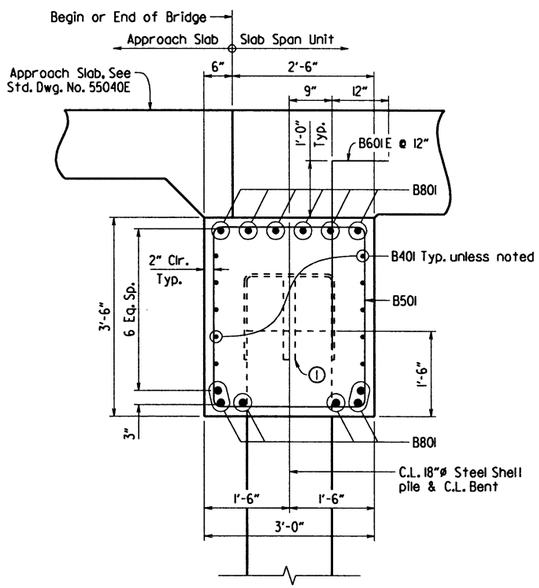
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 6/10/2019 FILENAME: bl10574x4_bl.dgn
CHECKED BY: JHP DATE: 8/5/19 SCALE: ⅜" = 1'-0" or As Shown
DESIGNED BY: JSQ DATE: 5/2019

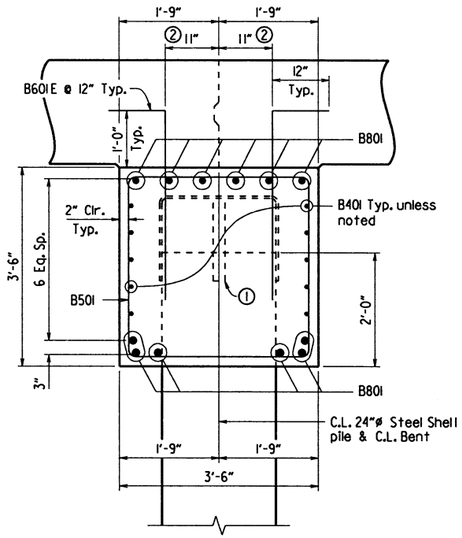
BRIDGE NO. 07446 DRAWING NO. 60731

PRINT DATE: 8/5/2019

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.		110574	96	176
				①	07446 - BENTS - 60732			



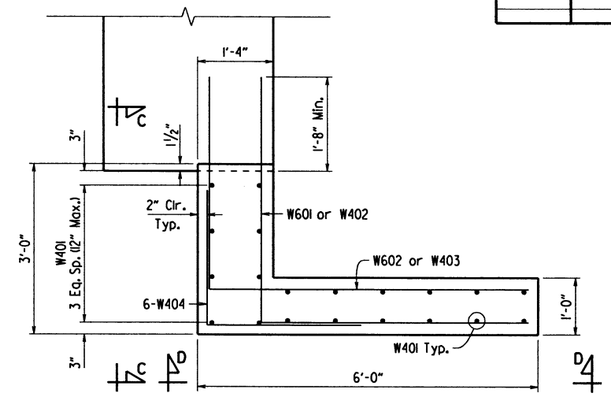
SECTION A-A
Bents 1 and 6



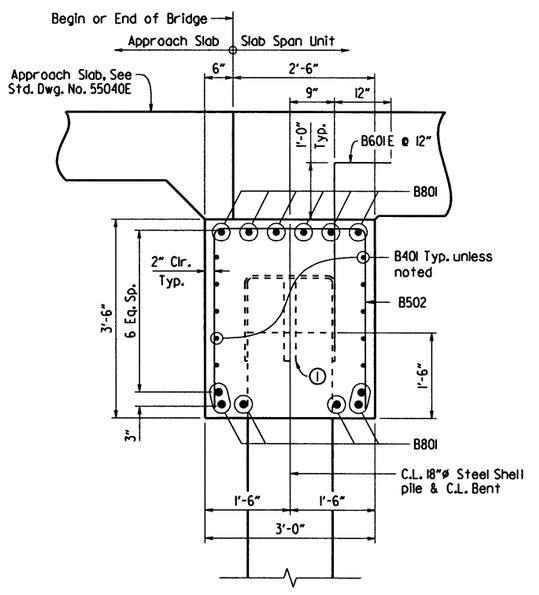
SECTION A-A
Bents 2 - 5

① Pile anchorage, See Std. Dwg. No. 55021 for additional information.

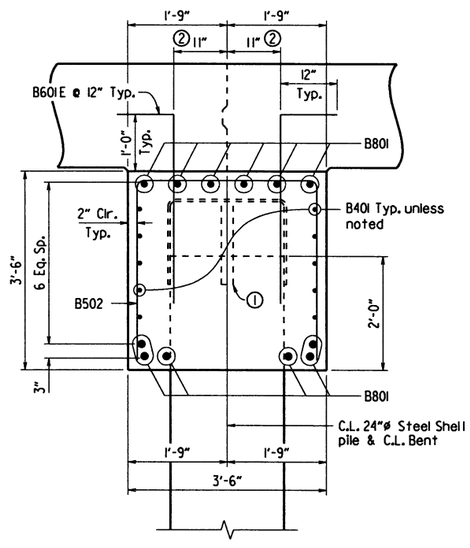
② Adjust position of B601E as necessary to avoid interference with piles.



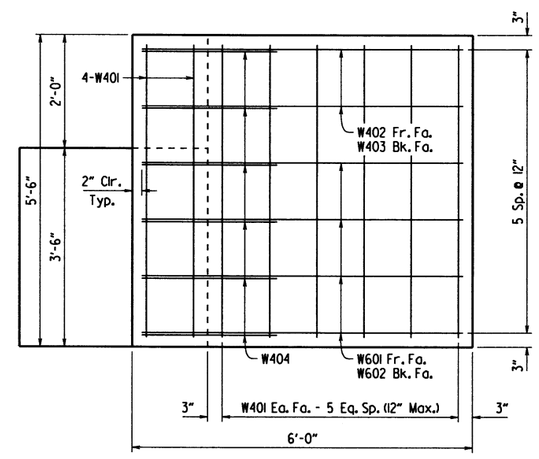
PLAN OF WING
Bents 1 and 4



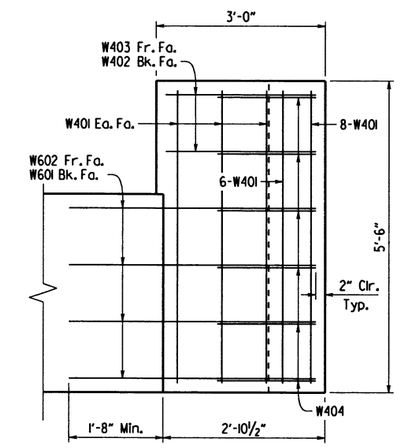
SECTION B-B
Bents 1 and 6



SECTION B-B
Bents 2 - 5



VIEW D-D
Bents 1 and 4



VIEW C-C
Bents 1 and 4

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS
DRAINAGE DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

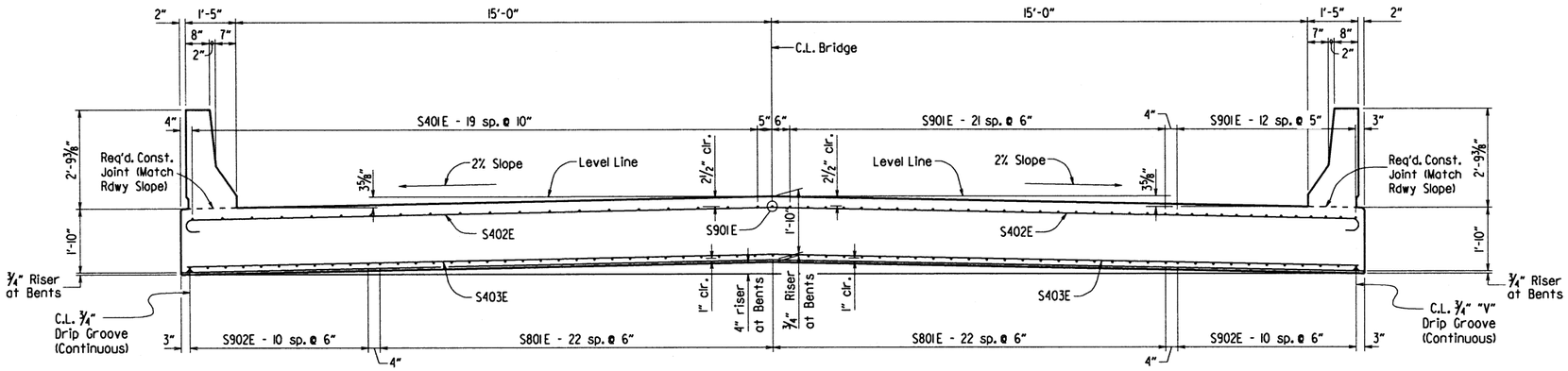
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 6/10/2019 FILENAME: bh0574x4_bl.dgn
CHECKED BY: JHP DATE: 9/13/19 SCALE: ¾" = 1'-0" or As Shown
DESIGNED BY: JSQ DATE: 5/20/19

BRIDGE NO. 07446 DRAWING NO. 60732

PRINT DATE: 9/13/2019

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.		110574	97	176
				(1)		07446 - 105'-0" Unit - 60733		



TYP. HALF-SECTION THROUGH ROADWAY NEAR BRIDGE ENDS

½" = 1'-0"

TYP. HALF-SECTION THROUGH ROADWAY @ INT. BENTS

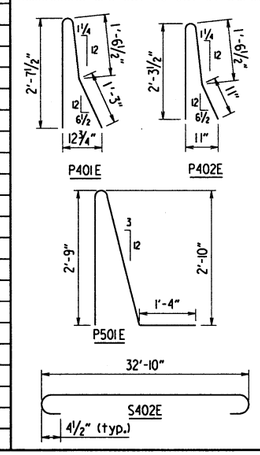
½" = 1'-0"

BAR LIST

	MARK	NO. REQ'D.	LENGTH	P.D.
RAILS	P401E	372	5'-6"	3"
	P402E	48	4'-10"	3"
	P403E	48	5'-9"	Str.
	P404E	84	9'-8"	Str.
	P405E	42	14'-8"	Str.
	P501E	372	7'-0"	3¾"
TOP	S401E	80	14'-11"	Str.
	S402E	251	33'-10"	3"
	S901E	142	45'-0"	Str.
	D601E	64	5'-0"	Str.
BOTTOM	S403E	251	32'-10"	Str.
	S801E	90	55'-6"	Str.
	S902E	44	56'-6"	Str.

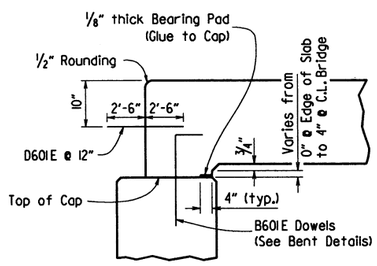
BENDING DIAGRAMS

Dimensions are out to out of bars.



Bars with an "E" suffix are to be Epoxy Coated.

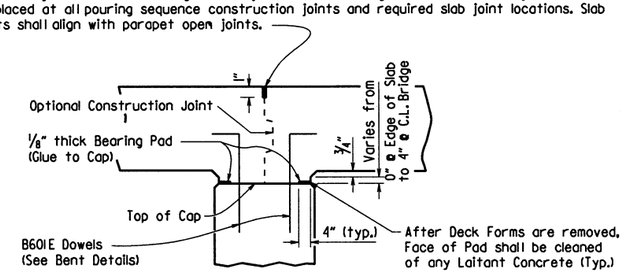
Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Roadway Face & Top of the Concrete Parapet Rails.



DETAIL A

No Scale

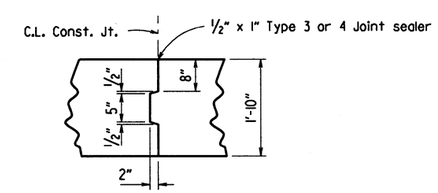
½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as "Class S(AE) Concrete-Bridge." Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the falsework is removed and before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. Slab joints shall align with parapet open joints.



Joint to be cleaned by sandblasting or other approved method before pouring joint.

DETAIL B

No Scale



Unit can be built with partial pours terminating at ends of spans only.

OPTIONAL DECK SLAB CONST. JT. DETAIL

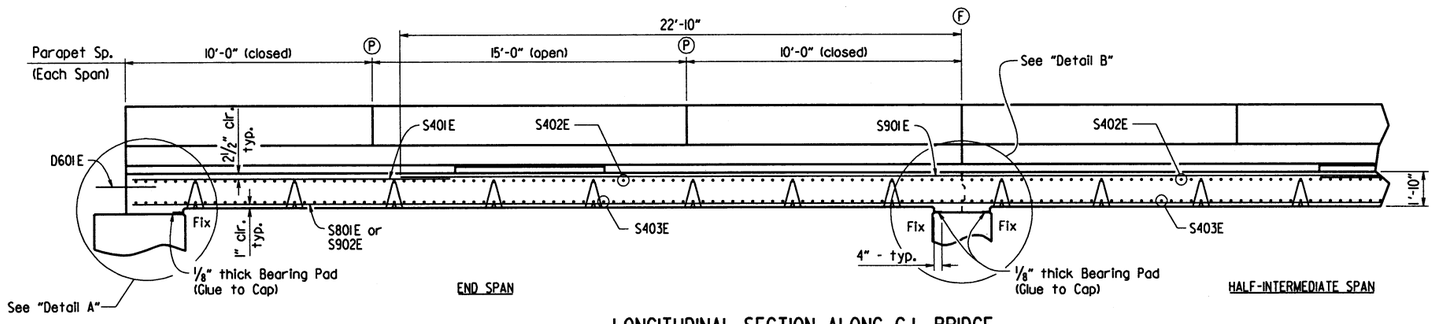
No Scale

See Dwg. No. 60721 for details of concrete parapet rails.

Ⓟ C.L. Partial-Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of slab.

Ⓕ C.L. Full-Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of slab.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06. Placement of slab bolsters or hi-chairs with full-length lower runners directly on removable deck forms will not be allowed.



LONGITUDINAL SECTION ALONG C.L. BRIDGE

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF 105'-0" CONTINUOUS R.C. SLAB UNIT DRAINAGE DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

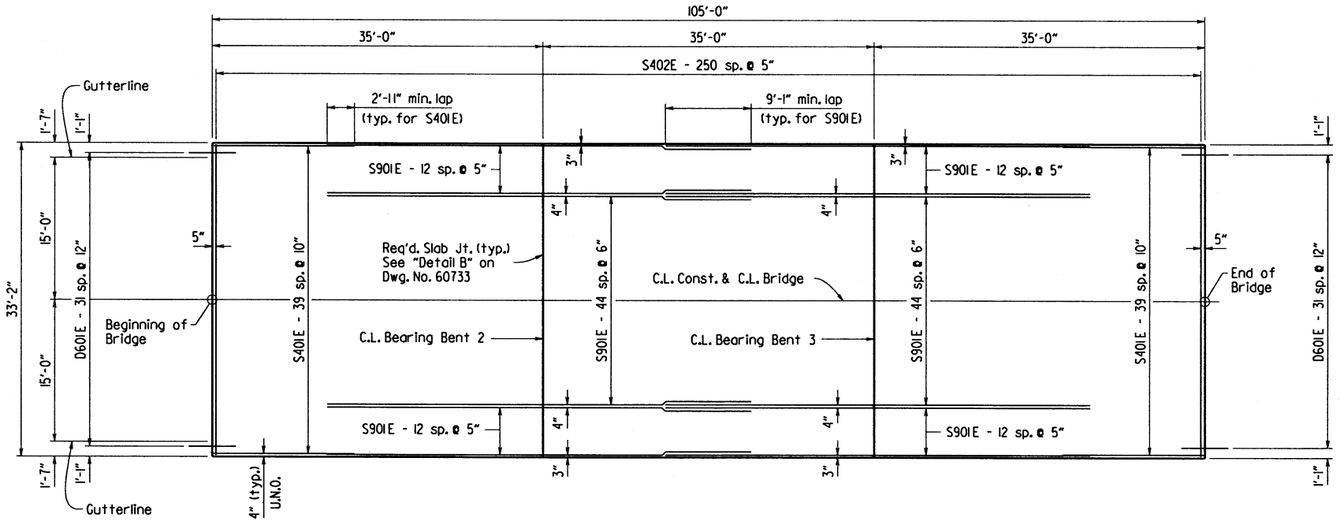
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 03/28/2019 FILENAME: b110574x4_sl.dgn
CHECKED BY: JSQ DATE: 9/4/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2018

BRIDGE NO. 07446 DRAWING NO. 60733

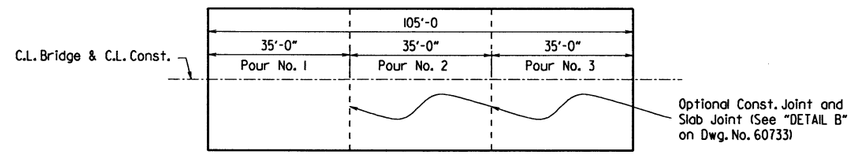
PRINT DATE: 9/4/2019

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.		110574	98	176
				①	07446 - 105'-0" Unit - 60734			



REINFORCING PLAN - TOP OF SLAB

1/8" = 1'-0"

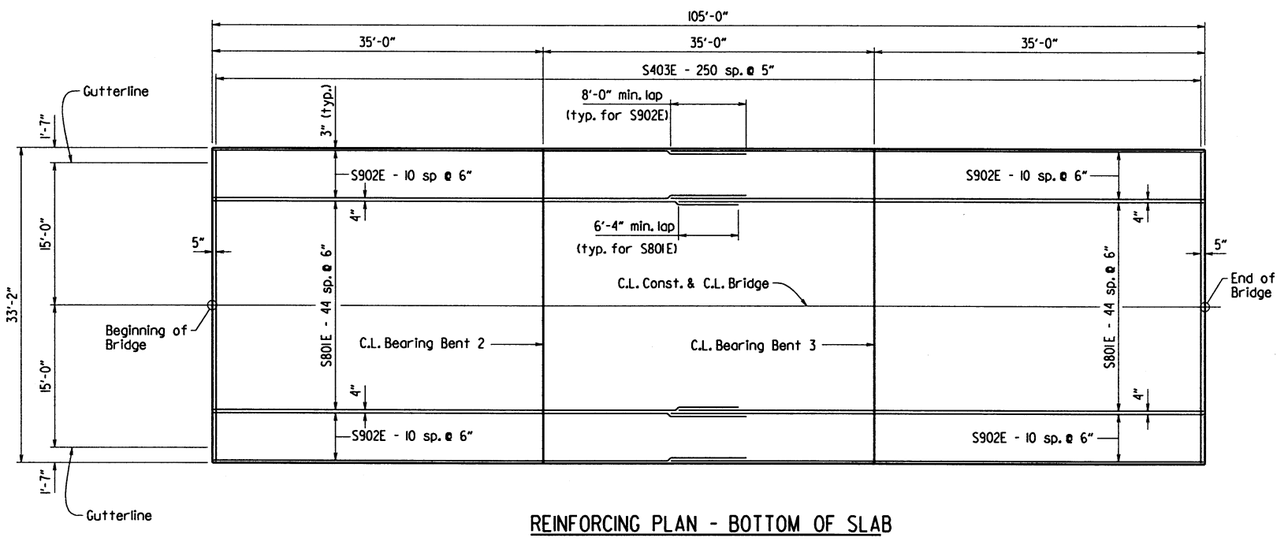


The Contractor may pour the entire bridge slab unit at once or may elect to form and pour the slab unit in three separate pours according to the pouring sequence shown. No part of the falsework for the entire unit shall be removed until all of the concrete in the slab has been placed and cured. Before removal of falsework begins, both the time and strength requirements of Subsection 802.15 must be met. All pours shall begin at one end of the bridge and proceed in sequence to the other end of the bridge. 72 hours shall elapse between the end of a pour and the start of the next pour.

Concrete in the bridge superstructure shall be placed and consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence shown and for any railing pours made before the entire bridge slab has been poured.

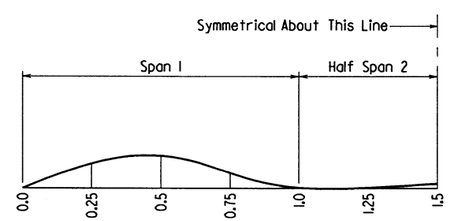
POURING SEQUENCE FOR CONTINUOUS R.C. SLAB UNITS

No Scale



REINFORCING PLAN - BOTTOM OF SLAB

1/8" = 1'-0"



DEAD LOAD CAMBER DIAGRAM

No Scale

DEAD LOAD DEFLECTIONS

POINT	TOTAL DEFLECTION
0.0	0"
0.25	0.368"
0.5	0.472"
0.75	0.264"
1.0	0"
1.25	0"
1.5	0.036"

Symmetrical About This Point

Deflections shown are from a chord from C.L. Bent to C.L. Bent. Vertical curve corrections are not included. Tolerance + 1/4" for camber and vertical alignment.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF 105'-0" CONTINUOUS R.C. SLAB UNIT DRAINAGE DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

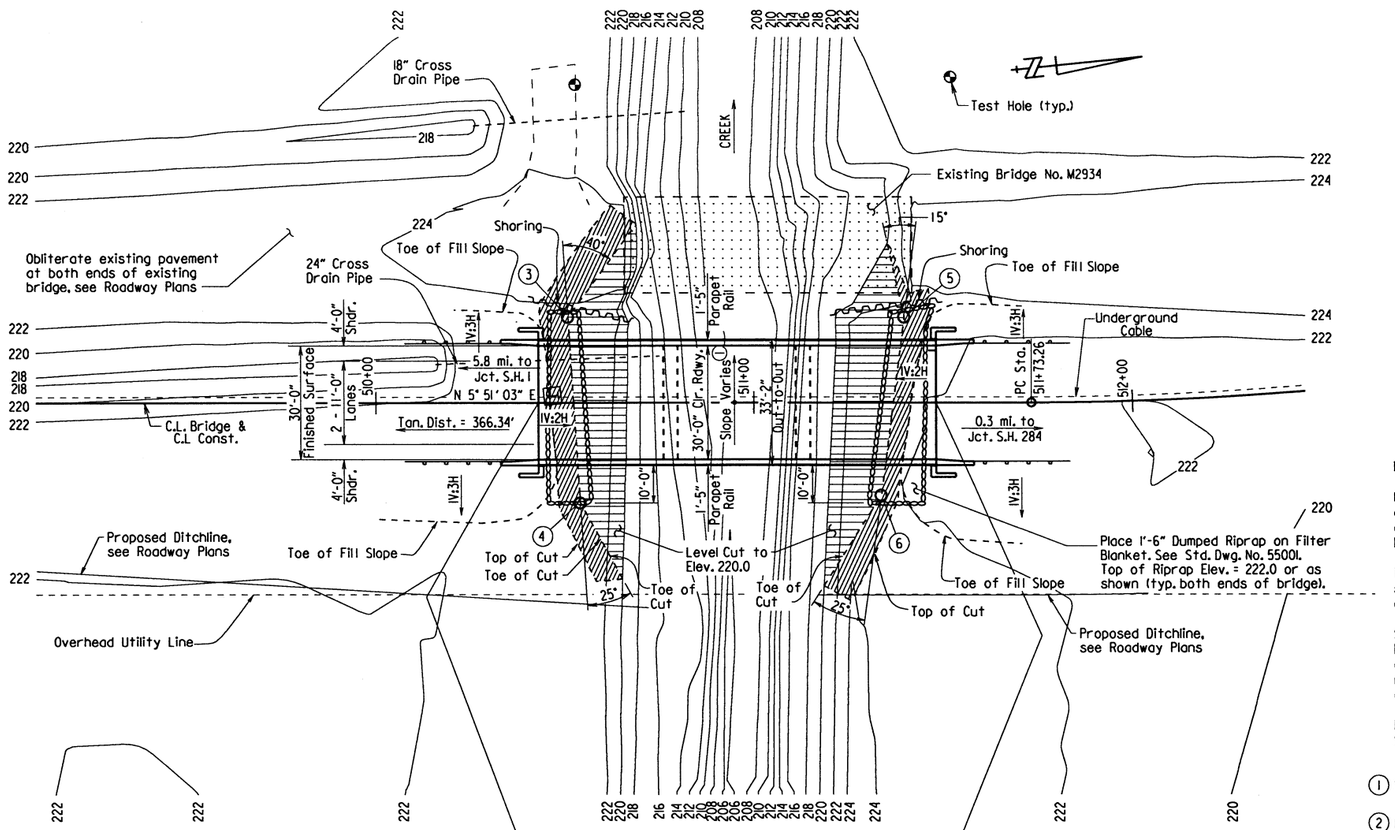
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 03/28/2019 FILENAME: b110574x4_sl.dgn
CHECKED BY: JSQ DATE: 9/9/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2018

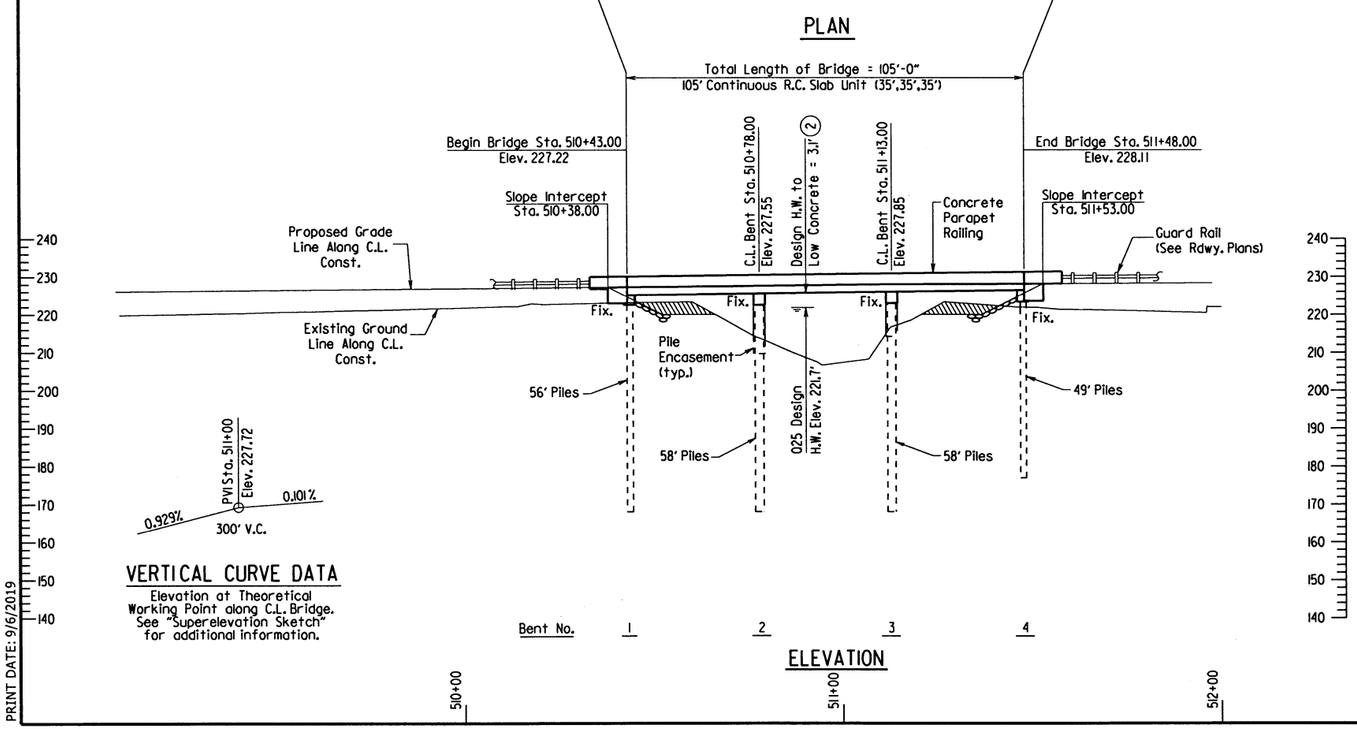
BRIDGE NO. 07446 DRAWING NO. 60734

PRINT DATE: 9/9/2019

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.		110574	99	176
				(1) 07447 - LAYOUT - 60735				



PLAN



VERTICAL CURVE DATA

Elevation at Theoretical Working Point along C.L. Bridge. See "Superelevation Sketch" for additional information.

For R/W Data, See Roadway Plans.

Use Type Special Approach Gutters ("W" = 4'-0") and Type E Approach Slab (width = 22'-0") at both ends of bridge. See Dwg. No. 60722 and Std. Dwg. No. 55040E, respectively.

The Contractor shall excavate embankment as shown at both ends of bridge. Approx. 290 cu. yds. of excavation.

Stations shown are along C.L. Construction. Elevations shown are actual top of deck elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on actual top of deck elevation at C.L. Bridge.

For Soil Borings and General Notes, See Dwg. No. 60736.

(1) See "Superelevation Sketch"

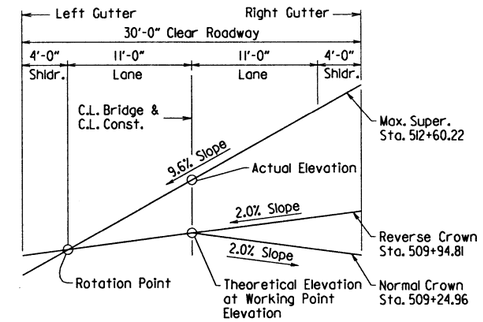
(2) Low Concrete is at Sta. 510+43.00.

(3) Approx. Sta. 510+50.9 22'-6" Lt. of C.L. Const.

(4) Approx. Sta. 510+54.10 26'-6" Rt. of C.L. Const.

(5) Approx. Sta. 511+39.60 22'-6" Lt. of C.L. Const.

(6) Approx. Sta. 511+33.50 24'-6" Rt. of C.L. Const.



SUPERELEVATION SKETCH

Looking Ahead
No Scale

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(7) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	25	3360	220.9	221.7
Base	100	5040	220.9	224.4
Extreme	500	7310	222.3	225.7
Overtopping	89	4870	221.0	224.2

(7) Unconstricted water surface elevation without structure or roadway approaches.

Q100 Backwater Elevation for Existing Structure = 224.6 ft.
Proposed Low Bridge Chord Elevation = 224.83 ft.
Drainage area = 8.2 square miles.
Historical H.W. Elev. = N/A

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER CREEK
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

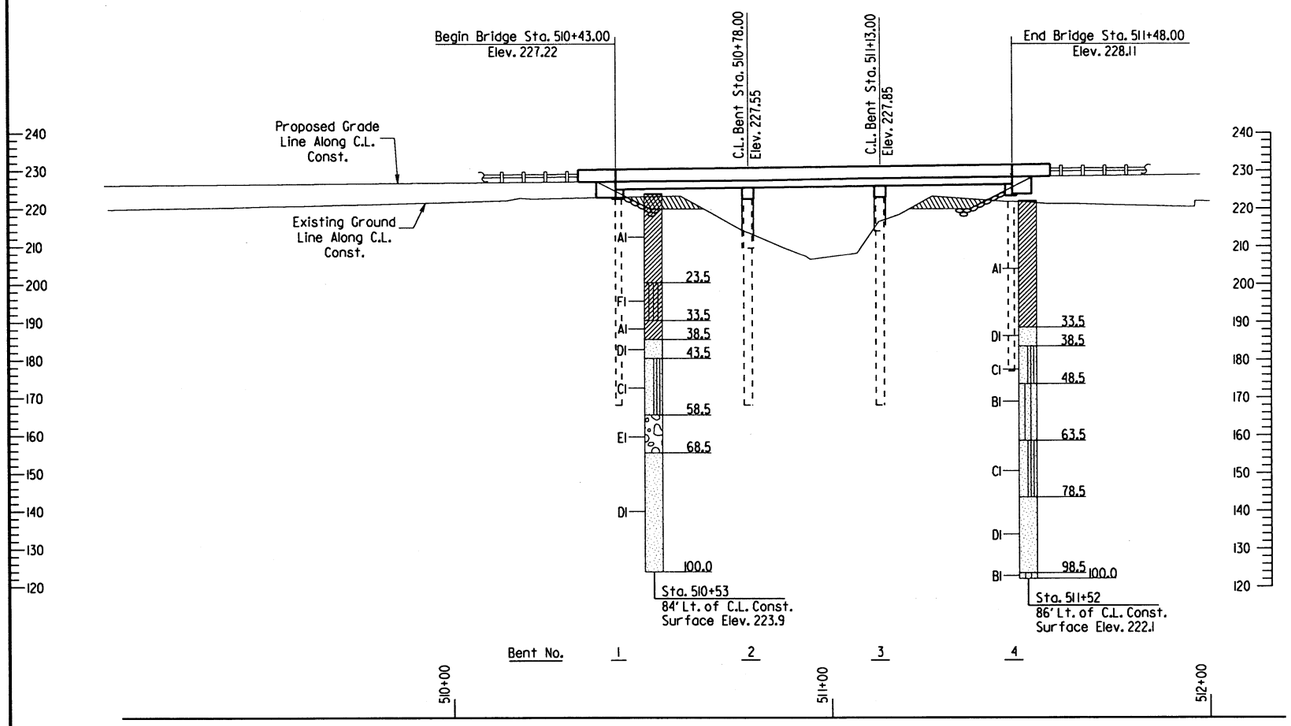
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 5/14/2018 FILENAME: b110574x5_1L.dgn
CHECKED BY: RAP DATE: 9/9/19 SCALE: 1" = 20'
DESIGNED BY: DES DATE: 11/2017

BRIDGE NO. 07447 DRAWING NO. 60735

PRINT DATE: 9/6/2019

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.		110574	100	176
				1	07447 - LAYOUT - 60736			



ELEVATION OF SOIL BORINGS

BORING LEGEND

A1-Lean Clay
B1-Silty Sand
C1-Sand with Silt
D1-Sand
E1-Gravel
F1-Sandy Silty Clay

"N" VALUES

Sta. 510+53 - 84' Lt. of C.L. Const.

1.0-2.5, N=8
3.5-5.0, N=3
6.0-7.5, N=4
13.5-15.0, N=7
23.5-25.0, N=5
28.5-30.0, N=5
33.5-35.0, N=3
38.5-40.0, N=13
43.5-45.0, N=22
48.5-50.0, N=25
53.5-55.0, N=69
58.5-60.0, N=22
68.5-70.0, N=31
78.5-80.0, N=26
88.5-90.0, N=29
98.5-100.0, N=87

Sta. 511+52 - 86' Lt. of C.L. Const.

1.0-2.5, N=5
3.5-5.0, N=8
6.0-7.5, N=20
8.5-10.0, N=13
13.5-15.0, N=8
18.5-20.0, N=7
23.5-25.0, N=3
28.5-30.0, N=2
33.5-35.0, N=9
38.5-40.0, N=18
43.5-45.0, N=33
48.5-50.0, N=41
53.5-55.0, N=86
58.5-60.0, N=26
63.5-65.0, N=26
68.5-70.0, N=39
73.5-75.0, N=35
78.5-80.0, N=24
83.5-85.0, N=45
88.5-90.0, N=33
93.5-95.0, N=65
98.5-100.0, N=50 (6")

GENERAL NOTES:

BENCH MARK: Vertical Control Data are shown on the Survey Control Data Sheets.

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, Section and Subsection refer to the Standard Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014) with 2015 Interim revisions.

LIVE LOADING: HL-93

SEISMIC PERFORMANCE ZONE: 4 S_{D1}: 0.748 Site Class: E

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 3,500 psi
Class S Concrete (substructure)	f'c = 4,000 psi
Reinforcing Steel (AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi
Structural Steel (ASTM A709, Gr. 50)	Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 50W)	Fy = 50,000 psi

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

STEEL SHELL PILING: Piling in Bents 1 and 4 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 188 tons per pile. Piling in Bents 2 and 3 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 364 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 168' or lower at Bents 1 thru 3 and to a minimum tip elevation of 177' or lower in Bent 4. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required, but may be driven for the Contractor's information in accordance with Subsection 805.08(g).

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling" (__" Dia.)".

PILE ENCASEMENT: Pile encasements for Bents 2 and 3 shall extend from the bottom of cap to 3' below natural ground. See Std. Dwg. No. 55021 for additional information.

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b) "Method B-Wave Equation Analysis (WEAP)". It is estimated that a minimum rated hammer energy required to obtain the ultimate bearing capacity will be 33,000 ft.-lbs. per blow for all piles at Bents 1 and 4 and 73,000 ft.-lbs. per blow for all piles at Bents 2 and 3.

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.

PROTECTIVE SURFACE TREATMENT: Class I Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

DETAIL DRAWINGS:	DRAWING NOS.
End Bents	60737-60738
Intermediate Bents	60737-60738
105' Continuous R.C. Slab Unit	60721, 60739-60740
Type Special Approach Gutters	60722
Concrete Filled Steel Shell Piling	55021
Type E Approach Slab	55040A

EXISTING BRIDGE: Existing Bridge No. M2934 (Log Mile 5.82) is 25.8' wide (24.9' clear roadway) and 76.0' long and consists of a concrete deck and timber subdeck with timber beams supported by timber pile bents. The existing bridge is located approximately 40' downstream from the proposed new bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, Existing Bridge No. M2934 shall be removed in accordance with Section 205. Additional debris, consisting of exposed remnant timber piling, shall also be removed. Removal of remnant timber piling shall be to a depth of 2' below subgrade or final ground surface. This work shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No. _)". All material, including remnant timber piling, from the existing bridge shall become the property of the Contractor.

SHORING: Shoring may be required at beginning and end of bridge. No direct payment will be made for shoring. See Special Provision Job No. 110574 "Shoring".

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 350 OVER CREEK
HWY. 350 STRS. & APPRS. (S)
CROSS COUNTY

ROUTE 350 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

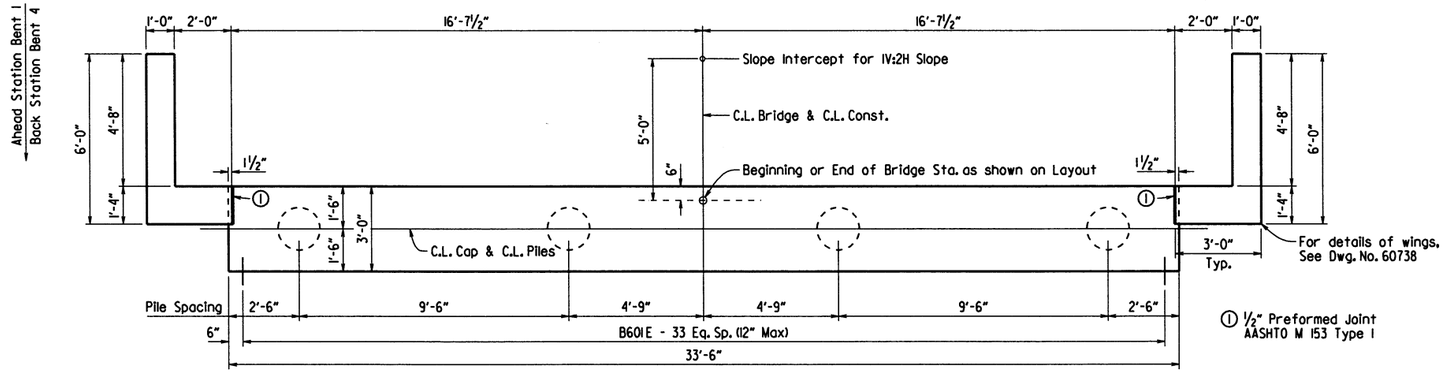
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 5/14/2018 FILENAME: b110574x5_ll.dgn
CHECKED BY: KAP DATE: 9/9/19 SCALE: 1" = 20'
DESIGNED BY: DKS DATE: 11/2017

BRIDGE NO. 07447 DRAWING NO. 60736

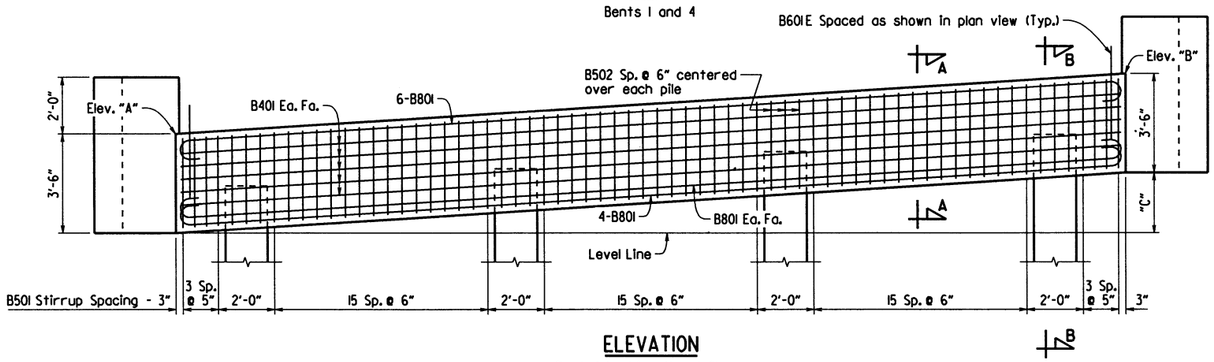
PRINT DATE: 9/6/2019

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.		110574	101	176
				①	07447 - BENTS - 60737			



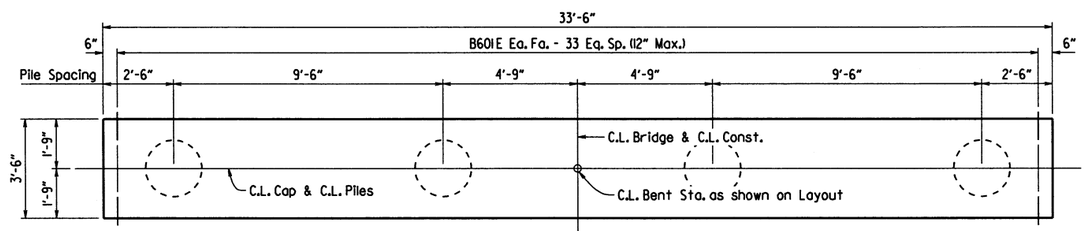
PLAN

Bents 1 and 4



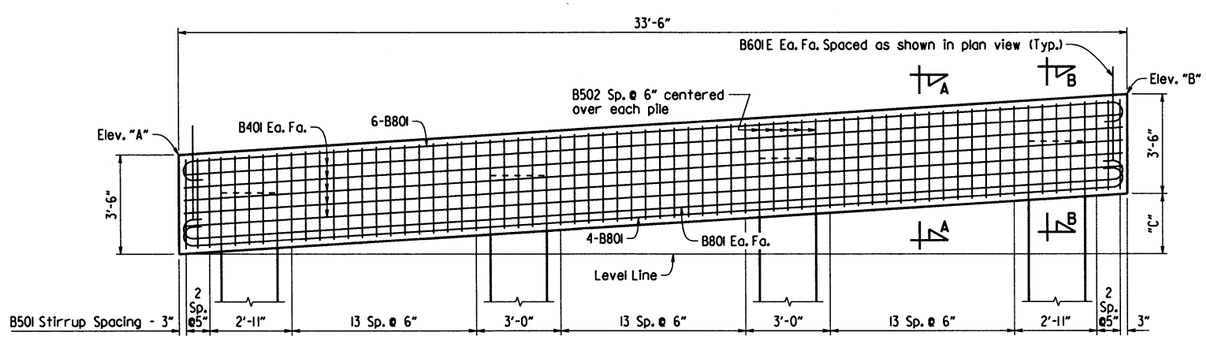
ELEVATION

Bent 4 Looking Ahead Shown
Bent 1 Similar



PLAN

Bents 2 and 3



ELEVATION

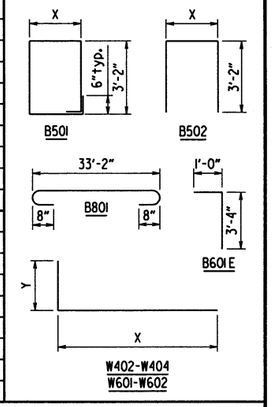
Bents 2 and 3
Looking Ahead

BAR LIST-PER BENT

	MARK	NO. REQ'D.	"X"	"Y"	LENGTH	P.D.
Bent 1 or 4	B401	10	-	-	33'-2"	Str.
	B501	56	2'-8"	-	12'-2"	2½"
	B502	12	2'-8"	-	8'-9"	2½"
	B601E	34	-	-	4'-3"	4½"
	B801	12	-	-	35'-0"	6"
	W401	40	-	-	5'-2"	Str.
	W402	4	4'-8"	2'-8"	7'-2"	3"
	W403	4	5'-8"	2'-0"	7'-6"	3"
	W404	12	2'-5"	2'-9"	5'-1"	3"
	W601	8	4'-8"	4'-5"	9'-0"	4½"
	W602	8	5'-8"	3'-10"	9'-4"	4½"
Bent 2 or 3	B401	10	-	-	33'-2"	Str.
	B501	48	3'-2"	-	13'-2"	2½"
	B502	20	3'-2"	-	9'-3"	2½"
	B601E	68	-	-	4'-3"	4½"
	B801	12	-	-	35'-0"	6"

BENDING DIAGRAMS

Dimensions are out to out of bars.



All bars with an "E" suffix shall be Epoxy Coated.

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 ¾" unless otherwise noted.

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.

Preformed joint filler shall be subsidiary to the item "Class S Concrete - Bridge."

All piling shall be Grade 3, Fy = 45 ksi, and shall conform to Std. Dwg. No. 55021.

For "Section A-A" and "Section B-B", See Dwg. No. 60738.

For additional information, See Layout.

TABLE OF VARIABLES

Bent	Elev. "A"	Elev. "B"	"C"
1	224.77	225.91	1'-1 11/16"
2	224.92	226.39	1'-5⅝"
3	225.05	226.85	1'-9⅝"
4	225.14	227.27	2'-1⅜"

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS
CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

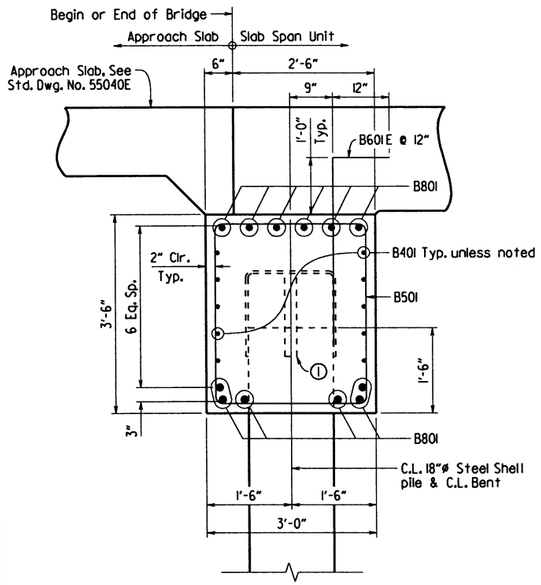
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 6/10/2019 FILENAME: b110574x5_b1.dgn
CHECKED BY: JHP DATE: 8/5/19 SCALE: ⅜" = 1'-0" or As Shown
DESIGNED BY: JSQ DATE: 5/2019

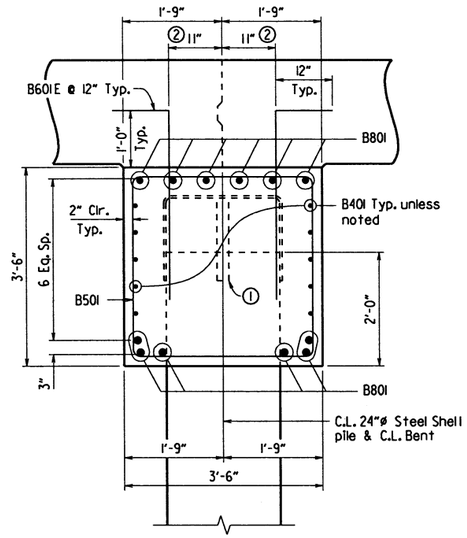
BRIDGE NO. 07447 DRAWING NO. 60737

PRINT DATE: 8/5/2019

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.		110574	102	176
				① 07447 - BENTS - 60738				



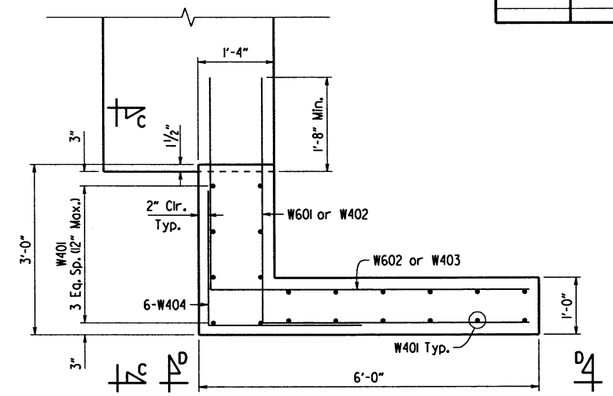
SECTION A-A
Bents 1 and 6



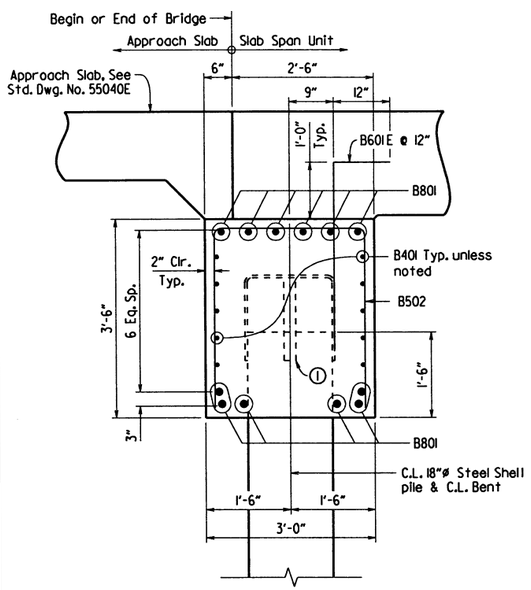
SECTION A-A
Bents 2 - 5

① Pile anchorage, See Std. Dwg. No. 55021 for additional information.

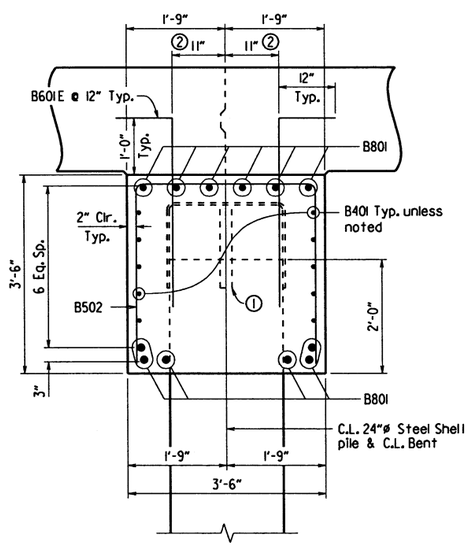
② Adjust position of B601E as necessary to avoid interference with piles.



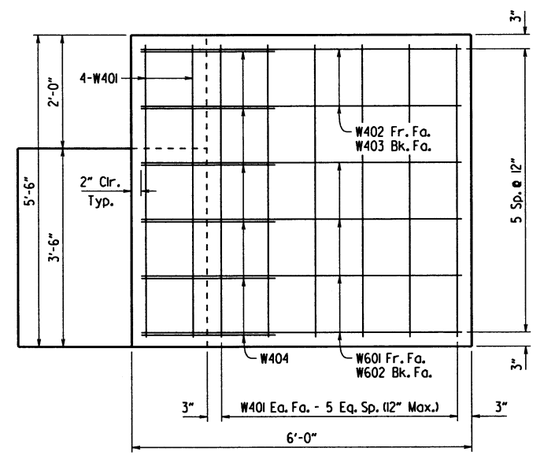
PLAN OF WING
Bents 1 and 4



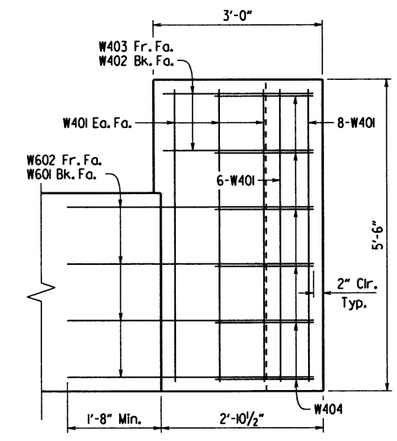
SECTION B-B
Bents 1 and 6



SECTION B-B
Bents 2 - 5



VIEW D-D
Bents 1 and 4



VIEW C-C
Bents 1 and 4

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS
CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

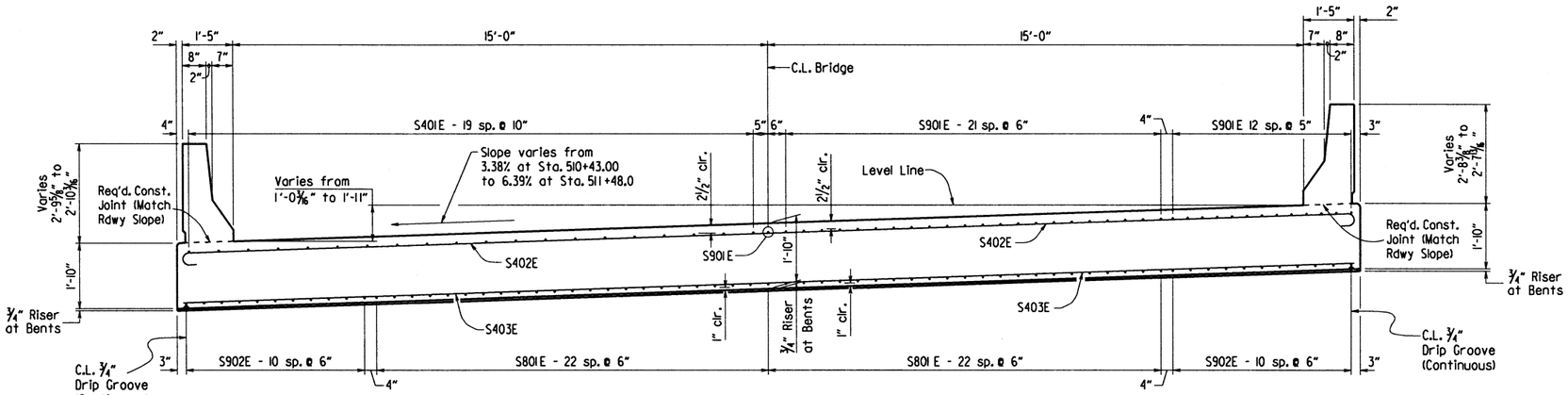
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 6/10/2019 FILENAME: bl10574x5_bl.dgn
CHECKED BY: JSP DATE: 9/13/19 SCALE: ¾" = 1'-0" or
DESIGNED BY: JSQ DATE: 5/2019 As Shown

BRIDGE NO. 07447 DRAWING NO. 60738

PRINT DATE: 9/13/2019

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.		110574	103	116
				(1)	07447 - 105'-0" Unit - 60739			



TYP. HALF-SECTION THROUGH ROADWAY NEAR BRIDGE ENDS

½" = 1'-0"

TYP. HALF-SECTION THROUGH ROADWAY @ INT. BENTS

½" = 1'-0"

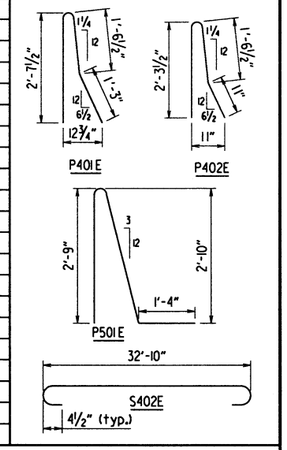
Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Roadway Face & Top of the Concrete Parapet Rail.

BAR LIST

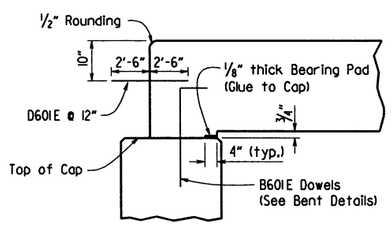
	MARK	NO. REQ'D.	LENGTH	P.D.
RAILS	P401E	372	5'-6"	3"
	P402E	48	4'-10"	3"
	P403E	48	5'-9"	Str.
	P404E	84	9'-8"	Str.
	P405E	42	14'-8"	Str.
	P501E	372	7'-0"	3¾"
TOP	S401E	80	14'-11"	Str.
	S402E	251	33'-10"	3"
	S901E	142	45'-0"	Str.
	D601E	64	5'-0"	Str.
BOTTOM	S403E	251	32'-10"	Str.
	S801E	90	55'-6"	Str.
	S902E	44	56'-6"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



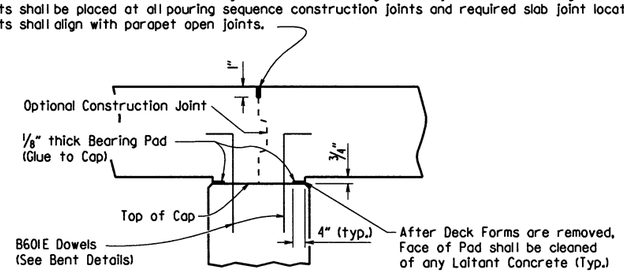
Bars with an "E" suffix are to be Epoxy Coated.



DETAIL A

No Scale

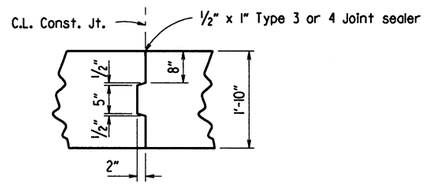
½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as "Class S(AE) Concrete-Bridge." Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the falsework is removed and before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. Slab joints shall align with parapet open joints.



Joint to be cleaned by sandblasting or other approved method before pouring joint.

DETAIL B

No Scale



Unit can be built with partial pours terminating at ends of spans only.

OPTIONAL DECK SLAB CONST. JT. DETAIL

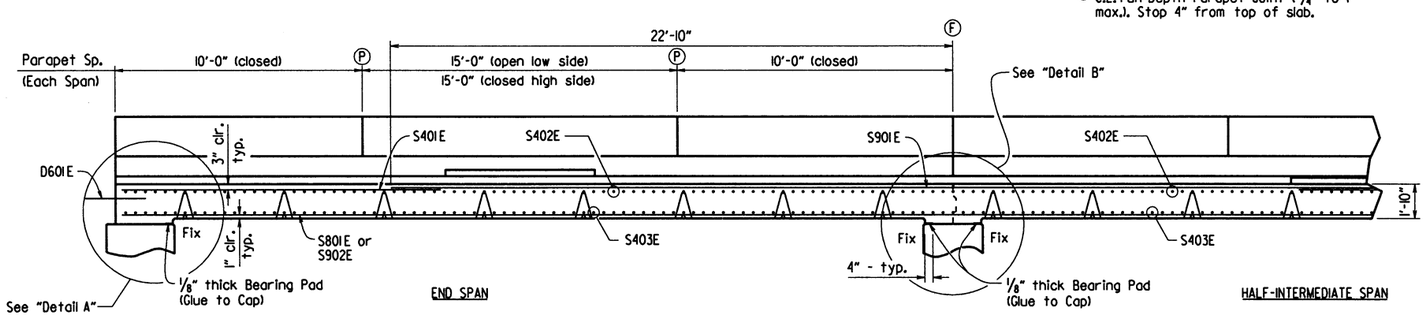
No Scale

See Dwg. No. 60721 for details of concrete parapet rails.

Ⓟ C.L. Partial-Depth Parapet Joint (1¼" to 1" max.). Stop 1'-2" from top of slab.

Ⓕ C.L. Full-Depth Parapet Joint (1¼" to 1" max.). Stop 4" from top of slab.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06 Placement of slab bolsters or hi-chairs with full-length lower runners directly on removable deck forms will not be allowed.



LONGITUDINAL SECTION ALONG C.L. BRIDGE

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF 105'-0"
CONTINUOUS R. C. SLAB UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

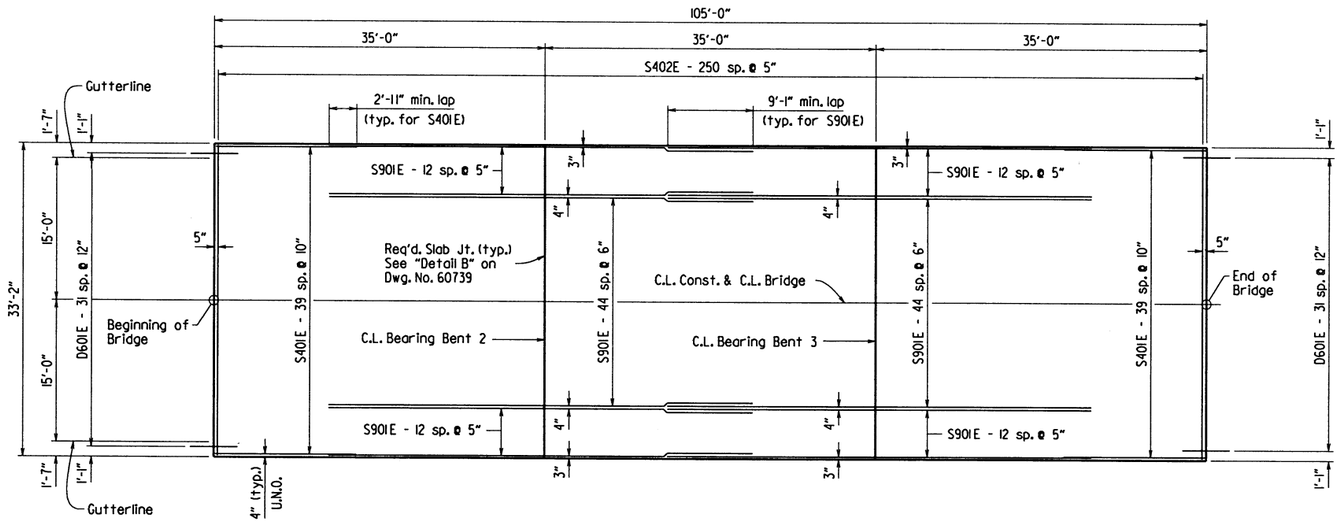
LITTLE ROCK, ARK.

DRAWN BY: JBD DATE: 4/9/2019 FILENAME: b110574x5.sl.dgn
CHECKED BY: JSQ DATE: 9/4/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2018

BRIDGE NO. 07447 DRAWING NO. 60739

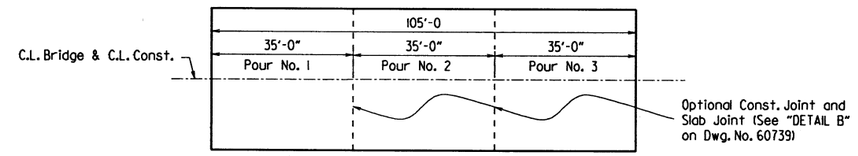
PRINT DATE: 9/4/2019

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.		110574	104	176
				①	07447	105'-0" Unit	60740	



REINFORCING PLAN - TOP OF SLAB

1/8" = 1'-0"

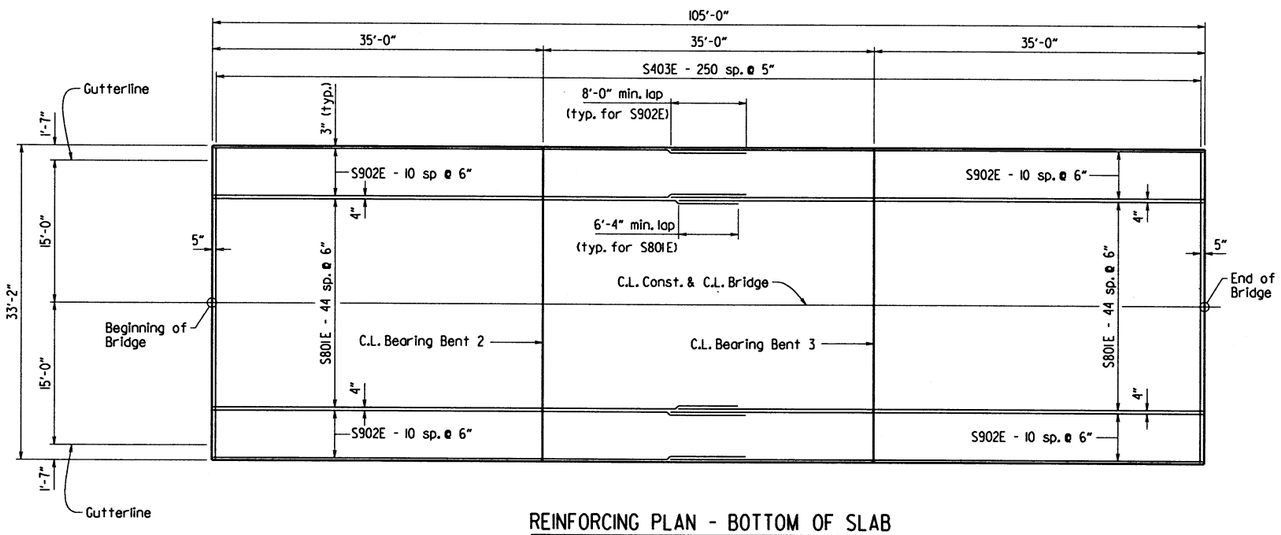


The Contractor may pour the entire bridge slab unit at once or may elect to form and pour the slab unit in three separate pours according to the pouring sequence shown. No part of the falsework for the entire unit shall be removed until all of the concrete in the slab has been placed and cured. Before removal of falsework begins, both the time and strength requirements of Subsection 802.15 must be met. All pours shall begin at one end of the bridge and proceed in sequence to the other end of the bridge. 72 hours shall elapse between the end of a pour and the start of the next pour.

Concrete in the bridge superstructure shall be placed and consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence shown and for any railing pours made before the entire bridge slab has been poured.

