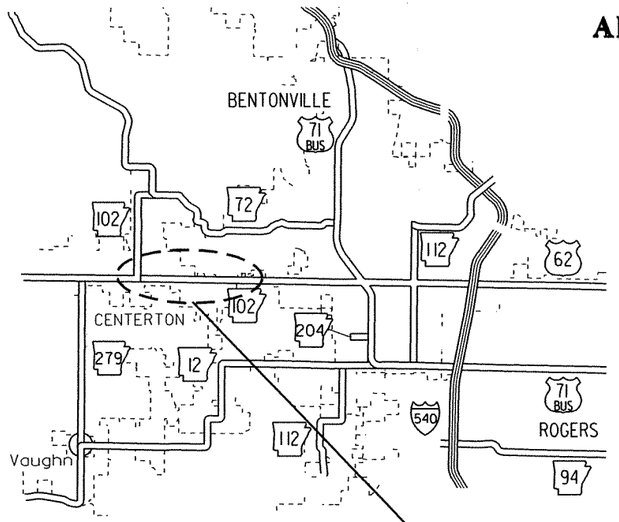
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	1	241
				(2) HWY. 102B - GREENHOUSE RD. (CENTERTON)(S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

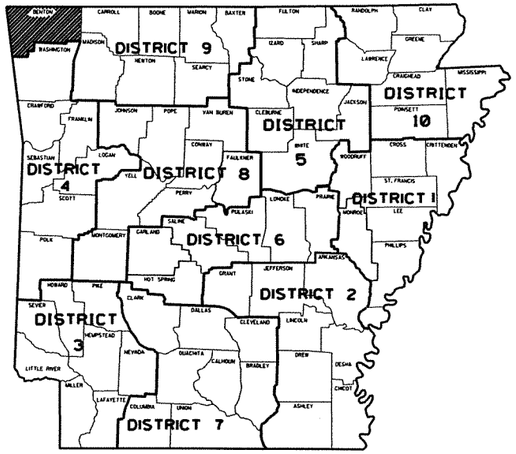
HWY. 102B - GREENHOUSE RD.
(CENTERTON) (S)
BENTON COUNTY
ROUTE 102 SECTION 3
F.A.P. NO. EBS-0004(41)
JOB 090174
NOT TO SCALE



VICINITY MAP

PROJECT LOCATION

N

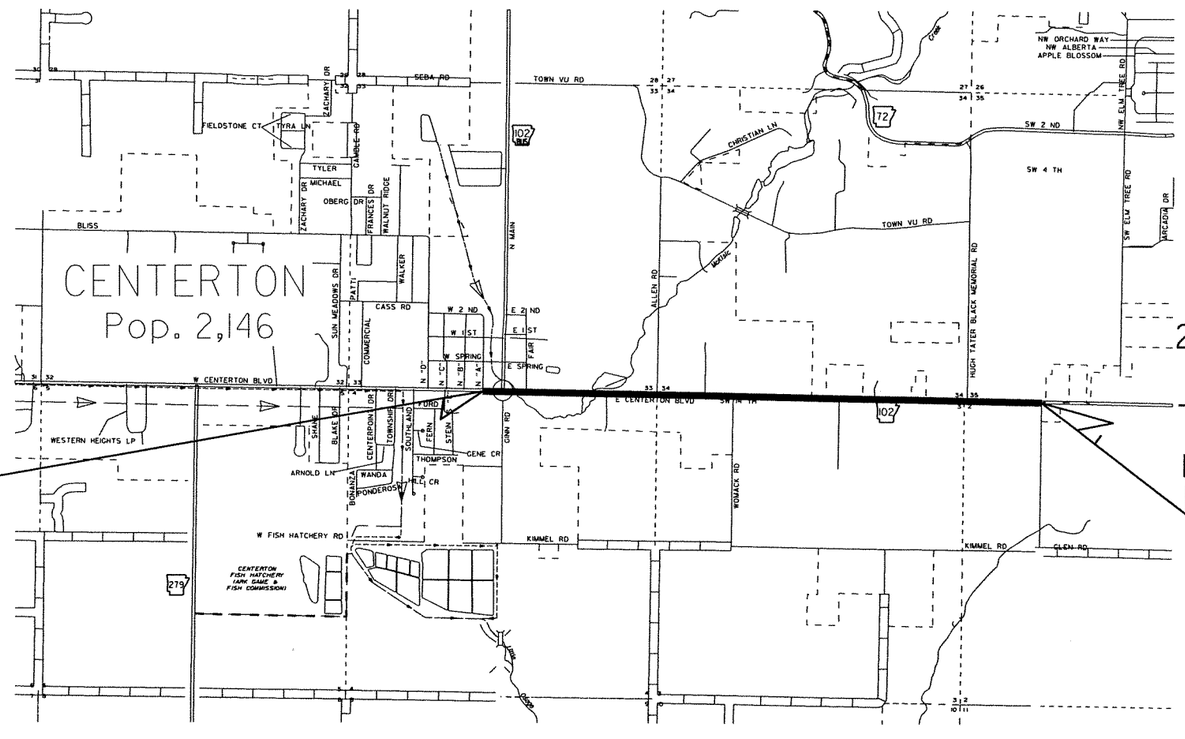


ARKANSAS HWY. DIST. 9

STRUCTURES OVER 20'-0" SPAN

STATION	DESCRIPTION	SPAN
139+12	DBL. 12' X 6' X 102' R.C. BOX CULVERT ON A 30° RT. FWD. SKEW W/ 3:1 WINGS LT. & RT.	28.67'
152+48	QUAD. 8' X 5' X 94' R.C. BOX CULVERT W/ 3:1 WINGS LT. & RT.	36.25'
78+30	QUAD. 8' X 4' X 66' R.C. BOX CULVERT W/ 3:1 WINGS LT. & RT.	

R31W



BEGIN JOB 090174
STA. 132+50
LOG MILE 11.293

END JOB 090174
STA. 224+00

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2012
2012 ADT	23,000
2032 ADT	32,000
2032 DHV	3,520
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	3%
DESIGN SPEED	40 MPH

N

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

5/15/12
DEPUTY DIRECTOR AND CHIEF ENGINEER

PROJECT COORDINATES:

	BEGIN	MID-POINT	END
LAT.	N36° 21' 31"	N36° 21' 30"	N36° 21' 28"
LON.	W94° 17' 11"	W94° 16' 15"	W94° 15' 19"

GROSS LENGTH OF PROJECT 9150.00 FEET OR 1.733 MILES
NET LENGTH OF ROADWAY 9085.08 FEET OR 1.721 MILES
NET LENGTH OF BRIDGES 64.92 FEET OR 0.012 MILES
NET LENGTH OF PROJECT 9150.00 FEET OR 1.733 MILES

P.E. JOB 090174
NON - PART.

090174

R090174.DGN 7/21/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	2	241

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

INDEX OF SHEETS

SHEET NO.	TITLE	DRWG.NO.	DATE
1	TITLE SHEET		
2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS AND GENERAL NOTES		
3 - 4	TYPICAL SECTIONS OF IMPROVEMENT		
5 - 6	SPECIAL DETAILS		
7 - 18	TEMPORARY EROSION CONTROL DETAILS		
19 - 42	MAINTENANCE OF TRAFFIC DETAILS		
43 - 50	PERMANENT PAVEMENT MARKING DETAILS		
51 - 57	QUANTITY SHEETS		
58 - 59	SUMMARY OF QUANTITIES AND REVISIONS		
60 - 67	SURVEY CONTROL DETAILS		
68 - 83	PLAN AND PROFILE SHEETS		
84	TRAFFIC SIGNAL QUANTITIES		
85	TRAFFIC SIGNAL NOTES		
86 - 91	SIGNALIZATION PLAN SHEETS		
92 - 97	SIGNALIZATION DETAILS		
98	CURBING DETAILS	CG-1	11-29-07
99	DETAILS OF DRIVEWAYS & ISLANDS	DR-1	11-29-07
100	FLARED END SECTION	FES-1	10-18-96
101	FLARED END SECTION	FES-2	10-18-96
102	DETAILS OF DROP INLETS & JUNCTION BOXES	FPC-9	11-16-01
103	DETAILS OF DROP INLETS	FPC-9D	8-22-02
104	DETAILS OF DROP INLETS (TYPE C)	FPC-9E	8-22-02
105	DETAILS OF DROP INLET (TYPE MO)	FPC-9M	8-22-02
106	DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)	FPC-9S	11-16-01
107	MAILBOX DETAILS	MB-1	11-18-04
108	PRECAST CONCRETE BOX CULVERTS	PBC-1	12-15-11
109	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	PCC-1	12-15-11
110	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	PCM-1	12-15-11
110A	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	PCP-1	12-15-11
110B	PLASTIC PIPE CULVERT (PVC F949)	PCP-2	12-15-11
111	PAVEMENT MARKING DETAILS	PM-1	11-17-10
112	DETAILS OF PIPE UNDERDRAIN	PU-1	4-10-03
113	REINFORCED CONCRETE BOX CULVERT DETAILS	RCB-1	12-15-11
114	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	RCB-2	11-20-03
115	METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS	RCB-3	10-12-95
116	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	SE-2	10-18-96
117	DETAILS OF SPECIAL ITEMS	SI-1	4-17-08
118	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-1	12-15-11
119	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-2	3-11-10
120	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-3	10-15-09
121	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	TC-4	10-15-09
122	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	TC-5	10-15-09
123	TEMPORARY EROSION CONTROL DEVICES	TEC-1	12-15-11
124	TEMPORARY EROSION CONTROL DEVICES	TEC-2	6-02-94
125	TEMPORARY EROSION CONTROL DEVICES	TEC-3	11-03-94
126	WIRE FENCE TYPE C AND D	WF-4	8-22-02
127	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	WR-1	11-10-05
128	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X303-1	5-10-66
128A	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X30	7-15-63
129	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X003-1	5-10-66
130	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	R-130X-0	2-24-64
131	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	R-200X-0	2-15-63
132	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	R-230X-02	3-20-64
133	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	R-400X-0	3-18-63
134 - 241	CROSS SECTIONS		

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

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 IF AND WHERE DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THIS PROJECT IS COVERED UNDER A NATIONWIDE 14 SECTION 404 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003, FOR PERMIT REQUIREMENTS.
9. ALL FLEXIBLE BASE, ASPHALTIC PAVEMENTS AND ASPHALT CURBS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
15765
MICHAEL D. FUGETT
6-1-12

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	FHWA 1273 - REVISIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - TRAINING PROGRAM - JOB 090174
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
102-1	BIDDING REQUIREMENTS AND CONDITIONS
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3	CONTROL OF WORK
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1	ASPHALT CONCRETE COLD PLANT MIX
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-2	INSPECTION OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
606-2	PIPE CULVERTS
711-1	CONCRETE PULL BOX
714-1	DESIGN AND MATERIAL REQUIREMENTS FOR TRAFFIC SIGNAL MAST ARMS AND POLES
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB 090174	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 090174	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 090174	CABINET DRAWER ASSEMBLY
JOB 090174	COMPACTED EMBANKMENT
JOB 090174	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 090174	COORDINATION OF WORK
JOB 090174	EDGE CARD VIDEO PROCESSOR
JOB 090174	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 090174	ELECTRICAL CONDUCTORS - IN - CONDUIT
JOB 090174	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 090174	INTERNET BIDDING
JOB 090174	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
JOB 090174	LED TRAFFIC SIGNAL HEAD
JOB 090174	LRFD PRECAST REINFORCED CONCRETE BOX CULVERTS
JOB 090174	LUMINAIRE ASSEMBLY (CUTOFF TYPE)
JOB 090174	MAINTENANCE OF TRAFFIC
JOB 090174	MODIFICATION OF EXISTING REINFORCED CONCRETE BOX CULVERTS
JOB 090174	NESTING SITES OF MIGRATORY BIRDS
JOB 090174	PARTNERING REQUIREMENTS
JOB 090174	PLASTIC PIPE
JOB 090174	RELOCATION OF TRAFFIC SIGNAL HEAD
JOB 090174	REMOVAL AND DISPOSAL OF GUARDRAIL
JOB 090174	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT
JOB 090174	SERVICE POINT ASSEMBLY
JOB 090174	SHORING
JOB 090174	SITE USE (A + C METHOD)
JOB 090174	STORM WATER POLLUTION PREVENTION PLAN
JOB 090174	STREET NAME SIGN (MAST ARM MOUNTED)
JOB 090174	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 090174	TEMPORARY IMPACT ATTENUATION BARRIER
JOB 090174	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)
JOB 090174	UTILITY ADJUSTMENTS
JOB 090174	VALUE ENGINEERING
JOB 090174	VIDEO DETECTOR (COLOR)
JOB 090174	VIDEO DETECTOR RELOCATION
JOB 090174	WARM MIX ASPHALT

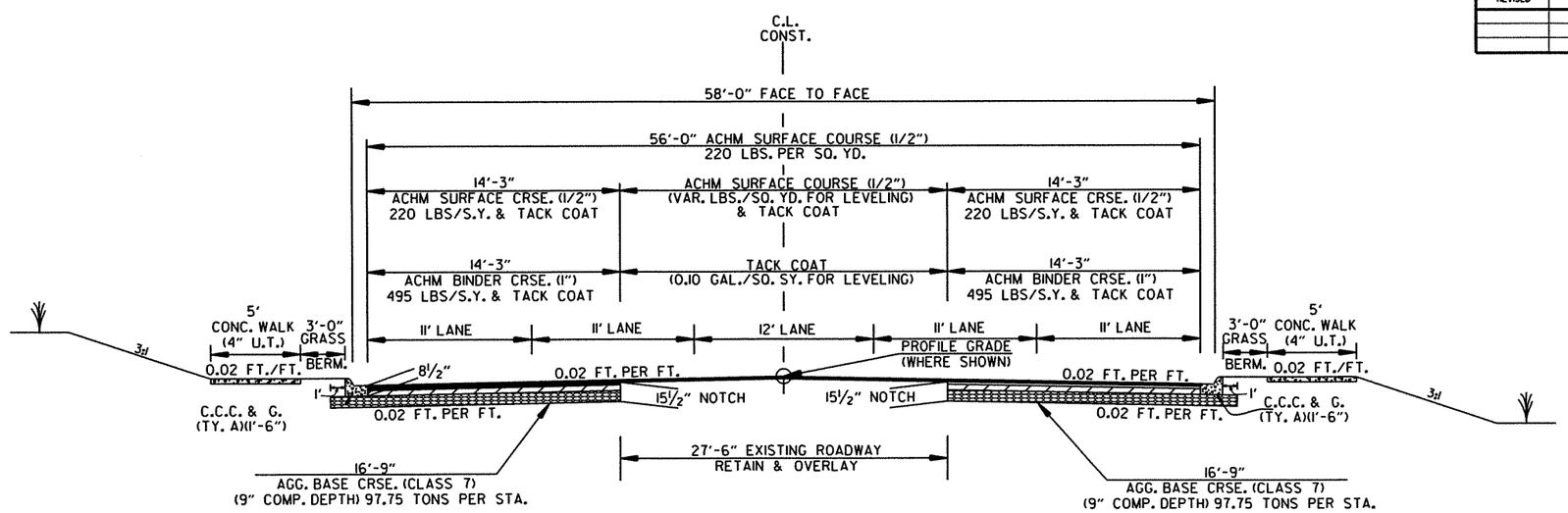
R090174.DGN 7/21/2011

INDEX OF SHEETS, GOVERNING SPECIFICATIONS AND GENERAL NOTES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	3	241

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGATT
5/14/12



TYPICAL SECTION OF IMPROVEMENT
MAIN LANES

NOTES:
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

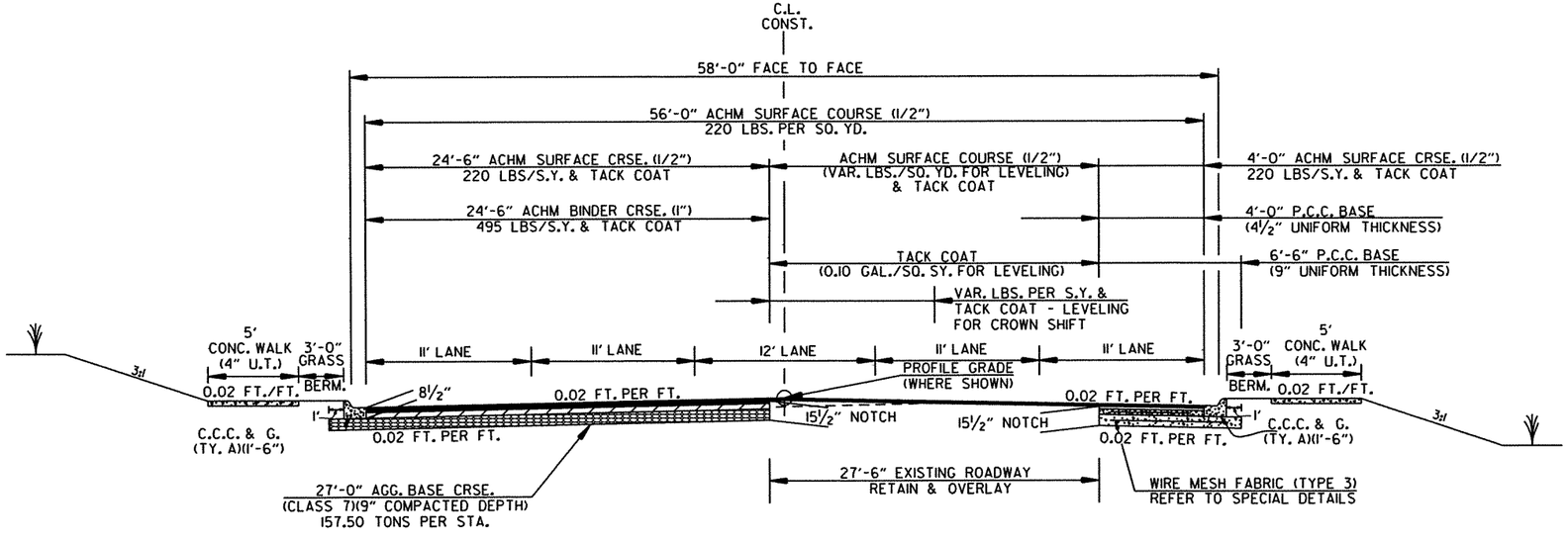
REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED 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.

THE THICKNESS OF AGG. 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.

REFER TO SPECIAL DETAIL FOR P.C.C. BASE FOR ANY WIDENING AREAS LESS THAN 4'-0" IN WIDTH.



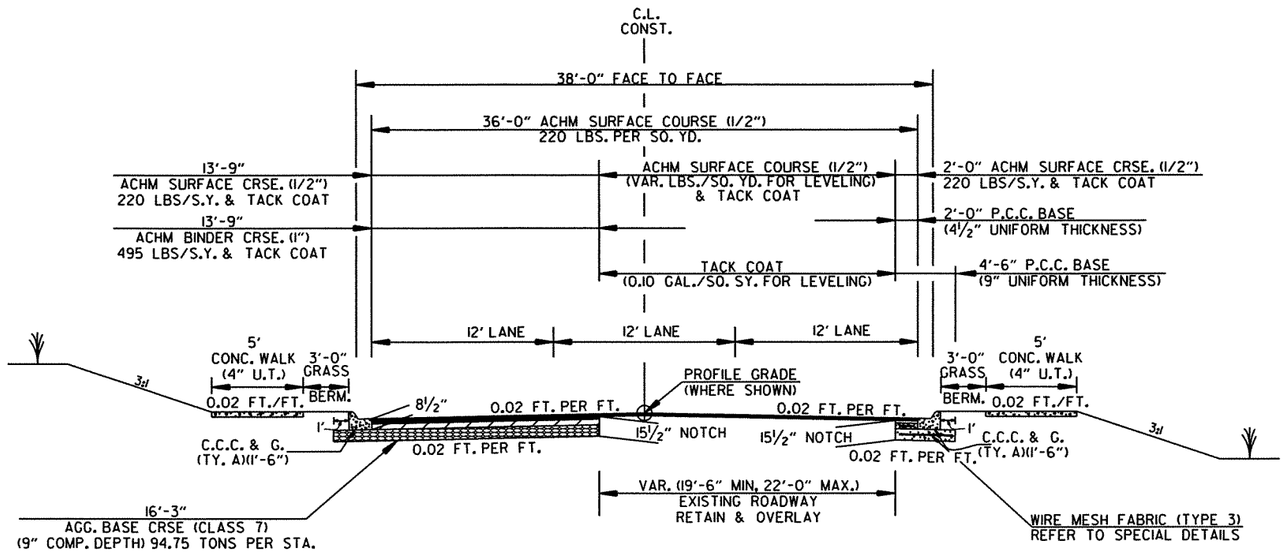
TYPICAL SECTION OF IMPROVEMENT
MAIN LANES

R090174.DGN 7/21/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	4	241

(2) TYPICAL SECTIONS OF IMPROVEMENT





TYPICAL SECTION OF IMPROVEMENT

FISH HATCHERY ROAD

NOTES:
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

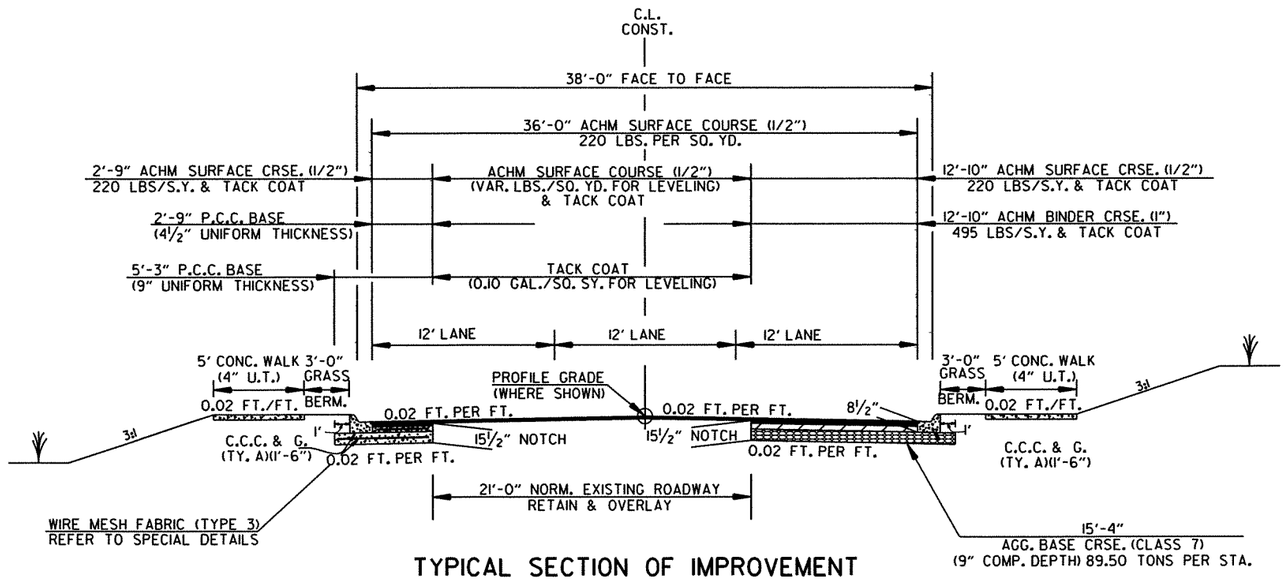
REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED 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.

THE THICKNESS OF AGG. 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.

REFER TO SPECIAL DETAIL FOR P.C.C. BASE FOR ANY WIDENING AREAS LESS THAN 4'-0" IN WIDTH.



TYPICAL SECTION OF IMPROVEMENT

HWY. 102B

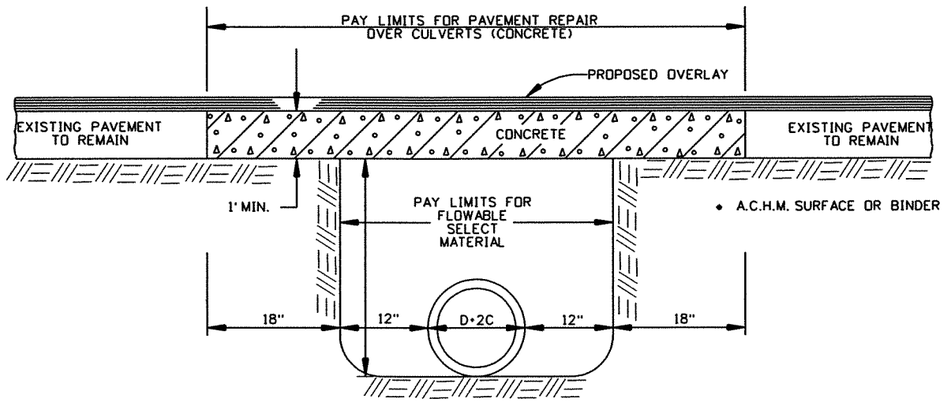
R090174.DGN 7/21/2011

TYPICAL SECTIONS OF IMPROVEMENT

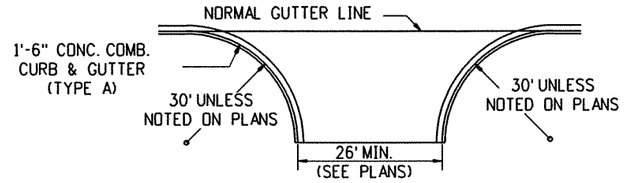
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	5	241

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

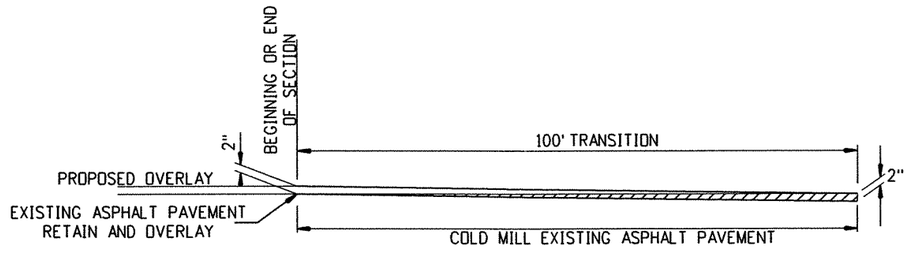


PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



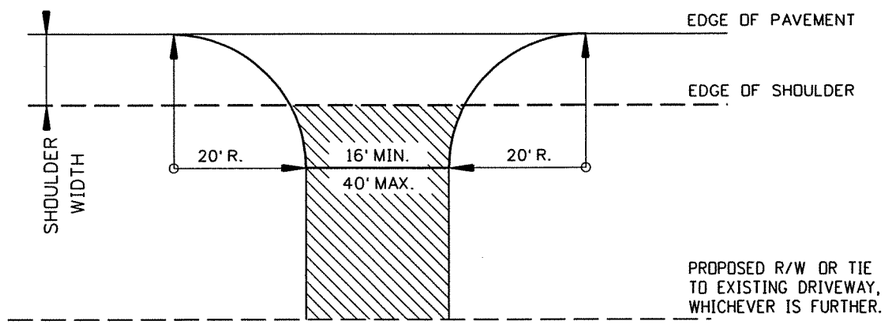
DETAIL OF TURNOUTS ASPHALT STREETS, COUNTY ROADS & STATE HIGHWAYS

NOTE: THE TYPICAL SECTION FOR THE CITY STREET CONNECTIONS IN THE CURB & GUTTER SECTION SHALL MATCH THE PROPOSED WIDENING SECTION SHOWN FOR THE MAIN LANES. UNLESS OTHERWISE NOTED ON THE PLANS, ALL CITY STREET RADII WILL BE 30'.



COLD MILLING DETAIL AT EXISTING PAVEMENT TIE-INS

NOTE: 50' PER 1" OF OVERLAY FOR MAIN LANES

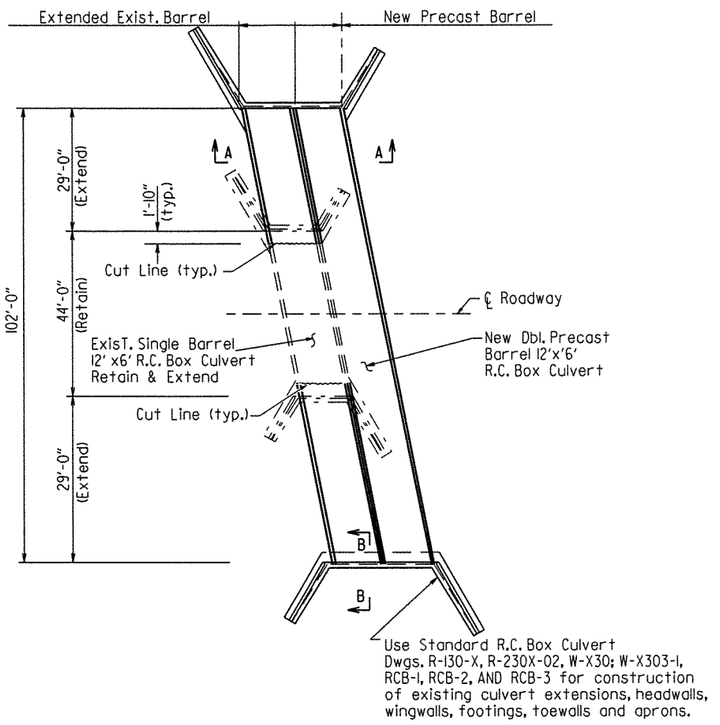


DETAIL FOR DRIVEWAY TURNOUTS

ASPHALT CONCRETE HOT MIX SURFACE COURSE (½") (220 LBS. PER SQ.YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP.DEPTH.

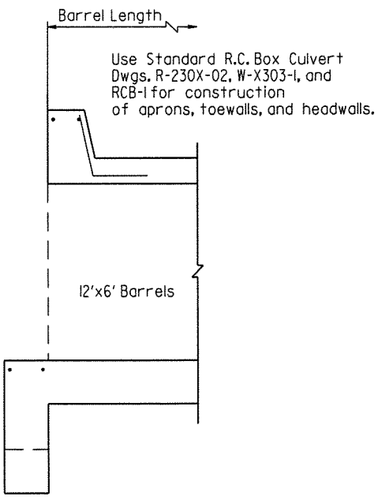
R090174.DGN 6/16/2011

SPECIAL DETAILS



LAYOUT OF 2-BARREL CULVERT ON 30° SKEW @ STA. 139+12

NOT TO SCALE



SECTION B-B

NOT TO SCALE

Notes:

See Standard Drawings for details and dimensions for extending existing culvert.

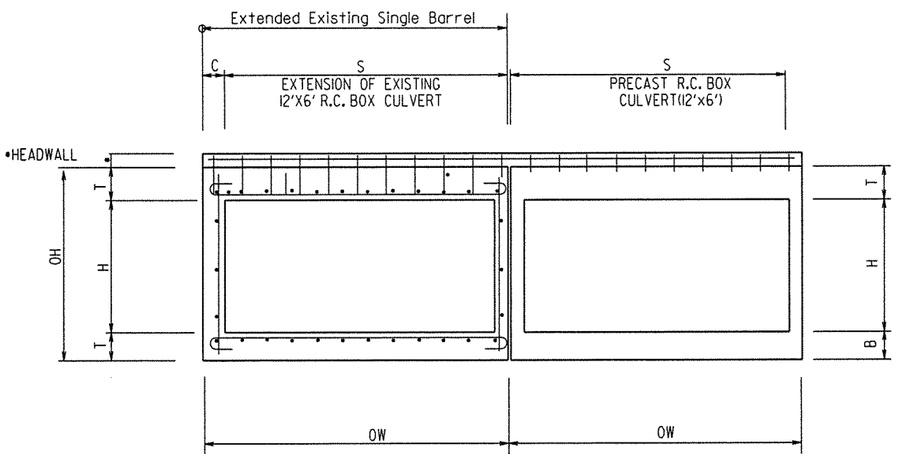
All dimensions and reinforcing shall be verified in the field and the Contractor shall be responsible for making any adjustments required to the satisfaction of the Engineer.

Any gaps between adjacent culvert barrel walls shall be sealed as approved by the Engineer. No direct payment shall be made for this work, but it shall be considered incidental to the unit price bid for "Class S Concrete-Roadway".

**R.C. BOX CULVERT EXTENSION QUANTITIES

Item	QUANTITY	UNIT
UNCLASS. EXC. - ROADWAY	195	CU. YD.
CLASS S CONC. - ROADWAY	103.90	CU. YD.
REINF. STEEL (GR. 60) - ROADWAY	11,401	TONS

** Includes: Headwalls, Wingwalls, Footings, Toes Walls, and Aprons



DIMENSIONS- REFER TO STANDARD DRAWINGS

SECTION A-A

NOT TO SCALE

CULVERT @ STA. 139+12

SPECIAL DETAILS
MODIFICATION OF EXISTING
REINFORCED CONCRETE BOX CULVERTS

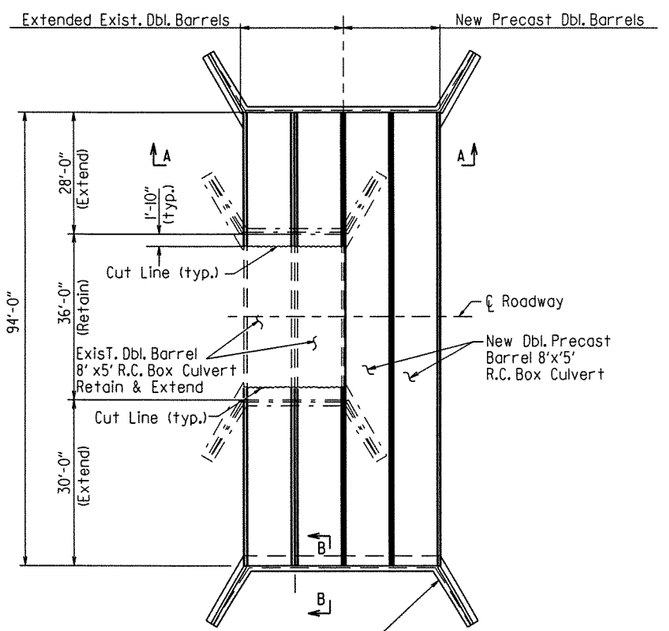
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER 14606 BRETT D. RUGETT

5/9/12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

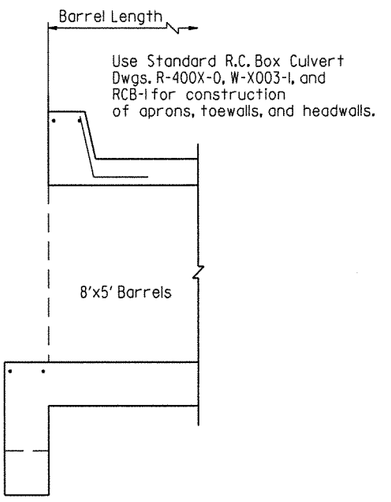
(2) SPECIAL DETAILS

JOB NO.	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
090174	6	ARK.		5A	241



LAYOUT OF 4-BARREL CULVERT @ STA. 152+48

NOT TO SCALE



SECTION B-B

NOT TO SCALE

Notes:

See Standard Drawings for details and dimensions for extending existing culvert.