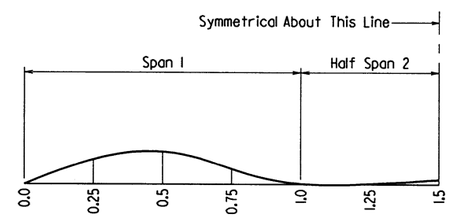
POURING SEQUENCE FOR CONTINUOUS R.C. SLAB UNITS

No Scale



REINFORCING PLAN - BOTTOM OF SLAB

1/8" = 1'-0"



DEAD LOAD CAMBER DIAGRAM

No Scale

DEAD LOAD DEFLECTIONS

POINT	TOTAL DEFLECTION
0.0	0"
0.25	0.368"
0.5	0.472"
0.75	0.264"
1.0	0"
1.25	0"
1.5	0.036"

Symmetrical About This Point

Deflections shown are from a chord from C.L. Bent to C.L. Bent. Vertical curve corrections are not included. Tolerance + 1/4" for camber and vertical alignment.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-13-19
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF 105'-0" CONTINUOUS R.C. SLAB UNIT DRAINAGE DITCH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

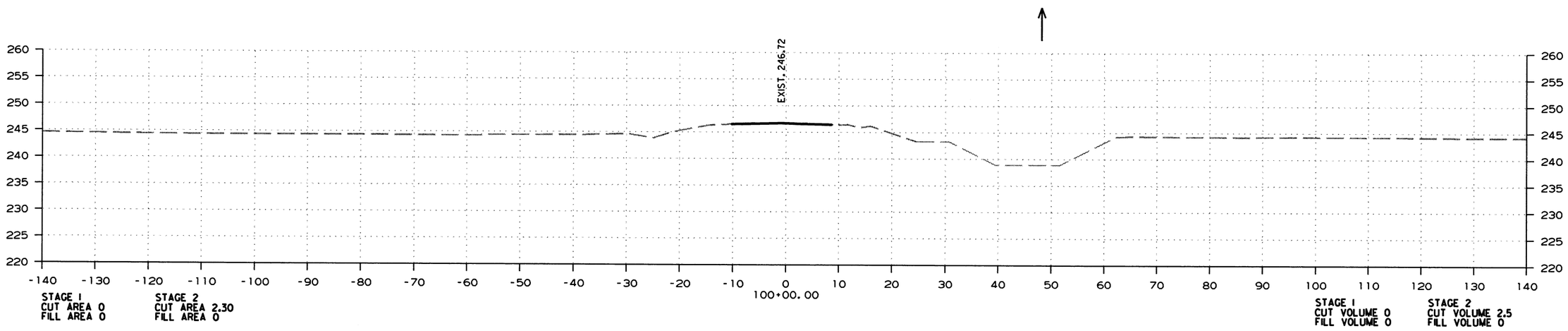
DRAWN BY: JBD DATE: 04/09/2019 FILENAME: bll0574x5_sl.dgn
CHECKED BY: JSQ DATE: 9/9/19 SCALE: As Shown
DESIGNED BY: JSQ DATE: 12/2018

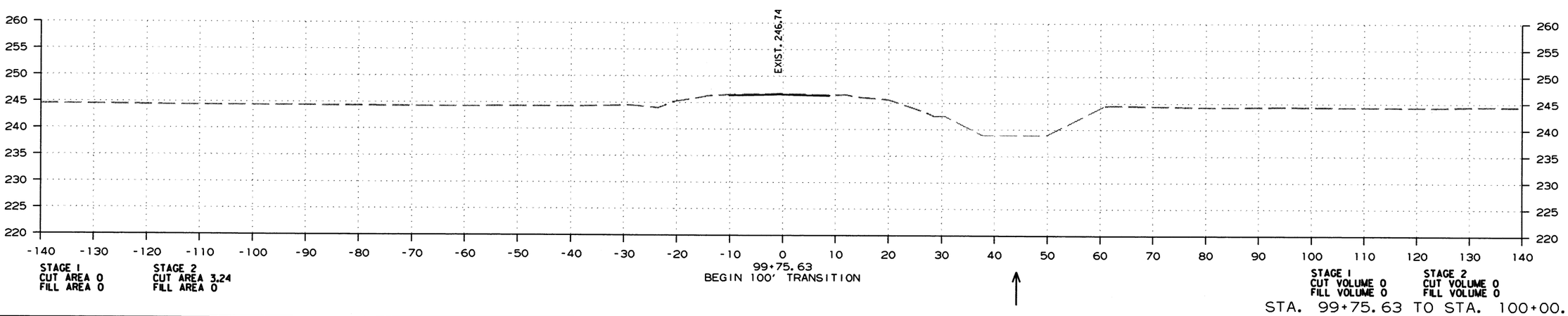
BRIDGE NO. 07447 DRAWING NO. 60740

PRINT DATE: 9/9/2019

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	105	176

(2) CROSS SECTIONS-SITE 1





STA. 99+75.63 TO STA. 100+00.00

10/1/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		110574	106	176

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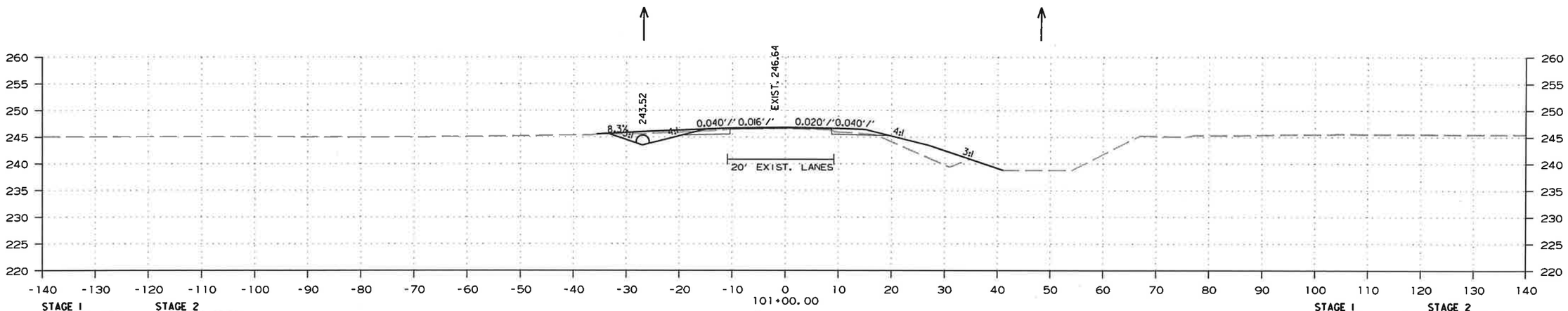
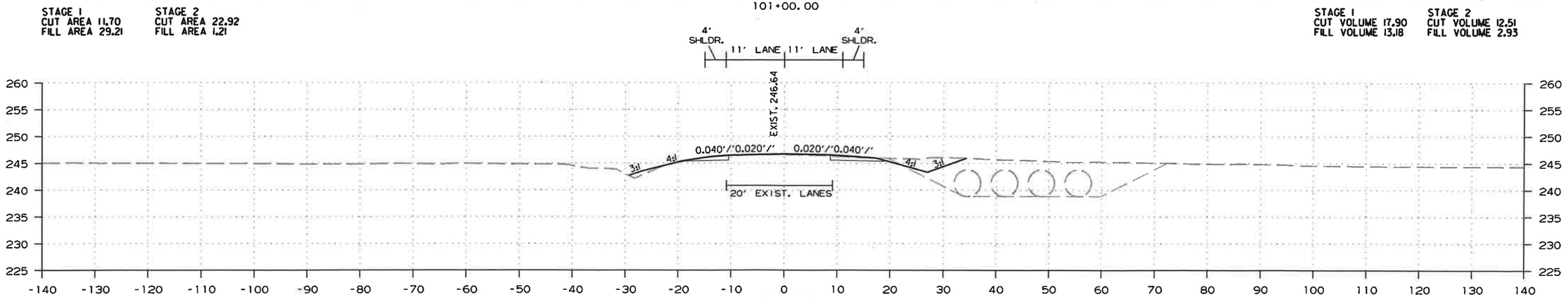


STAGE 1
CUT AREA 11.70
FILL AREA 29.21

STAGE 2
CUT AREA 22.92
FILL AREA 1.21

STAGE 1
CUT VOLUME 17.90
FILL VOLUME 13.18

STAGE 2
CUT VOLUME 12.51
FILL VOLUME 2.93



STAGE 1
CUT AREA 27.97
FILL AREA 0

STAGE 2
CUT AREA 4.81
FILL AREA 5.29

100+75.63
BEGIN JOB 110574
AND SITE 1
BEGIN SUPERELEVATION
AND PROFILE GRADE (ELEV. 247.00)

STAGE 1
CUT VOLUME 37.54
FILL VOLUME 0

STAGE 2
CUT VOLUME 9.95
FILL VOLUME 7.40

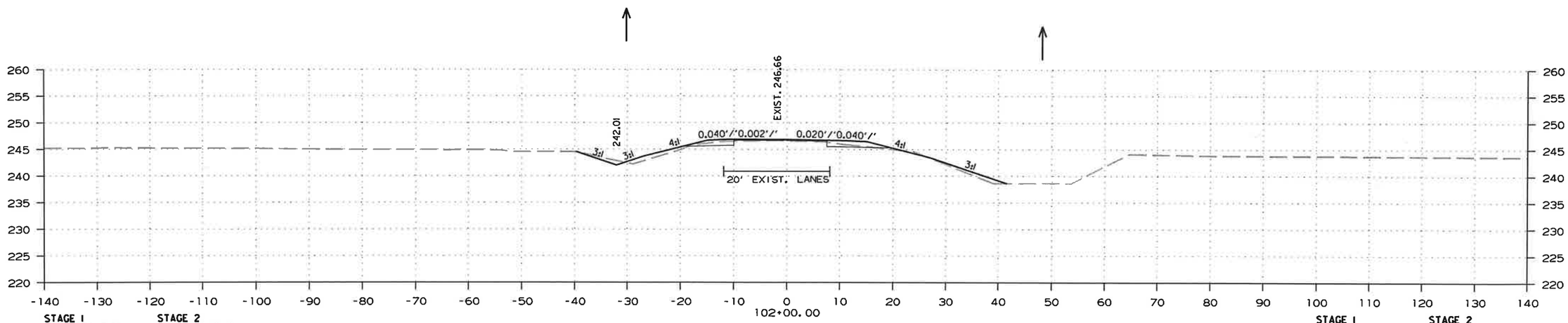
STA. 100+75.63 TO STA. 101+00.00

10/31/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		110574	107	176

(2) CROSS SECTIONS-SITE 1



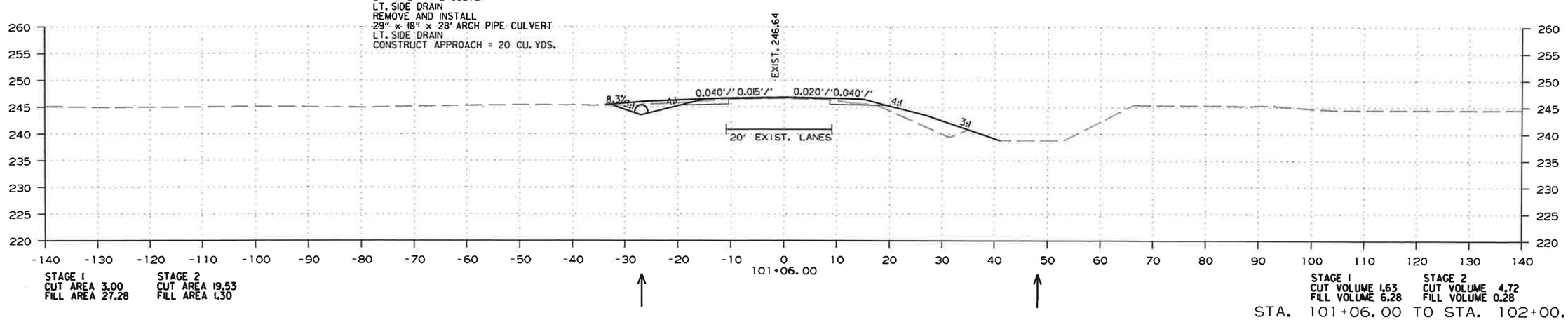
STAGE 1
CUT AREA 3.98
FILL AREA 6.80

STAGE 2
CUT AREA 8.49
FILL AREA 9.56

STAGE 1
CUT VOLUME 12.15
FILL VOLUME 59.31

STAGE 2
CUT VOLUME 48.77
FILL VOLUME 18.90

STA. 101+06 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
29" x 18" x 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.



STAGE 1
CUT AREA 3.00
FILL AREA 27.28

STAGE 2
CUT AREA 19.53
FILL AREA 1.30

STAGE 1
CUT VOLUME 1.63
FILL VOLUME 6.28

STAGE 2
CUT VOLUME 4.72
FILL VOLUME 0.28

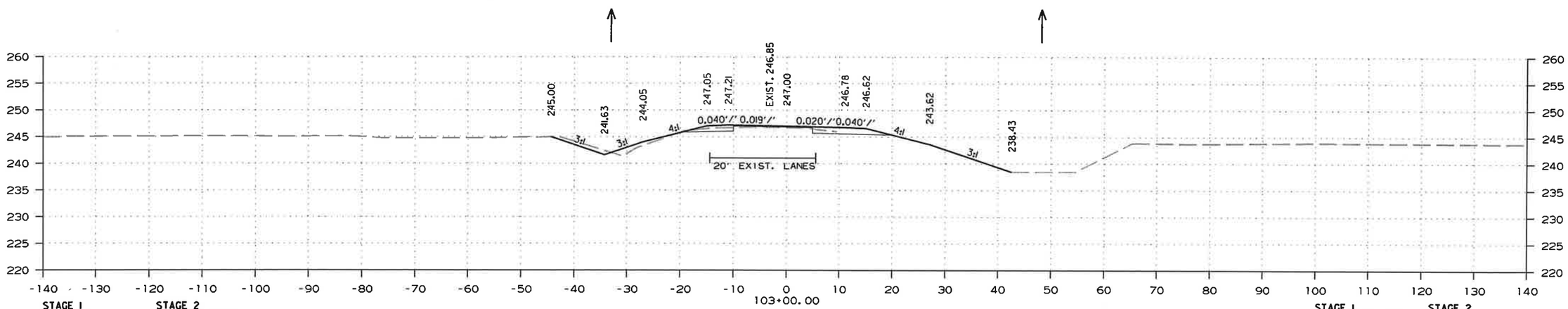
STA. 101+06.00 TO STA. 102+00.00

10/31/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		110574	108	176

(2) CROSS SECTIONS-SITE 1



STAGE 1
CUT AREA 7.25
FILL AREA 4.02

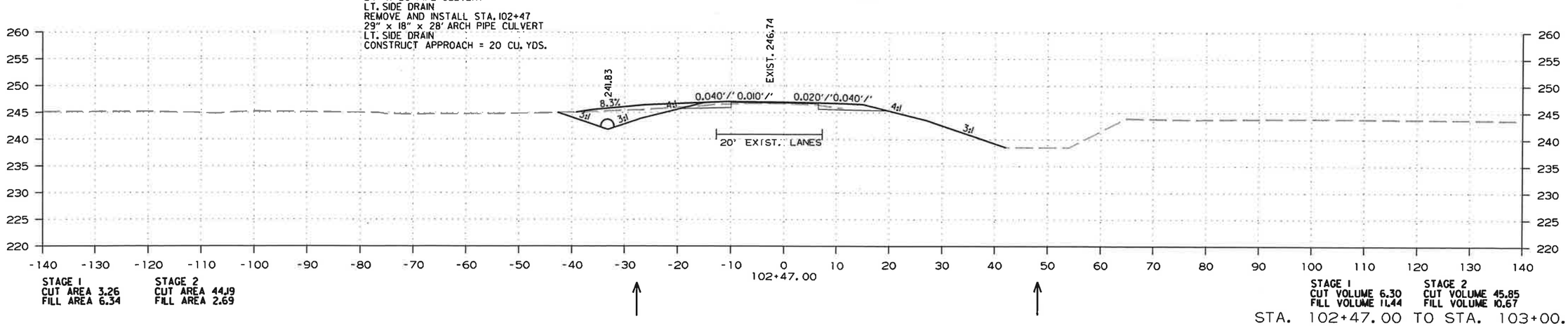
STAGE 2
CUT AREA 5.07
FILL AREA 9.30

STAGE 1
CUT VOLUME 10.32
FILL VOLUME 10.17

STAGE 2
CUT VOLUME 54.93
FILL VOLUME 11.77

STA. 102+54 IN PLACE
24" x 26' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL STA. 102+47
29" x 18" x 28' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 102+98.19 - MAX. SUPERELEVATON



STAGE 1
CUT AREA 3.26
FILL AREA 6.34

STAGE 2
CUT AREA 44.19
FILL AREA 2.69

STAGE 1
CUT VOLUME 6.30
FILL VOLUME 11.44

STAGE 2
CUT VOLUME 45.85
FILL VOLUME 10.67

STA. 102+47.00 TO STA. 103+00.00

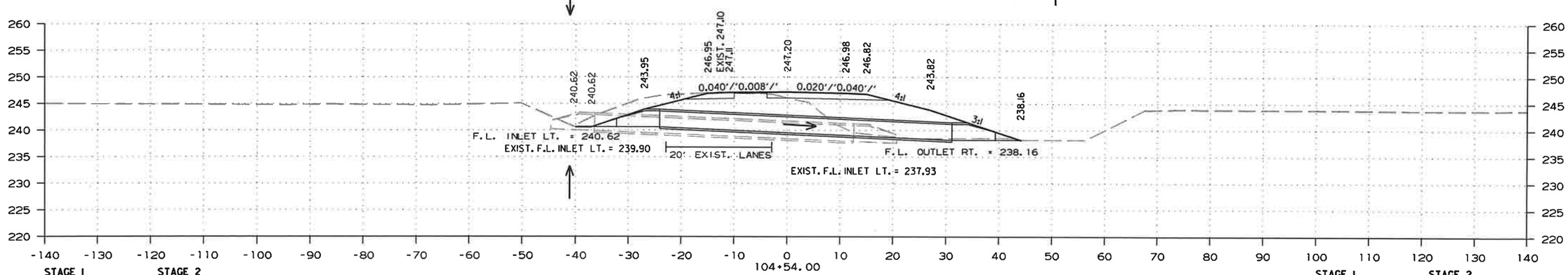
10/31/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		110574	109	176

(2) CROSS SECTIONS-SITE 1

STA. 104+57 IN PLACE
36" x 50' R.C. PIPE CULVERT
REMOVE & CONSTRUCT STA. 104+54
36" x 56' PIPE CULVERT
WITH FES LT. & RT.
R.C. PIPE (CLASS III) (TYPE 3) = 56 LIN. FT.
C.M. PIPE (TYPE 2) = 60 LIN. FT.
PLASTIC PIPE = 60 LIN. FT.

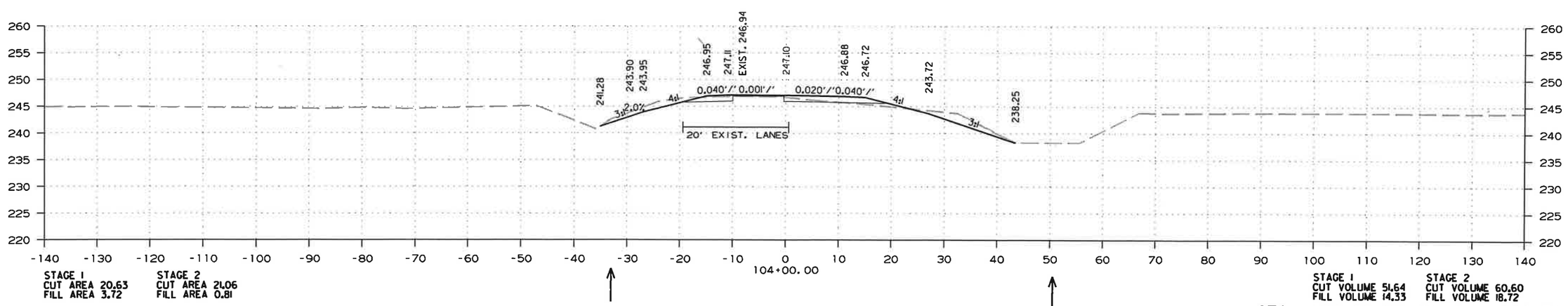


STAGE 1
CUT AREA 21.23
FILL AREA 168.94

STAGE 2
CUT AREA 50.88
FILL AREA 0.17

STAGE 1
CUT VOLUME 41.86
FILL VOLUME 172.66

STAGE 2
CUT VOLUME 71.93
FILL VOLUME 0.97



STAGE 1
CUT AREA 20.63
FILL AREA 3.72

STAGE 2
CUT AREA 21.06
FILL AREA 0.81

STAGE 1
CUT VOLUME 51.64
FILL VOLUME 14.33

STAGE 2
CUT VOLUME 60.60
FILL VOLUME 18.72

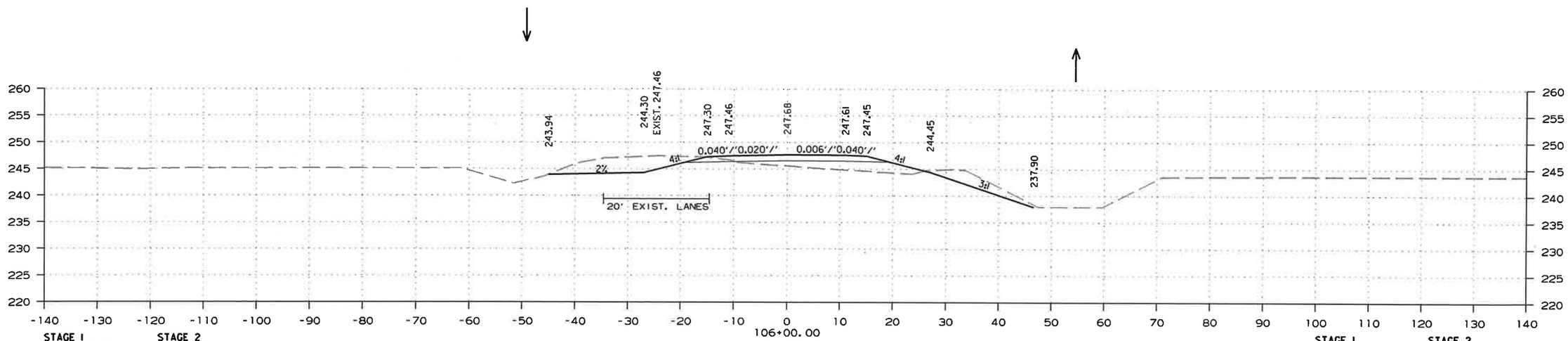
STA. 104+00.00 TO STA. 104+54.00

10/31/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		110574	110	176

(2) CROSS SECTIONS-SITE 1



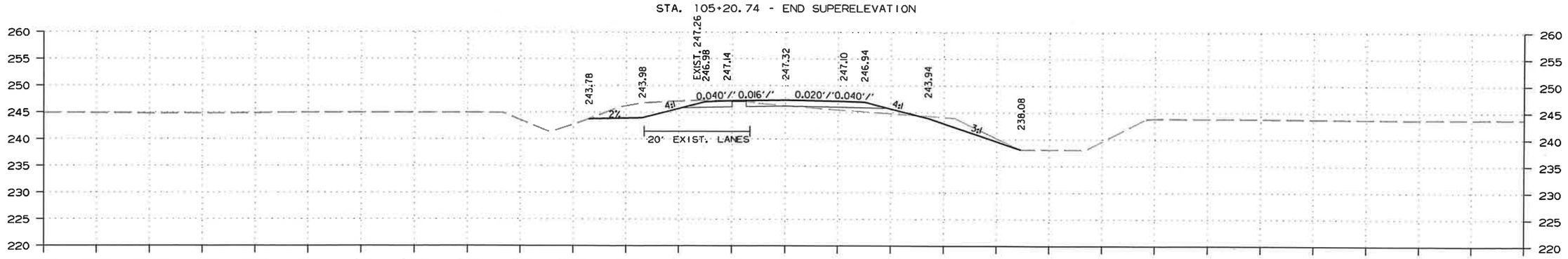
STAGE 1
CUT AREA 30.63
FILL AREA 45.32

STAGE 2
CUT AREA 64.05
FILL AREA 0

STAGE 1
CUT VOLUME 85.93
FILL VOLUME 106.90

STAGE 2
CUT VOLUME 206.03
FILL VOLUME 0

STA. 105+20.75 - BEG. SUPERELEVATION
STA. 105+20.74 - END SUPERELEVATION



STAGE 1
CUT AREA 15.77
FILL AREA 12.41

STAGE 2
CUT AREA 56.75
FILL AREA 0

STAGE 1
CUT VOLUME 31.52
FILL VOLUME 154.48

STAGE 2
CUT VOLUME 91.69
FILL VOLUME 0.14

STA. 105+00.00 TO STA. 106+00.00

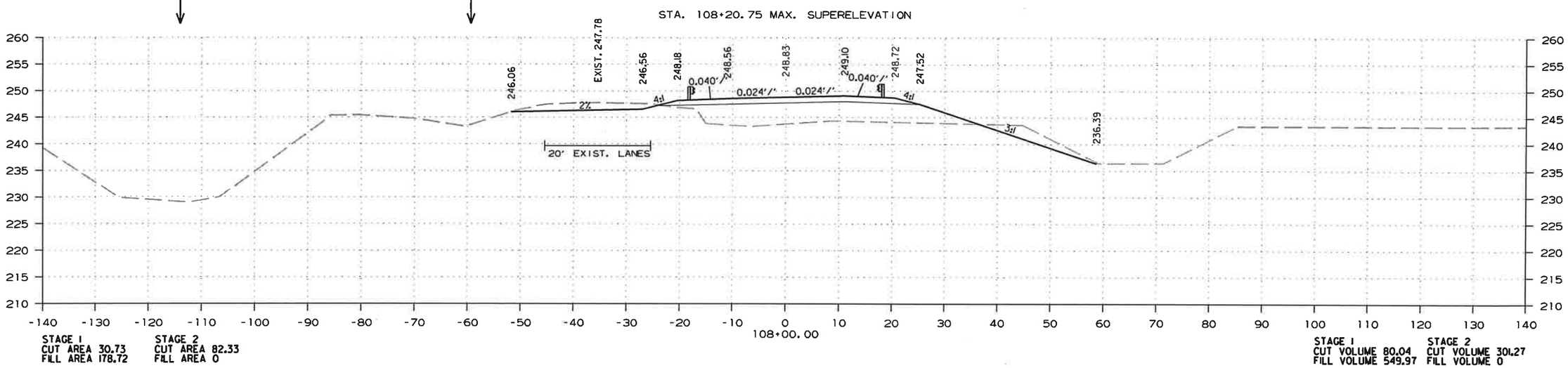
10/31/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		110574	111	176

(2) CROSS SECTIONS-SITE 1

STA. 108+20.75 MAX. SUPERELEVATION

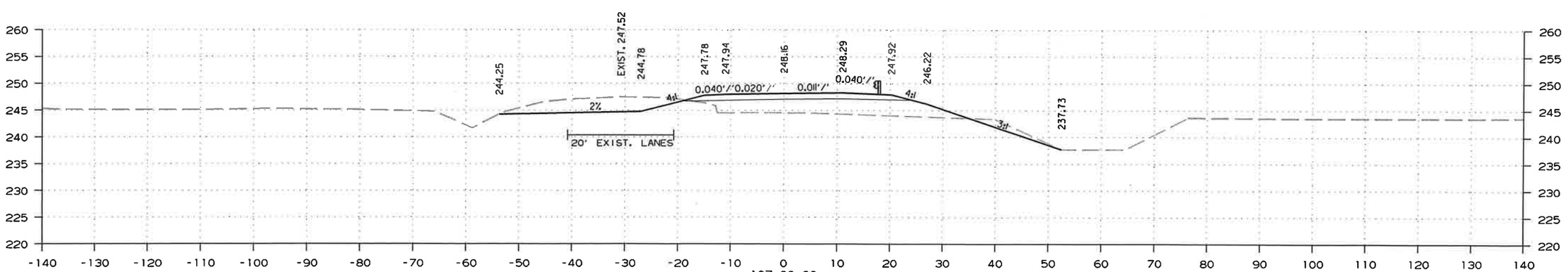


STAGE 1
CUT AREA 30.73
FILL AREA 178.72

STAGE 2
CUT AREA 82.33
FILL AREA 0

STAGE 1
CUT VOLUME 80.04
FILL VOLUME 549.97

STAGE 2
CUT VOLUME 301.27
FILL VOLUME 0



STAGE 1
CUT AREA 12.49
FILL AREA 118.27

STAGE 2
CUT AREA 80.36
FILL AREA 0

STAGE 1
CUT VOLUME 79.86
FILL VOLUME 302.94

STAGE 2
CUT VOLUME 286.51
FILL VOLUME 0

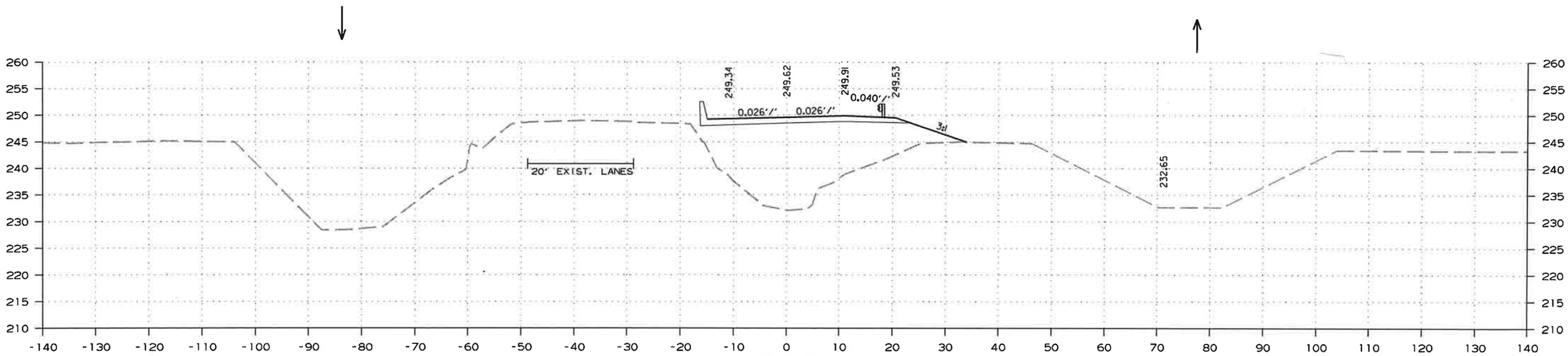
STA. 107+00.00 TO STA. 108+00.00

10/31/2019

R110574.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-31-19				6	ARK.			
				JOB NO.		110574	112	176

(2) CROSS SECTIONS-SITE 1

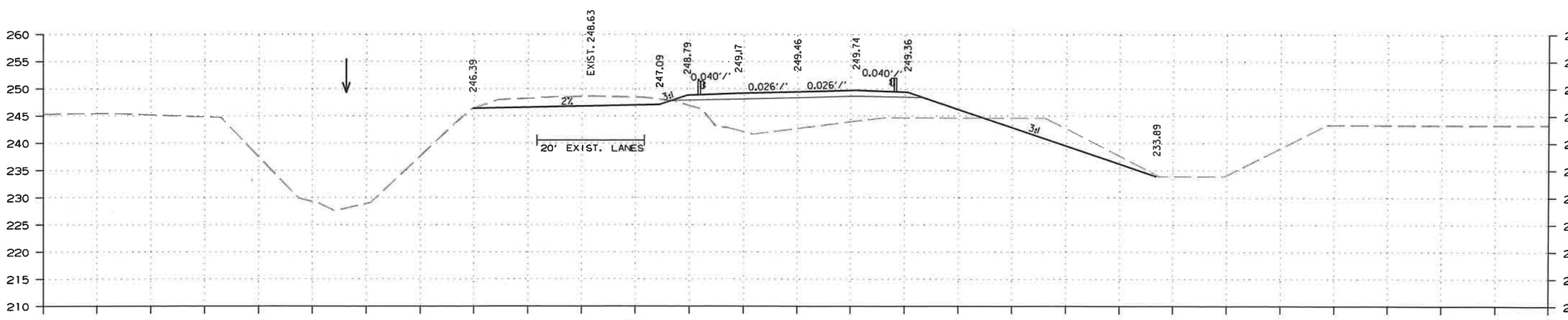


STAGE 1
CUT AREA 73.15
FILL AREA 454.69

STAGE 2
CUT AREA 128.24
FILL AREA 0

STAGE 1
CUT VOLUME 121.52
FILL VOLUME 721.82

STAGE 2
CUT VOLUME 225.48
FILL VOLUME 0



STAGE 1
CUT AREA 64.56
FILL AREA 228.92

STAGE 2
CUT AREA 115.28
FILL AREA 0

STAGE 1
CUT VOLUME 176.47
FILL VOLUME 754.87

STAGE 2
CUT VOLUME 365.95
FILL VOLUME 0

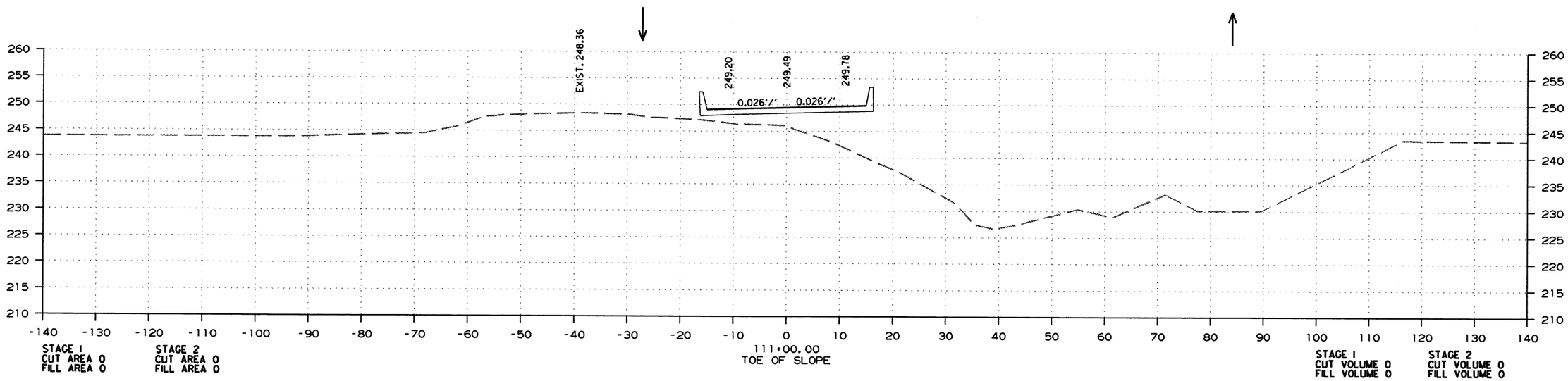
STA. 109+00.00 TO STA. 109+50.00

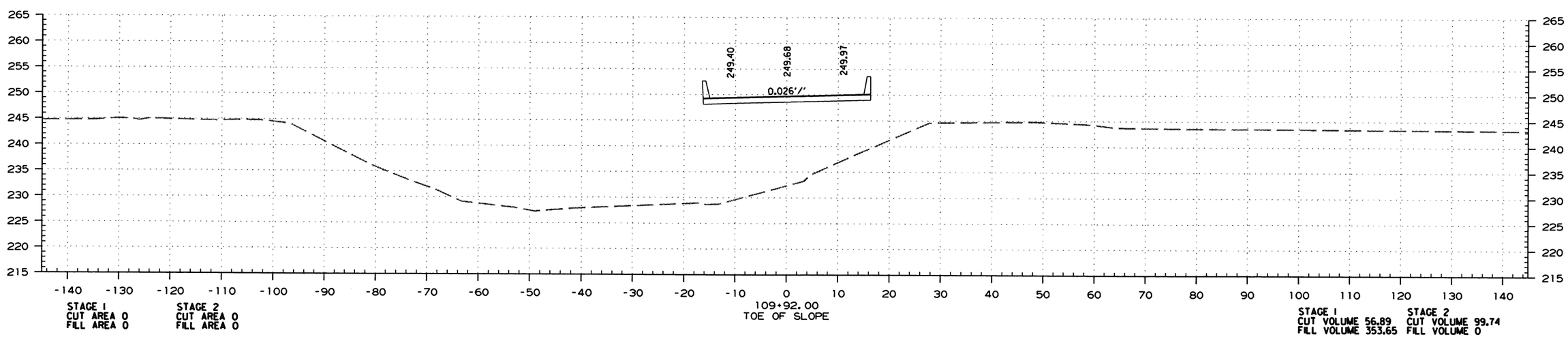
10/31/2019

R110574.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.		110574	113	176

(2) CROSS SECTIONS-SITE 1





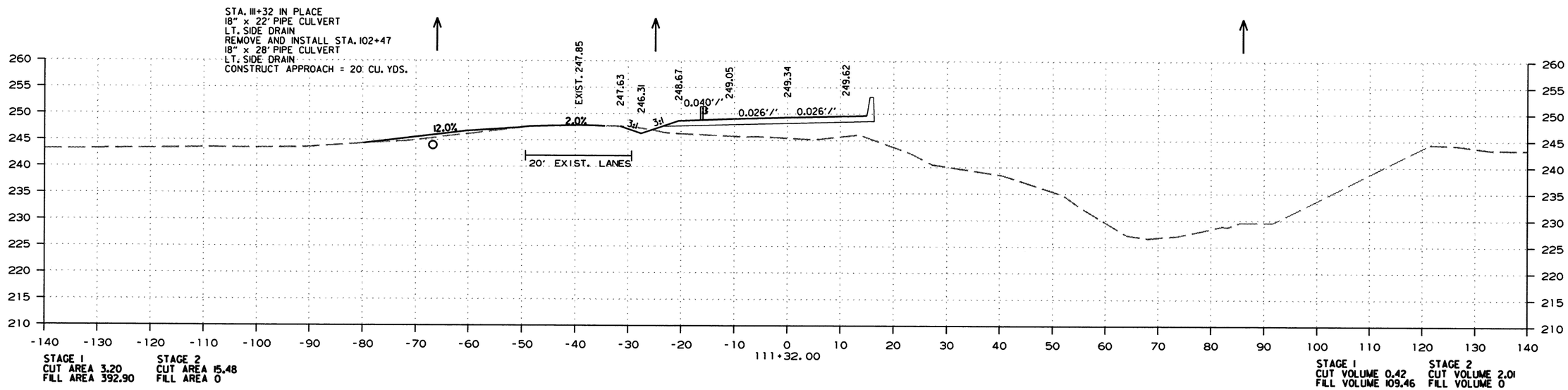
STA. 109+92.00 TO STA. 111+00.00

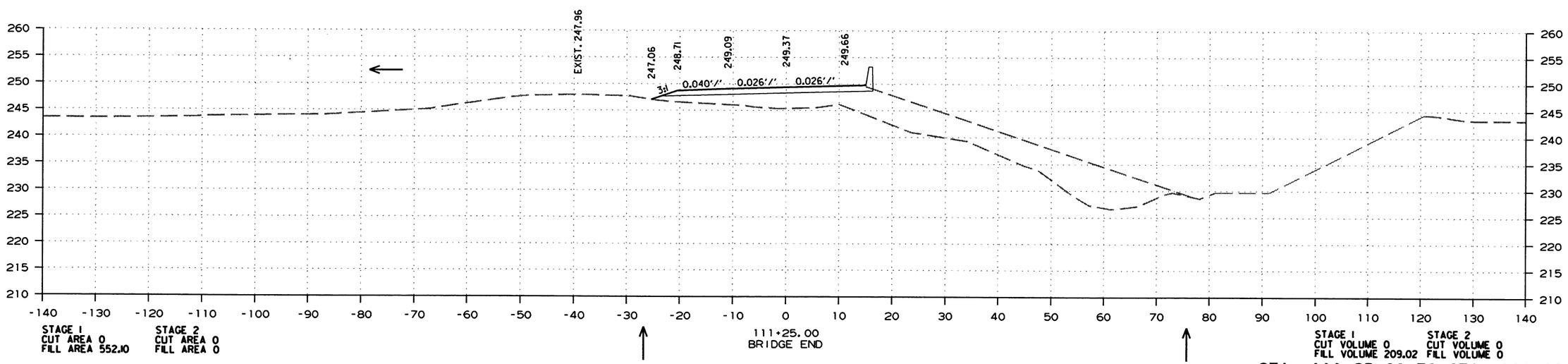
10/1/2019

R110574.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.		110574	114	176

(2) CROSS SECTIONS-SITE 1





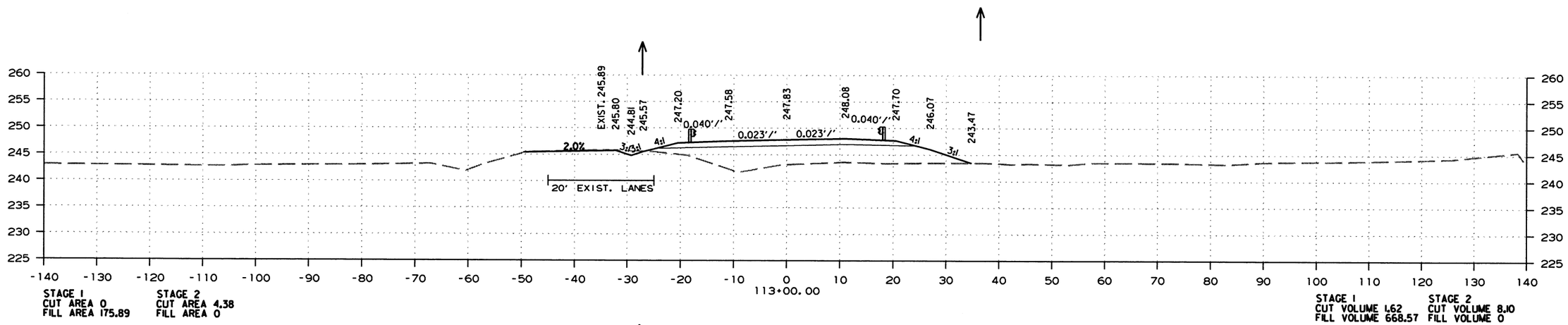
STA. 111+25.00 TO STA. 111+32.00

10/1/2019

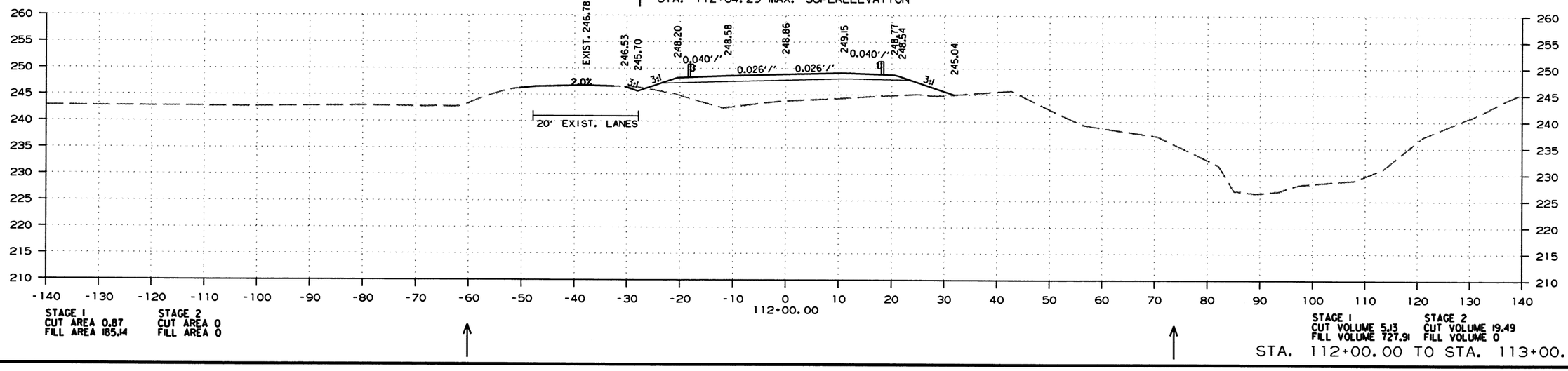
R110574.DGN

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.		110574	115	176

(2) CROSS SECTIONS-SITE 1



STA. 112+64.29 MAX. SUPERELEVATION



STA. 112+00.00 TO STA. 113+00.00

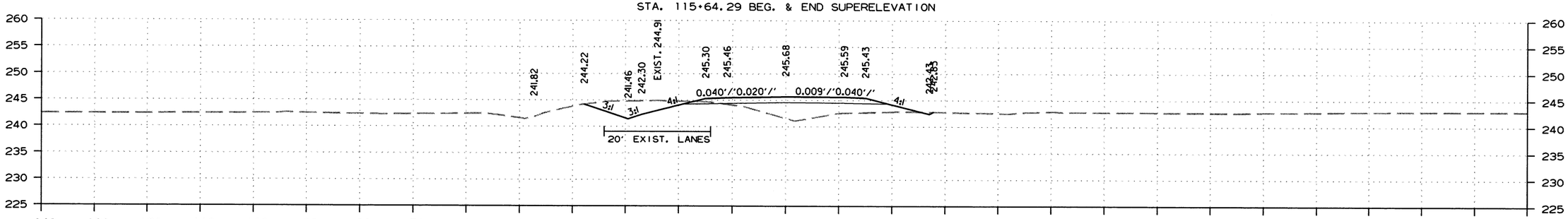
10/1/2019

R110574.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.		110574	116	176

(2) CROSS SECTIONS-SITE 1

STA. 115+64.29 BEG. & END SUPERELEVATION



STAGE 1
CUT AREA 0.50
FILL AREA 63.98

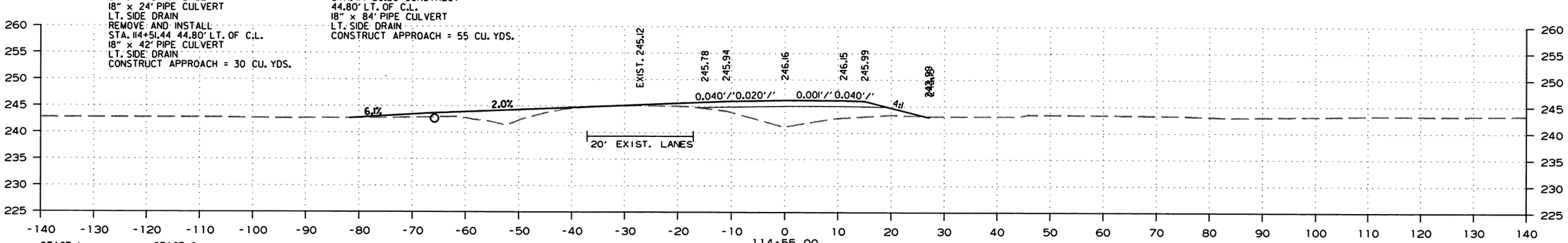
STAGE 2
CUT AREA 37.34
FILL AREA 0

STAGE 1
CUT VOLUME 0.51
FILL VOLUME 121.01

STAGE 2
CUT VOLUME 31.12
FILL VOLUME 0

STA. 114+13 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
STA. 114+51.44 44.80' LT. OF C.L.
18" x 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS.

STA. 114+29.26 CONSTRUCT
44.80' LT. OF C.L.
18" x 84' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 55 CU. YDS.



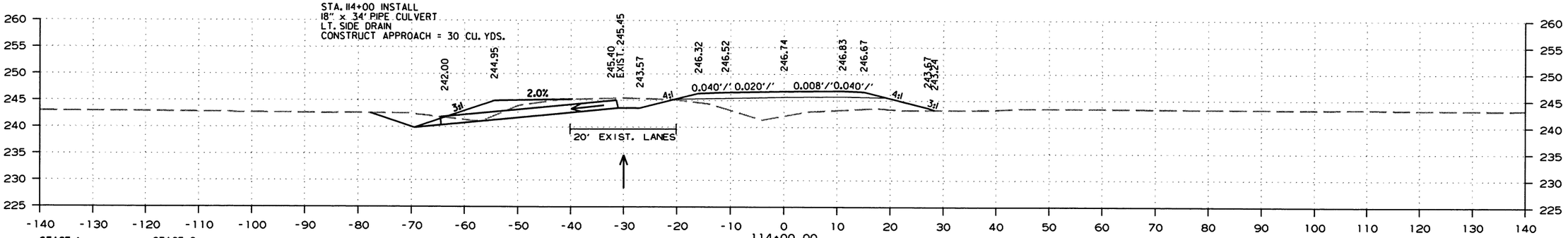
STAGE 1
CUT AREA 0.10
FILL AREA 81.23

STAGE 2
CUT AREA 0
FILL AREA 41.65

STAGE 1
CUT VOLUME 0.10
FILL VOLUME 190.56

STAGE 2
CUT VOLUME 32.57
FILL VOLUME 73.52

STA. 114+00 INSTALL
18" x 34' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS.



STAGE 1
CUT AREA 0
FILL AREA 105.87

STAGE 2
CUT AREA 31.98
FILL AREA 30.53

STAGE 1
CUT VOLUME 0
FILL VOLUME 521.92

STAGE 2
CUT VOLUME 67.50
FILL VOLUME 56.53

STA. 114+00.00 TO STA. 115+00.00

10/1/2019

R110574.DGN

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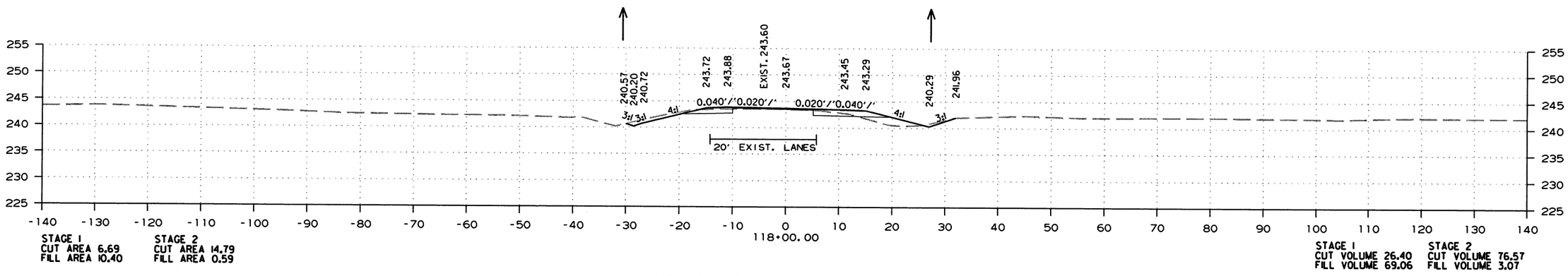
				6	ARK.			
				JOB NO.		110574	117	176

(2) CROSS SECTIONS-SITE 1



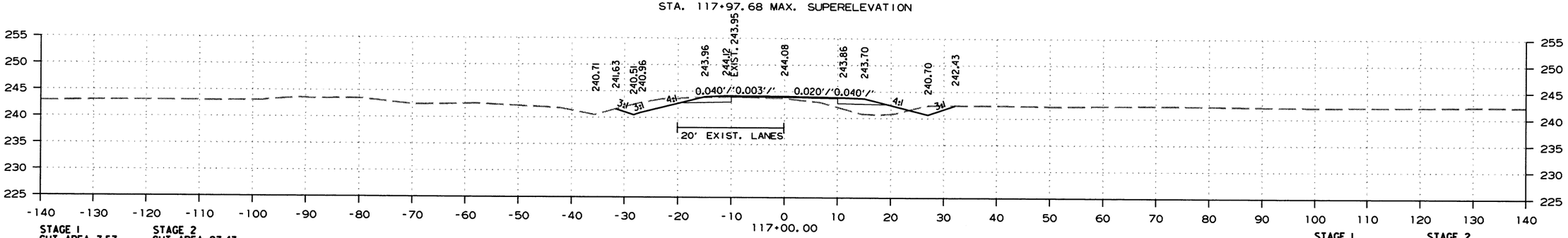
STAGE 1
CUT AREA 6.69
FILL AREA 10.40

STAGE 2
CUT AREA 14.79
FILL AREA 0.59

STAGE 1
CUT VOLUME 26.40
FILL VOLUME 69.06

STAGE 2
CUT VOLUME 76.57
FILL VOLUME 3.07

STA. 117+97.68 MAX. SUPERELEVATION

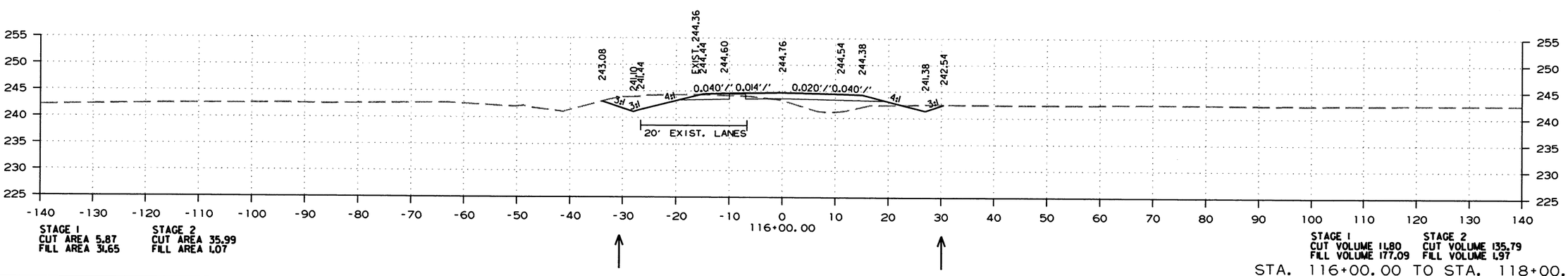


STAGE 1
CUT AREA 7.57
FILL AREA 26.89

STAGE 2
CUT AREA 27.43
FILL AREA 1.07

STAGE 1
CUT VOLUME 46.53
FILL VOLUME 108.41

STAGE 2
CUT VOLUME 134.62
FILL VOLUME 3.95



STAGE 1
CUT AREA 5.87
FILL AREA 31.65

STAGE 2
CUT AREA 35.99
FILL AREA 1.07

STAGE 1
CUT VOLUME 11.80
FILL VOLUME 177.09

STAGE 2
CUT VOLUME 135.79
FILL VOLUME 1.97

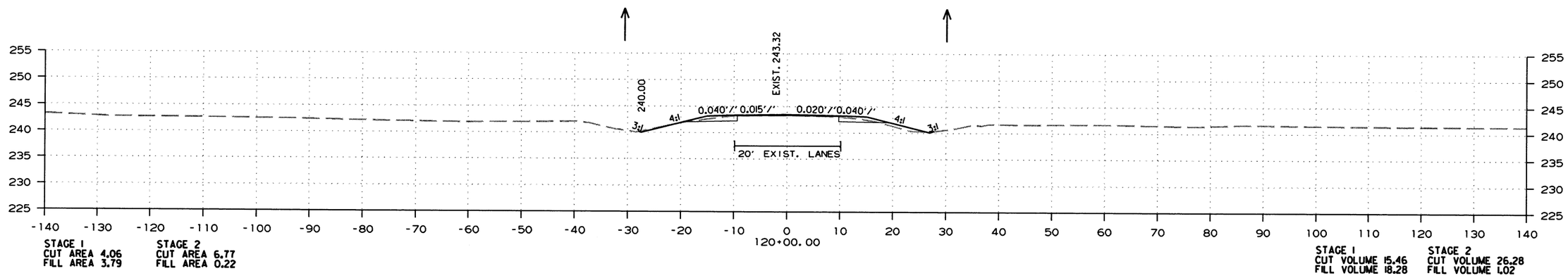
STA. 116+00.00 TO STA. 118+00.00

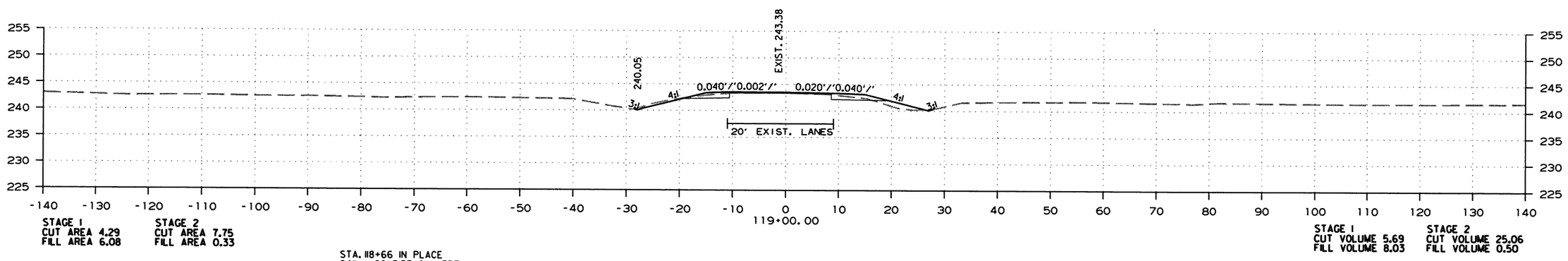
10/1/2019

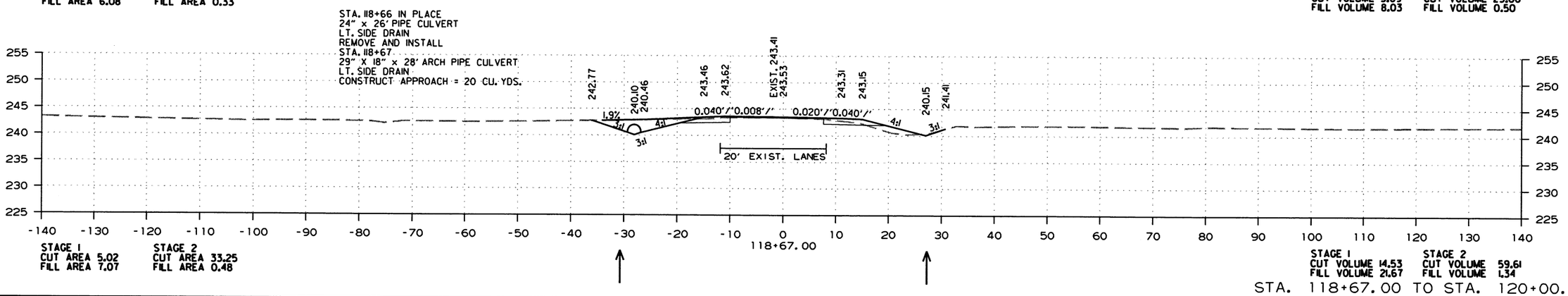
R110574.DGN

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.		110574	118	176

(2) CROSS SECTIONS-SITE 1







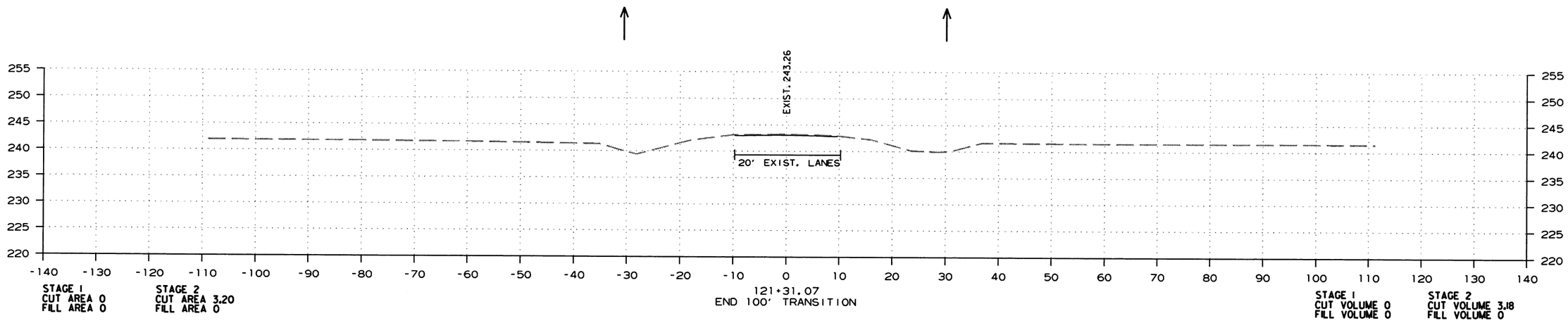
STA. 118+67.00 TO STA. 120+00.00

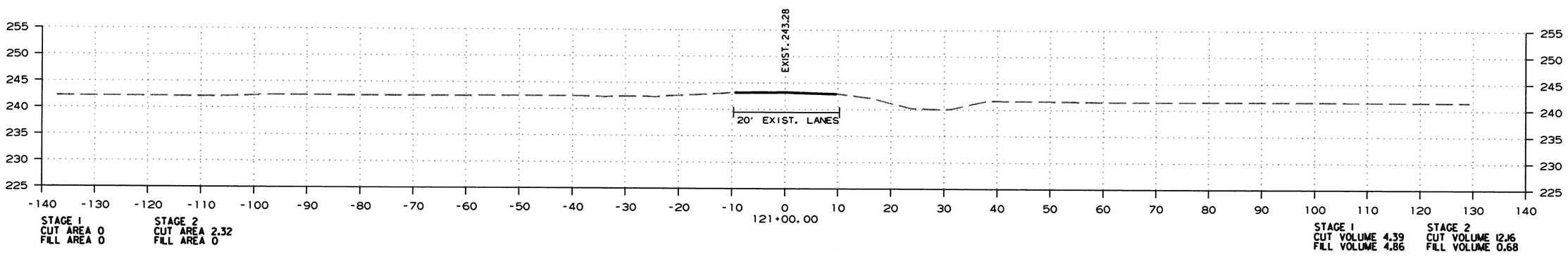
10/1/2019

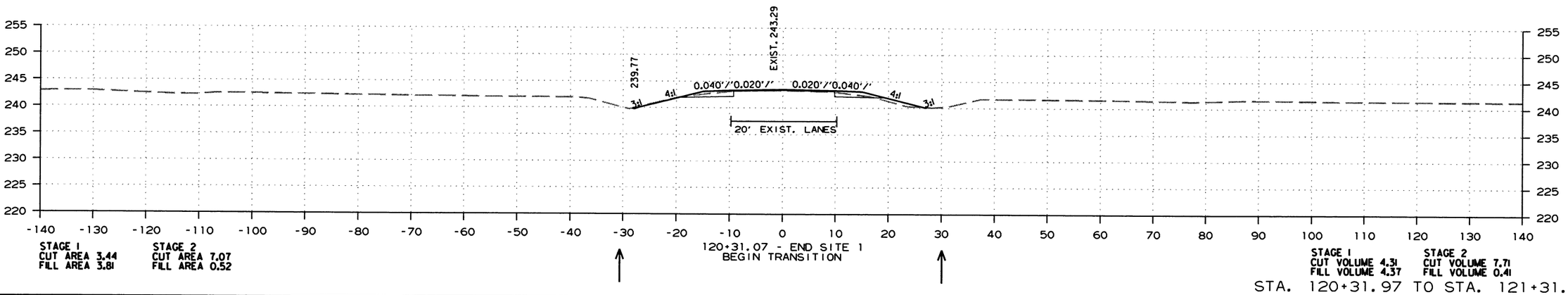
R110574.DGN

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.		110574	119	176

(2) CROSS SECTIONS-SITE 1







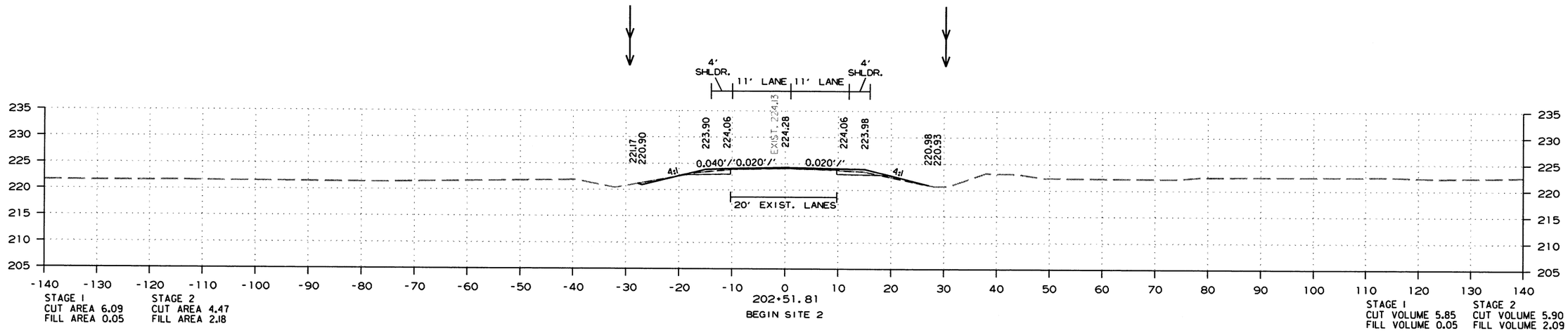
STA. 120+31.97 TO STA. 121+31.97

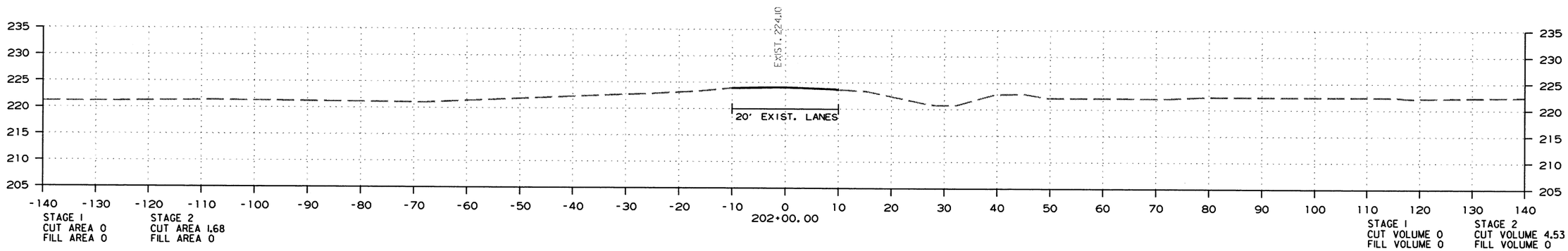
10/1/2019

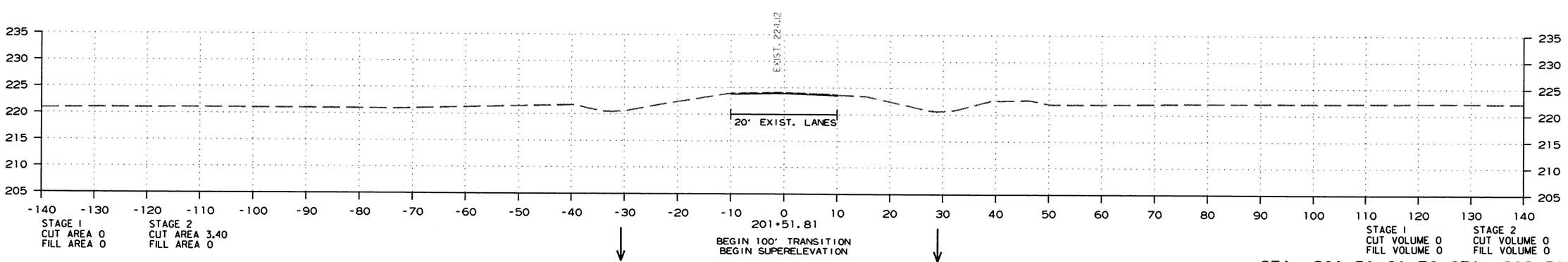
R110574.DGN

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.		110574	120	176

(2) CROSS SECTIONS-SITE 2







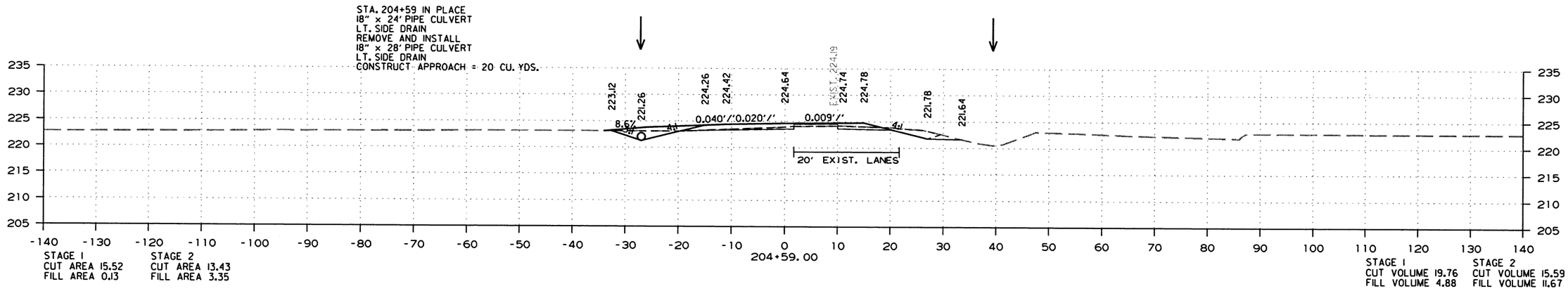
STA. 201+51.81 TO STA. 202+51.81

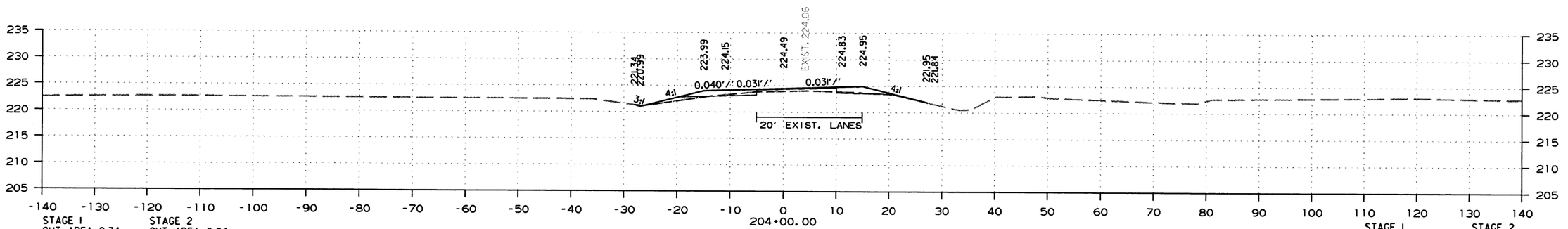
4/22/2019

R110574.DGN

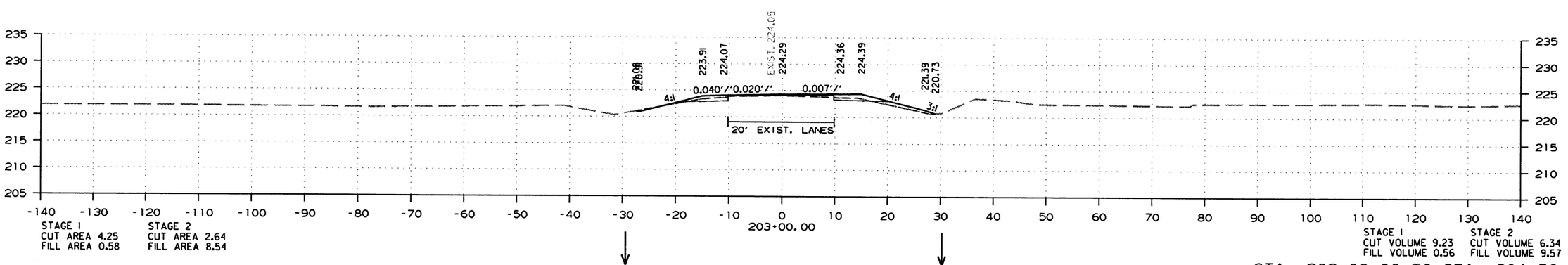
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	121	176

(2) CROSS SECTIONS-SITE 2





STA. 203+81.35 - MAX. SUPERELEVATION



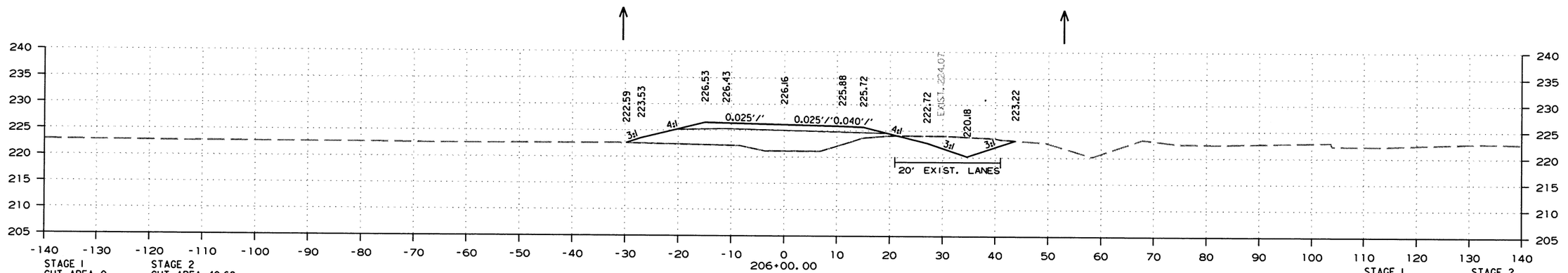
STA. 203+00.00 TO STA. 204+59.00

4/22/2019

R110574.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.		110574	122	176

(2) CROSS SECTIONS-SITE 2



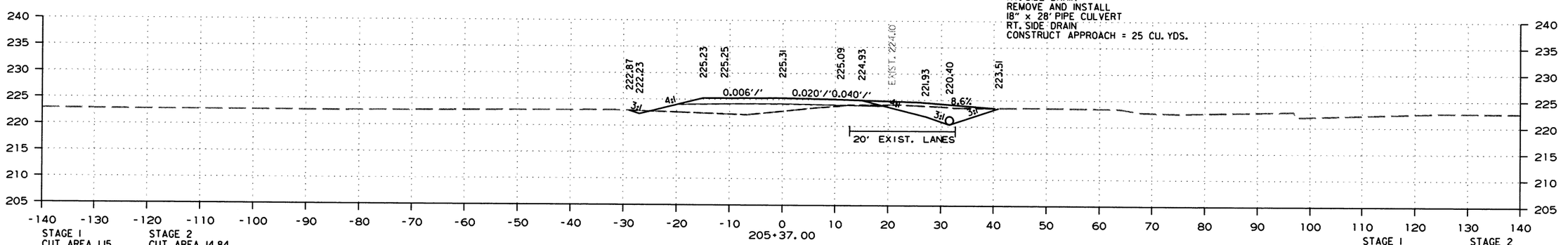
STAGE 1
CUT AREA 0
FILL AREA 131.22

STAGE 2
CUT AREA 40.68
FILL AREA 0

STAGE 1
CUT VOLUME 1.34
FILL VOLUME 207.12

STAGE 2
CUT VOLUME 90.01
FILL VOLUME 0

STA. 205+37 IN PLACE
18" x 24' PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.