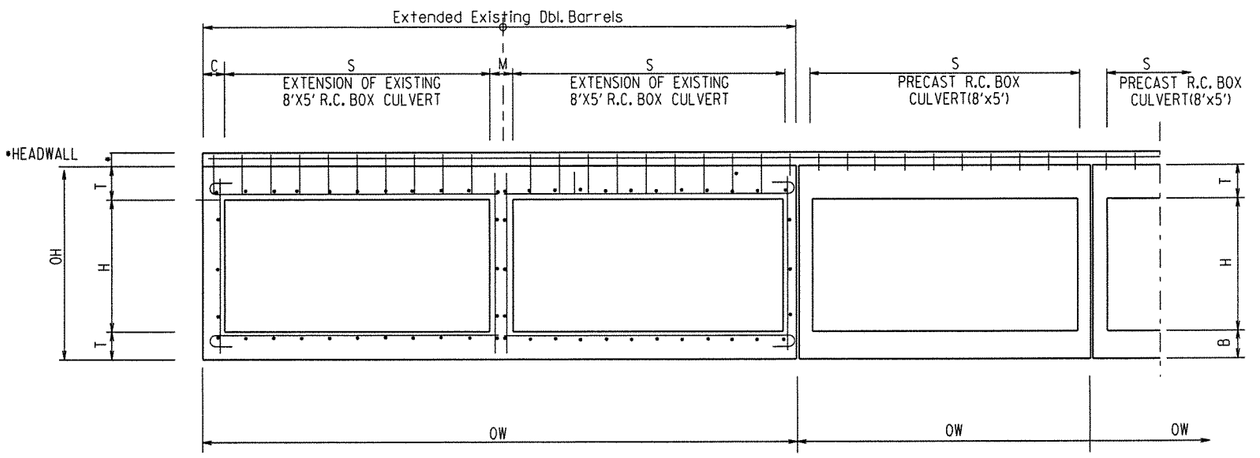
All dimensions and reinforcing shall be verified in the field and the Contractor shall be responsible for making any adjustments required to the satisfaction of the Engineer.

Any gaps between adjacent culvert barrel walls shall be sealed as approved by the Engineer. No direct payment shall be made for this work, but it shall be considered incidental to the unit price bid for "Class S Concrete-Roadway".

**R.C. BOX CULVERT EXTENSION QUANTITIES

Item	QUANTITY	UNIT
UNCLASS. EXC. - ROADWAY	171	CU. YD.
CLASS S CONC. - ROADWAY	98.49	CU. YD.
REINF. STEEL (GR. 60) - ROADWAY	14,652	TONS

** Includes: Headwalls, Wingwalls, Footings, Toes Walls, and Aprons



DIMENSIONS- REFER TO STANDARD DRAWINGS

SECTION A-A

NOT TO SCALE

CULVERT @ STA. 152+48

SPECIAL DETAILS
MODIFICATION OF EXISTING
REINFORCED CONCRETE BOX CULVERTS

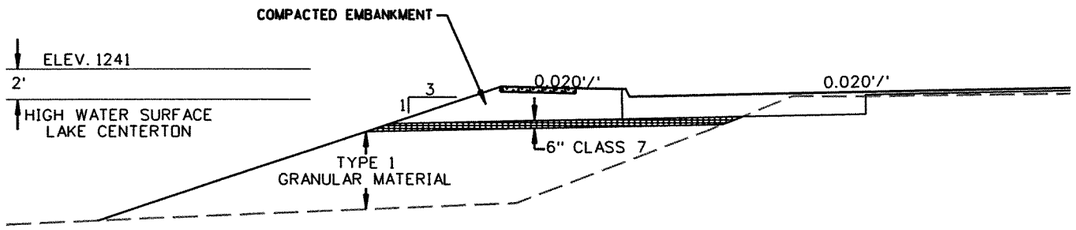


DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	090174	5B	241

(2) 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.		090174	6	241

(2) SPECIAL DETAILS



EMBANKMENT DETAIL FOR LAKE

STATION 152+00 - STATION 157+00

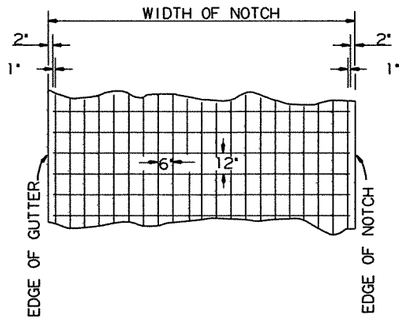
NOTES:

THE POND WILL REMAIN FULL DURING CONSTRUCTION.

THE EMBANKMENT SHALL BE CONSTRUCTED OF TYPE 1 GRANULAR MATERIAL MEETING MATERIAL SIZE REQUIREMENTS OF SECTION 630 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION 2003. NO UNDERCUT WILL BE REQUIRED.

THE TOP 6 INCHES OF THE GRANULAR MATERIAL (ROCK) SHALL BE MATERIAL COMPLYING WITH SECTION 303 AGGREGATE BASE COURSE CLASS 7 IN THE ROADWAY SECTION TO FILL THE VOIDS ON THE SURFACE AND PREVENT FINER MATERIAL FROM ABOVE FROM FILTERING INTO THE ROCK SURFACE.

REFER TO THE SP "EXCAVATION AND EMBANKMENT".



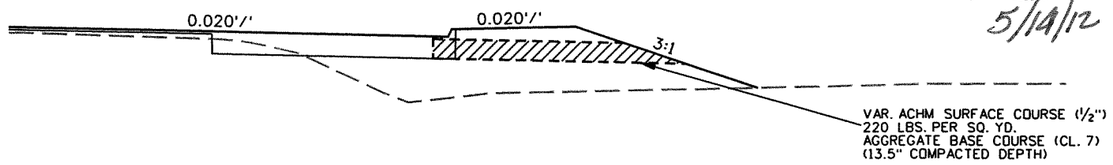
DETAIL OF REINFORCING STEEL FOR PAVEMENT (WIRE MESH TYPE 3)

6" X 12" MESH FABRIC (TYPE 3) (W5.5 x W2.9) = 4.26 LBS./SQ.YD.

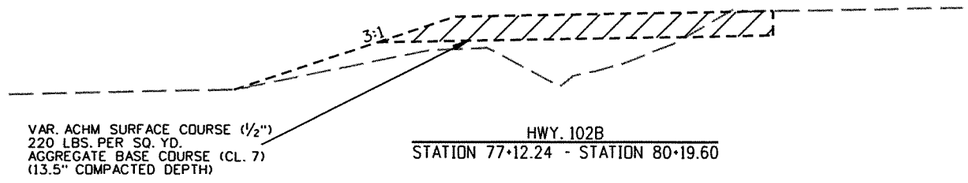
NOTES:

1. LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6' TRANSVERSELY.
2. MESH FABRIC IS NOT REQUIRED WHEN THE WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
3. MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (3.5" U.T.) AND PORTLAND CEMENT CONCRETE BASE (8" U.T.).

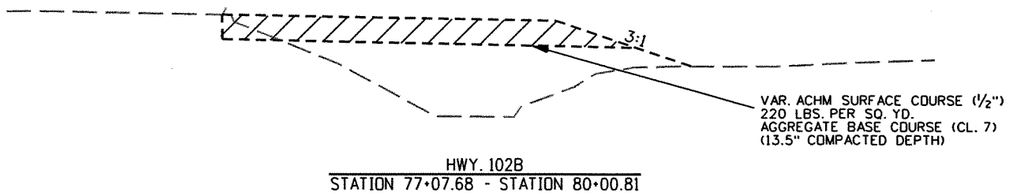
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. RUGETT
5/14/12



HWY. 102
STATION 135+73.84 - STATION 142+33.69
STATION 149+59.60 - STATION 155+97.54



HWY. 102B
STATION 77+12.24 - STATION 80+19.60



HWY. 102B
STATION 77+07.68 - STATION 80+00.81

TEMPORARY WIDEN DETAILS

R090174.DGN 6/16/2011

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.		090174	7	241

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12

N

P.I. STA. 80+71.90
N1°07'28.9"E
S87°27'10.2"E
S87°14'57.8"E
N1°51'43.5"E
N1°49'19.8"E
P.I. STA. 72+37.10
P.I. STA. 71+46.01
P.I. STA. 74+87.19
P.I. STA. 78+05.21
P.I. STA. 78+14.34
NORTH 'B' STREET
NORTH 'A' STREET
FAIR STREET
RET. WALL
CONCRETE
PAVED PARKING
FISH HATCHERY
MH
P.C.E.
T.C.E.
E-11 · 241'
E-11 · 67'

EROSION CONTROL REVISIONS

DATE	REVISION MADE

TEMPORARY EROSION CONTROL DETAILS: STAGE 1

R090174.DGN 7/20/2011

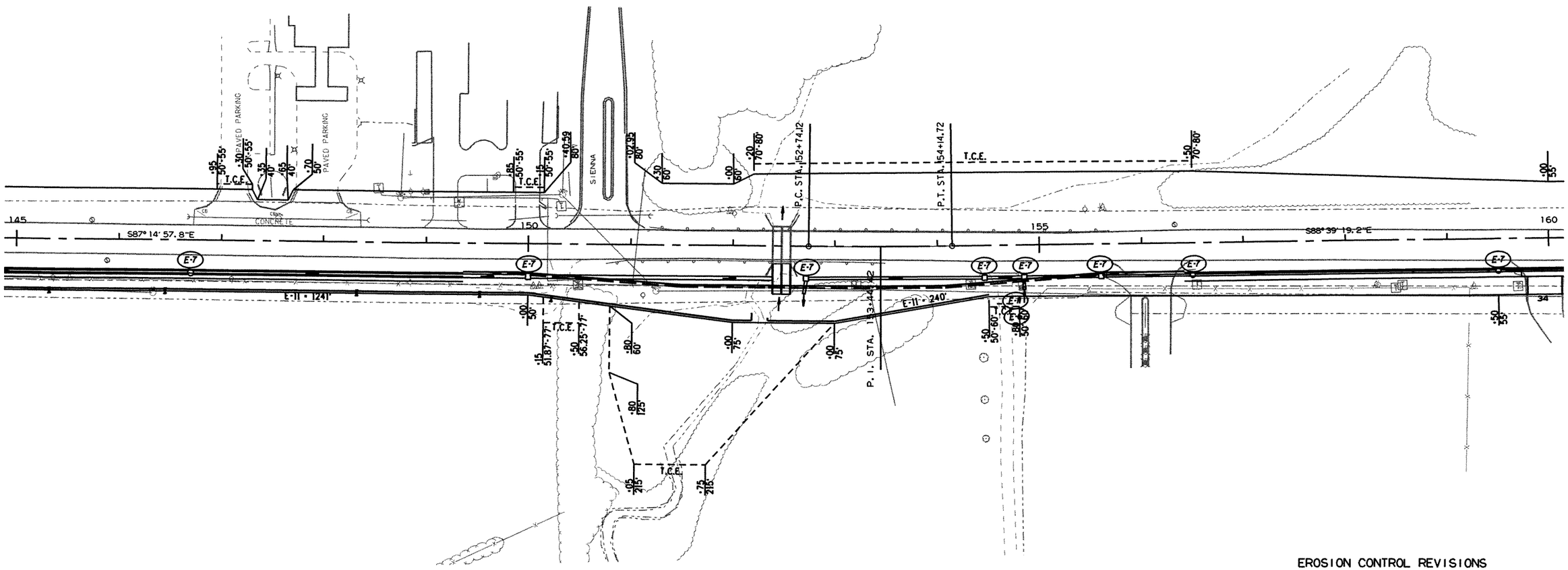
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	8	241

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
E-14
LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

N



EROSION CONTROL REVISIONS

DATE	REVISION MADE

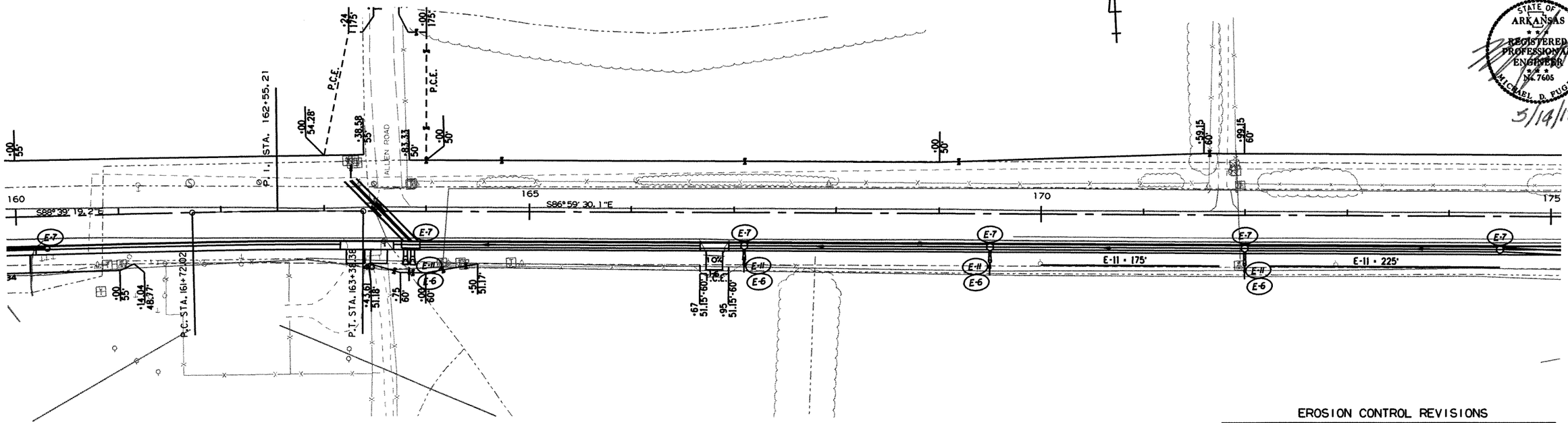
TEMPORARY EROSION CONTROL DETAILS: STAGE 1

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	9	241

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3/14/12

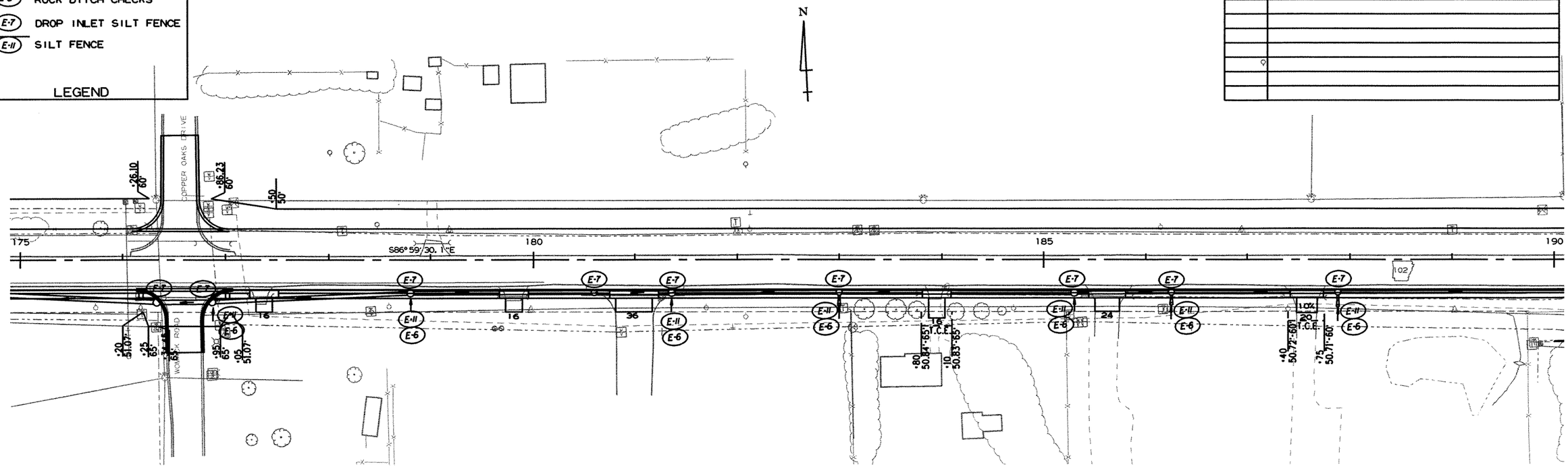


EROSION CONTROL REVISIONS

DATE	REVISION MADE

E-6 ROCK DITCH CHECKS
E-7 DROP INLET SILT FENCE
E-11 SILT FENCE

LEGEND



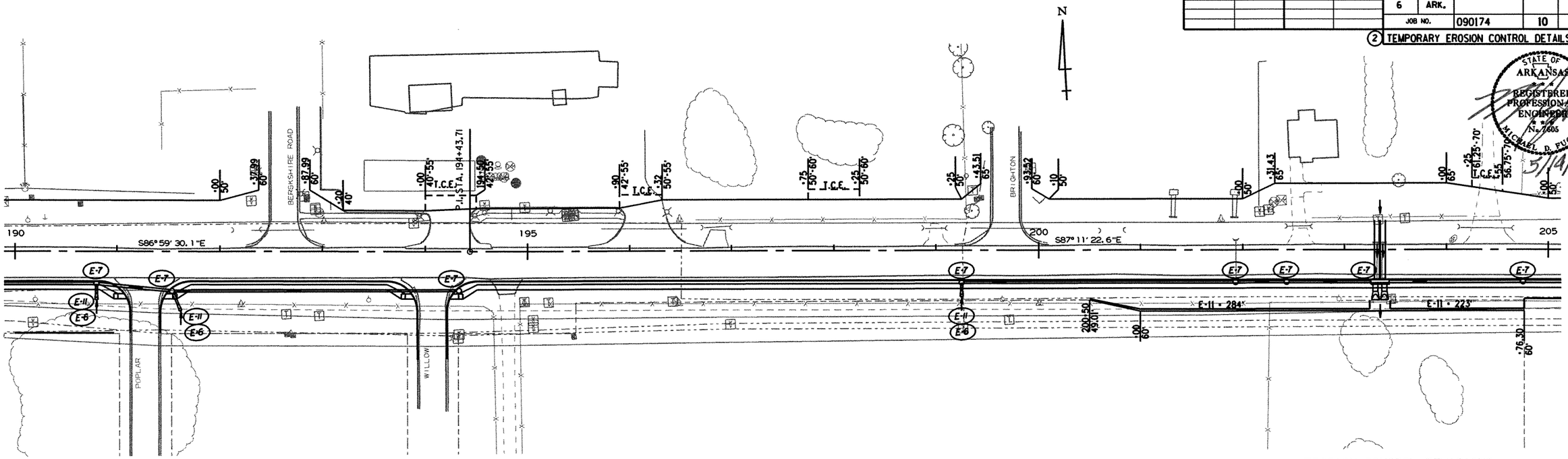
TEMPORARY EROSION CONTROL DETAILS: STAGE 1

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	10	241

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

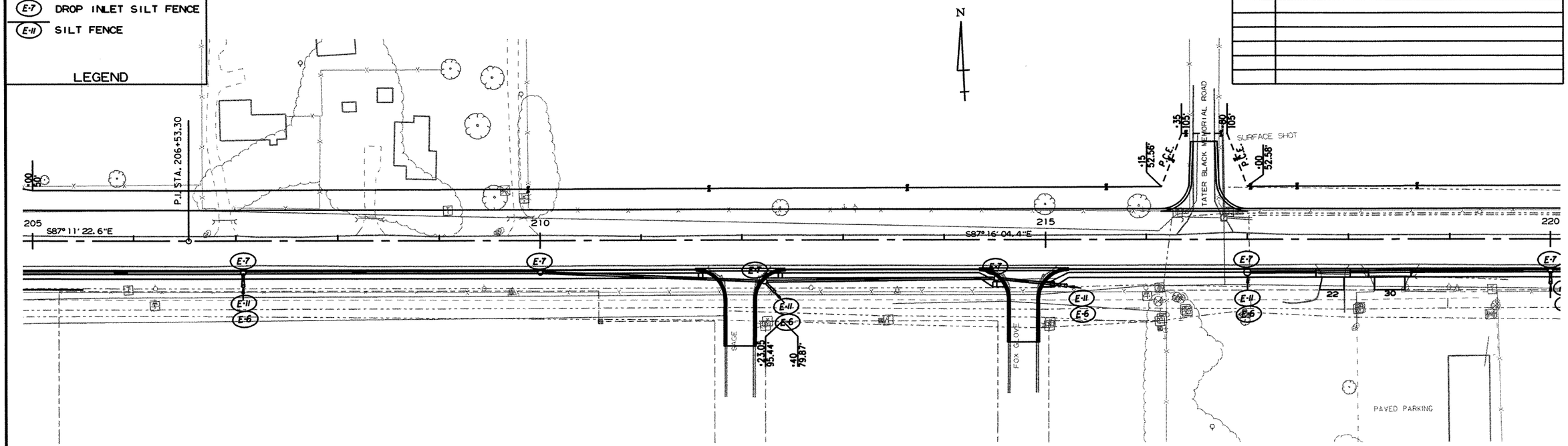


EROSION CONTROL REVISIONS

DATE	REVISION MADE

E-6 ROCK DITCH CHECKS
E-7 DROP INLET SILT FENCE
E-11 SILT FENCE

LEGEND



TEMPORARY EROSION CONTROL DETAILS: STAGE 1

R090174.DGN 7/20/2011

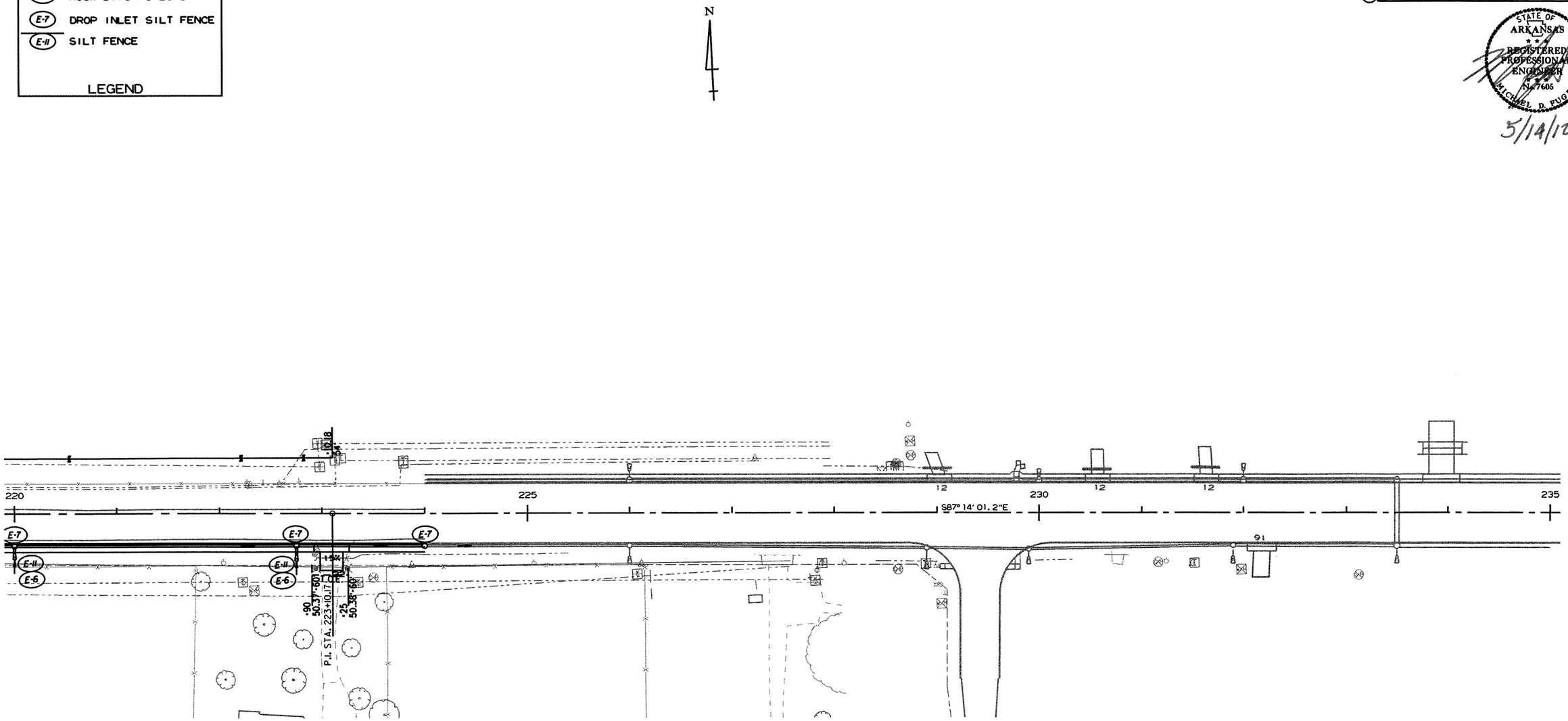
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	11	241

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND

N



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12

EROSION CONTROL REVISIONS

DATE	REVISION MADE

TEMPORARY EROSION CONTROL DETAILS: STAGE 1

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	12	241

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5/14/12

N

EROSION CONTROL REVISIONS

DATE	REVISION MADE

TEMPORARY EROSION CONTROL DETAILS: STAGE 2

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	13	241

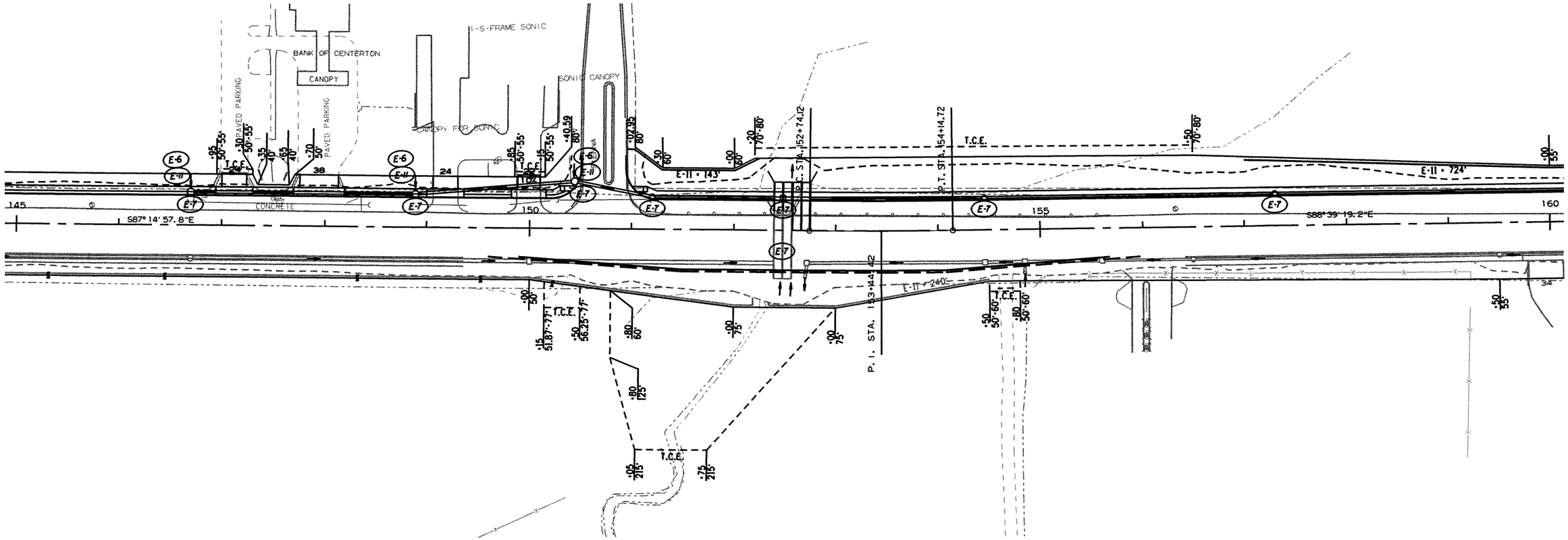
(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

N



EROSION CONTROL REVISIONS

DATE	REVISION MADE

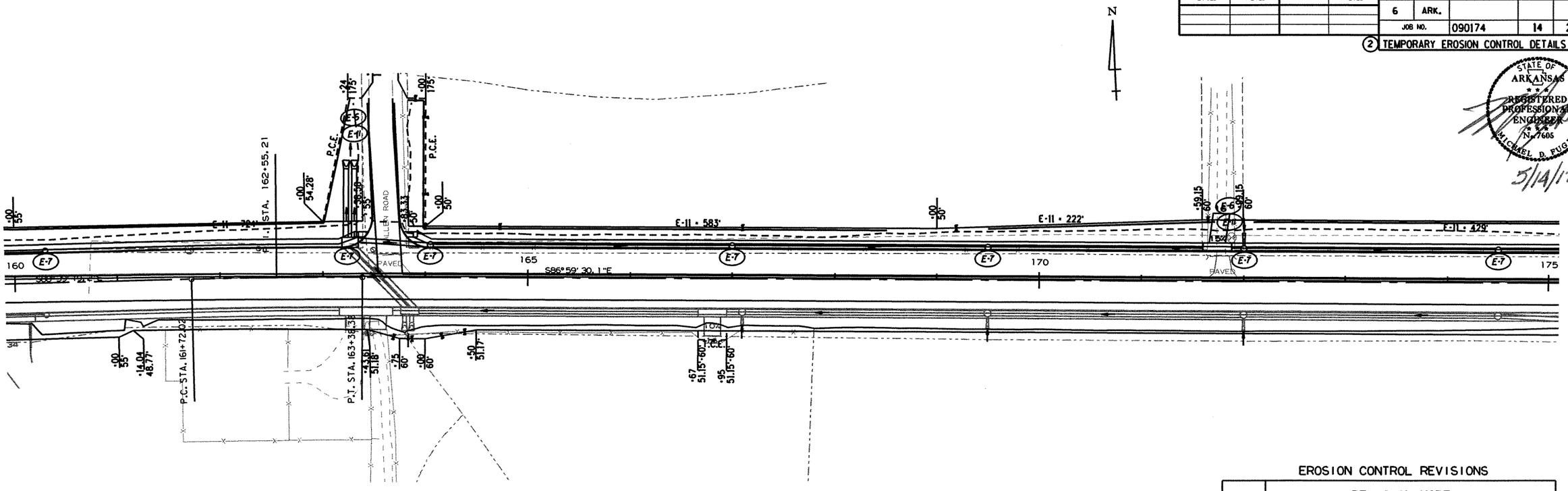
TEMPORARY EROSION CONTROL DETAILS: STAGE 2

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	14	241

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

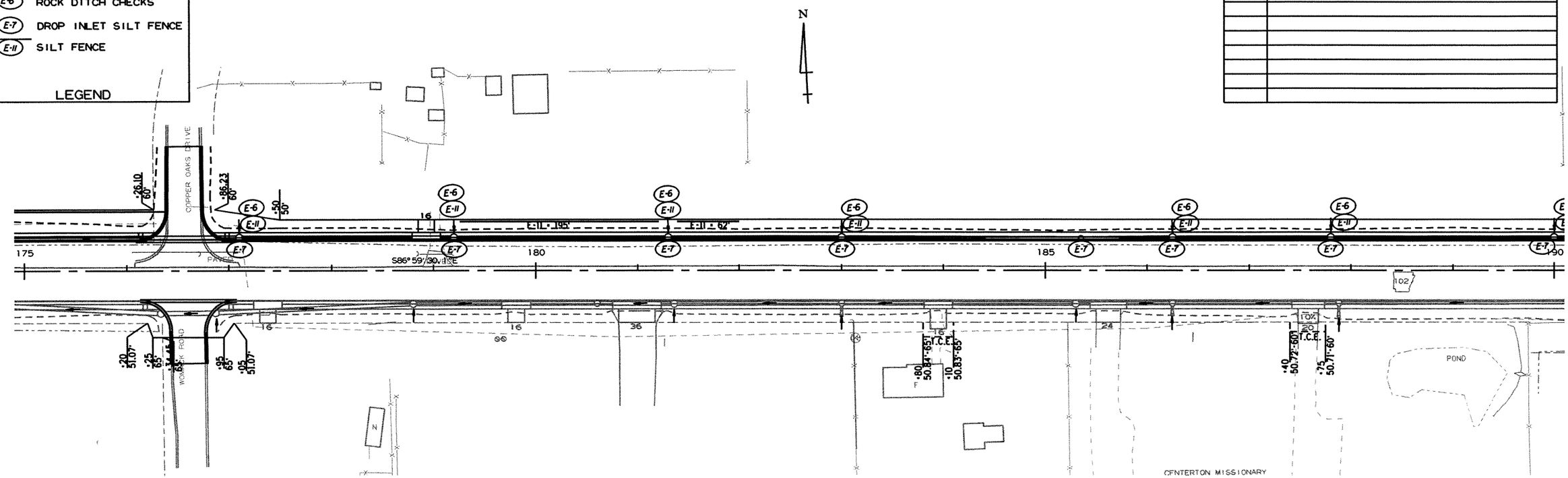


EROSION CONTROL REVISIONS

DATE	REVISION MADE

E-6 ROCK DITCH CHECKS
E-7 DROP INLET SILT FENCE
E-11 SILT FENCE

LEGEND

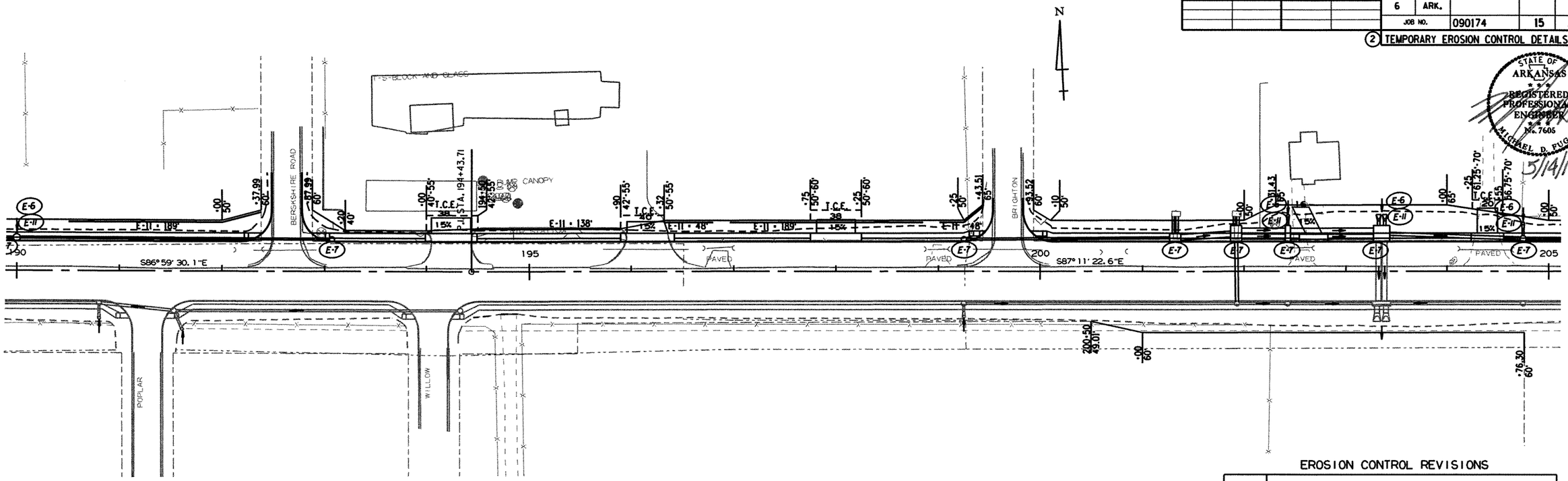


TEMPORARY EROSION CONTROL DETAILS: STAGE 2

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	15	241

(2) TEMPORARY EROSION CONTROL DETAILS



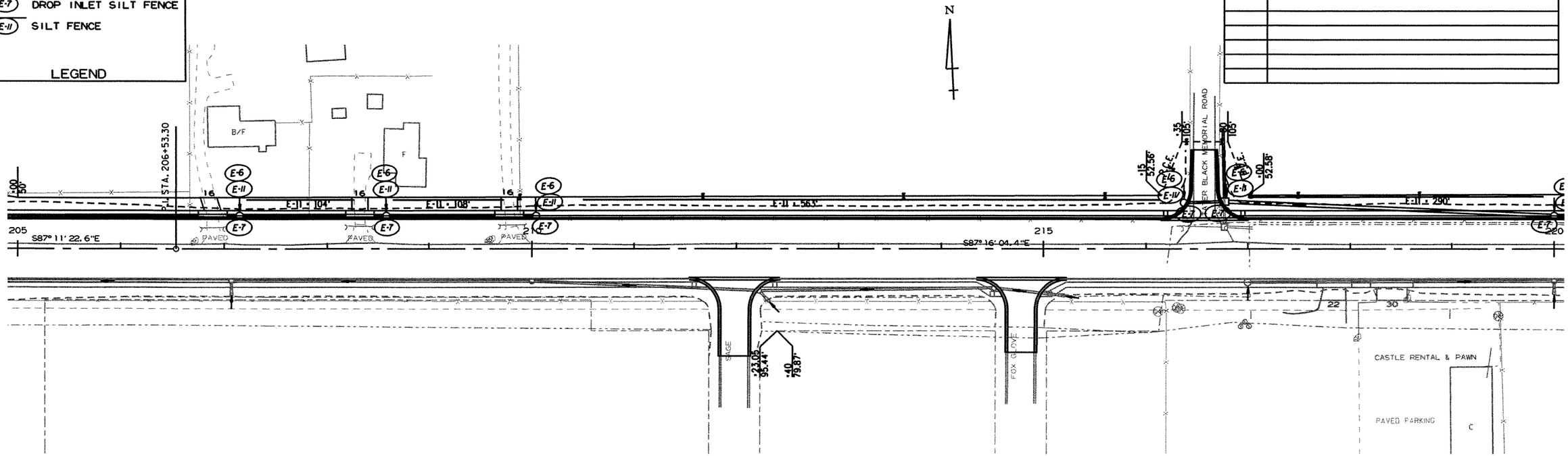
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