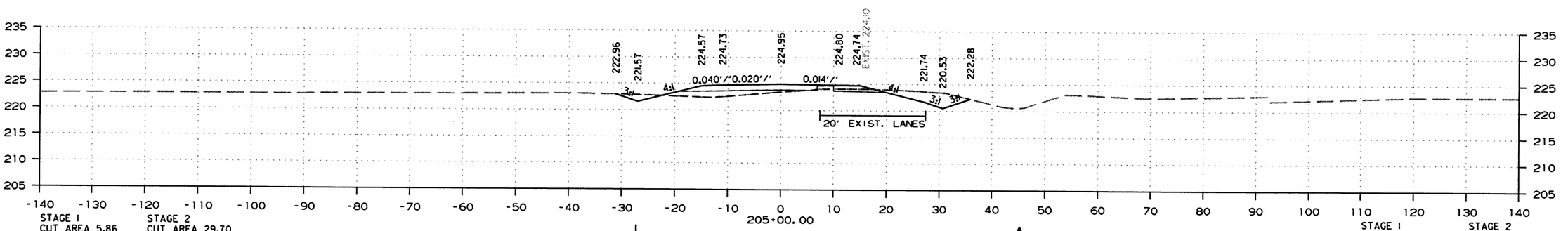
STAGE 1
CUT AREA 1.15
FILL AREA 46.32

STAGE 2
CUT AREA 14.84
FILL AREA 0

STAGE 1
CUT VOLUME 4.80
FILL VOLUME 45.04

STAGE 2
CUT VOLUME 29.15
FILL VOLUME 1.32

STA. 205+10.89 - BEGIN AND END SUPERELEVATION



STAGE 1
CUT AREA 5.86
FILL AREA 19.42

STAGE 2
CUT AREA 29.70
FILL AREA 1.92

STAGE 1
CUT VOLUME 16.23
FILL VOLUME 14.84

STAGE 2
CUT VOLUME 32.75
FILL VOLUME 4.00

STA. 205+00.00 TO STA. 206+00.00

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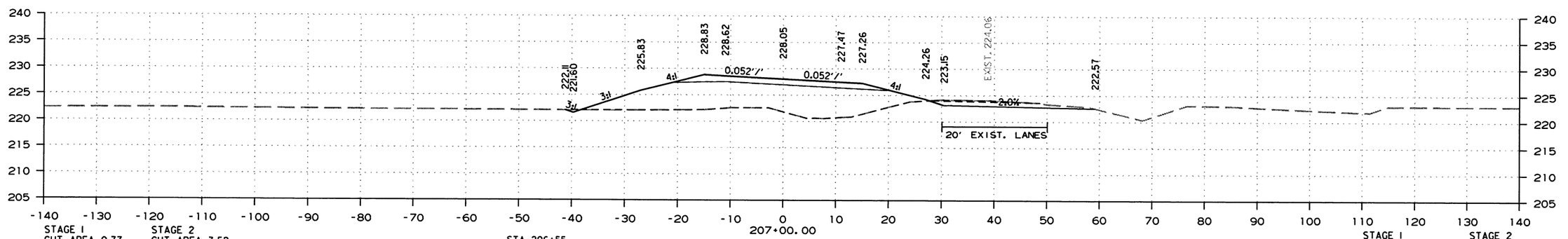
				6	ARK.			
				JOB NO.		110574	123	176

(2) CROSS SECTIONS-SITE 2

STA. 207+56.37 - MAX SUPERELEVATION



STAGE 1
CUT AREA 0.77
FILL AREA 267.39

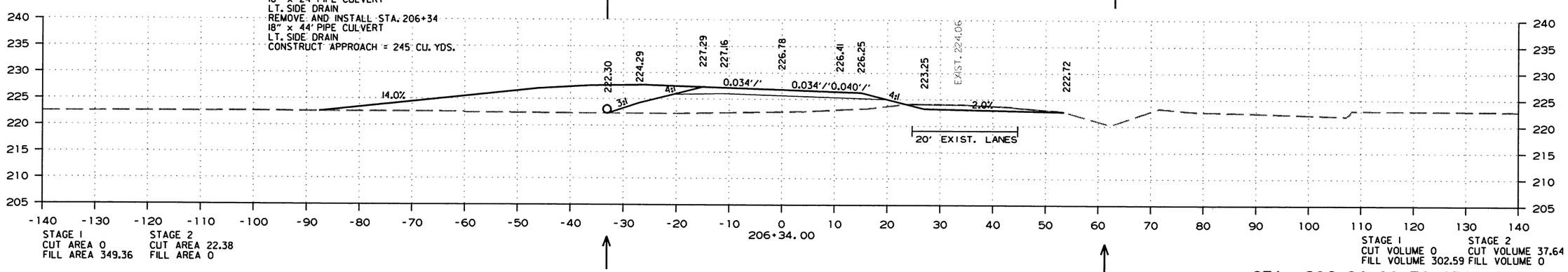
STAGE 2
CUT AREA 3.52
FILL AREA 0

STA. 206+55
BEGIN -1.46% LT. DITCH GRADE
ELEV. = 222.26

STAGE 1
CUT VOLUME 0.94
FILL VOLUME 753.81

STAGE 2
CUT VOLUME 27.65
FILL VOLUME 0

STA. 206+28 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL STA. 206+34
18" x 44' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 245 CU. YDS.



STAGE 1
CUT AREA 0
FILL AREA 349.36

STAGE 2
CUT AREA 22.38
FILL AREA 0

STAGE 1
CUT VOLUME 0
FILL VOLUME 302.59

STAGE 2
CUT VOLUME 37.64
FILL VOLUME 0

STA. 206+34.00 TO STA. 207+00.00

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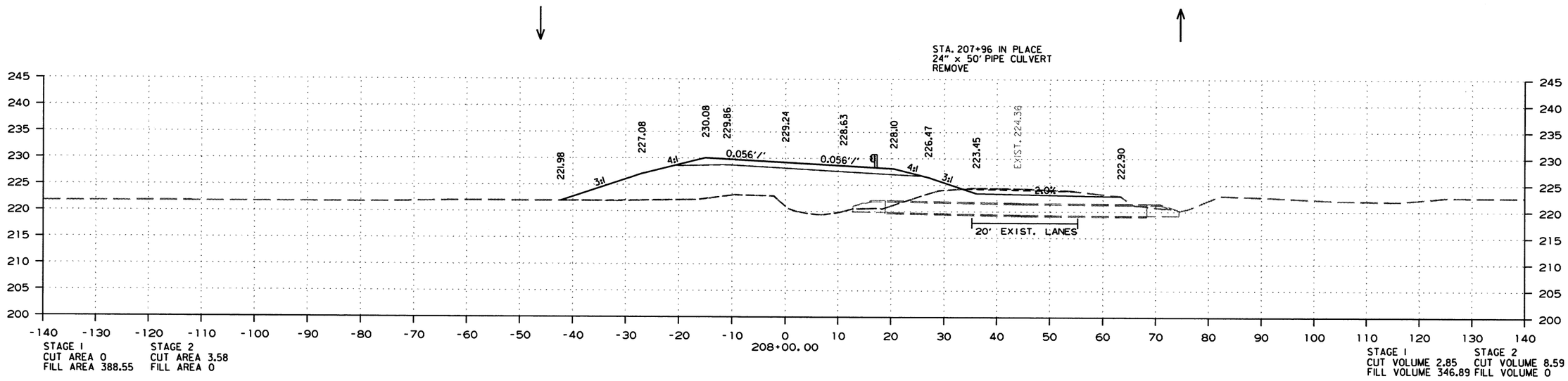
				6	ARK.			
				JOB NO.		110574	124	176

(2) CROSS SECTIONS-SITE 2

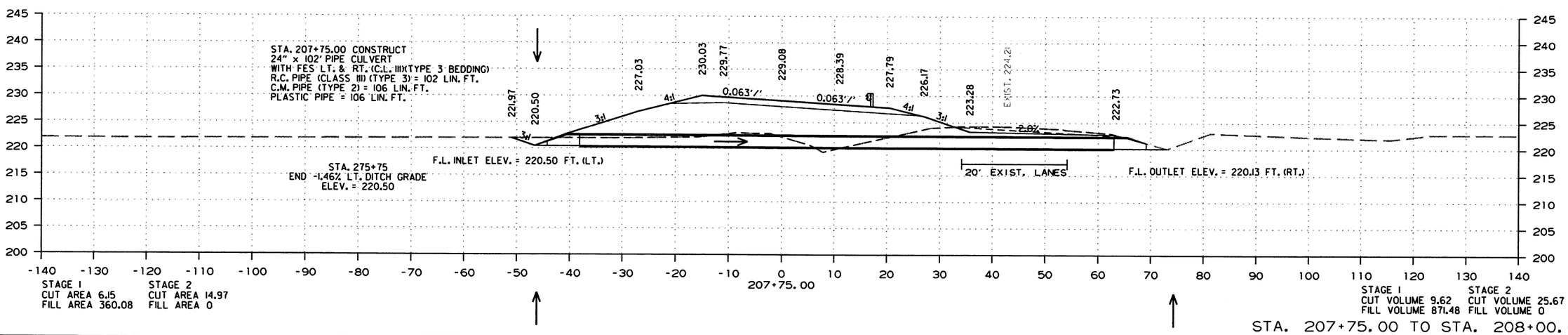


STAGE 1
CUT AREA 0
FILL AREA 388.55

STAGE 2
CUT AREA 3.58
FILL AREA 0

STAGE 1
CUT VOLUME 2.85
FILL VOLUME 346.89

STAGE 2
CUT VOLUME 8.59
FILL VOLUME 0



STAGE 1
CUT AREA 6.15
FILL AREA 360.08

STAGE 2
CUT AREA 14.97
FILL AREA 0

STAGE 1
CUT VOLUME 9.62
FILL VOLUME 871.48

STAGE 2
CUT VOLUME 25.67
FILL VOLUME 0

STA. 207+75.00 TO STA. 208+00.00

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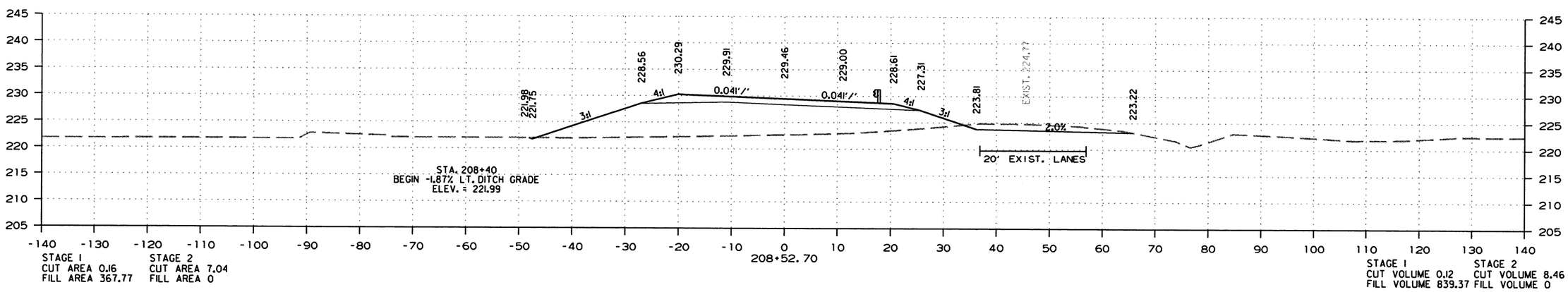
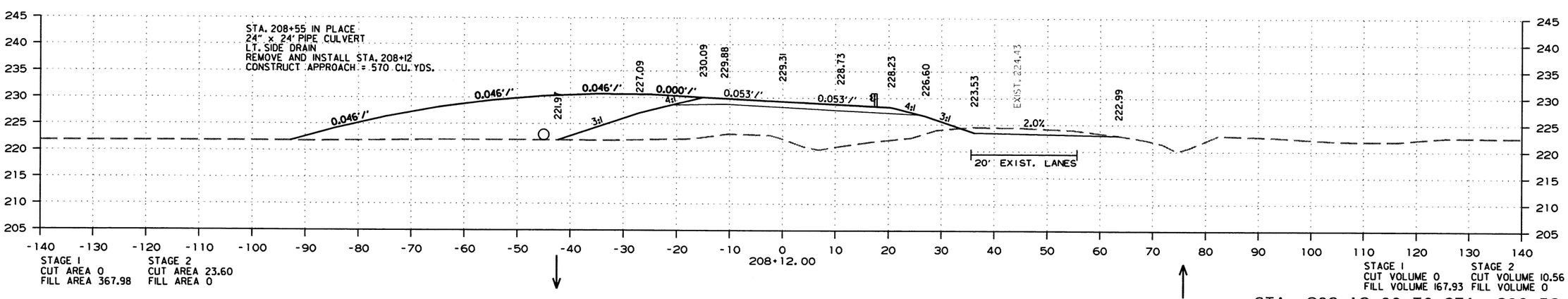
				6	ARK.			
				JOB NO.		110574	125	176

(2) CROSS SECTIONS-SITE 2





STA. 208+12.00 TO STA. 208+52.70

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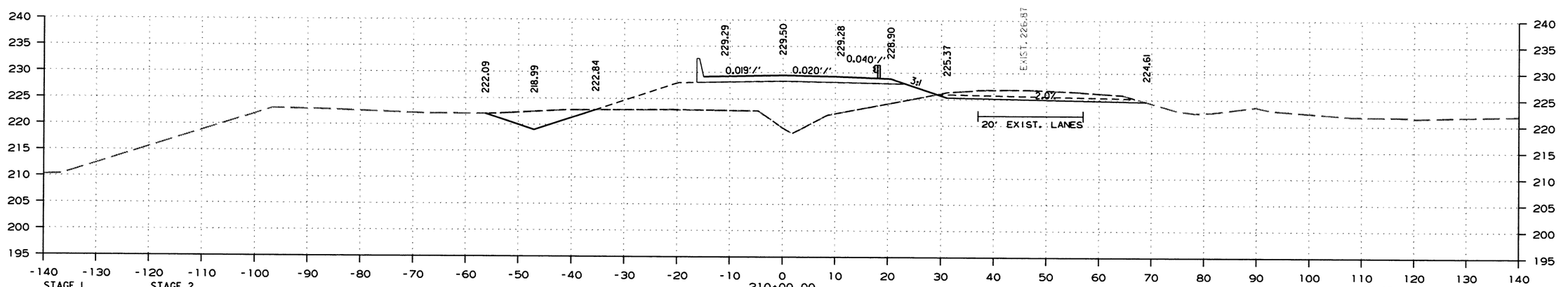
				6	ARK.			
				JOB NO.		110574	126	176

(2) CROSS SECTIONS-SITE 2

STA. 210+25
END -1.87% LT. DITCH GRADE
ELEV. = 218.53

STA. 210+01.86 - END SUPERELEVATION

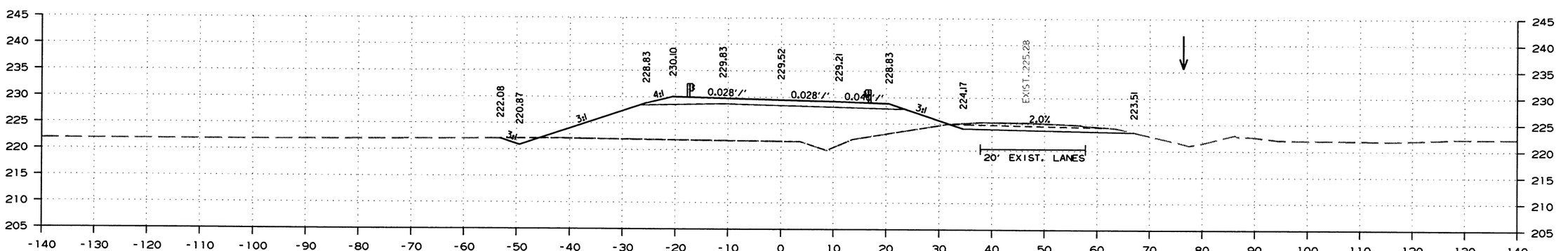


STAGE 1
CUT AREA 36.91
FILL AREA 305.03

STAGE 2
CUT AREA 32.81
FILL AREA 0

STAGE 1
CUT VOLUME 76.79
FILL VOLUME 1316.88

STAGE 2
CUT VOLUME 82.24
FILL VOLUME 0



STAGE 1
CUT AREA 4.56
FILL AREA 406.22

STAGE 2
CUT AREA 36.75
FILL AREA 0

STAGE 1
CUT VOLUME 4.14
FILL VOLUME 678.14

STAGE 2
CUT VOLUME 55.64
FILL VOLUME 0

STA. 209+00.00 TO STA. 210+00.00

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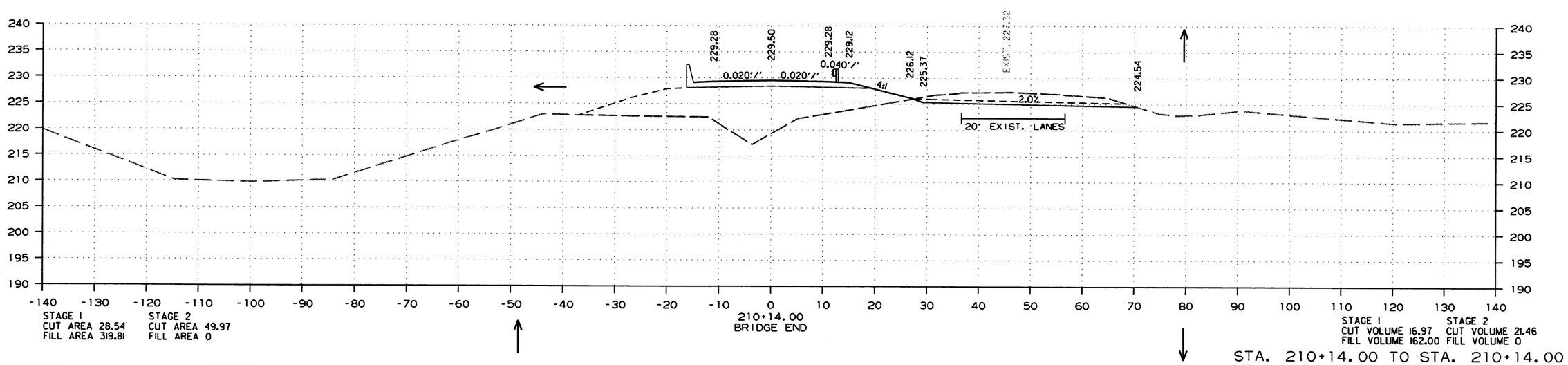
				6	ARK.			
				JOB NO.		110574	127	176

(2) CROSS SECTIONS-SITE 2

STA. 210+60
BEGIN 0.56% LT. DITCH GRADE
ELEV. 217.61

BEGIN SUPERELEVATION - STA. 211+01.41



STA. 210+14.00 TO STA. 210+14.00

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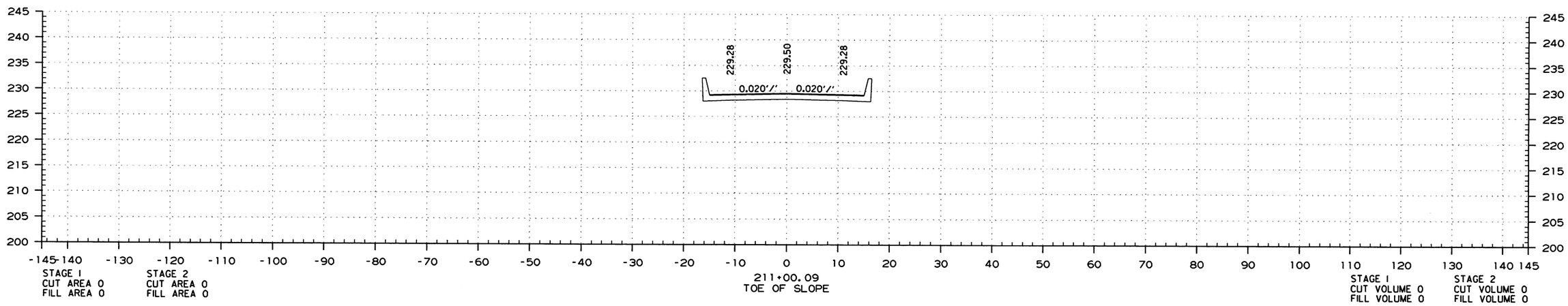
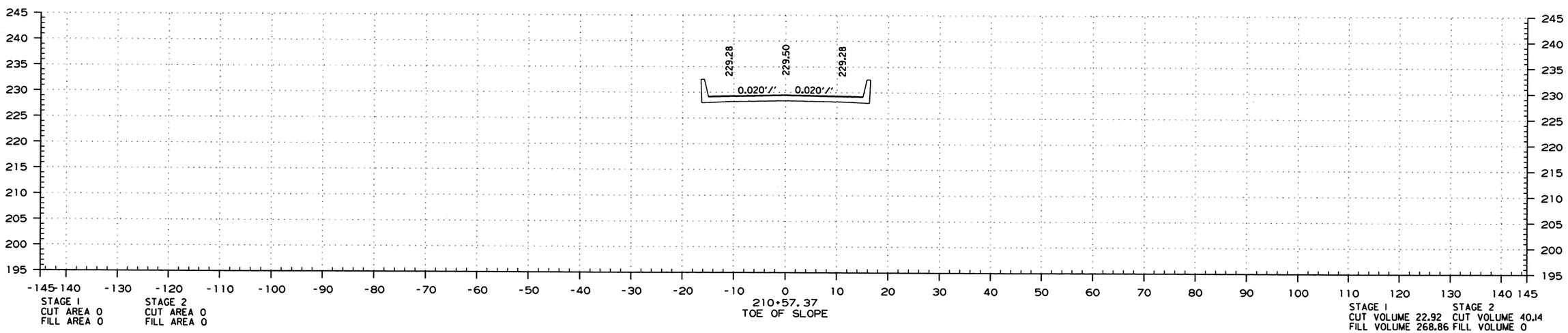
				6	ARK.			
				JOB NO.		110574	128	176

(2) CROSS SECTIONS - SITE 2



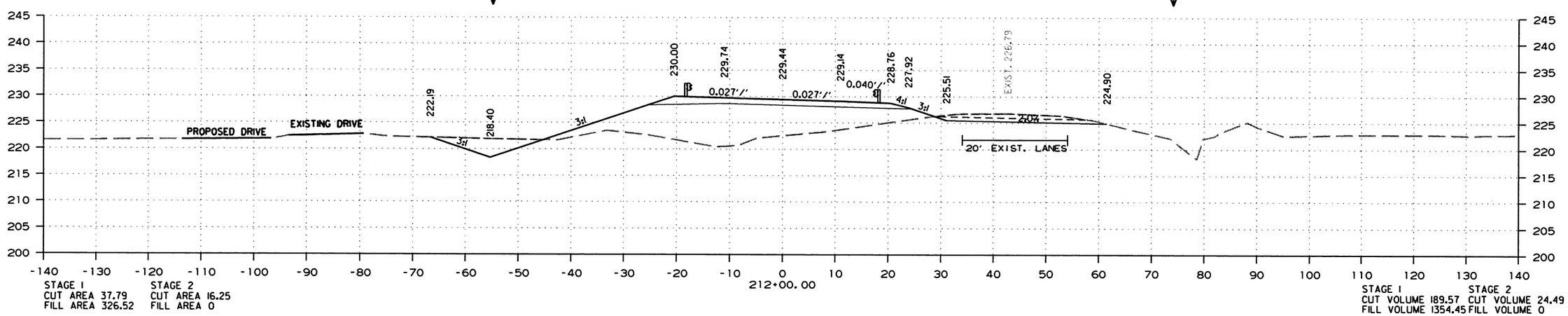


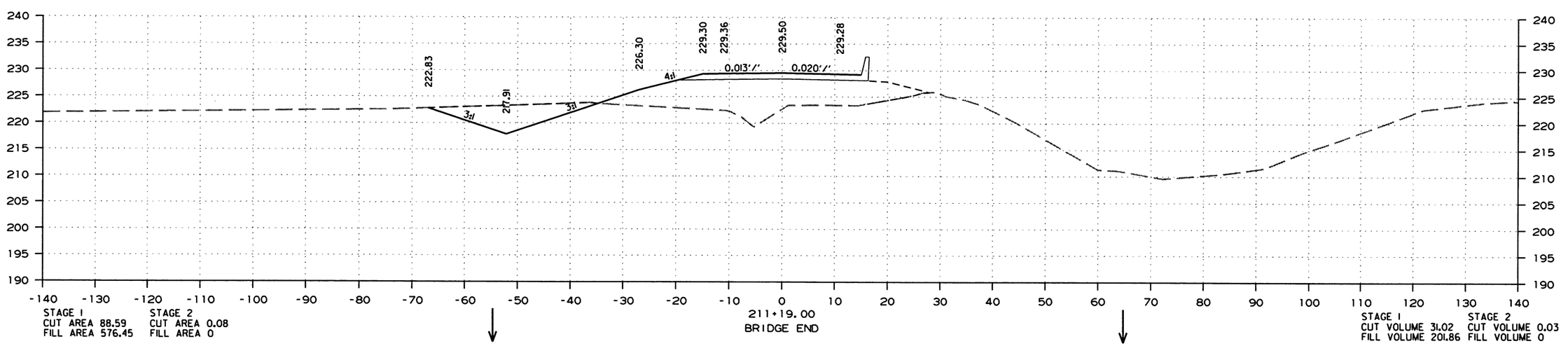
STA. 210+57.37 TO STA. 211+00.09

dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	129	176

(2) CROSS SECTIONS-SITE 2





STA. 211+19.00 TO STA. 212+00.00

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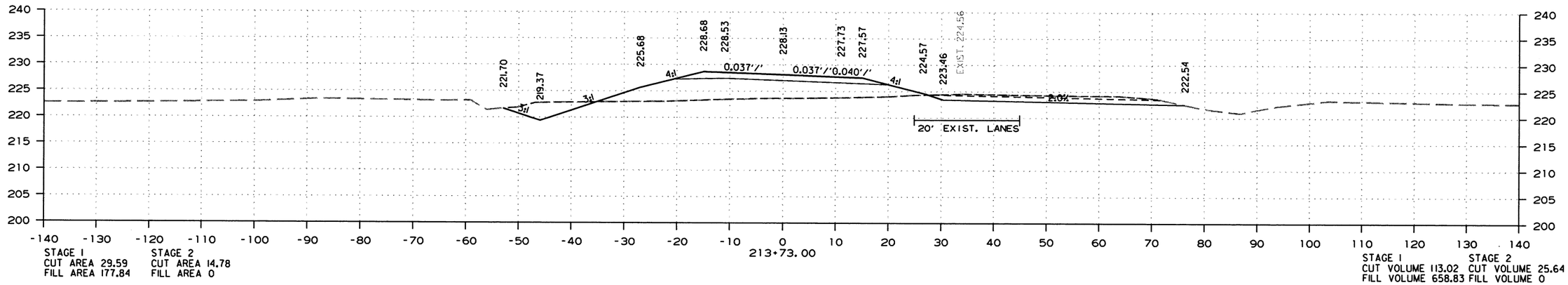
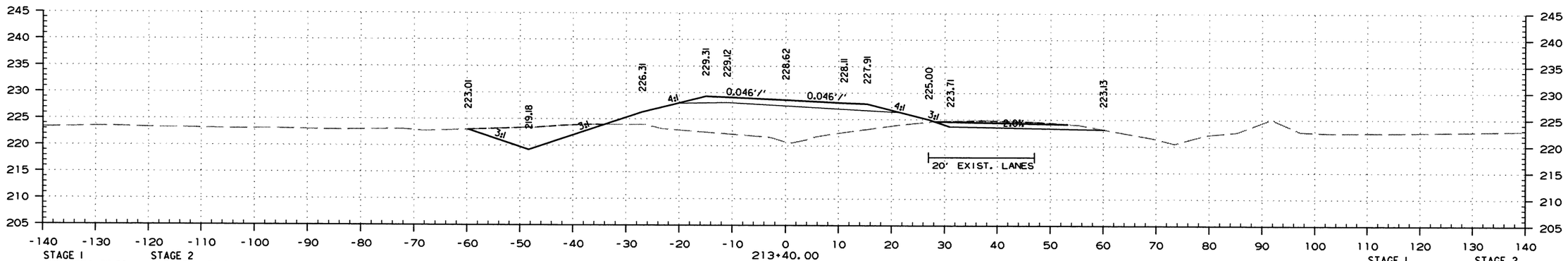
				6	ARK.			
				JOB NO.		110574	130	176

(2) CROSS SECTIONS-SITE 2

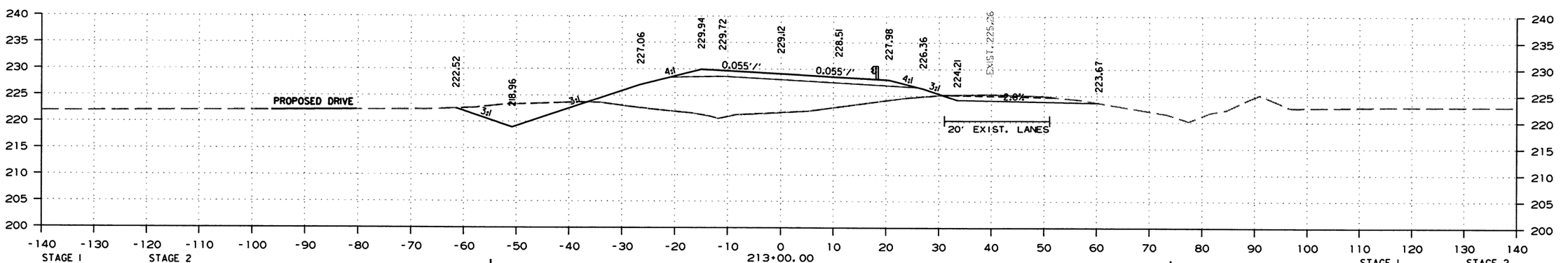


STAGE 1 CUT AREA 29.59 FILL AREA 177.84
STAGE 2 CUT AREA 14.78 FILL AREA 0
STAGE 1 CUT VOLUME 113.02 FILL VOLUME 658.83
STAGE 2 CUT VOLUME 25.64 FILL VOLUME 0



STAGE 1 CUT AREA 55.22 FILL AREA 257.45
STAGE 2 CUT AREA 5.69 FILL AREA 0
STAGE 1 CUT VOLUME 80.91 FILL VOLUME 419.97
STAGE 2 CUT VOLUME 7.32 FILL VOLUME 0

STA. 213+03.29 - MAX. SUPERELEVATION (0.056'/')



STAGE 1 CUT AREA 53.43 FILL AREA 311.84
STAGE 2 CUT AREA 26.39 FILL AREA 0
STAGE 1 CUT VOLUME 169.51 FILL VOLUME 1188.54
STAGE 2 CUT VOLUME 124.82 FILL VOLUME 0

STA. 213+00.00 TO STA. 213+73.00

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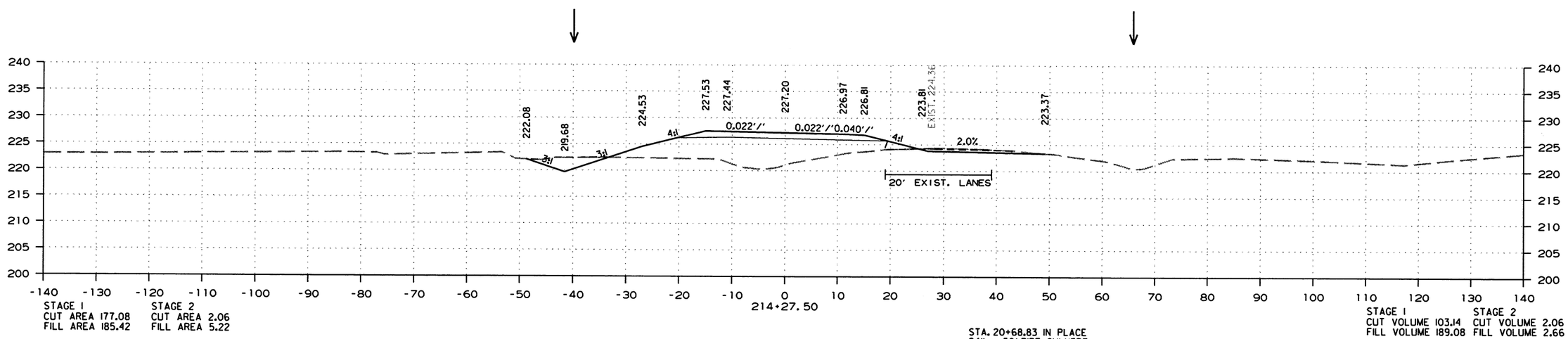
				6	ARK.			
				JOB NO.		110574	131	176

(2) CROSS SECTIONS-SITE 2



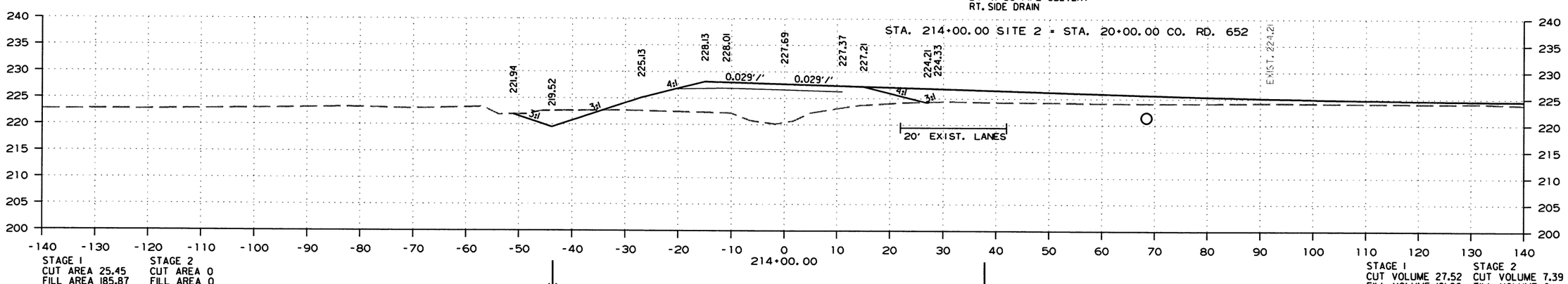
STAGE 1
CUT AREA 177.08
FILL AREA 185.42

STAGE 2
CUT AREA 2.06
FILL AREA 5.22

STAGE 1
CUT VOLUME 103.14
FILL VOLUME 189.08

STAGE 2
CUT VOLUME 2.06
FILL VOLUME 2.66

STA. 20+68.83 IN PLACE
24" x 50' PIPE CULVERT
REMOVE & REPLACE WITH
24" x 50' PIPE CULVERT
RT. SIDE DRAIN



STAGE 1
CUT AREA 25.45
FILL AREA 185.87

STAGE 2
CUT AREA 0
FILL AREA 0

STAGE 1
CUT VOLUME 27.52
FILL VOLUME 181.86

STAGE 2
CUT VOLUME 7.39
FILL VOLUME 0

STA. 214+00.00 TO STA. 214+27.50

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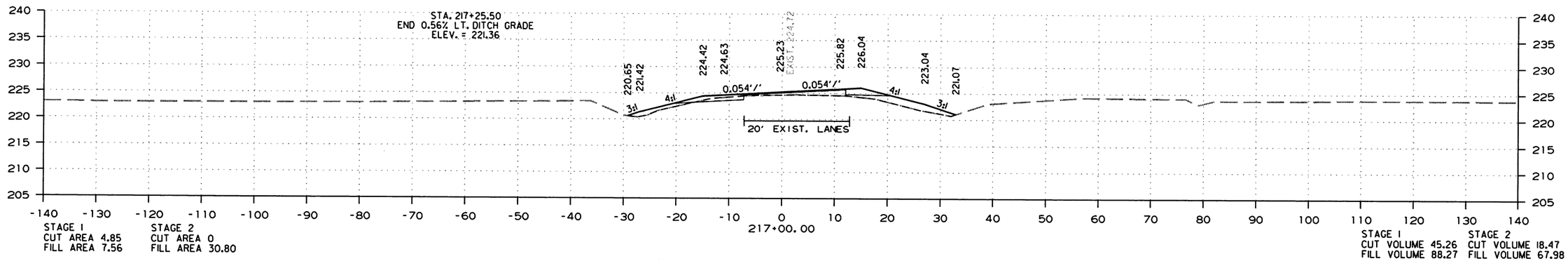
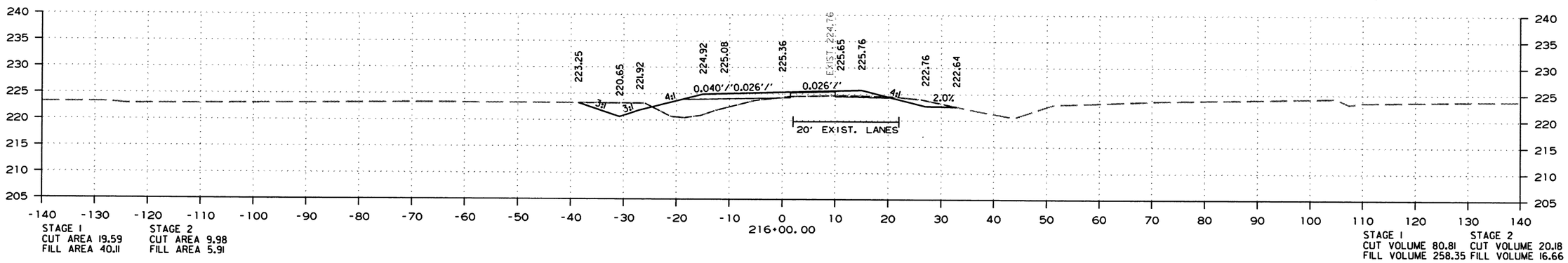
				6	ARK.			
				JOB NO.		110574	132	176

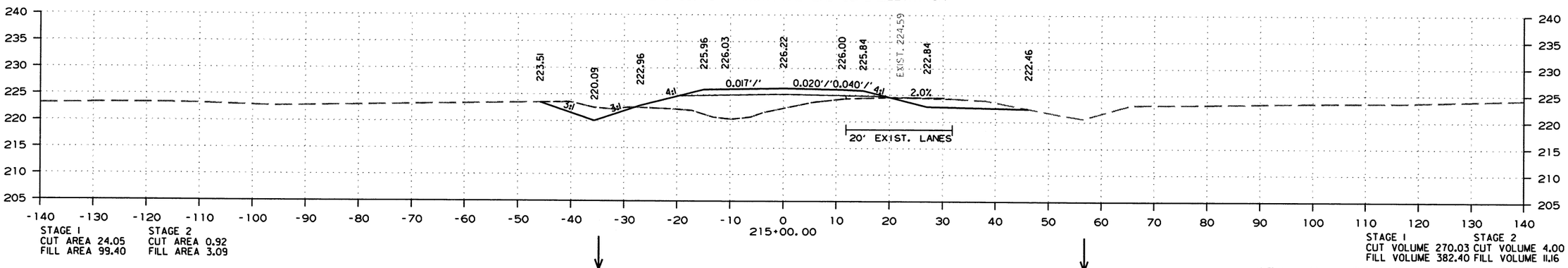
(2) CROSS SECTIONS-SITE 2

STA. 217+25.50 - END P.G.
ELEV. 224.82





STA. 215+05.16 - BEGIN AND END SUPERELEVATION



STA. 215+00.00 TO STA. 217+00.00

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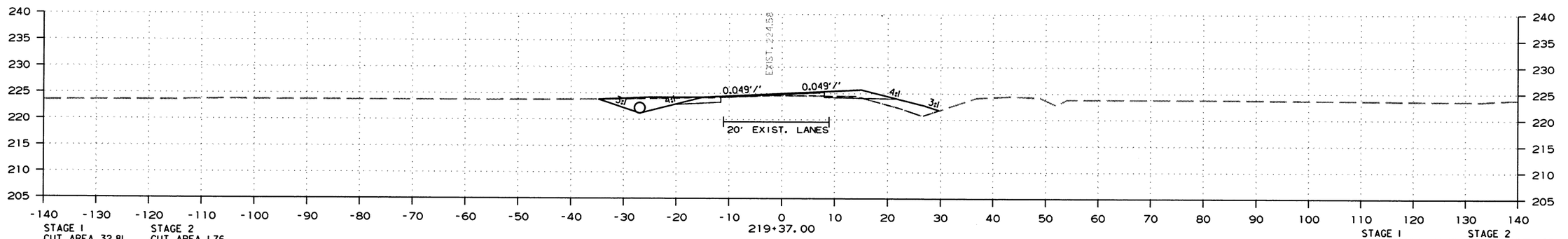
(2) CROSS SECTIONS-SITE 2

STA. 219+37 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" x 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.

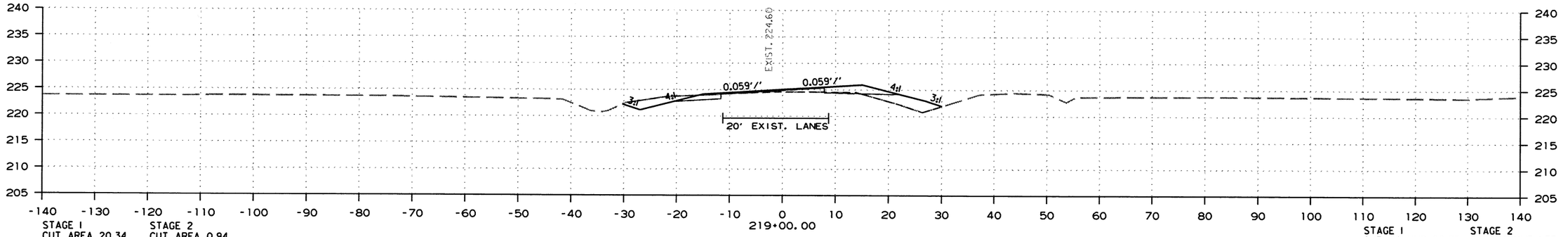


STAGE 1
CUT AREA 32.81
FILL AREA 0

STAGE 2
CUT AREA 1.76
FILL AREA 21.72

STAGE 1
CUT VOLUME 36.42
FILL VOLUME 0

STAGE 2
CUT VOLUME 1.85
FILL VOLUME 32.90



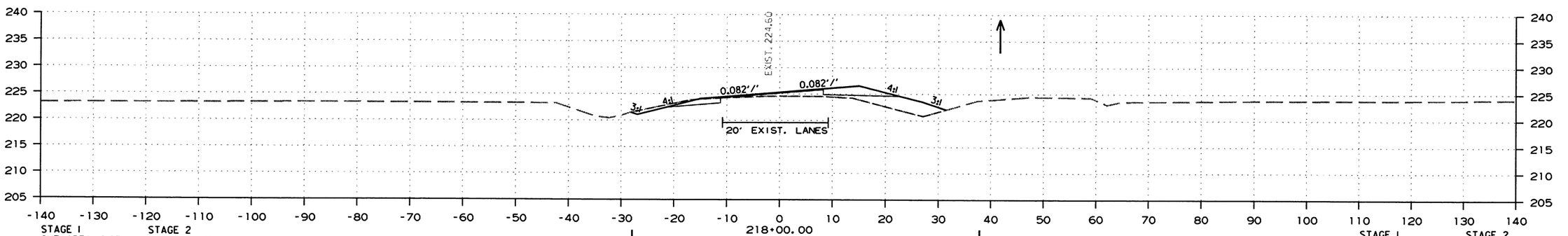
STAGE 1
CUT AREA 20.34
FILL AREA 0

STAGE 2
CUT AREA 0.94
FILL AREA 26.31

STAGE 1
CUT VOLUME 60.35
FILL VOLUME 0

STAGE 2
CUT VOLUME 1.75
FILL VOLUME 132.12

STA. 218+05.16 - MAX. SUPERELEVATION (0.083'/')
STA. 218+14.80 - MAX. SUPERELEVATION (0.083'/')



STAGE 1
CUT AREA 12.25
FILL AREA 0

STAGE 2
CUT AREA 0
FILL AREA 45.04

STAGE 1
CUT VOLUME 31.66
FILL VOLUME 13.99

STAGE 2
CUT VOLUME 0
FILL VOLUME 140.45

STA. 218+00.00 TO STA. 219+37.00

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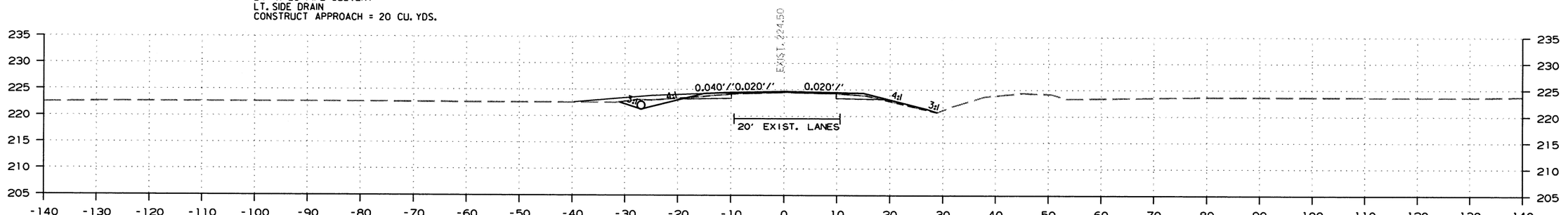
				6	ARK.			
				JOB NO.		110574	134	176

(2) CROSS SECTIONS-SITE 2

STA. 221+15 IN PLACE
24" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.



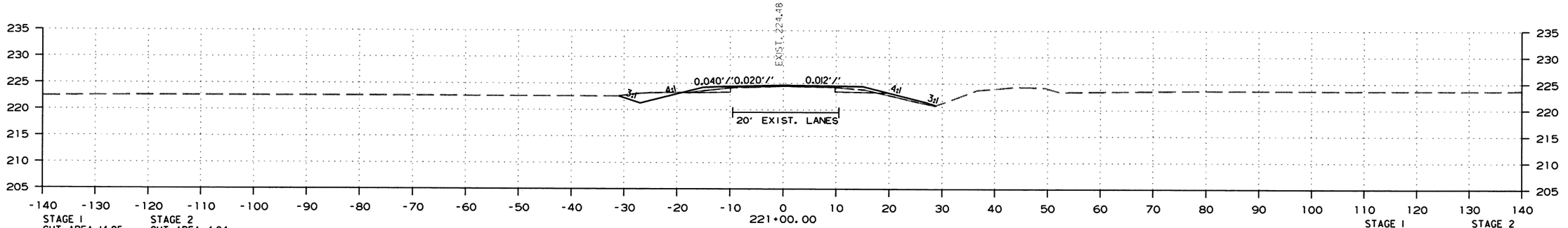
STAGE 1
CUT AREA 15.53
FILL AREA 0

STAGE 2
CUT AREA 5.04
FILL AREA 2.80

221+14.80
END SITE 2
BEGIN 100' TRANSITION

STAGE 1
CUT VOLUME 8.35
FILL VOLUME 0

STAGE 2
CUT VOLUME 2.54
FILL VOLUME 2.09



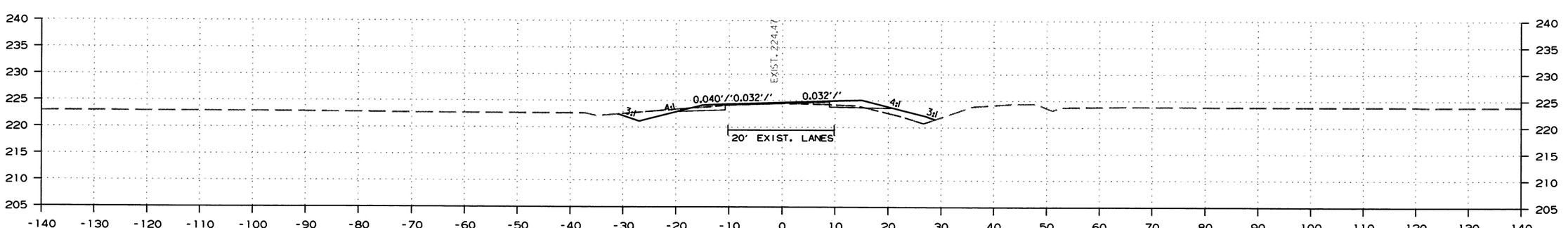
STAGE 1
CUT AREA 14.95
FILL AREA

STAGE 2
CUT AREA 4.24
FILL AREA 4.83

221+00.00

STAGE 1
CUT VOLUME 58.58
FILL VOLUME 0

STAGE 2
CUT VOLUME 34.27
FILL VOLUME 13.20



STAGE 1
CUT AREA 16.69
FILL AREA 0

STAGE 2
CUT AREA 14.27
FILL AREA 2.30

220+00.00

STAGE 1
CUT VOLUME 57.75
FILL VOLUME 0

STAGE 2
CUT VOLUME 18.69
FILL VOLUME 28.02

STA. 220+00.00 TO STA. 221+14.80

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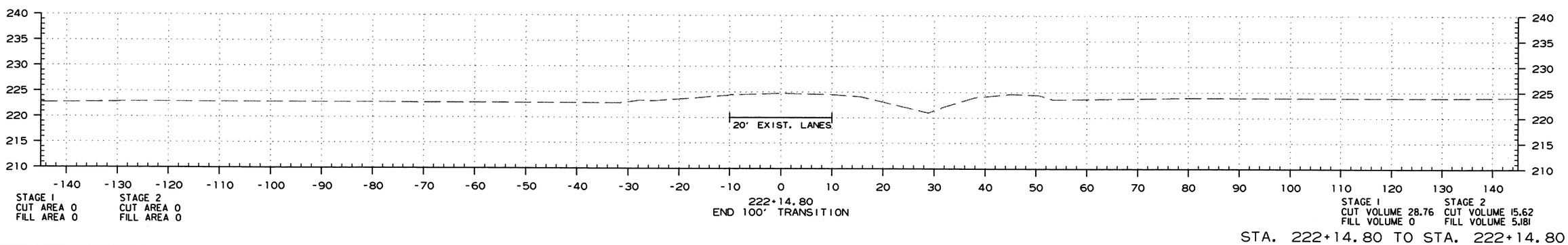
				6	ARK.			
				JOB NO.		110574	135	176

(2) CROSS SECTIONS - SITE 2

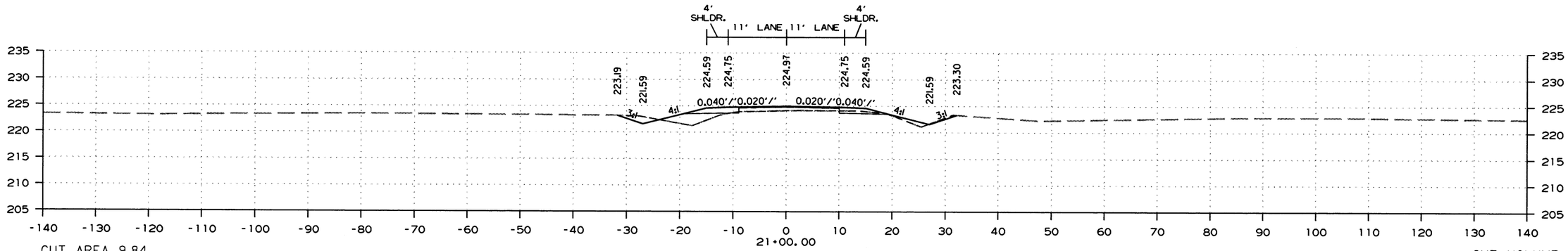


STA. 222+14.80 TO STA. 222+14.80

dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	136	176

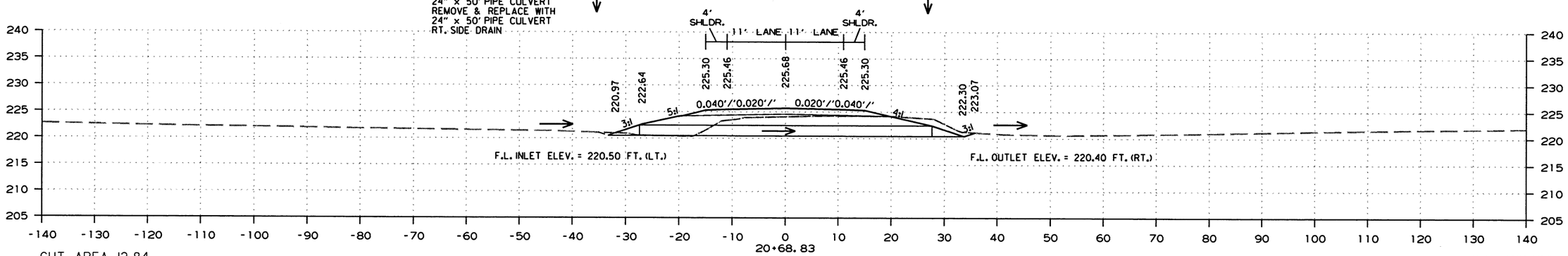
(2) CROSS SECTIONS - SITE 2 - CO. RD. 652



CUT AREA 9.84
FILL AREA 30.33

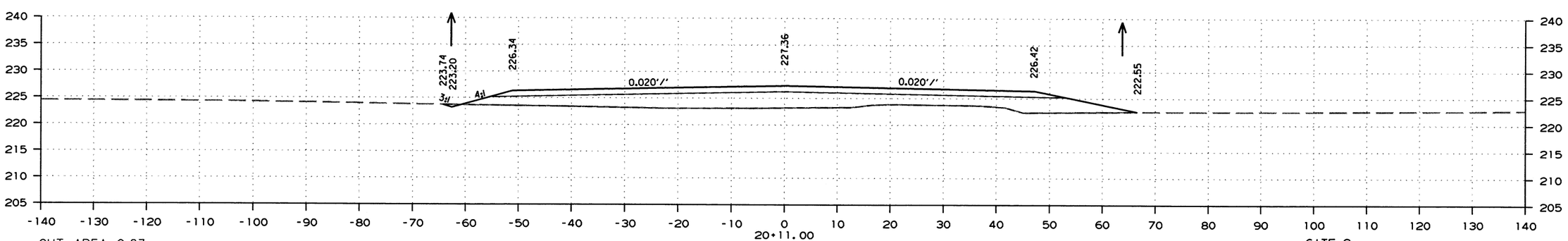
CUT VOLUME 13.09
FILL VOLUME 52.50

STA. 20+68.83 IN PLACE
24" x 50' PIPE CULVERT
REMOVE & REPLACE WITH
24" x 50' PIPE CULVERT
RT. SIDE DRAIN



CUT AREA 12.84
FILL AREA 60.61

CUT VOLUME 14.65
FILL VOLUME 369.96



CUT AREA 0.83
FILL AREA 284.84

TIE WITH SITE 2 - STA. 214+00.00

SITE 2
CO. RD. 652

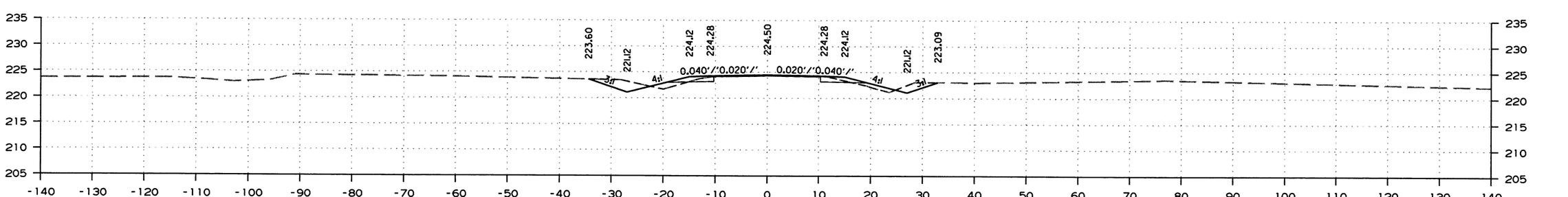
CUT VOLUME 0
FILL VOLUME 0

STA. 20+11.00 TO STA. 21+00.00

dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	137	176

(2) CROSS SECTIONS - SITE 2 - CO. RD. 652



CUT AREA 27.84
FILL AREA 9.11

SITE 2
CO. RD. 652

CUT VOLUME 45.79
FILL VOLUME 47.94

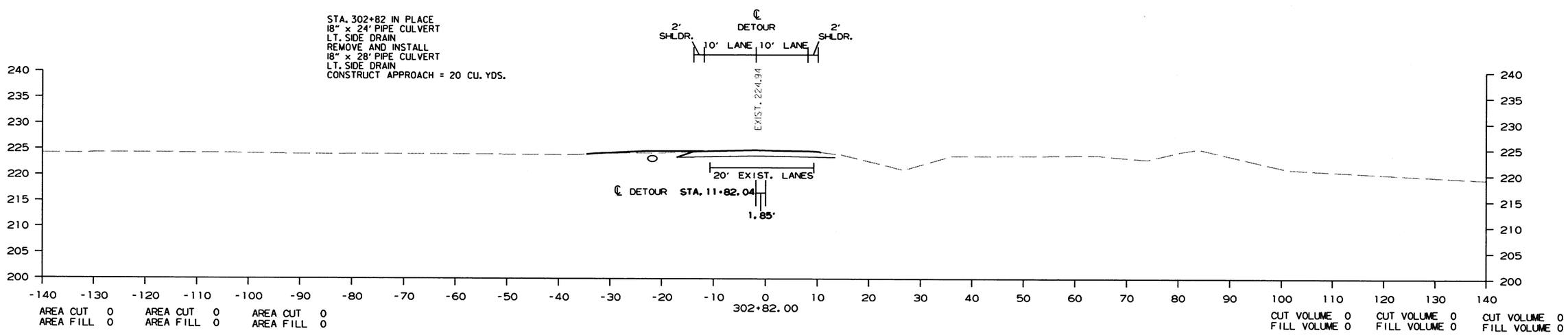
STA. 21+65.64 TO STA. 21+65.64

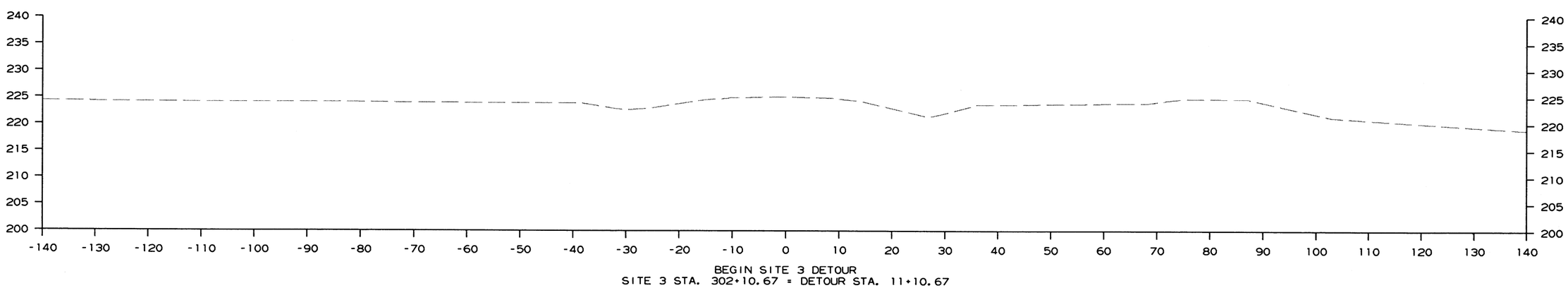
dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	138	176

(2) CROSS SECTIONS-SITE 3

STA. 302+82 IN PLACE
18" x 24' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.





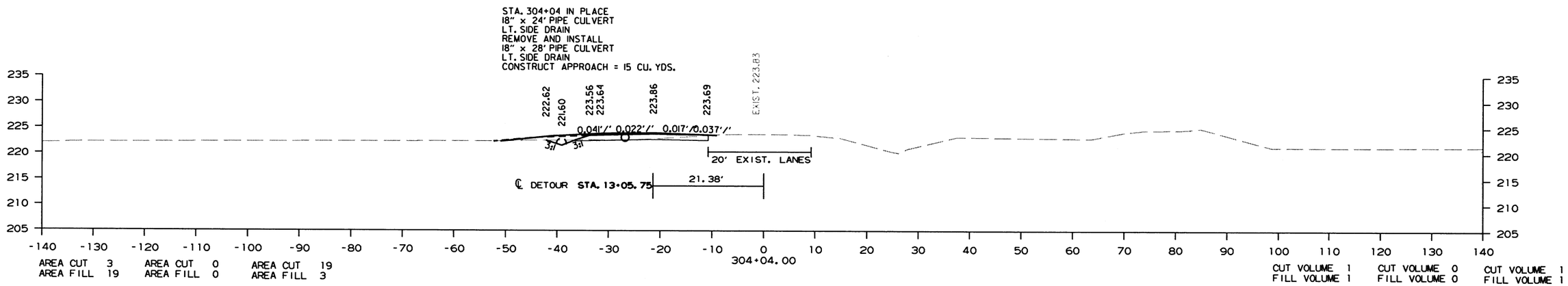
STA. 302+10.70 TO STA. 302+82.00

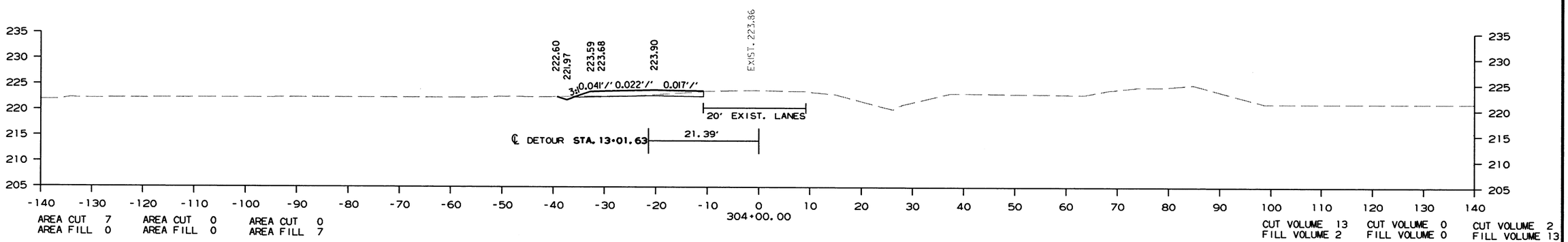
6/6/2018

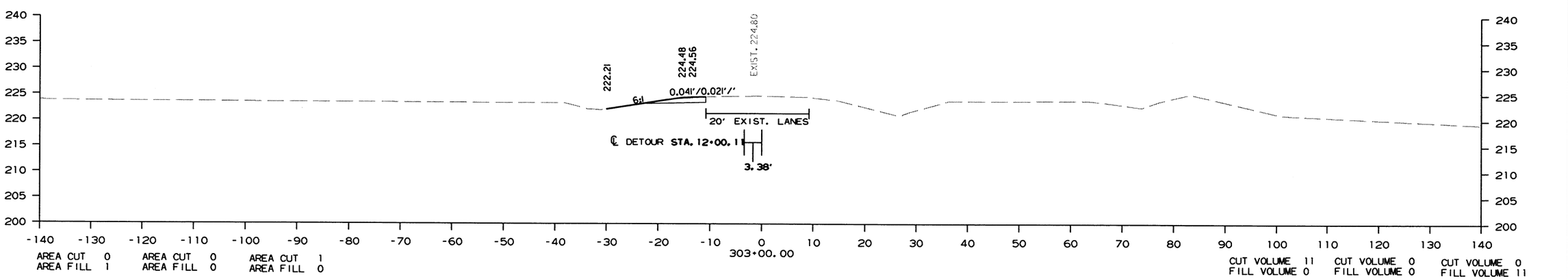
R110574.DGN

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.		110574	139	176

(2) CROSS SECTIONS-SITE 3







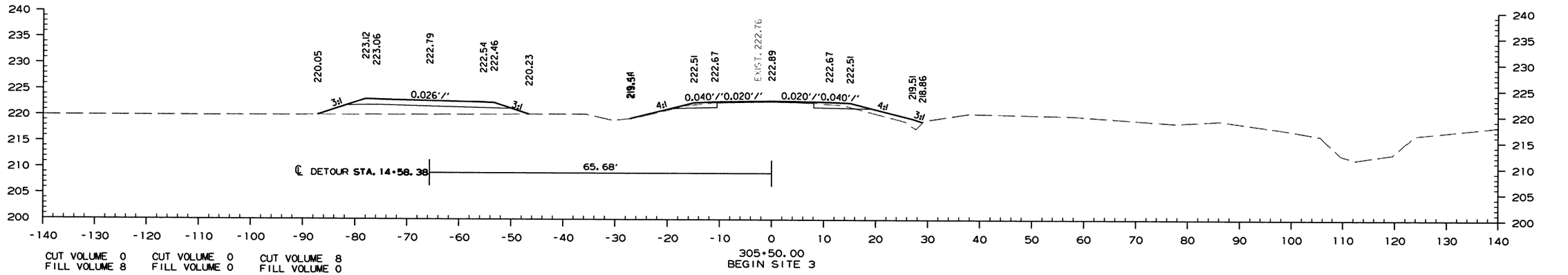
STA. 303+00.00 TO STA. 304+04.00

6/6/2018

R110574.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.		110574	140	176

(2) CROSS SECTIONS-SITE 3



CUT VOLUME 0
FILL VOLUME 8

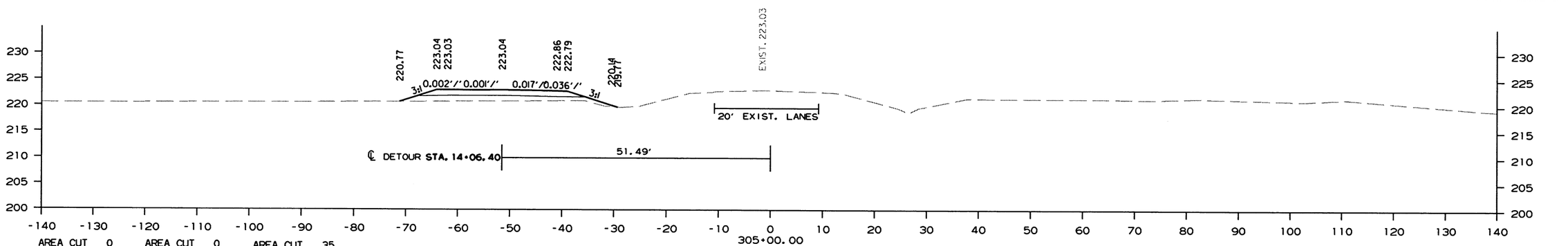
CUT VOLUME 0
FILL VOLUME 0

CUT VOLUME 8
FILL VOLUME 0

CUT VOLUME 5
FILL VOLUME 94

CUT VOLUME 0
FILL VOLUME 0

CUT VOLUME 94
FILL VOLUME 5



AREA CUT 0
AREA FILL 35

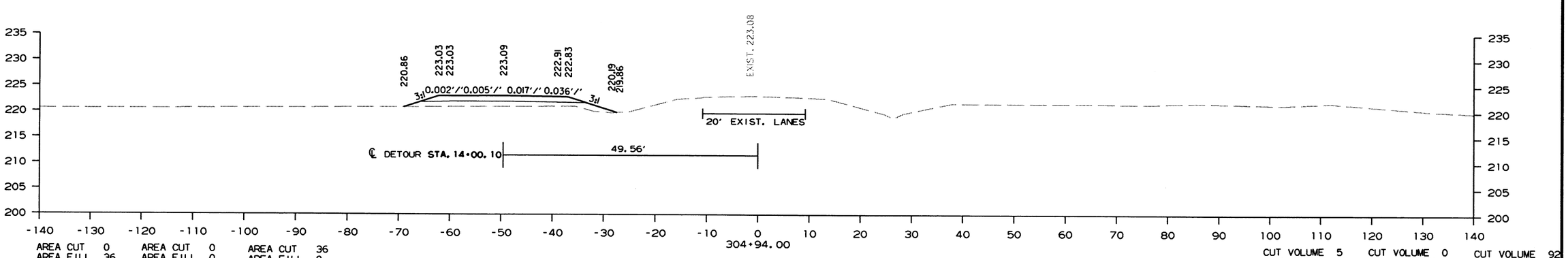
AREA CUT 0
AREA FILL 0

AREA CUT 35
AREA FILL 0

CUT VOLUME 0
FILL VOLUME 8

CUT VOLUME 0
FILL VOLUME 0

CUT VOLUME 8
FILL VOLUME 0



AREA CUT 0
AREA FILL 36

AREA CUT 0
AREA FILL 0

AREA CUT 36
AREA FILL 0

CUT VOLUME 5
FILL VOLUME 92

CUT VOLUME 0
FILL VOLUME 0

CUT VOLUME 92
FILL VOLUME 5

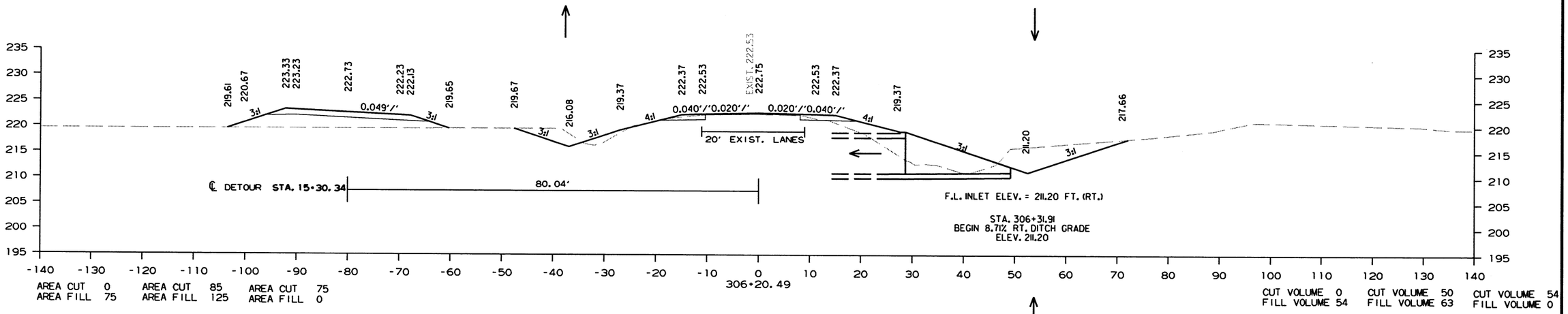
STA. 304+94.00 TO STA. 305+50.00

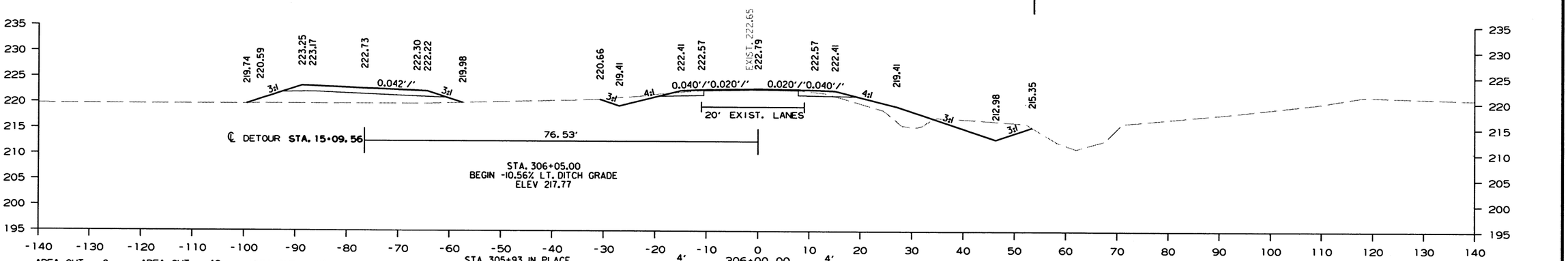
6/6/2018

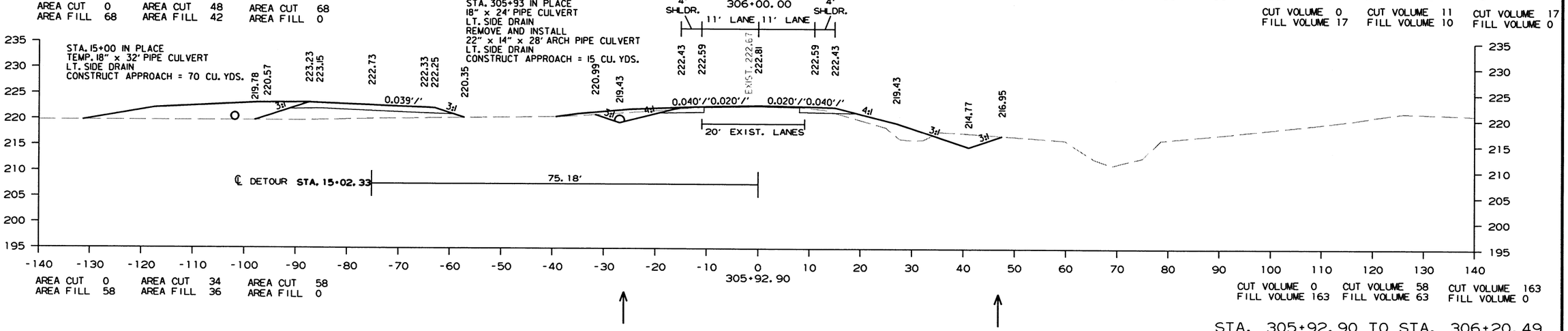
R110574.DGN

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.		110574	141	176

(2) CROSS SECTIONS-SITE 3







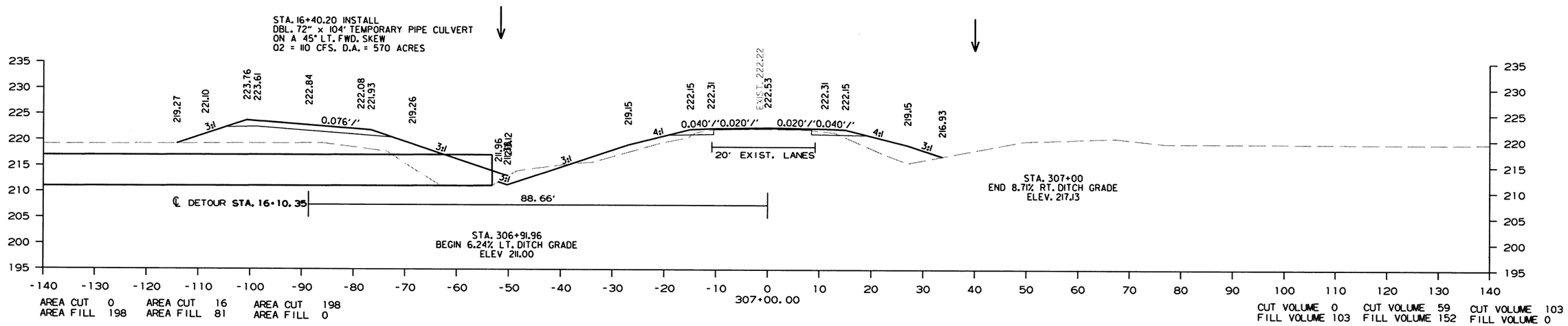
STA. 305+92.90 TO STA. 306+20.49

6/6/2018

R110574.DGN

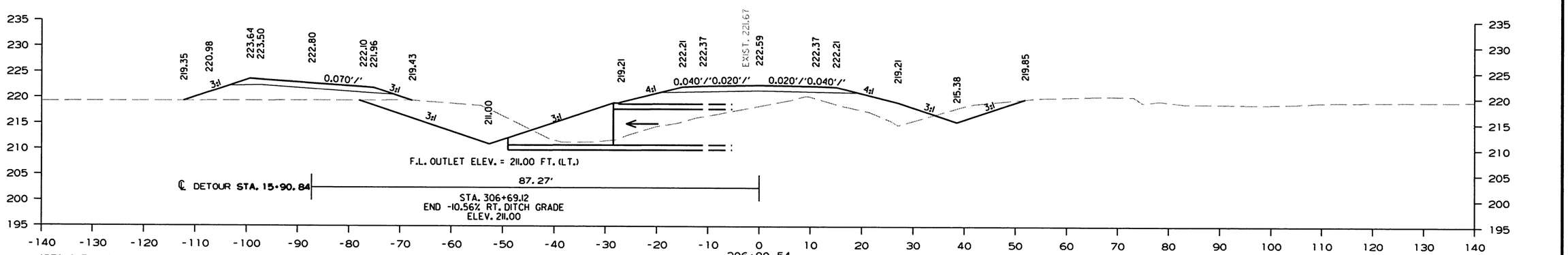
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	142	176

(2) CROSS SECTIONS-SITE 3



AREA CUT 0 AREA FILL 198 | AREA CUT 16 AREA FILL 81 | AREA CUT 198 AREA FILL 0

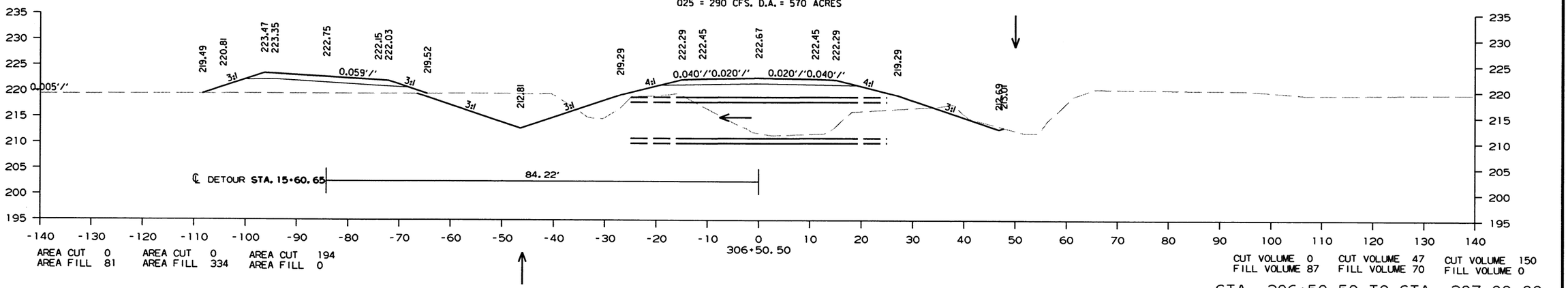
CUT VOLUME 0 FILL VOLUME 103 | CUT VOLUME 59 FILL VOLUME 152 | CUT VOLUME 103 FILL VOLUME 0



AREA CUT 0 AREA FILL 86 | AREA CUT 147 AREA FILL 342 | AREA CUT 214 AREA FILL 0

CUT VOLUME 0 FILL VOLUME 48 | CUT VOLUME 82 FILL VOLUME 190 | CUT VOLUME 48 FILL VOLUME 0

STA. 306+50.50 CONSTRUCT
DBL. 12' x 7' x 83' R.C. BOX CULVERT
ON A 45° LT. FWD. SKEW
WITH 3:1 WING WALLS
Q25 = 290 CFS. D.A. = 570 ACRES



AREA CUT 0 AREA FILL 81 | AREA CUT 0 AREA FILL 334 | AREA CUT 194 AREA FILL 0

CUT VOLUME 0 FILL VOLUME 87 | CUT VOLUME 47 FILL VOLUME 70 | CUT VOLUME 150 FILL VOLUME 0

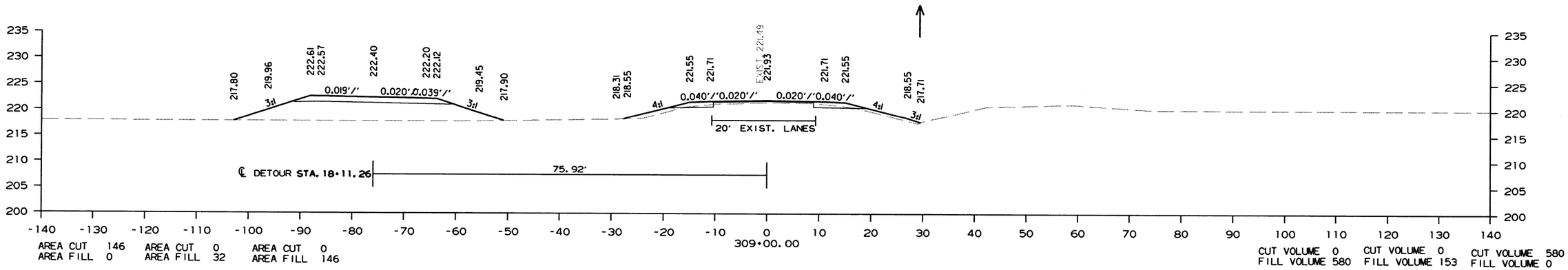
STA. 306+50.50 TO STA. 307+00.00

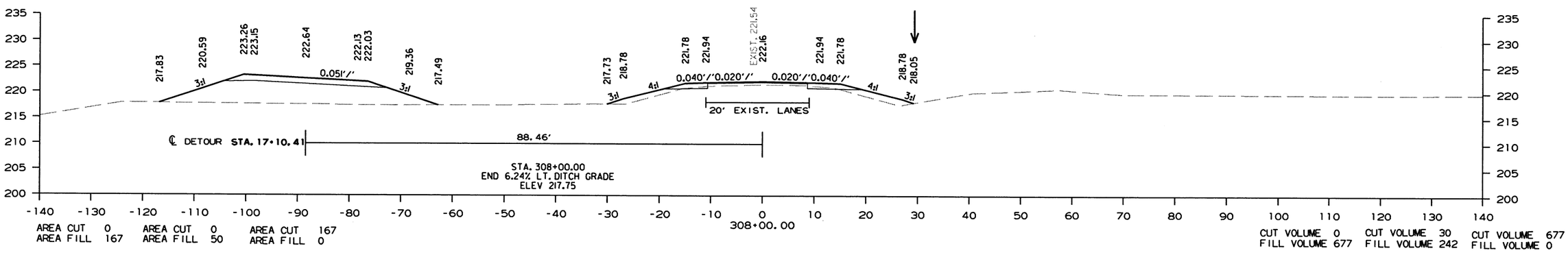
6/6/2018

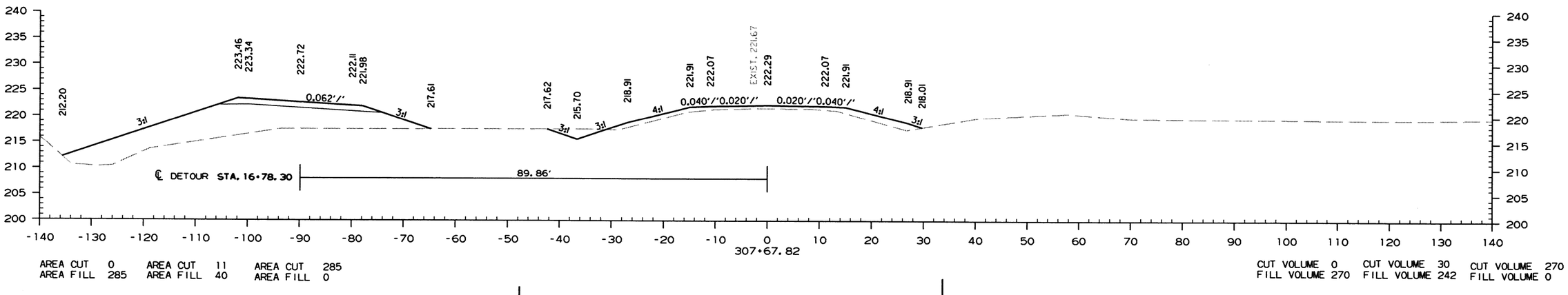
R110574.DGN

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.		110574	143	176

(2) CROSS SECTIONS-SITE 3







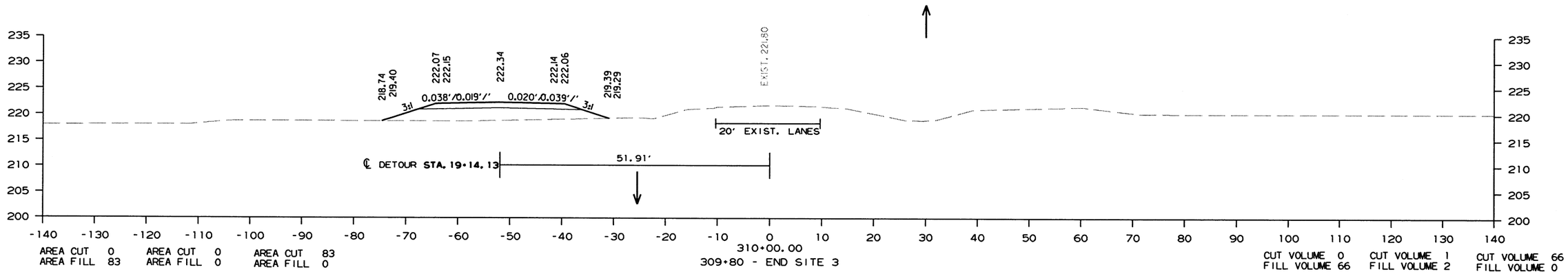
STA. 307+67.82 TO STA. 309+00.00

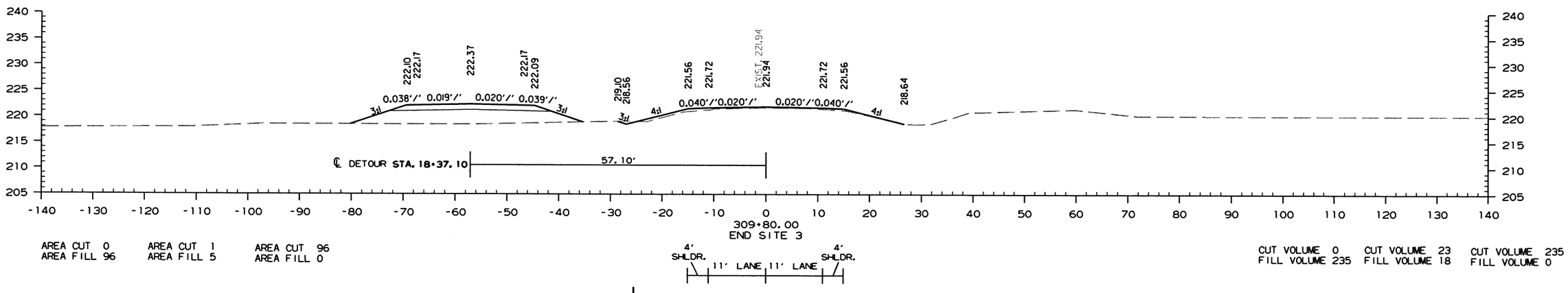
6/6/2018

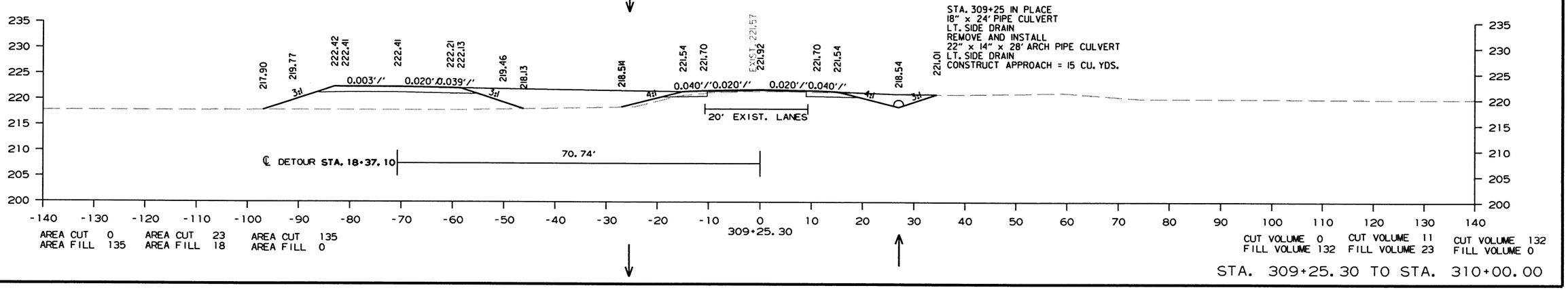
R110574.DGN

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.		110574	144	176

(2) CROSS SECTIONS-SITE 3







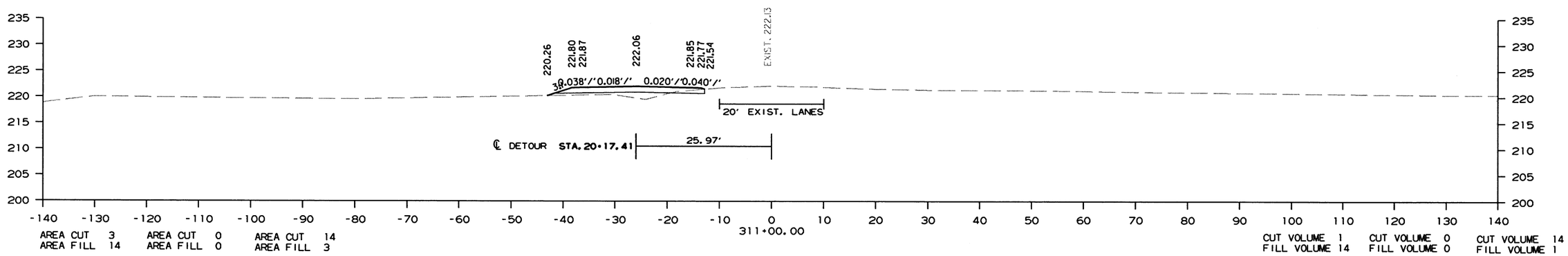
STA. 309+25.30 TO STA. 310+00.00

6/6/2018

R110574.DGN

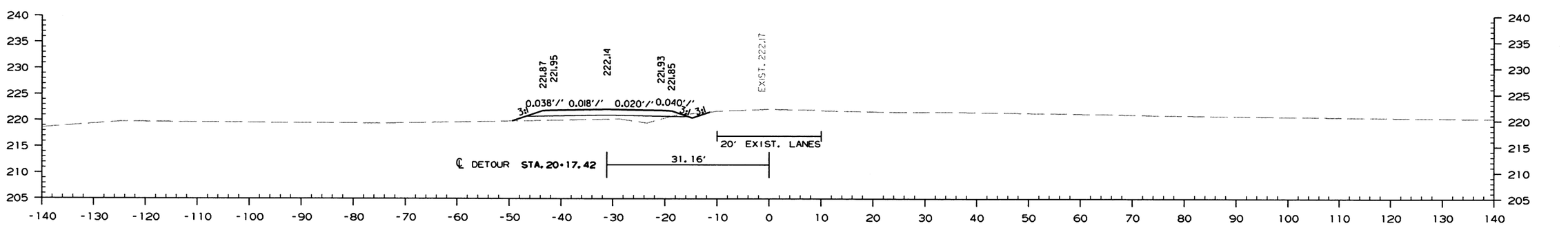
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	145	176

(2) CROSS SECTIONS-SITE 3



AREA CUT 3 AREA FILL 14 | AREA CUT 0 AREA FILL 0 | AREA CUT 14 AREA FILL 3

CUT VOLUME 1 FILL VOLUME 14 | CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 14 FILL VOLUME 1



AREA CUT 0 AREA FILL 24 | AREA CUT 0 AREA FILL 0 | AREA CUT 24 AREA FILL 0

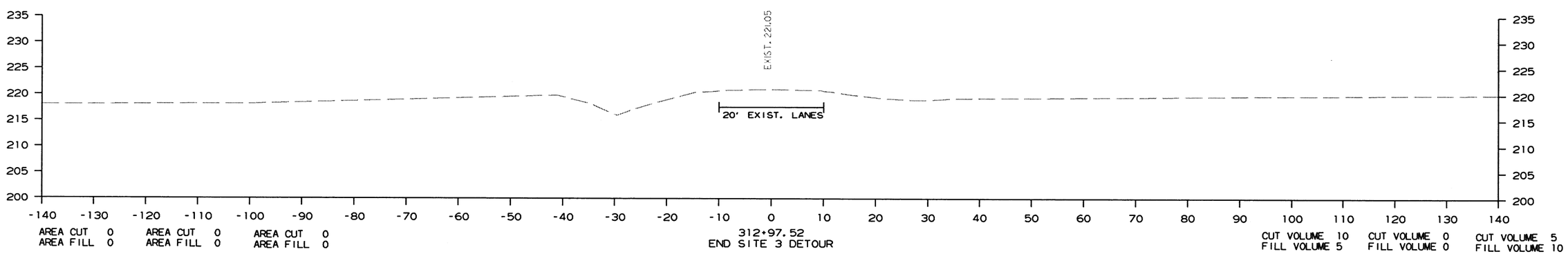
CUT VOLUME 0 FILL VOLUME 159 | CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 159 FILL VOLUME 0

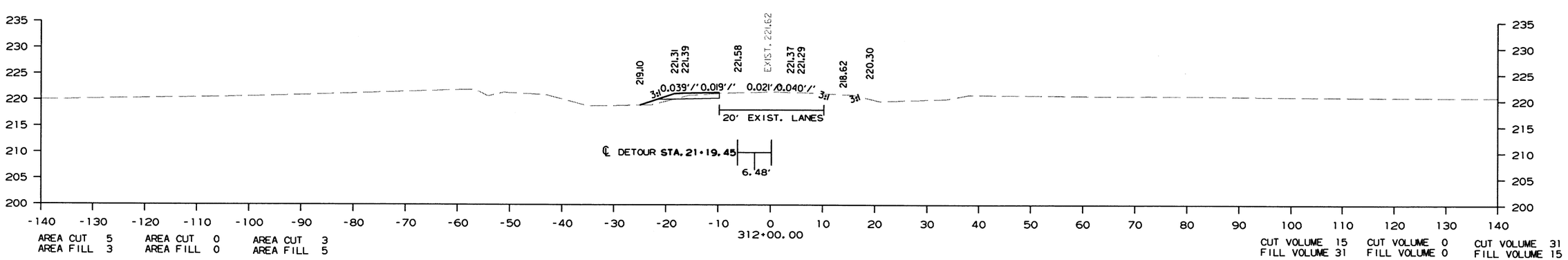
STA. 310+80.00 TO STA. 311+00.00

dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	146	176

(2) CROSS SECTIONS-SITE 3





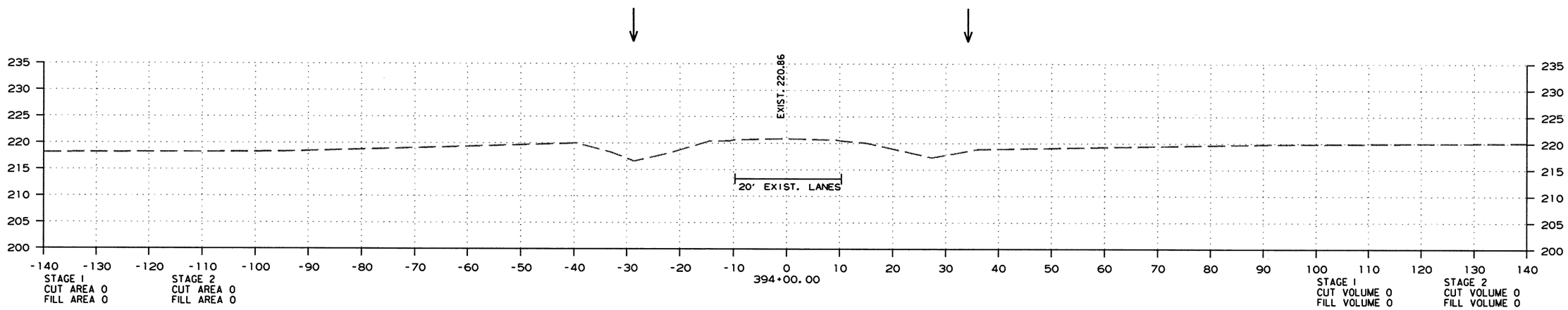
STA. 312+00.00 TO STA. 312+97.52

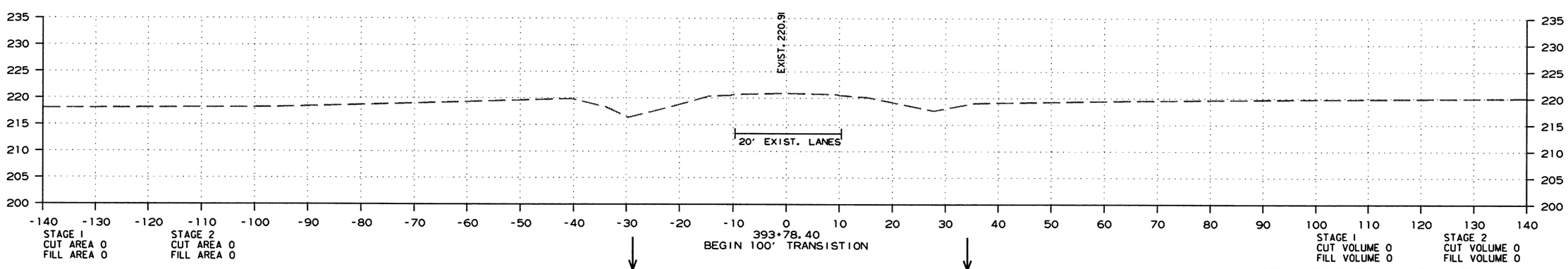
6/6/2018

R110574.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.		110574	147	176

(2) CROSS SECTIONS-SITE 4





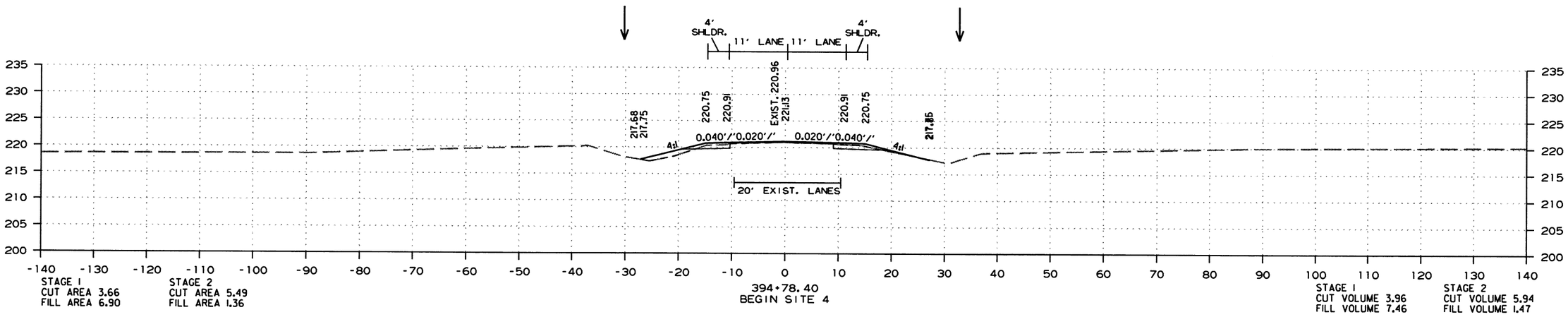
STA. 393+78.40 TO STA. 394+00.00

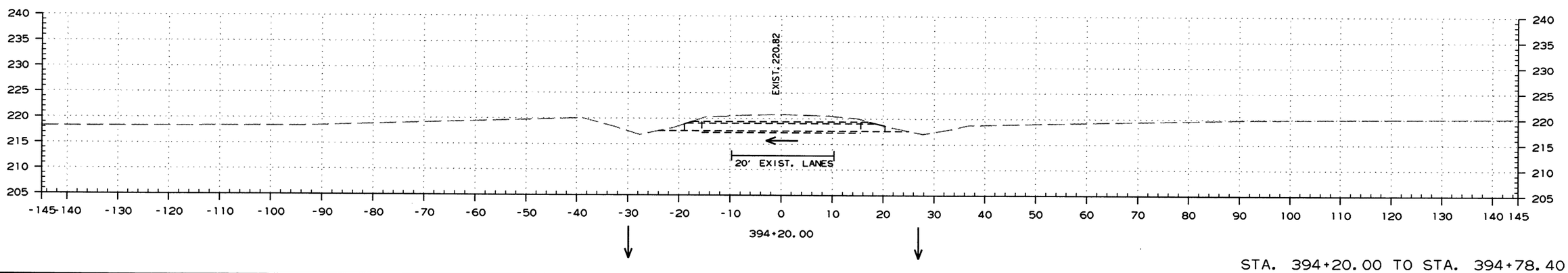
10/2/2019

R110574.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.		110574	148	176

(2) CROSS SECTIONS-SITE 4



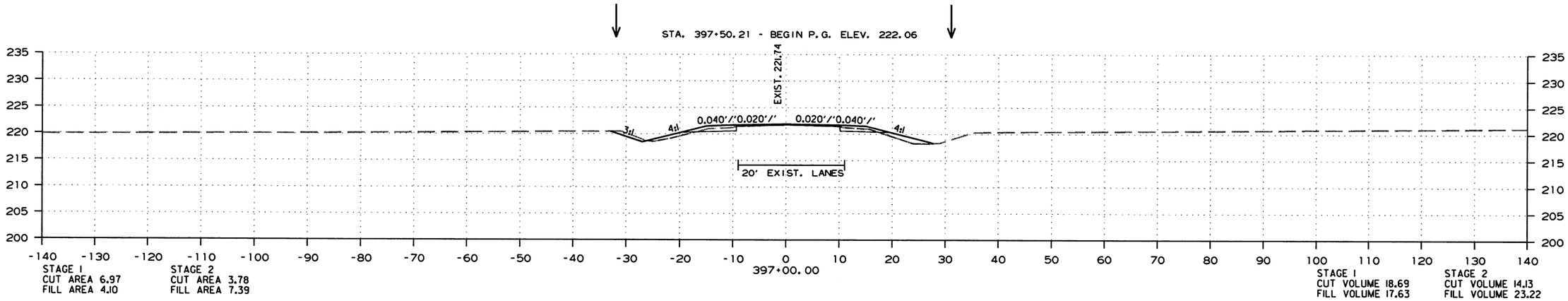


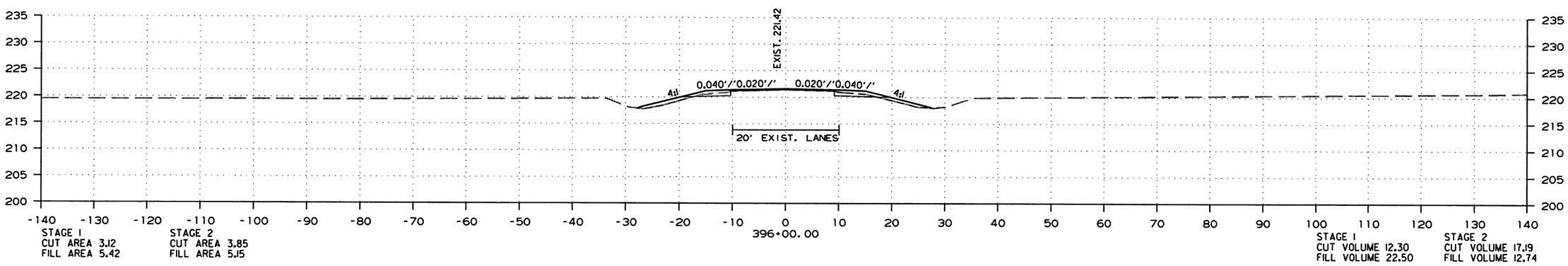
STA. 394+20.00 TO STA. 394+78.40

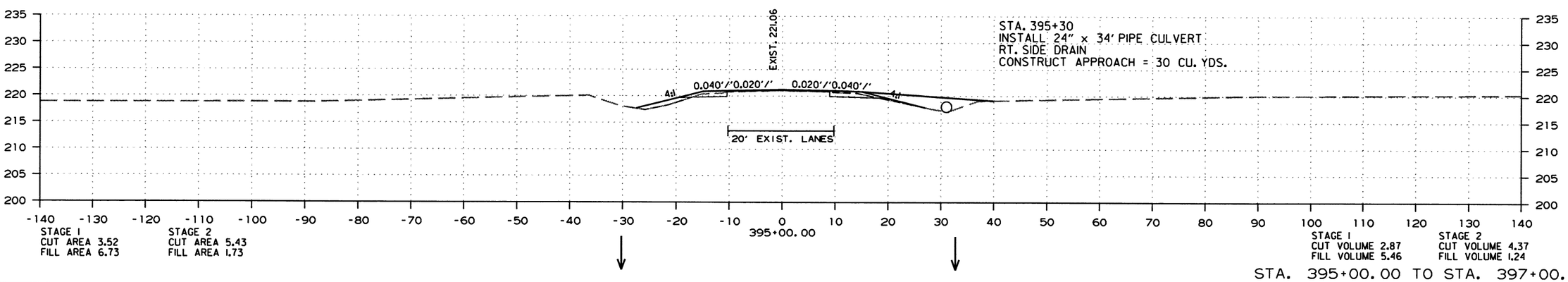
lc38019 10/2/2019
R110574.DGN

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.		110574	149	176

(2) CROSS SECTIONS-SITE 4







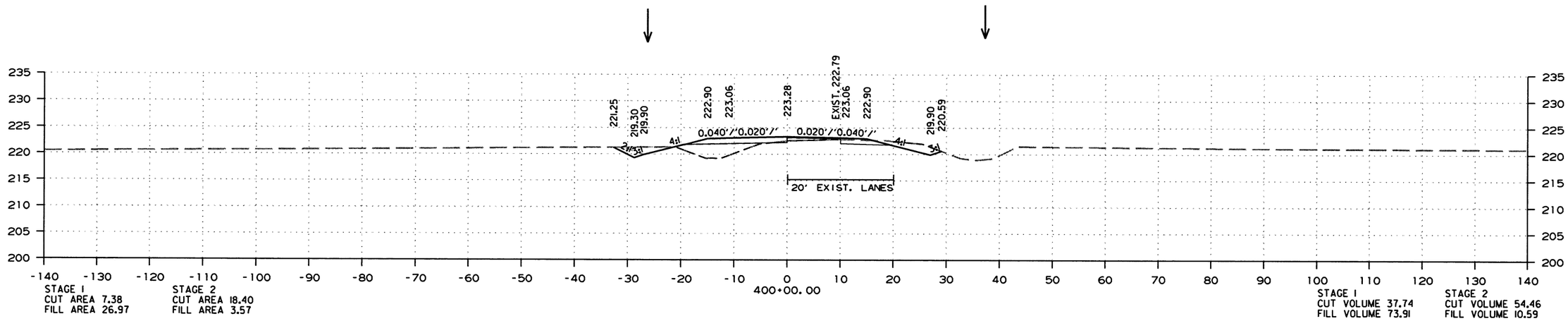
STA. 395+00.00 TO STA. 397+00.00

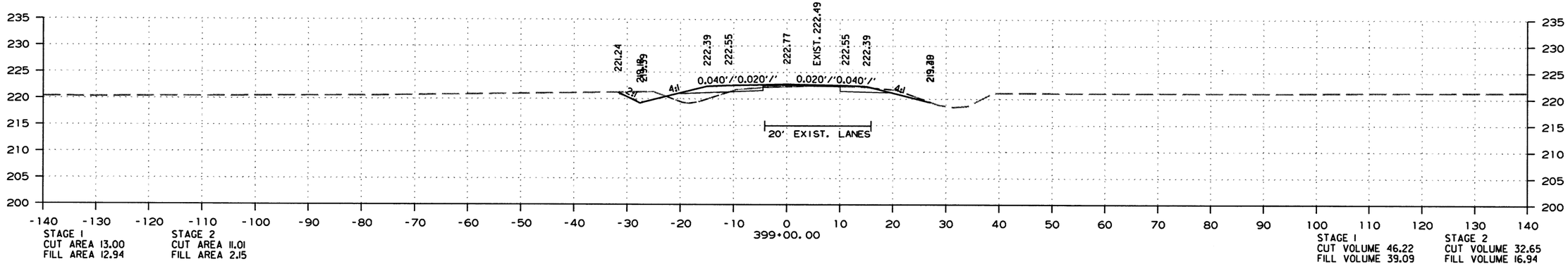
10/2/2019

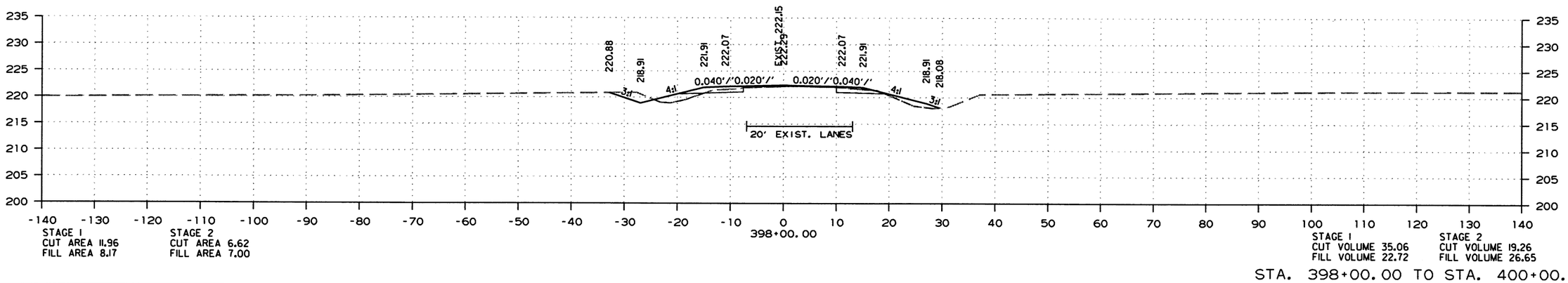
R110574.DGN

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.		110574	150	176

(2) CROSS SECTIONS-SITE 4







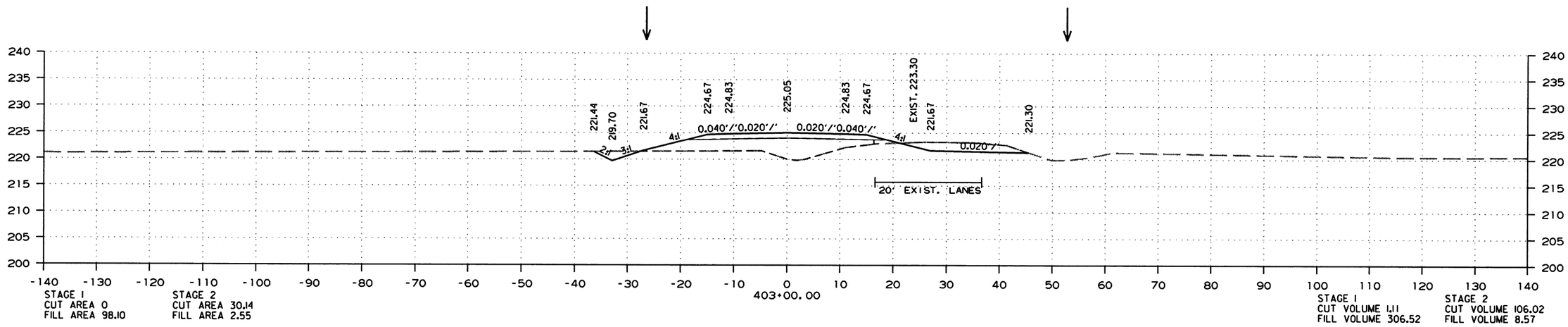
STA. 398+00.00 TO STA. 400+00.00

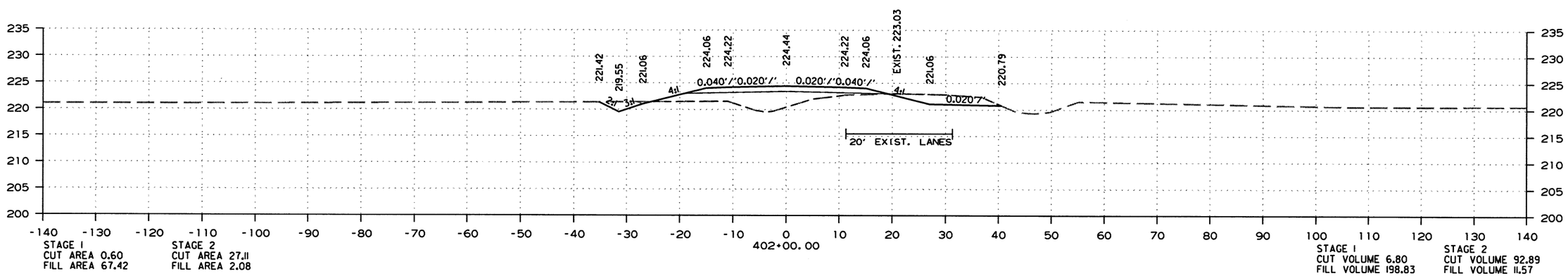
10/2/2019

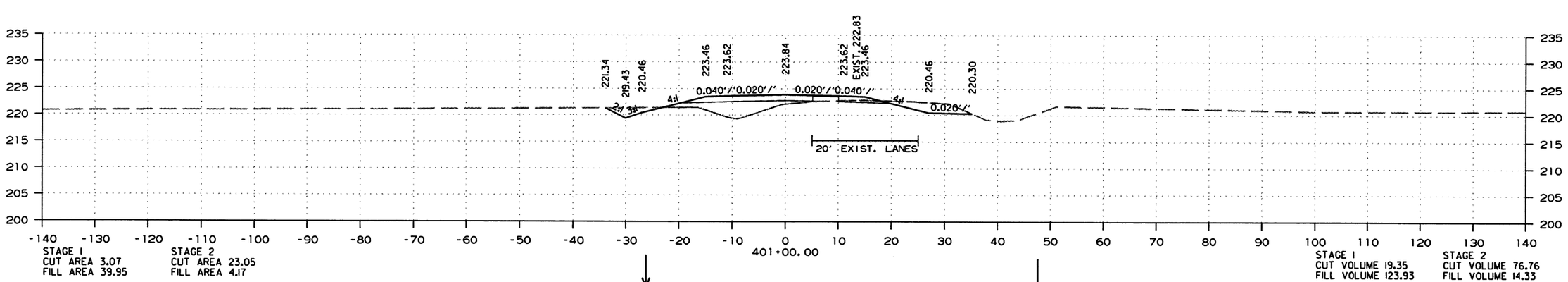
R110574.DGN

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.		110574	151	176

(2) CROSS SECTIONS-SITE 4







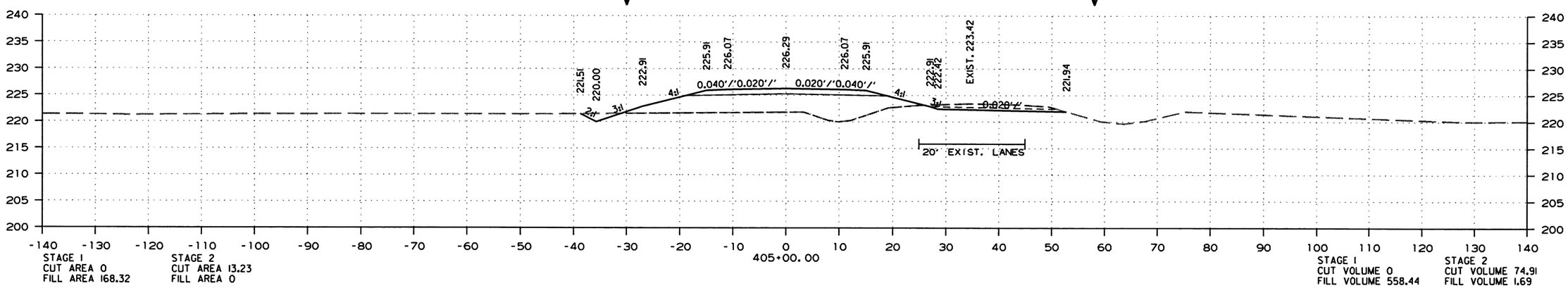
STA. 401+00.00 TO STA. 403+00.00

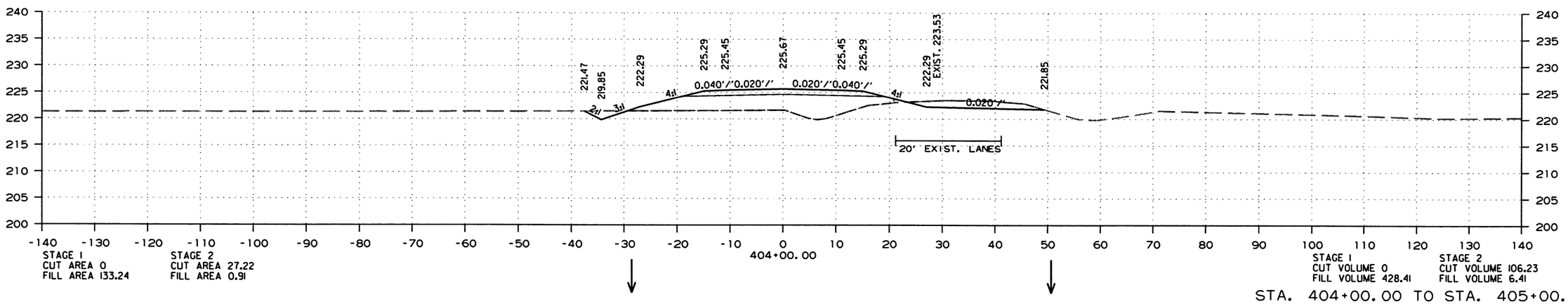
10/2/2019

R110574.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.		110574	152	176

(2) CROSS SECTIONS-SITE 4





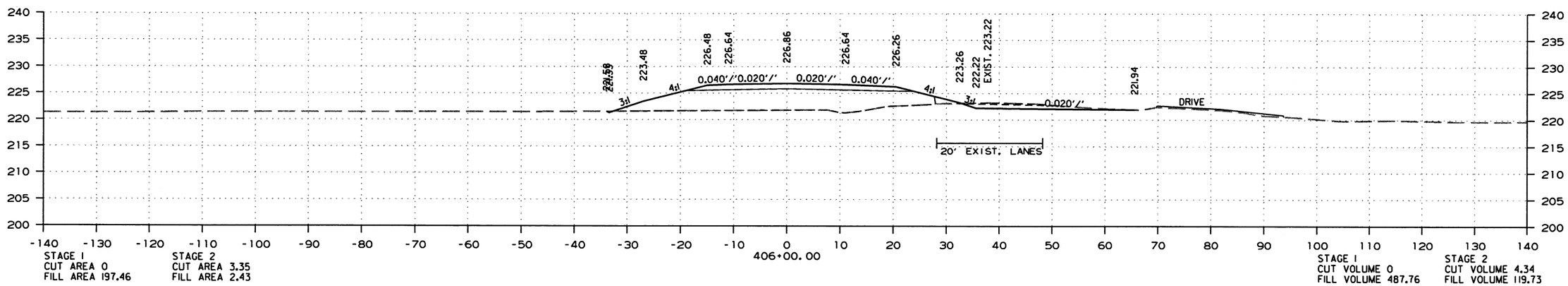
STA. 404+00.00 TO STA. 405+00.00

10/2/2019

R110574.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.		110574	153	176

(2) CROSS SECTIONS-SITE 4



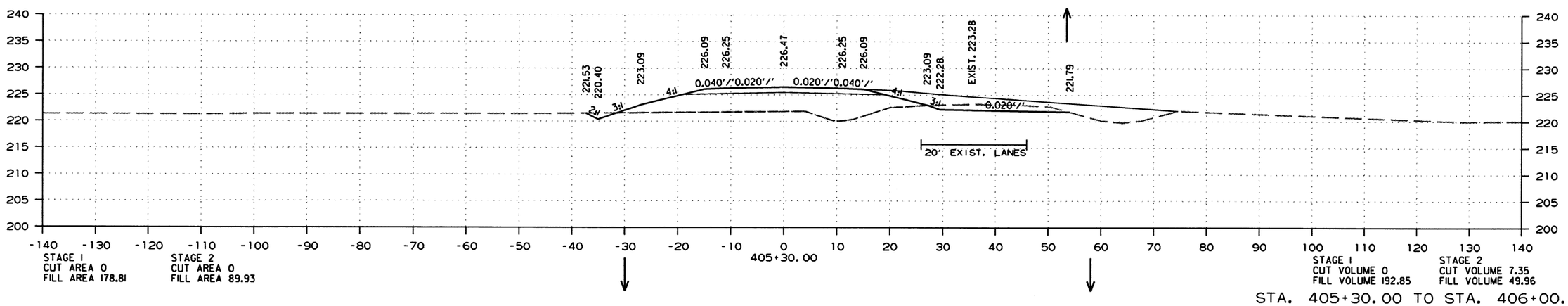
STAGE 1
CUT AREA 0
FILL AREA 197.46

STAGE 2
CUT AREA 3.35
FILL AREA 2.43

STAGE 1
CUT VOLUME 0
FILL VOLUME 487.76

STAGE 2
CUT VOLUME 4.34
FILL VOLUME 119.73

STA. 405+30
CONSTRUCT APPROACH = 50 CU. YDS.



STAGE 1
CUT AREA 0
FILL AREA 178.81

STAGE 2
CUT AREA 0
FILL AREA 89.93

STAGE 1
CUT VOLUME 0
FILL VOLUME 192.85

STAGE 2
CUT VOLUME 7.35
FILL VOLUME 49.96

STA. 405+30.00 TO STA. 406+00.00

10/2/2019

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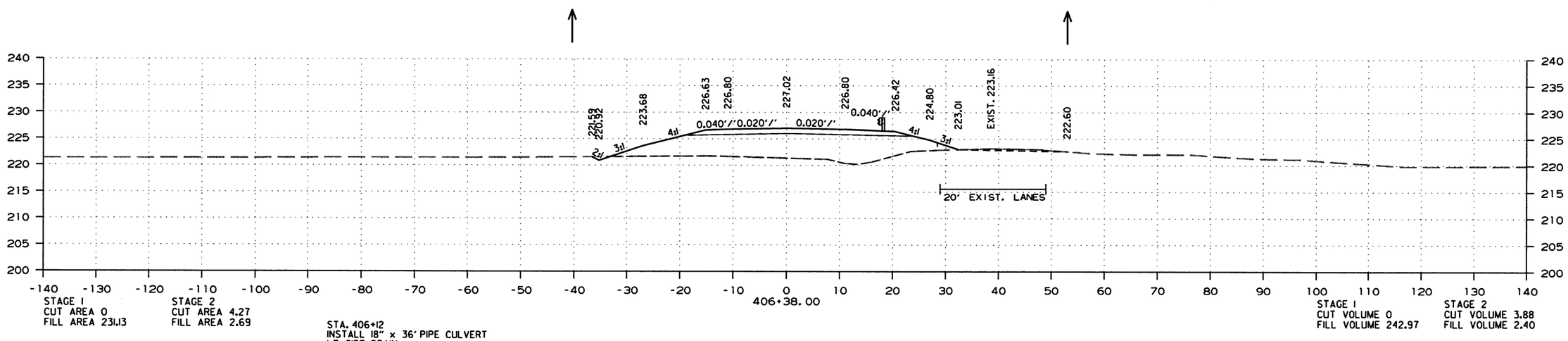
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	154	176

(2) CROSS SECTIONS-SITE 4



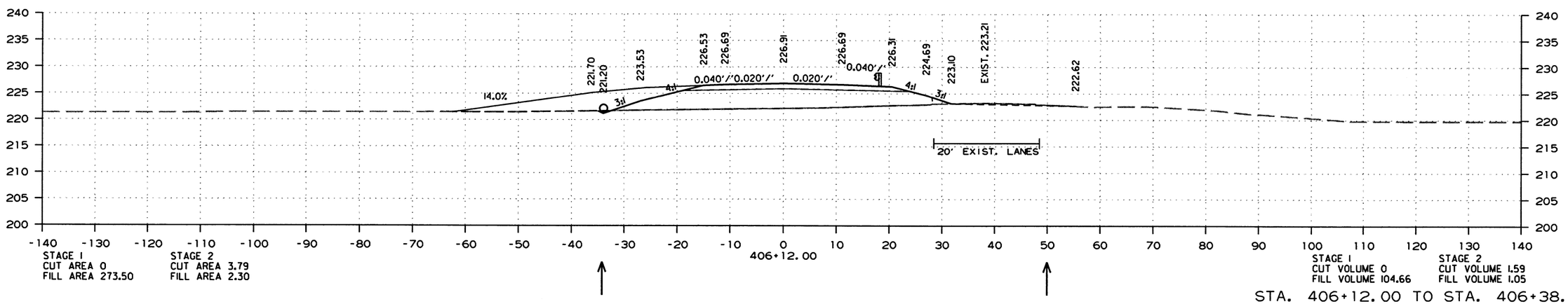
STAGE 1
CUT AREA 0
FILL AREA 231.13

STAGE 2
CUT AREA 4.27
FILL AREA 2.69

STA. 406+12
INSTALL 18" x 36' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 95 CU. YDS.