EROSION CONTROL REVISIONS

DATE	REVISION MADE

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND



TEMPORARY EROSION CONTROL DETAILS: STAGE 2

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	16	241

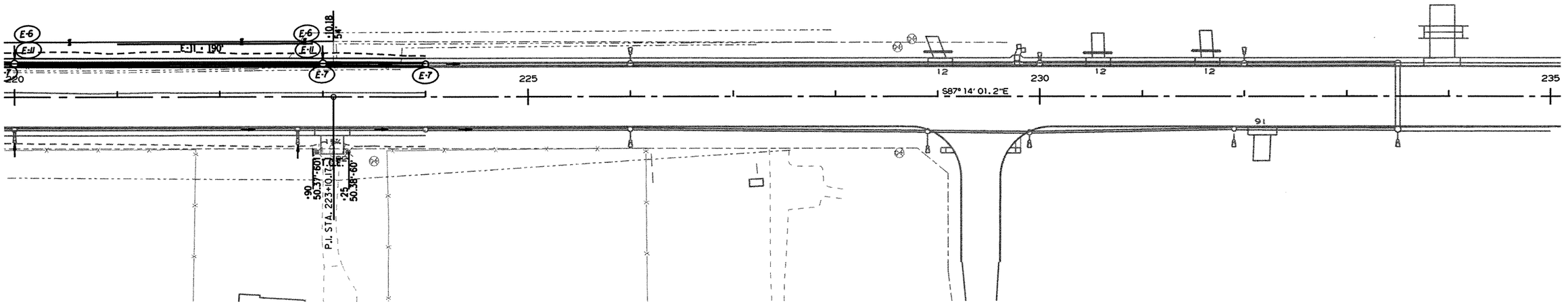
(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND

N

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12



EROSION CONTROL REVISIONS

DATE	REVISION MADE

TEMPORARY EROSION CONTROL DETAILS: STAGE 2

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	17	241

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. RUGETT
5/14/12

N

P.I. STA. 80+71.90
N2° 36' 57.0"E
N1° 07' 28.9"E
S87° 27' 10.2"E
S87° 14' 57.8"E
N1° 51' 43.5"E
N0° 25' 02.7"E
N1° 49' 19.8"E
P.I. STA. 74+87.19
P.I. STA. 72+37.10
P.I. STA. 71+46.01
P.I. STA. 78+05.21
P.I. STA. 72+39.36
P.I. STA. 73+84.62
P.I. STA. 73+84.62
P.I. STA. 74+87.19
P.I. STA. 72+37.10
P.I. STA. 71+46.01
P.I. STA. 78+05.21
P.I. STA. 72+39.36

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	18	241

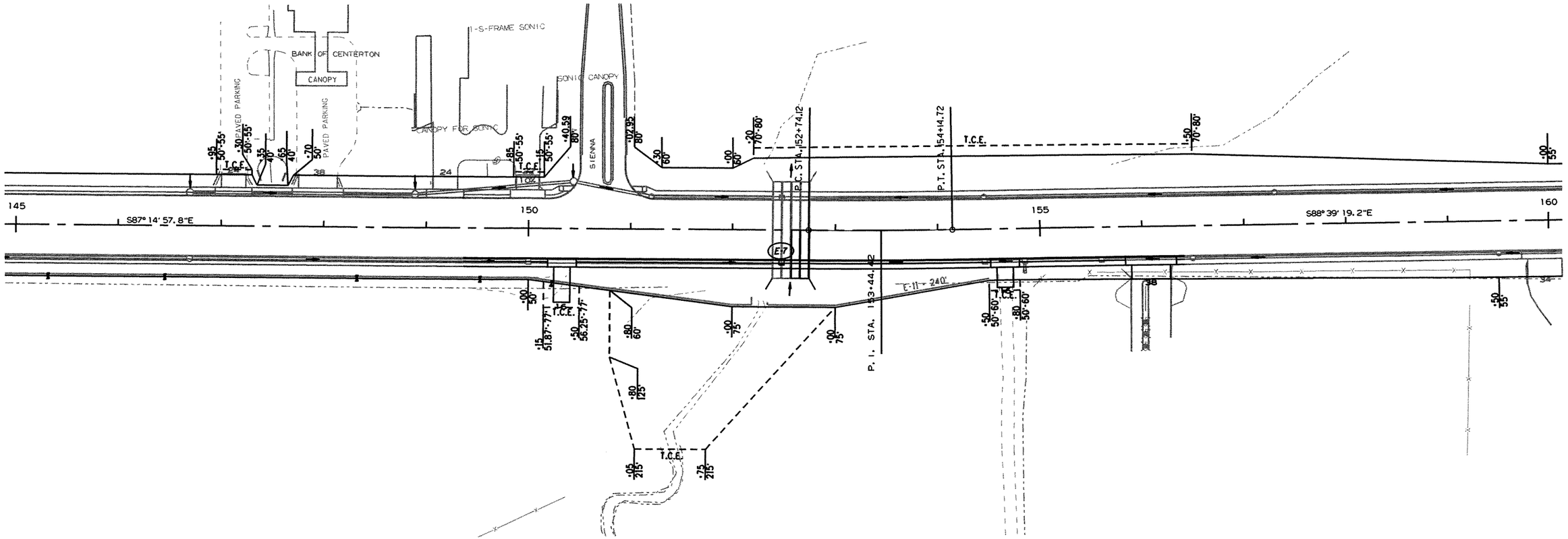
(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE

LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

N



EROSION CONTROL REVISIONS

DATE	REVISION MADE

TEMPORARY EROSION CONTROL DETAILS: STAGE 3

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	19	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AT THE BEGINNING AND END OF PROJECT AND ON HWY. 102B. REFER TO MAINTENANCE OF TRAFFIC SP. SPECIAL DETAILS. CROSS SECTIONS AND MAINTENANCE OF TRAFFIC PLAN SHEET 19A WHEN CONSTRUCTING QUAD. PRECAST R.C. BOX CULVERT ON HWY. 102B. AT STATION 78+30.

PLACE W20-1 (AHEAD) SIGNS ON ALL INTERSECTING STREETS. DELINEATE DRIVEWAYS AND CITY STREETS ON THE SIDE BEING WIDENED WITH TRAFFIC DRUMS (6 PER DRIVE). MAINTAIN TRAFFIC THROUGHOUT THE PROJECT USING VERTICAL PANELS PLACED AT 40' O.C. ON THE RIGHT SIDE AND NOTCH EACH SIDE OF FISH HATCHERY ROAD ONE SIDE AT A TIME.

CONSTRUCT NOTCH AND WIDEN ON RIGHT SIDE OF HWY. 102 UP TO THE FINAL 2" LIFT OF SURFACE COURSE, WITH TEMPORARY WIDENING FROM STATION 135+62 TO STATION 142+52 AND STATION 149+36 TO STATION 156+41. REFER TO CROSS SECTIONS FOR TEMPORARY WIDENING WIDTHS. INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+94 TO STATION 140+19 ON RIGHT WITH TEMPORARY IMPACT ATTENUATION BARRIER. CONSTRUCT 28'-8" OF 13' x 6' R.C. BOX CULVERT ON RIGHT WITHOUT HEADWALL AND WING WALLS AT STATION 139+12. CONSTRUCT 30' OF DOUBLE 8' x 5' R.C. BOX CULVERT ON RIGHT WITH HEADWALL AND WING WALLS AT STATION 152+48.

CONSTRUCT EACH SIDE OF FISH HATCHERY ROAD ONE SIDE AT A TIME UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

STAGE 2:

REMOVE ALL CONFLICTING PAVEMENT MARKINGS ON HWY 102. APPLY CONSTRUCTION PAVEMENT MARKINGS AND SHIFT TRAFFIC ONTO NEW CONSTRUCTION. MAINTAIN TRAFFIC USING TRAFFIC DRUMS PLACED 40' O.C. ON SIDE BEING WIDENED. DELINEATE DRIVEWAYS AND CITY STREETS ON THE SIDE BEING WIDENED WITH TRAFFIC DRUMS (6 PER DRIVE). CONSTRUCT THE NOTCH AND WIDEN SECTION UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+47 TO STATION 140+73 AND FROM STATION 151+82 TO STATION 154+08. CONSTRUCT 28'-4" OF 13' x 6' R.C. BOX CULVERT ON LEFT AND INSTALL HALF OF 12' x 6' PRECAST R.C. BOX CULVERT AT STATION 139+12. CONSTRUCT 28' OF DOUBLE 8' x 5' R.C. BOX CULVERT AND INSTALL HALF OF DOUBLE 8' x 5' PRECAST R.C. BOX CULVERT AT STATION 152+48.

CONSTRUCT EACH SIDE OF HWY. 102B ONE SIDE AT A TIME UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

STAGE 3:

REMOVE ALL CONFLICTING PAVEMENT MARKINGS ON HWY. 102 AND HWY. 102B. APPLY CONSTRUCTION PAVEMENT MARKINGS AND SHIFT TRAFFIC ONTO NEW CONSTRUCTION. MAINTAIN TRAFFIC USING TRAFFIC DRUMS AT 40' O.C., DELINEATE DRIVEWAYS AND CITY STREETS WITH TRAFFIC DRUMS (6 PER DRIVE).

INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+94 TO STATION 139+99 WITH TEMPORARY IMPACT ATTENUATION BARRIER. INSTALL PRECAST BARRIER WALL FROM STATION 151+02 TO STATION 153+27. INSTALL 12' x 6' PRECAST R.C. BOX CULVERT ON THE RIGHT AT STATION 139+12. INSTALL DOUBLE 8' x 5' PRECAST R.C. BOX CULVERT ON THE RIGHT AT STATION 152+48.

REMOVE TEMPORARY WIDENING FROM STATION 135+62 TO STATION 142+52 AND FROM STATION 149+36 TO STATION 156+41. CONSTRUCT REMAINING CURB AND GUTTER SECTION ON RIGHT FROM STATION 135+62 TO STATION 142+52 AND FROM STATION 149+36 TO STATION 156+41. REMOVE ALL TEMPORARY PRECAST BARRIER WALL AND APPLY THE FINAL 2" OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETE.

APPLY FINAL STRIPING AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.

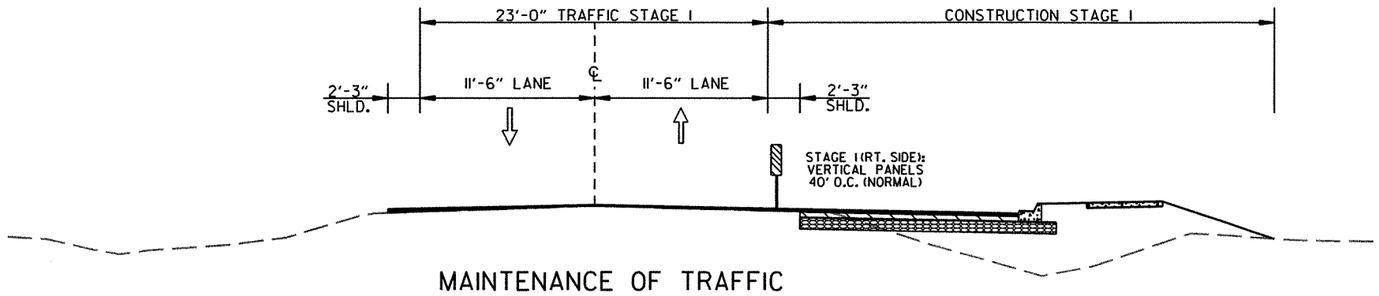
MAINTENANCE OF TRAFFIC QUANTITIES: STAGE 1

SIGNS = 592.0 LIN. FT.
VERTICAL PANELS = 197 EACH
TRAFFIC DRUMS = 154 EACH
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 339 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 226 LIN. FT.
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 694 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 1989 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH
TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 1 EACH
CONSTRUCTION PAVEMENT MARKINGS = 20,007 LIN. FT.

NOTE: VERTICAL PANELS 40' O.C. IN CURB & GUTTER SECTION

NOTE: R4-1 TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER





MAINTENANCE OF TRAFFIC
STAGE 1

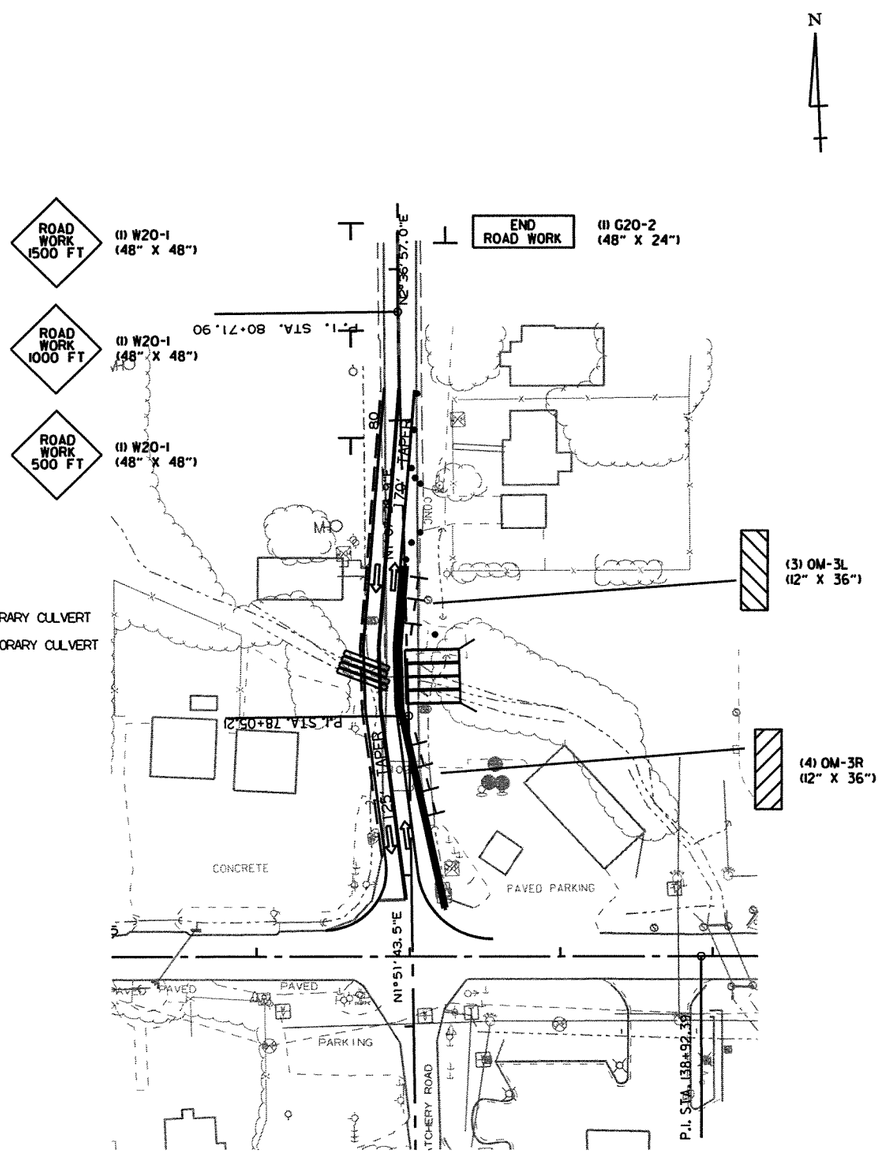
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	19A	241

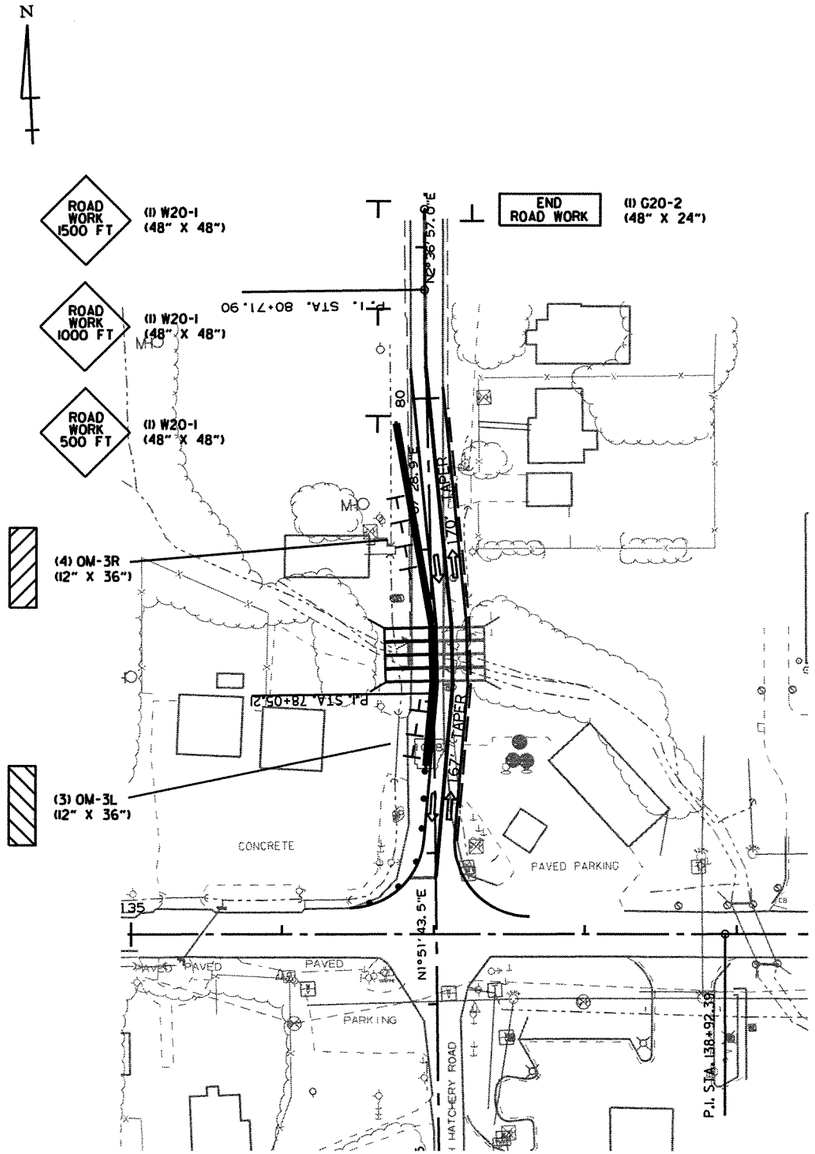
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3/14/12



STA. 78+30 INSTALL
DBL. 42" x 34' TEMPORARY CULVERT
IN ONE BARREL
DBL. 42" x 32' TEMPORARY CULVERT
IN ONE BARREL

HWY. 102B - STAGE 1



HWY. 102B - STAGE 1A

MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

11/8/2011

R090174.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	20	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
M.L.7605
MICHAEL D. PUGETT
3/14/12

ROAD WORK 1500 FT — (1) W20-1 (48" X 48")
ROAD WORK 1000 FT — (1) W20-1 (48" X 48")
ROAD WORK 500 FT — (1) W20-1 (48" X 48")
END ROAD WORK — (1) G20-2 (48" X 24")
ROAD WORK AHEAD — (1) W20-1 (48" X 48")

P.I. STA. 80+71.96
N1°07'26.9"E
4" DBL. YELLOW
P.I. STA. 78+05.2
EXISTING 4" DBL. YELLOW (RETAIN)
12" WHITE
NORTH "B" STREET
NORTH "A" STREET
FAIR STREET
PAVED PARKING
CONCRETE
RET. WALL
MH
CONC
S87°27'10.2"E
S87°14'57.8"E
N1°51'43.5"E
183' TAPER
130' TAPER
P.I. STA. 138+92.35
(3) OM-3L (12" X 36")
(4) OM-3R (12" X 36")
TEMPORARY IMPACT ATTENUATION BARRIER
P.I. STA. 74+87.19
FISH HATCHERY ROAD
N1°07'26.9"E
P.I. STA. 72+37.10
N1°49'19.8"E
P.I. STA. 71+46.01
PARKING
CURB
PAVED

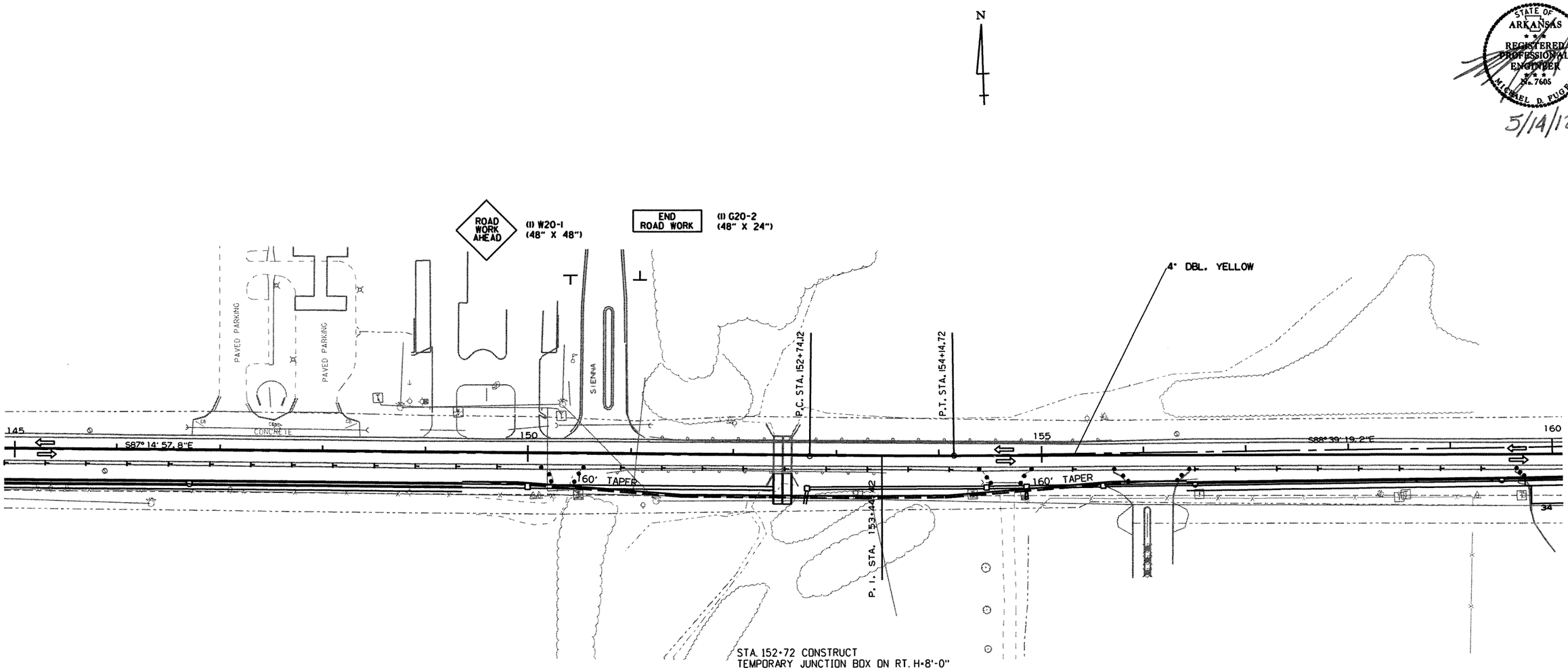
MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

R090174.DGN 7/20/2011

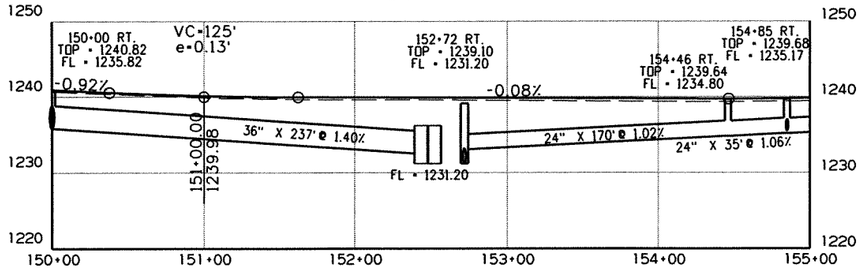
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	21	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12



STA. 152+72 CONSTRUCT
TEMPORARY JUNCTION BOX ON RT. H=8'-0"
24" x 13' R.C PIPE CULVERT OUTLET. WITH FES
TYPE ST JUNCTION BOX = 4' x 4'



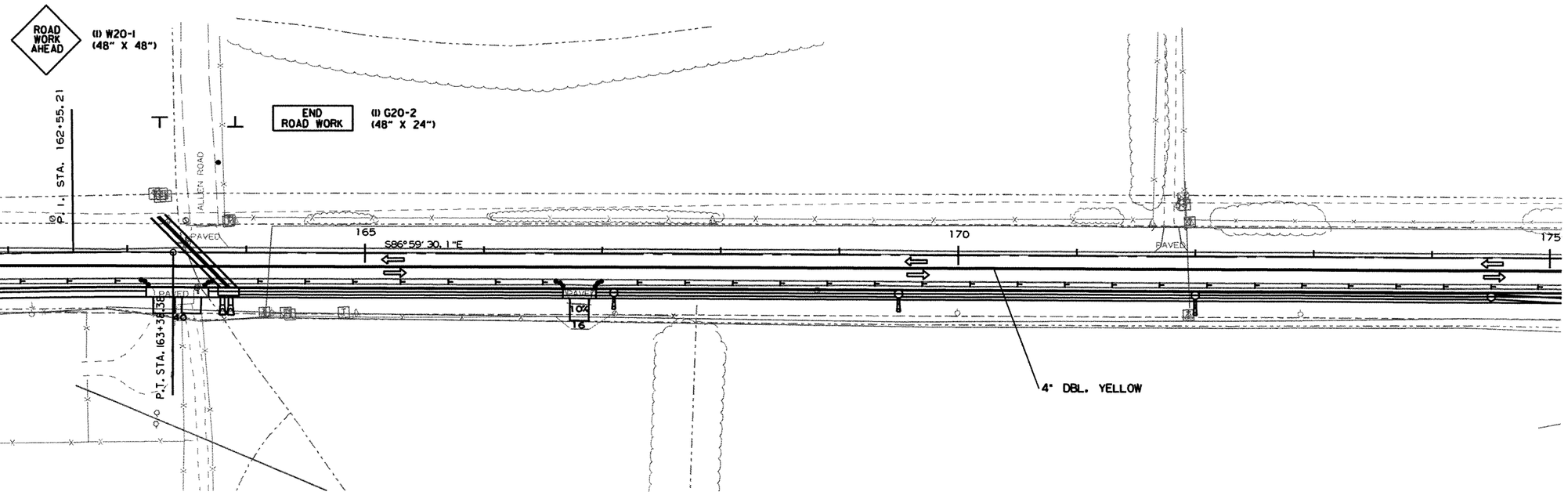
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	22	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12



R090174.DGN 7/22/2011

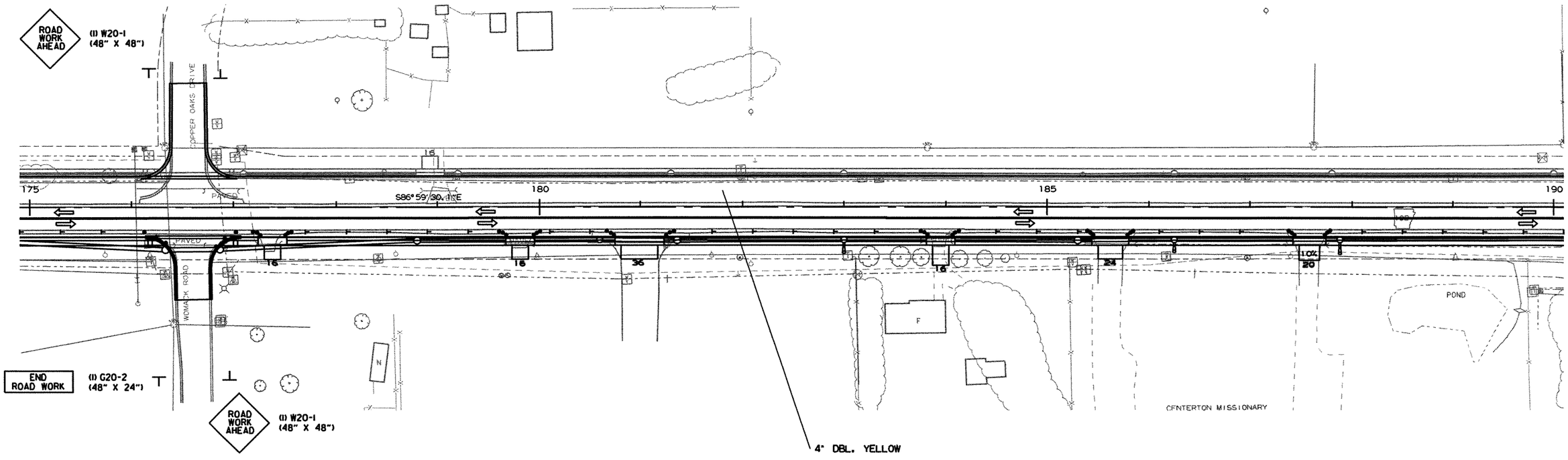
MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	23	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12

N



R090174.DGN 7/20/2011

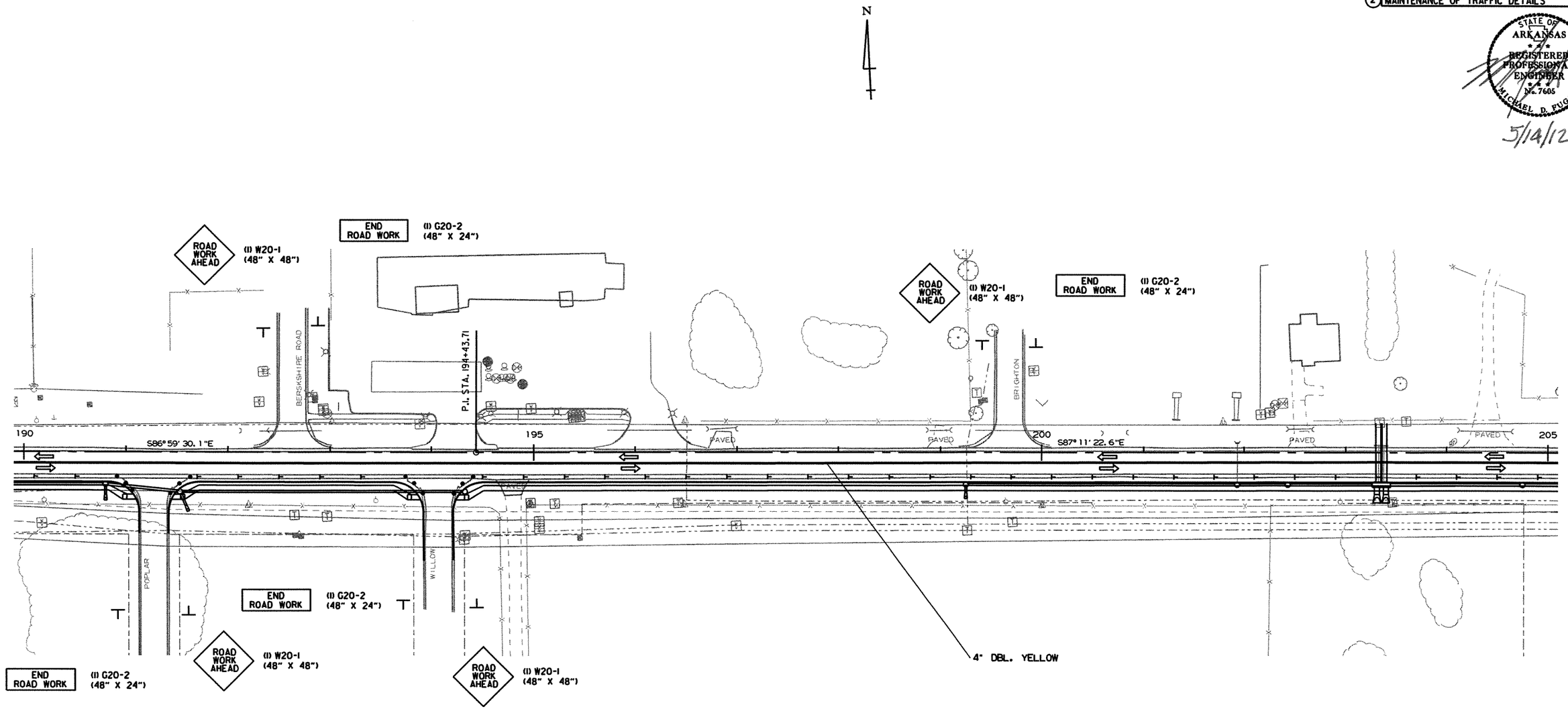
MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	24	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT

5/14/12



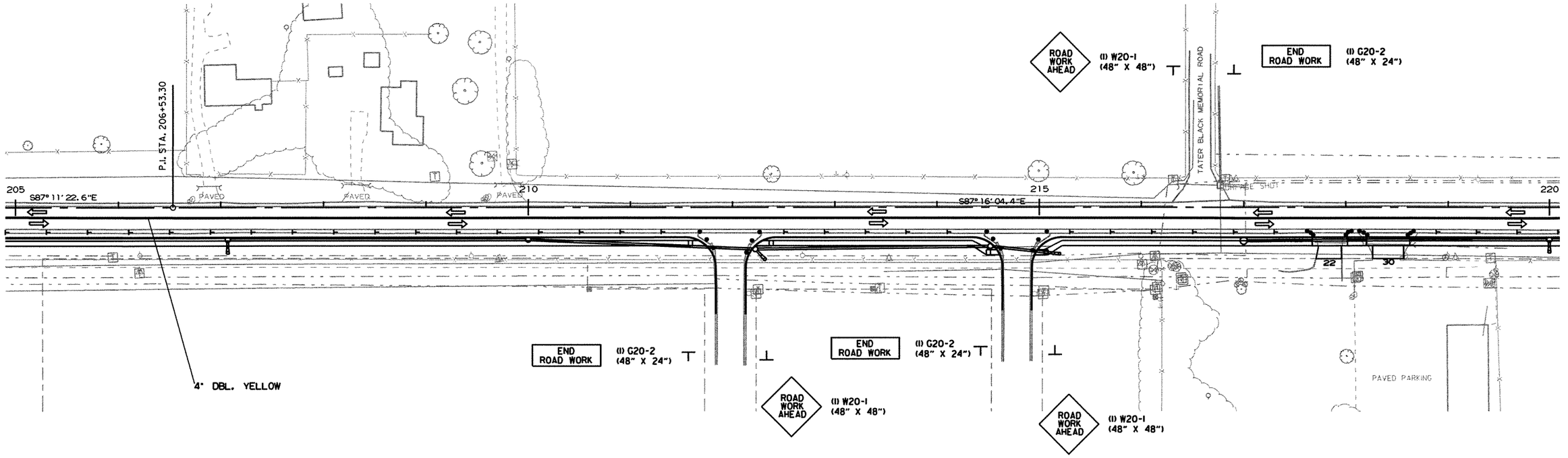
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	25	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3/14/12



R090174.DGN 7/20/2011

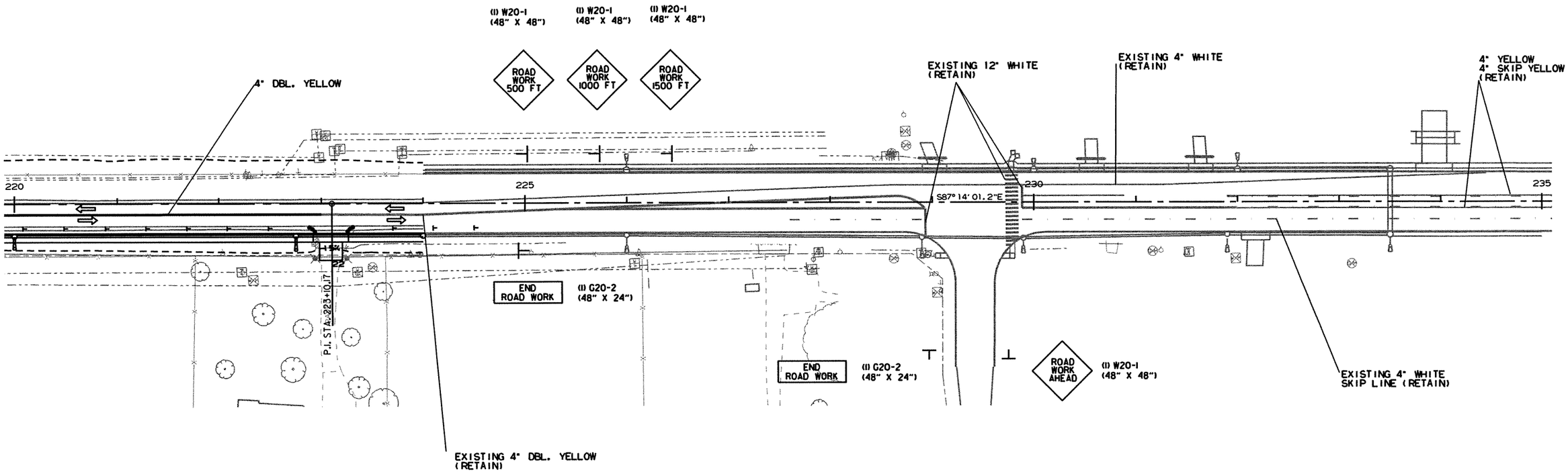
MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	26	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

N



R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	27	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AT THE BEGINNING AND END OF PROJECT AND ON HWY. 102B. REFER TO MAINTENANCE OF TRAFFIC SP, SPECIAL DETAILS. CROSS SECTIONS AND MAINTENANCE OF TRAFFIC PLAN SHEET 19A WHEN CONSTRUCTING OUAD. PRECAST R.C. BOX CULVERT ON HWY. 102B. AT STATION 78+30.