STAGE 1
CUT VOLUME 0
FILL VOLUME 242.97

STAGE 2
CUT VOLUME 3.88
FILL VOLUME 2.40



STAGE 1
CUT AREA 0
FILL AREA 273.50

STAGE 2
CUT AREA 3.79
FILL AREA 2.30

STAGE 1
CUT VOLUME 0
FILL VOLUME 104.66

STAGE 2
CUT VOLUME 1.59
FILL VOLUME 1.05

STA. 406+12.00 TO STA. 406+38.00

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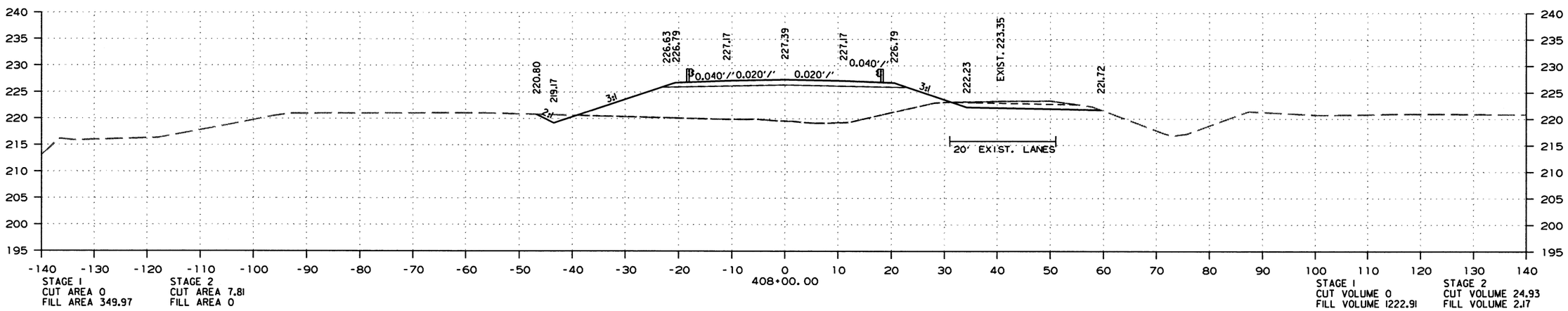
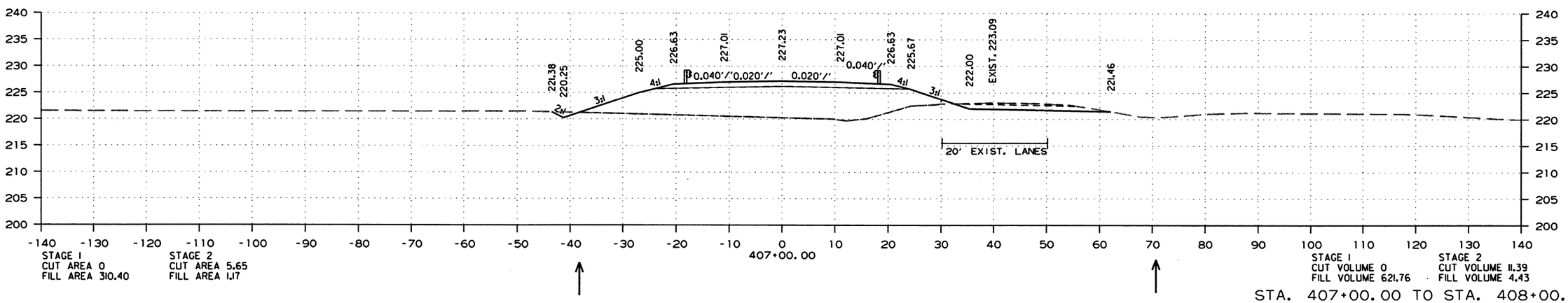
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	155	176

(2) CROSS SECTIONS-SITE 4





STA. 407+00.00 TO STA. 408+00.00

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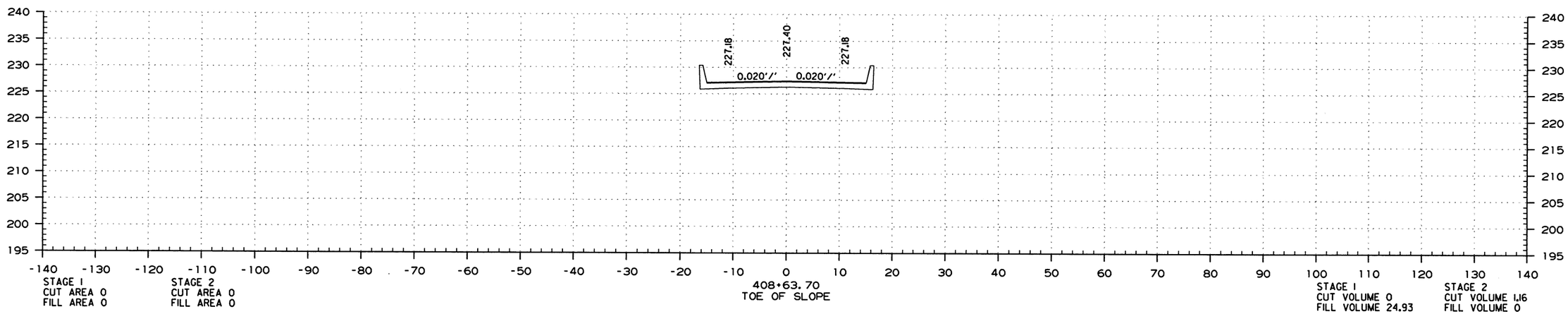
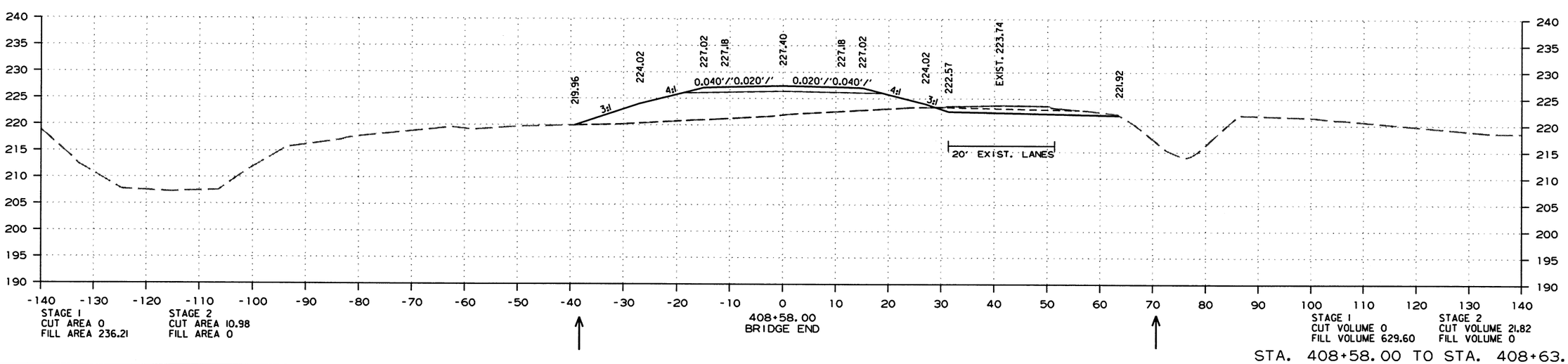
R110574.DGN

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.		110574	156	176

(2) CROSS SECTIONS-SITE 4





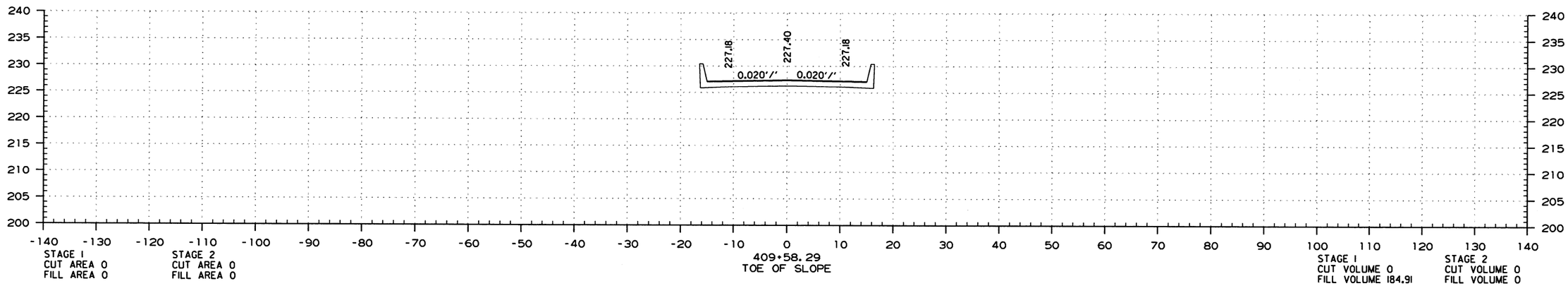
STA. 408+58.00 TO STA. 408+63.70

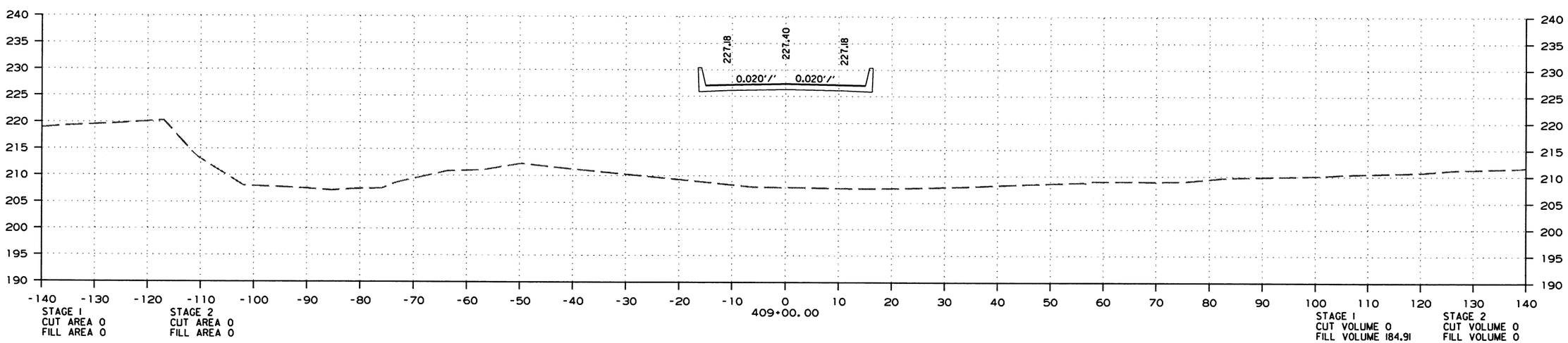
10/2/2019

R110574.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.		110574	157	176

(2) CROSS SECTIONS-SITE 4



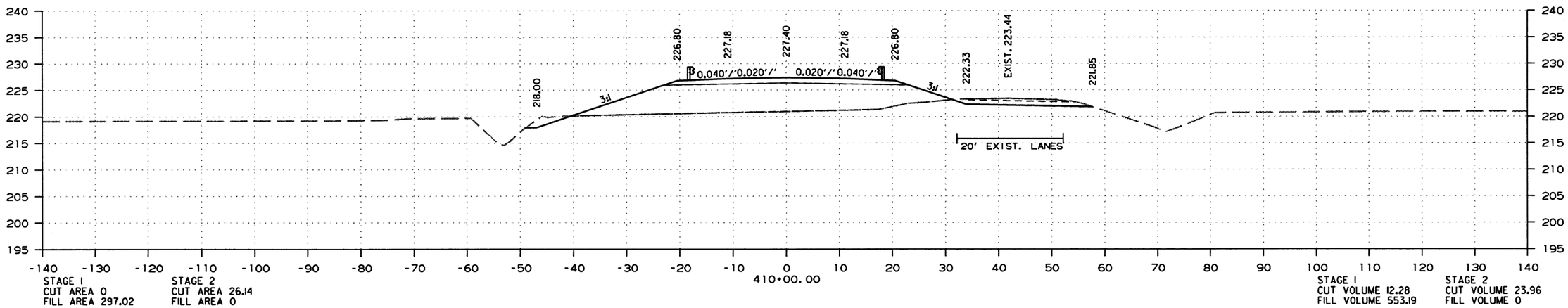


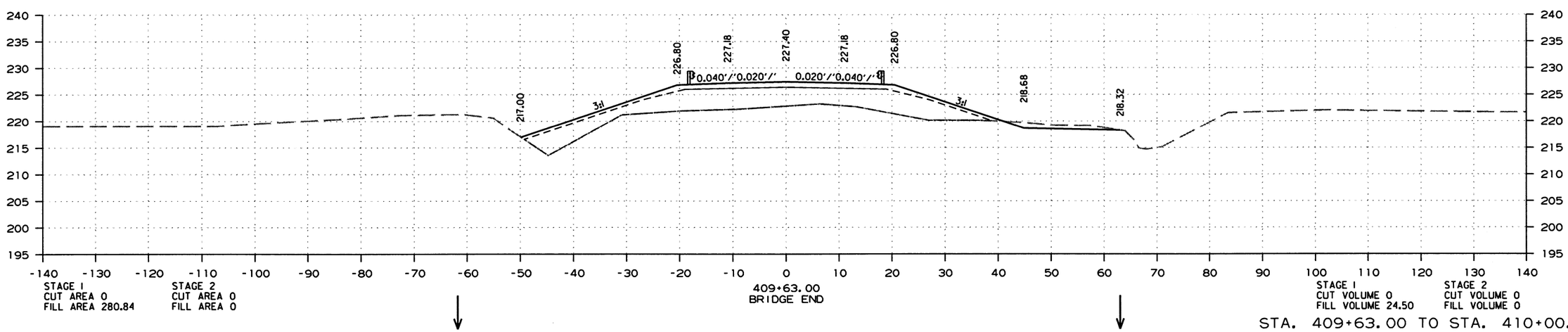
STA. 409+00.00 TO STA. 409+58.29

lc38019 10/2/2019
R110574.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.		110574	158	176

(2) CROSS SECTIONS-SITE 4





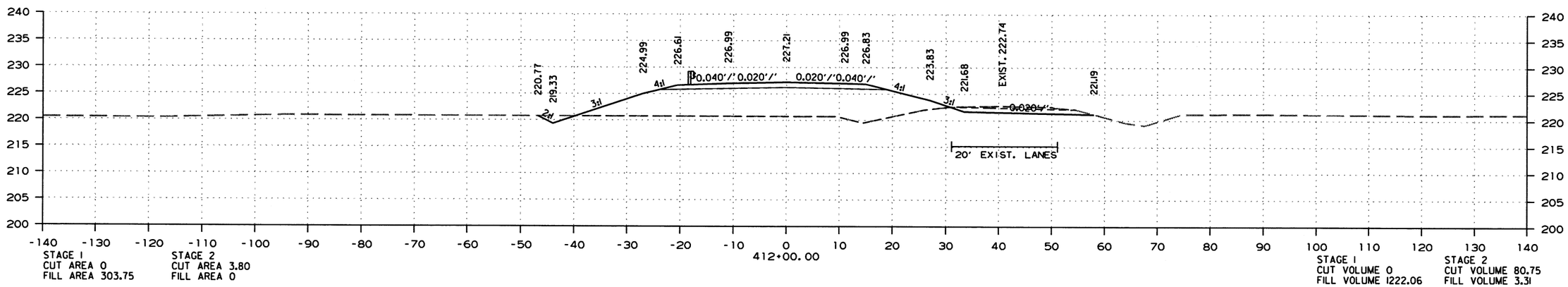
STA. 409+63.00 TO STA. 410+00.00

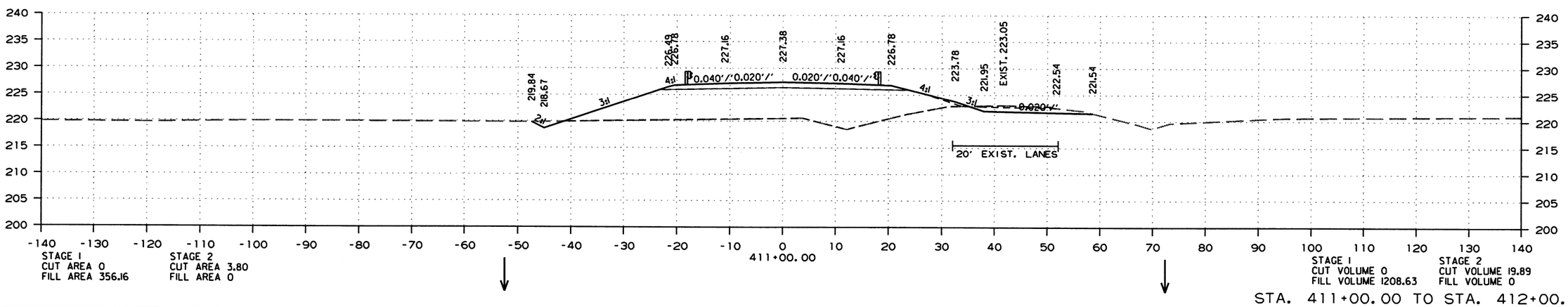
10/2/2019

R110574.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.		110574	159	176

(2) CROSS SECTIONS-SITE 4





STA. 411+00.00 TO STA. 412+00.00

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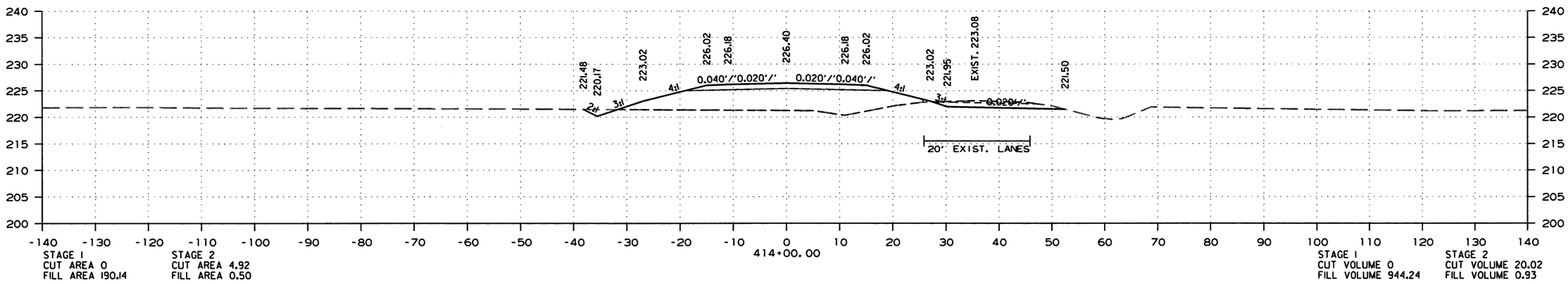
R110574.DGN

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.		110574	160	176

(2) CROSS SECTIONS-SITE 4



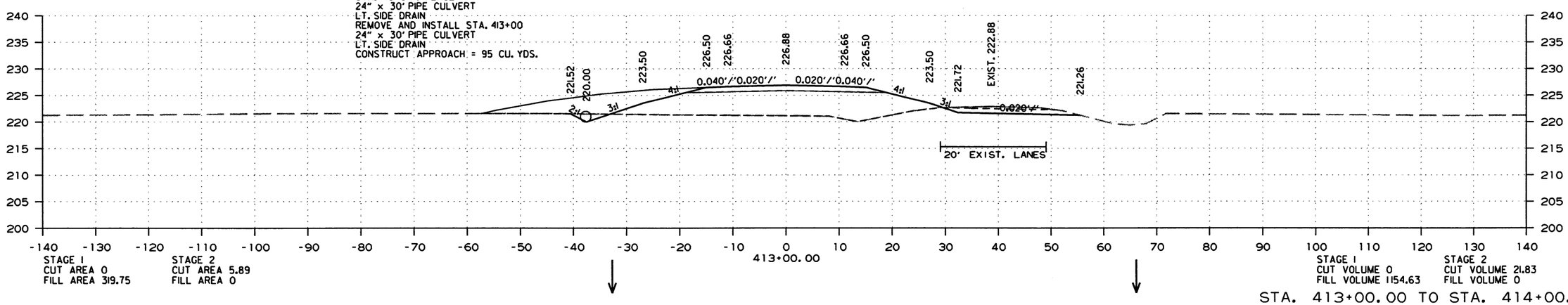
STAGE 1
CUT AREA 0
FILL AREA 190.14

STAGE 2
CUT AREA 4.92
FILL AREA 0.50

STAGE 1
CUT VOLUME 0
FILL VOLUME 944.24

STAGE 2
CUT VOLUME 20.02
FILL VOLUME 0.93

STA. 410+01 IN PLACE
24" x 30' PIPE CULVERT
L.T. SIDE DRAIN
REMOVE AND INSTALL STA. 413+00
24" x 30' PIPE CULVERT
L.T. SIDE DRAIN
CONSTRUCT APPROACH = 95 CU. YDS.



STAGE 1
CUT AREA 0
FILL AREA 319.75

STAGE 2
CUT AREA 5.89
FILL AREA 0

STAGE 1
CUT VOLUME 0
FILL VOLUME 1154.63

STAGE 2
CUT VOLUME 21.83
FILL VOLUME 0

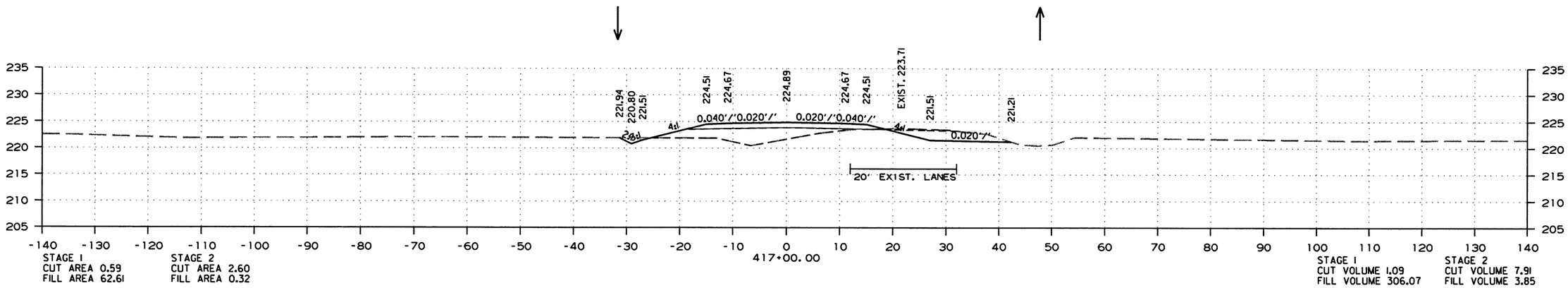
STA. 413+00.00 TO STA. 414+00.00

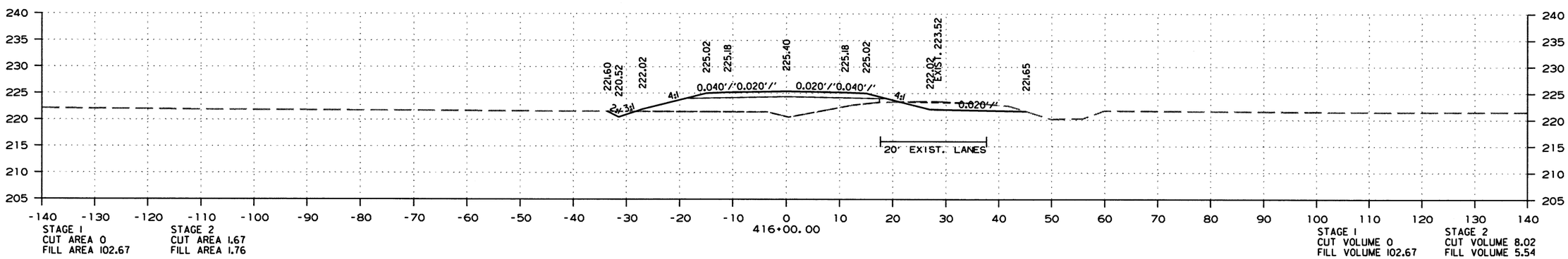
10/2/2019

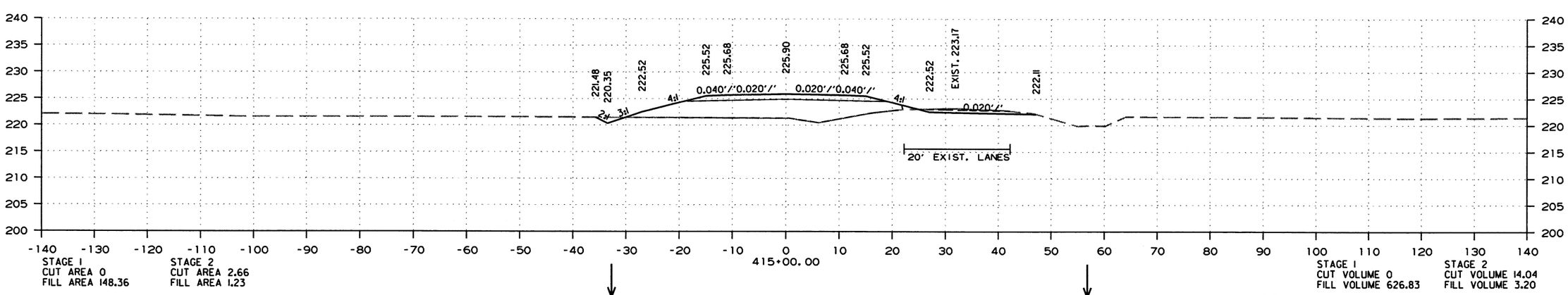
R110574.DGN

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.		110574	161	176

(2) CROSS SECTIONS-SITE 4







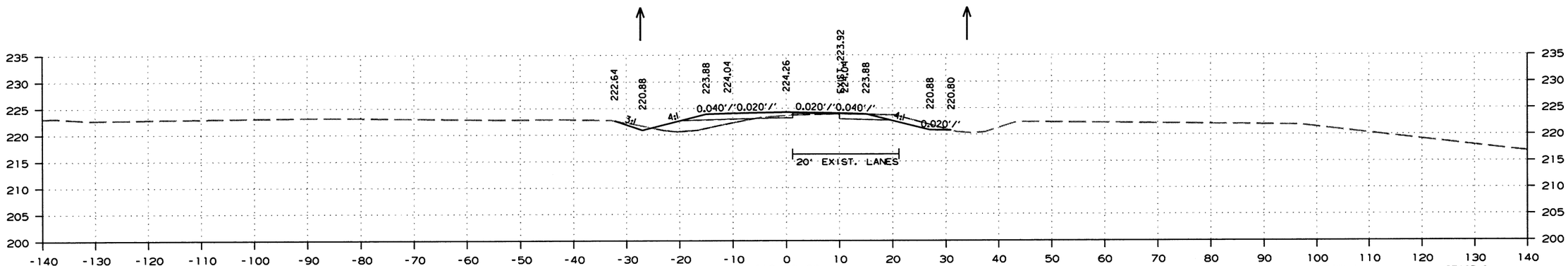
STA. 415+00.00 TO STA. 417+00.00

10/2/2019

R110574.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.		110574	162	176

(2) CROSS SECTIONS-SITE 4



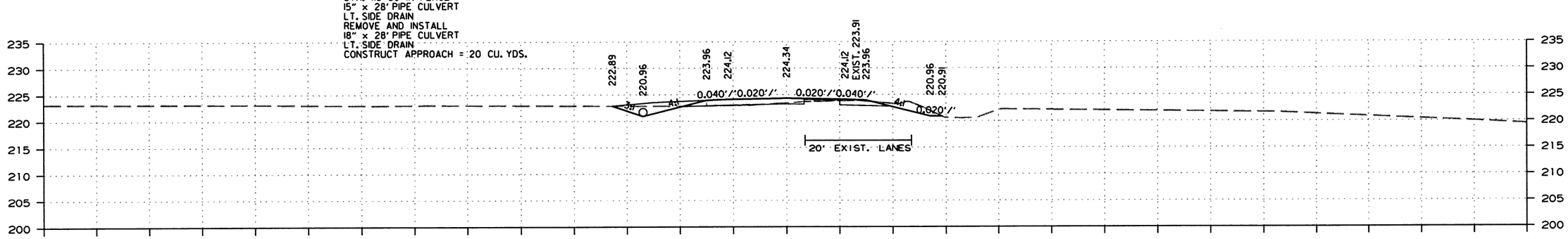
STAGE 1
CUT AREA 4.95
FILL AREA 22.53

STAGE 2
CUT AREA 19.49
FILL AREA 1.45

STAGE 1
CUT VOLUME 28.69
FILL VOLUME 21.23

STAGE 2
CUT VOLUME 34.51
FILL VOLUME 3.01

STA. 418+50 IN PLACE
15" x 28' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

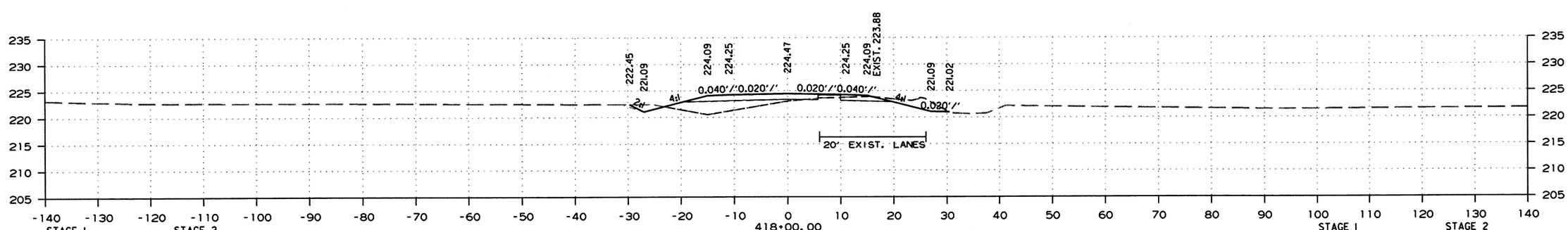


STAGE 1
CUT AREA 26.04
FILL AREA 0.41

STAGE 2
CUT AREA 17.77
FILL AREA 1.80

STAGE 1
CUT VOLUME 29.71
FILL VOLUME 31.84

STAGE 2
CUT VOLUME 34.44
FILL VOLUME 3.50



STAGE 1
CUT AREA 6.05
FILL AREA 33.98

STAGE 2
CUT AREA 19.43
FILL AREA 1.98

STAGE 1
CUT VOLUME 12.30
FILL VOLUME 178.87

STAGE 2
CUT VOLUME 40.80
FILL VOLUME 4.26

STA. 418+00.00 TO STA. 419+00.00

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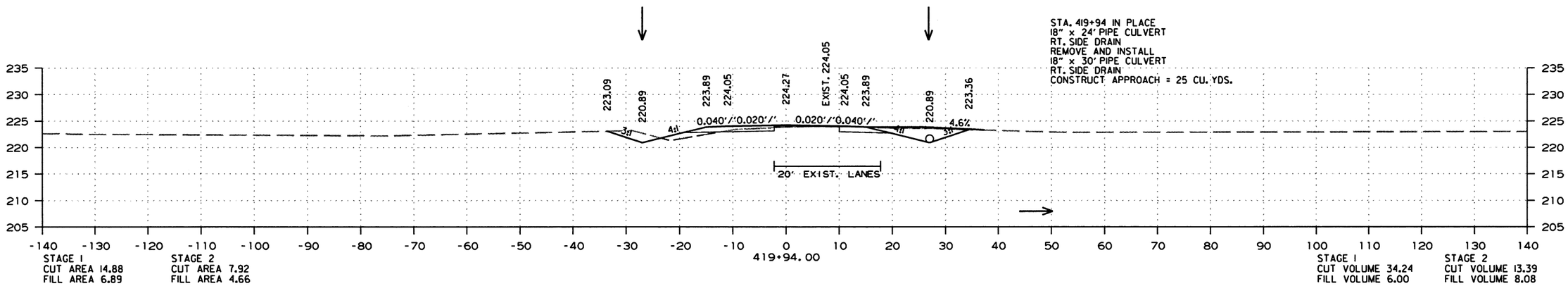
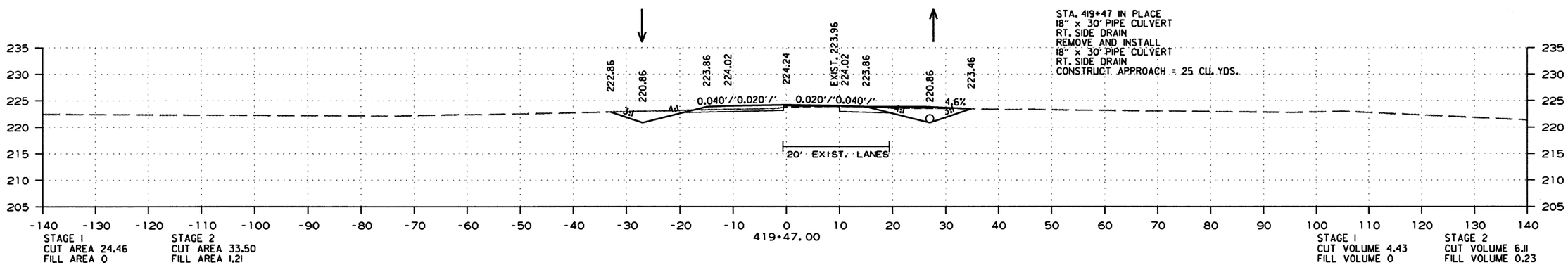
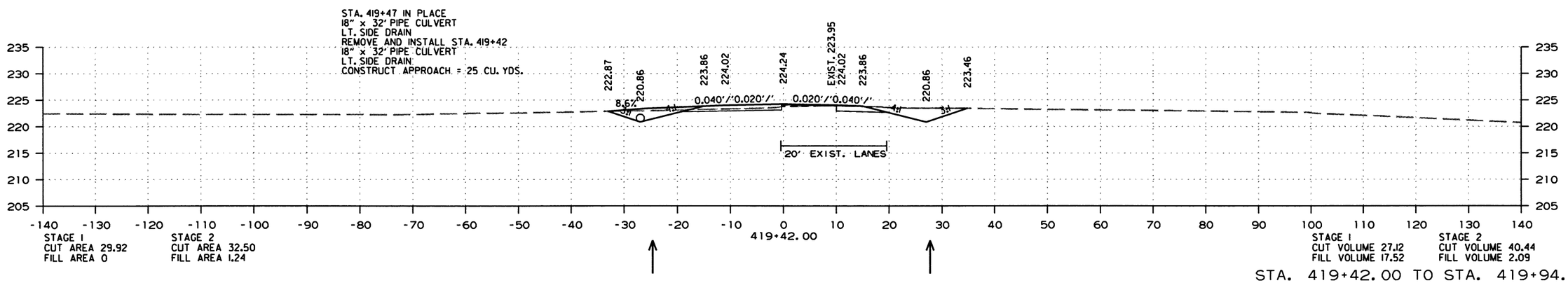
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	163	176

(2) CROSS SECTIONS-SITE 4







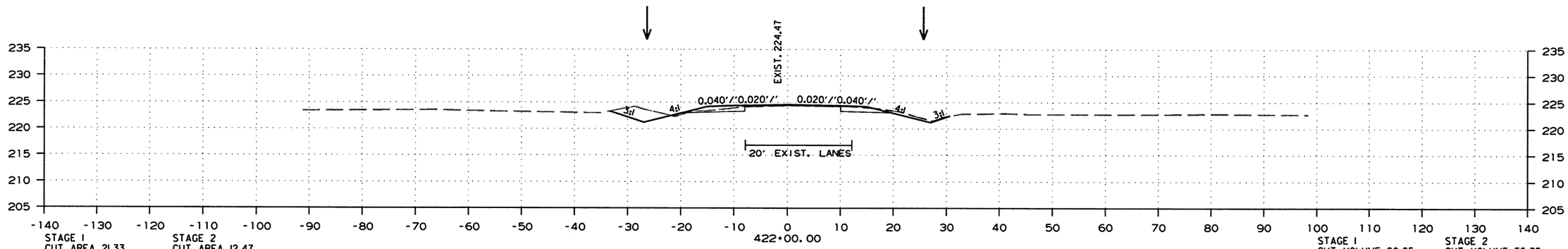
STA. 419+42.00 TO STA. 419+94.00

10/2/2019

R110574.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.		110574	164	176

(2) CROSS SECTIONS-SITE 4



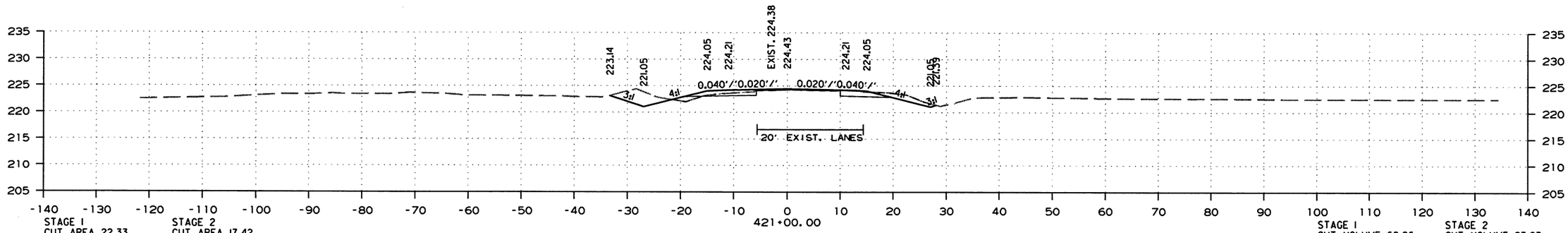
STAGE 1
CUT AREA 21.33
FILL AREA 0.73

STAGE 2
CUT AREA 12.47
FILL AREA 0.24

STA. 421+92.81 - END P.G. ELEV. 224.57

STAGE 1
CUT VOLUME 80.85
FILL VOLUME 6.70

STAGE 2
CUT VOLUME 55.35
FILL VOLUME 0.70

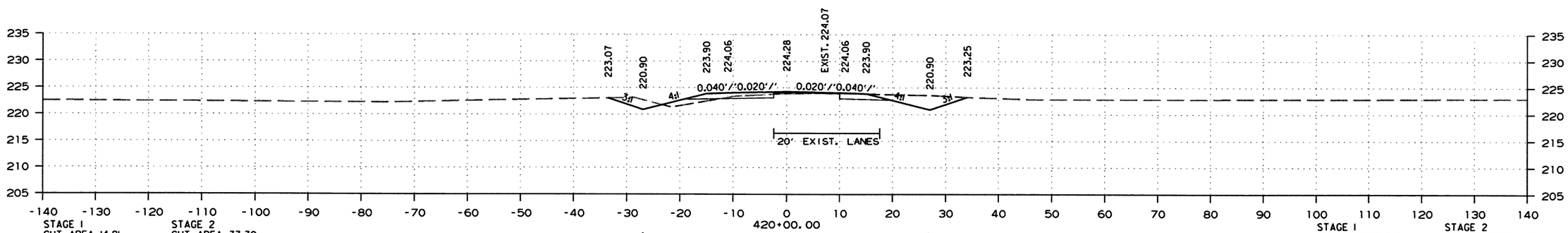


STAGE 1
CUT AREA 22.33
FILL AREA 2.89

STAGE 2
CUT AREA 17.42
FILL AREA 0.14

STAGE 1
CUT VOLUME 68.96
FILL VOLUME 17.69

STAGE 2
CUT VOLUME 93.93
FILL VOLUME 2.02



STAGE 1
CUT AREA 14.91
FILL AREA 6.66

STAGE 2
CUT AREA 33.30
FILL AREA 0.95

STAGE 1
CUT VOLUME 3.31
FILL VOLUME 1.51

STAGE 2
CUT VOLUME 4.58
FILL VOLUME 0.62

STA. 420+00.00 TO STA. 422+00.00

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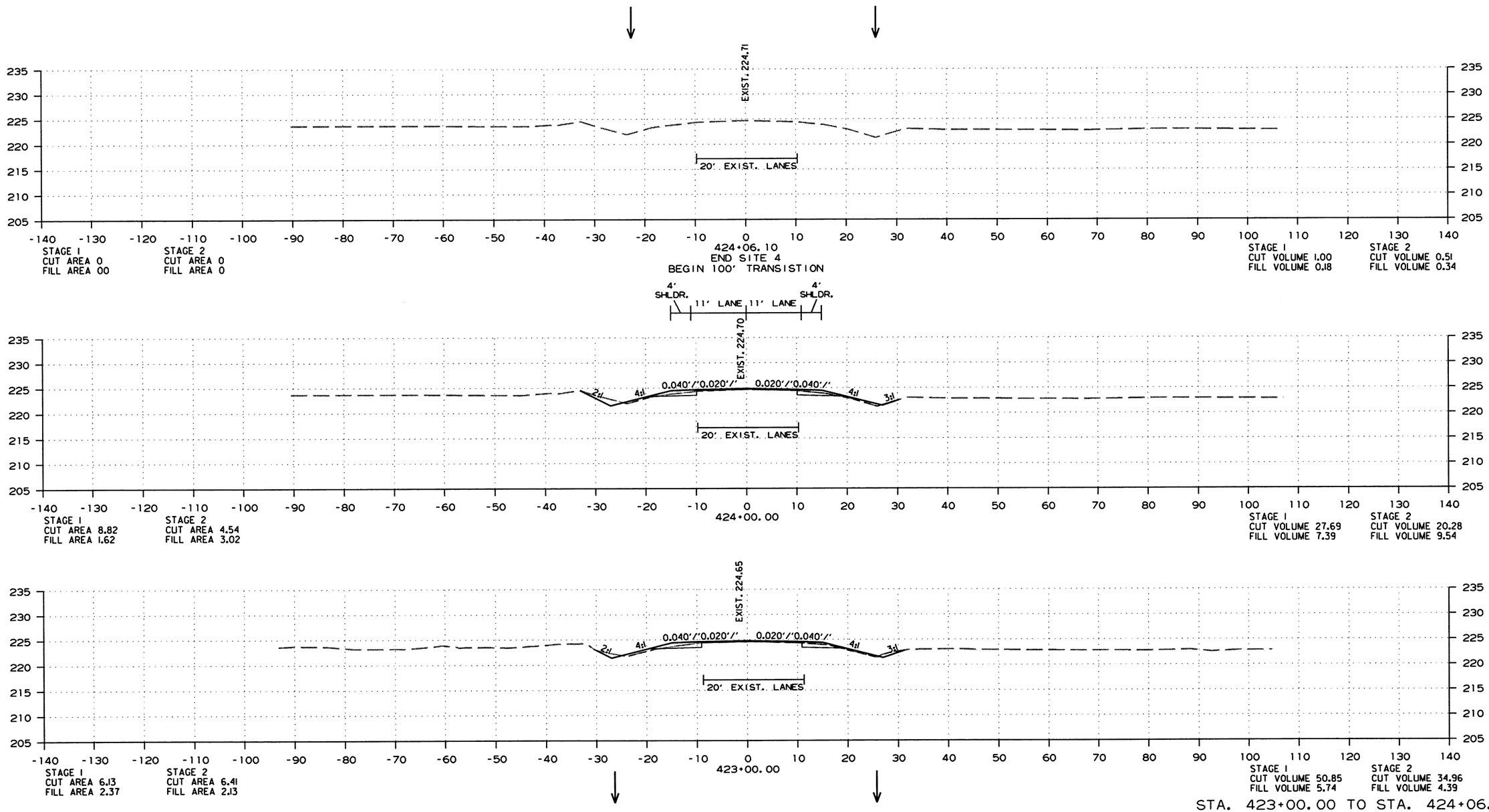
R110574.DGN

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.		110574	165	176

(2) CROSS SECTIONS-SITE 4



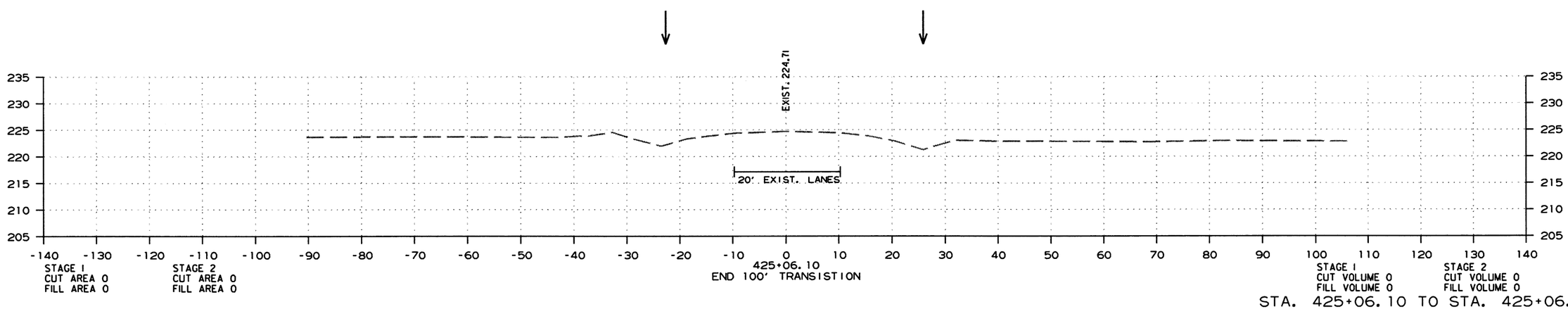
STA. 423+00.00 TO STA. 424+06.10

10/2/2019

R110574.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.		110574	166	176

(2) CROSS SECTIONS-SITE 4



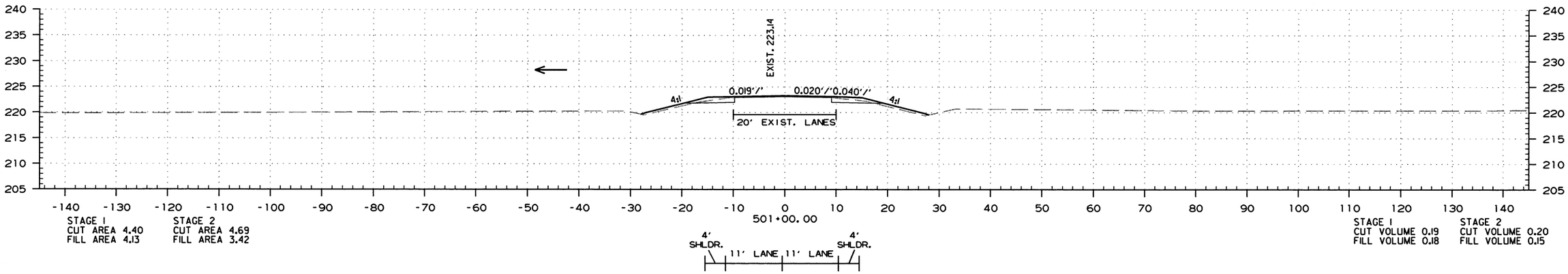
STA. 425+06.10 TO STA. 425+06.10

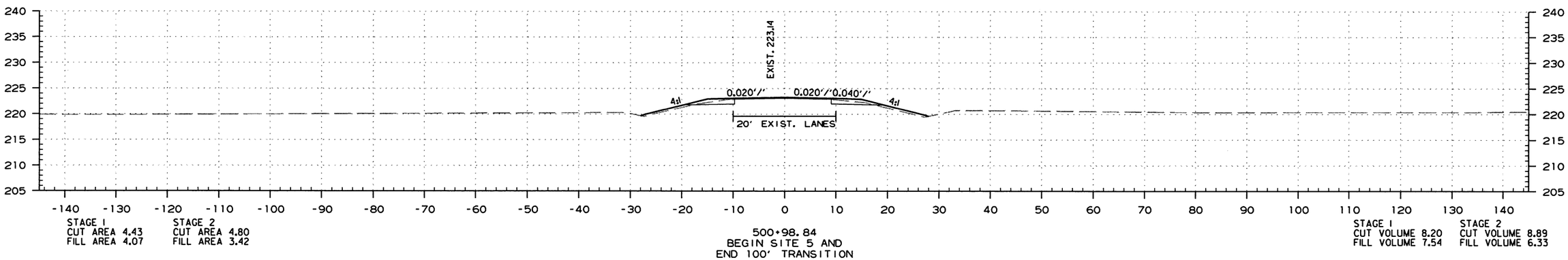
10/2/2019

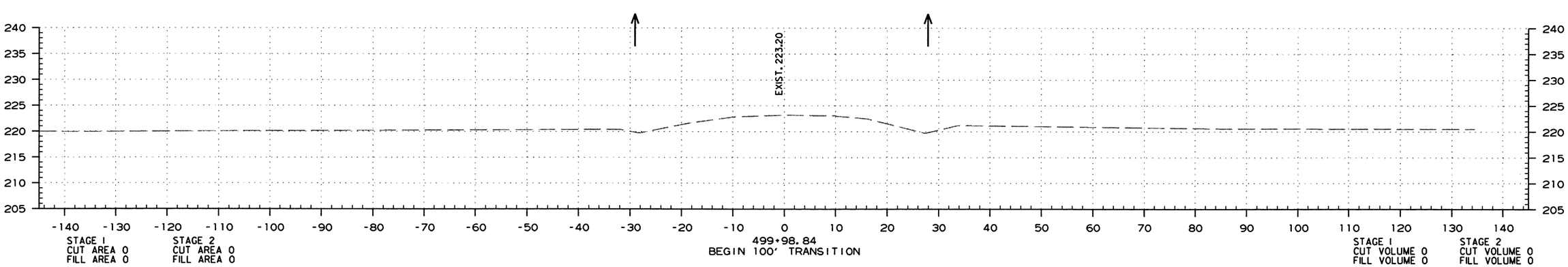
R110574.DGN

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.		110574	167	176

(2) CROSS SECTIONS - SITE 5





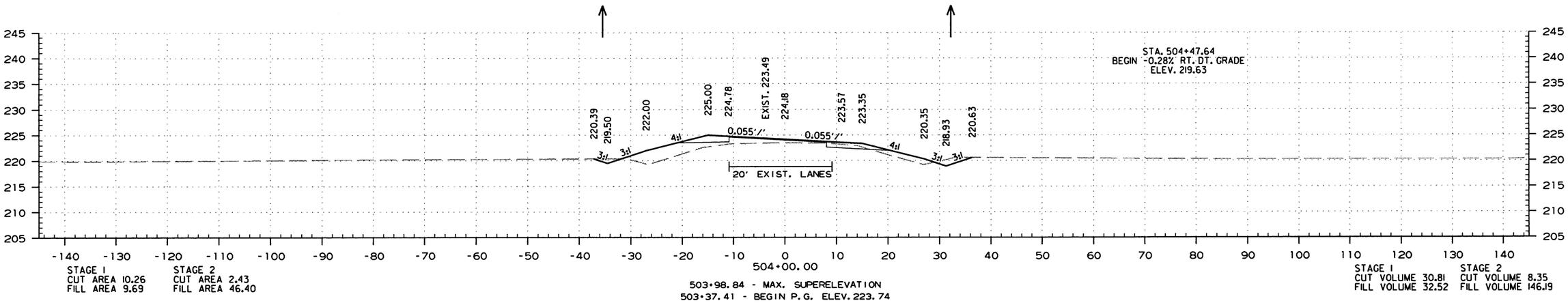


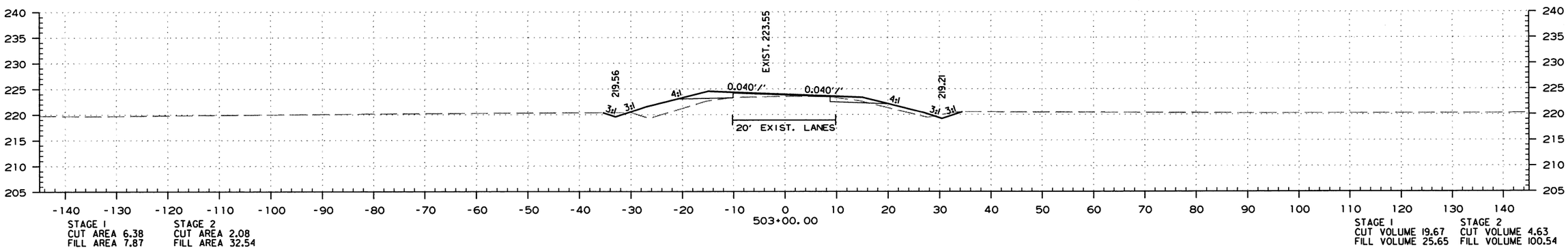
STA. 499+98.84 TO STA. 501+00.00

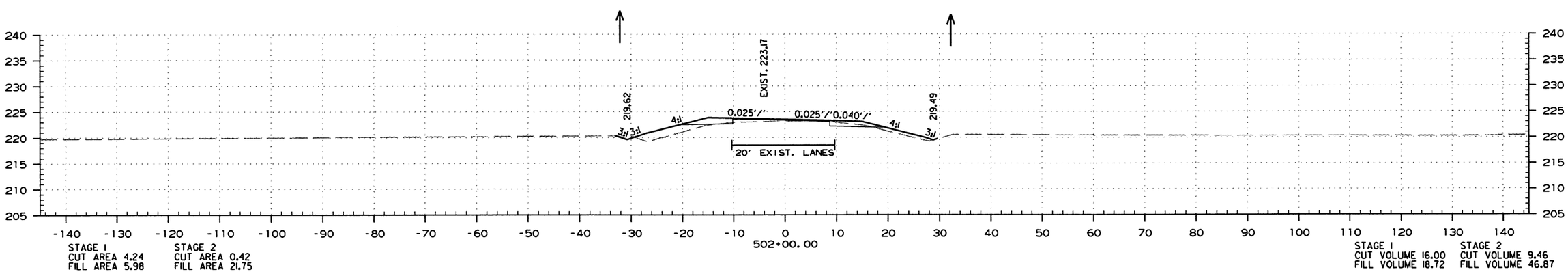
dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	168	176

(2) CROSS SECTIONS - SITE 5





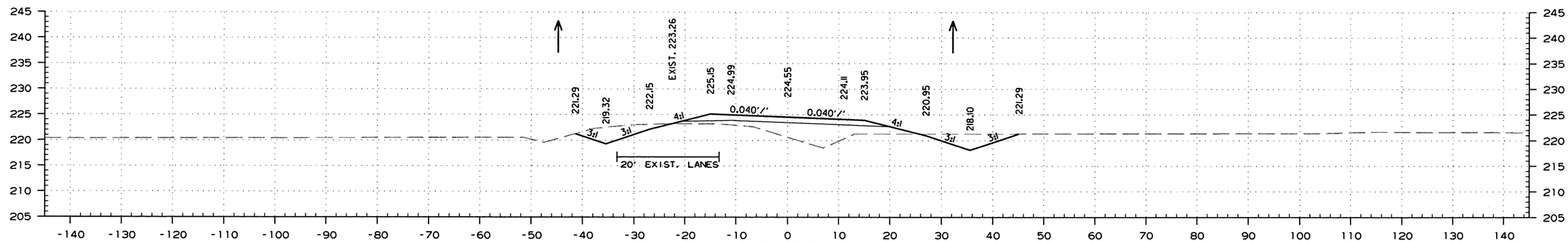


STA. 502+00.00 TO STA. 504+00.00

dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	169	176

(2) CROSS SECTIONS - SITE 5



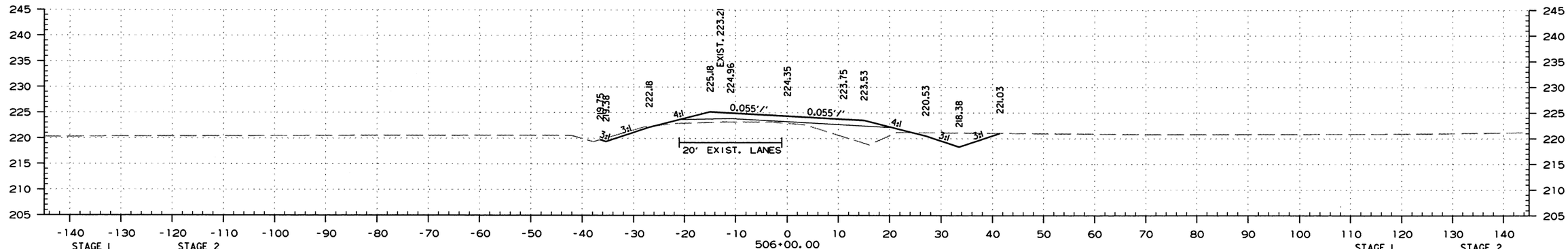
STAGE 1
CUT AREA 30.36
FILL AREA 79.32

STAGE 2
CUT AREA 30.84
FILL AREA 5.10

STAGE 1
CUT VOLUME 97.72
FILL VOLUME 221.09

STAGE 2
CUT VOLUME 65.93
FILL VOLUME 33.24

STA. 506+01.66 - MAX SUPERELEVATION

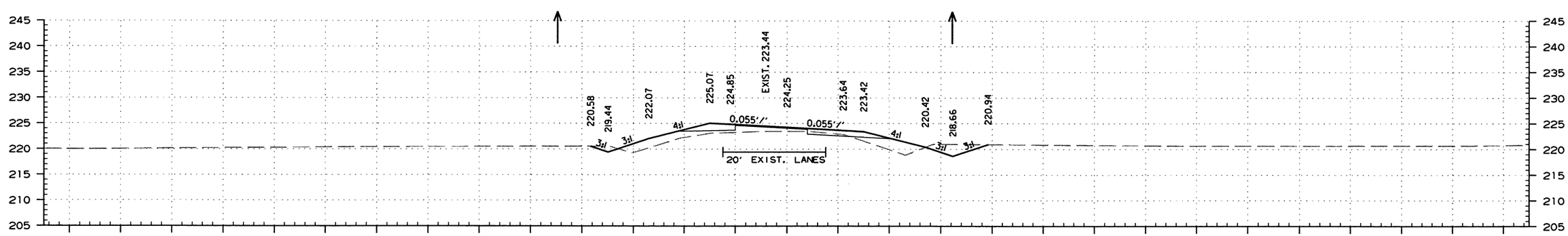


STAGE 1
CUT AREA 22.41
FILL AREA 40.07

STAGE 2
CUT AREA 4.76
FILL AREA 12.85

STAGE 1
CUT VOLUME 69.98
FILL VOLUME 112.35

STAGE 2
CUT VOLUME 20.52
FILL VOLUME 93.26



STAGE 1
CUT AREA 15.38
FILL AREA 20.60

STAGE 2
CUT AREA 6.32
FILL AREA 37.51

STAGE 1
CUT VOLUME 47.48
FILL VOLUME 56.09

STAGE 2
CUT VOLUME 16.20
FILL VOLUME 155.39

STA. 505+00.00 TO STA. 507+00.00

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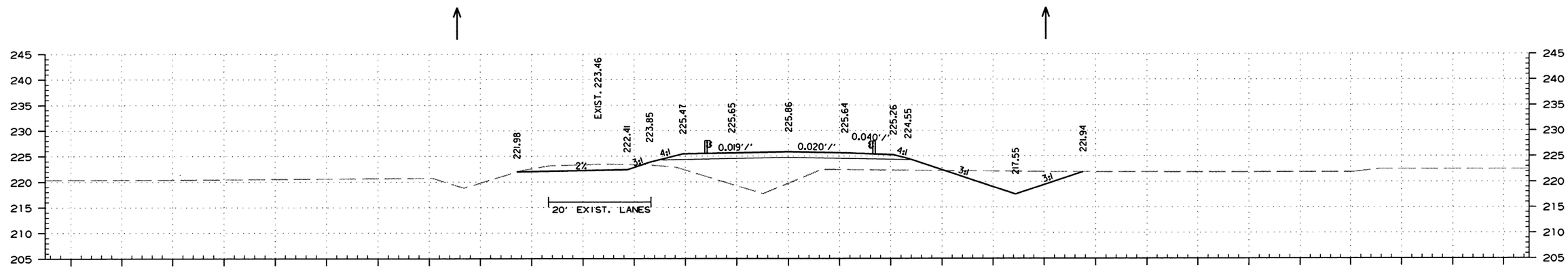
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	170	176

(2) CROSS SECTIONS - SITE 5

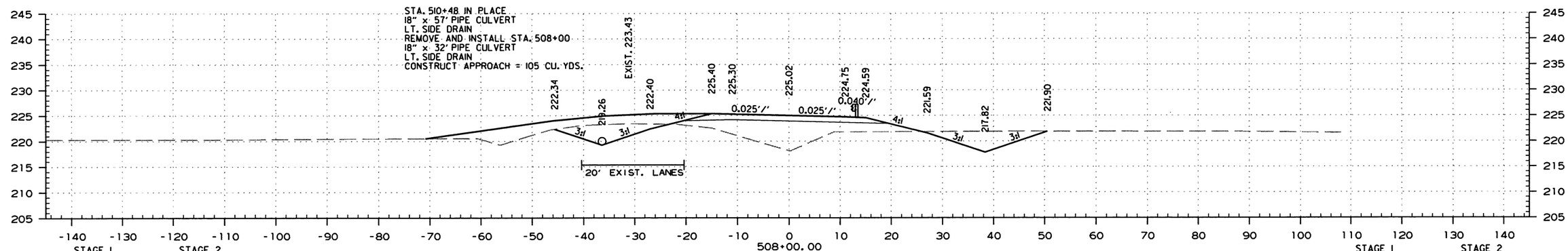


STAGE 1
CUT AREA 60.35
FILL AREA 175.62

STAGE 2
CUT AREA 5.28
FILL AREA 0

STAGE 1
CUT VOLUME 203.74
FILL VOLUME 549.61

STAGE 2
CUT VOLUME 5.28
FILL VOLUME 169.76

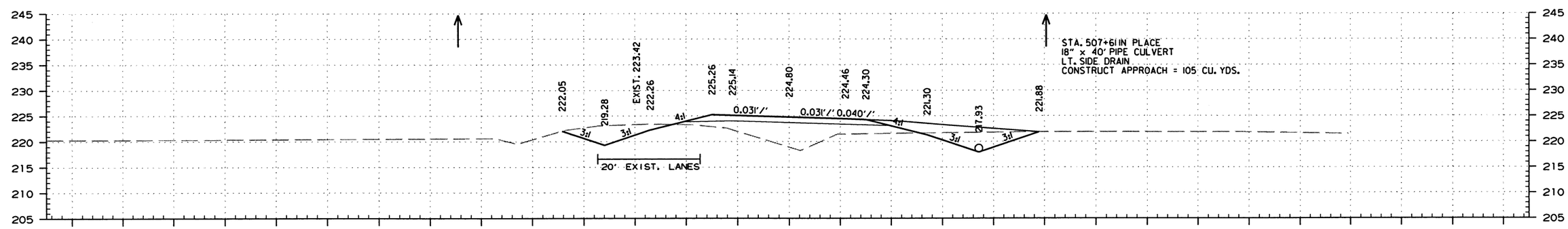


STAGE 1
CUT AREA 49.67
FILL AREA 121.17

STAGE 2
CUT AREA 0
FILL AREA 91.67

STAGE 1
CUT VOLUME 36.79
FILL VOLUME 181.89

STAGE 2
CUT VOLUME 30.86
FILL VOLUME 67.90



STAGE 1
CUT AREA 0
FILL AREA 124.38

STAGE 2
CUT AREA 41.66
FILL AREA 0

STAGE 1
CUT VOLUME 33.73
FILL VOLUME 226.33

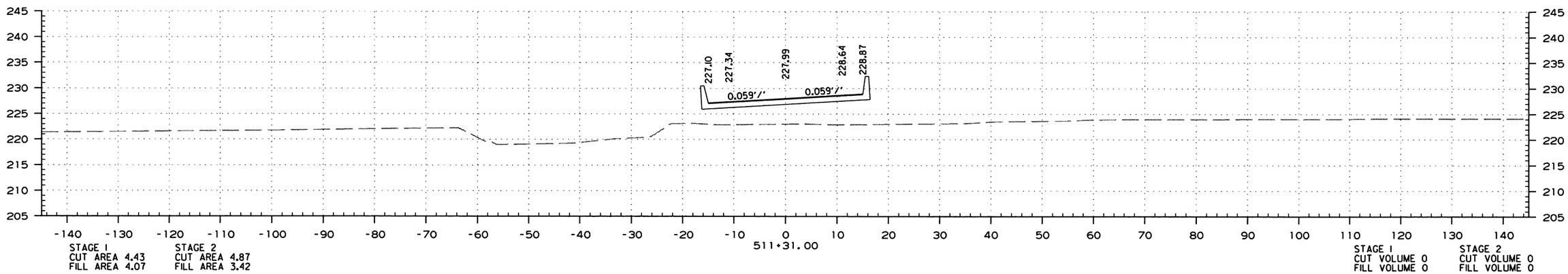
STAGE 2
CUT VOLUME 80.56
FILL VOLUME 5.67

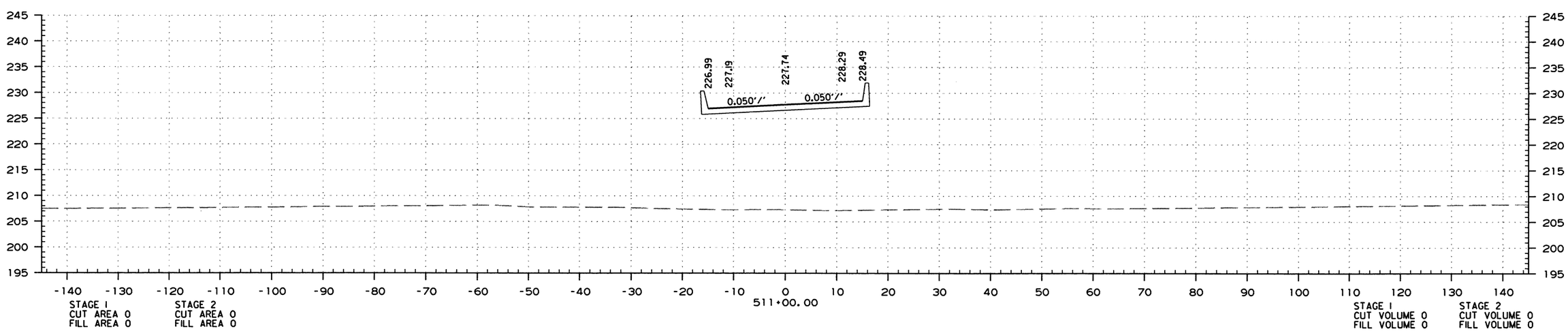
STA. 507+60.00 TO STA. 509+00.00

dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	171	176

(2) CROSS SECTIONS - SITE 5



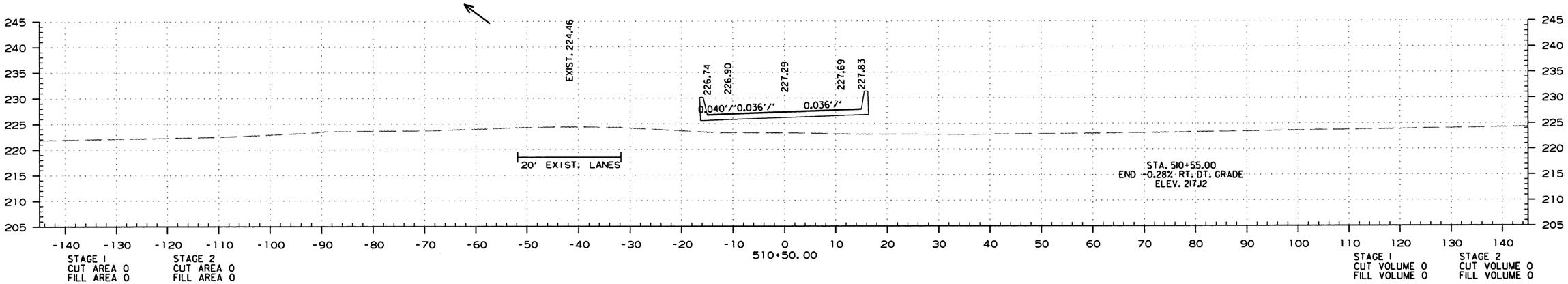


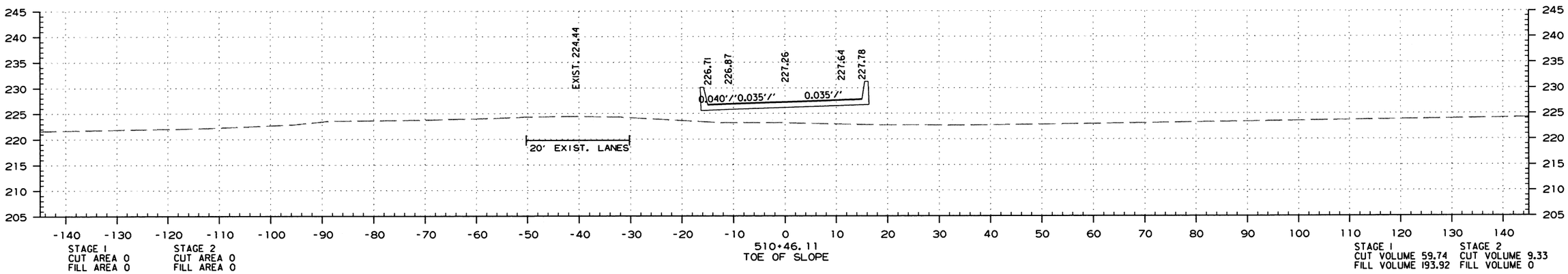
STA. 511+00.00 TO STA. 511+31.00

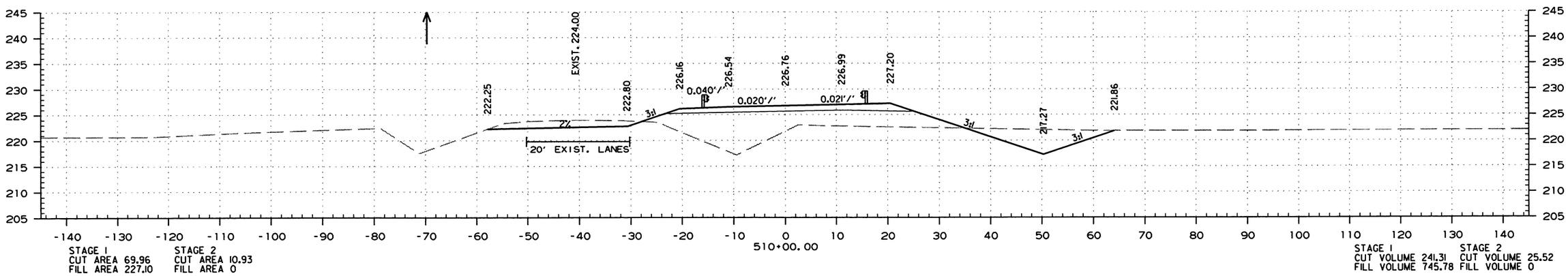
dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	172	176

(2) CROSS SECTIONS - SITE 5





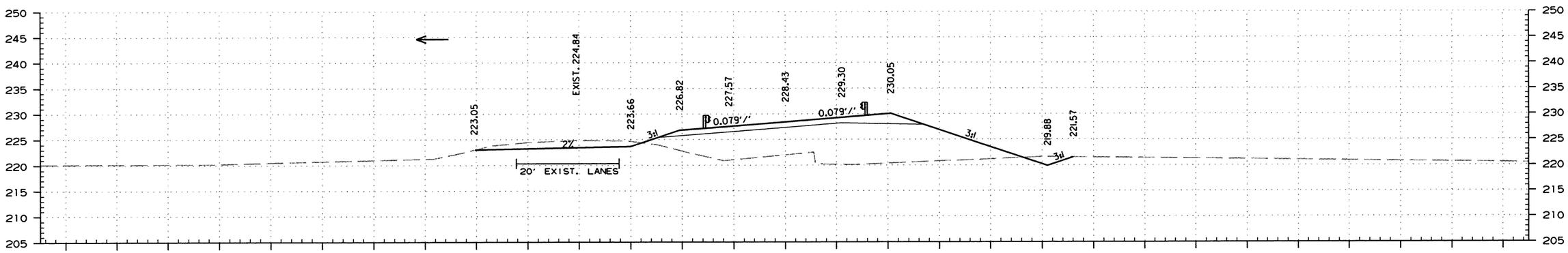


STA. 510+00.00 TO STA. 511+00.00

dwbc553 6/20/2019
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	173	176

(2) CROSS SECTIONS - SITE 5

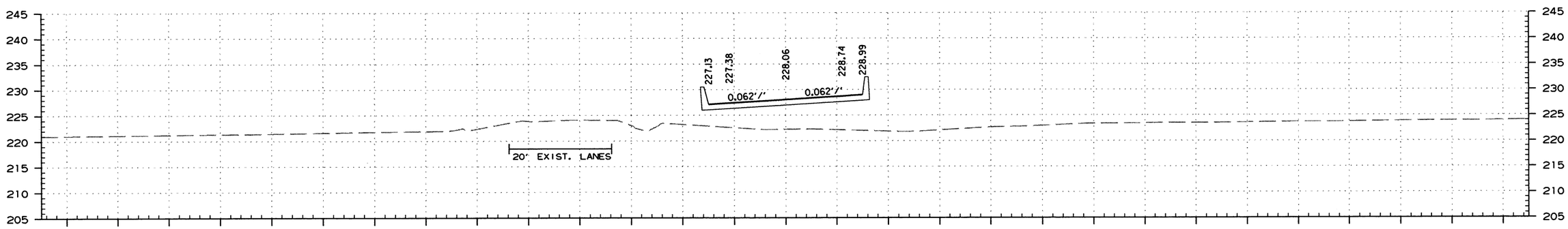


STAGE 1
CUT AREA 8.66
FILL AREA 376.32

STAGE 2
CUT AREA 14.21
FILL AREA 0

STAGE 1
CUT VOLUME 9.40
FILL VOLUME 408.45

STAGE 2
CUT VOLUME 15.42
FILL VOLUME 0

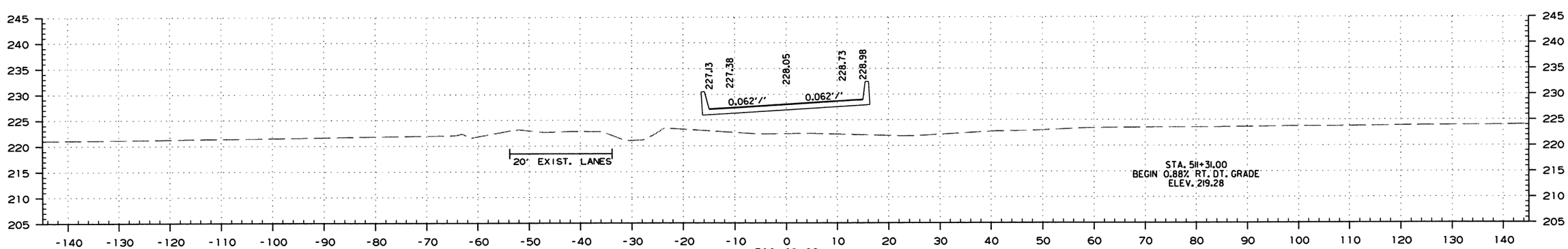


STAGE 1
CUT AREA 0
FILL AREA 0

STAGE 2
CUT AREA 0
FILL AREA 0

STAGE 1
CUT VOLUME 0
FILL VOLUME 0

STAGE 2
CUT VOLUME 0
FILL VOLUME 0



STAGE 1
CUT AREA 0
FILL AREA 0

STAGE 2
CUT AREA 4.87
FILL AREA 3.42

STAGE 1
CUT VOLUME 332.67
FILL VOLUME 217.92

STAGE 2
CUT VOLUME 76.15
FILL VOLUME 5.16

STA. 511+40.00 TO STA. 512+00.00

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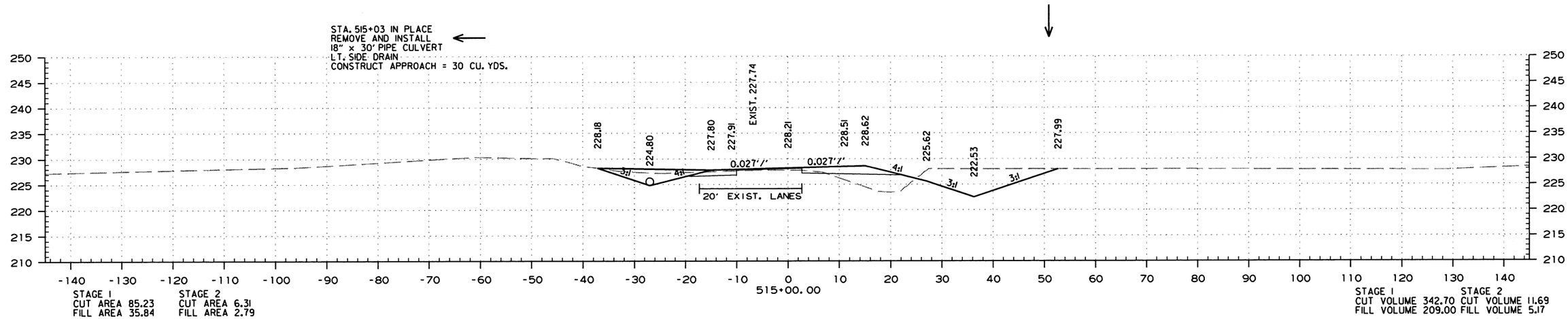
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	174	176

(2) CROSS SECTIONS - SITE 5

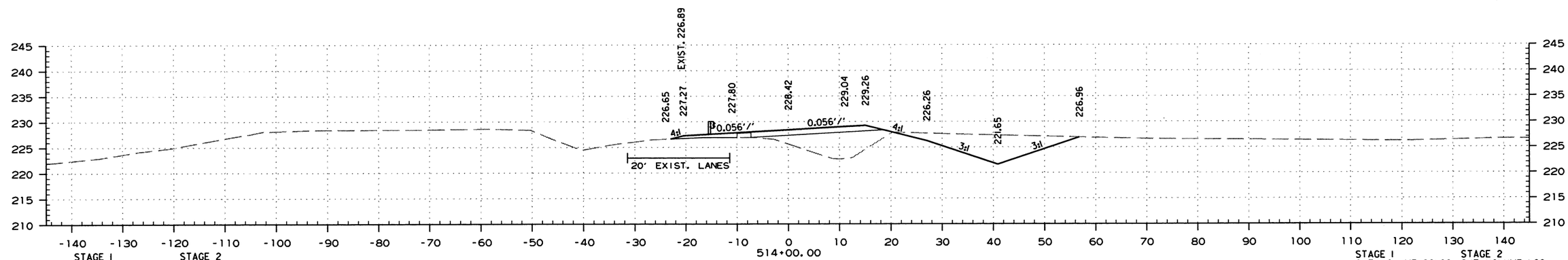


STAGE 1
CUT AREA 85.23
FILL AREA 35.84

STAGE 2
CUT AREA 6.31
FILL AREA 2.79

STAGE 1
CUT VOLUME 342.70
FILL VOLUME 209.00

STAGE 2
CUT VOLUME 11.69
FILL VOLUME 5.17

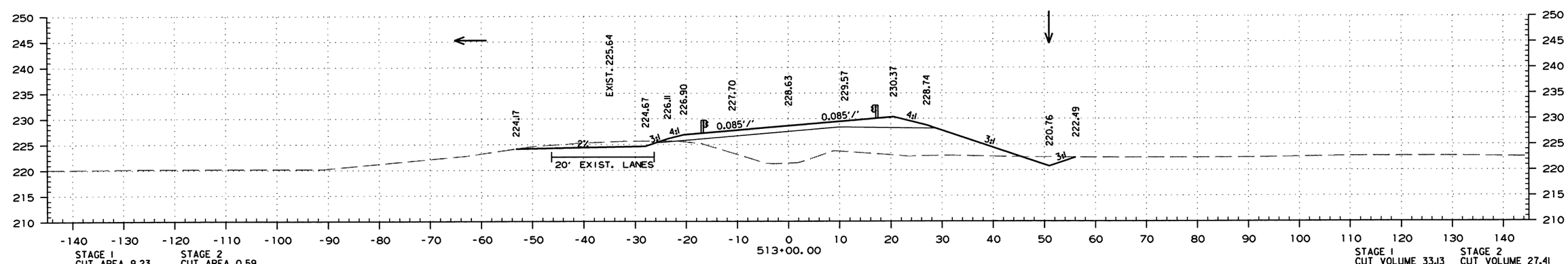


STAGE 1
CUT AREA 99.83
FILL AREA 77.02

STAGE 2
CUT AREA 0
FILL AREA 0

STAGE 1
CUT VOLUME 201.96
FILL VOLUME 639.39

STAGE 2
CUT VOLUME 1.09
FILL VOLUME 0



STAGE 1
CUT AREA 9.23
FILL AREA 268.25

STAGE 2
CUT AREA 0.59
FILL AREA 0

STAGE 1
CUT VOLUME 33.13
FILL VOLUME 1193.65

STAGE 2
CUT VOLUME 27.41
FILL VOLUME 0

STA. 513+00.00 TO STA. 515+00.00

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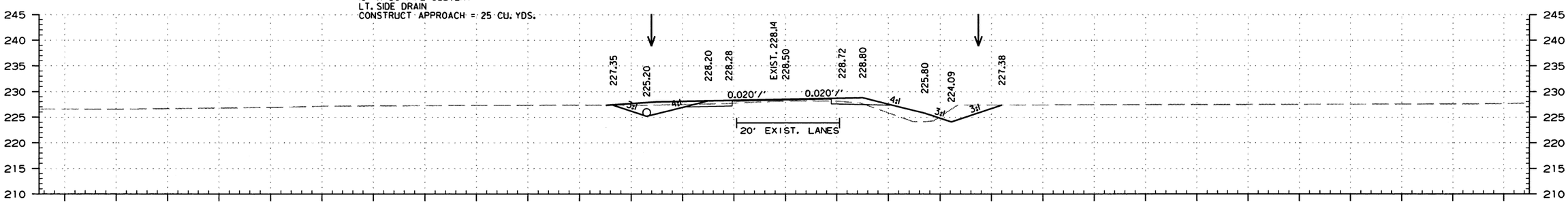
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	175	176

(2) CROSS SECTIONS - SITE 5

STA. 516+77 IN PLACE
12" x 22' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.