PLACE W20-1(AHEAD) SIGNS ON ALL INTERSECTING STREETS. DELINEATE DRIVEWAYS AND CITY STREETS ON THE SIDE BEING WIDENED WITH TRAFFIC DRUMS (6 PER DRIVE). MAINTAIN TRAFFIC THROUGHOUT THE PROJECT USING VERTICAL PANELS PLACED AT 40' O.C. ON THE RIGHT SIDE AND NOTCH EACH SIDE OF FISH HATCHERY ROAD ONE SIDE AT A TIME.

CONSTRUCT NOTCH AND WIDEN ON RIGHT SIDE OF HWY. 102 UP TO THE FINAL 2" LIFT OF SURFACE COURSE, WITH TEMPORARY WIDENING FROM STATION 135+62 TO STATION 142+52 AND STATION 149+36 TO STATION 156+41. REFER TO CROSS SECTIONS FOR TEMPORARY WIDENING WIDTHS. INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+94 TO STATION 140+19 ON RIGHT WITH TEMPORARY IMPACT ATTENUATION BARRIER. CONSTRUCT 28'-8" OF 13' x 6' R.C. BOX CULVERT ON RIGHT WITHOUT HEADWALL AND WING WALLS AT STATION 139+12. CONSTRUCT 30' OF DOUBLE 8' x 5' R.C. BOX CULVERT ON RIGHT WITH HEADWALL AND WING WALLS AT STATION 152+48.

CONSTRUCT EACH SIDE OF FISH HATCHERY ROAD ONE SIDE AT A TIME UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

STAGE 2:

REMOVE ALL CONFLICTING PAVEMENT MARKINGS ON HWY 102. APPLY CONSTRUCTION PAVEMENT MARKINGS AND SHIFT TRAFFIC ONTO NEW CONSTRUCTION. MAINTAIN TRAFFIC USING TRAFFIC DRUMS PLACED 40' O.C. ON SIDE BEING WIDENED. DELINEATE DRIVEWAYS AND CITY STREETS ON THE SIDE BEING WIDENED WITH TRAFFIC DRUMS (6 PER DRIVE). CONSTRUCT THE NOTCH AND WIDEN SECTION UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+47 TO STATION 140+73 AND FROM STATION 151+82 TO STATION 154+08. CONSTRUCT 28'-4" OF 13' x 6' R.C. BOX CULVERT ON LEFT AND INSTALL HALF OF 12' x 6' PRECAST R.C. BOX CULVERT AT STATION 139+12. CONSTRUCT 28' OF DOUBLE 8' x 5' R.C. BOX CULVERT AND INSTALL HALF OF DOUBLE 8' x 5' PRECAST R.C. BOX CULVERT AT STATION 152+48.

CONSTRUCT EACH SIDE OF HWY. 102B ONE SIDE AT A TIME UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

STAGE 3:

REMOVE ALL CONFLICTING PAVEMENT MARKINGS ON HWY. 102 AND HWY. 102B. APPLY CONSTRUCTION PAVEMENT MARKINGS AND SHIFT TRAFFIC ONTO NEW CONSTRUCTION. MAINTAIN TRAFFIC USING TRAFFIC DRUMS AT 40' O.C.. DELINEATE DRIVEWAYS AND CITY STREETS WITH TRAFFIC DRUMS (6 PER DRIVE).

INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+94 TO STATION 139+99 WITH TEMPORARY IMPACT ATTENUATION BARRIER. INSTALL PRECAST BARRIER WALL FROM STATION 151+02 TO STATION 153+27. INSTALL 12' x 6' PRECAST R.C. BOX CULVERT ON THE RIGHT AT STATION 139+12. INSTALL DOUBLE 8' x 5' PRECAST R.C. BOX CULVERT ON THE RIGHT AT STATION 152+48.

REMOVE TEMPORARY WIDENING FROM STATION 135+62 TO STATION 142+52 AND FROM STATION 149+36 TO STATION 156+41. CONSTRUCT REMAINING CURB AND GUTTER SECTION ON RIGHT FROM STATION 135+62 TO STATION 142+52 AND FROM STATION 149+36 TO STATION 156+41. REMOVE ALL TEMPORARY PRECAST BARRIER WALL AND APPLY THE FINAL 2" OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETE.

APPLY FINAL STRIPING AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.

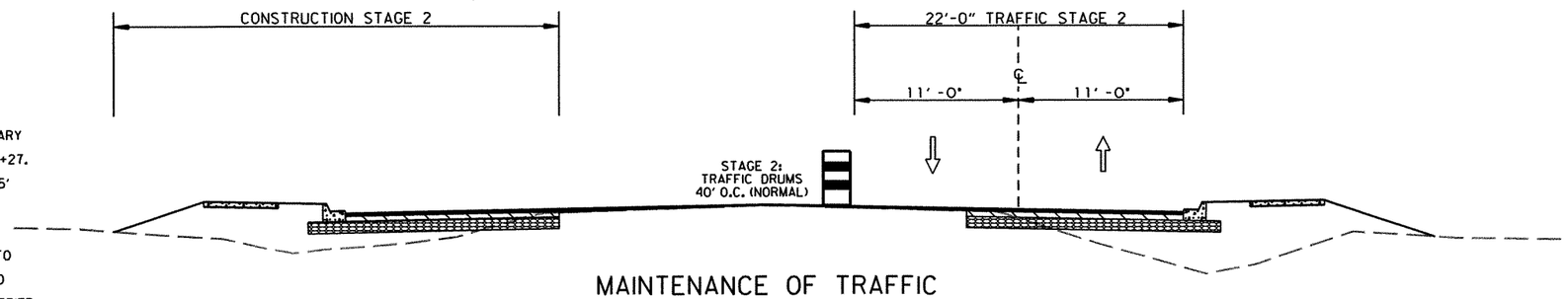
MAINTENANCE OF TRAFFIC ADDITIONAL QUANTITIES: STAGE II

SIGNS = 114.0 LIN. FT.
TRAFFIC DRUMS = 362 EACH
BARRICADES = 160 LIN. FT.
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 113 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 339 LIN. FT.
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 1138 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 17,064
CONSTRUCTION PAVEMENT MARKINGS = 31,463 LIN. FT.

NOTE: TRAFFIC DRUMS 40' O.C. IN CURB & GUTTER SECTION

NOTE: R4-1 TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER





MAINTENANCE OF TRAFFIC
STAGE 2

NOTE: REFER TO CROSS SECTIONS FOR STAGING OF TRAFFIC

R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	28	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

ROAD WORK 1500 FT — (1) W20-1 (48" X 48")
ROAD WORK 1000 FT — (1) W20-1 (48" X 48")
ROAD WORK 500 FT — (1) W20-1 (48" X 48")
END ROAD WORK — (1) G20-2 (48" X 24")
EXISTING 4" DBL. YELLOW (RETAIN)
ROAD CLOSED — (1) R11 - 2 (48" X 30") — (2) 8' BARR. TYP. III RT.
ROAD CLOSED — (1) R11 - 2 (48" X 30") — (1) 8' BARR. TYP. III LT. — (1) 8' BARR. TYP. III RT.
ROAD WORK AHEAD — (1) W20-1 (48" X 48")
END ROAD WORK — (1) G20-2 (48" X 24")
4" WHITE
4" DBL. YELLOW
(3) OM-3L (12" X 36")
(4) OM-3R (12" X 36")
ROAD CLOSED — (1) R11 - 2 (48" X 30") — (1) W1 - 6 (48" X 24") — (2) 8' BARR. TYP. III LT.
550' TAPER
130' TAPER
P.I. STA. 80+71.
P.I. STA. 78+05.2
P.I. STA. 74+87.19
P.I. STA. 72+37.10
P.I. STA. 71+46.01
P.I. STA. 138+92.39
N 51° 43.5" E
S 87° 27' 10.2" E
S 87° 14' 57.8" E
N 1° 49' 19.8" E
BANK OF GRAVETTE
BENTON COUNTY CLINICAL OFFICE
DCC TAX SERVICE
AUTO SALES
BRUCE'S MARKET
7-S-BLOCK MCDONALDS
PAVED PARKING
CONCRETE
SHEDS
NORTH "A" STREET
NORTH "B" STREET
FAIR STREET
EAST "A" STREET

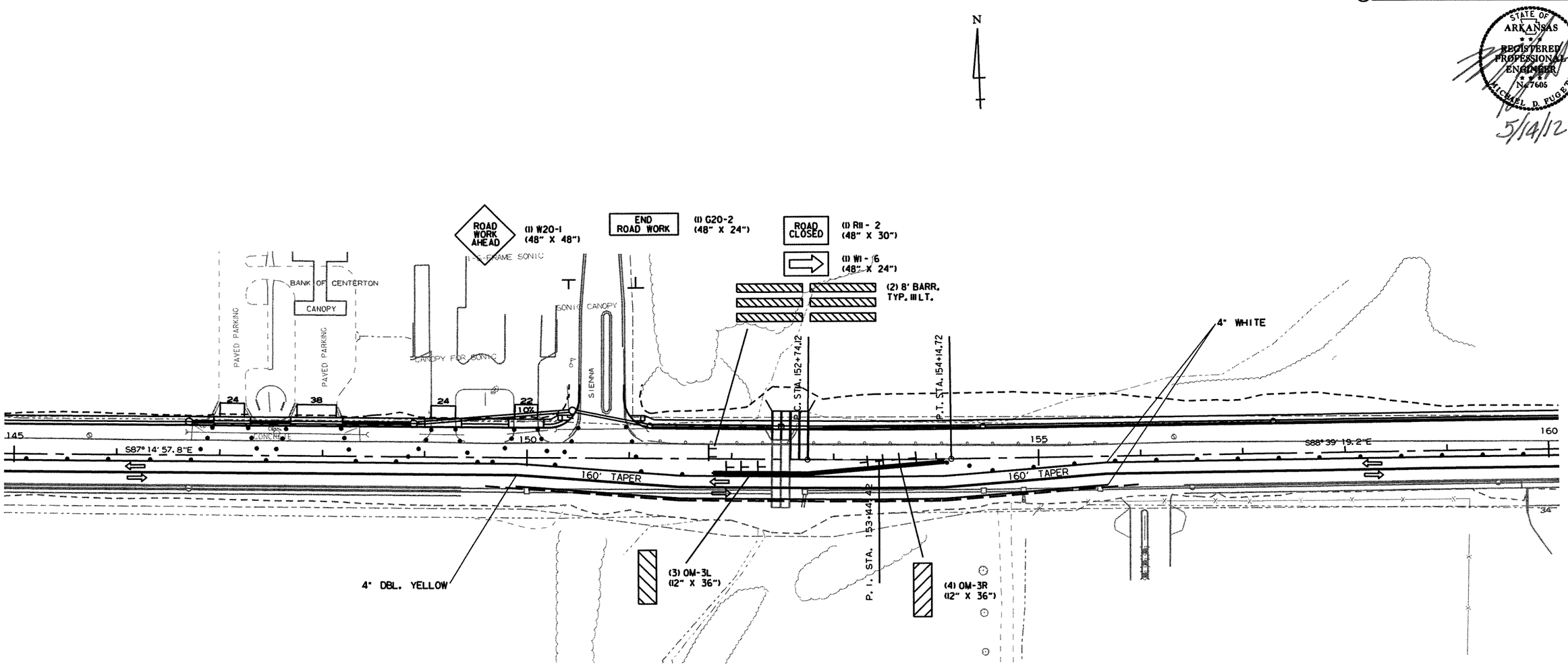
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	29	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGATT
5/14/12



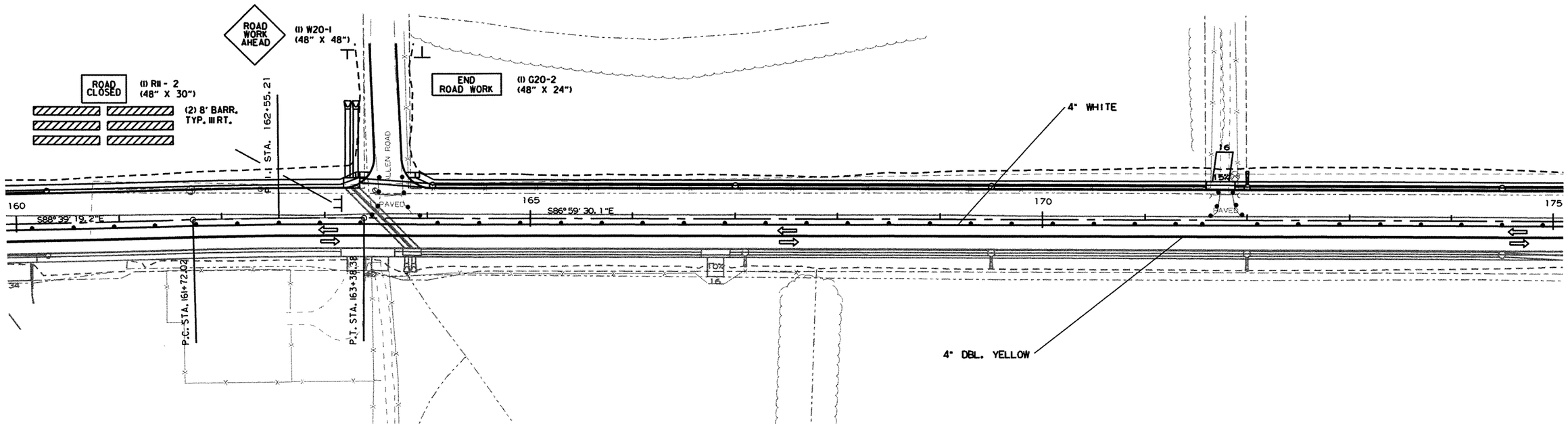
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	30	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 17605
MICHAEL D. PUGETT
5/14/12



MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	31	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT

5/14/12

N

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

(2) 8' BARR. TYP. III RT.

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

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

4" WHITE

4" DBL. YELLOW

COPPER OAKS DRIVE

WOMACK ROAD

S86°59'30"W

175 180 185 190

POND

CENTERTON MISSIONARY

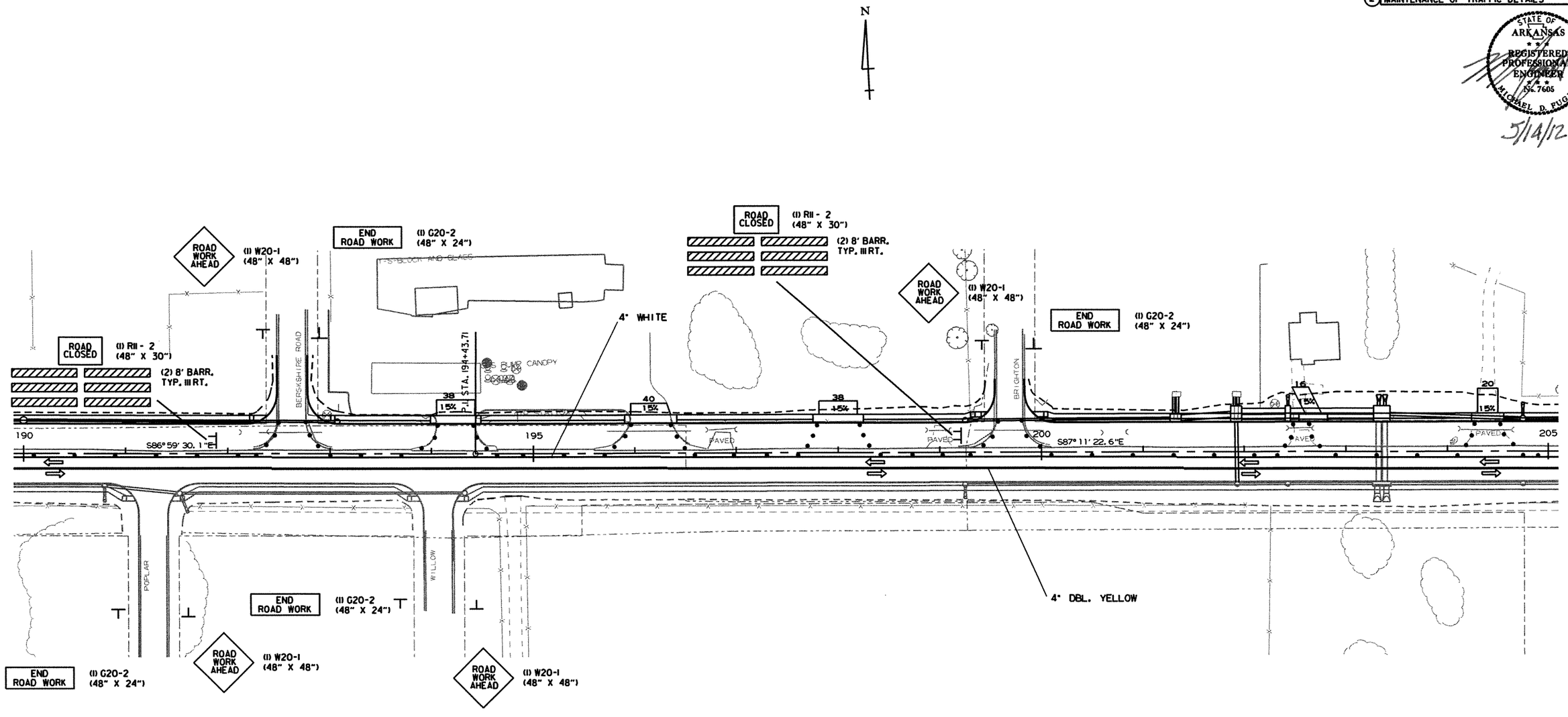
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	32	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12



MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

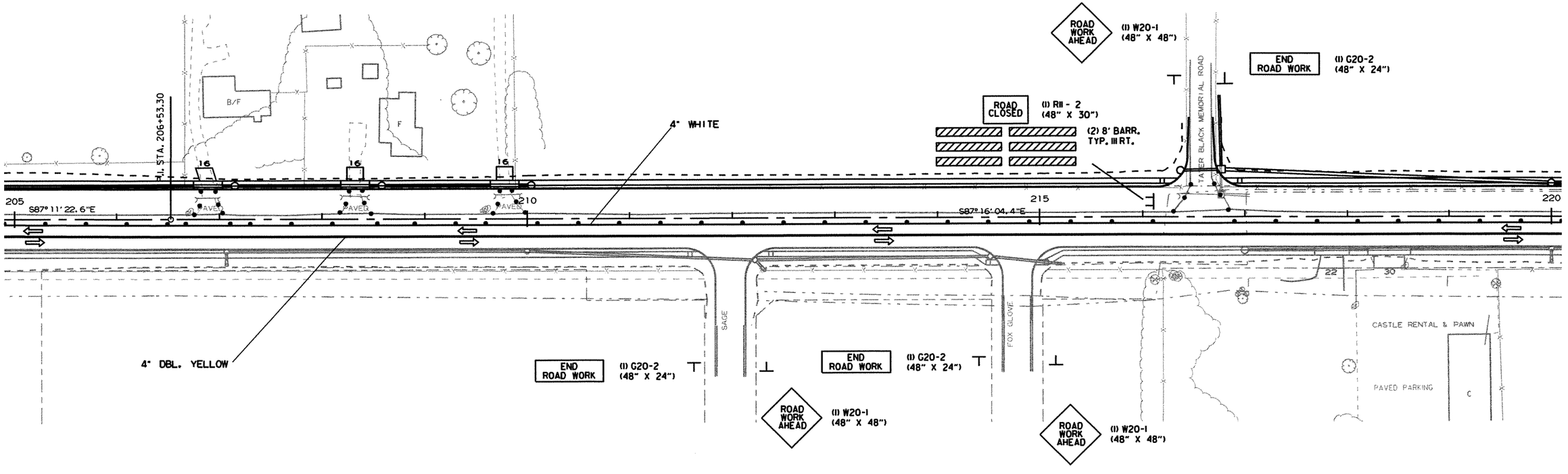
ZBORDER.CEL 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	33	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

N



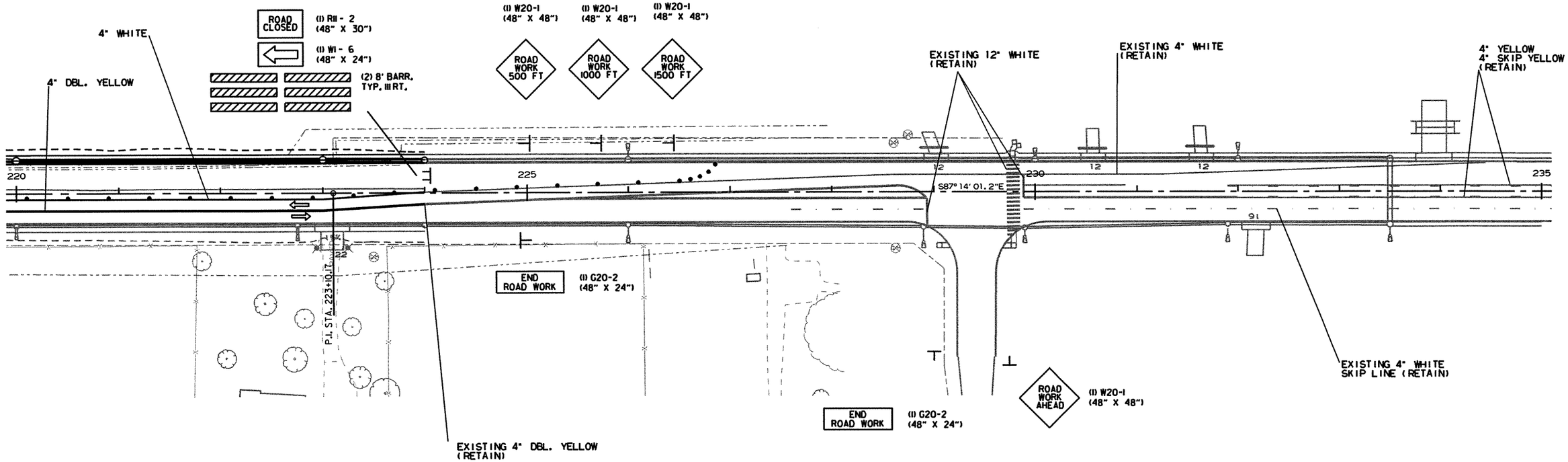
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	34	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGETT
5/14/12



R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	35	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AT THE BEGINNING AND END OF PROJECT AND ON HWY. 102B. REFER TO MAINTENANCE OF TRAFFIC SP. SPECIAL DETAILS. CROSS SECTIONS AND MAINTENANCE OF TRAFFIC PLAN SHEET 19A WHEN CONSTRUCTING QUAD. PRECAST R.C. BOX CULVERT ON HWY. 102B. AT STATION 78+30.

PLACE W20-1 (AHEAD) SIGNS ON ALL INTERSECTING STREETS. DELINEATE DRIVEWAYS AND CITY STREETS ON THE SIDE BEING WIDENED WITH TRAFFIC DRUMS (6 PER DRIVE). MAINTAIN TRAFFIC THROUGHOUT THE PROJECT USING VERTICAL PANELS PLACED AT 40' O.C. ON THE RIGHT SIDE AND NOTCH EACH SIDE OF FISH HATCHERY ROAD ONE SIDE AT A TIME.

CONSTRUCT NOTCH AND WIDEN ON RIGHT SIDE OF HWY. 102 UP TO THE FINAL 2" LIFT OF SURFACE COURSE. WITH TEMPORARY WIDENING FROM STATION 135+62 TO STATION 142+52 AND STATION 149+36 TO STATION 156+41. REFER TO CROSS SECTIONS FOR TEMPORARY WIDENING WIDTHS. INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+94 TO STATION 140+19 ON RIGHT WITH TEMPORARY IMPACT ATTENUATION BARRIER. CONSTRUCT 28'-8" OF 13' x 6' R.C. BOX CULVERT ON RIGHT WITHOUT HEADWALL AND WING WALLS AT STATION 139+12. CONSTRUCT 30' OF DOUBLE 8' x 5' R.C. BOX CULVERT ON RIGHT WITH HEADWALL AND WING WALLS AT STATION 152+48.

CONSTRUCT EACH SIDE OF FISH HATCHERY ROAD ONE SIDE AT A TIME UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

STAGE 2:

REMOVE ALL CONFLICTING PAVEMENT MARKINGS ON HWY 102. APPLY CONSTRUCTION PAVEMENT MARKINGS AND SHIFT TRAFFIC ONTO NEW CONSTRUCTION. MAINTAIN TRAFFIC USING TRAFFIC DRUMS PLACED 40' O.C. ON SIDE BEING WIDENED. DELINEATE DRIVEWAYS AND CITY STREETS ON THE SIDE BEING WIDENED WITH TRAFFIC DRUMS (6 PER DRIVE). CONSTRUCT THE NOTCH AND WIDEN SECTION UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+47 TO STATION 140+73 AND FROM STATION 151+82 TO STATION 154+08. CONSTRUCT 28'-4" OF 13' x 6' R.C. BOX CULVERT ON LEFT AND INSTALL HALF OF 12' x 6' PRECAST R.C. BOX CULVERT AT STATION 139+12. CONSTRUCT 28' OF DOUBLE 8' x 5' R.C. BOX CULVERT AND INSTALL HALF OF DOUBLE 8' x 5' PRECAST R.C. BOX CULVERT AT STATION 152+48.

CONSTRUCT EACH SIDE OF HWY. 102B ONE SIDE AT A TIME UP TO THE FINAL 2" LIFT OF SURFACE COURSE.

STAGE 3:

REMOVE ALL CONFLICTING PAVEMENT MARKINGS ON HWY. 102 AND HWY. 102B. APPLY CONSTRUCTION PAVEMENT MARKINGS AND SHIFT TRAFFIC ONTO NEW CONSTRUCTION. MAINTAIN TRAFFIC USING TRAFFIC DRUMS AT 40' O.C.. DELINEATE DRIVEWAYS AND CITY STREETS WITH TRAFFIC DRUMS (6 PER DRIVE).

INSTALL TEMPORARY PRECAST BARRIER WALL FROM STATION 138+94 TO STATION 139+99 WITH TEMPORARY IMPACT ATTENUATION BARRIER. INSTALL PRECAST BARRIER WALL FROM STATION 151+02 TO STATION 153+27. INSTALL 12' x 6' PRECAST R.C. BOX CULVERT ON THE RIGHT AT STATION 139+12. INSTALL DOUBLE 8' x 5' PRECAST R.C. BOX CULVERT ON THE RIGHT AT STATION 152+48.

REMOVE TEMPORARY WIDENING FROM STATION 135+62 TO STATION 142+52 AND FROM STATION 149+36 TO STATION 156+41. CONSTRUCT REMAINING CURB AND GUTTER SECTION ON RIGHT FROM STATION 135+62 TO STATION 142+52 AND FROM STATION 149+36 TO STATION 156+41. REMOVE ALL TEMPORARY PRECAST BARRIER WALL AND APPLY THE FINAL 2" OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETE.

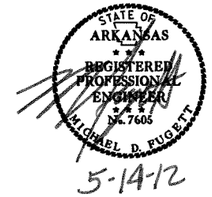
APPLY FINAL STRIPING AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.

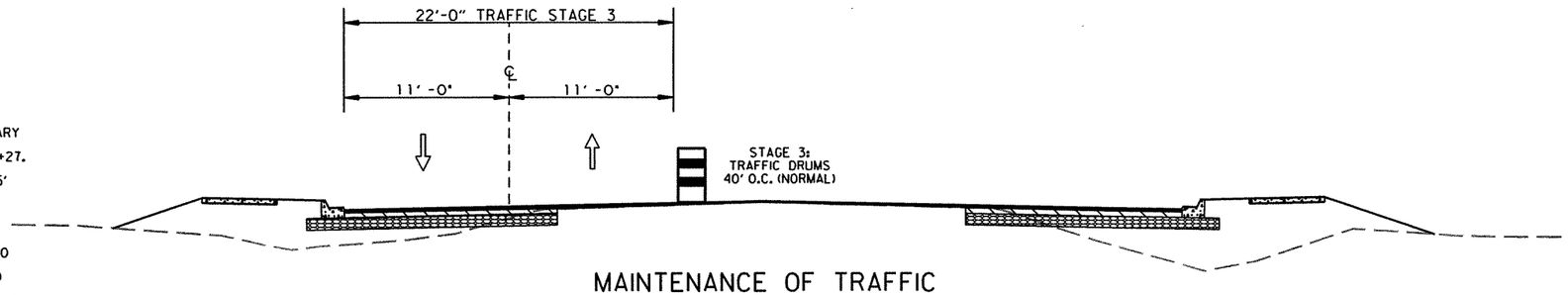
MAINTENANCE OF TRAFFIC ADDITIONAL QUANTITIES: STAGE III

BARRICADES = 160 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 319 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH
TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 1 EACH
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 901 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 29,912 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS = 30,117 LIN. FT.

NOTE: TRAFFIC DRUMS 40' O.C. IN CURB & GUTTER SECTION

NOTE: R4-1 TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER





MAINTENANCE OF TRAFFIC
STAGE 3

NOTE: REFER TO CROSS SECTIONS FOR STAGING OF TRAFFIC

R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	36	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 14605
MICHAEL D. FUGETT
5-14-12

ROAD WORK 1500 FT — (1) W20-1 (48" X 48")
ROAD WORK 1000 FT — (1) W20-1 (48" X 48")
ROAD WORK 500 FT — (1) W20-1 (48" X 48")
END ROAD WORK — (1) G20-2 (48" X 24")
ROAD WORK AHEAD — (1) W20-1 (48" X 48")
TEMPORARY IMPACT ATTENUATION BARRIER
4" WHITE
4" DBL. YELLOW
(3) OM-3L (12" X 36")
(4) OM-3R (12" X 36")
ROAD CLOSED — (1) R11 - 2 (48" X 30")
(1) W1 - 6 (48" X 24")
(2) 8' BARR. TYP. III RT.