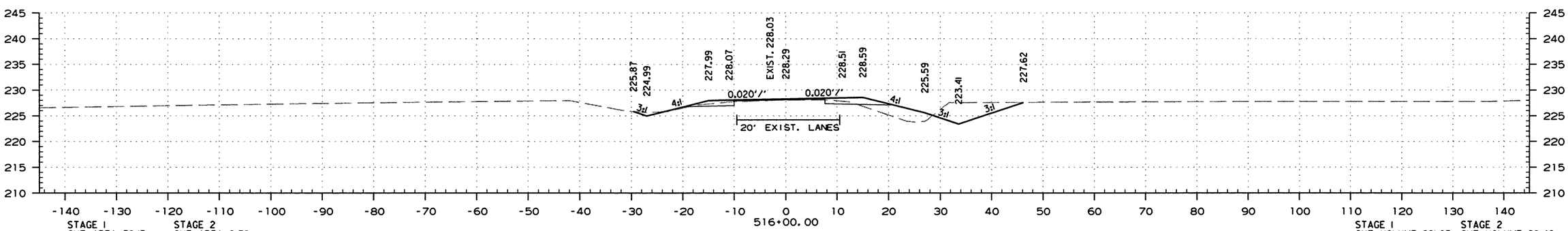
STAGE 1
CUT AREA 21.39
FILL AREA 19.70

STAGE 2
CUT AREA 4.15
FILL AREA 5.15

516+77.00

STAGE 1
CUT VOLUME 86.30
FILL VOLUME 60.73

STAGE 2
CUT VOLUME 19.29
FILL VOLUME 11.12



STAGE 1
CUT AREA 39.13
FILL AREA 22.89

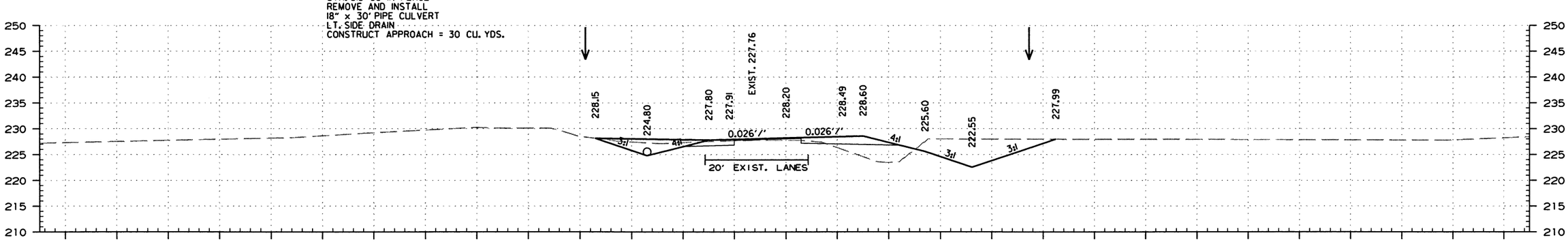
STAGE 2
CUT AREA 9.38
FILL AREA 2.65

516+00.00

STAGE 1
CUT VOLUME 221.05
FILL VOLUME 104.58

STAGE 2
CUT VOLUME 28.40
FILL VOLUME 9.27

STA. 515+03 IN PLACE
REMOVE AND INSTALL
18" x 30' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 30 CU. YDS.



STAGE 1
CUT AREA 85.93
FILL AREA 35.33

STAGE 2
CUT AREA 6.43
FILL AREA 2.51

515+03.00

STAGE 1
CUT VOLUME 9.40
FILL VOLUME 3.95

STAGE 2
CUT VOLUME 0.71
FILL VOLUME 0.29

STA. 515+03.00 TO STA. 516+77.00

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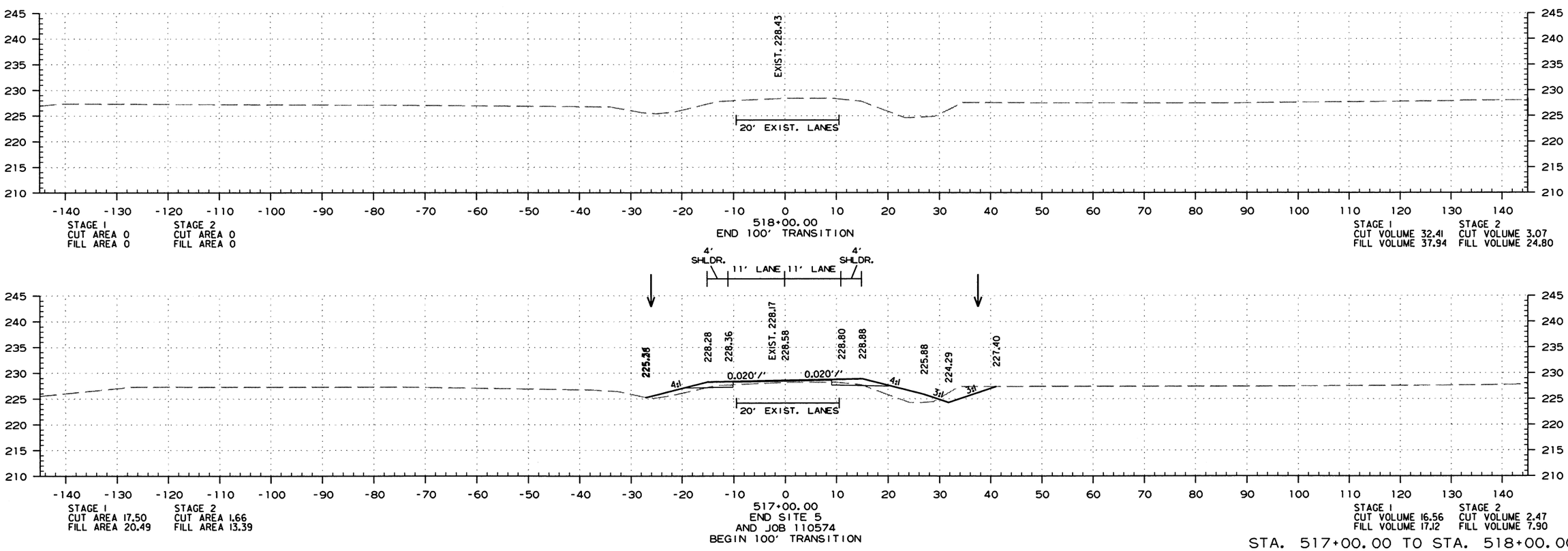
ZBORDER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110574	176	176

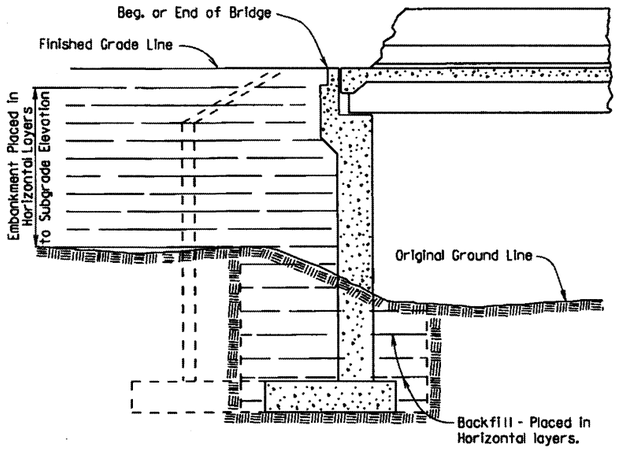
(2) CROSS SECTIONS - SITE 5



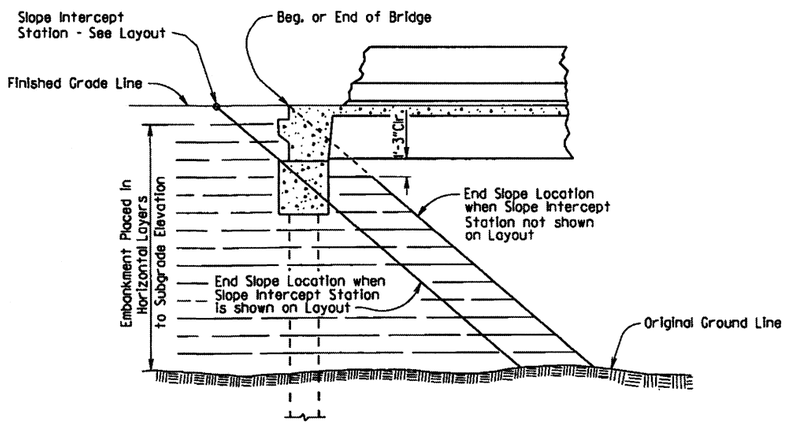
STA. 517+00.00 TO STA. 518+00.00

dwbc553 6/20/2019
ZBORDER.CEL

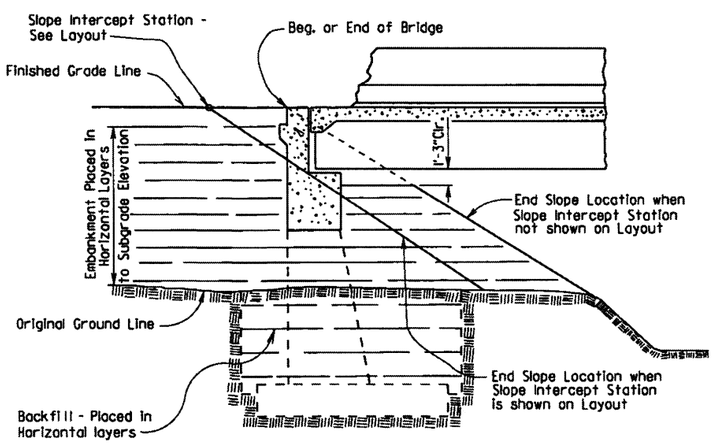
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1	EMBANKMENT & BACKFILL		55000	



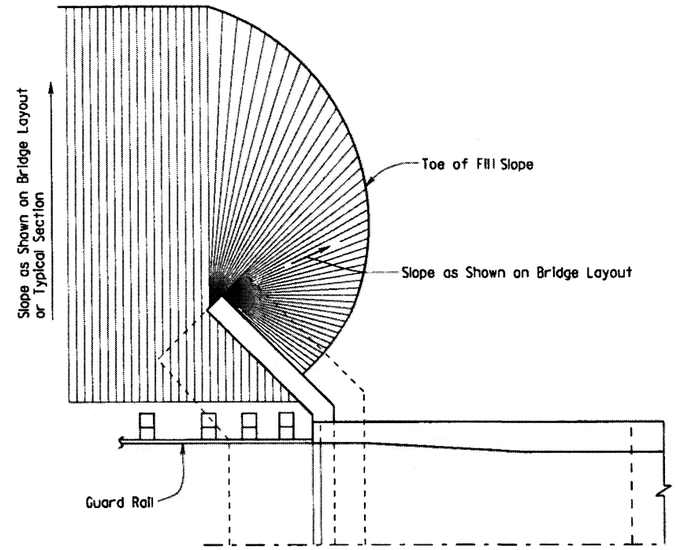
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



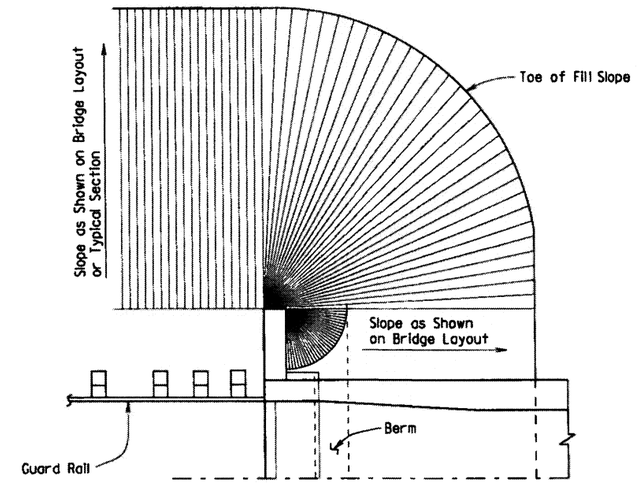
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



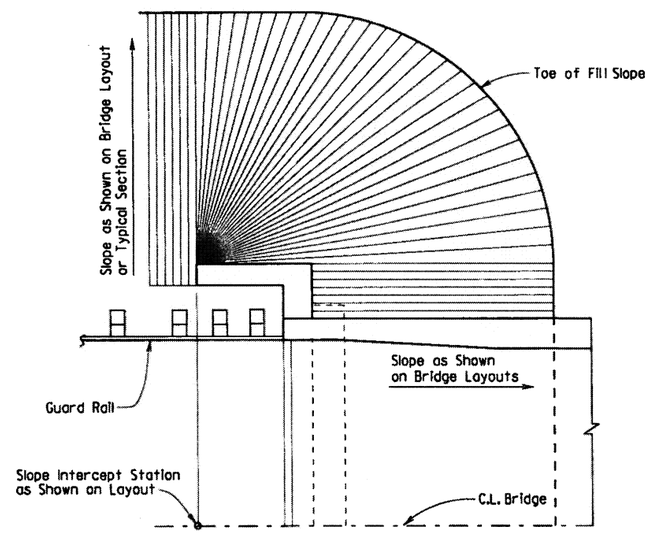
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



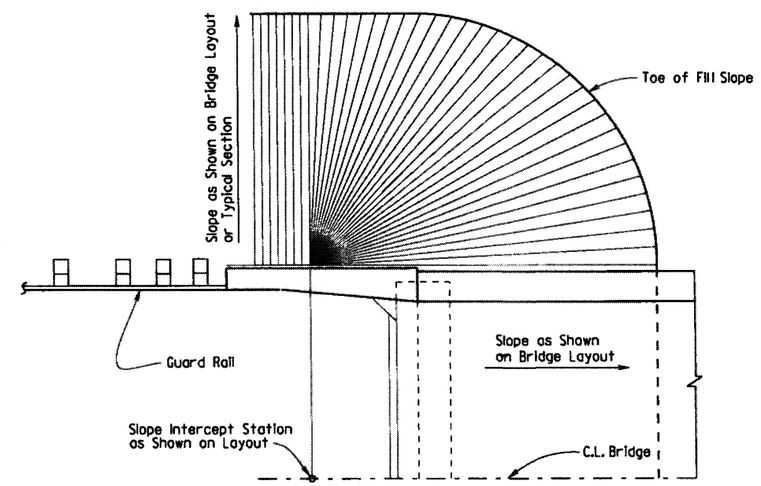
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH 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

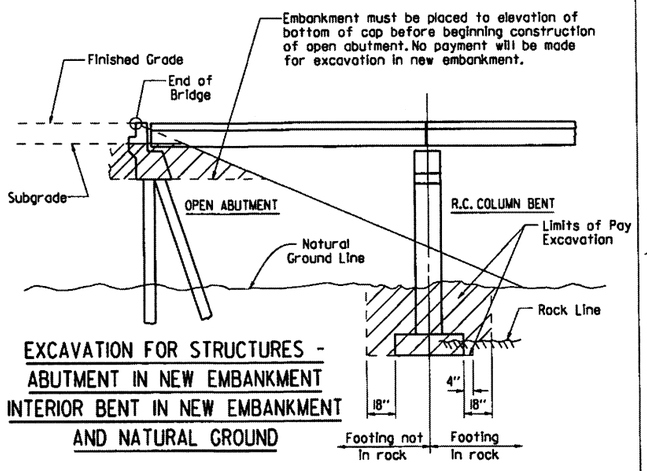
LITTLE ROCK, ARK.

DRAWN BY:	KDH	DATE:	2-27-2014	FILENAME:	b55000.dgn
CHECKED BY:	BEF	DATE:	2-27-2014	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:	-		

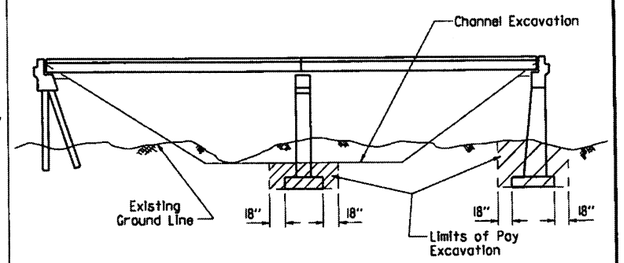
DRAWING NO. 55000

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

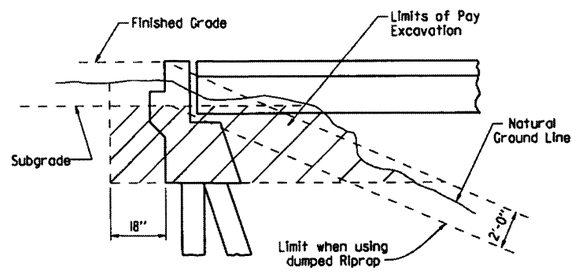
1 RIPRAP & EXCAV. 55001



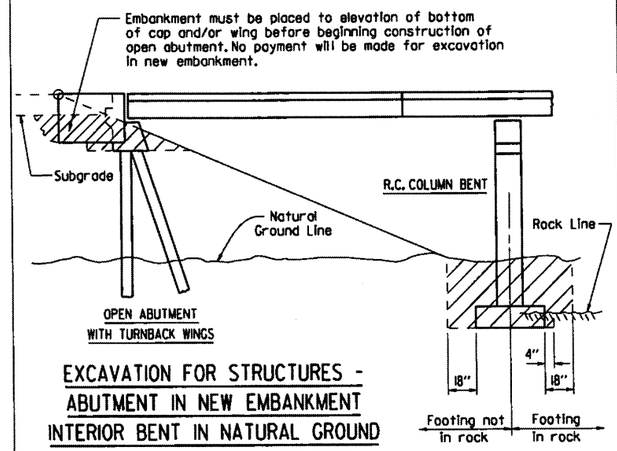
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



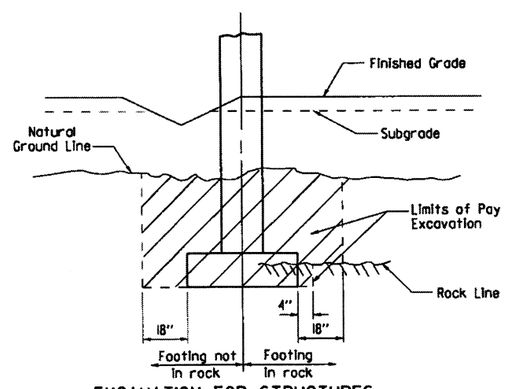
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



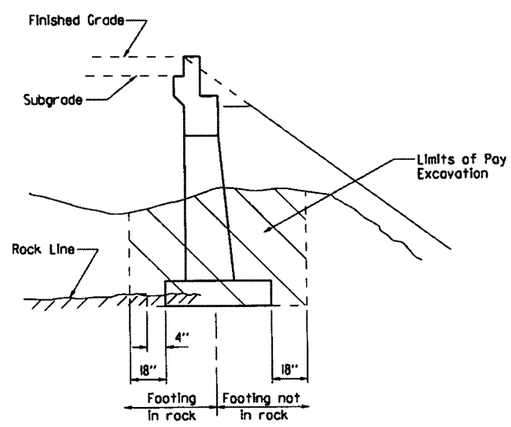
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



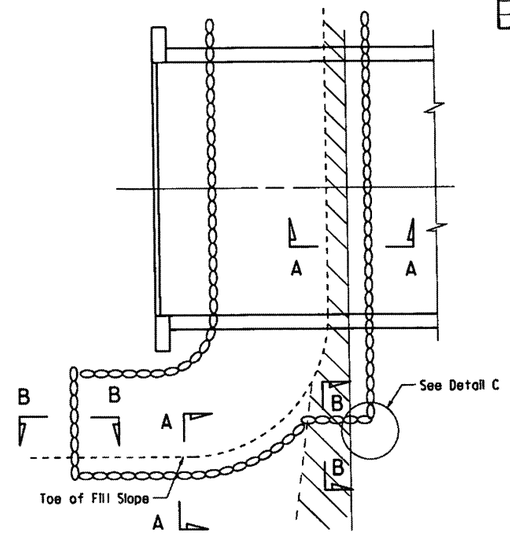
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



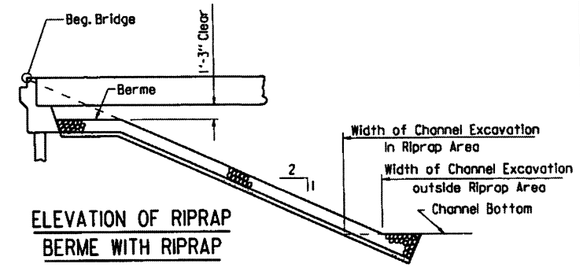
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



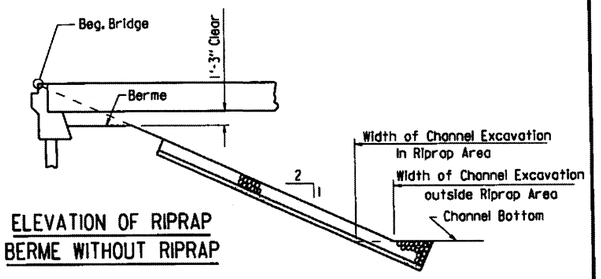
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



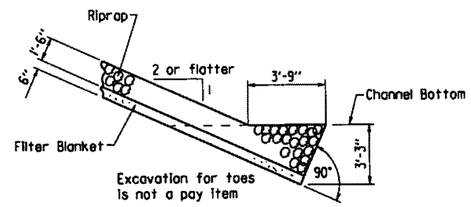
PLAN OF DUMPED RIPRAP



ELEVATION OF RIPRAP BERME WITH RIPRAP

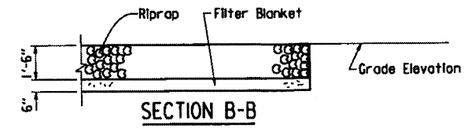


ELEVATION OF RIPRAP BERME WITHOUT RIPRAP

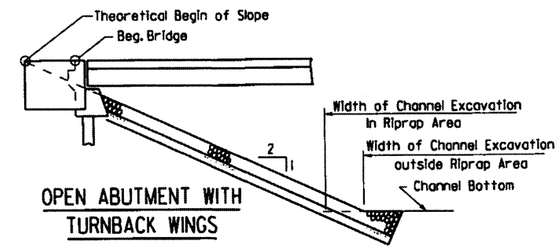


SECTION A-A

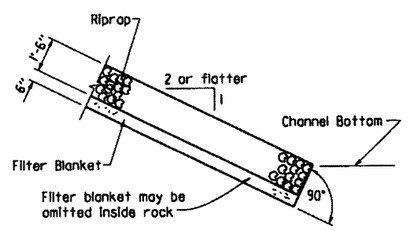
(Toe Excavation in Soil)



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



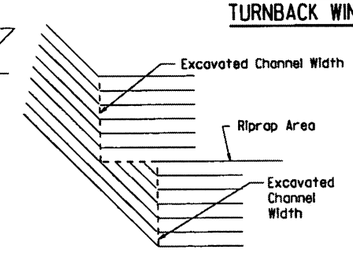
SECTION A-A

(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.



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:			

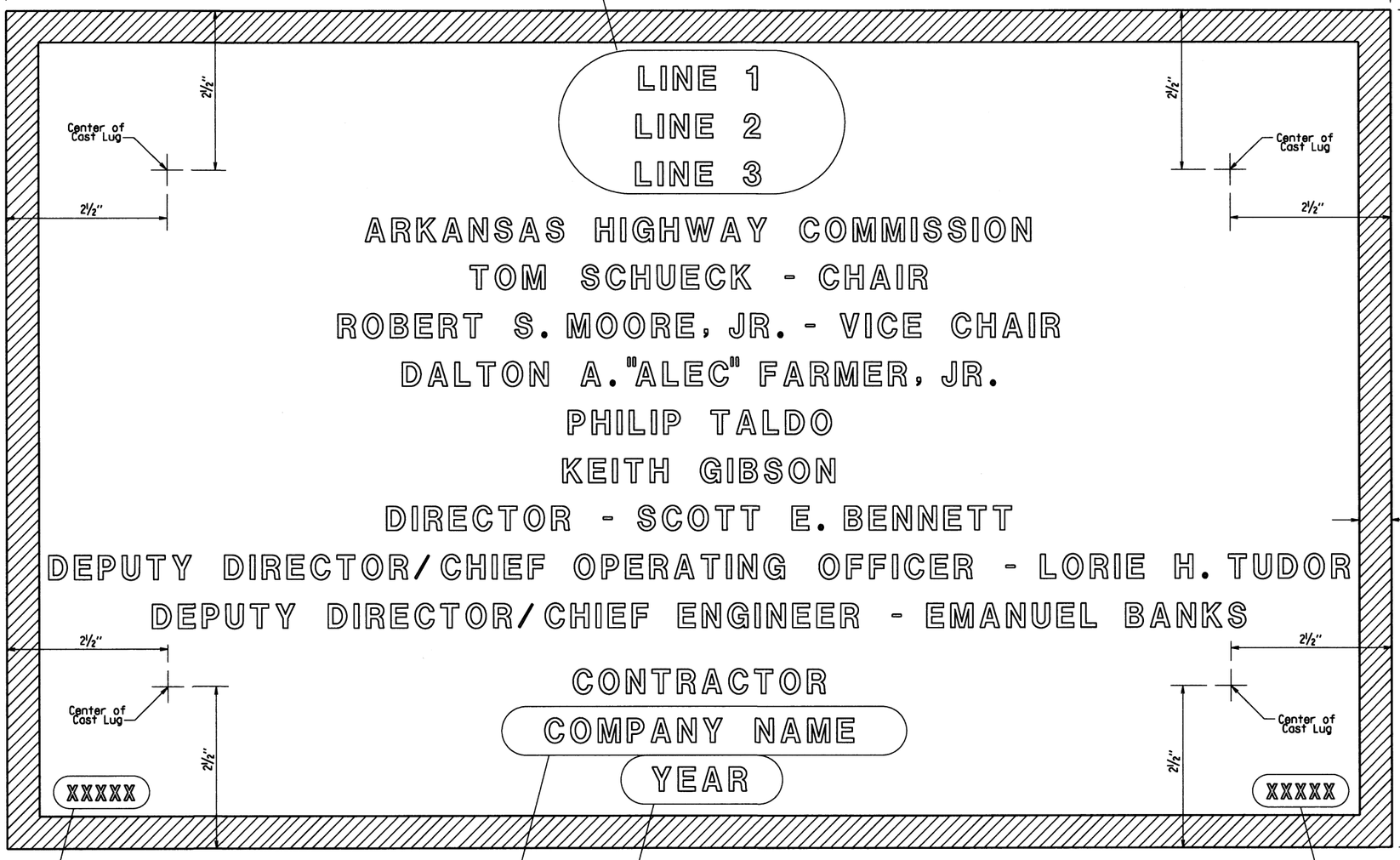
DRAWING NO. 55001

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

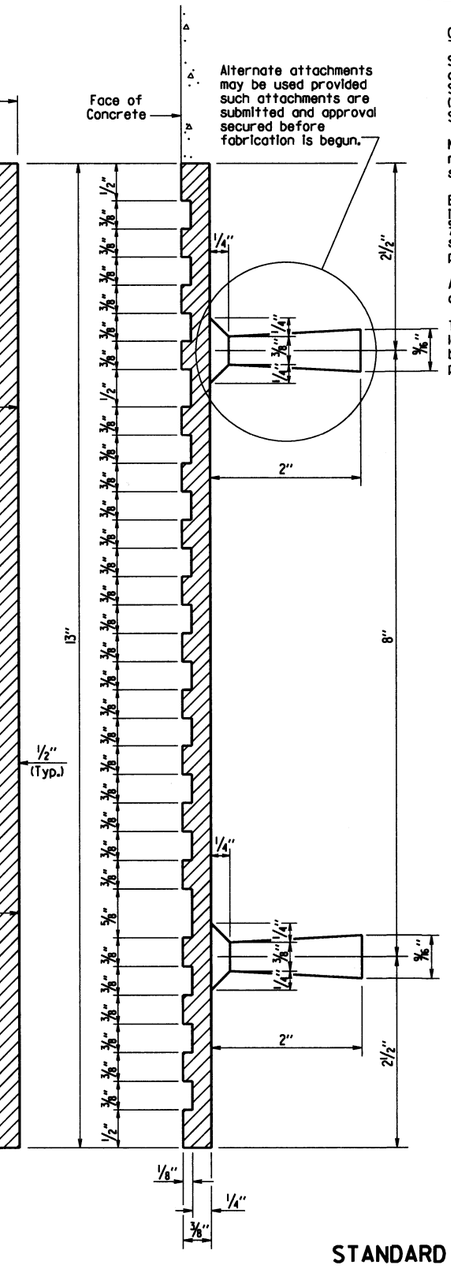
1 TYPE D NAME PLATE 55010

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.

4 Revised Chair and Vice Chair
Added New Commissioner
1-15-19 CGP Checked By: CRE

3 Added New Commissioner
1-17-17 KDH Checked By: CRE

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

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

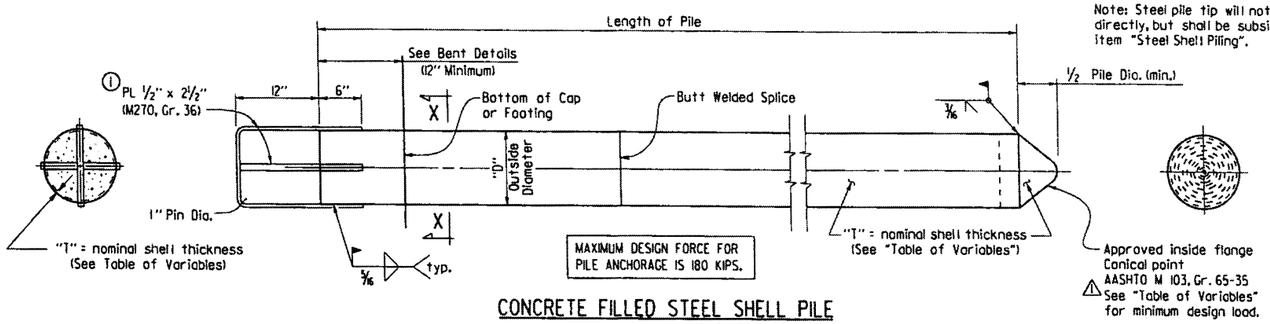
STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE

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
3/24/16				6	ARK.			
				JOB NO.				
				①	STEEL SHELL PILES		55021	

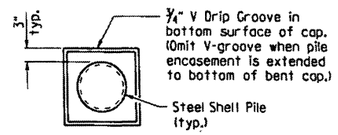


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

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

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

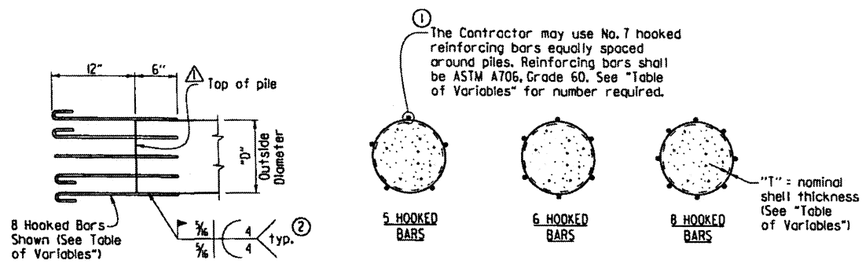
Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.)

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.

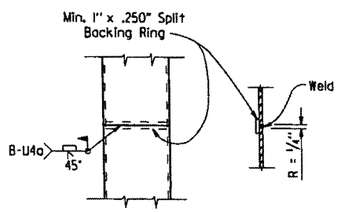
See Bridge Layout for size and estimated length of steel shell piles and for driving information.

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".

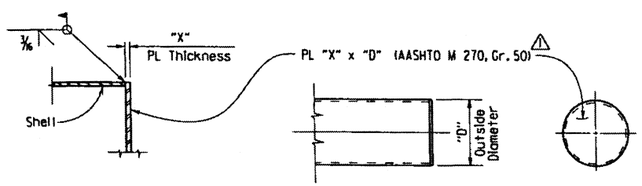


ALTERNATE PILE ANCHORAGE DETAIL

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



TYPICAL SPLICE DETAILS



PART SECTION

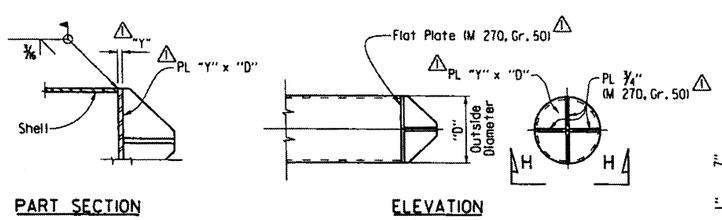
ELEVATION

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.

TABLE OF VARIABLES

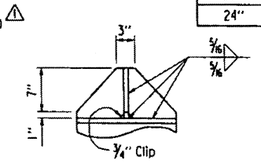
OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	PLATE THICKNESS "Y"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE	MINIMUM CONICAL TIP DESIGN LOAD (KIPS)
14"	0.50"	2 1/4"	1 1/2"	5	859
16"	0.50"	2 1/4"	1 1/2"	5	986
18"	0.50"	2 1/2"	1 1/2"	6	1,114
20"	0.50"	2 1/2"	1 3/4"	6	1,241
24"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



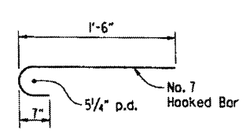
PART SECTION

ELEVATION

ALTERNATE VANED TIP DETAIL



VIEW H-H



HOOKED BAR DETAIL

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

GENERAL NOTES FOR PILE ENCASEMENTS:

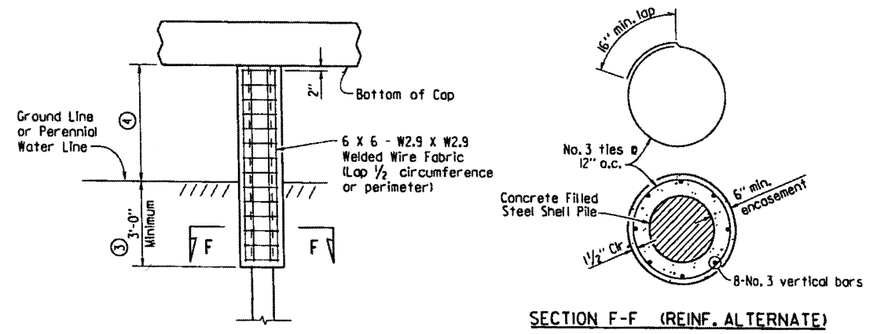
See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

Welded wire fabric shall conform to AASHTO M 55 or M 221.

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



SECTION F-F (REINF. ALTERNATE)

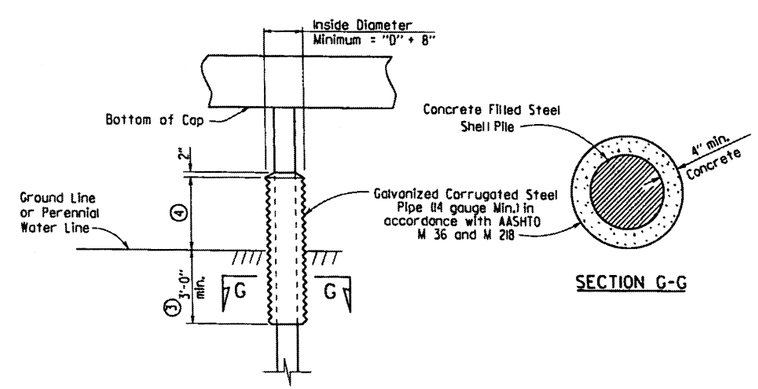
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

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.



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on March 24, 2016. This copy is not a signed and sealed document.

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

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

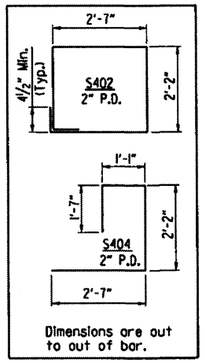
DRAWN BY:	A.M.S.	DATE:	2/27/2014	FILENAME:	b55021.dgn
CHECKED BY:	B.E.F.	DATE:	2/27/2014	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:	—		

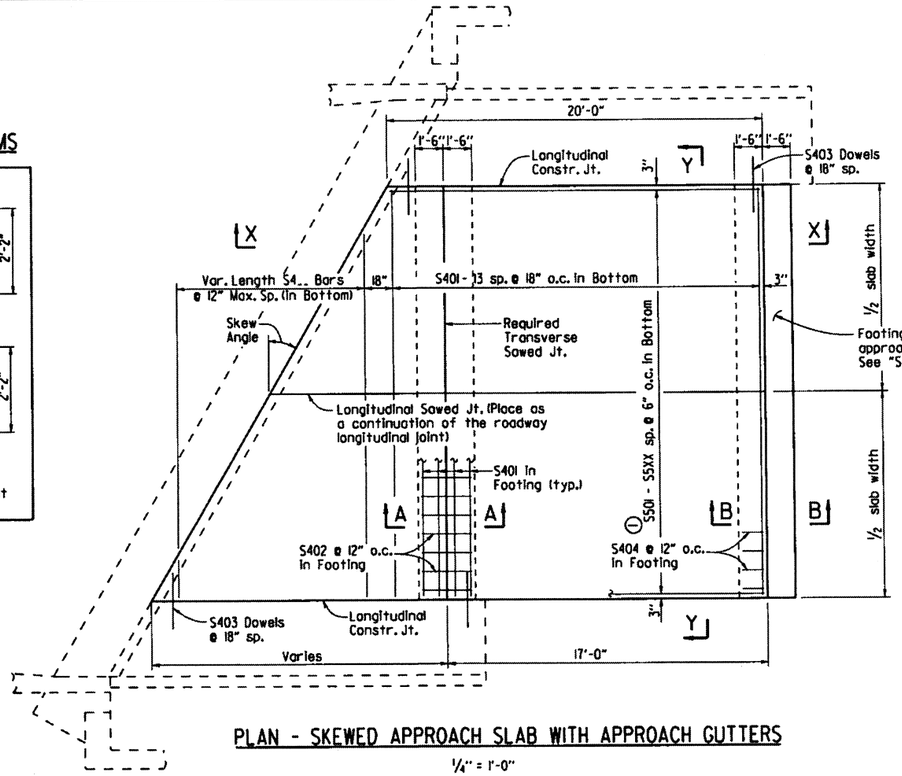
DRAWING NO. 55021

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

1 TYPE E APPROACH SLAB 55040E

BENDING DIAGRAMS





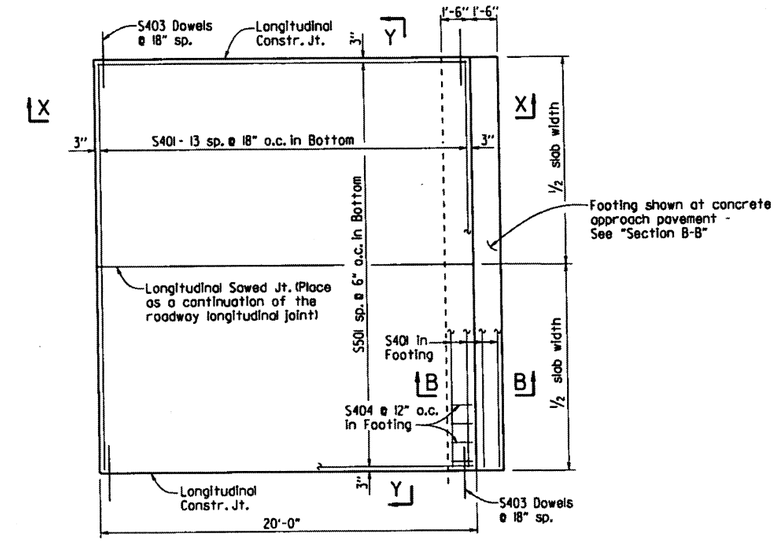
PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

¼" = 1'-0"

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

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

1 S5XX = S540 for 20'-0" Width
= S544 for 22'-0" Width
= S548 for 24'-0" Width
= S572 for 36'-0" Width



PLAN - SQUARE APPROACH SLAB

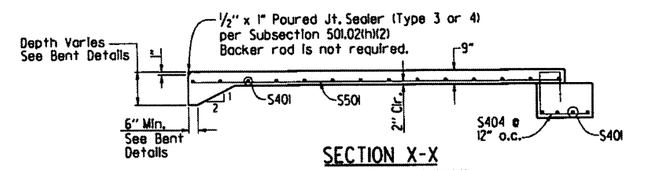
¼" = 1'-0"

BAR LIST

(Square & Skewed Approach Slabs)

	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
20'-0" Slab Width	S401	18	19'-8"	22	19'-8"
	S402	—	—	20	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	20	7'-2"	20	7'-2"
	S4..	—	—	1 Ea.	19.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	40	19'-8"	—	—
	S501 - S540	—	—	1 Ea.	19.6' + 0.25' (tan skew angle) to 19.6' + 19.75' (tan skew angle)
22'-0" Slab Width	S401	18	21'-8"	22	21'-8"
	S402	—	—	22	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	22	7'-2"	22	7'-2"
	S4..	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	19'-8"	—	—
	S501 - S544	—	—	1 Ea.	19.6' + 0.25' (tan skew angle) to 19.6' + 21.75' (tan skew angle)
24'-0" Slab Width	S401	18	23'-8"	22	23'-8"
	S402	—	—	24	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	24	7'-2"	24	7'-2"
	S4..	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	48	19'-8"	—	—
	S501 - S548	—	—	1 Ea.	19.6' + 0.25' (tan skew angle) to 19.6' + 23.75' (tan skew angle)
36'-0" Slab Width	S401	18	35'-8"	22	35'-8"
	S402	—	—	36	9'-10"
	S403	28	3'-0"	*	3'-0"
	S404	36	7'-2"	36	7'-2"
	S4..	—	—	1 Ea.	35.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	72	19'-8"	—	—
	S501 - S572	—	—	1 Ea.	19.6' + 0.25' (tan skew angle) to 19.6' + 35.75' (tan skew angle)

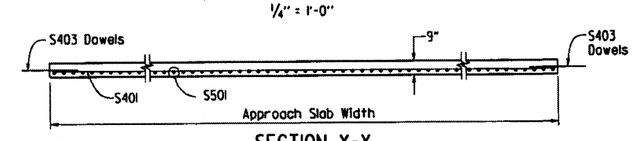
*Varies with skew angle



SECTION X-X

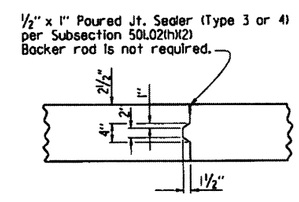
SQUARE APPROACH SLAB SHOWN

¼" = 1'-0"



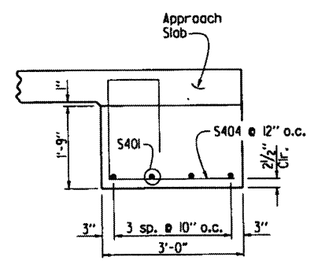
SECTION Y-Y

N.T.S.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

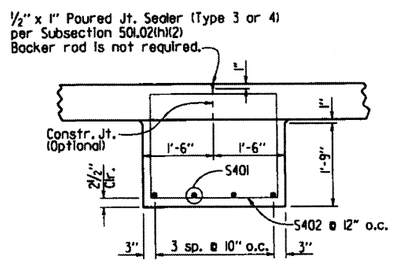
1" = 1'-0"



SECTION B-B

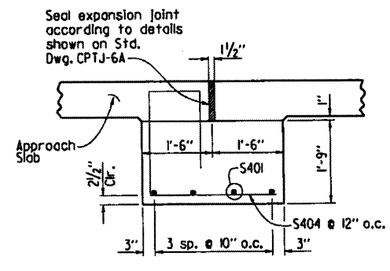
AT ASPHALT APPROACH PAVEMENT

N.T.S.



SECTION A-A

N.T.S.



SECTION B-B

AT CONCRETE APPROACH PAVEMENT

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
20'-0"	1210	15.60
22'-0"	1325	17.20
24'-0"	1440	18.70
36'-0"	2135	28.10

GENERAL NOTES

This drawing is for use with Reinforced Concrete Slab Spans in Seismic Performance Zones 2, 3 & 4 and for the maximum skew angles shown below:

20'-0" Slab Width: Maximum Skew Angle = 45°
22'-0" Slab Width: Maximum Skew Angle = 45°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

All concrete shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504.

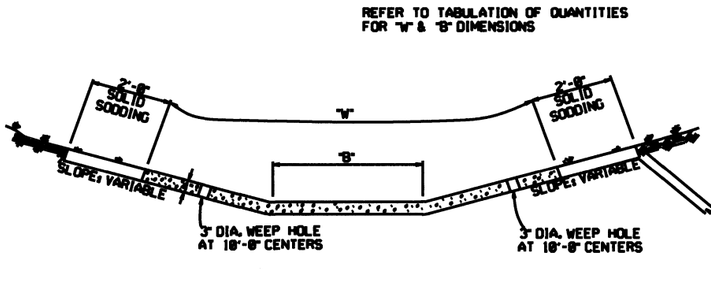
STANDARD DETAILS FOR TYPE E APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

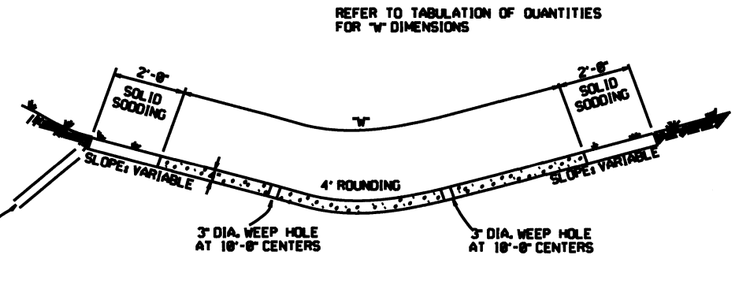
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040e.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

DRAWING NO. 55040E



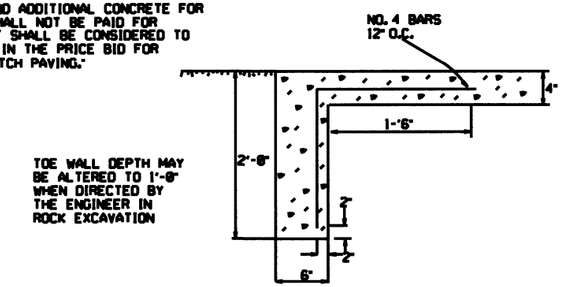
TYPE A



EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.

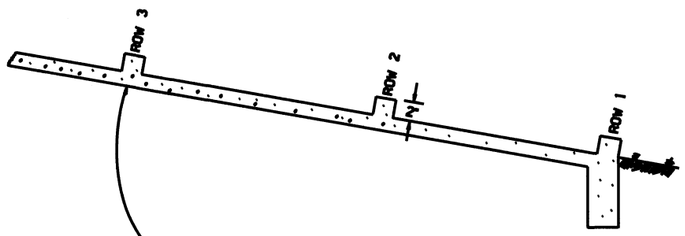
TYPE B

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."



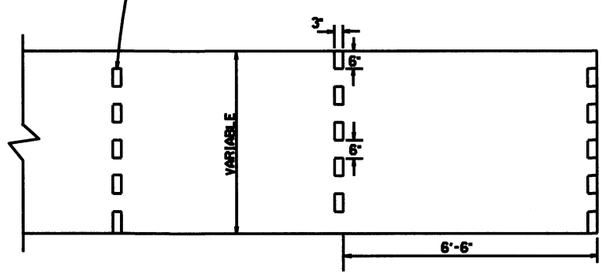
TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

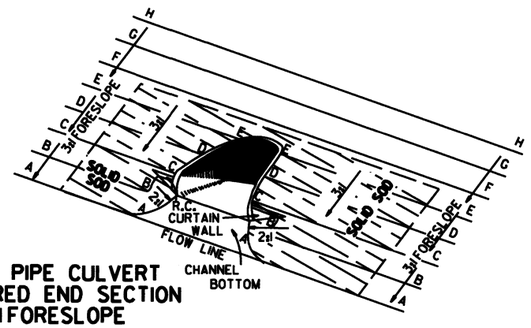
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-89	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-19-88	REVISED DISSIPATOR NOTE	583-7-19-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	642-1-9-87
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 TYPES A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

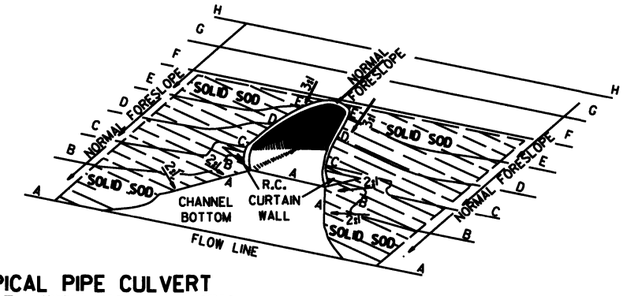
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

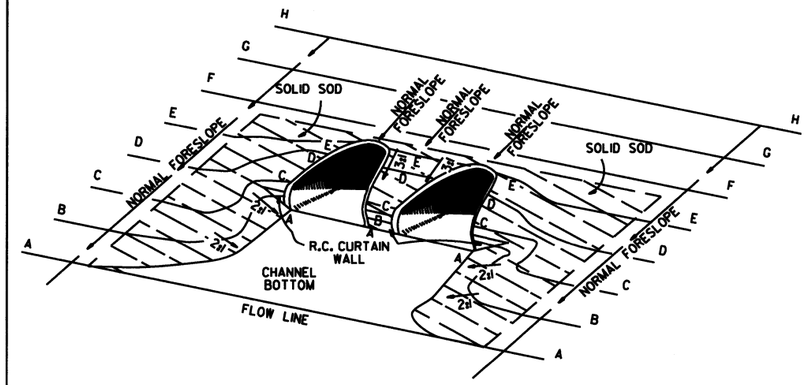
STANDARD DRAWING CDP-1



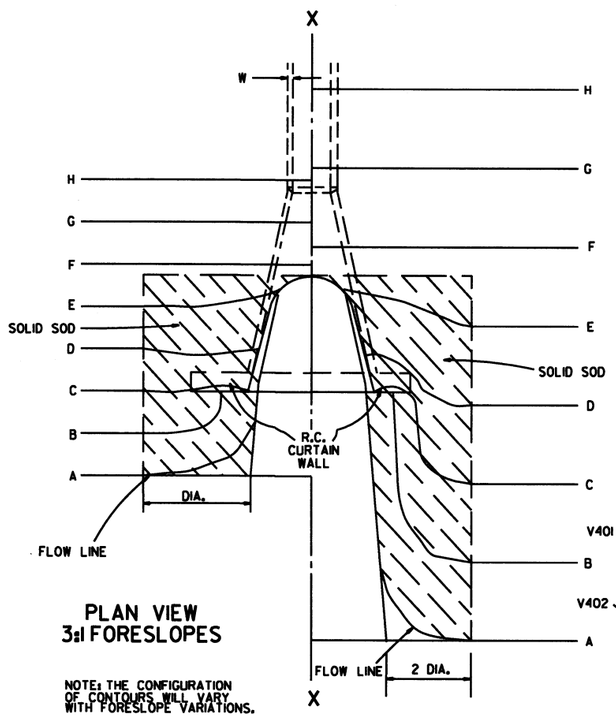
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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



PLAN VIEW
3:1 FORESLOPES

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

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

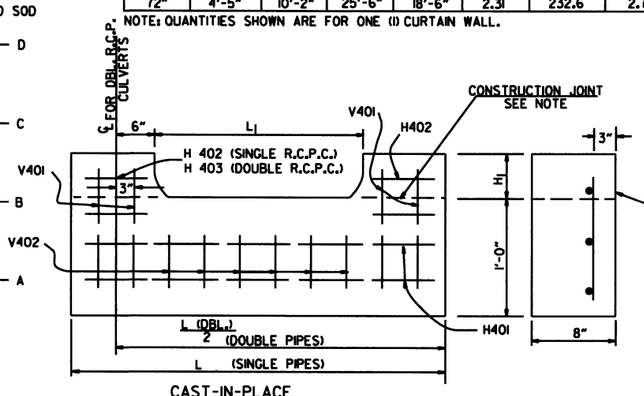
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	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

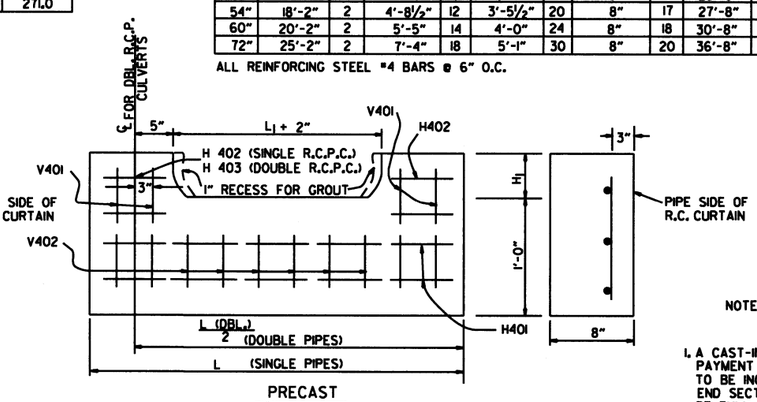
PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	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.



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

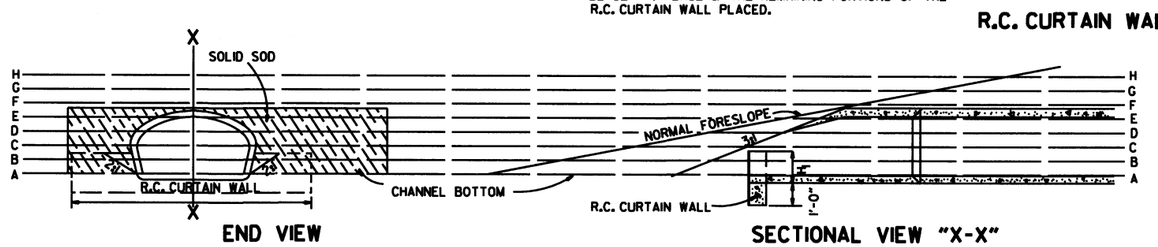
SOLID SODDING

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

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	
10-12-95	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

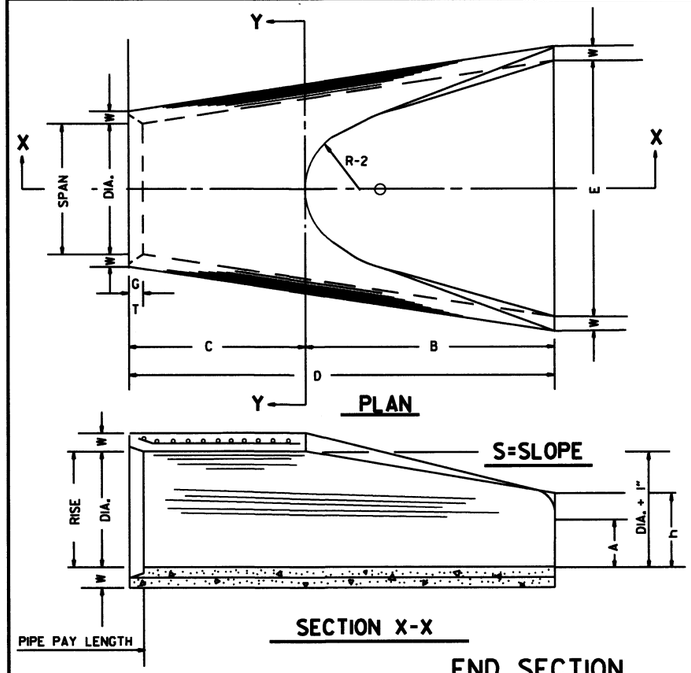


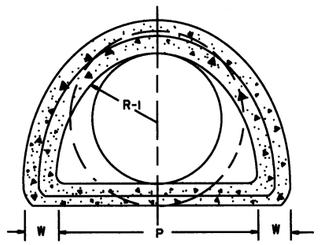
TABLE OF DIMENSIONS

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 5/16"	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'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47 15/16"	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 15/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 15/16"	38 15/16"	24"	5"	13250	4'-6"

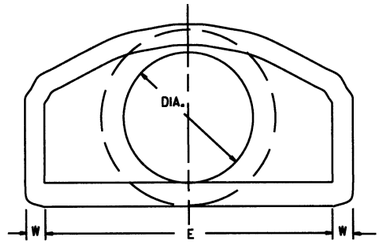
ARCH PIPE

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"	½"	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 5/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3¼"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 15/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54 5/16"	22"	3¼"	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 15/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 15/16"	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.



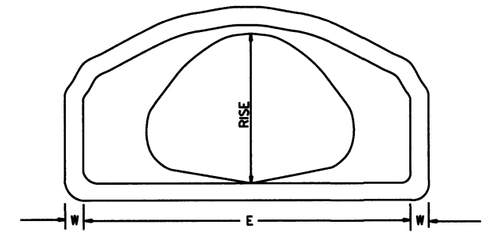
SECTION Y-Y



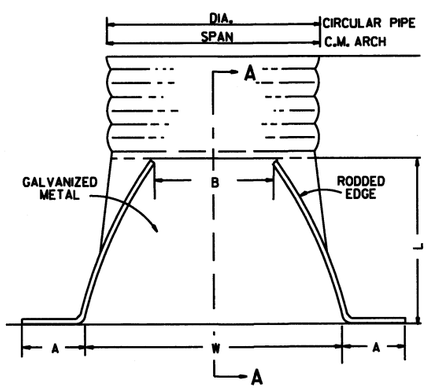
END VIEW

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

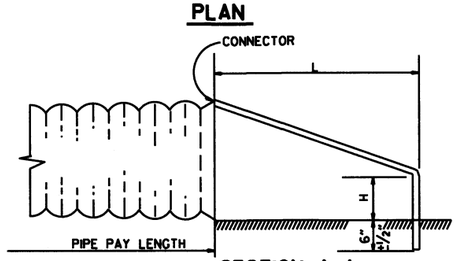
END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS



END VIEW
CONCRETE ARCH PIPE

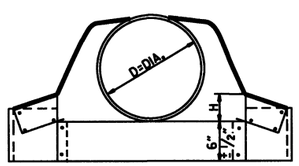


PLAN

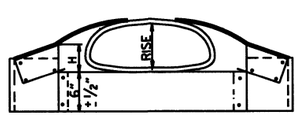


SECTION A-A

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



C.M. ARCH PIPE

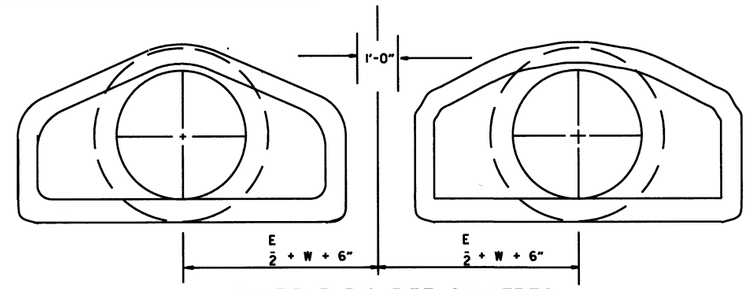
CIRCULAR PIPE

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

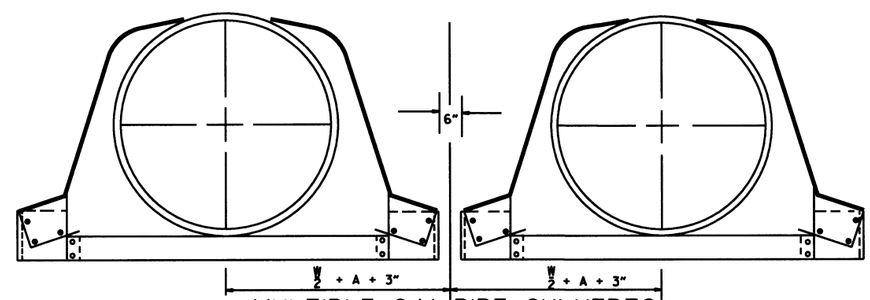
C.M. ARCH PIPE

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



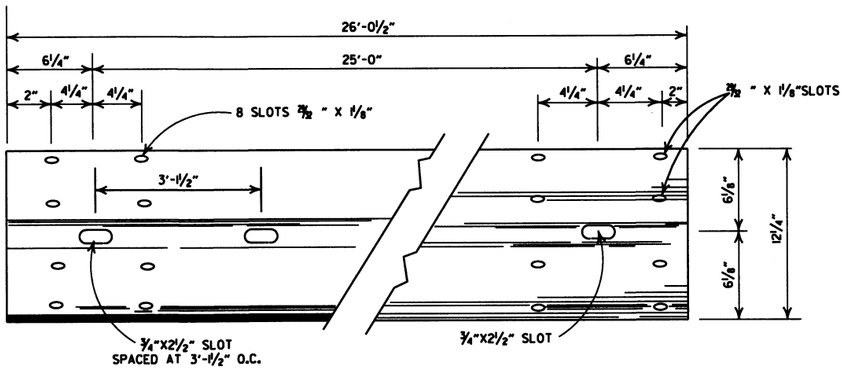
MULTIPLE C.M. PIPE CULVERTS

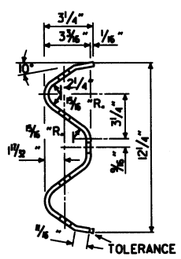
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73
10-2-72	REVISED AND REDRAWN	760-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

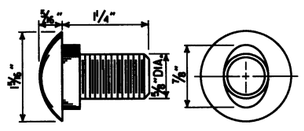
STANDARD DRAWING FES-2



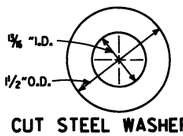


DETAILS OF W-BEAM GUARD RAIL

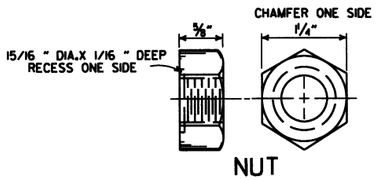
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



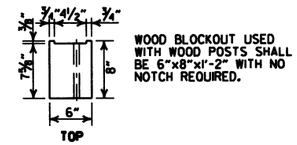
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



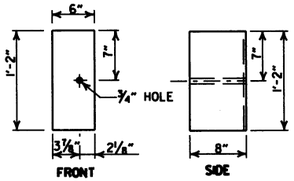
CUT STEEL WASHER



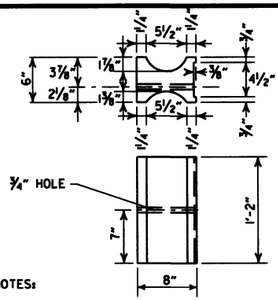
NUT



WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.



WOOD BLOCKOUT (W-BEAM)

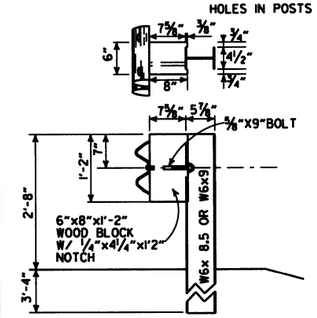


NOTES:

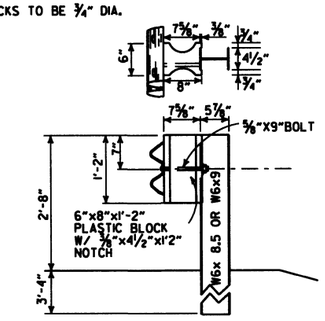
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.