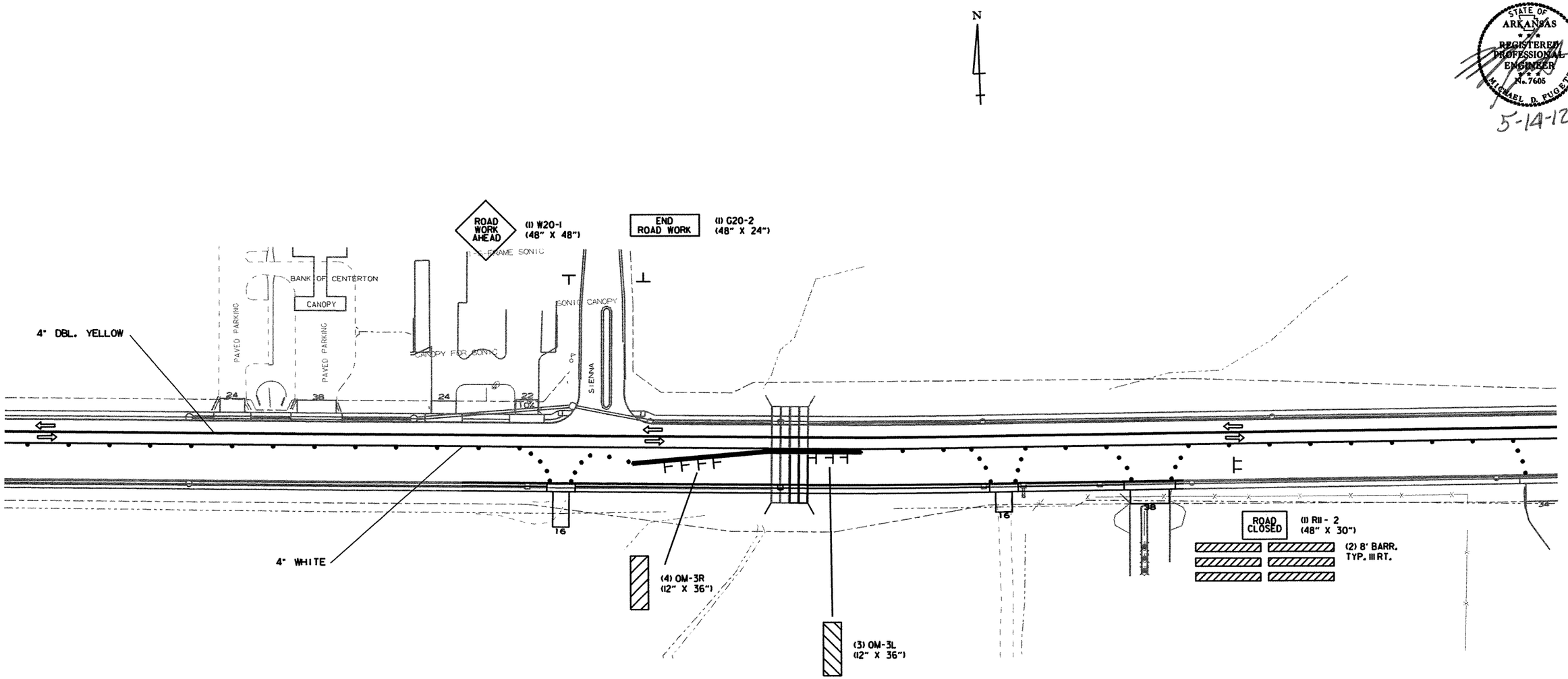
R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	37	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5-14-12



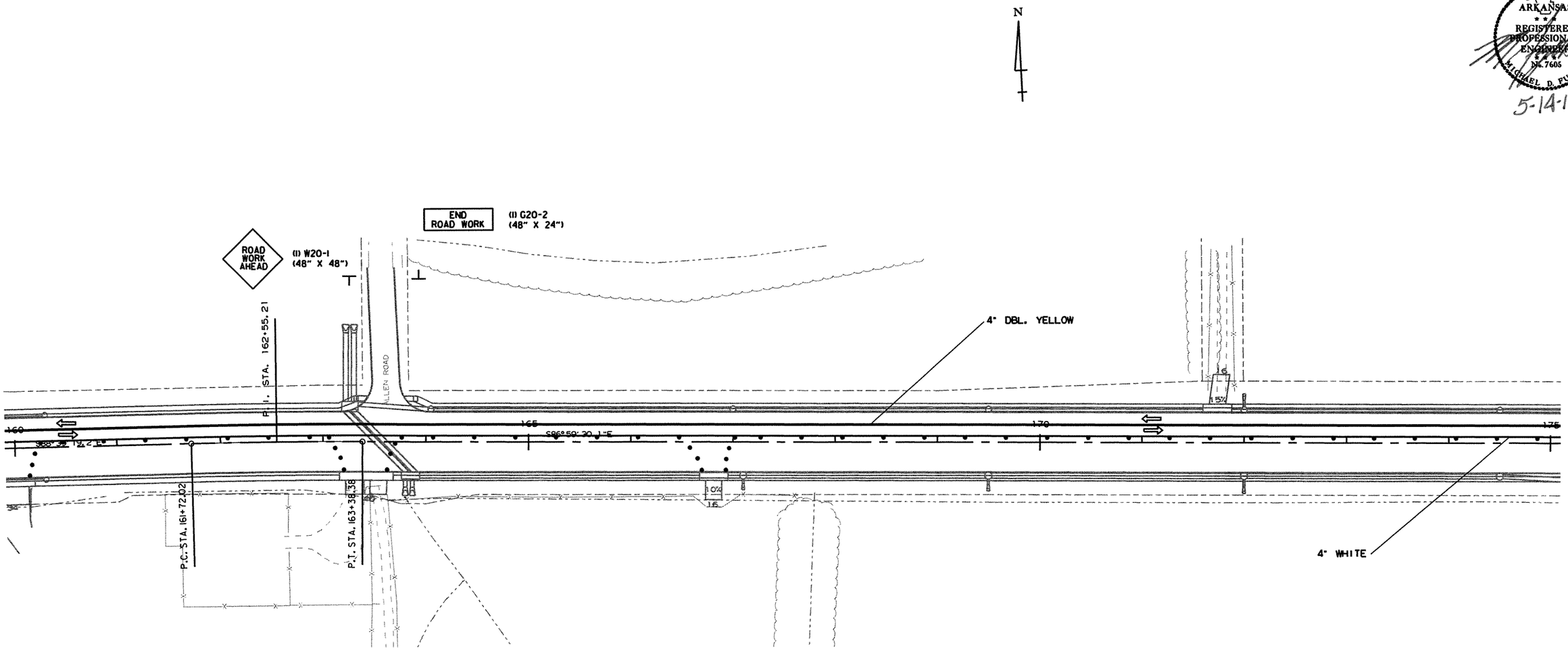
MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	38	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5-14-12



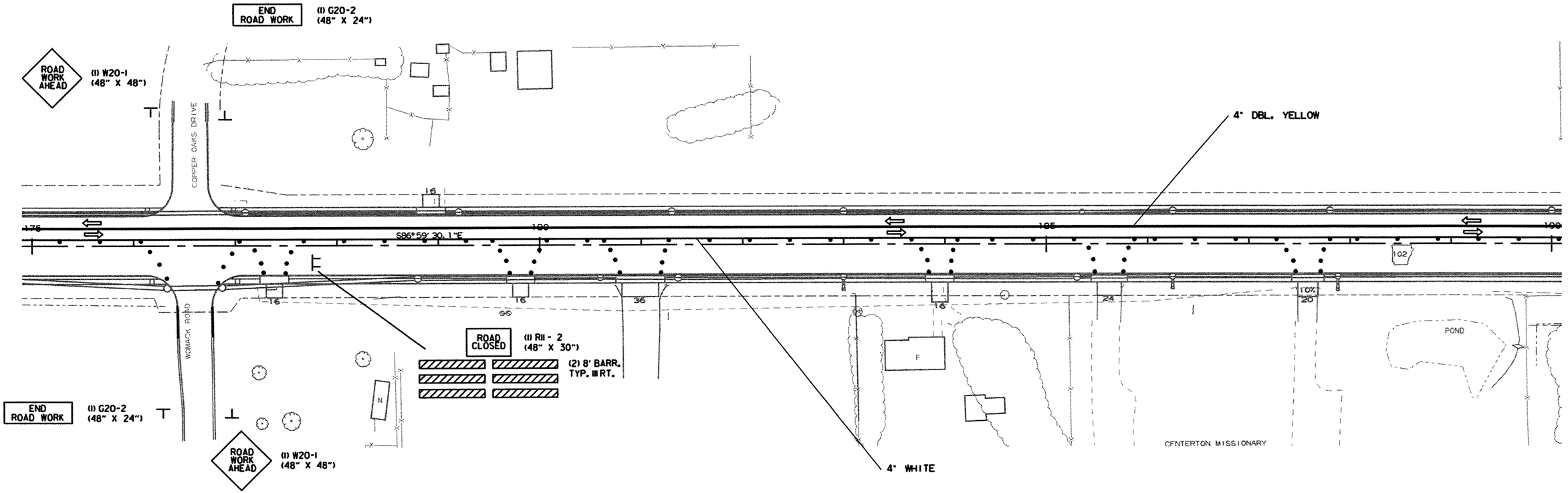
MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	39	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5-14-12



MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	40	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5-14-12

N

ROAD WORK AHEAD (I) W20-1 (48" X 48")
END ROAD WORK (I) G20-2 (48" X 24")
4" DBL. YELLOW
ROAD WORK AHEAD (I) W20-1 (48" X 48")
END ROAD WORK (I) G20-2 (48" X 24")
P.I. STA. 194+43.71
BERKSHIRE ROAD
BRIGHTON
S86° 59' 30.1"E
S87° 11' 22.6"E
4" WHITE
ROAD CLOSED (I) R11 - 2 (48" X 30")
(2) 8' BARR. TYP. III RT.
ROAD CLOSED (I) R11 - 2 (48" X 30")
(2) 8' BARR. TYP. III RT.
END ROAD WORK (I) G20-2 (48" X 24")
POPLAR
WILLOW
END ROAD WORK (I) G20-2 (48" X 24")
ROAD WORK AHEAD (I) W20-1 (48" X 48")
ROAD WORK AHEAD (I) W20-1 (48" X 48")

MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

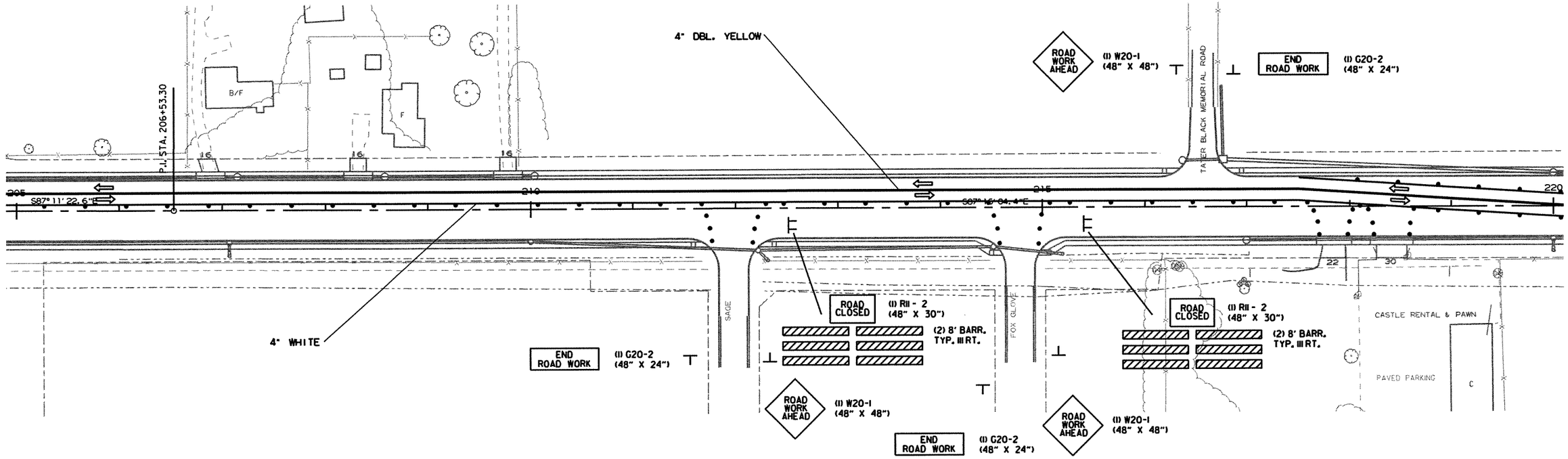
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	41	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5-14-12

N



MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

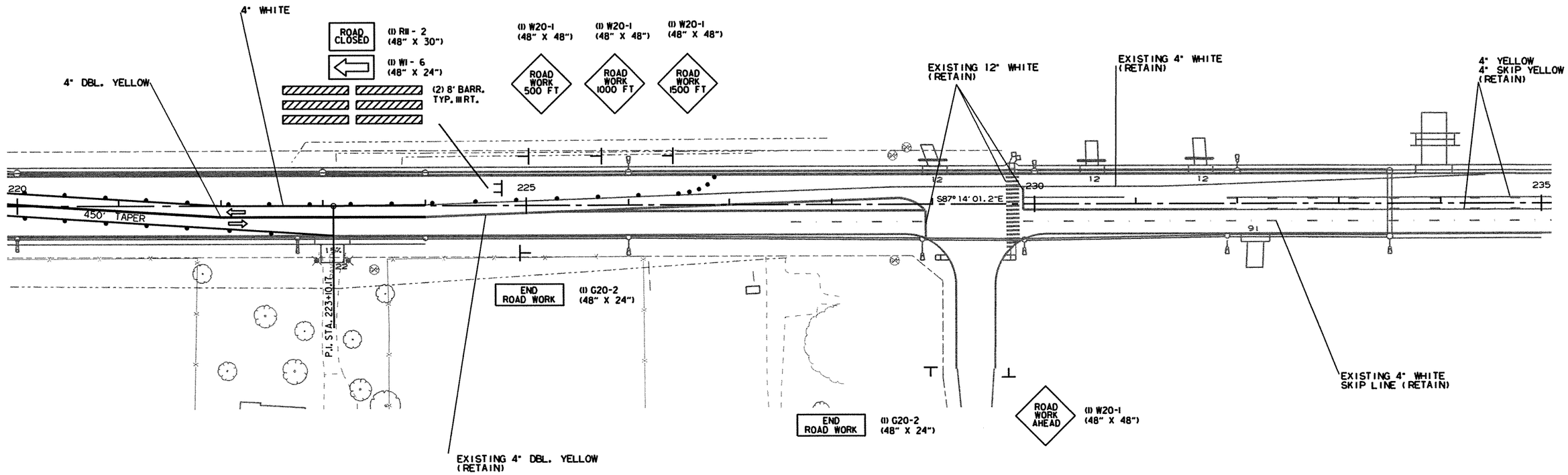
R090174.DGN 7/22/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	42	241

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT

5-14-12



R090174.DGN 7/20/2011

MAINTENANCE OF TRAFFIC DETAILS - STAGE 3

RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) ARE TO BE PLACED ON EACH SIDE OF THE CENTER TURN LANE AT 80' INTERVALS.

RAISED PAVEMENT MARKERS (TYPE II)(WHITE/RED) ARE TO BE PLACED ON THE LANE LINES AT 80' INTERVALS.

REFER TO THE PERMANENT PAVEMENT MARKING DETAILS, STD. DRWG. PM-1, AND THE LATEST EDITION OF THE MUTCD FOR ADDITIONAL PAVEMENT MARKING DETAILS.

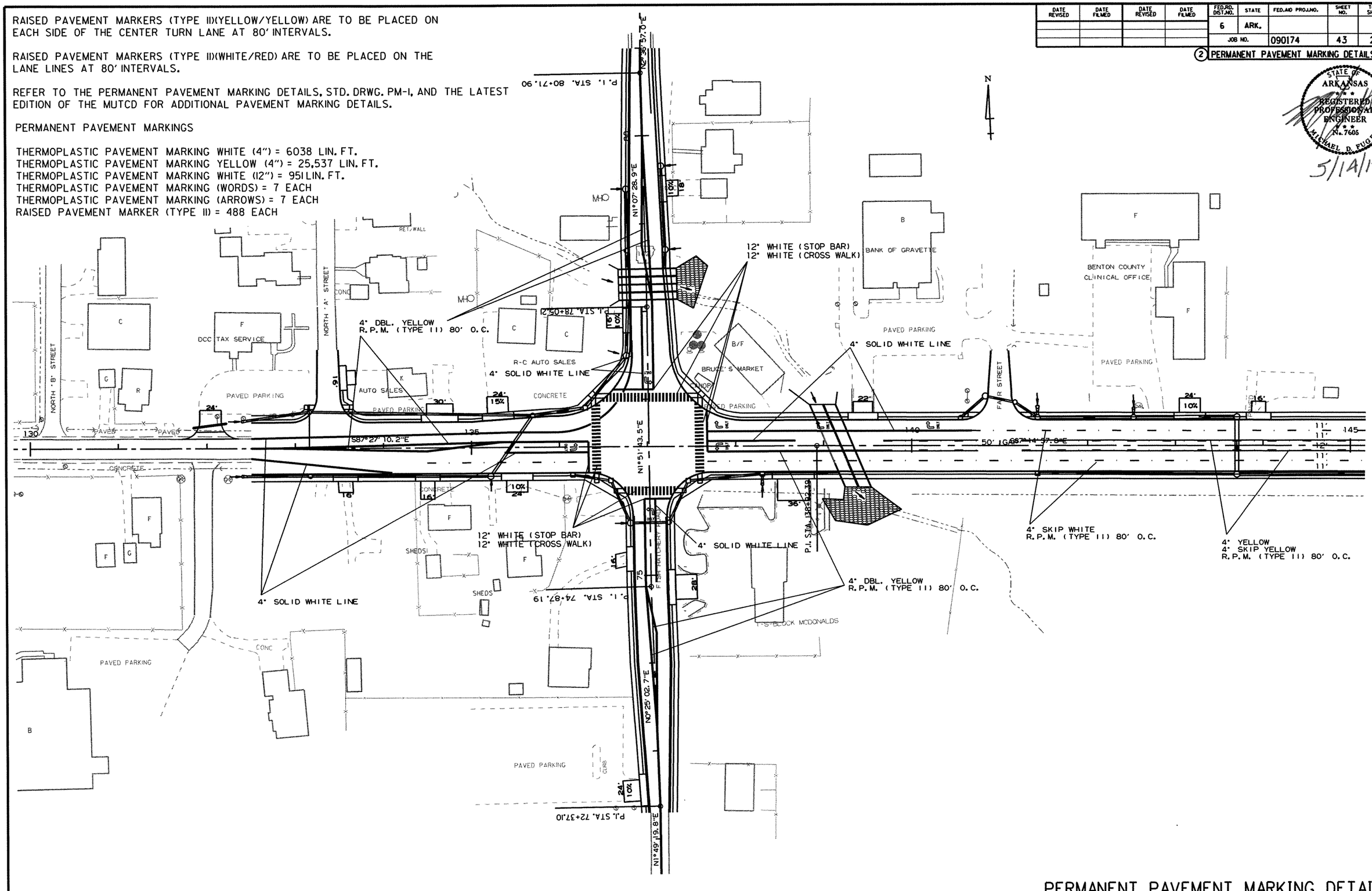
PERMANENT PAVEMENT MARKINGS

THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 6038 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 25,537 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (12") = 951 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING (WORDS) = 7 EACH
THERMOPLASTIC PAVEMENT MARKING (ARROWS) = 7 EACH
RAISED PAVEMENT MARKER (TYPE II) = 488 EACH

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	43	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12



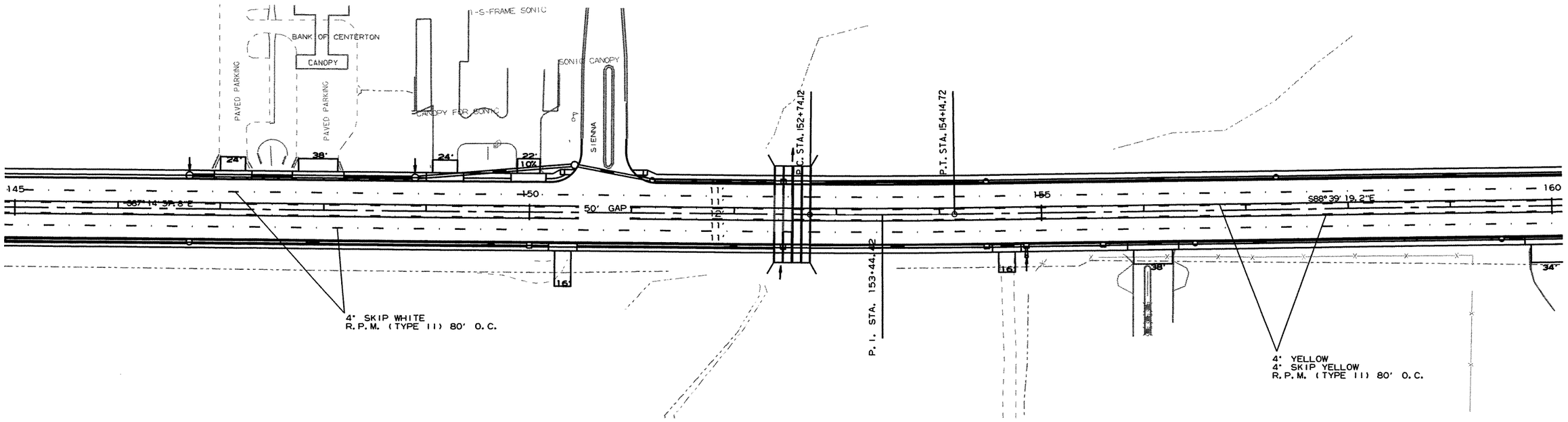
R090174.DGN 7/20/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	44	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
14576
MICHAEL D. PUGETT
5/14/12



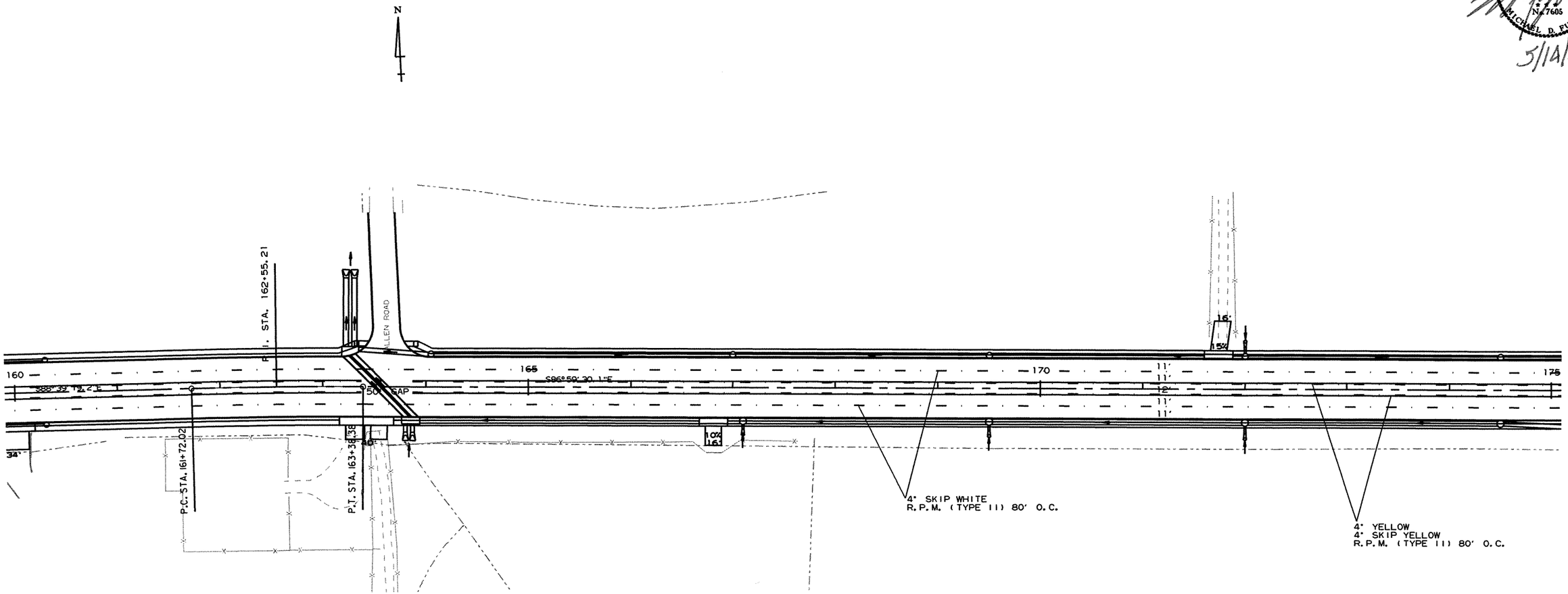
R090174.DGN 7/20/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	45	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3/14/12



R090174.DGN 7/20/2011

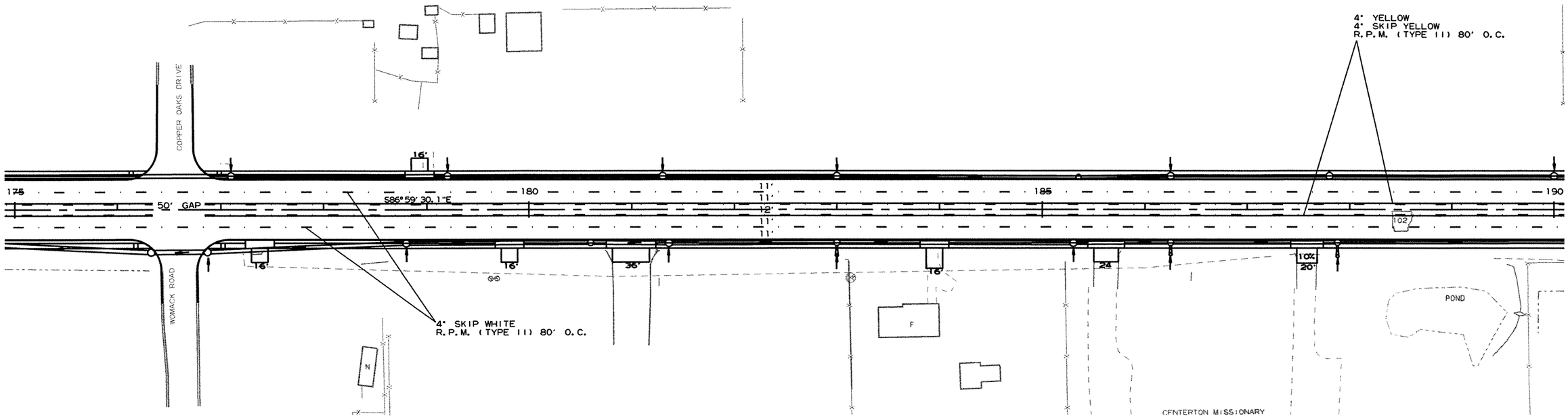
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	46	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12

N



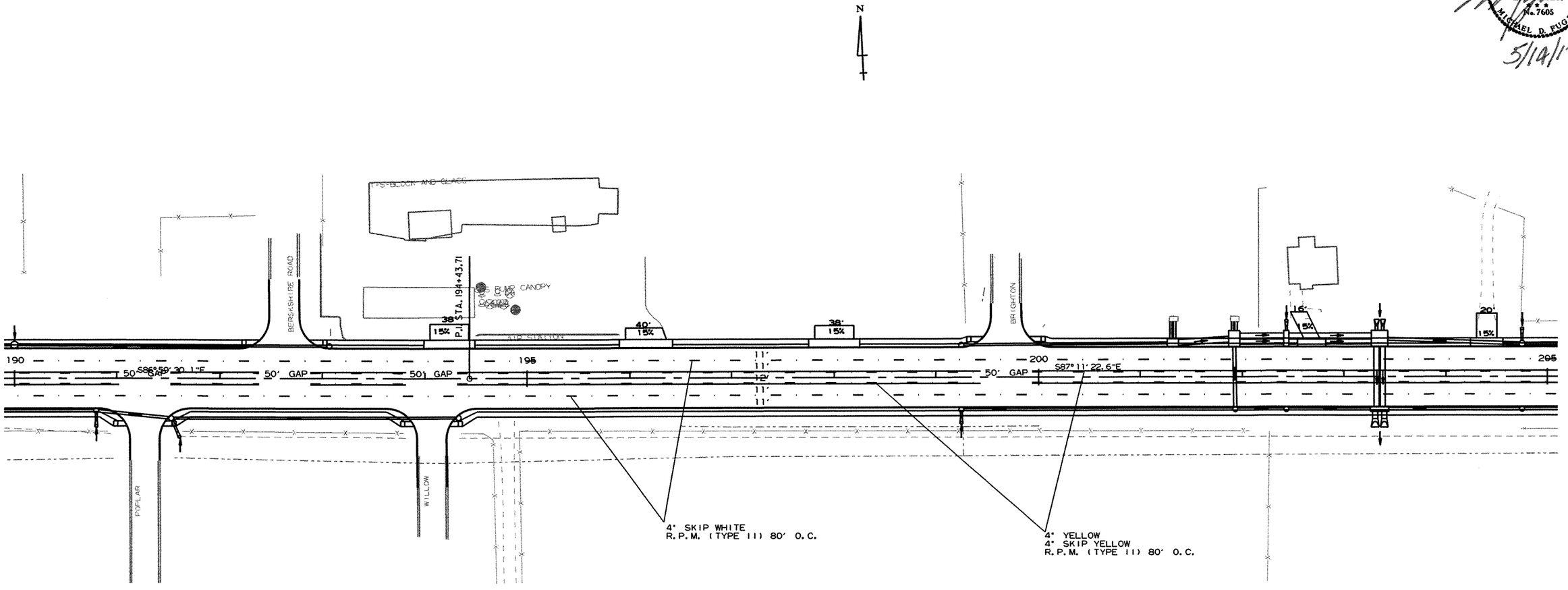
R090174.DGN 7/20/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	47	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12



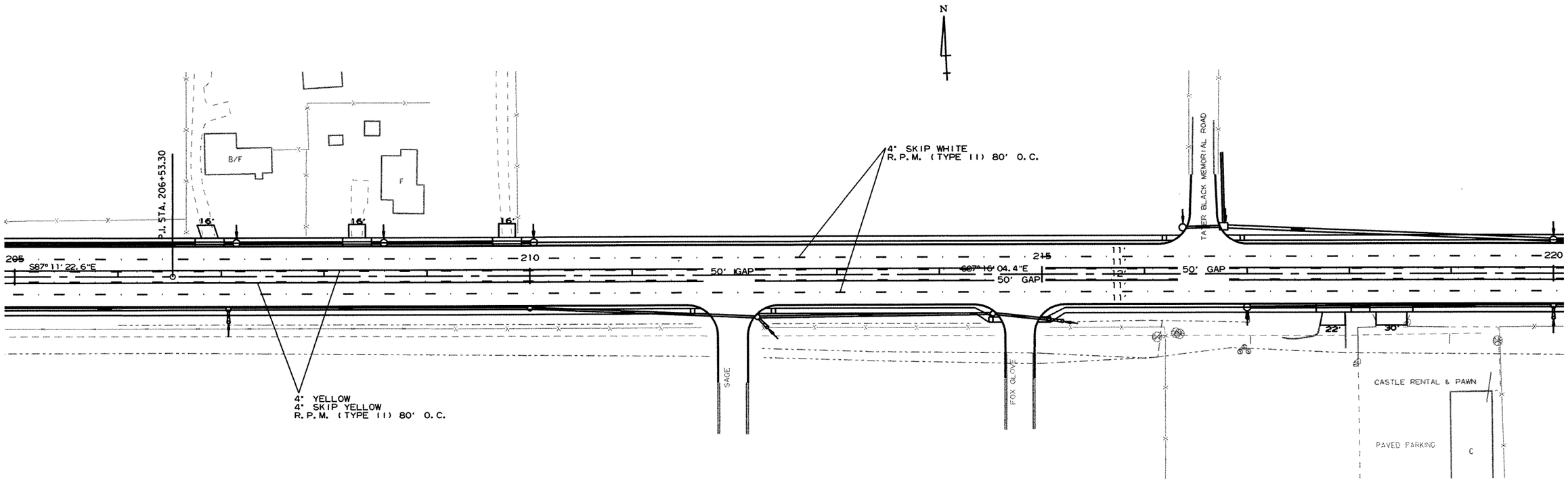
R090174.DGN 7/20/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	48	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12



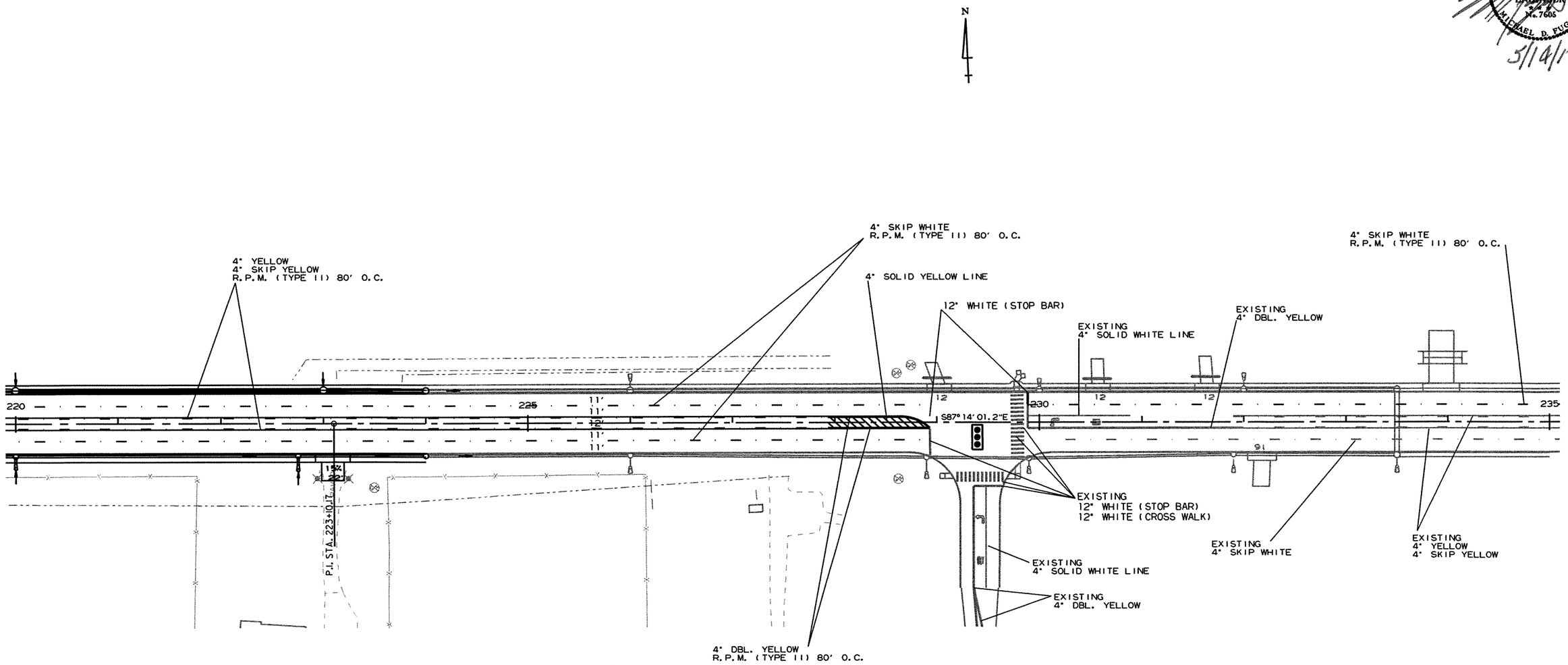
R090174.DGN 7/20/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	49	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
3/14/12



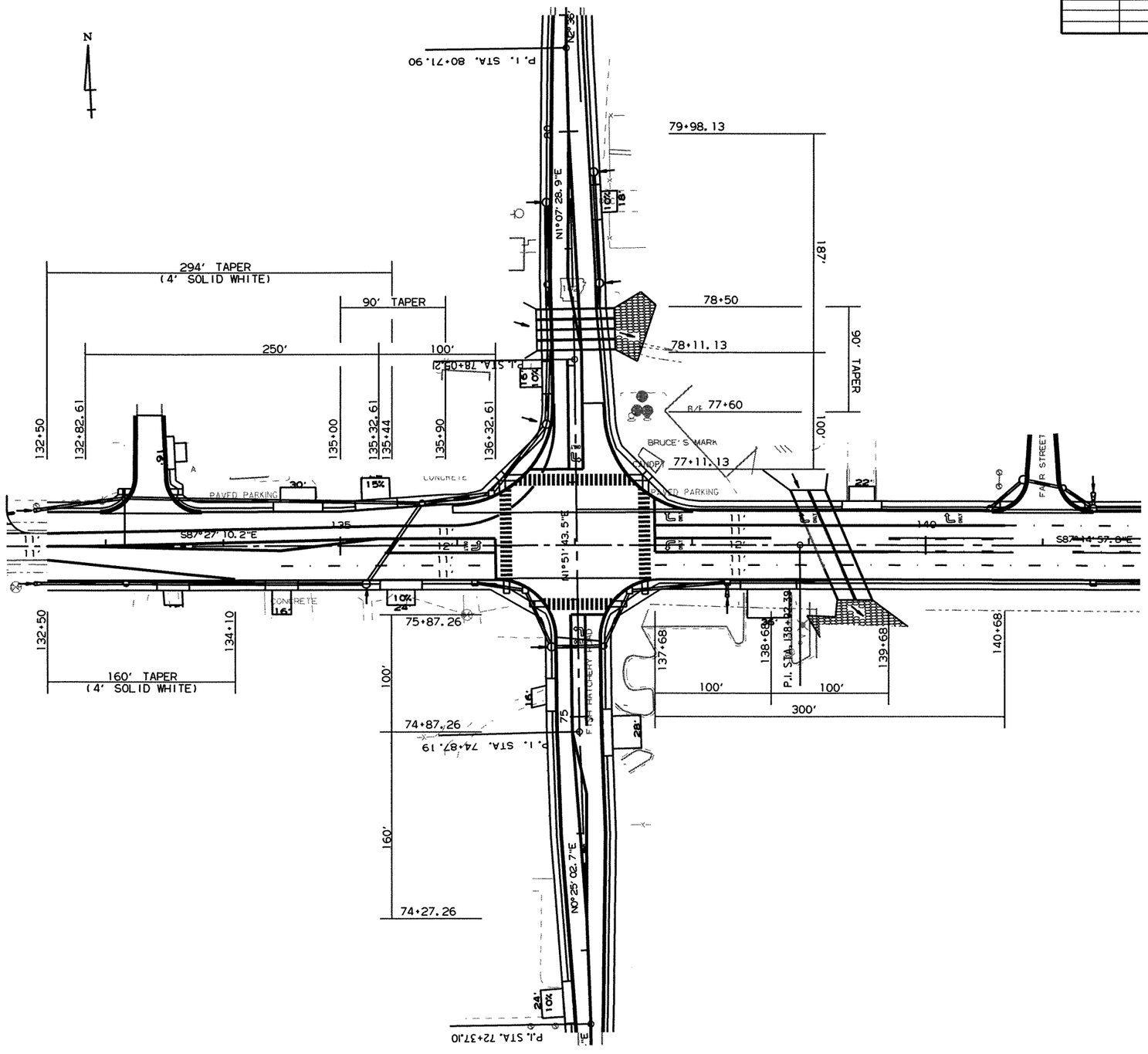
R090174.DGN 7/20/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	50	241

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5/14/12



INTERSECTION LAYOUT

R090174.DGN 7/20/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	51	241

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7606
MICHAEL D. FUGETT
5/14/12

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)
											RIGHT	LEFT				
			LIN.FT. - EACH				NO.	SQ. FT.	EACH				LIN.FT.		EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	3	3	3	3	3	48.0								
W20-1	ROAD WORK 1000 FT.	48"x48"	3	3	3	3	3	48.0								
W20-1	ROAD WORK 500 FT.	48"x48"	3	3	3	3	3	48.0								
W20-1	ROAD WORK AHEAD	48"x48"	15	15	15	15	15	240.0								
G20-2	END ROAD WORK	48"x24"	17	17	17	17	17	136.0								
R11-2	ROAD CLOSED	48"x30"		9	7	9	9	90.0								
OM-3L	OBJECT MARKER	12"x36"	6	6	6	6	6	18.0								
OM-3R	OBJECT MARKER	12"x36"	8	8	8	8	8	24.0								
W1-6	LARGE ARROW	48"x24"		3	2	3	3	24.0								
R4-1	DO NOT PASS	24"x30"	6	6	6	6	6	30.0								
	VERTICAL PANELS		197			197	197		197							
	TRAFFIC DRUMS		154	508	454	508	508			508						
	TYPE III BARRICADE-RT. (8')			15	16	16	16				128					
	TYPE III BARRICADE-LT. (8')			5		5	5					40				
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		339	113		452							452			
	RELOCATING PRECAST CONCRETE BARRIER		226	339	319	884								884		
	TEMPORARY IMPACT ATTENUATION BARRIER		1		1	2									2	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		1		1	2										2
TOTALS:								**706.0**	**197**	**508**	**128**	**40**	**452**	**884**	**2**	**2**

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKINGS				
								TYPE II (WHITE/RED)	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	12" WHITE	WORDS	ARROWS
	LIN.FT. - EACH				LIN.FT.		LIN.FT.	EACH		LIN.FT.			EACH	
REMOVAL OF PERMANENT PAVEMENT MARKINGS	694	1138	901	2748	5481									
CONSTRUCTION PAVEMENT MARKINGS	20007	31463	30117			81587								
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	1989	17064	29912				48965							
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)				240				240						
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)				248					248					
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")				6038						6038				
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")				25534							25534			
THERMOPLASTIC PAVEMENT MARKINGS WHITE (12")				951								951		
THERMOPLASTIC PAVEMENT MARKINGS WORDS				7									7	
THERMOPLASTIC PAVEMENT MARKINGS ARROWS				7										7
TOTALS:					**5481**	**81587**	**48965**	**240**	**248**	**6038**	**25534**	**951**	**7**	**7**

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL						TEMPORARY EROSION CONTROL								
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	SOLID SODDING	TEMPORARY SEEDING	MULCH COVER	WATER	*SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	SQ.YD.	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN.FT.	LIN.FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1							8.19	8.19	167.1		120	1175	3244			188
ENTIRE	PROJECT	STAGE 2							11.75	11.75	239.7		145	1225	4920			257
ENTIRE	PROJECT	STAGE 3							1.13	1.13	23.1			75				13
ENTIRE	PROJECT	SEEDING BEHIND SIDEWALK	3.85	7.70	3.85	392.7	3.85											
ENTIRE	PROJECT	3' BERM BETWEEN CURB AND SIDEWALK				70.2		5570										
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			2.00	4.00	2.00	216.6	2.00	1000	5.00	5.00	102.0	1250	250		2000	500	500	584
TOTALS:			**5.85**	**11.70**	**5.85**	**679.5**	**5.85**	**6570**	**26.07**	**26.07**	**531.9**	**1250**	**515**	**2475**	**10164**	**500**	**500**	**1042**

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING.
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING.
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.
BALED STRAW DITCH CHECKS....4 BALES / LOCATION
SAND BAG DITCH CHECKS.....25 BAGS / LOCATION
ROCK DITCH CHECKS.....5 CU.YD./LOCATION

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

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

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	52	241

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
14760
MICHAEL D. FUGETT
5/14/12

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	POSTS	CURB AND GUTTER	RETAINING WALL	CONCRETE DRIVEWAYS	CONCRETE PARKING AREA	WALKS	SIGN FOUNDATIONS	DITCH PAVING	AIR STATION	GUARDRAIL	LUMINAIRE POLES	BILLBOARD	SIGNS	PLANTERS
			EACH	LIN. FT.	LIN. FT.	SQ. YD.	SQ. YD.	SQ. YD.	EACH	SQ. YD.	EACH	LIN.FT.	EACH	EACH	EACH	EACH
132+75		HWY. 102 ON LEFT							1						1	1
135+16	136+82	HWY. 102 ON LEFT	1			139	571									
137+46	138+56	HWY. 102 ON LEFT							1					1	1	
137+56	139+06	HWY. 102 ON RIGHT		94					1	24					3	
139+32	139+68	HWY. 102 ON LEFT		68												
140+62		HWY. 102 ON LEFT							1						1	
142+02		HWY. 102 ON LEFT													1	
146+71	148+35	HWY. 102 ON LEFT		143			371									
148+97	150+21	HWY. 102 ON LEFT				208				3					2	
150+31	151+14	HWY. 102 ON LEFT		132											1	
150+74	153+29	HWY. 102 ON RIGHT										274				
151+17	155+68	HWY. 102 ON LEFT										450				
155+64	156+44	HWY. 102 ON RIGHT				195				20						
159+62	160+90	HWY. 102 ON RIGHT			60	154				5						
162+35		HWY. 102 ON LEFT														
176+07	177+04	HWY. 102 ON LEFT (COPPER OAKS DR.)		262											1	
176+12	176+94	HWY. 102 ON RIGHT (WOMACK DR.)		103						22						
180+51	181+47	HWY. 102 ON RIGHT				177										
191+02	191+46	HWY. 102 ON RIGHT (POPLAR)		90												
192+25	193+02	HWY. 102 ON LEFT (BERSKSHIRE)		205												
193+20	196+75	HWY. 102 ON LEFT				422	92	150	2		1		5		3	
193+87	194+27	HWY. 102 ON RIGHT (WILLOW)		143												
199+28	200+09	HWY. 102 ON LEFT (BRIGHTON)		158											1	
200+00		HWY. 102 ON LEFT													1	
206+93		HWY. 102 ON LEFT			6											
211+77	212+13	HWY. 102 ON RIGHT (SAGE)		138												
214+57	214+98	HWY. 102 ON RIGHT (FOX GLOVE)		134												
217+00		HWY. 102 ON LEFT													1	
217+84		HWY. 102 ON RIGHT				72										
	FISH HATCHERY/ HWY.102B															
72+56		LEFT SIDE				28										
73+60		LEFT SIDE											1			
74+50	75+26	RIGHT SIDE		82											2	
78+69		LEFT SIDE														
79+00		LEFT SIDE						16								
79+40		RIGHT SIDE				24										
79+82		RIGHT SIDE						3								
TOTALS:			1	1752	66	1419	1034	169	6	74	1	724	6	1	19	1

CONCRETE CURB

STATION	STATION	LOCATION	(TYPE A)
			LIN. FT.
133+09	133+15	LEFT OF MAIN LANES IN PARKING LOT	45
133+65	134+49	LEFT OF MAIN LANES IN PARKING LOT	116
135+42	136+72	LEFT OF MAIN LANES IN PARKING LOT	189
TOTAL:			350

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP (GROUTED)	FILTER BLANKET
		CU. YD.	SQ. YD.
139+12	OUTLET OF R.C. BOX CULVERT	127	254
FISH HATCHERY/ HWY. 102B			
78+30	OUTLET OF R.C. BOX CULVERT	133	266
*ENTIRE PROJECT	TO BE USED IF AND WHERE	200	400
	DIRECTED BY THE ENGINEER		
TOTALS:		460	920

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

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
133+00	141+00	HWY. 102	8	8
149+00	154+00	HWY. 102	5	5
156+00	162+00	HWY. 102	6	6
164+00	173+00	HWY. 102	9	9
175+00	176+00	HWY. 102	1	1
183+00	185+00	HWY. 102	2	2
206+00	211+00	HWY. 102	5	5
212+00	213+00	HWY. 102	1	1
214+00	216+00	HWY. 102	2	2
72+00	76+00	FISH HATCHERY/ HWY.102B	4	4
78+00	79+00	FISH HATCHERY/ HWY.102B	1	1
TOTALS:			44	44

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
139+50	150+26	HWY. 102 ON RIGHT	1076
163+62	164+39	HWY. 102 ON RIGHT	78
163+76	171+65	HWY. 102 ON LEFT	965
202+15		HWY. 102 ON LEFT	15
202+67	204+20	HWY. 102 ON LEFT	153
206+66	206+80	HWY. 102 ON LEFT	32
206+96	207+82	HWY. 102 ON LEFT	105
209+88	216+43	HWY. 102 ON LEFT	749
207+45	208+35	HWY. 102 ON LEFT	90
216+71	223+10	HWY. 102 ON LEFT	711
71+87	74+05	FISH HATCHERY/ HWY. 102B ON RIGHT	243
79+00	80+13	FISH HATCHERY/ HWY. 102B ON RIGHT	102
TOTAL:			4319

SOIL LOG

STATION	LOCATION	DEPTH	AASHTO CLASSIFICATION	LIQUID LIMIT	PLASTICITY INDEX	COLOR
		FEET				
136+00	21'RT	0-5'	A-7-6(14)	41	21	RD/BR
136+00	5'RT	0-5'	A-7-6(19)	46	25	RD/BR
144+00	23'LT	0-5'	A-6(11)	37	20	RD/BR
144+00	5'LT	0-5'	A-6(15)	38	23	RD/BR
144+00	23'LT	0-5'	A-6(15)	35	18	RD/BR
151+45	25'RT	0-5'	A-6(9)	31	13	RD/BR
152+00	5'RT	0-5'	A-6(9)	28	15	RD/BR
160+00	30'LT	0-5'	A-6(13)	35	19	RD/GR
160+00	5'LT	0-3.6Z'	A-6(10)	31	16	BROWN
168+00	17'RT	0-5'	A-6(13)	32	18	BROWN
168+00	36'RT	0-5'	A-7-6(21)	41	24	RD/BR
176+00	16'LT	0-5'	A-4(8)	28	10	RED
176+00	7'RT	0-5'	A-4(4)	23	8	RD/BR
184+00	34'RT	0-5'	A-6(10)	30	13	BR/RD
184+00	17'RT	0-5'	A-6(16)	34	19	RED
192+00	7'RT	0-5'	A-6(8)	26	12	RD/BR
192+00	20'LT	0-5'	A-6(13)	32	15	RED
192+00	20'LT	0-5'	A-6(11)	30	14	RD/BR
200+00	39'RT	0-5'	A-6(19)	38	20	RED
200+00	17'RT	0-5'	A-6(11)	28	14	RD/BR
208+00	21'LT	0-5'	A-6(19)	37	21	RED
208+00	7'RT	0-5'	A-6(7)	26	11	RED
216+00	17'RT	0-5'	A-6(8)	26	12	RD/BR
216+00	37'RT	0-5'	A-6(13)	32	15	RED
224+00	14'LT	0-5'	A-6(9)	29	11	RED
224+00	7'RT	0-5'	A-4(7)	26	10	RD/BR

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

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 2	TYPE 3
		SQ.YD.	
133+14	LEFT OF MAIN LANES		4.3
133+61	LEFT OF MAIN LANES		4.3
136+41	LEFT OF MAIN LANES	13.7	
136+42	RIGHT OF MAIN LANES		3.9
136+66	RIGHT OF MAIN LANES		4.7
137+39	RIGHT OF MAIN LANES		4.7
137+57	LEFT OF MAIN LANES	12.6	
137+59	RIGHT OF MAIN LANES		4.0
140+64	LEFT OF MAIN LANES		6.0
141+35	LEFT OF MAIN LANES		6.0
150+34	LEFT OF MAIN LANES		5.1
151+11	LEFT OF MAIN LANES		5.1
163+35	LEFT OF MAIN LANES		4.7
163+88	LEFT OF MAIN LANES		4.7
176+16	LEFT OF MAIN LANES		6.0
176+20	RIGHT OF MAIN LANES		6.0
176+96	LEFT OF MAIN LANES		6.0
177+00	RIGHT OF MAIN LANES		6.0
191+01	RIGHT OF MAIN LANES		4.5
191+53	RIGHT OF MAIN LANES		4.5
192+26	LEFT OF MAIN LANES		6.0
193+00	LEFT OF MAIN LANES		6.0
193+81	RIGHT OF MAIN LANES		4.5
194+32	RIGHT OF MAIN LANES		4.2
199+35	LEFT OF MAIN LANES		5.5
200+02	LEFT OF MAIN LANES		5.5
211+61	RIGHT OF MAIN LANES		6.0
212+35	RIGHT OF MAIN LANES		6.0
214+53	RIGHT OF MAIN LANES		4.5
215+04	RIGHT OF MAIN LANES		4.5
216+22	LEFT OF MAIN LANES		6.0
216+93	LEFT OF MAIN LANES		6.0
TOTALS:		26.3	155.2

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	(TYPE A)(1' 6")
			LIN. FT.
132+50	133+25	LEFT OF MAIN LANES	140
133+49	136+81	LEFT OF MAIN LANES	426
137+25	140+90	LEFT OF MAIN LANES	460
141+09	150+51	LEFT OF MAIN LANES	978
150+94	163+43	LEFT OF MAIN LANES	1351
163+68	176+39	LEFT OF MAIN LANES	1439
176+72	192+48	LEFT OF MAIN LANES	1645
192+77	199+54	LEFT OF MAIN LANES	744
199+83	216+45	LEFT OF MAIN LANES	1660
216+69	224+00	LEFT OF MAIN LANES	750
132+50	136+84	RIGHT OF MAIN LANES	433
137+22	176+44	RIGHT OF MAIN LANES	3828
179+77	191+13	RIGHT OF MAIN LANES	1445
191+41	193+93	RIGHT OF MAIN LANES	348
194+21	211+84	RIGHT OF MAIN LANES	1817
212+12	214+64	RIGHT OF MAIN LANES	363
214+92	224+00	RIGHT OF MAIN LANES	947
FISH HATCHERY ROAD/ HWY. 102B			
72+30	75+68	LEFT SIDE	403
77+67	81+00	LEFT SIDE	317
72+30	75+66	RIGHT SIDE	407
77+60	81+00	RIGHT SIDE	322
TOTAL:			20223

NOTE: DROP INLETS AND EXTENSIONS HAVE BEEN SUBTRACTED OUT OF THE CURB LENGTH.

R090174.DGN 7/20/2011

QUANTITY SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	53	241

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5-14-12

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	DROP INLETS
		EACH	EACH
133+38	18" X 31' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
133+57	24" X 51' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
134+07	24" X 41' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
134+50	18" X 16' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
134+64	18" X 45' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
135+21	18" X 17' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
135+31	18" X 26' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
135+46	24" X 44' R.C. PIPE CULVERT CROSS DRAIN	1	
136+44	18" X 15" X 31' C.M. ARCH PIPE CULVERT SIDE DRAIN ON LEFT	1	
138+65	24" X 59' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
141+00	15" X 12" X 30' C.M. ARCH PIPE CUVLERT SIDE DRAIN ON LEFT	1	
142+78	18" X 24' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
143+70	18" X 37' R.C. PIPE CULVERT CROSS DRAIN	1	
147+54	24" X 176' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
149+18	24" X 44' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
150+00	24" X 40' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
150+33	15" X 12" X 25' C.M. ARCH PIPE CUVLERT SIDE DRAIN ON RIGHT	1	
150+75	24" X 96' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
154+65	18" X 36' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
156+09	18" X 88' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
159+96	18" X 68' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
163+47	42" X 42' R.C. PIPE CULVERT CROSS DRAIN	1	
163+63	36" X 23" X 30' C.M. ARCH PIPE CULVERT SIDE DRAIN ON LEFT	1	
166+81	18" X 21' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
171+74	18" X 12" X 24' C.M. ARCH PIPE CULVERT SIDE DRAIN ON LEFT	1	
176+57	18" X 106' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
176+60	18" X 37' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
177+38	18" X 23' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
178+93	18" X 33' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
179+81	24" X 27' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
181+00	24" X 100' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
183+95	18" X 21' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
185+62	18" X 49' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
187+58	18" X 41' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
191+26	24" X 84' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
192+60	24" X 61' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
196+16	24" X 83' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
196+88	12" X 25' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
198+93	12" X 20' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
199+67	24" X 68' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
201+93	24" X 40' C.M. PIPE CULVERT CROSS DRAIN	1	
202+68	18" X 24' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
203+35	DBL. 30"" X 37' R.C. PIPE CULVERT CROSS DRAIN	2	
204+40	24" X 50' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
206+89	18" X 21' R.C. PIPE CULVERT SIDE DRAIN ON LEFT	1	
208+32	18" X 12" X 24' ARCH PIPE CULVERT SIDE DRAIN ON LEFT	1	
209+78	18" X 12" X 25' ARCH PIPE CULVERT SIDE DRAIN ON LEFT	1	
211+78	18" X 77' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
214+75	18" X 76' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
216+55	18" X 12" X 27' R.C. ARCH PIPE CULVERT INLET ON LEFT	1	
216+77	D.I. WITH DBL. 18" X 25' R.C. PIPE CULVERT INTLET ON LEFT	2	1
216+91	DBL. 18" X 26' R.C. PIPE CULVERT OUTLET ON LEFT	2	
217+85	18" X 30' R.C. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
218+41	18" X 48' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
223+09	18" X 31' C.M. PIPE CULVERT SIDE DRAIN ON RIGHT	1	
	FISH HATCHERY ROAD/ HWY. 102B		
77+53	12" X 40' PIPE CULVERT SIDE DRAIN ON RIGHT	1	
77+70	18" X 41' C.M. PIPE CULVERT SIDE DRAIN ON LEFT	1	
78+57	18" X 24' C.M. PIPE CUVLERT SIDE DRAIN ON RIGHT	1	
79+40	12" X 24' PIPE CULVERT SIDE DRAIN ON RIGHT	1	
	BEFORE STAGE 3 CONSTRUCTION		
152+72	JUNCTION BOX WITH 24" X 13' R.C. PIPE CULVERT OUTLET	1	1
TOTALS:		63	2

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
152+48	TOP OF HEADWALL ON RIGHT	1
203+35	TOP OF JUNCTION BOX ON LEFT	1
TOTAL:		2

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

EARTHWORK

	STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	TYPE 1 GRANULAR MATERIAL
				CU. YD.		TONS
	ENTIRE	PROJECT	MAIN LANES	3356	30895	
	152+00	157+00	MAIN LANES - ON RIGHT AT LAKE			242
	ENTIRE	PROJECT	FISH HATCHERY ROAD/ HWY. 102B	681	1395	
	ENTIRE	PROJECT	APPROACHES	15	315	
	ENTIRE	PROJECT	TEMPORARY APPROACHES			
*	133+38		NORTH "A" STREET	180	58	
*	141+00		FAIR STREET	77	118	
*	150+74		SIENNA	124	50	
*	163+62		ALLEN ROAD	173	356	
*	176+56		COPPER OAKS DRIVE	161	58	
*	176+59		WOMACK	136	73	
*	191+27		POPLAR	85	148	
*	192+63		BERSKSHIRE ROAD	145	14	
*	194+07		WILLOW	113	83	
*	199+68		BRIGHTON	75	49	
*	211+98		SAGE	107	66	
*	214+78		FOX GLOVE	124	117	
*	216+57		TATER BLACK MEMORIAL ROAD	85	69	
	135+73.84	142+33.69	TEMPORARY WIDENING AND REMOVAL	400	41	
	149+59.60	155+97.54	TEMPORARY WIDENING AND REMOVAL	394		
	77+12.24	80+19.60	TEMPORARY WIDENING AND REMOVAL ON LEFT	336	79	
	77+07.68	80+00.81	TEMPORARY WIDENING AND REMOVAL ON RIGHT	312	42	
	78+30		INLET CHANNEL CLEAN OUT ON RIGHT	227		
	137+59	139+12	INLET CHANNEL CLEAN OUT ON LEFT	757		
	139+12	141+17	OUTLET CHANNEL CLEAN OUT ON RIGHT	213		
	151+48	152+48	INLET CHANNEL CLEAN OUT ON LEFT	235		
**	ENTIRE	PROJECT	UNDERCUT - MAIN LANES	25667	25667	
**	ENTIRE	PROJECT	UNDERCUT - FISH HATCHERY ROAD	543	543	
**	ENTIRE	PROJECT	UNDERCUT - HWY. 102B	703	703	
***	152+48		UNDERCUT - PRECAST R.C. BOX CUVLERT	125		7
TOTALS:				35549	60939	249

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

** THE UNDERCUT VOLUME IS CALCULATED BASED ON REMOVING AND BACKFILLING THE EXISTING SOIL TO A DEPTH OF 2 FEET MAX FROM THE EXISTING ROAD EDGE TO BACK OF THE PROPOSED CURB FOR THE ENTIRE PROJECT

*** THE UNDERCUT VOLUME IS CALCULATED BASED ON REMOVING AND BACKFILLING THE EXISTING SOIL TO A DEPTH OF 2 FEET.

BASIS OF ESTIMATE:
TYPE 1 GRANULAR MATERIAL .....115 LBS / TONS

4" PIPE UNDERDRAIN

	STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS
				LIN.FT.
*	ENTIRE PROJECT TO BE USED IF AND			2575
	WHERE DIRECTED BY THE ENGINEER			
	TOTAL:			2575

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

UNDERDRAINS SHALL BE STUBBED INTO THE PROPOSED DROP INLET IF AND WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR THIS TO BE INCLUDED IN THE UNIT PRICE BID FOR 4" PIPE UNDERDRAIN.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	250
ENGINEER	
TOTALS:	250

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

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
135+46	HWY. 102	8.50	36.84	11.6
143+70	HWY. 102	10.25	30.00	11.4
163+55	HWY. 102	10.25	32.86	12.5
163+56	HWY. 102	19.67	42.76	31.2
201+93	HWY. 102	9.08	29.57	9.9
203+35	HWY. 102	20.83	29.57	22.8
75+60	FISH HATCHERY ROAD	7.92	21.90	6.4
TOTAL:				105.8

AVG. DEPTH = 1'-0"

ACHM PATCHING OF EXISTING ROADWAY

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

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	50	100
DIRECTED BY THE ENGINEER		
TOTALS:	50	100

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

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)	MAILBOX SUPPORTS (DOUBLE)
	EACH		
ENTIRE PROJECT	16	12	2
TOTALS:	16	12	2

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE D-1)
			LIN. FT.
139+78	150+25	HWY. 102 ON RIGHT	1050
163+62	164+39	HWY. 102 ON RIGHT	78
163+76	171+65	HWY. 102 ON LEFT	892
209+88	216+43	HWY. 102 ON LEFT	693
216+71	223+10	HWY. 102 ON LEFT	674
TOTAL:			3387

* DENOTES ALTERNATE BID ITEM.

11/8/2011

R090174.DGN

QUANTITY SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	54	241

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5-14-12

CONCRETE WALKS

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS
			LIN.FT.	SQ.YD.
132+50	133+14	LEFT OF MAIN LANES	64	39
133+54	134+43	LEFT OF MAIN LANES	89	55
134+85	135+12	LEFT OF MAIN LANES	27	15
135+48	136+23	LEFT OF MAIN LANES	75	42
136+23	136+70	LEFT OF MAIN LANES	47	38
137+37	137+80	LEFT OF MAIN LANES	43	34
137+80	139+28	LEFT OF MAIN LANES	148	82
139+62	140+64	LEFT OF MAIN LANES	102	57
141+35	142+90	LEFT OF MAIN LANES	155	86
143+42	143+81	LEFT OF MAIN LANES	39	22
144+09	146+94	LEFT OF MAIN LANES	285	158
147+30	147+69	LEFT OF MAIN LANES	39	22
147+19	149+00	LEFT OF MAIN LANES	181	101
149+36	149+82	LEFT OF MAIN LANES	46	26
150+16	150+34	LEFT OF MAIN LANES	18	12
151+11	151+24	LEFT OF MAIN LANES	13	10
151+24	163+15	LEFT OF MAIN LANES	1191	662
163+15	163+35	LEFT OF MAIN LANES	20	12
163+88	164+04	LEFT OF MAIN LANES	16	12
164+04	171+60	LEFT OF MAIN LANES	756	420
171+88	176+16	LEFT OF MAIN LANES	428	238
176+96	178+79	LEFT OF MAIN LANES	183	102
179+07	192+26	LEFT OF MAIN LANES	1319	733
193+00	193+99	LEFT OF MAIN LANES	99	55
194+49	195+90	LEFT OF MAIN LANES	141	78
196+42	197+75	LEFT OF MAIN LANES	133	74
198+25	199+35	LEFT OF MAIN LANES	110	61
200+02	200+12	LEFT OF MAIN LANES	10	6
200+12	201+26	LEFT OF MAIN LANES	114	63
201+37	201+86	LEFT OF MAIN LANES	49	27
201+97	202+40	LEFT OF MAIN LANES	43	24
202+45	202+54	LEFT OF MAIN LANES	9	5
202+82	203+27	LEFT OF MAIN LANES	45	25
203+43	204+24	LEFT OF MAIN LANES	81	45
204+56	206+75	LEFT OF MAIN LANES	219	122
207+03	208+18	LEFT OF MAIN LANES	115	64
208+46	209+64	LEFT OF MAIN LANES	118	66
209+92	216+22	LEFT OF MAIN LANES	630	350
216+93	224+00	LEFT OF MAIN LANES	707	393
132+50	133+43	RIGHT OF MAIN LANES	93	52
133+71	134+36	RIGHT OF MAIN LANES	65	36
134+64	135+34	RIGHT OF MAIN LANES	70	39
135+70	136+30	RIGHT OF MAIN LANES	60	33
136+30	136+73	RIGHT OF MAIN LANES	43	41
137+32	137+72	RIGHT OF MAIN LANES	40	35
137+72	138+41	RIGHT OF MAIN LANES	69	38
138+89	150+19	RIGHT OF MAIN LANES	1130	628
150+47	154+52	RIGHT OF MAIN LANES	405	225
154+80	155+84	RIGHT OF MAIN LANES	104	58
156+34	159+73	RIGHT OF MAIN LANES	339	188
160+19	163+16	RIGHT OF MAIN LANES	297	165
163+68	166+67	RIGHT OF MAIN LANES	299	166
166+95	176+20	RIGHT OF MAIN LANES	925	514
177+00	177+24	RIGHT OF MAIN LANES	24	13
177+52	179+67	RIGHT OF MAIN LANES	215	119
179+95	180+75	RIGHT OF MAIN LANES	80	44
181+23	183+81	RIGHT OF MAIN LANES	258	143
184+09	185+44	RIGHT OF MAIN LANES	135	75
185+80	187+42	RIGHT OF MAIN LANES	162	90
187+74	190+83	RIGHT OF MAIN LANES	309	172
190+83	191+01	RIGHT OF MAIN LANES	18	12
191+53	191+71	RIGHT OF MAIN LANES	18	12
193+62	193+81	RIGHT OF MAIN LANES	19	12
194+32	194+50	RIGHT OF MAIN LANES	18	12
194+50	211+61	RIGHT OF MAIN LANES	1711	951
212+35	214+34	RIGHT OF MAIN LANES	199	111
214+34	214+53	RIGHT OF MAIN LANES	19	12
215+04	215+22	RIGHT OF MAIN LANES	18	12
215+22	217+68	RIGHT OF MAIN LANES	246	137
208+02	218+20	RIGHT OF MAIN LANES	1018	566
218+62	222+92	RIGHT OF MAIN LANES	430	239
223+26	224+00	RIGHT OF MAIN LANES	74	41
		FISH HATCHERY ROAD/ HWY. 102B		
72+30	72+38	LEFT SIDE	8	4
72+74	75+05	LEFT SIDE	231	128
75+33	75+86	LEFT SIDE	53	31
77+39	77+76	LEFT SIDE	37	22
78+04	81+00	LEFT SIDE	296	164
72+30	74+65	RIGHT SIDE	235	131
75+06	75+85	RIGHT SIDE	79	44
77+29	79+24	RIGHT SIDE	195	109
79+54	81+00	RIGHT SIDE	146	81
TOTAL:				10141

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	**MODIFIED CURB		PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS
										18"
			FEET	STATION	STATION	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.
132+00	LT.	DRIVEWAY	24				89.9	9.9	36.7	38
133+57	RT.	DRIVEWAY	16	133+35	133+79	24.90	22.2	2.4	9.1	
133+59	LT.	DRIVEWAY - RIGHT SIDE NORTH "A" ST.	16	133+37	133+81	24.90	17.8	2.0	7.3	
134+07	LT.	DRIVEWAY	24	133+81	134+33	32.00	33.3	3.7	13.6	
134+50	RT.	DRIVEWAY	16	134+28	134+72	61.50				
134+64	LT.	DRIVEWAY	30	134+35	134+93	37.30	41.7	4.6	17.0	
135+31	LT.	DRIVEWAY	24	135+05	135+57	82.80				
135+52	RT.	DRIVEWAY	16	135+30	135+74	24.90	23.4	2.6	9.6	
138+65	RT.	DRIVEWAY	36	138+33	138+97	140.60				
139+45	LT.	DRIVEWAY	22	139+20	139+70	30.20	30.6	3.4	12.5	
143+16	LT.	DRIVEWAY	24	142+90	143+42	32.00	43.3	4.8	17.7	
143+95	LT.	DRIVEWAY	16	143+73	144+17	24.90	22.2	2.4	9.1	
147+12	LT.	DRIVEWAY	24	146+86	147+38	32.00	35.9	3.9	14.7	
147+94	LT.	DRIVEWAY	38	147+61	148+27	44.40	52.8	5.8	21.6	
149+18	LT.	DRIVEWAY	24	148+92	149+44	32.00				
150+00	LT.	DRIVEWAY	22	149+75	150+25	65.10				
150+33	RT.	DRIVEWAY	16	150+11	150+55	24.90	59.5	6.5	24.3	
154+65	RT.	DRIVEWAY	16	154+43	154+87	24.90	34.8	3.8	14.2	
156+09	RT.	DRIVEWAY	38	155+76	156+42	101.40				
159+96	RT.	DRIVEWAY	24	159+70	160+22	78.70				
163+41	RT.	DRIVEWAY	40	163+07	163+75	46.20	60.5	6.7	24.7	
166+81	RT.	DRIVEWAY	16	166+59	167+03	24.90	33.2	3.7	13.6	
171+74	LT.	DRIVEWAY	16	171+52	171+96	24.90	51.2	5.6	20.9	
177+38	RT.	DRIVEWAY	16	177+16	177+60	24.90	24.1	2.7	9.8	
178+93	LT.	DRIVEWAY	16	178+71	179+15	24.90	22.2	2.4	9.1	
179+81	RT.	DRIVEWAY	16	179+59	180+03	24.90	24.0	2.6	9.8	
181+00	RT.	DRIVEWAY	36	180+68	181+32	92.70				
183+95	RT.	DRIVEWAY	16	183+73	184+17	24.90	35.1	3.9	14.3	
185+62	RT.	DRIVEWAY	24	185+36	185+88	32.00	35.4	3.9	14.5	
187+58	RT.	DRIVEWAY	20	187+34	187+82	28.40	32.4	3.6	13.2	
194+24	LT.	DRIVEWAY	38	193+91	194+57	109.10				
196+16	LT.	DRIVEWAY	40	195+82	196+50	96.50				
198+00	LT.	DRIVEWAY	38	197+67	198+33	44.40	55.5	6.1	22.7	
202+68	LT.	DRIVEWAY	16	202+46	202+90	24.90	50.8	5.6	20.7	
204+40	LT.	DRIVEWAY	20	204+16	204+64	28.40	54.3	6.0	22.2	
206+89	LT.	DRIVEWAY	16	206+67	207+11	24.90	22.4	2.5	9.1	
208+32	LT.	DRIVEWAY	16	208+10	208+54	24.90	23.0	2.5	9.4	
209+78	LT.	DRIVEWAY	16	209+56	210+00	24.90	23.6	2.6	9.6	
217+85	RT.	DRIVEWAY	22	217+60	218+10	61.10				
218+41	RT.	DRIVEWAY	30	218+12	218+70	37.30	42.2	4.6	17.2	
223+09	RT.	DRIVEWAY	22	222+84	223+34	30.20	44.2	4.9	18.0	
		FISH HATCHERY ROAD/ HWY. 102B								
72+56	LT.	DRIVEWAY	24	72+30	72+82	32.00	50.4	5.5	20.6	
74+86	RT.	DRIVEWAY	28	74+58	75+14	35.60	75.9	8.3	31.0	
75+19	LT.	DRIVEWAY	16	74+97	75+41	24.90	22.2	2.4	9.1	
77+90	LT.	DRIVEWAY	16	77+68	78+12	57.80				
79+40	RT.	DRIVEWAY	16	79+18	79+62	48.80				
* ENTIRE PROJECT TEMPORARY DRIVES									690.0	
TOTALS:						**1973.80**		**141.9**	**1216.9**	**38**

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

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

BASIS OF ESTIMATE:
* TEMPORARY DRIVES .....15 TONS / DRIVE

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

** FOR INFORMATION ONLY

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
131+50	132+50	MAIN LANES - HWY. 102	22	244.44
223+00	224+00	MAIN LANES - HWY. 102	56	622.22
71+30	72+30	FISH HATCHERY/ HWY. 102B	20	222.22
81+00	82+00	FISH HATCHERY/ HWY. 102B	21	233.33
TOTAL:				1322.21

NOTE: AVERAGE MILLING DEPTH 1".