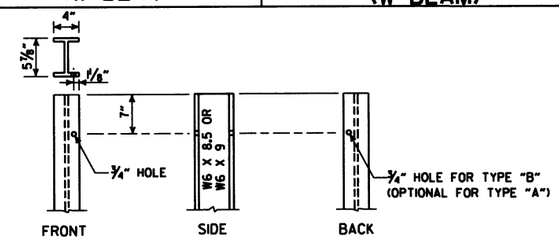


WOOD BLOCKOUT CONNECTIONS

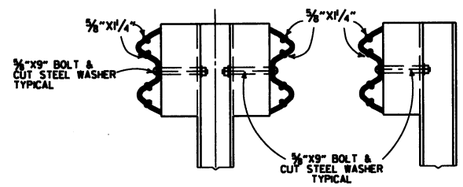


PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

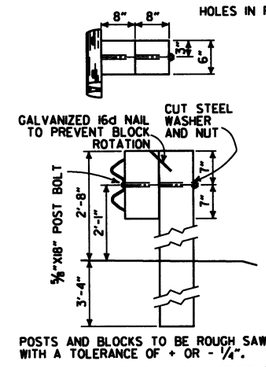


STEEL POST



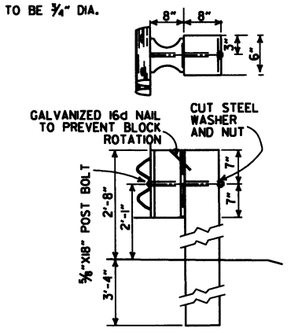
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

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

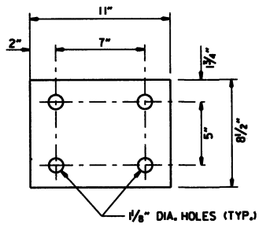
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

DATE	REVISION	FILMED
11-16-17	REVISED GENERAL NOTES AND RAISED GUARD RAIL HEIGHT 3"	
07-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
03-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
01-12-00	ADDED PLASTIC BLOCKOUT	
08-12-98	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	
04-03-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
06-02-94	ADDED ALT. STEEL POST SIZE	
08-05-93	REVISED STEEL POST SIZE	8-5-93
10-01-92	REDRAWN & REVISED	10-1-92
08-15-91	REVISED WASHER NOTE	8-15-91
08-02-90	REV. GEN. NOTE & DEPTH OF ANC. POST IN ROCK	8-2-90
07-15-88	REVISED SECTION 3 & GENERAL NOTES	
03-04-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-09-87	REDRAWN & REVISED	802-10-9-87

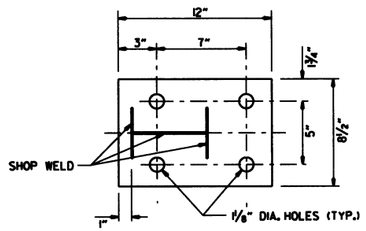
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8

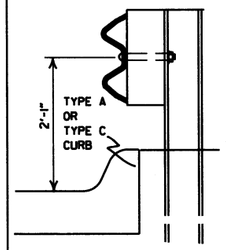


WASHER PLATE



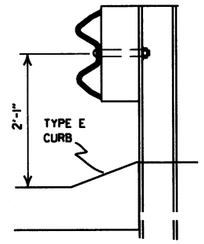
BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.



FOR DESIGN SPEEDS OF 50 MPH OR LESS

ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

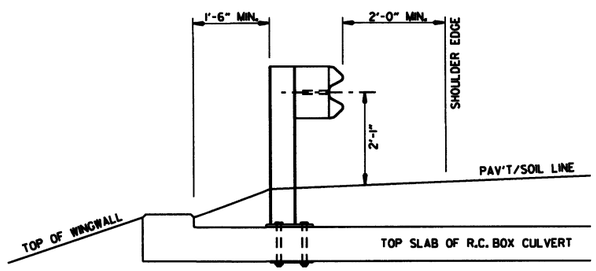


FOR DESIGN SPEEDS OF 55 MPH OR MORE

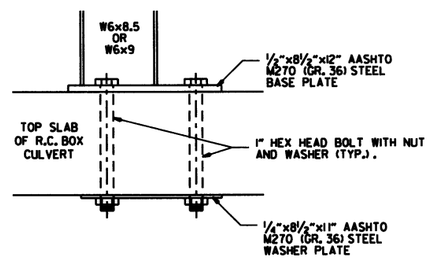
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

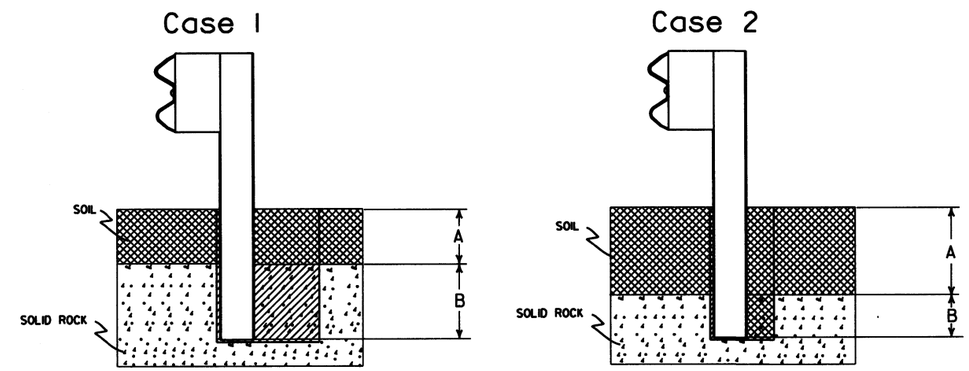
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A

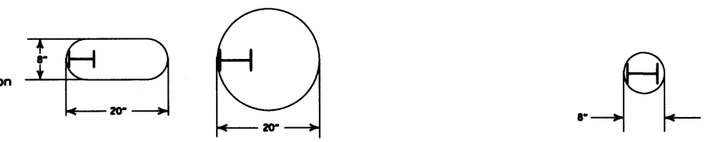


DETAIL OF CONNECTION



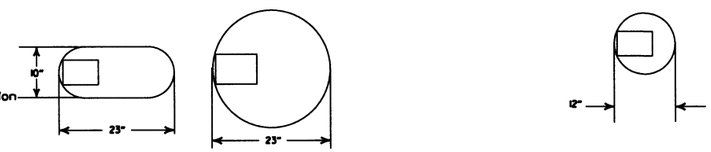
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

Either hole configuration acceptable



Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

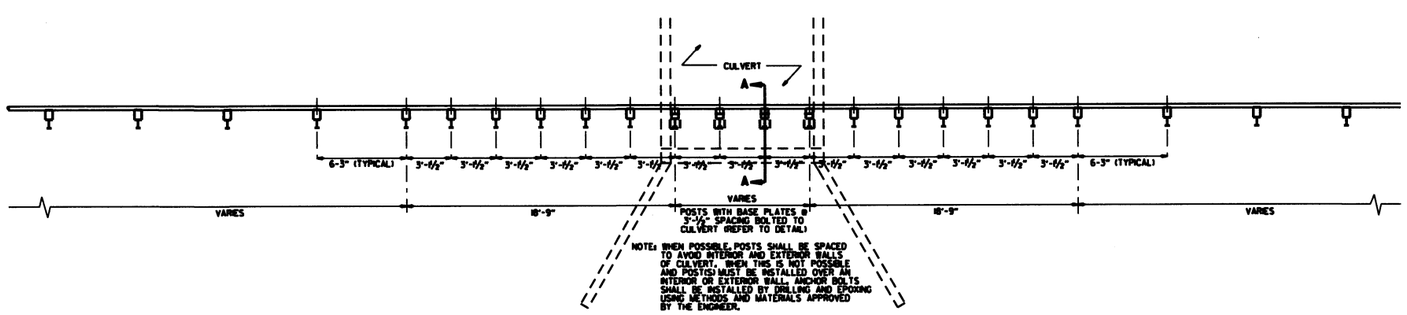
Zone A:
Backfill according to Section 617.03(a).

Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B:
Backfill according to Section 617.03(a).

DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

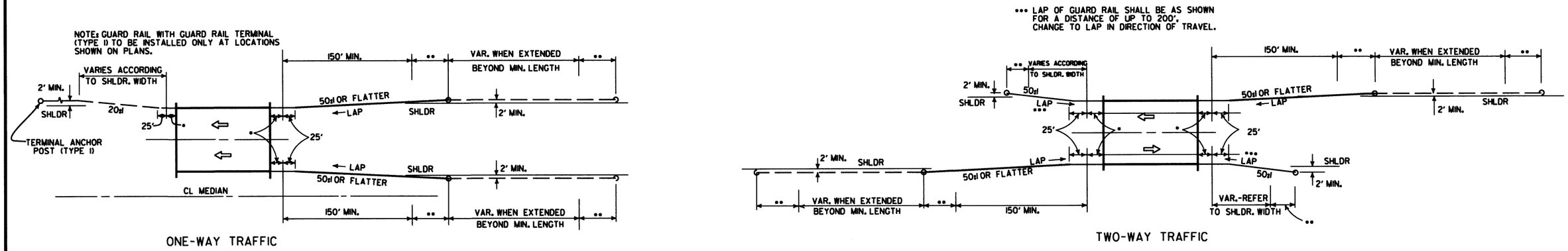
NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD. DWG. GR-8.

DATE	REVISION	FILMED
11-16-17	REVISED GUARD RAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
04-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADDED DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV'T., DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POSTPLACE. IN SOLID ROCK	
04-03-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
06-02-94	REVISED ALTERNATE POST SIZE	
08-05-93	REVISED STEEL POST SIZE	
10-01-92	REDRAWN & REVISED	10-1-92
06-02-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
07-15-88	CONFORMED TO 1988 SPECS	
03-04-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-09-87	REDRAWN & REVISED	803-10-9-87

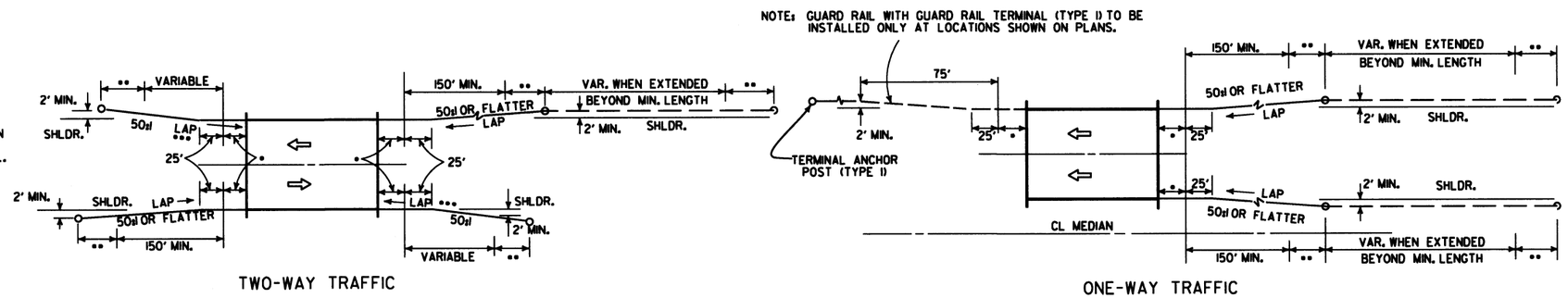
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8A

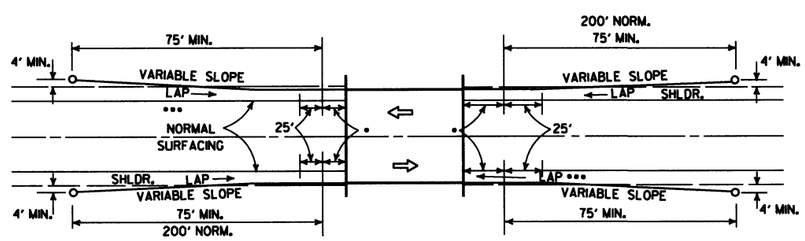


METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)



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

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



LEGEND

- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

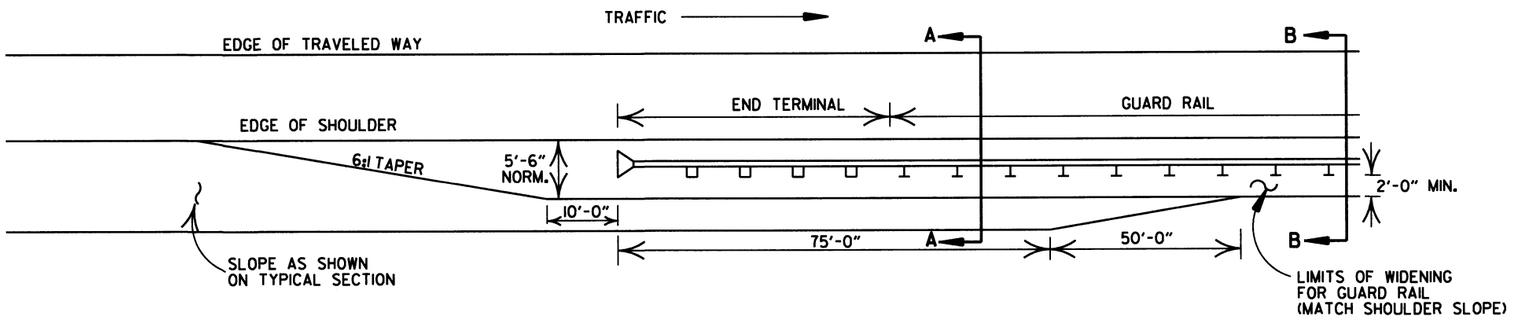
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

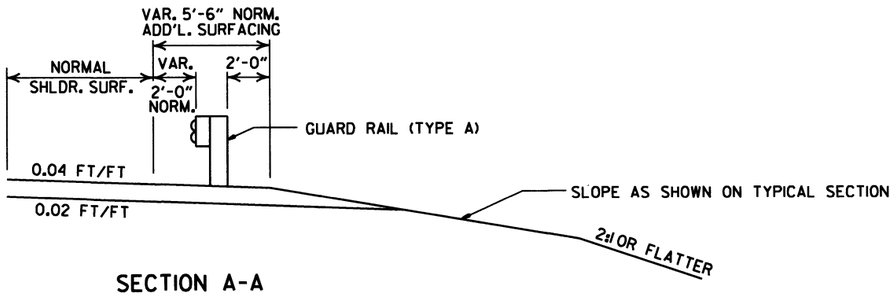
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

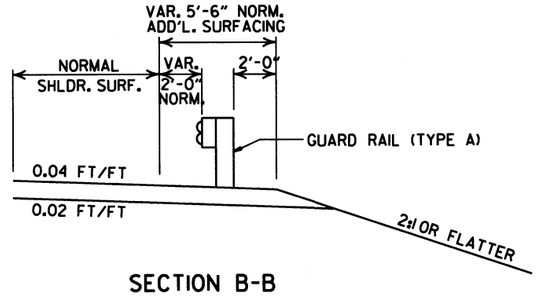
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





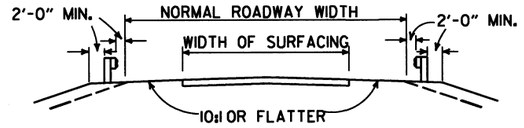
SECTION A-A



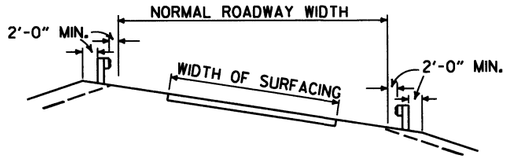
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.

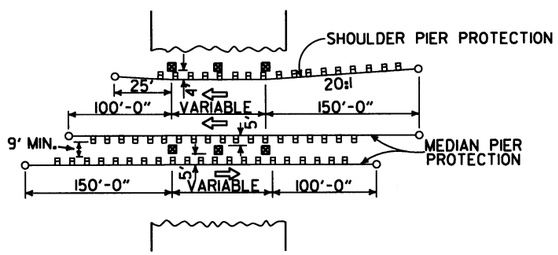


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



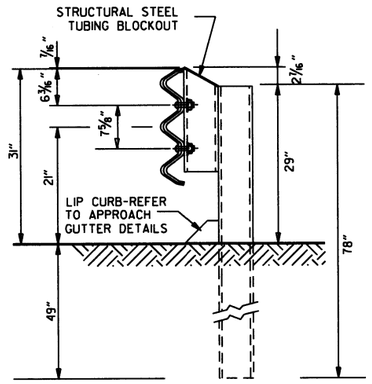
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

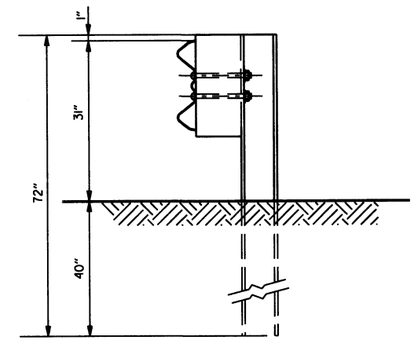
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

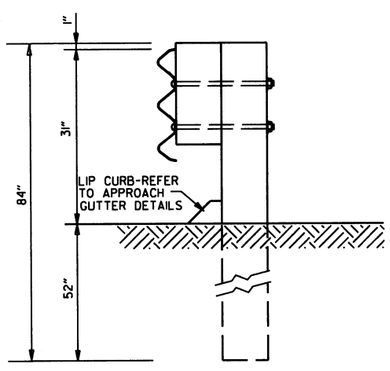
STANDARD DRAWING GR-9A



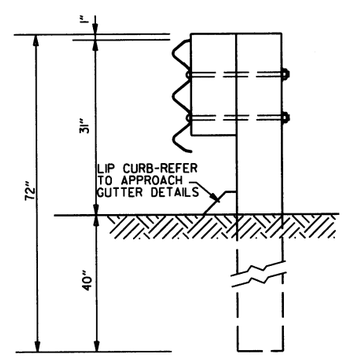
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



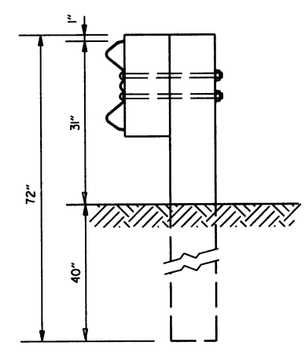
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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



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



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

GENERAL NOTES:

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

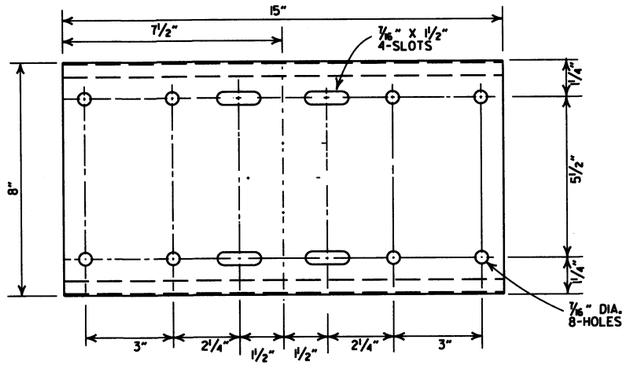
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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

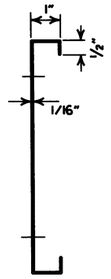
ARKANSAS STATE HIGHWAY COMMISSION

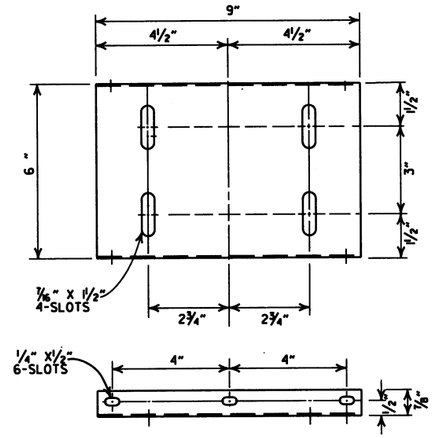
GUARD RAIL DETAILS

STANDARD DRAWING GR-11

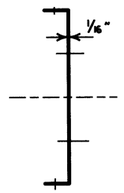


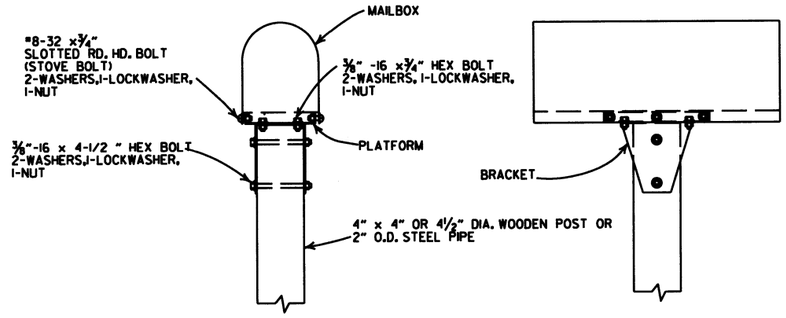
SHELF



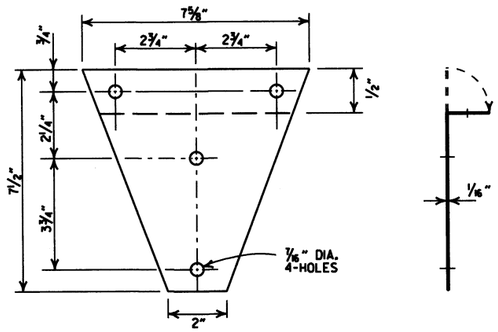


PLATFORM





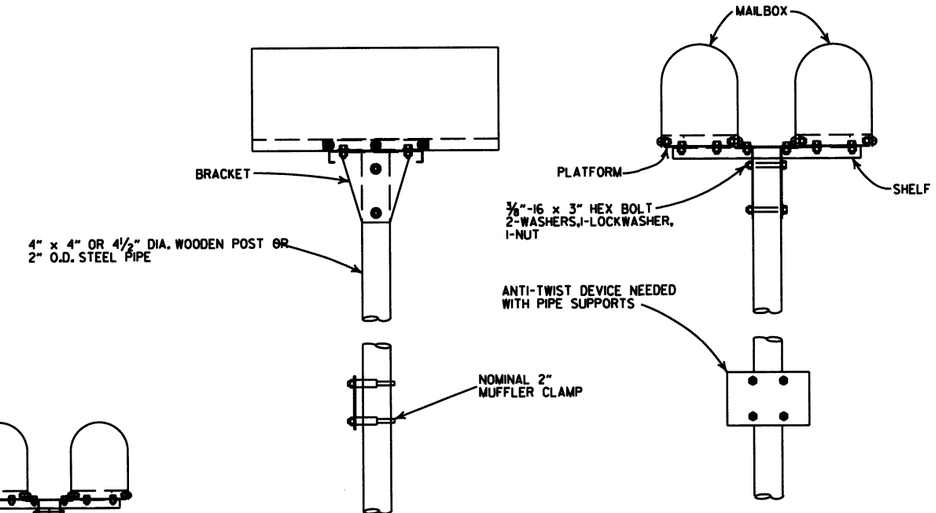
SINGLE INSTALLATION



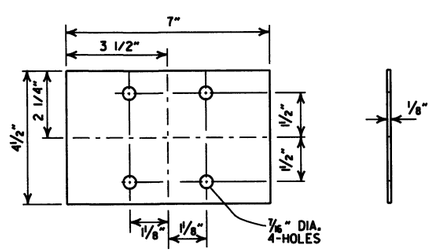
BRACKET

GENERAL NOTES

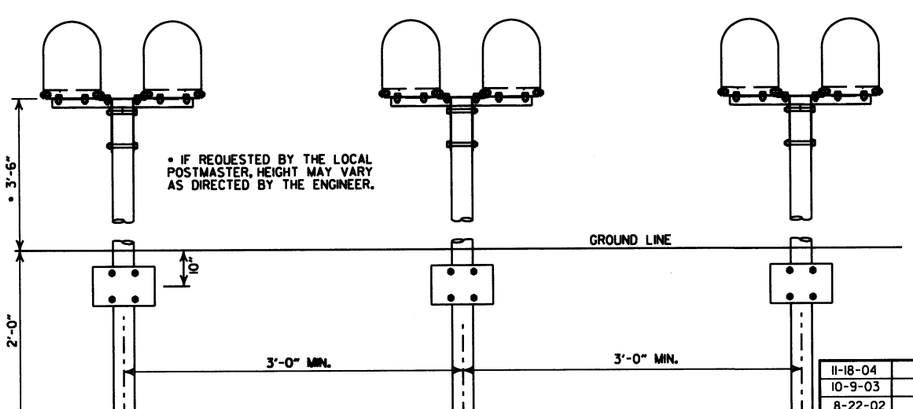
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED 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.



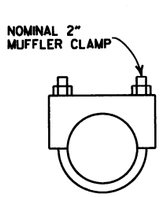
DOUBLE INSTALLATION



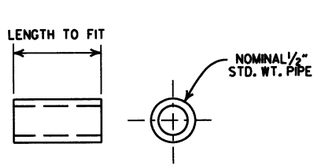
ANTI-TWIST PLATE



SPACING FOR MULTIPLE POST INSTALLATION



CLAMP



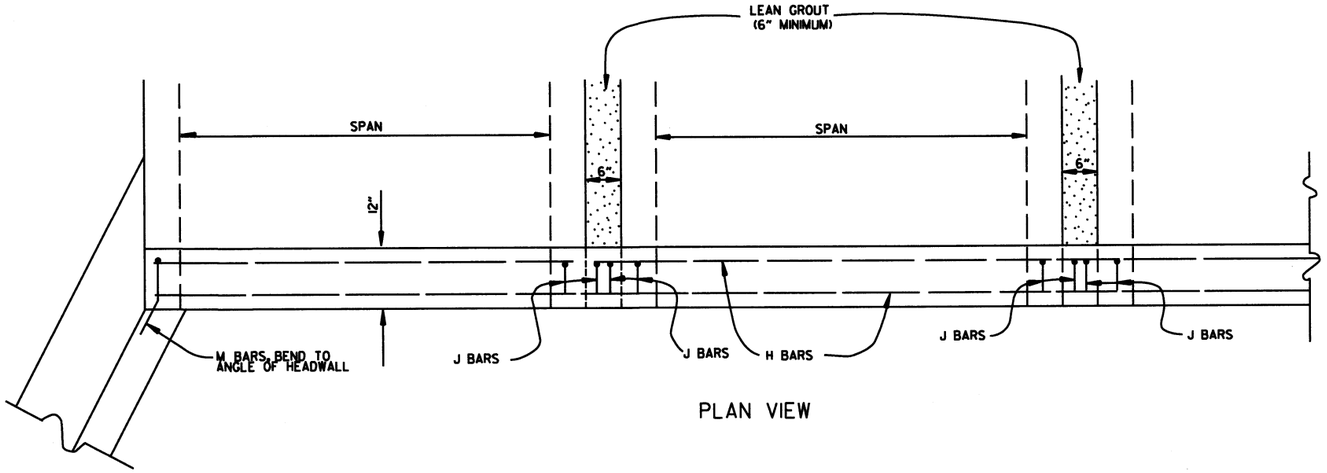
SPACER

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

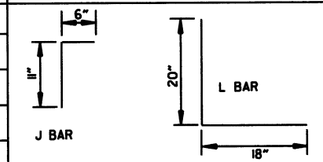
STANDARD DRAWING MB-1



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.

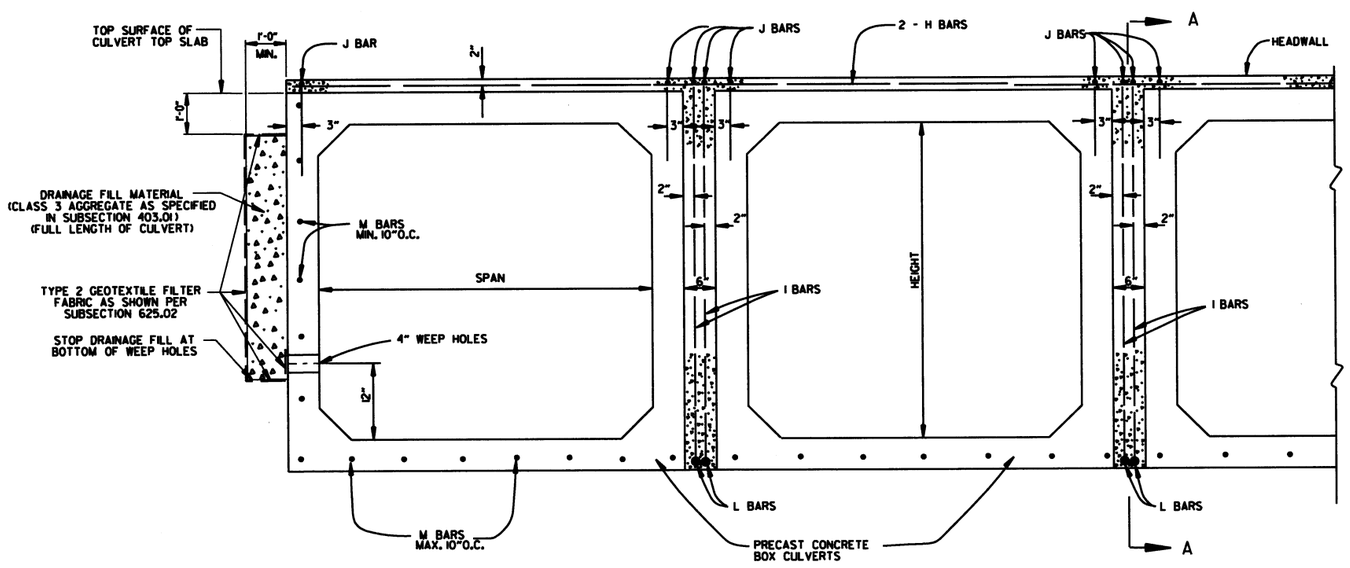
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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.

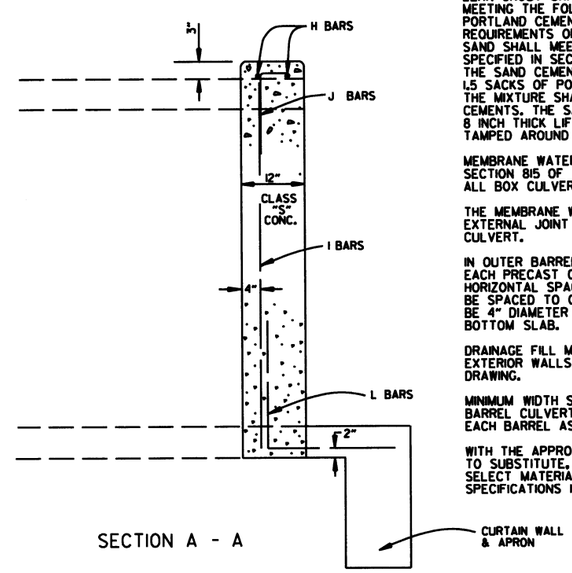
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

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	31 5/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

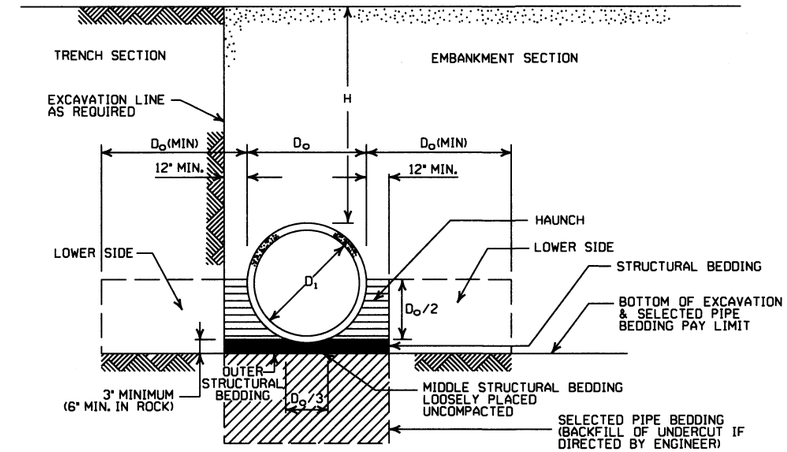
- LEGEND -

D_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.

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.

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."

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
		2⅔ 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: MIN. THICKNESS REQUIRED INCHES	STEEL: ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	STEEL: MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM: MIN. THICKNESS REQUIRED INCHES	ALUMINUM: ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM: MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2⅔ 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 TYPE 2	INSTALLATION TYPE 1	INSTALLATION TYPE 2	INSTALLATION 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

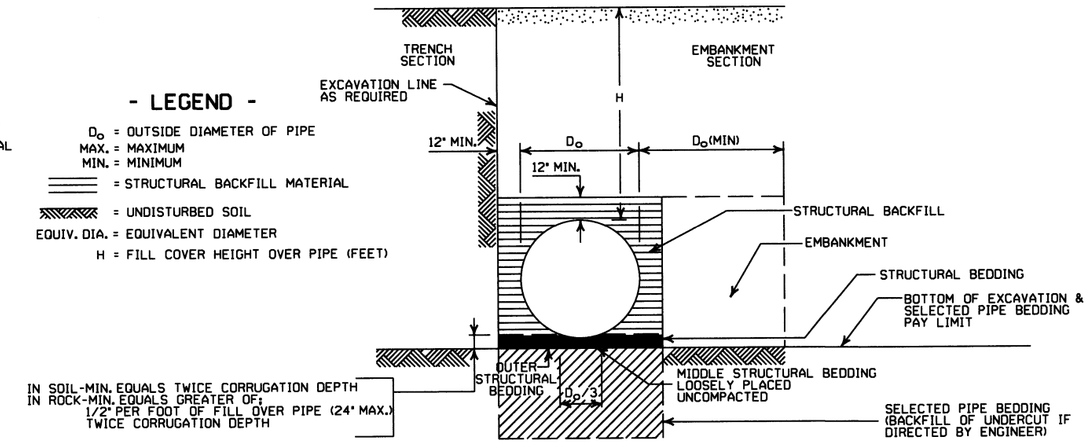
③ SM-3 WILL NOT BE ALLOWED.

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.

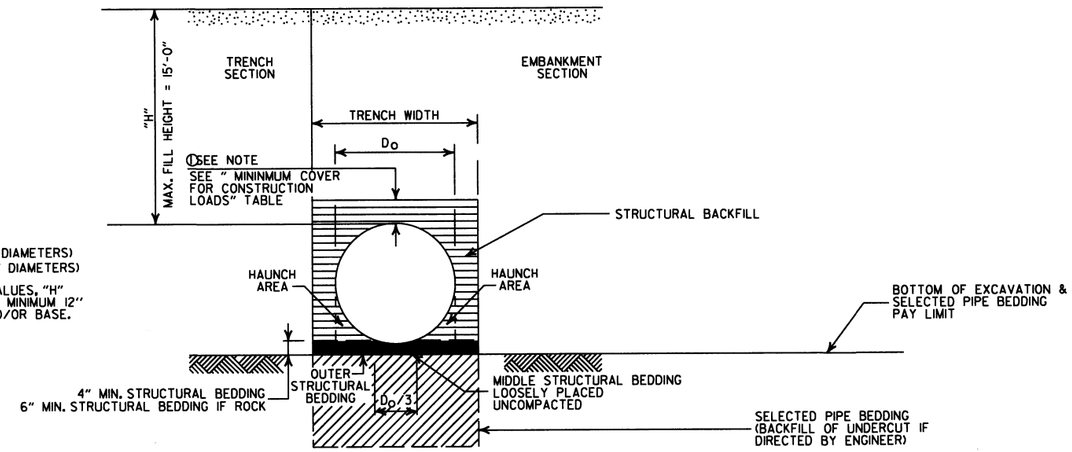
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

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.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS 18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
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

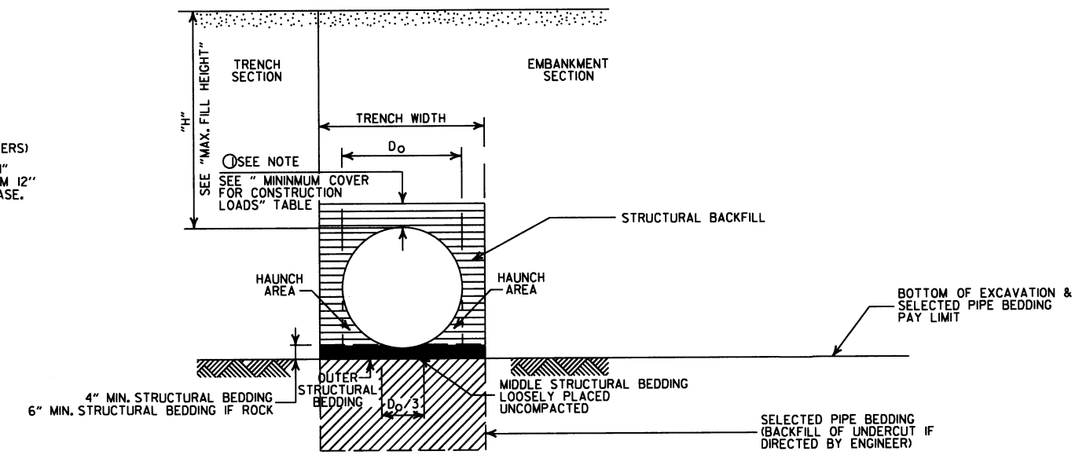
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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	

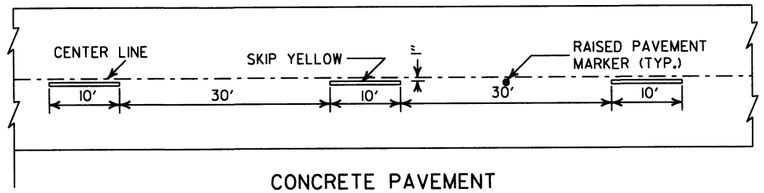
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

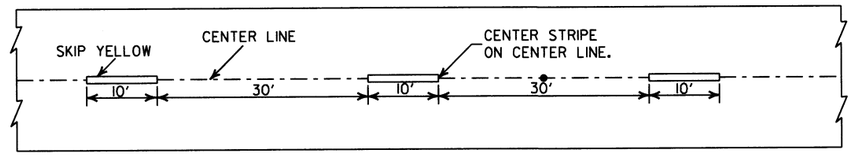
STANDARD DRAWING PCP-2

NOTES:

1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.

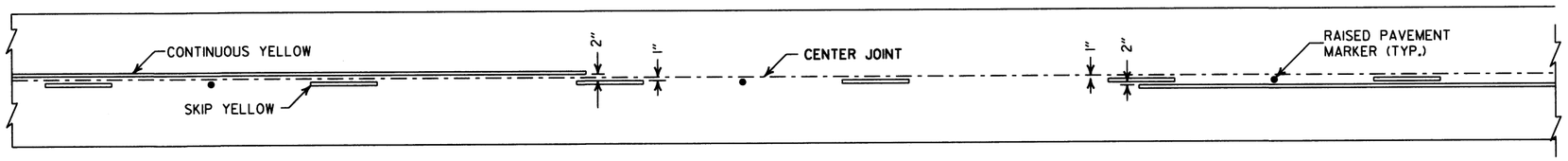


CONCRETE PAVEMENT

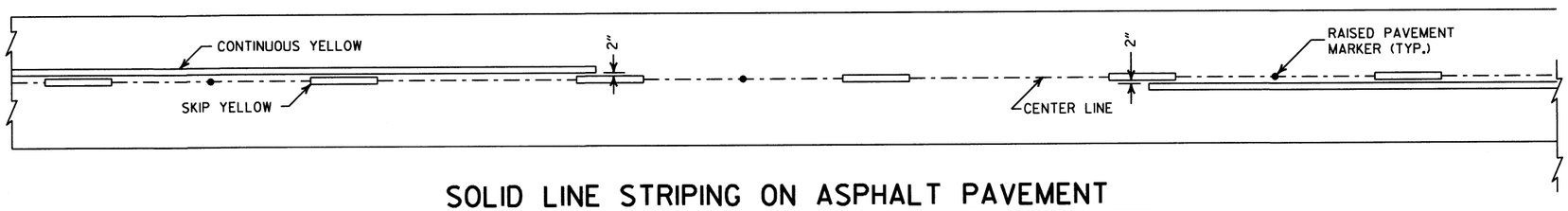


ASPHALT PAVEMENT

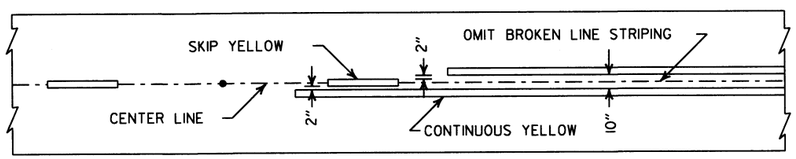
BROKEN LINE STRIPING



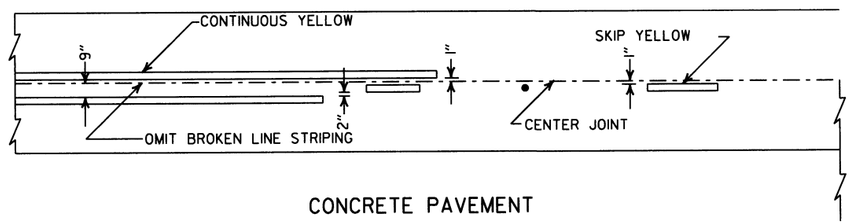
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

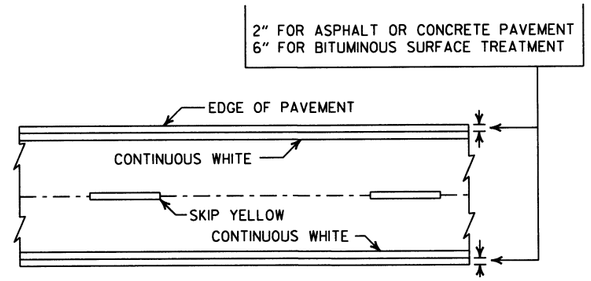


ASPHALT PAVEMENT



CONCRETE PAVEMENT

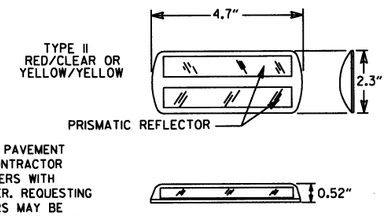
STRIPING AT ADJACENT NO PASSING LANES



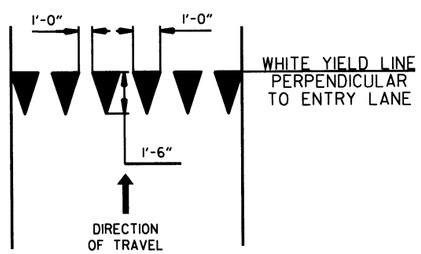
PAVEMENT EDGE LINE MARKING

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

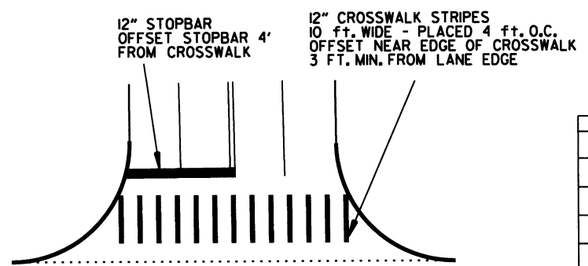
NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS



YIELD LINE DETAIL



CROSSWALK AND STOPBAR DETAILS

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

ARKANSAS STATE HIGHWAY COMMISSION

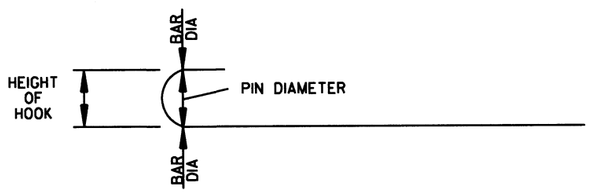
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

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

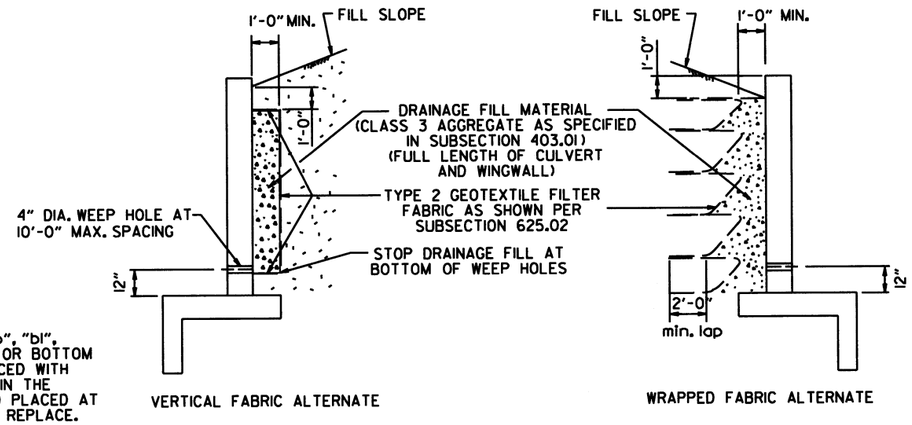
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

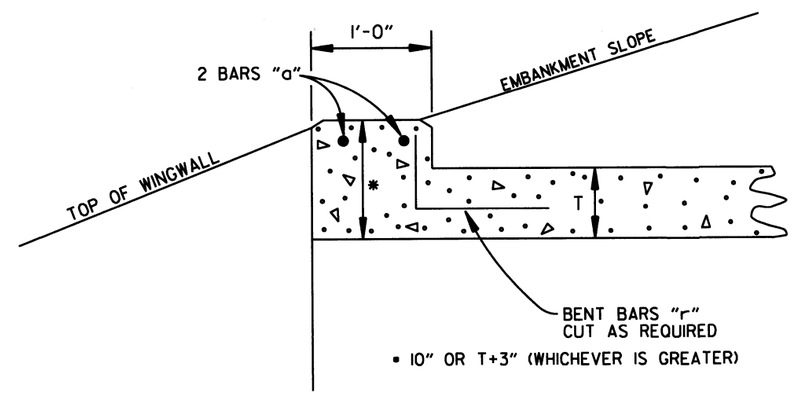
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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.

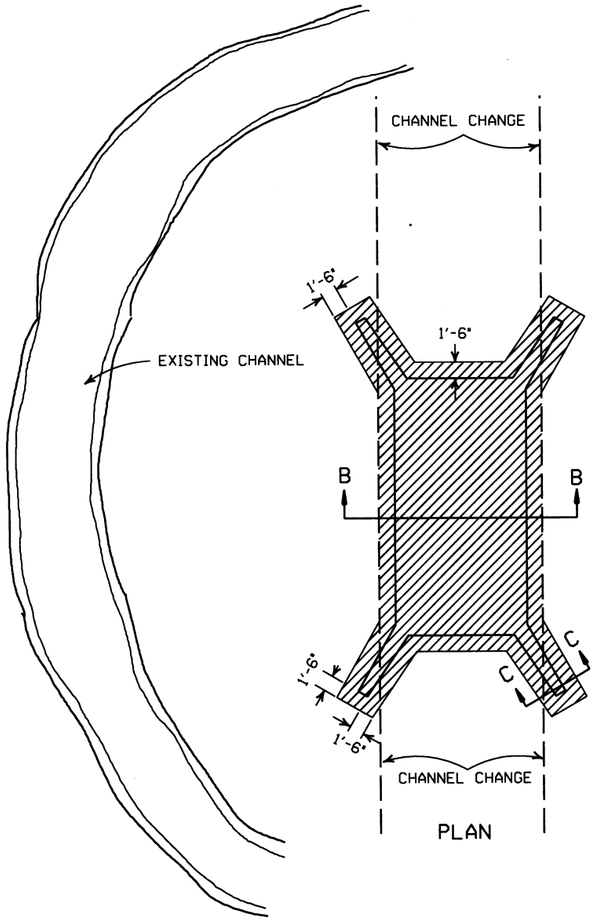
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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

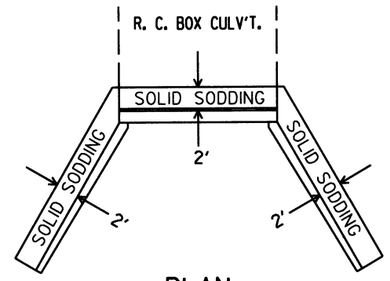
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

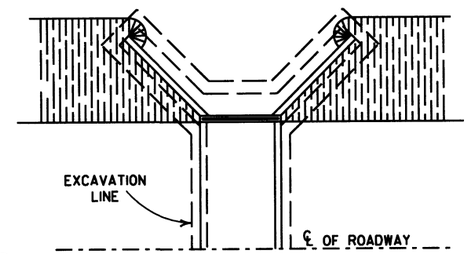
SOLID SODDING



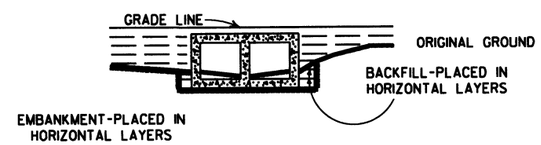
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

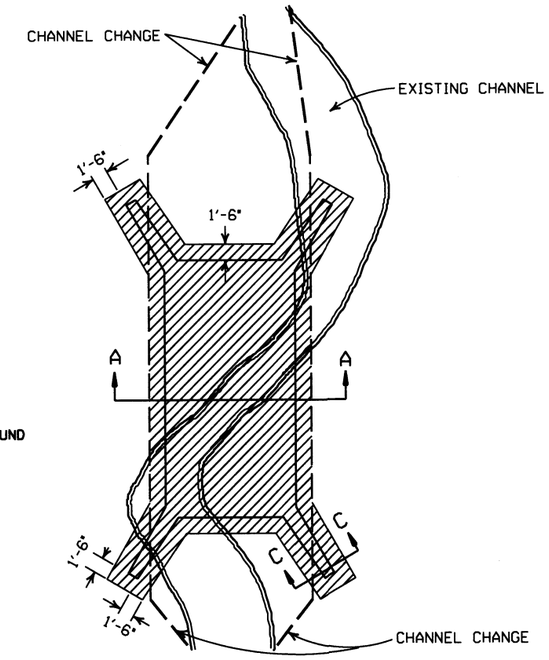


PLAN

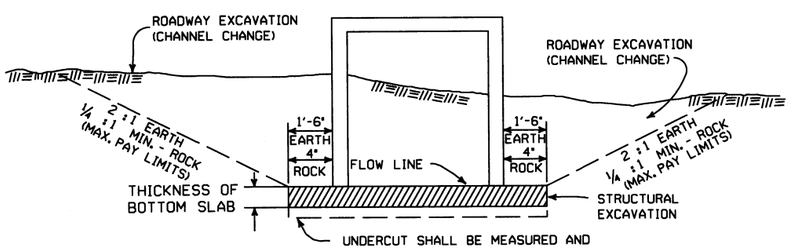


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT



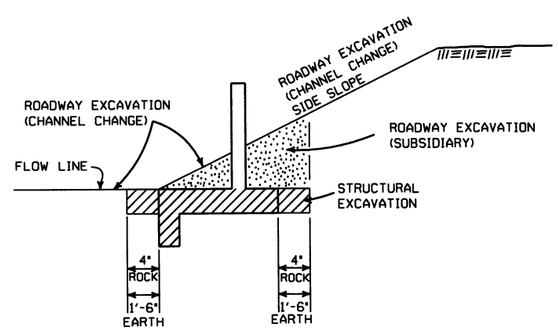
PLAN



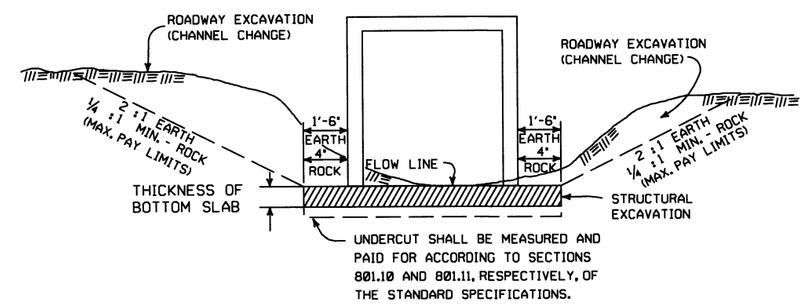
UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.

SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.

SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

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			0.025			0.030			0.037		
1° 15'	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30'	N.C.			0.021			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			0.053			0.061			0.078		
2° 30'	0.021			0.034			0.049			0.058			0.067			0.085		
2° 45'	0.023			0.037			0.053			0.063			0.072			0.091		
3° 00'	0.025			0.040			0.057			0.067			0.077			0.096		
3° 15'	0.027			0.043			0.061			0.072			0.082			0.098		
3° 30'	0.029			0.046			0.065			0.076			0.088			0.100		
3° 45'	0.031			0.049			0.069			0.080			0.090					
4° 00'	0.033			0.051			0.072			0.083			0.093					
4° 30'	0.037			0.056			0.078			0.087			0.096					
5° 00'	0.040			0.061			0.083			0.091			0.098					
5° 30'	0.043			0.066			0.088			0.094								
6° 00'	0.046			0.070			0.092			0.096								
6° 30'	0.050			0.074			0.095			0.100								
7° 00'	0.053			0.078			0.098											
7° 30'	0.056			0.081			0.099											
8° 00'	0.058			0.084			0.100											
8° 30'	0.061			0.087														
9° 00'	0.063			0.089														
10° 00'	0.068			0.094														
11° 00'	0.072			0.097														
12° 00'	0.076			0.099														
13° 00'	0.080			0.100														
14° 00'	0.083																	
15° 00'	0.086																	
16° 00'	0.089																	
17° 00'	0.091																	
18° 00'	0.093																	
19° 00'	0.095																	
20° 00'	0.097																	
21° 00'	0.098																	
22° 00'	0.099																	
23° 00'	0.099																	
24° 00'	0.100																	

D MAX = 24° 45'

D MAX = 13° 15'

D MAX = 8° 15'

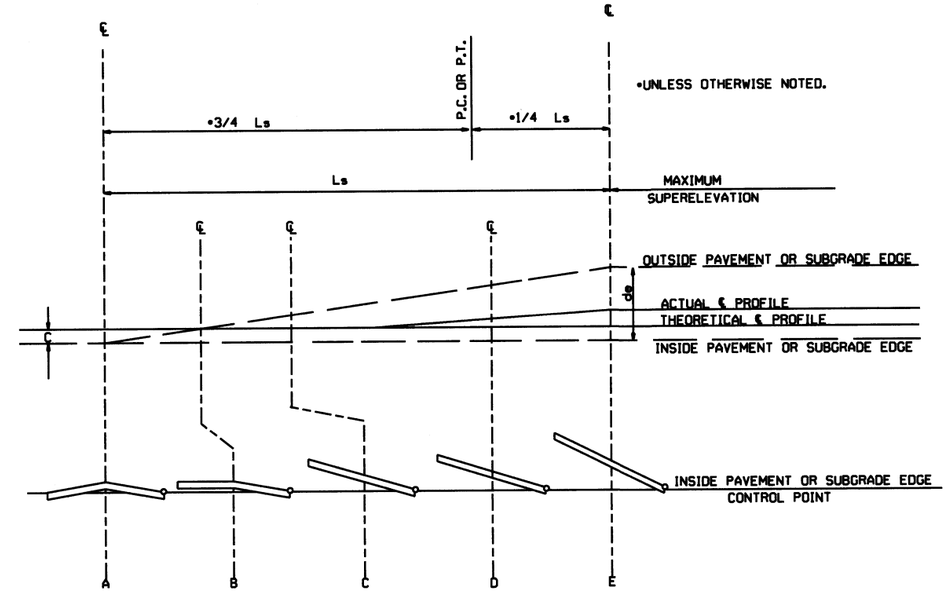
D MAX = 6° 30'

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

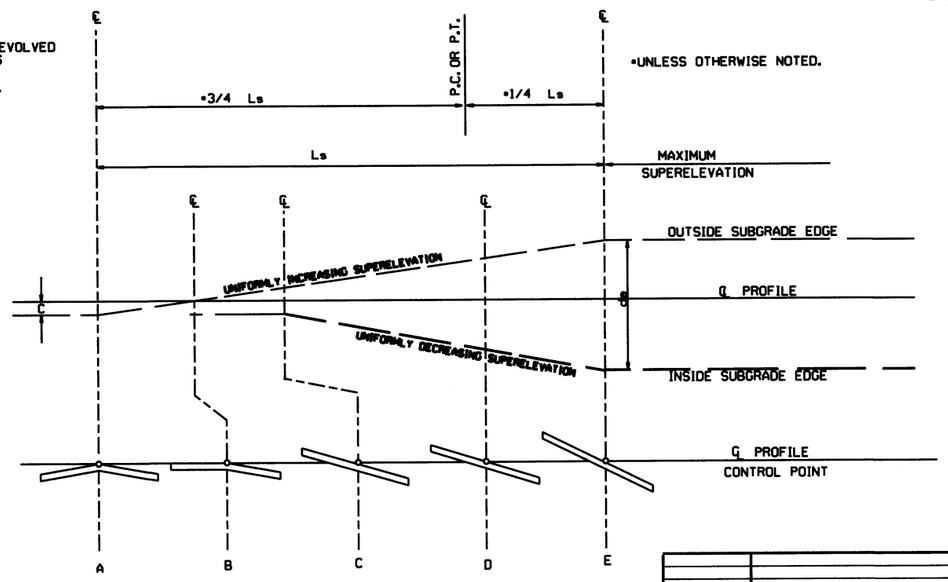
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

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%

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

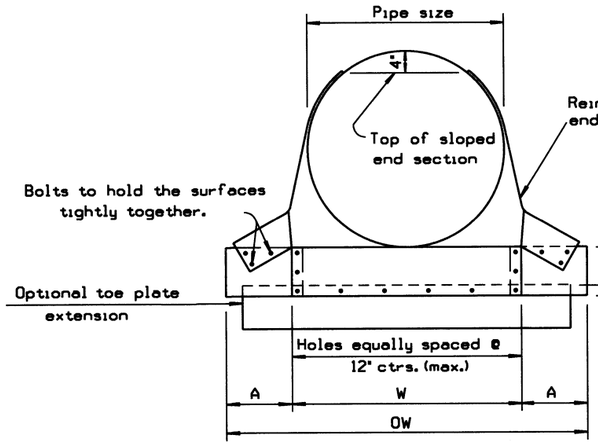
RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	
01-09-87	ISSUED	534-1-9-87

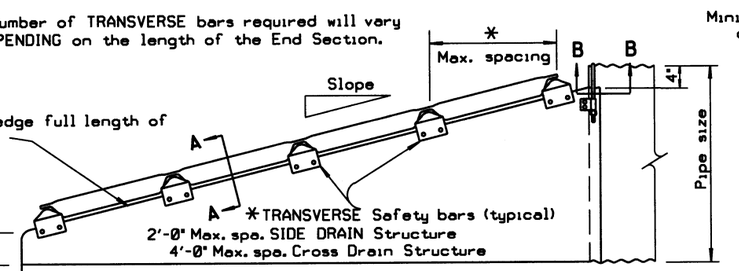
ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

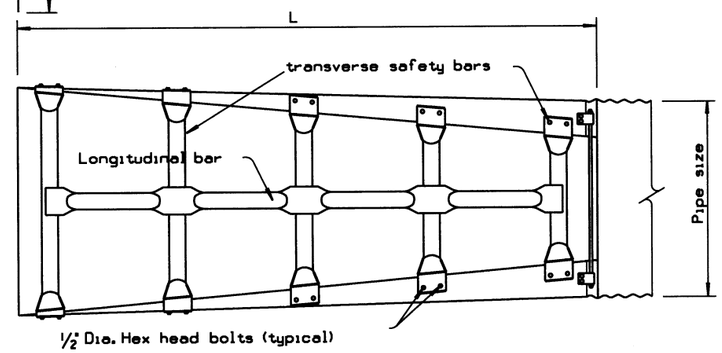
STANDARD DRAWING SE-2



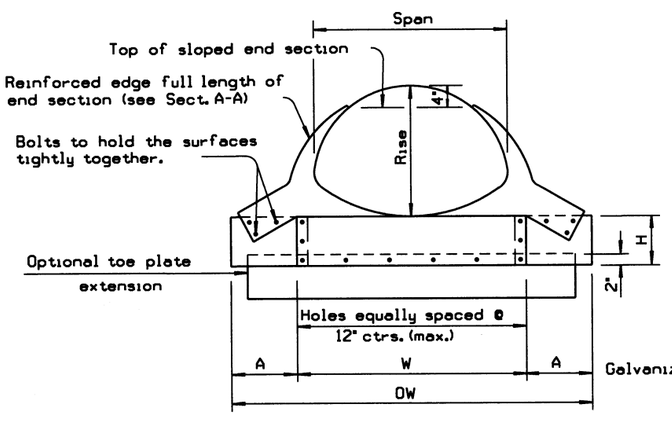
FRONT VIEW CIRCULAR PIPE



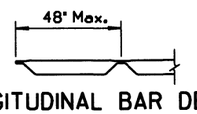
SIDE ELEVATION CIRCULAR OR ARCH SECTION



TOP VIEW CIRCULAR OR ARCH SECTION

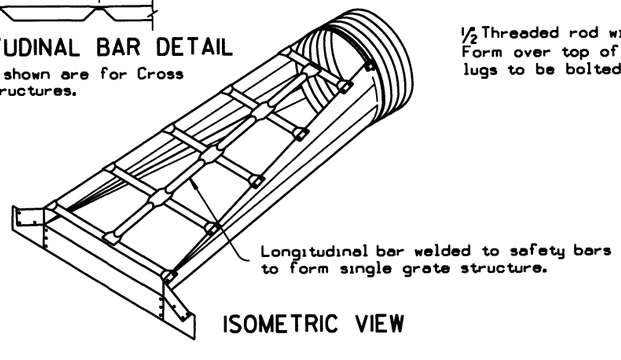


FRONT VIEW ARCH PIPE

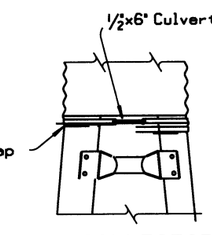


LONGITUDINAL BAR DETAIL

Note: Bars shown are for Cross Drain Structures.

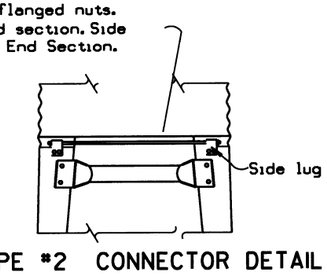


ISOMETRIC VIEW



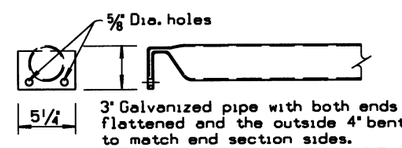
TYPE #1 CONNECTOR DETAIL

For 15" thru 24" pipe



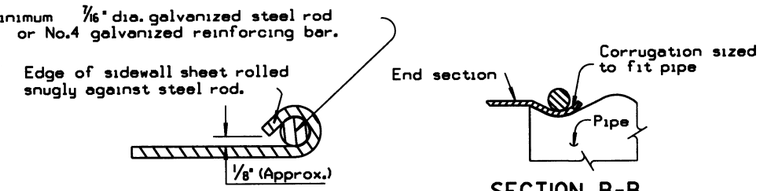
TYPE #2 CONNECTOR DETAIL

For 30" and larger round pipes & 21"x15" thru 64"x43" arch pipes



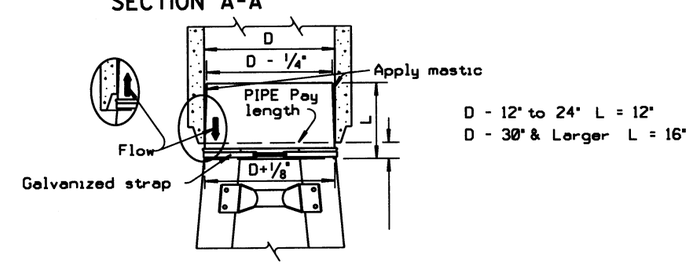
3" Galvanized pipe with both ends flattened and the outside 4" bent to match end section sides.

DETAIL OF TRANSVERSE SAFETY BAR



SECTION A-A

SECTION B-B



Note: Metal end section to be firmly wedged INTO PIPE END BEFORE BACKFILLING PIPE.

(Tapered sleeve to be 12 Ga. smooth galvanized steel in accordance with AASHTO M 218.)

STEEL END SECTION FOR CONCRETE PIPE
(Alternate for Concrete End Section)

GENERAL NOTES

End sections shall be fabricated from galvanzied steel meeting the requirements of SUBSECTION 606.02(c)(1) OF THE STANDARD SPECIFICATIONS.
When specified optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section.
Dimensions shall be overall width less 6" by 8" high.
Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.
Safety bars shall be fabricated from steel pipe meeting the requirements of ASTM A-53 Schedule 40 Specifications. Safety bars shall be hot dipped galvanized after fabrication.
All work and materials required for construction and installation of safety end section shall be included in the PRICE BID EACH FOR SAFETY END SECTIONS FOR PIPE CULVERTS.
Longitudinal and transverse bars will be required for cross drain structures when span is greater than 30". no safety bars will be REQUIRED FOR 30" SPAN OR LESS WHEN USED ON CROSS DRAIN STRUCTURES.
Transverse bars will be required for all sizes of side drain structures.
Class I safety end sections shall be end sections with a 4:1 slope.
Class 2 safety end sections shall be end sections with a 6:1 slope.

SAFETY END SECTIONS FOR ARCH PIPES

Equv. Dia.	Nom. W.W. Area Sq Ft	Pipe Arch Span (In.)	Pipe Arch Rise (In.)	Min. Gauge End Sect.	Dimensions in Inches A	H	W	OW	Slope	L (In)	Slope	L (In)
18"	1.6	21	15	16	8	6	27	43	4:1	20	6:1	30
21"	2.2	24	18	16	8	6	30	46	4:1	32	6:1	48
24"	2.9	28	20	16	8	6	34	50	4:1	40	6:1	60
30"	4.5	35	24	14	12	9	41	65	4:1	56	6:1	84
36"	6.5	42	29	12	12	9	48	72	4:1	76	6:1	114
42"	8.9	49	33	12	16	12	55	87	4:1	92	6:1	138
48"	11.6	57	38	12	16	12	63	95	4:1	112	6:1	168
54"	14.7	64	43	12	16	12	70	102	4:1	132	6:1	198
60"	18.1	71	47	12	16	12	77	109	4:1	148	6:1	222
72"	26.0	83	57	12	16	12	89	121	4:1	188	6:1	282

SAFETY END SECTIONS FOR CIRCULAR PIPES

Pipe Dia.	Min. Gauge Ends	Dimensions in Inches A 1"Tol	H 1"Tol	W 2"Tol	OW	L Dimensions in Inches Slope	L	Slope	L
15"	16	8	6	21	37	4:1	20	6:1	30
18"	16	8	6	24	40	4:1	32	6:1	48
21"	16	8	6	27	43	4:1	44	6:1	66
24"	16	8	6	30	46	4:1	56	6:1	84
30"	12	12	9	36	60	4:1	80	6:1	120
36"	12	12	9	42	66	4:1	104	6:1	156
42"	12	16	12	48	80	4:1	128	6:1	192
48"	12	16	12	54	86	4:1	152	6:1	228
54"	12	16	12	60	92	4:1	176	6:1	264
60"	12	16	12	66	98	4:1	200	6:1	300

DATE	REVISION	DATE FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	
8-15-91	DRAWN & ISSUED	

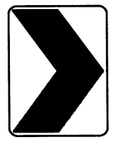
ARKANSAS STATE HIGHWAY COMMISSION

SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES

STANDARD DRAWING SES-1

R1-1
30"X30"

W1-3
30"X30"
(LT. OR RT.)

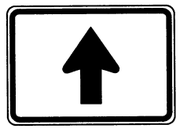


W1-8
18"X24"

W2-5
30"X30"

W3-1
36"X36"

W5-1
36"X36"



M6-3
21"X15"

R1-2
36"X36"X36"

W1-4
30"X30"
(LT. or RT.)

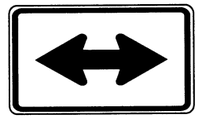
W2-1
30"X30"

S1-1
36"X36"

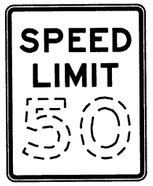
W3-2
36"X36"

County
Route Marker
M1-6
24"X24"

NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.



M6-4
21"X15"



R2-1
24"X30"

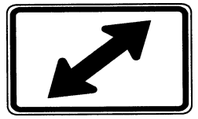
W1-5
30"X30"
(LT. or RT.)

W2-2
30"X30"

W5-2
36"X36"

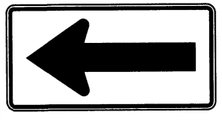
W8-3
36"X36"

R1-3P
18"X6"



M6-5
21"X15"

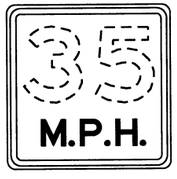
W1-1
30"X30"
(LT. or RT.)



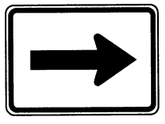
W1-6
48"X24"

W2-3
30"X30"
(LT. or RT.)

W5-3
36"X36"

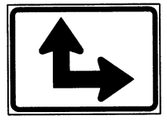


W13-1P
18"X18"

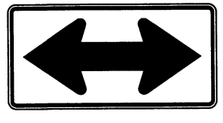


M6-1
21"X15"

NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND.



M6-6
21"X15"

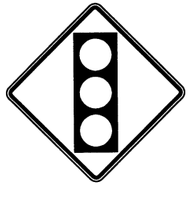


W1-7
48"X24"

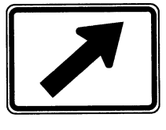
W1-2
30"X30"
(LT. or RT.)

W2-4
30"X30"

W10-1
36" DIAMETER



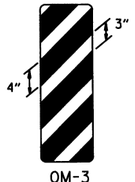
W3-3
36"X36"



M6-2
21"X15"

S4-3P
24"X8"

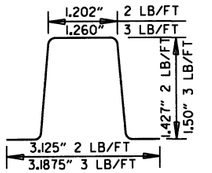
S4-2P
24"X10"



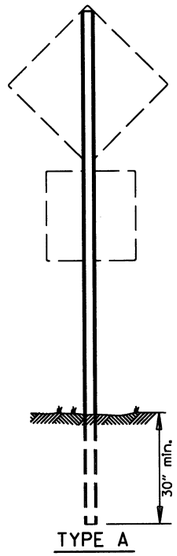
OM-3
12"X36"
(LT. or RT.)