FLOWABLE SELECT MATERIAL

STATION	LOCATION	CU. YD.
135+46	HWY. 102	10
143+70	HWY. 102	24
163+55	HWY. 102	38
163+56	HWY. 102	74
201+93	HWY. 102	17
203+35	HWY. 102	50
75+60	FISH HATCHERY ROAD	9
TOTAL:		222

R090174.DGN 7/20/2011

QUANTITY SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	55	241

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5-14-12

STRUCTURES (BOX 1 OF 2)

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III)							SIDE DRAIN	PIPE CULVERT STORM DRAIN (ALTERNATES 1 & 2)								FLARED END SECTIONS FOR R.C. PIPE CULVERTS							TEMPORARY CULVERTS	DROP INLETS TYPE		DROP INLETS EXT.		JUNCT. BOX		YARD DRAIN	SOLID SODDING	WATER
		18"	24"	30"	36"	48"	44"X27"	59"X36"	12"	18"	24"	30"	36"	42"	48"	54"	59"X36"	18"	24"	30"	36"	48"	59"X36"	42"	C	MO	4'	8'	E	ST			
		LIN. FT.																EACH						LIN. FT.	EACH								
133+17	CONSTRUCT DROP INLET ON RT.	70								200								1								1							5	0.06
133+16	CONSTRUCT DROP INLET ON LT.	70								250								1								1							5	0.06
135+22	CONSTRUCT DROP INLET ON RT.		79																							1	1							
135+70	CONSTRUCT DROP INLET ON LT.										56															1	1							
136+15	CONSTRUCT DROP INLET ON RT.									40																1	1							
136+29.41	CONSTRUCT 4' X 4' TYPE E JUNCTION BOX ON LT.										70																			1				
136+58.23	CONSTRUCT 4' X 4' TYPE E JUNCTION BOX ON RT.									48																				1				
137+46.22	CONSTRUCT 4' X 4' TYPE E JUNCTION BOX ON RT.	80																													1			
138+30	CONSTRUCT 4' X 4' TYPE C DROP INLET ON RT.	92																1							1		1					5	0.06
140+55	CONSTRUCT DROP INLET ON LT.									33																1	1							
140+83	CONSTRUCT DROP INLET ON LT.	18																								1								
141+17	CONSTRUCT DROP INLET ON LT.									27																1								
141+43	CONSTRUCT DROP INLET ON LT.	4										104						1								1							5	0.06
141+43	CONSTRUCT 4' X 4' TYPE C DROP INLET ON RT.									222															1		1							
142+52	CONSTRUCT DROP INLET ON LT.	3											113					1								1							5	0.06
143+70	CONSTRUCT DROP INLET ON LT.						59																			1								
143+70	CONSTRUCT DROP INLET ON RT.												295													1	1							
146+70	CONSTRUCT DROP INLET ON RT.				325																					1	1							
146+70	CONSTRUCT DROP INLET ON LT.										213															1	1							
148+89	CONSTRUCT DROP INLET ON LT.										150															1	1							
150+00	CONSTRUCT DROP INLET ON RT.				237																					1	1							
150+44	CONSTRUCT DROP INLET ON LT.		72																							1	1							
151+20	CONSTRUCT DROP INLET ON LT.		118																							1	1							
152+48	CONSTRUCT 4' X 4' TYPE C DROP INLET ON LT.																								1									
152+48	CONSTRUCT 4' X 4' TYPE C DROP INLET ON RT.																								1		1							
152+72	CONSTRUCT TEMPORARY 4' X 4' TYPE ST JUNCTION BOX ON RT.		13																1											1				
154+46	CONSTRUCT DROP INLET ON LT.	170																								1		1						
154+46	CONSTRUCT 4' X 4' TYPE C DROP INLET ON RT.		170																						1									
154+85	CONSTRUCT 4' X 4' TYPE C DROP INLET ON RT.	6	35															1							1							5	0.06
155+60	CONSTRUCT 4' X 4' TYPE C DROP INLET ON RT.		71																						1									
156+50	CONSTRUCT DROP INLET ON RT.	86																								1		1						
157+30	CONSTRUCT DROP INLET ON LT.									280																1	1							
159+50	CONSTRUCT DROP INLET ON RT.									296																1		1						
160+30	CONSTRUCT DROP INLET ON LT.									296																1	1							
160+30	CONSTRUCT DROP INLET ON RT.									76																1	1							
163+23.27	CONSTRUCT 15' X 9' TYPE C DROP INLET ON LT.					268																2			1							31	0.39
163+85	CONSTRUCT 17' X 6' TYPE C DROP INLET ON RT.				12	356															2				1							18	0.23
164+05	CONSTRUCT DROP INLET ON LT.													69												1	1							
167+00	CONSTRUCT DROP INLET ON LT.													290												1								
167+10	CONSTRUCT DROP INLET ON RT.	5														313		1								1							5	0.06
169+50	CONSTRUCT DROP INLET ON LT.													245												1								
169+50	CONSTRUCT DROP INLET ON RT.	7														234		1								1							5	0.06
172+00	CONSTRUCT DROP INLET ON LT.	9												245				1								1							5	0.06
172+00	CONSTRUCT DROP INLET ON RT.	7														244		1								1							5	0.06
174+50	CONSTRUCT DROP INLET ON LT.												245													1								
174+50	CONSTRUCT DROP INLET ON RT.														244											1	1							
176+33	CONSTRUCT DROP INLET ON RT.													177												1	1							
176+87	CONSTRUCT DROP INLET ON RT.													48												1		1						
177+10	CONSTRUCT DROP INLET ON LT.												255													1	1							
178+80	CONSTRUCT DROP INLET ON RT.												187													1								
179+20	CONSTRUCT DROP INLET ON LT.											204														1								
180+60	CONSTRUCT DROP INLET ON RT.												175													1								
181+30	CONSTRUCT DROP INLET ON LT.										204															1								
181+36	CONSTRUCT DROP INLET ON RT.												71													1	1							
183+00	CONSTRUCT DROP INLET ON LT.										164															1								
183+00	CONSTRUCT DROP INLET ON RT.	6											159					1								1							5	0.06
185+30	CONSTRUCT DROP INLET ON RT.												225													1								
185+35	CONSTRUCT DROP INLET ON LT.										230															1								
186+25	CONSTRUCT DROP INLET ON LT.										85															1	1							
186+25	CONSTRUCT DROP INLET ON RT.	5										89						1								1	1						5	0.06
187+80	CONSTRUCT DROP INLET ON LT.									149																1	1							
187+88	CONSTRUCT DROP INLET ON RT.	6										157						1								1	1						5	0.06
190+00	CONSTRUCT DROP INLET ON LT.									214																1								
190+80	CONSTRUCT DROP INLET ON RT.	8									287							1								1							5	0.06
191+53	CONSTRUCT DROP INLET ON RT.	14									69							1								1							5	0.06
193+07	CONSTRUCT DROP INLET ON LT.									302																1								
194+33	CONSTRUCT DROP INLET ON RT.									276																1								
199+25	CONSTRUCT DROP INLET ON LT.									200																1		1						
199+25	CONSTRUCT DROP INLET ON RT.	6								264								1								1		1					5	0.06
201+32	CONSTRUCT 10' X 7' TYPE E JUNCTION BOX ON LT.																50												1					
201+92	CONSTRUCT 10' X 15' TYPE E JUNCTION BOX ON LT.			59													88												1					
201+93	CONSTRUCT DROP INLET ON RT.											45														1								
202+43	CONSTRUCT 4' X 15' TYPE C DROP INLET ON LT.	7															166	1							1							5	0.06
202+43	CONSTRUCT DROP INLET ON RT.											84														1	1							
SUBTOTALS:		**679**	**558**	**59**	**574**	**624**	**59**	**0**	**0**	**3173**	**1528**	**683**	**1725**	**1074**	**244**	**791**	**304**	**17**	**1**	**0**	**2**	**2**	**0**	**0**	**10**	**58**	**27**	**6**	**4**	**2**	**0**	**134**	**1.64**

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

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

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

NOTE: FOR CONCRETE PIPE CULVERT DETAIL, REFER TO STD. DRWG. NO. PCC-1.
FOR METAL PIPE CULVERT DETAILS, REFER TO STD. DRWG. NO. PCM-1
FOR FLARED END SECTION DETAILS, REFER TO STD. DRWG. NOS. FES-1 & FES-2.
FOR DROP INLET DETAILS REFER TO STD. DRWG. NOS. FPC-9E, FPC-9M, AND FPC-9S.

R090174.DGN 7/20/2011

QUANTITY SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	56	241

(2) QUANTITY SHEETS

STRUCTURES (BOX 2 OF 2)

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III)							SIDE DRAIN	PIPE CULVERT STORM DRAIN (ALTERNATES 1 & 2)								FLARED END SECTIONS FOR R.C. PIPE CULVERTS							TEMPORARY CULVERTS	DROP INLETS				JUNCT. BOX		YARD DRAIN	SOLID SODDING	WATER
		18"	24"	30"	36"	48"	44"X27"	59"X36"	12"	18"	24"	30"	36"	42"	48"	54"	59"X36"	18"	24"	30"	36"	48"	59"X36"	42"	TYPE C	TYPE MO	EXT. 4'	EXT. 8'	E	ST			
		LIN. FT.							LIN. FT.									EACH							LIN. FT.	EACH							SQ.YD.	M.GAL
203+35	CONSTRUCT 15' X 15' TYPE E JUNCTION BOX ON LT.			10				118												2									1			14	0.18
203+35	CONSTRUCT 17' X 5' TYPE E JUNCTION BOX ON RT.							14														2							1			31	0.39
204+75	CONSTRUCT DROP INLET ON LT.	6										130						1							1	1						5	0.06
204+75	CONSTRUCT DROP INLET ON RT.										130														1	1							
207+07	CONSTRUCT DROP INLET ON RT.	6									228							1							1	1						5	0.06
207+15	CONSTRUCT DROP INLET ON LT.										234														1								
208+58	CONSTRUCT DROP INLET ON LT.										137														1								
210+00	CONSTRUCT DROP INLET ON RT.										289														1								
210+04	CONSTRUCT DROP INLET ON LT.										140														1	1							
212+22	CONSTRUCT DROP INLET ON RT.	7								218								1							1							5	0.06
214+52	CONSTRUCT DROP INLET ON RT.	62								226								1							1							5	0.06
216+37	CONSTRUCT DROP INLET ON LT.									34															1	1							
216+77	CONSTRUCT 7' X 6' TYPE C DROP INLET ON LT.											317													1								
217+00	CONSTRUCT DROP INLET ON RT.	3								295								1							1	1						5	0.06
220+00	CONSTRUCT DROP INLET ON LT.											294													1	1							
220+00	CONSTRUCT DROP INLET ON RT.	5								271								1							1	1						5	0.06
222+75	CONSTRUCT DROP INLET ON RT.	7								121								1							1	1						5	0.06
223+00	CONSTRUCT DROP INLET ON LT.											95													1	1							
224+00	CONSTRUCT DROP INLET ON LT.																								1								
224+00	CONSTRUCT DROP INLET ON RT.																								1								
	FISH HATCHERY ROAD/ HWY. 102B																																
75+60	CONSTRUCT DROP INLET ON LT.	39																							1		1						
75+60	CONSTRUCT DROP INLET ON RT.									135															1	1							
77+50	CONSTRUCT DROP INLET ON LT.		61																						1	1							
78+30	DOULBE TEMPORARY PIPE IN ONE BARREL ON LT.																							68									
78+30	DOULBE TEMPORARY PIPE IN ONE BARREL ON LT.																							64									
78+70	CONSTRUCT DROP INLET ON LT.		20																						1	1							
78+70	CONSTRUCT DROP INLET ON RT.	19																							1	1							
79+40	CONSTRUCT DROP INLET ON LT.										65														1								
79+65	CONSTRUCT DROP INLET ON RT.									89															1								
*	ENTIRE PROJECT YARD DRAINS IF AND WHERE DIRECTED BY THE ENGINEER								1200																						12		
*	ENTIRE PROJECT IF AND WHERE DIRECTED BY THE ENGINEER																												6				
SUBTOTALS:		**154**	**81**	**10**	**0**	**0**	**0**	**132**	**1200**	**1389**	**1223**	**836**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**2**	**0**	**0**	**2**	**132**	**1**	**24**	**14**	**1**	**8**	**0**	**12**	**80**	**0.99**
TOTALS:		**833**	**639**	**69**	**574**	**624**	**59**	**132**	**1200**	**4562**	**2751**	**1519**	**1725**	**1074**	**244**	**791**	**304**	**24**	**1**	**2**	**2**	**2**	**2**	**132**	**11**	**82**	**41**	**7**	**12**	**2**	**12**	**214**	**2.63**

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

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

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

NOTE: FOR CONCRETE PIPE CULVERT DETAIL, REFER TO STD. DRWG. NO. PCC-1.
FOR METAL PIPE CULVERT DETAILS, REFER TO STD. DRWG. NO. PCM-1
FOR FLARED END SECTION DETAILS, REFER TO STD. DRWG. NOS. FES-1 & FES-2.
FOR DROP INLET DETAILS REFER TO STD. DRWG. NOS. FPC-9E, FPC-9M, AND FPC-9S.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 17605
MICHAEL D. FUGETT
5-14-12

STRUCTURES OVER 20'-0" SPAN

STATION	DESCRIPTION	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL. EXC. FOR STR.-ROADWAY	PRECAST R.C. BOX CULVERT 8' x 4'	PRECAST R.C. BOX CULVERT 8' x 5'	PRECAST R.C. BOX CULVERT 12' x 6'	SOLID SODDING	WATER	STD. DWG. NOS.
		LIN. FT.			CU.YD.	POUND	CU.YD.	LIN. FT.			SQ.YD.	M.GAL	
139+12	DOUBLE 12' X 6' R.C. BOX CULVERT ON A 30° RIGHT FWD. SKEW	12	6	61.5	103.90	11401	195			102	34	0.43	R-130X-0, R-230X-02, W-X303-1, W-X30, RCB-1, RCB-2, RCB-3
152+48	QUAD. 8' X 5' R.C. BOX CULVERT	8	5	62.5	98.49	14652	171		188		28	0.35	R-200-X, R-400X-0, W-X003-1, RCB-1, RCB-2, RCB-3
78+30	QUAD. 8' X 4' R.C. BOX CULVERT	8	4	46.5	14.65	871	82	264			28	0.35	R-400X-0, W-X003-1, RCB-1, RCB-2, RCB-3
TOTALS:					**217.04**	**26924**	**448**	**264**	**188**	**102**	**90**	**1.13**	

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

SHORING

STATION	LOCATION	LUMP SUM
139+12	MAIN LANES - R.C. BOX CULVERT	0.33
152+48	MAIN LANES - R.C. BOX CULVERT	0.33
78+30	HWY. 102B - R.C. BOX CULVERT	0.34
TOTAL:		1.00

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	57	241

(2) QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5-14-12

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	TOTAL 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 70-22
			FEET			FEET				FEET			TON	FEET			TON
MAIN LANES																	
131+50	132+50	OVERLAY	100.0			22.0	244.4	0.10	24.4					22.0	244.4	220.0	26.9
132+50	135+00	MAIN LANES - NOTCH	250.0	195.95	489.9	84.6	2350.0	0.30	705.0	28.6	794.4	495.0	196.6	84.6	2350.0	220.0	258.5
135+00	135+90	MAIN LANES - NOTCH	90.0	213.82	192.4	87.7	877.0	0.30	263.1	31.7	317.0	495.0	78.5	87.7	877.0	220.0	96.5
135+90	139+07	MAIN LANES - NOTCH	317.0	196.76	623.7	84.7	2983.3	0.30	895.0	28.7	1010.9	495.0	250.2	84.7	2983.3	220.0	328.2
139+07	139+47	MAIN LANES - FULL DEPTH	40.0	355.83	142.3	112.0	497.8	0.30	149.3	56.0	248.9	495.0	61.6	112.0	497.8	220.0	54.8
139+47	152+57	MAIN LANES - NOTCH	1310.0	197.03	2581.1	84.8	12343.1	0.30	3702.9	28.8	4192.0	495.0	1037.5	84.8	12343.1	220.0	1357.7
152+57	153+02	MAIN LANES - FULL DEPTH	45.0	355.83	160.1	112.0	560.0	0.30	168.0	56.0	280.0	495.0	69.3	112.0	560.0	220.0	61.6
153+02	162+57	MAIN LANES - NOTCH	955.0	195.11	1863.3	84.5	8966.4	0.30	2689.9	28.5	3024.2	495.0	748.5	84.5	8966.4	220.0	986.3
162+57	224+00	MAIN LANES - NOTCH	6143.0	157.25	9659.9	84.5	57675.9	0.30	17302.8	24.5	16722.6	495.0	4138.8	84.5	57675.9	220.0	6344.3
TEMPORARY WIDENING																	
135+73.84	137+99.74	TEMPORARY WIDENING ON RIGHT	225.9	63.79	144.1									6.3	158.1	220.0	17.4
137+99.74	142+33.69	TEMPORARY WIDENING ON RIGHT	434.0	127.58	553.7									12.6	607.6	220.0	66.8
149+59.60	154+07.34	TEMPORARY WIDENING ON RIGHT	447.7	131.16	587.2									12.9	641.7	220.0	70.6
154+07.34	155+97.57	TEMPORARY WIDENING ON RIGHT	190.2	65.58	124.7									7.5	158.5	220.0	17.4
77+12.24	78+11.09	TEMPORARY WIDENING ON LEFT HWY. 102B	98.9	78.25	77.4									8.4	92.3	220.0	10.2
78+11.09	78+51.09	TEMPORARY WIDENING ON LEFT HWY. 102B	40.0	141.00	56.4									16.9	75.1	220.0	8.3
78+51.09	80+19.60	TEMPORARY WIDENING ON LEFT HWY. 102B	168.5	78.25	131.9									8.4	157.3	220.0	17.3
77+07.68	78+10.82	TEMPORARY WIDENING ON RIGHT HWY. 102B	103.1	82.50	85.1									9.0	103.1	220.0	11.3
78+10.82	78+50.82	TEMPORARY WIDENING ON RIGHT HWY. 102B	40.0	149.50	59.8									18.0	80.0	220.0	8.8
78+50.82	80+00.81	TEMPORARY WIDENING ON RIGHT HWY. 102B	150.0	82.50	123.8									9.0	150.0	220.0	16.5
FISH HATCHERY ROAD																	
72+30	72+73	NOTCH	43.0			23.0	109.9	0.30	33.0					26.0	124.2	220.0	13.7
72+73	74+00	NOTCH	127.0	60.70	77.1	40.1	565.9	0.30	169.8	7.9	111.5	495.0	27.6	40.1	565.9	220.0	62.2
74+00	75+66	NOTCH	166.0	93.63	155.4	46.3	854.0	0.30	256.2	13.6	250.8	495.0	62.1	46.3	854.0	220.0	93.9
75+66	76+18	NOTCH	52.0			VAR.	331.7	0.30	99.5					VAR.	519.9	220.0	57.2
HWY. 102B																	
76+74	77+67	NOTCH	93.0			VAR.	845.6	0.30	253.7					VAR.	1370.6	220.0	150.8
77+67	78+50	NOTCH	83.0	83.20	69.1	50.4	464.8	0.30	139.4	11.8	108.8	495.0	26.9	53.0	488.8	220.0	53.8
78+50	78+77	NOTCH	27.0	73.62	19.9	47.1	141.3	0.30	42.4	10.1	30.3	495.0	7.5	51.9	155.7	220.0	17.1
78+77	80+25	NOTCH	148.0	52.99	78.4	38.1	626.5	0.30	188.0	6.6	108.5	495.0	26.9	42.2	694.0	220.0	76.3
80+25	81+00	NOTCH	75.0			27.0	225.0	0.30	67.5					31.2	260.0	220.0	28.6
ADDITIONAL FOR LEVELING																	
132+50	224+00	LEVELING - MAIN LANES	9150.0			27.5	27958.3	0.10	2795.8					27.5	27958.3	VAR.	3075.4
159+50	224+00	LEVELING - CROWN SHIFT	6450.0			14.3	10248.3	0.10	1024.8	14.3	10248.3	VAR.	1844.7				
72+30	76+18	LEVELING - FISH HATCHERY	388.0			20.0	862.2	0.10	86.2					20.0	862.2	VAR.	94.8
76+74	81+00	LEVELING - HWY. 102B	426.0			21.0	994.0	0.10	99.4					21.0	994.0	VAR.	188.9
SIDE STREETS																	
133+38		NORTH "A" STREET		VAR.	154.7	VAR.	526.0	0.30	157.8	VAR.	263.0	495.0	65.1	VAR.	526.0	220.0	57.9
141+00		FAIR STREET		VAR.	142.8	VAR.	484.5	0.30	145.4	VAR.	242.2	495.0	59.9	VAR.	484.5	220.0	53.3
150+74		SIENNA		VAR.	132.7	VAR.	496.4	0.30	148.9	VAR.	248.2	495.0	61.4	VAR.	496.4	220.0	54.6
163+62		ALLEN ROAD		VAR.	254.1	VAR.	839.7	0.30	251.9	VAR.	419.8	495.0	103.9	VAR.	839.7	220.0	92.4
176+56		COPPER OAKS DRIVE		VAR.	219.2	VAR.	765.4	0.30	229.6	VAR.	382.7	495.0	94.7	VAR.	765.4	220.0	84.2
176+59		WOMACK ROAD		VAR.	149.8	VAR.	535.8	0.30	160.7	VAR.	267.9	495.0	66.3	VAR.	535.8	220.0	58.9
191+27		POPLAR		VAR.	110.7	VAR.	395.9	0.30	118.8	VAR.	197.9	495.0	49.0	VAR.	395.9	220.0	43.5
192+63		BERSKSHIRE ROAD		VAR.	144.4	VAR.	505.4	0.30	151.6	VAR.	252.7	495.0	62.5	VAR.	505.4	220.0	55.6
194+07		WILLOW		VAR.	158.9	VAR.	550.6	0.30	165.2	VAR.	275.3	495.0	68.1	VAR.	550.6	220.0	60.6
199+68		BRIGHTON		VAR.	97.4	VAR.	354.2	0.30	106.3	VAR.	177.1	495.0	43.8	VAR.	354.2	220.0	39.0
211+98		SAGE		VAR.	157.3	VAR.	545.9	0.30	163.8	VAR.	272.9	495.0	67.5	VAR.	545.9	220.0	60.0
214+78		FOX GLOVE		VAR.	148.2	VAR.	515.2	0.30	154.6	VAR.	257.6	495.0	63.8	VAR.	515.2	220.0	56.7
216+57		TATER BLACK MEMORIAL ROAD		VAR.	129.9	VAR.	448.1	0.30	134.4	VAR.	224.0	495.0	55.4	VAR.	448.1	220.0	49.3
TOTALS:					**20056.8**				**33245.1**				**9438.1**				**14438.1**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BINDER COURSE (1").....95% MIN. AGGR.....5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22

CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	PORTLAND CEMENT CONCRETE BASE		PORTLAND CEMENT CONCRETE BASE	
				AVG. WID.	4.5" U.T.	AVG. WID.	9" U.T.
			FEET	FEET	SQ. YD.	FEET	SQ. YD.
135+90	136+83	MAIN LANES - RADIUS ON LEFT		VAR.	243.6	VAR.	280.8
136+34	136+96	MAIN LANES - RADIUS ON RIGHT		VAR.	89.4	VAR.	110.8
137+09	138+09	MAIN LANES - RADIUS ON LEFT		VAR.	281.4	VAR.	317.7
137+19	137+71	MAIN LANES - RADIUS ON RIGHT		VAR.	78.5	VAR.	98.8
162+57	224+00	MAIN LANES - NOTCH ON LEFT	6143.0	4.0	2730.2	6.5	4436.6
		FISH HATCHERY ROAD					
72+30	72+73	NOTCH ON LEFT	43.0	2.5	11.9	5.0	23.9
72+30	75+66	NOTCH ON RIGHT	336.0	1.6	59.7	4.1	153.1
		HWY. 102B					
77+67	78+50	NOTCH ON LEFT	83.0	2.6	24.0	5.1	47.0
78+50	78+77	NOTCH ON LEFT	27.0	4.8	14.4	7.3	21.9
78+77	80+25	NOTCH ON LEFT	148.0	4.1	67.4	6.6	108.5
80+25	81+00	NOTCH ON LEFT	75.0	2.2	18.3	4.7	39.2
80+25	81+00	NOTCH ON RIGHT	75.0	2.0	16.7	4.5	37.5
TOTALS:					**3635.5**		**5675.8**

R090174.DGN 7/20/2011

QUANTITY SHEETS

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		44	STATION
201	GRUBBING		44	STATION
202	REMOVAL AND DISPOSAL OF CURB AND GUTTER		1752	LIN. FT.
202	REMOVAL AND DISPOSAL OF FENCE		4319	LIN. FT.
202	REMOVAL AND DISPOSAL OF POSTS		1	EACH
202	REMOVAL AND DISPOSAL OF RETAINING WALLS		66	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		1419	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE PARKING AREA		1034	SQ. YD.
202	REMOVAL AND DISPOSAL OF WALKS		169	SQ. YD.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		6	EACH
202	REMOVAL AND DISPOSAL OF DROP INLETS		2	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		63	EACH
202	REMOVAL AND DISPOSAL OF DITCH PAVING		74	SQ. YD.
SP & 202	REMOVAL AND DISPOSAL OF GUARDRAIL		724	LIN. FT.
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLES		6	EACH
202	REMOVAL AND DISPOSAL OF BILLBOARDS		1	EACH
202	REMOVAL AND DISPOSAL OF SIGNS		19	EACH
202	REMOVAL AND DISPOSAL OF PLANTERS		1	EACH
202	REMOVAL AND DISPOSAL OF AIR STATION		1	EACH
206	FLOWABLE SELECT MATERIAL		222	CU. YD.
210	UNCLASSIFIED EXCAVATION		35549	CU. YD.
SP & 210	COMPACTED EMBANKMENT		60939	CU. YD.
SP	TYPE 1 GRANULAR MATERIAL		249	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		21274	TON
309	PORTLAND CEMENT CONCRETE BASE (4 1/2" UNIFORM THICKNESS)		3636	SQ. YD.
309	PORTLAND CEMENT CONCRETE BASE (9" UNIFORM THICKNESS)		5676	SQ. YD.
401	TACK COAT		33345	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		8966	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		472	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		13938	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		6	TON
SP, SS, & 407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")		635	TON
412	COLD MILLING ASPHALT PAVEMENT		1322	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		50	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		50	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY		1973.80	SQ. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SP, SS, & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	42" TEMPORARY CULVERT		132	LIN. FT.
SS & 604	SIGNS		706	SQ. FT.
SS & 604	BARRICADES		168	LIN. FT.
SS & 604	TRAFFIC DRUMS		508	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		452	LIN. FT.
SS & 604	RELOCATING PRECAST CONCRETE BARRIER		884	LIN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS		81587	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		48965	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		5481	LIN. FT.
SS & 604	VERTICAL PANELS		197	EACH
SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		833	LIN. FT.
* SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	4562	LIN. FT.
* 606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	4562	LIN. FT.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		639	LIN. FT.
* SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	2751	LIN. FT.
* 606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	2751	LIN. FT.
SS & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		69	LIN. FT.
* SS & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	1519	LIN. FT.
* 606	30" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	1519	LIN. FT.
SS & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		574	LIN. FT.
* SS & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	1725	LIN. FT.
* 606	36" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	1725	LIN. FT.
* SS & 606	42" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	1074	LIN. FT.
* 606	42" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	1074	LIN. FT.
SS & 606	48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		624	LIN. FT.
* SS & 606	48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	244	LIN. FT.
* 606	48" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	244	LIN. FT.
* SS & 606	54" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	791	LIN. FT.
* 606	54" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	791	LIN. FT.
SS & 606	44" X 27" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)		59	LIN. FT.
SS & 606	59" X 36" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)		132	LIN. FT.
* SS & 606	59" X 36" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	304	LIN. FT.
* 606	57" X 38" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL ARCH PIPE	(ALTERNATE NO. 2)	304	LIN. FT.
SS & 606	12" SIDE DRAIN		1200	LIN. FT.
SP, SS & 606	18" SIDE DRAIN		38	LIN. FT.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		24	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
606	48" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
606	59" X 36" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS		2	EACH
606	SELECTED PIPE BEDDING		250	CU. YD.
SP & 607	PRECAST REINFORCED CONCRETE BOX CULVERT (8'X4')		264	LIN. FT.
SP & 607	PRECAST REINFORCED CONCRETE BOX CULVERT (8' X 5')		188	LIN. FT.
SP & 607	PRECAST REINFORCED CONCRETE BOX CULVERT (12' X 6')		102	LIN. FT.
609	DROP INLETS (TYPE C)		11	EACH
609	DROP INLETS (TYPE MO)		82	EACH
609	JUNCTION BOXES (TYPE E)		12	EACH
609	JUNCTION BOXES (TYPE ST)		2	EACH
609	DROP INLET EXTENSIONS (4')		41	EACH
609	DROP INLET EXTENSIONS (8')		7	EACH
609	YARD DRAINS		12	EACH
611	4" PIPE UNDERDRAINS		2575	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		105.8	CU. YD.
619	WIRE FENCE (TYPE D-1)		3387	LIN. FT.
620	LIME		12	TON
620	SEEDING		5.85	ACRE
620	MULCH COVER		31.92	ACRE
SS & 620	WATER		1215.2	M.GAL.
621	TEMPORARY SEEDING		26.07	ACRE
621	SILT FENCE		10164	LIN. FT.
621	SAND BAG DITCH CHECKS		1250	BAG
621	DROP INLET SILT FENCE		2475	LIN. FT.
621	SEDIMENT BASIN		500	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		500	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		1042	CU. YD.
621	ROCK DITCH CHECKS		515	CU. YD.
623	SECOND SEEDING APPLICATION		5.85	ACRE
624	SOLID SODDING		6874	SQ. YD.
633	CONCRETE WALKS		10141	SQ. YD.
634	CONCRETE CURB (TYPE A)		350	LIN. FT.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")		20223	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
637	MAILBOXES		16	EACH
637	MAILBOX SUPPORTS (SINGLE)		12	EACH
637	MAILBOX SUPPORTS (DOUBLE)		2	EACH
641	WHEELCHAIR RAMPS (TYPE 2)		26	SQ. YD.
641	WHEELCHAIR RAMPS (TYPE 3)		155	SQ. YD.
SP & 701	ACTUATED CONTROLLER TS 2-TYPE 2 (8 PHASES)		1	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)		4	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)		20	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD		8	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED		8	EACH

*ALTERNATE BID ITEMS

SUMMARY OF QUANTITIES



6-1-12

				DATE REVISED	DATE PLANS
				DATE REVISED	DATE PLANS
2 SUMMARY OF QUANTITIES				DATE REVISED	DATE PLANS
	JOB NO.	STATE	FED.AID PROJ.NO.	FED.RD. DIST.NO.	
	090174	ARK.		6	
	SHEET NO.	TOTAL SHEETS			
	58	241			

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1380	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	324	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	580	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	458	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	820	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	820	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
710	NON-METALLIC CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (3")	405	LIN. FT.
SS & 711	CONCRETE PULL BOX (TYPE 2 HD)	5	EACH
713	SPAN WIRE ASSEMBLY	2	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (52')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (58')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (64')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (66')	1	EACH
SP	LUMINAIRE ASSEMBLY	4	EACH
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	1	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1.00	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	6038	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	951	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	25534	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	7	EACH
SS & 719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	7	EACH
721	RAISED PAVEMENT MARKERS (TYPE II)	488	EACH
SP	18" STREET NAME SIGN	6	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER	2	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	2	EACH
SP & 733	VIDEO DETECTOR (CLR)	12	EACH
SP & 733	VIDEO DETECTOR RELOCATION	4	EACH
733	VIDEO CABLE	1319	LIN. FT.
733	VIDEO MONITOR (CLR)	1	EACH
SP & 733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	5	EACH
SP & 733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	EACH
816	FILTER BLANKET	920	SQ. YD.
816	DUMPED RIPRAP (GROUTED)	460	CU. YD.
SP	SHORING	1.00	LUMP SUM
	STRUCTURES OVER 20' SPAN		
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	448	CU. YD.
802	CLASS S CONCRETE-ROADWAY	217.04	CU. YD.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	26924	POUND

REVISION BOX

DATE	REVISION	SHEET NUMBER

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.AID DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		59	241
				JOB NO.		090174		

(2) SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 17405
DANIEL D. FUGETT
5-14-12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AND PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	60	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5-14-12

SURVEY CONTROL COORDINATES

Project Name: s090174.alg
Date: 9/5/2008
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
11	744948.9358	639532.9699	1254.94	CTL	REBAR AND CAP
12	744932.2663	640700.6850	1241.60	CTL	REBAR AND CAP
13	744833.4507	642177.6919	1258.47	CTL	REBAR AND CAP
14	744800.3802	643534.1441	1261.96	CTL	REBAR AND CAP
15	744714.1188	644447.7577	1266.76	CTL	REBAR AND CAP
16	744541.2257	648732.4590	1252.01	CTL	REBAR AND CAP
17	744441.7776	650064.6121	1249.54	CTL	REBAR AND CAP
18	744408.2511	651479.9970	1253.13	CTL	REBAR AND CAP
19	744350.8444	652795.6417	1260.61	CTL	REBAR AND CAP
37	745167.7346	635733.9642	1299.15	CTL	REBAR AND CAP
38	745108.6574	636944.5835	1284.73	CTL	REBAR AND CAP
39	745011.7138	638205.0545	1275.11	CTL	REBAR AND CAP
40	744976.3524	638982.9911	1274.93	CTL	REBAR AND CAP
102	744535.7438	647655.4849	1263.64	GPS	AHTD GPS 040043
103	744706.5587	645356.4791	1268.74	GPS	AHTD GPS 040043A
906	745210.1719	635148.5955	1318.27	BM	CPS IN COMBINATION POLE LT OF CL
907	745157.8179	636285.4010	1290.70	BM	RR SPIKE IN COMBINATION POLE LT OF CL
908	745025.7945	637877.3763	1277.01	BM	SQ CUT W END OF HEADWALL RT CL
909	744983.2223	638785.5992	1276.91	BM	SQ CUT IN END CURB RT OF CL
910	744953.8489	640234.0528	1245.55	BM	SQ CUT HEADWALL LT C\L
911	744877.1932	641101.2240	1238.13	BM	SQ CUT SW HEADWALL
912	744781.2919	642858.3805	1258.84	BM	CPS HIGH VOLTAGE POWER POLE RT CL
913	744689.6588	644596.2265	1267.35	BM	CPS HIGH VOLTAGE POWER POLE RT
914	744663.7825	646198.6476	1260.68	BM	SQ CUT E END OF HEADWALL LT CL
915	744548.8162	647452.9805	1265.72	BM	CPS IN POWER POLE RT OF CL
916	744489.9790	648662.2486	1252.58	BM	CPS HIGH VOL POWER POLE RT C\L
917	744432.7268	650246.0272	1248.55	BM	SQ CUT HEADWALL RT C\L
918	744414.3588	651461.2415	1253.82	BM	SQ CUT HEADWALL LT C\L
919	744354.3580	652723.1796	1259.71	BM	SQ CUT HEADWALL LT C\L

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped *(AHTD 090174 T-*), or as indicated (other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999709446 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 S090174GI.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: 040016 - 040043
CONVERGENCE ANGLE: 01° 19' 56.17" LEFT AT LT: 36-21-30.57129N LG: 94-17-22.27495W
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 102

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	124+00.00	745025.05	638265.99
8001	P.I. STA.	129+00.00	745002.83	638765.50
8002	P.I. STA.	138+92.39	744958.73	639756.90
8003	P.C. STA.	152+74.12	744892.42	641137.05
8005	P.T. STA.	154+14.72	744887.40	641277.55
8006	P.C. STA.	161+72.02	744869.63	642034.64
8008	P.T. STA.	163+38.38	744863.31	642200.88
8009	P.I. STA.	194+43.71	744700.34	645301.93
8010	P.I. STA.	206+53.30	744641.03	646510.06
8011	P.I. STA.	223+10.17	744562.06	648165.05
8012	POE	236+00.00	744499.81	649453.38