MINIMUM DIMENSIONS SHOWN

SUPPORT SECTION

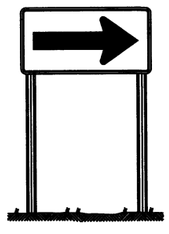


(U-CHANNEL)
STANDARD SUPPORT
ASSEMBLIES

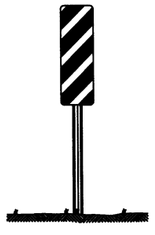


TYPE A

NOTE: LENGTH OF SIGN POSTS SHALL BE DETERMINED SO AS TO PROVIDE FOR MINIMUM VERTICAL CLEARANCES AS CALLED FOR IN THE SPECIFICATIONS PLUS A MINIMUM VERTICAL PENETRATION OF 30" IN THE SOIL.



TYPE B



TYPE C

MINIMUM WEIGHT

TYPE A & B = 3 LBS./FT.
TYPE C = 2 LBS./FT.

STANDARD HIGHWAY SIGNS

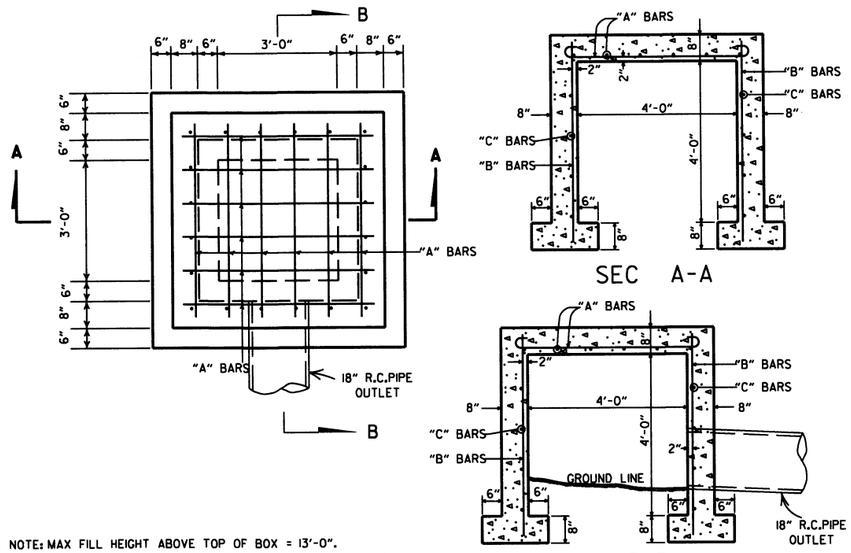
SUPPORT ASSEMBLIES

DATE	REVISION	DATE FILMED
9-12-13	DELETED JOB NO. BLOCK; REVISED R1-3 TO R1-3P	
4-17-08	REVISED SIGN DESIGNATION - W3-1 & W3-2	
4-10-03	REVISED W5-2, W8-3, OM-3; ADDED W1-8	
1-5-81	REDRAWN	960-1-15-81
9-15-78	ADDED W14-3	877-9-15-78
9-2-76	POST WT.	623-9-3-76
5-3-76	STEEL POST WT. FROM 2#-3#; ADDED S4-2 & S4-3	504-5-3-76
8-12-74	REV. HT. TYPE "C" ASSEMBLY	500-8-21-74
12-21-72	ADDED M6-2,3,4,5,6	500-12-21-72
12-1-72	ISSUED	562-12-1-72

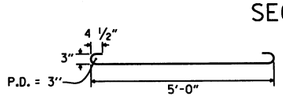
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD HIGHWAY SIGNS
AND SUPPORT ASSEMBLIES

STANDARD DRAWING SHS-1



NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".



"A" BARS

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 1/2"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS

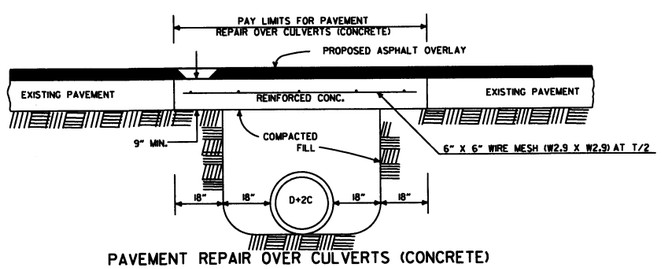
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

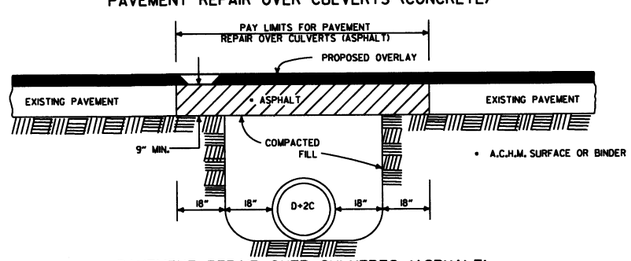
GENERAL NOTE:

THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



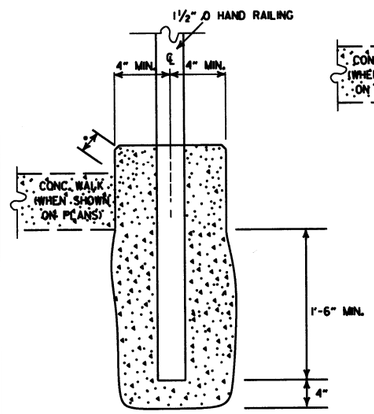
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



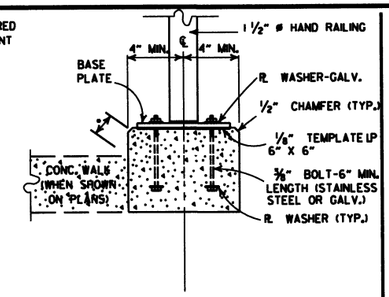
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

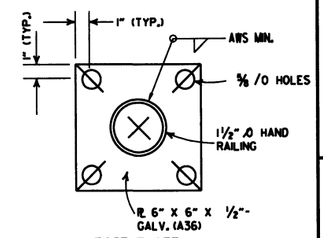
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

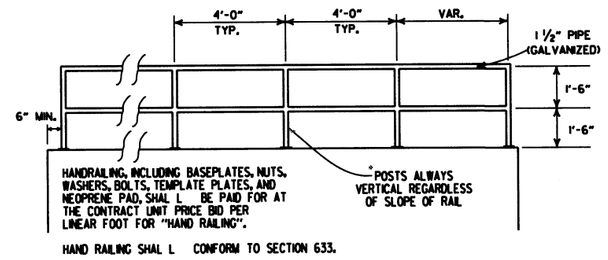


POST CONNECTION TO WALL

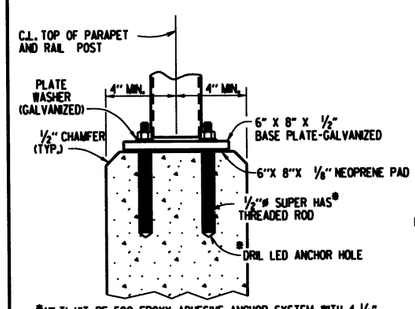


BASE PLATE

POST CONNECTION DETAILS



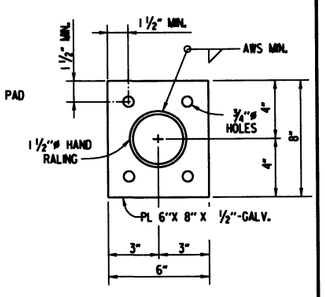
HAND RAILING SHALL CONFORM TO SECTION 633.



®HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 1/2" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

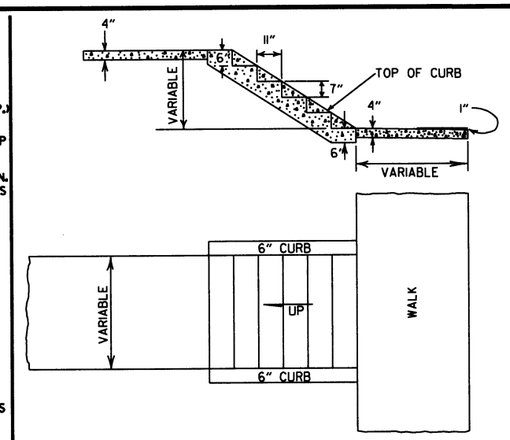
POST CONNECTION TO WALL



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.

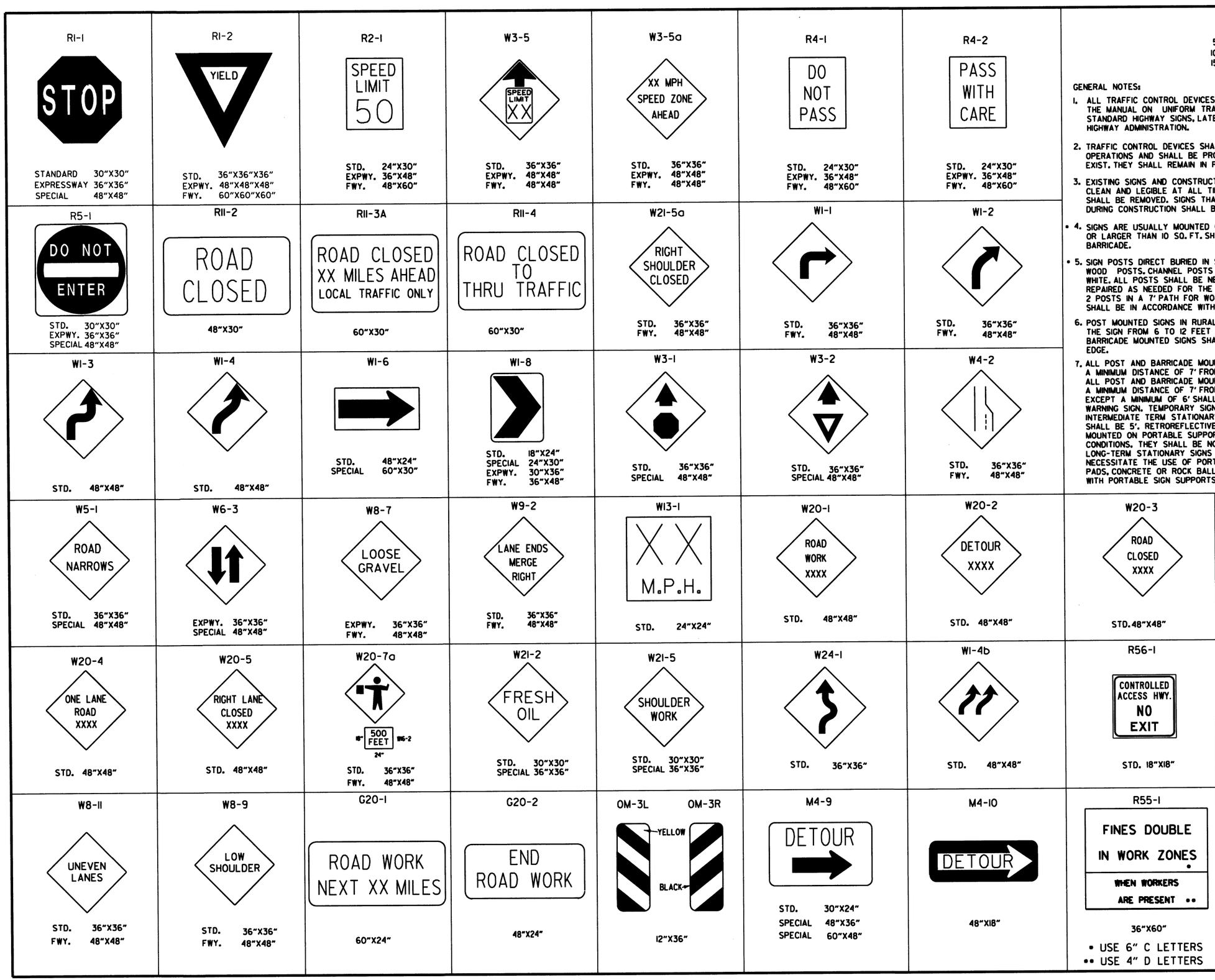
DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
10-25-18	REVISED DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS	
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



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.

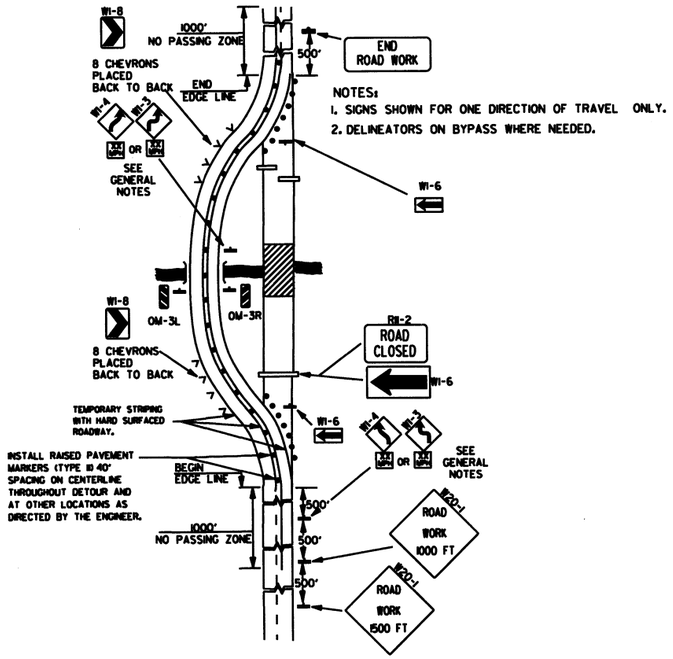
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
4-13-17	DELETED RSP-1 & ADDED W21-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

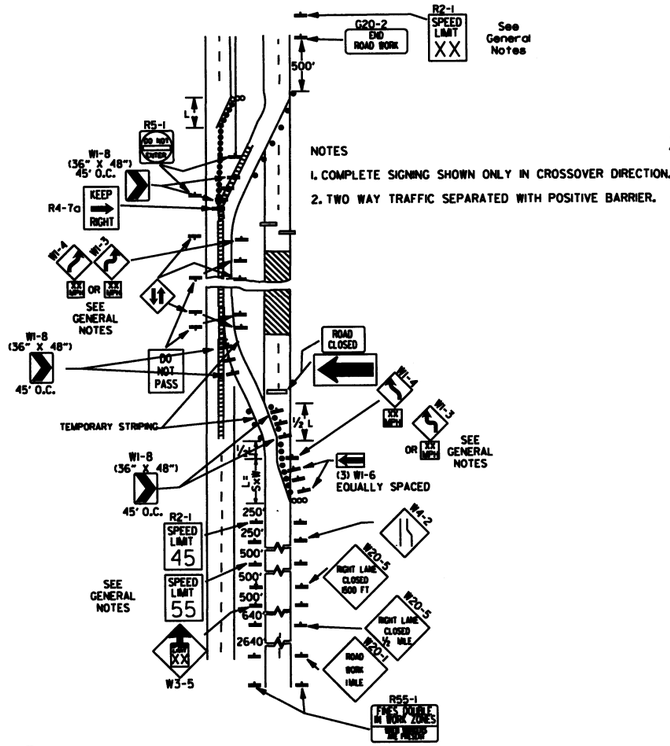
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



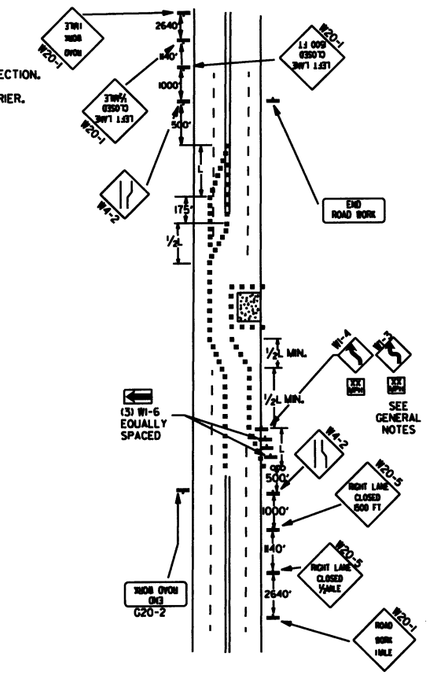
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

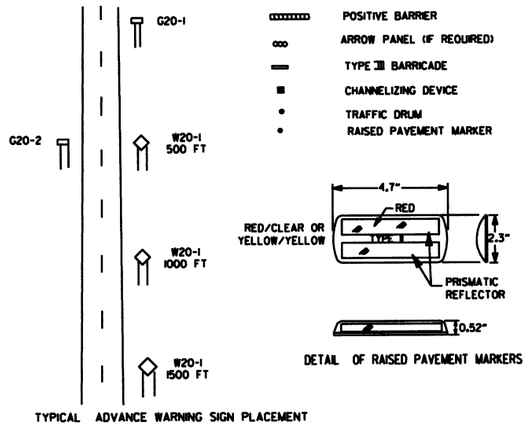


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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



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



TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:

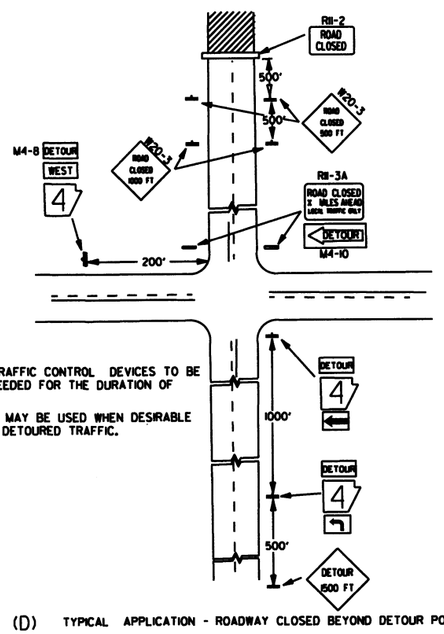
L= MINIMUM LENGTH OF TAPER.

S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.

W= WIDTH OF OFFSET.

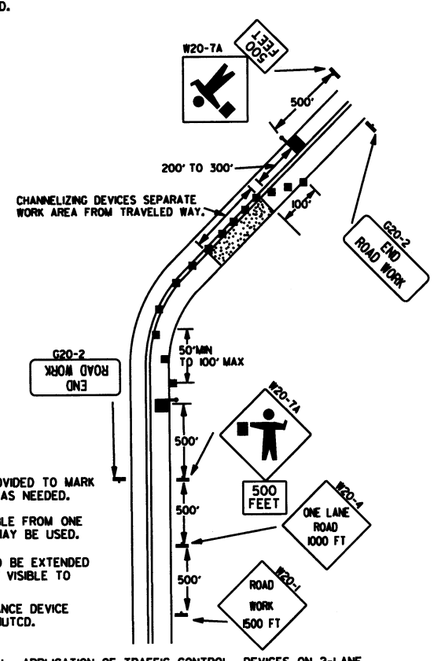
GENERAL NOTES:

1. 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.



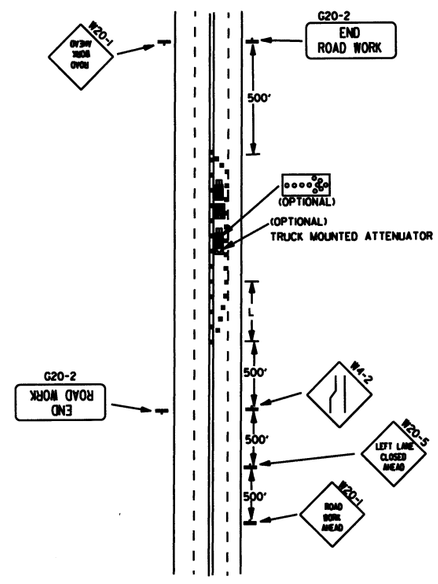
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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.



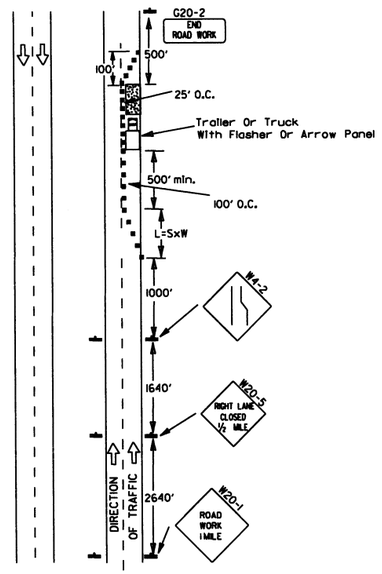
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (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	

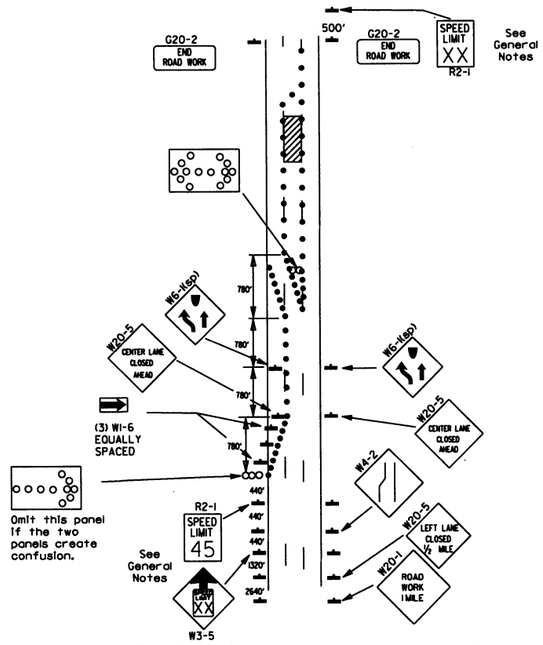
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

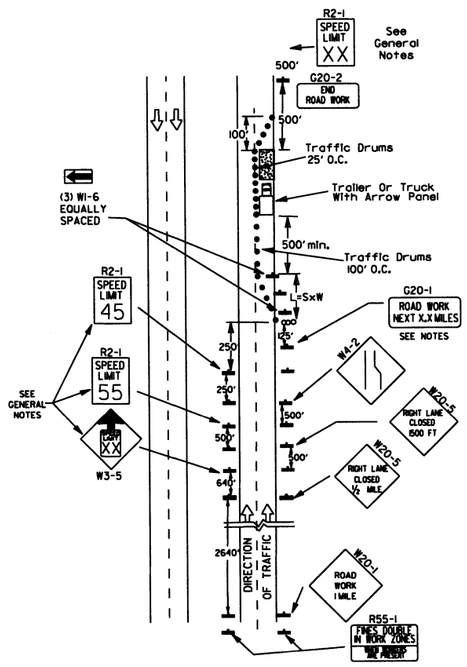
STANDARD DRAWING TC-2



(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 operatipns of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

KEY:

ooo Arrow Panel (if Required)

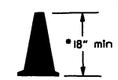
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

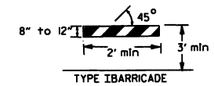
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional 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

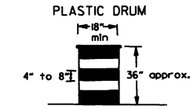


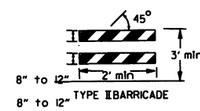
• When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

CONES

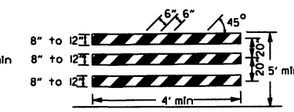


TYPE I BARRICADE



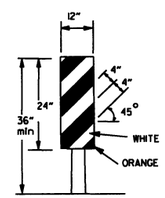


TYPE II BARRICADE



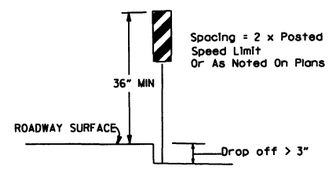
TYPE III BARRICADE

NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

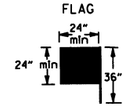


VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT



FLAG



Flag shall be of good grade red material

TRAFFIC CONTROL DEVICES

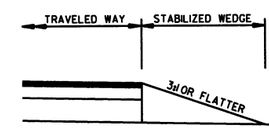
NON-INTERSTATE			
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 2"	CENTERLINE	W8-11 AND LANE STRIPING	W8-11 AND LANE STRIPING
> 2"	CENTERLINE	STANDARD LANE CLOSURE	STANDARD LANE CLOSURE
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS
> 6" ≤ 12"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1)	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2)
> 12" ≤ 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1)	PRECAST CONCRETE BARRIER(3) & EDGE LINES
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER(3) & EDGE LINES	PRECAST CONCRETE BARRIER(3) & EDGE LINES

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

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

GENERAL NOTES:

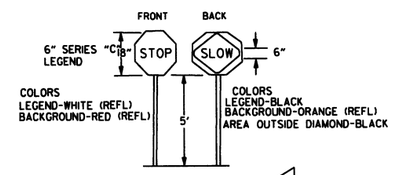
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
3. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
4. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.



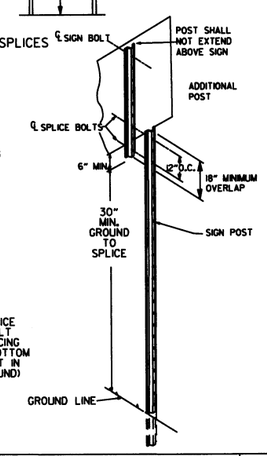
STABILIZED WEDGE

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

STOP SLOW PADDLE



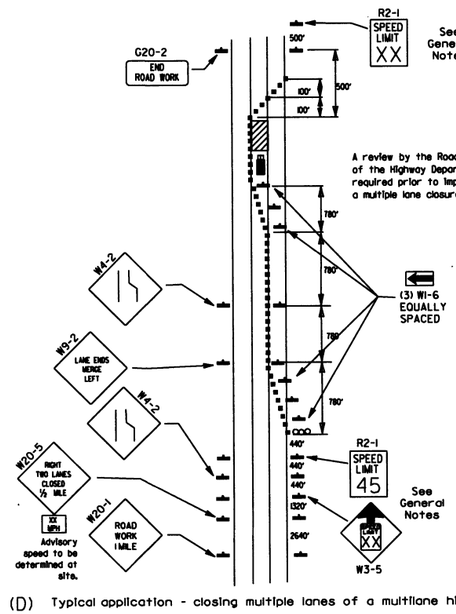
DETAIL OF SPLICES



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.



(D) Typical application - closing multiple lanes of a multilane highway.

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

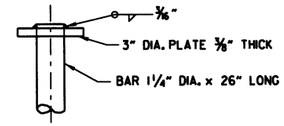
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

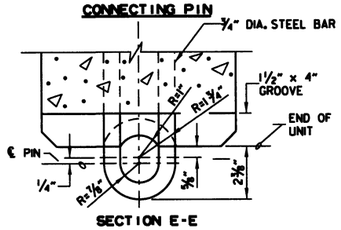
STANDARD DRAWING TC-3

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'-8", 90°, 3 3/8" R, LIFTING HOLE
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1' MIN. CLEAR TO BAR, 1'-6", 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°, 1 1/2", 6", 2'-1 3/8", 4 3/8"

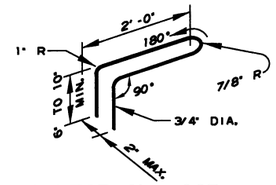


CONNECTING PIN

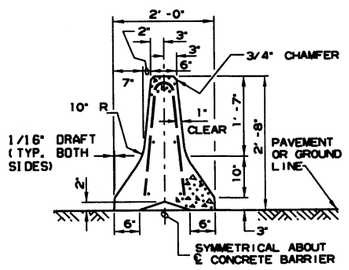


SECTION E-E

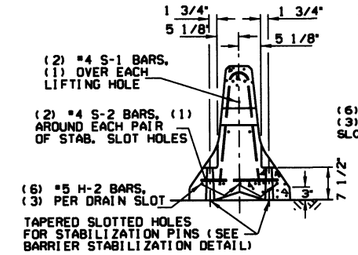
CONNECTION DETAILS



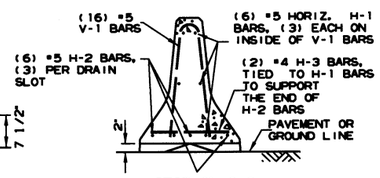
CONNECTION LOOP



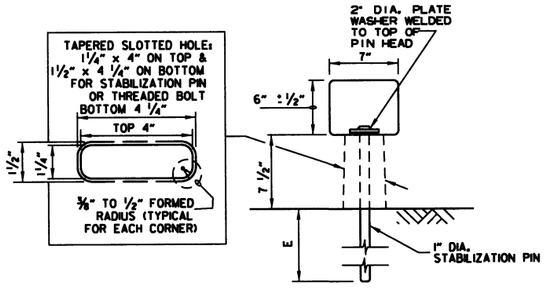
SECTION A-A



SECTION B-B



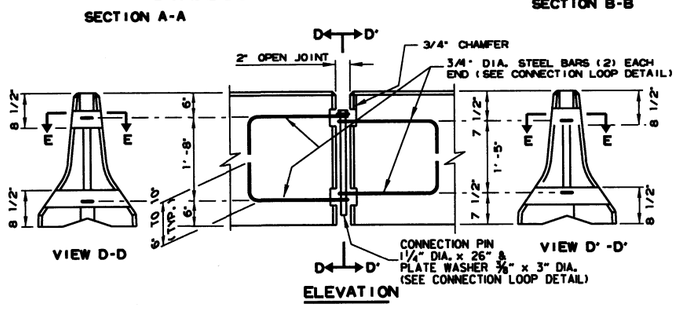
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

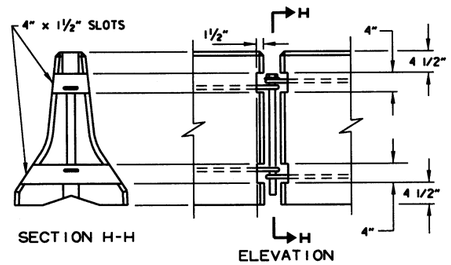
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



VIEW D-D

VIEW D'-D'

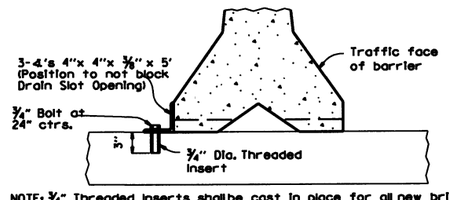
ELEVATION



SECTION H-H

ELEVATION

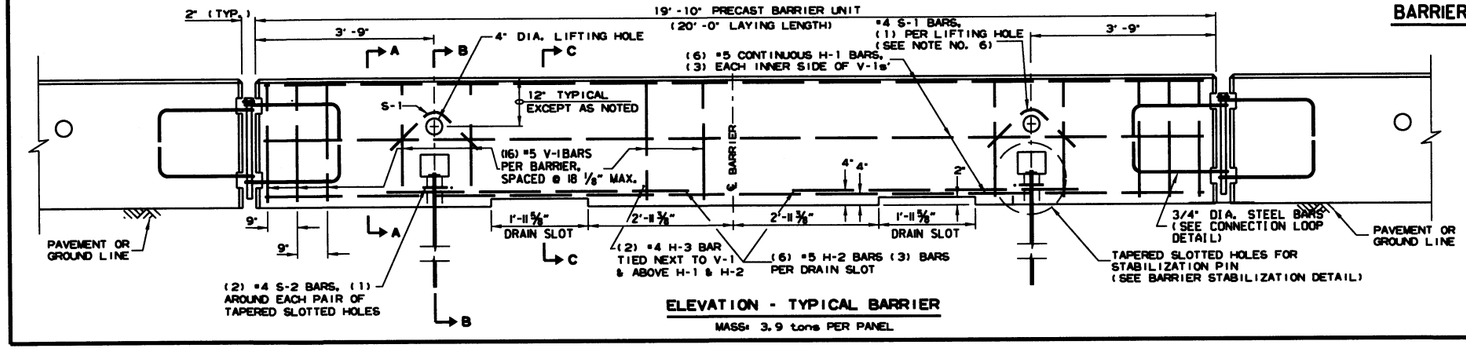
BARRIER REMOVAL SLOT DETAILS



NOTE: 3/4" Threaded inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

BRIDGE DECKS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

1. The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

2. Materials shall meet the following minimum requirements:
   Concrete: 2500 psi compressive strength at 28 days.
   Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
   Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
   Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

   In applications where barrier walls within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
   Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
   Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

3. Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

4. Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

5. Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

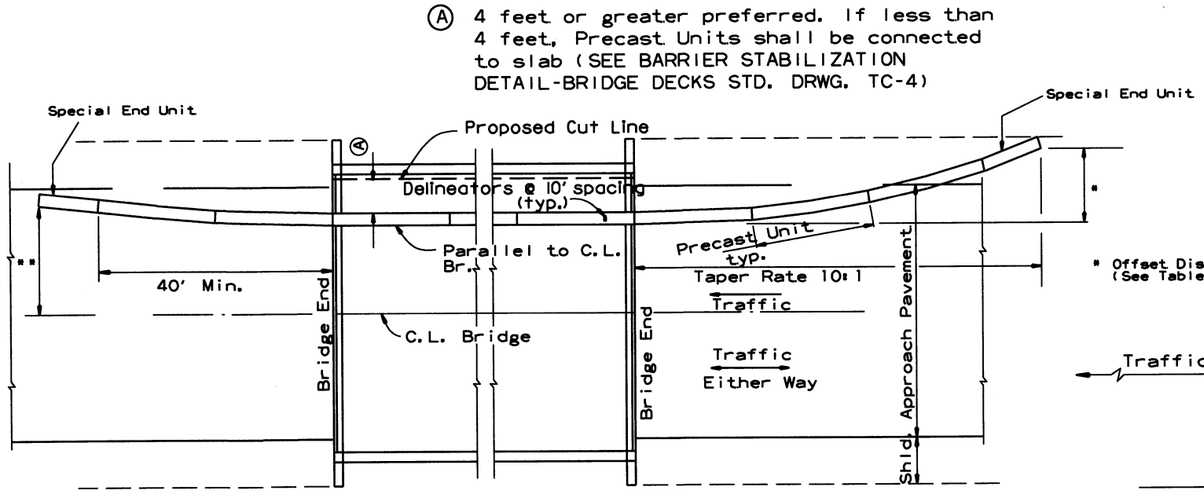
6. A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

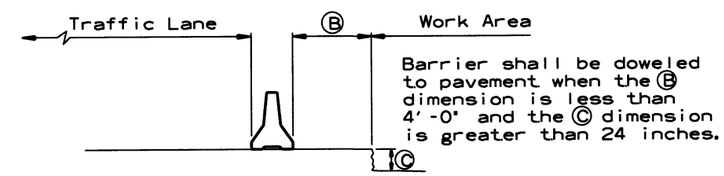
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4



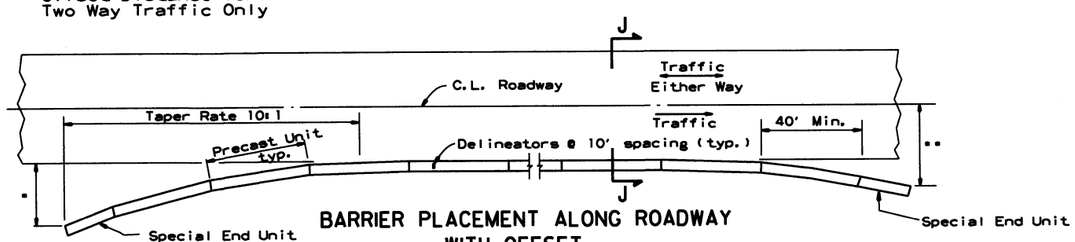
BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale



SECTION J-J

No Scale



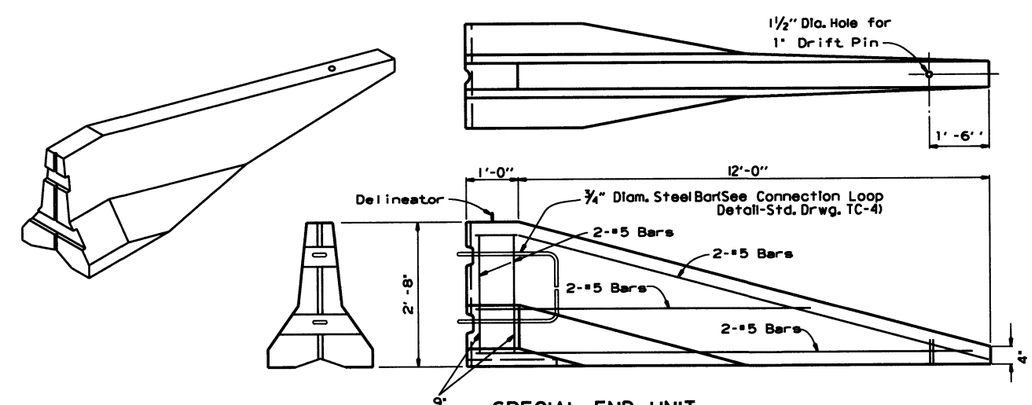
BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

Offset Distance Table

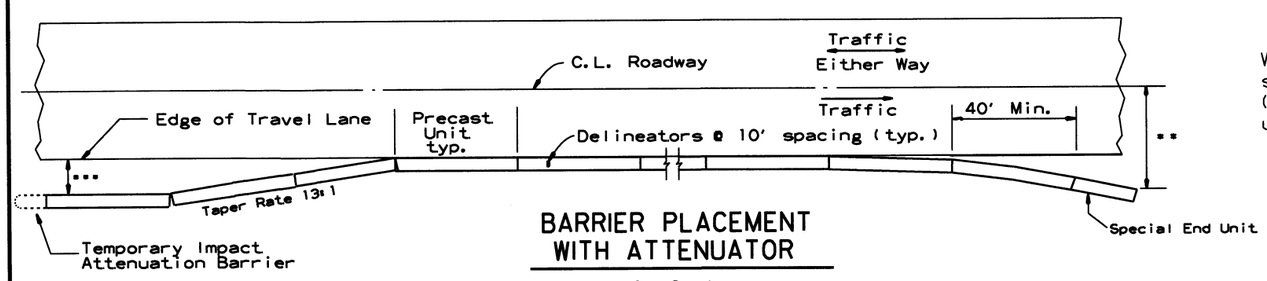
Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

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



SPECIAL END UNIT

No Scale



BARRIER PLACEMENT WITH ATTENUATOR

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	

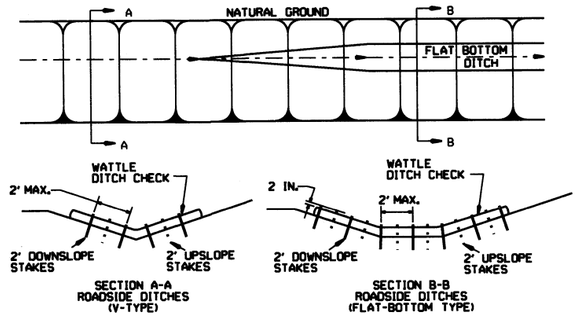
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

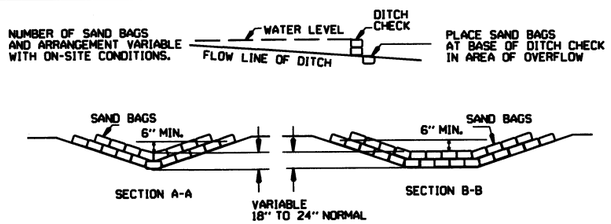
STANDARD DRAWING TC-5

GENERAL NOTES

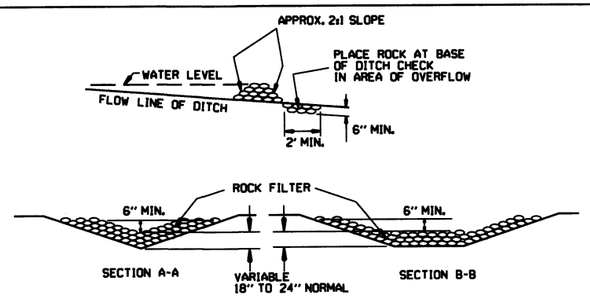
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

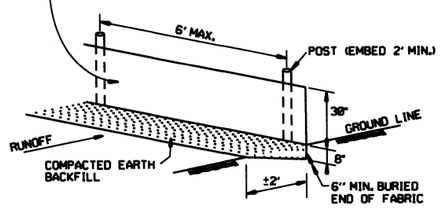


ROCK DITCH CHECK (E-6)

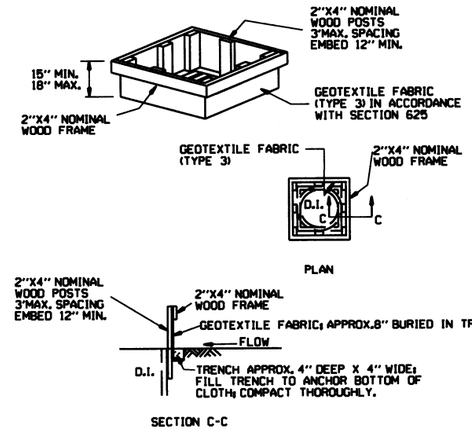
GENERAL NOTES

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

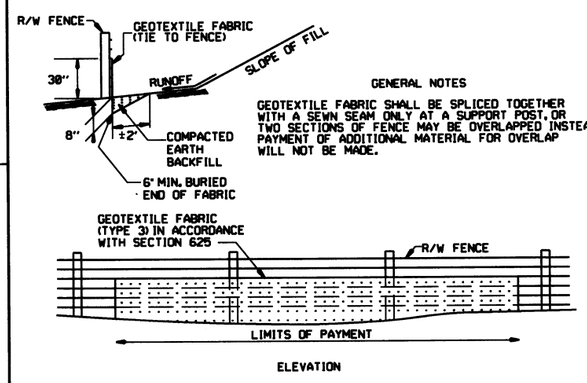
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



SILT FENCE (E-11)



DROP INLET SILT FENCE (E-7)



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.

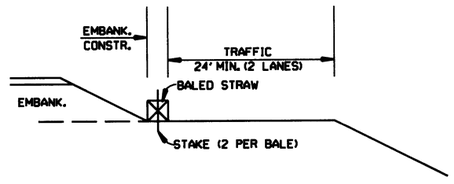
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

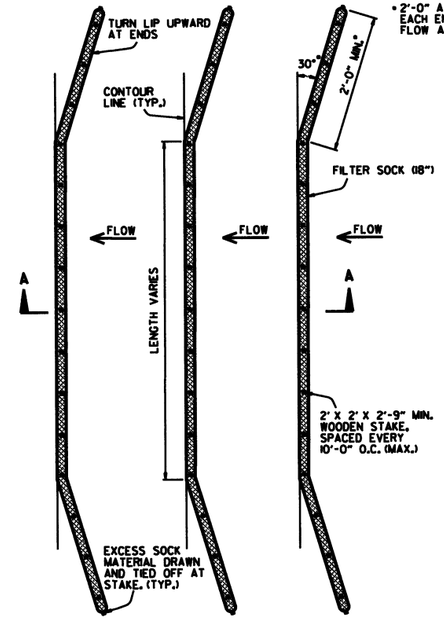
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

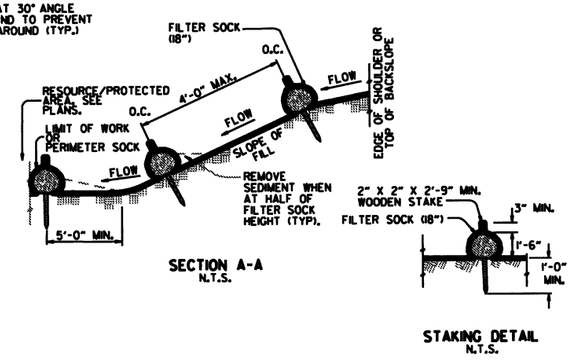
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



BALED STRAW FILTER BARRIER (E-2)



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

STAKING DETAIL
N.T.S.

NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

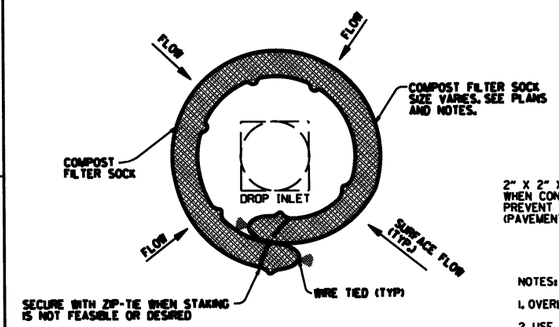
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBSIDIARY TO "FILTER SOCK (18")."

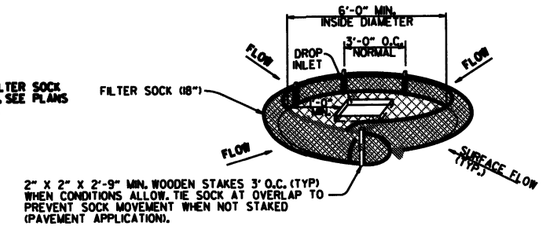
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

FILTER SOCK ALONG SLOPE (E-3)



DROP INLET PLAN VIEW
N.T.S.



DROP INLET PERSPECTIVE VIEW
N.T.S.

NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).

2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

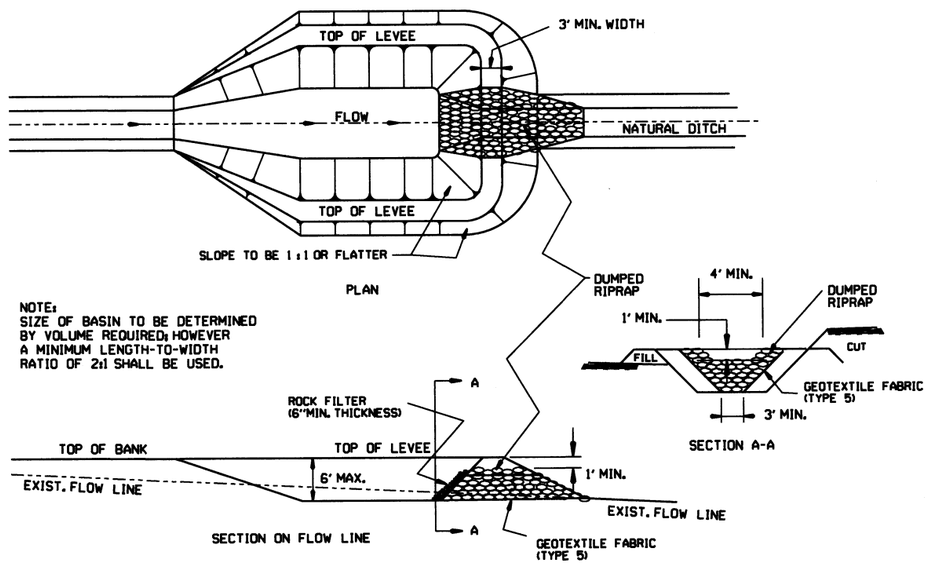
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

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

ARKANSAS STATE HIGHWAY COMMISSION

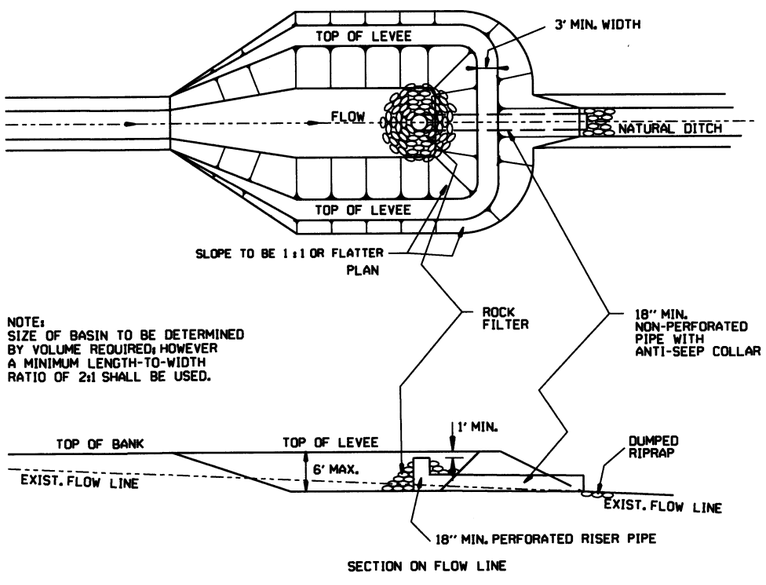
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-1



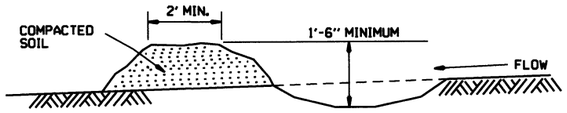
NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH-TO-WIDTH RATIO OF 2:1 SHALL BE USED.

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)

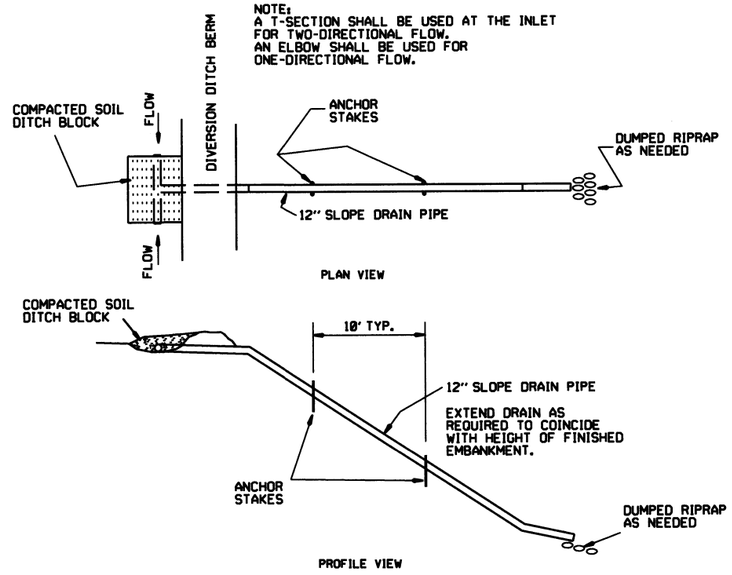


NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH-TO-WIDTH RATIO OF 2:1 SHALL BE USED.

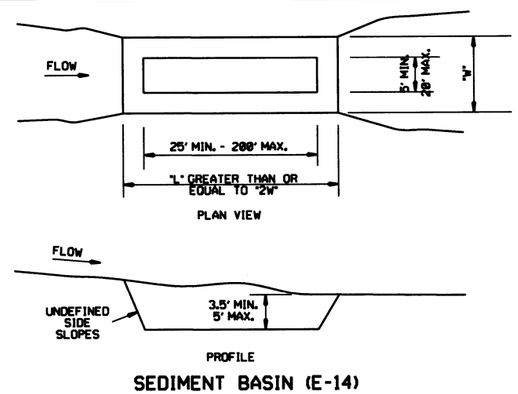
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

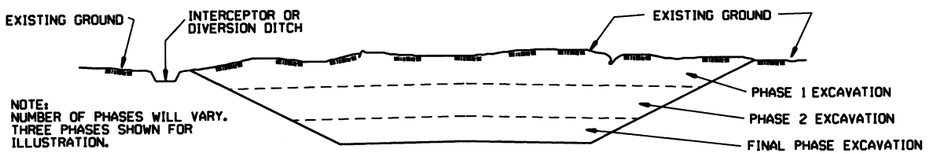
STANDARD DRAWING TEC-2

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



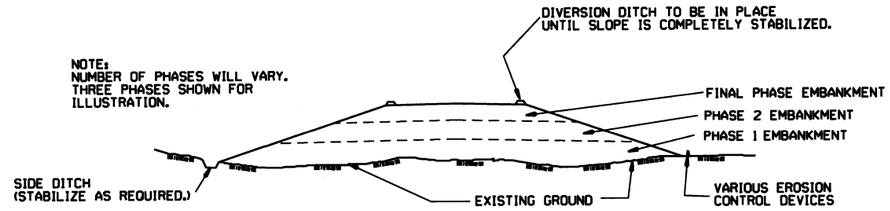
GENERAL NOTE

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

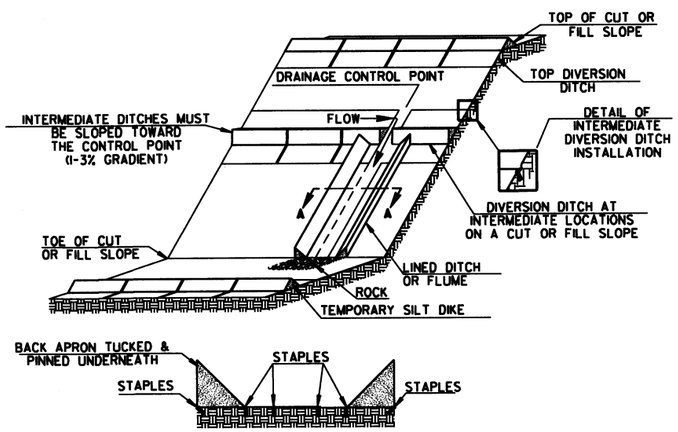
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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

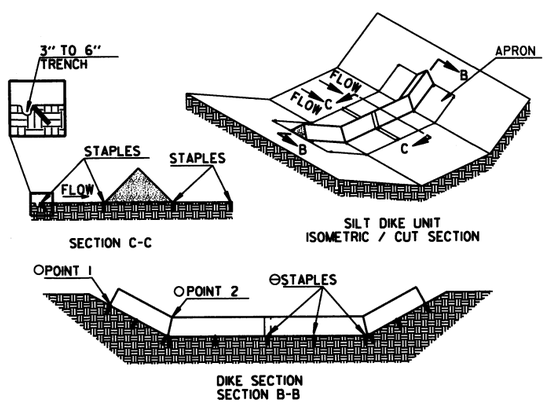
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3



TEMPORARY DITCH LINER
SECTION A-A

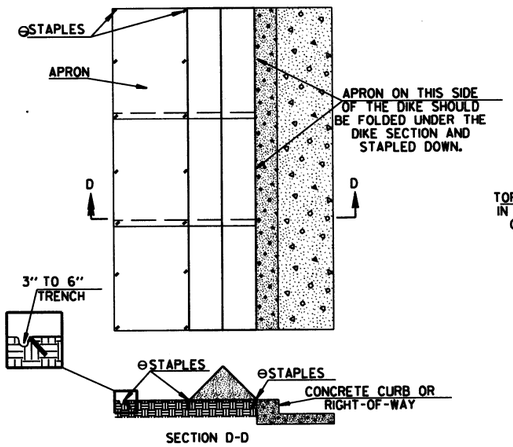
TRIANGULAR SILT DIKE INSTALLATION FOR DIVERSION DITCH AND/OR DITCH LINER



TRIANGULAR SILT DIKE INSTALLATION FOR ROADWAY DITCH OR DRAINAGE DITCH

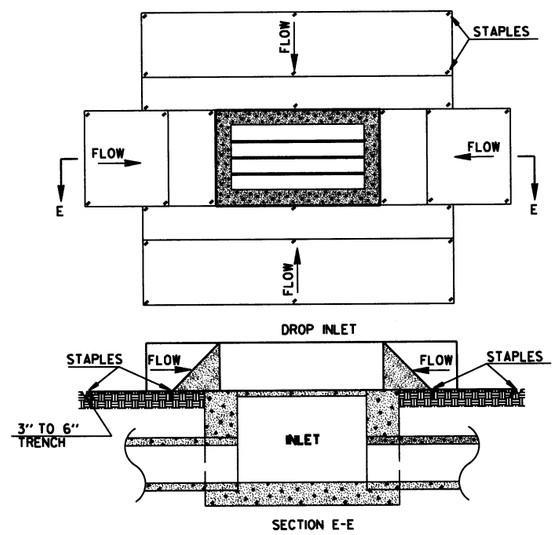
○ POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

⊖ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



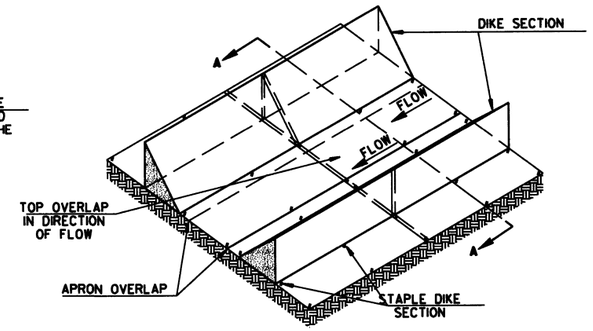
SECTION D-D

TRIANGULAR SILT DIKE INSTALLATION FOR CONTINUOUS BARRIER



SECTION E-E

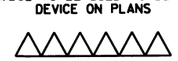
TRIANGULAR SILT DIKE INSTALLATION FOR DROP INLETS



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.

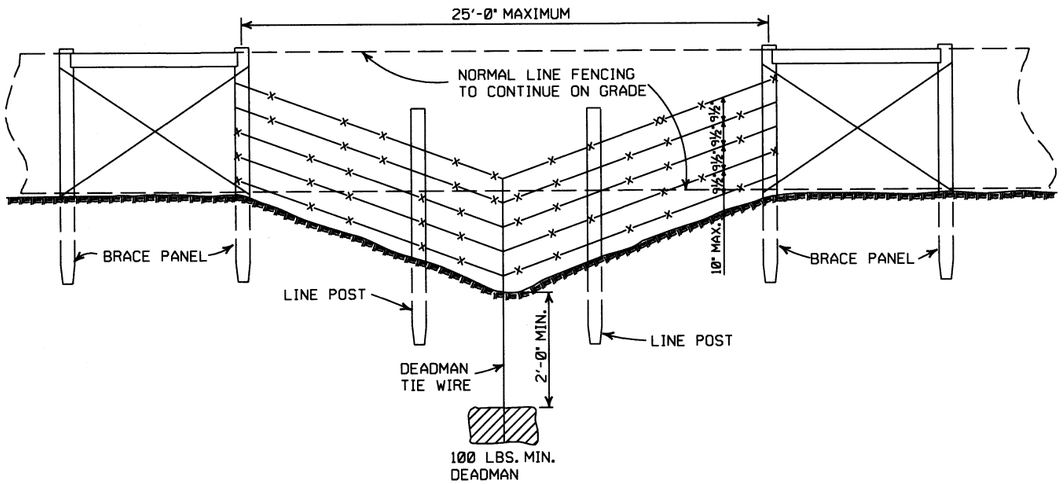
3. ACCEPTED TRIANGULAR SILT DIKE, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR TRIANGULAR SILT DIKE. PRICE BID WILL INCLUDE THE COST OF FURNISHING THE DIKES, INSTALLING, MAINTAINING AND REMOVAL WHEN DIRECTED BY THE ENGINEER.

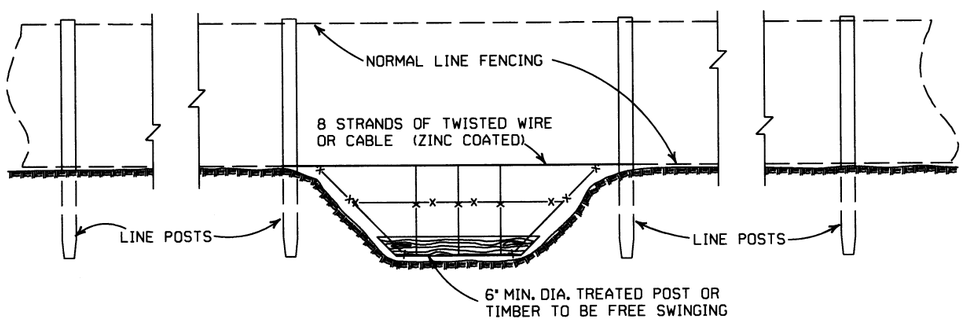
DATE	REVISION	FILMED
7-26-12	REVISED GENERAL NOTE 2.	
12-15-11	ISSUED	

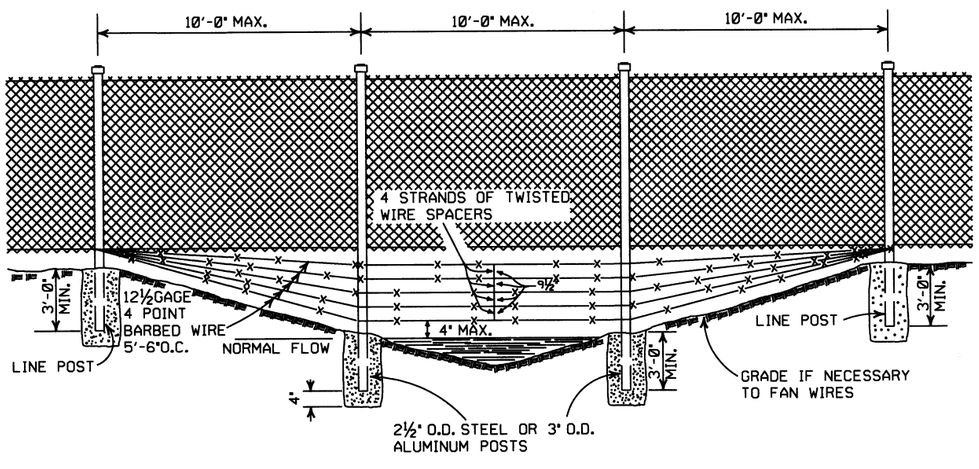
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-4







GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

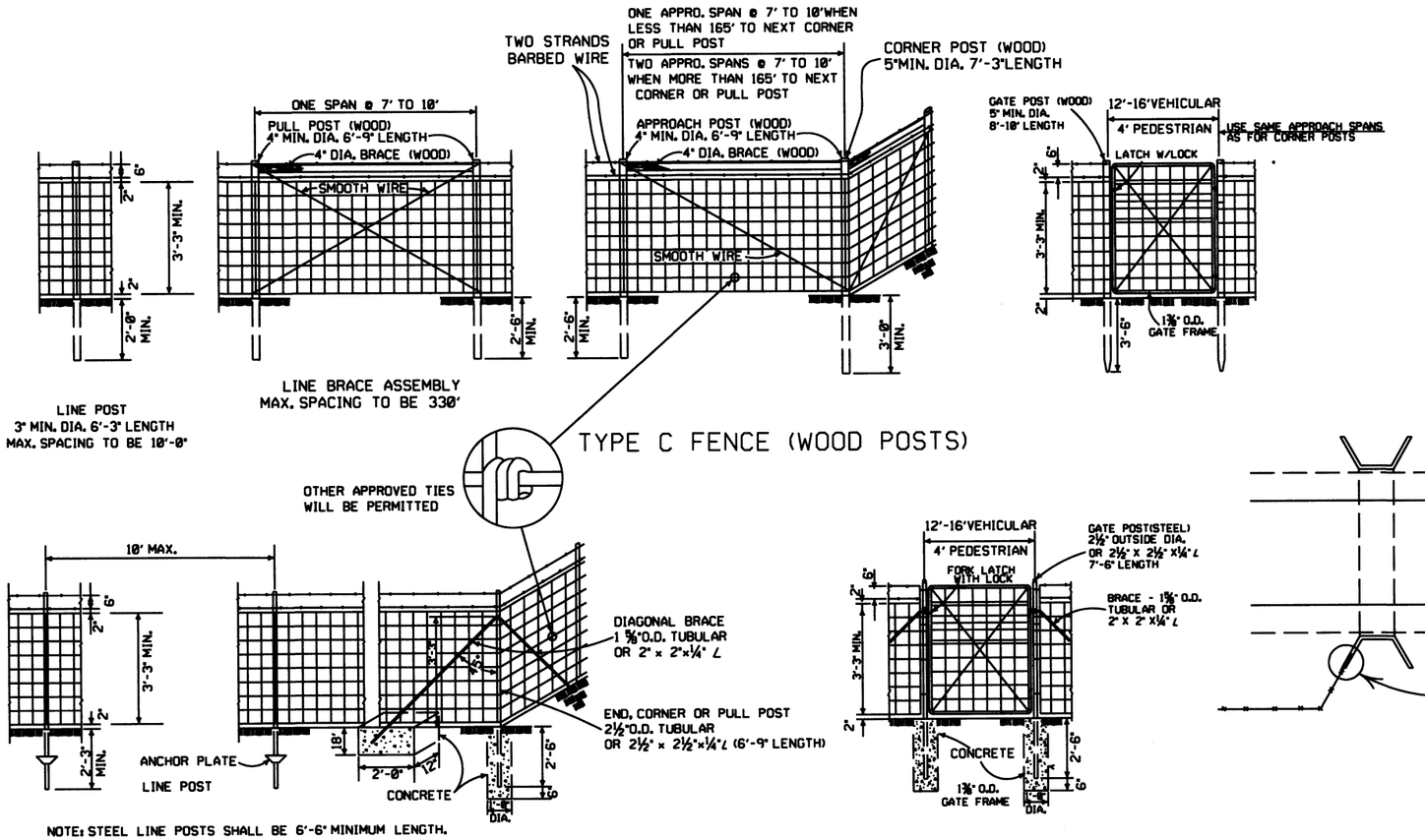
PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

DATE	REVISION	FILMED
4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED AND REDRAWN	529-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

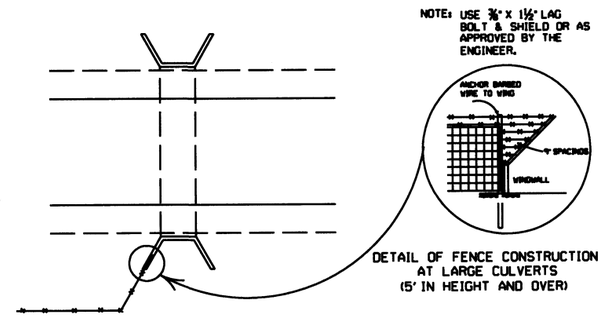
STANDARD DRAWING WF-2



TYPE C FENCE (WOOD POSTS)

NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

TYPE C FENCE (STEEL POSTS)



DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

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.

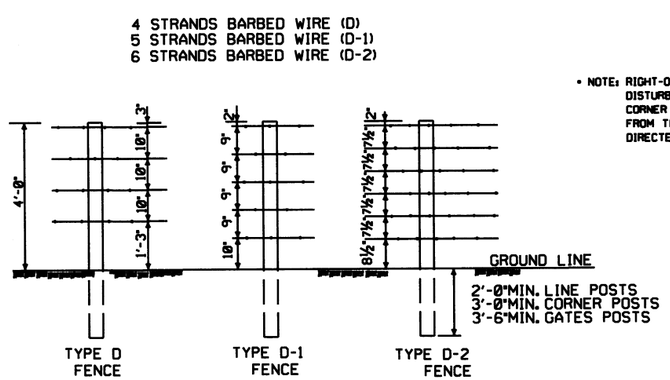
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED 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.

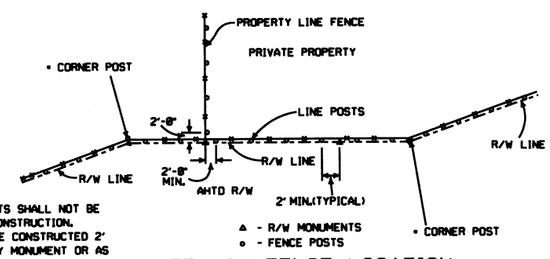
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 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.

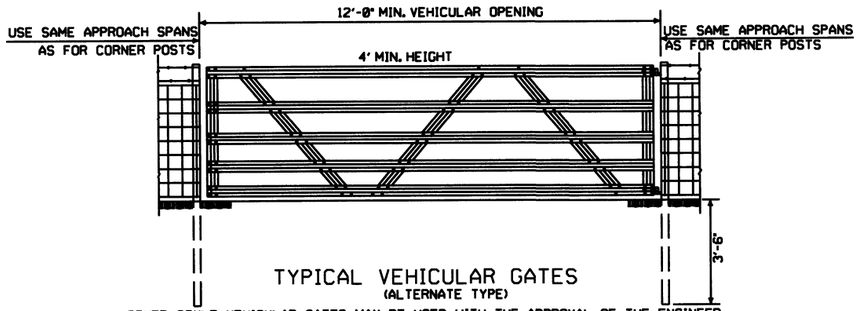


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



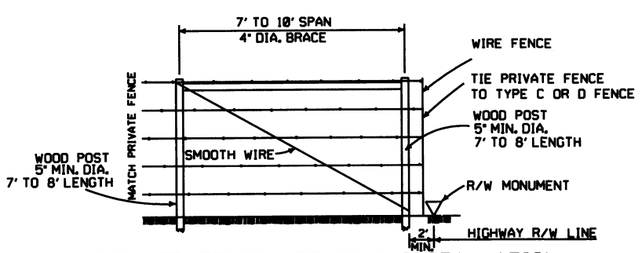
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



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.



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.

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	6-2-94
	ADDED CORNER POST NOTES	
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