FISH HATCHERY/HWY. 102B

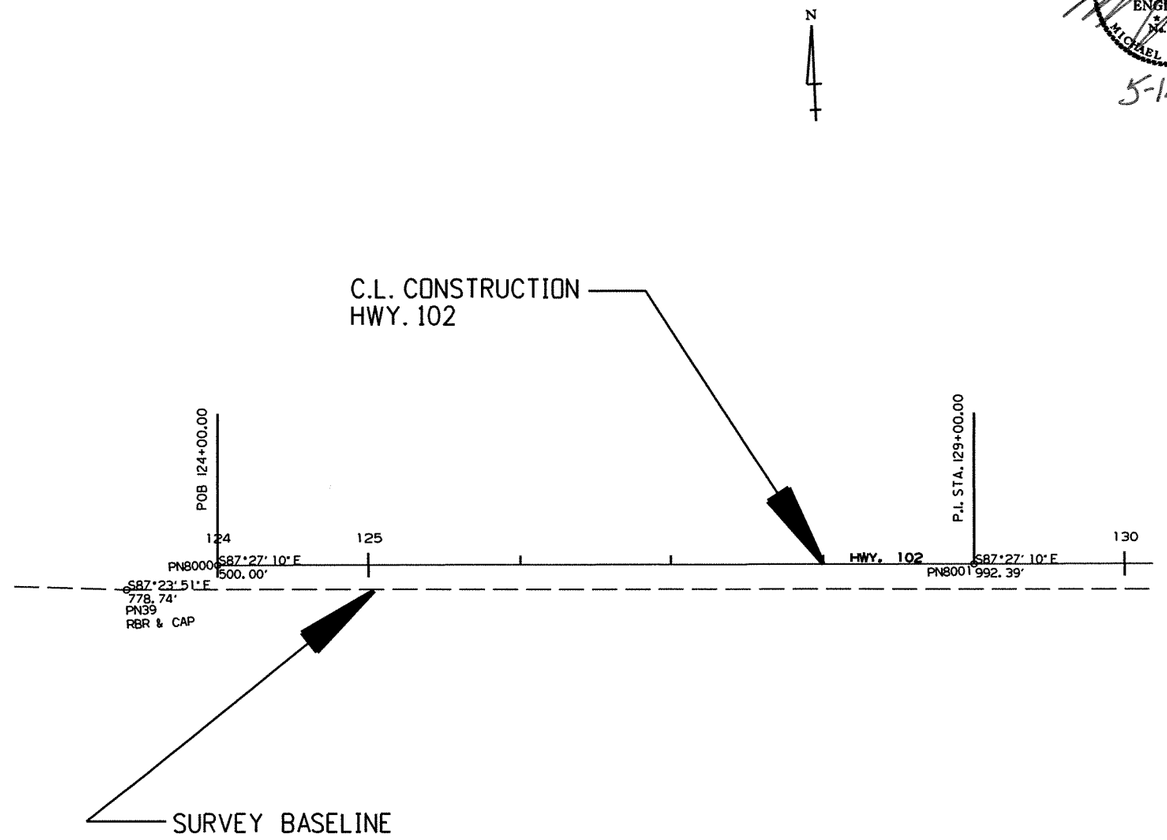
POINT NO.	TYPE	STATION	NORTHING	EASTING
8013	POB	70+00.00	744321.39	639548.12
8014	P.I. STA.	70+69.73	744391.02	639551.85
8015	P.I. STA.	71+46.01	744467.15	639556.59
8016	P.I. STA.	72+37.10	744558.20	639559.49
8017	P.I. STA.	74+87.19	744808.27	639561.31
8018	P.I. STA.	78+05.21	745126.13	639571.65
8019	P.I. STA.	80+71.90	745392.76	639576.88
8020	POE	82+00.00	745520.74	639582.73

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	61	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGETT
5-14-12



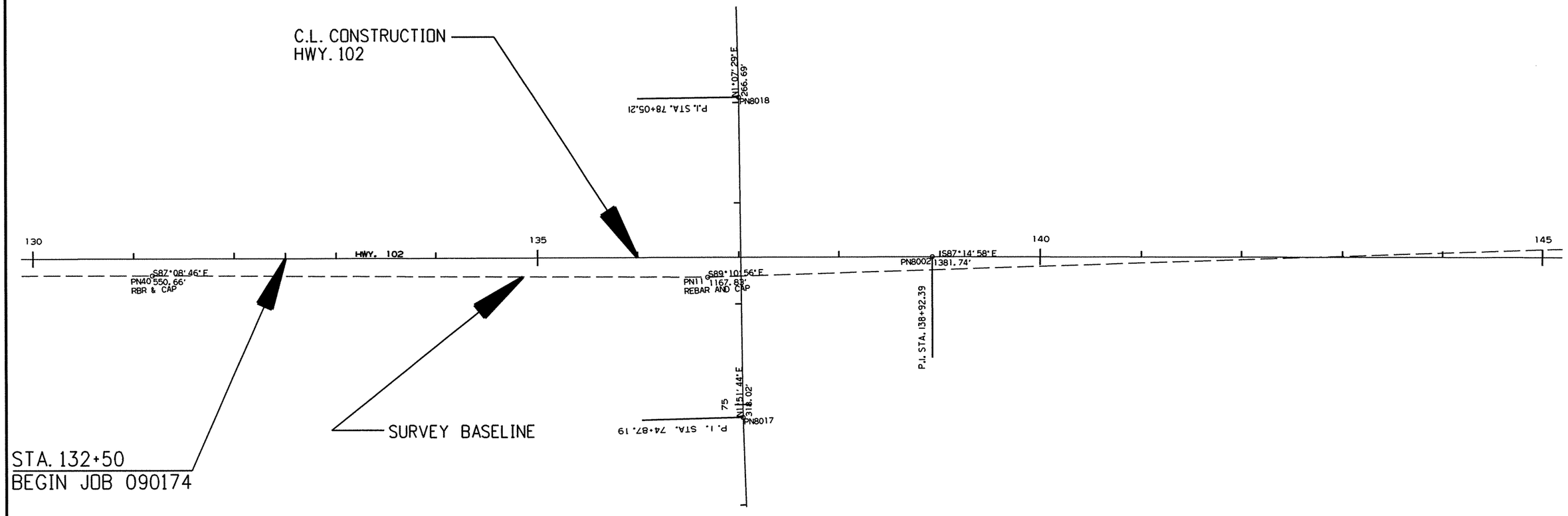
R090174.DGN 7/20/2011

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	62	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGETT
5-14-12



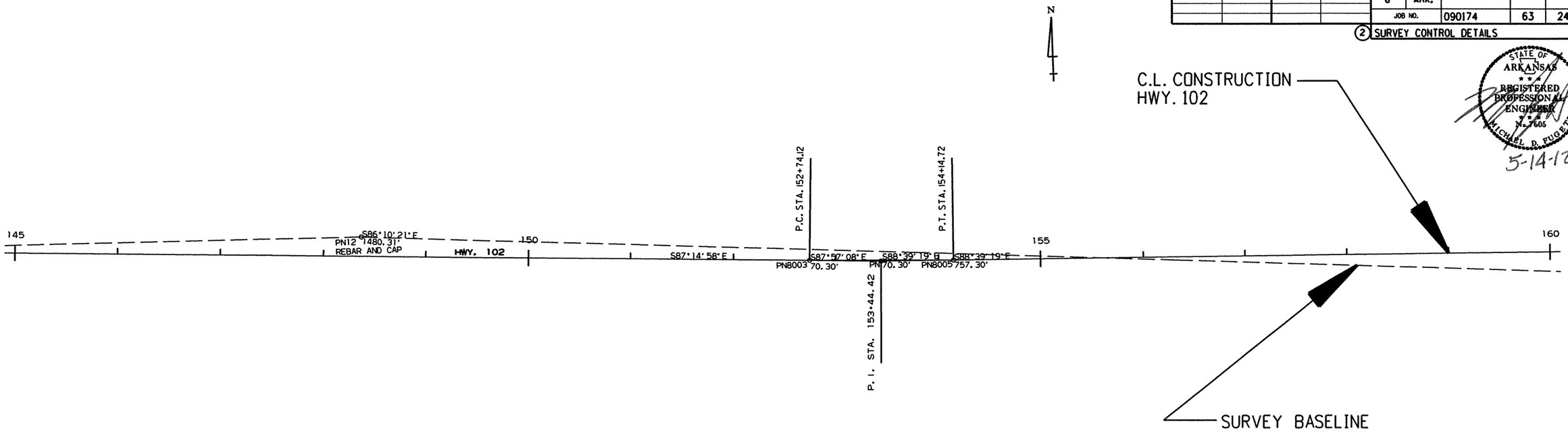
SURVEY CONTROL DETAILS

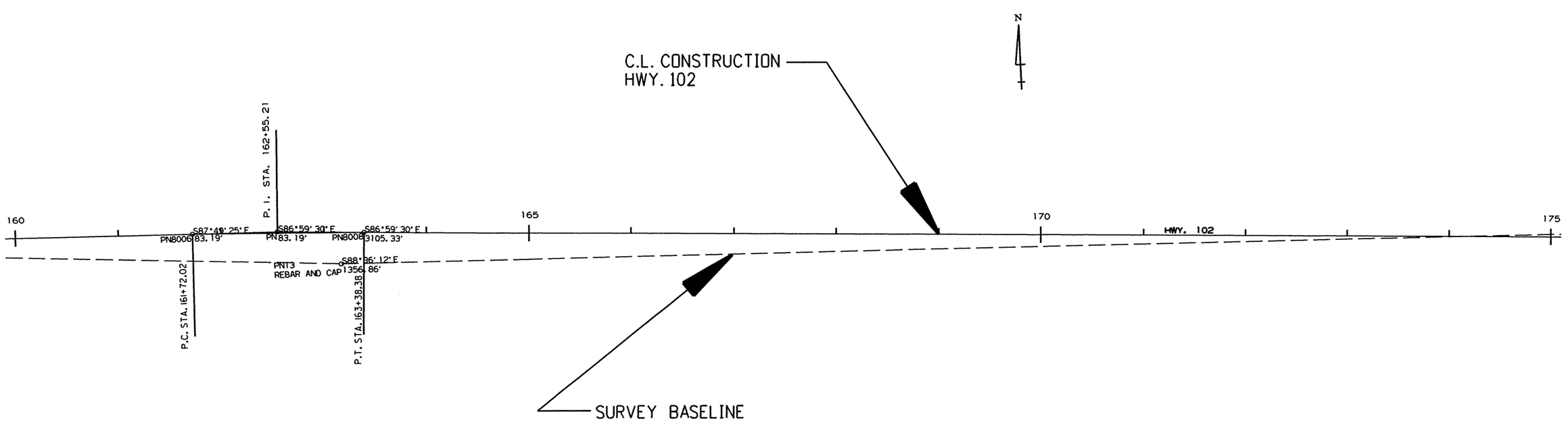
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	63	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5-14-12





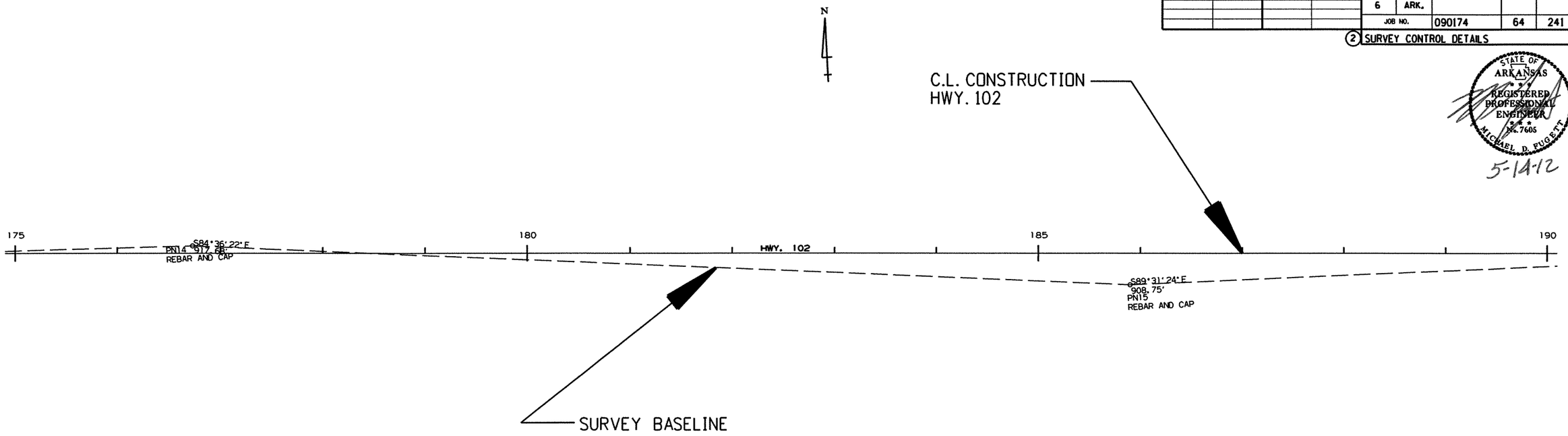
R090174.DGN 7/20/2011

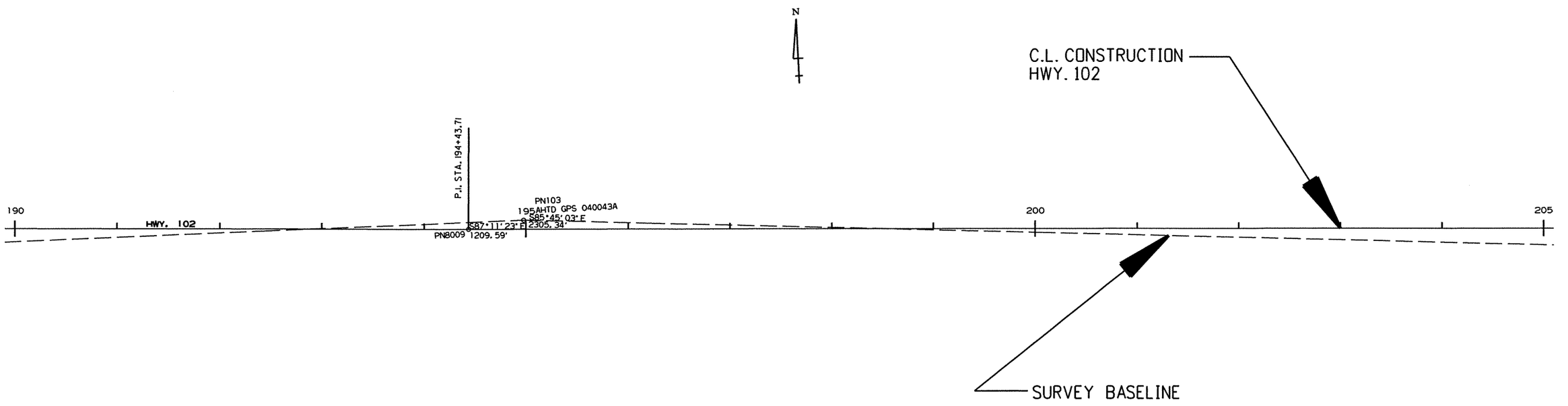
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	64	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5-14-12





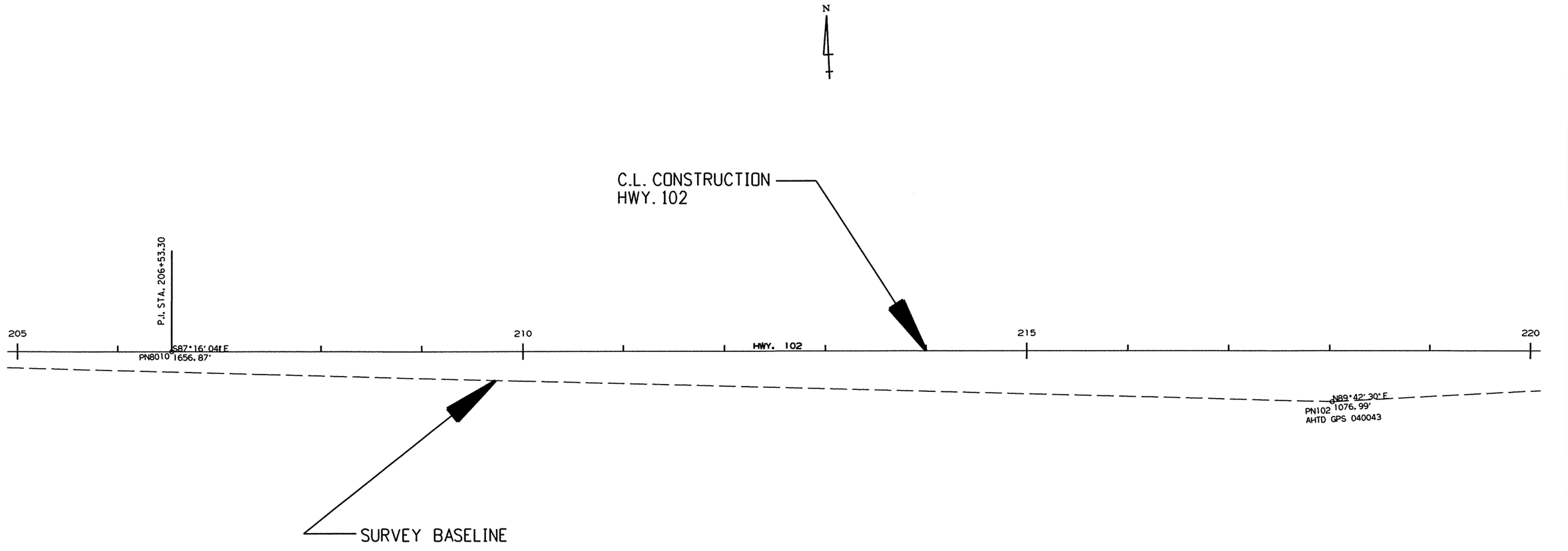
SURVEY CONTROL DETAILS

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	65	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5-14-12



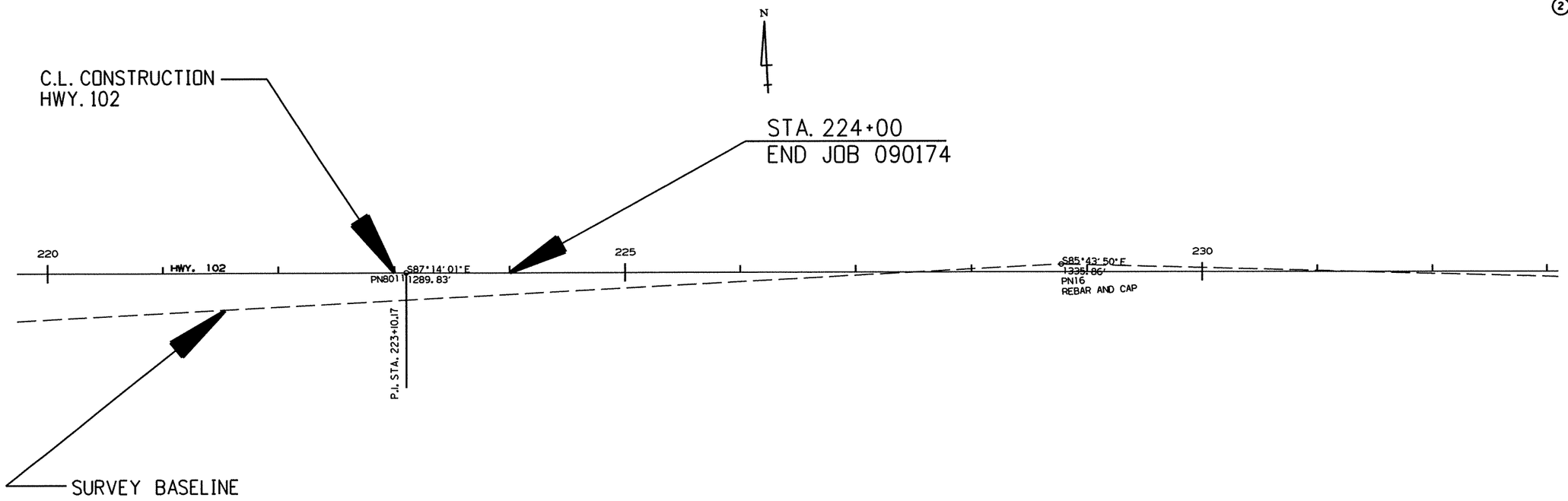
R090174.DGN 7/20/2011

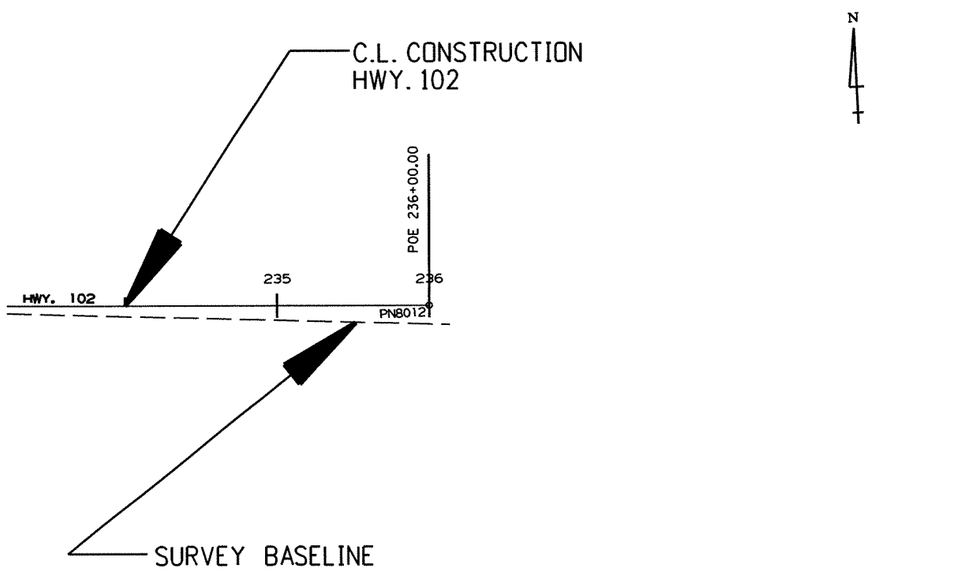
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	66	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. RUGETT
5-14-12





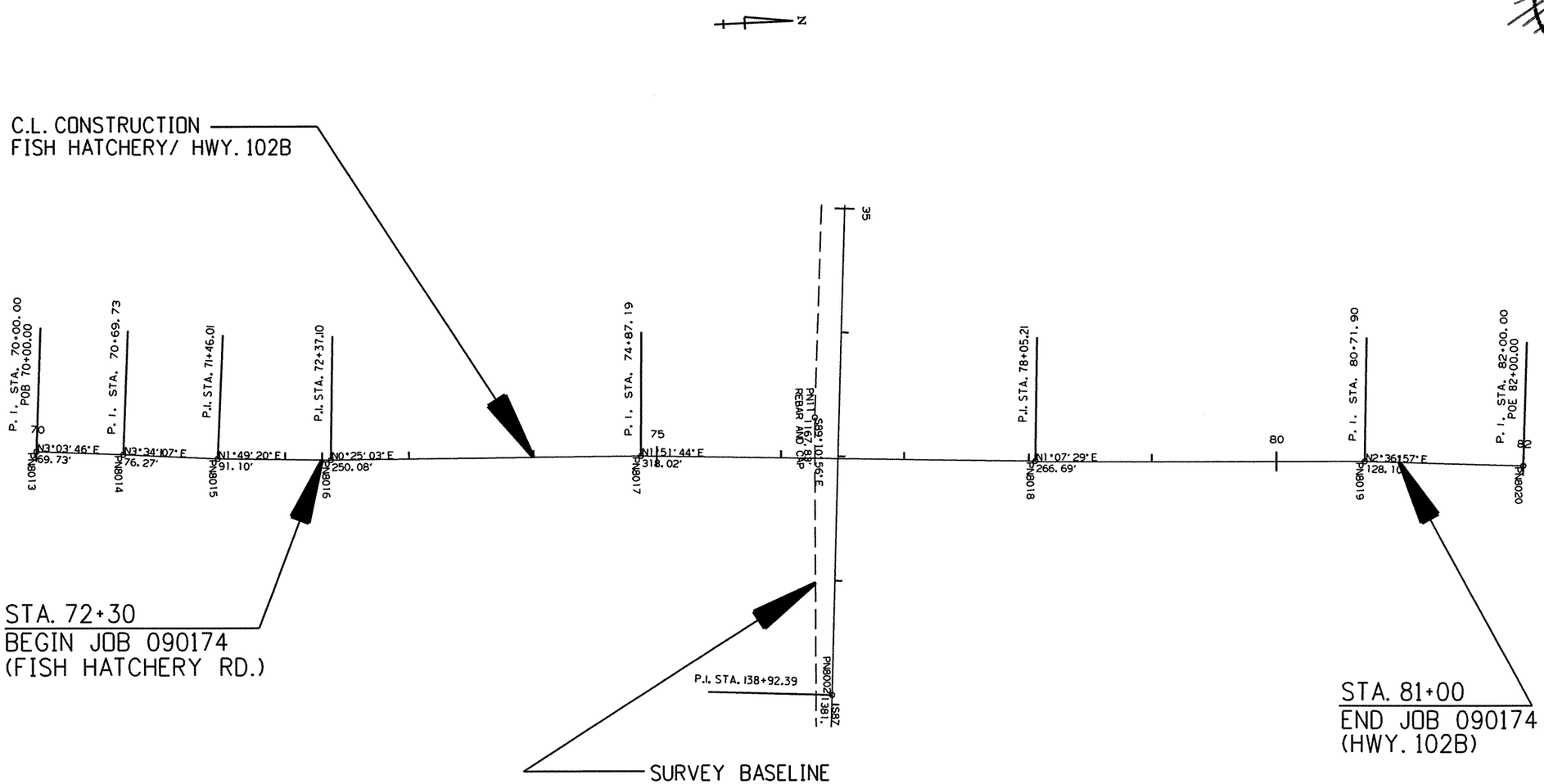
R090174.DGN 7/20/2011

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	67	241

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5-14-12



R090174.DGN 7/20/2011

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	68	241

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5-14-12

N

STA. 136+29.41 CONSTRUCT
JUNCTION BOX ON LT. H=4'-3"
24" x 70' PIPE CULVERT
TO DROP INLET ON LT.
TYPE E JUNCTION BOX = 4' x 4'

STA. 133+16 CONSTRUCT
DROP INLET ON LT. H=3'-9"
18" x 70' R.C. PIPE CULVERT INLET
WITH FES AND 18" x 250' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 135+70 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 4' EXTENSION
24" x 56' PIPE CULVERT
TO JUNCTION BOX ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 77+50 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 61' R.C. PIPE CULVERT TO R.C. BOX CULVERT ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 140+55 CONSTRUCT
DROP INLET ON LT. H=3'-6"
WITH 4' EXTENSION AND 18" x 33'
PIPE CULVERT TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 140+83 CONSTRUCT
DROP INLET ON LT. H=3'-9"
WITH OPENING IN BACK AND 18" x 30'
R.C. PIPE CULVERT TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 141+17 CONSTRUCT
DROP INLET ON LT. H=4'-3"
18" x 27' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 139+45 CONSTRUCT
APPROACH ON LT.

STA. 141+43 CONSTRUCT
DROP INLET ON LT. H=5'-0"
18" x 4' R.C. PIPE CULVERT INLET
WITH FES AND 30" x 104' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 142+52 CONSTRUCT
DROP INLET ON LT. H=4'-9"
18" x 3' R.C. PIPE CULVERT INLET
WITH FES AND 36" x 113' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 143+70 IN PLACE
18" x 36' R.C. PIPE CULVERT
REMOVE AND CONSTRUCT
DROP INLET ON LT. H=5'-0"
WITH OPENING IN BACK
44" x 27" x 59' R.C. ARCH PIPE CUVLERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 6' x 6'
Q50 = 49 CFS D.A. = 21 ACRES

STA. 132+04 INSTALL
18" x 38' C.M. PIPE CULVERT
AND CONSTRUCT APPROACH
ON LT. = 35 CU. YDS.

STA. 133+38 IN PLACE
18" x 31' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 133+59 CONSTRUCT
APPROACH ON LT. = 5 CU. YDS.

STA. 134+07 IN PLACE
24" x 41' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 134+64 IN PLACE
18" x 45' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 135+31 IN PLACE
18" x 26' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 10 CU. YDS.

STA. 136+44 IN PLACE
18" x 15" x 31' C.M. ARCH PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 139+12 IN PLACE
12' x 6' x 45' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
RETAIN & EXTEND 29'-0" LT. & 29'-0" RT.
CONSTRUCT 12' x 6' x 102' PRECAST R.C. BOX CULVERT
TO THE EAST SIDE OF EXISTING R.C. BOX CULVERT
WITH 3:1 WINGS ON 30° RT. FWD. SKEW
Q50 = 1419 CFS D.A. = 582 ACRES

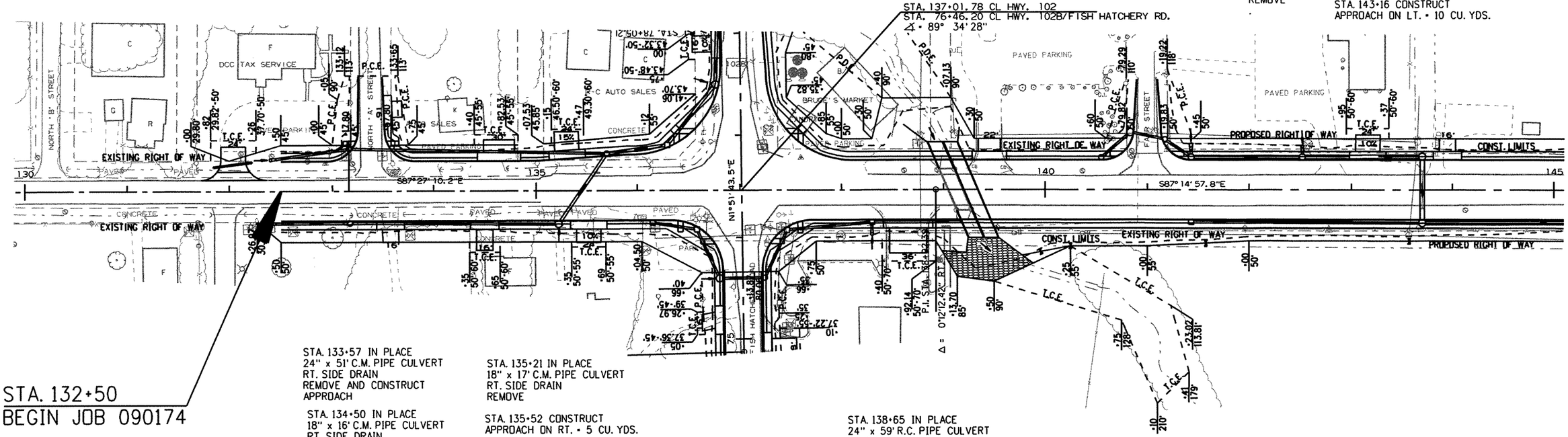
STA. 141+00 IN PLACE
15" x 12" x 30' C.M. ARCH
PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 142+78 IN PLACE
18" x 24' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 143+95 CONSTRUCT
APPROACH ON LT.

STA. 143+16 CONSTRUCT
APPROACH ON LT. = 10 CU. YDS.

STA. 137+01.78 CL HWY. 102
STA. 76+46.20 CL HWY. 102B/FISH HATCHERY RD.
Δ = 89° 34' 28"



STA. 132+50
BEGIN JOB 090174

STA. 133+57 IN PLACE
24" x 51' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 134+50 IN PLACE
18" x 16' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.
UNCLASSIFIED EXCAVATION

STA. 135+21 IN PLACE
18" x 17' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 135+52 CONSTRUCT
APPROACH ON RT. = 5 CU. YDS.

STA. 138+65 IN PLACE
24" x 59' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 15 CU. YDS.

STA. 133+17 CONSTRUCT
DROP INLET ON RT. H=4'-0"
18" x 70' R.C. PIPE CULVERT INLET
WITH FES AND 18" x 200' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 135+22 CONSTRUCT
DROP INLET ON RT. H=4'-9"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 79' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'
Q50 = 9 CFS D.A. = 1.5 ACRES

STA. 136+15 CONSTRUCT
DROP INLET ON RT. H=3'-9"
WITH 4' EXTENSION AND 18" x 40'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 136+58.23 CONSTRUCT
JUNCTION BOX ON RT. H=3'-9"
18" x 48' PIPE CULVERT
TO DROP INLET ON RT.
TYPE E JUNCTION BOX = 4' x 4'

STA. 75+60 CONSTRUCT
DROP INLET ON RT. H=5'-0"
WITH 4' EXTENSION AND 18" x 48'
PIPE CULVERT TO JUNCTION BOX ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 137+46.22 CONSTRUCT
JUNCTION BOX ON RT. H=3'-9"
18" x 80' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE ST JUNCTION BOX = 4' x 4'

STA. 138+30 CONSTRUCT
DROP INLET ON RT. H=5'-3"
WITH 4' EXTENSION AND 18" x 6'
R.C. PIPE CULVERT INLET WITH FES
18" x 86' R.C. PIPE CULVERT
TO R.C. BOX CULVERT ON RT.
TYPE C DROP INLET = 4' x 4'

STA. 141+43 CONSTRUCT
DROP INLET ON RT. H=3'-6"
WITH 4' EXTENSION AND 18" x 222'
PIPE CULVERT TO DROP INLET ON RT.
TYPE C DROP INLET = 4' x 4'

STA. 143+70 CONSTRUCT
DROP INLET ON RT. H=5'-6"
WITH 4' EXTENSION AND 36" x 295'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 6' x 6'

STA. 75+60 CONSTRUCT
DROP INLET ON LT. H=3'-9"
WITH 8' EXTENSION AND OPENING IN BACK
18" x 39' R.C. PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

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

R090174.DGN 7/20/2011

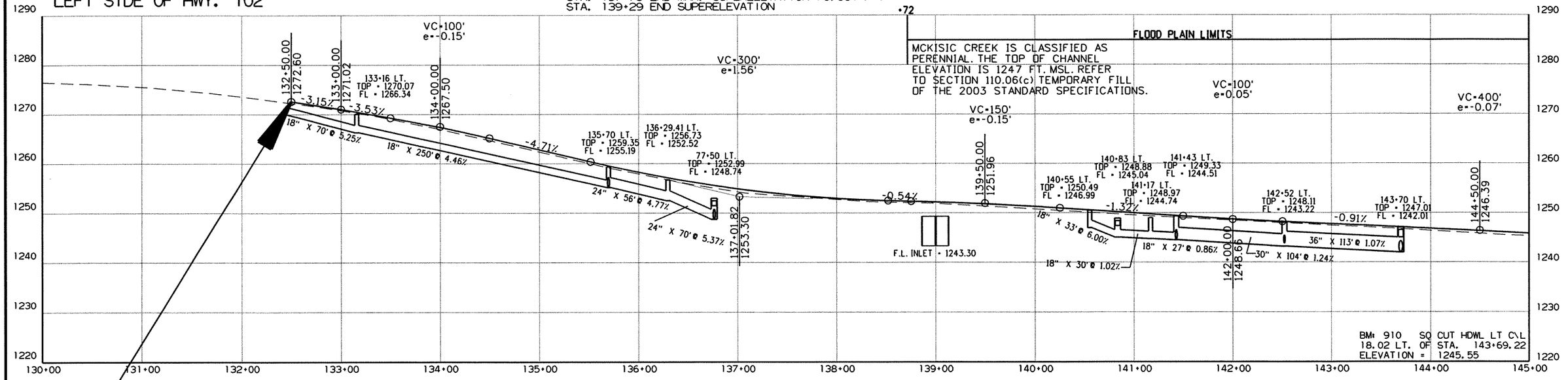
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	69	241

(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
12760
MICHAEL D. FUGETT
5-14-12

LEFT SIDE OF HWY. 102

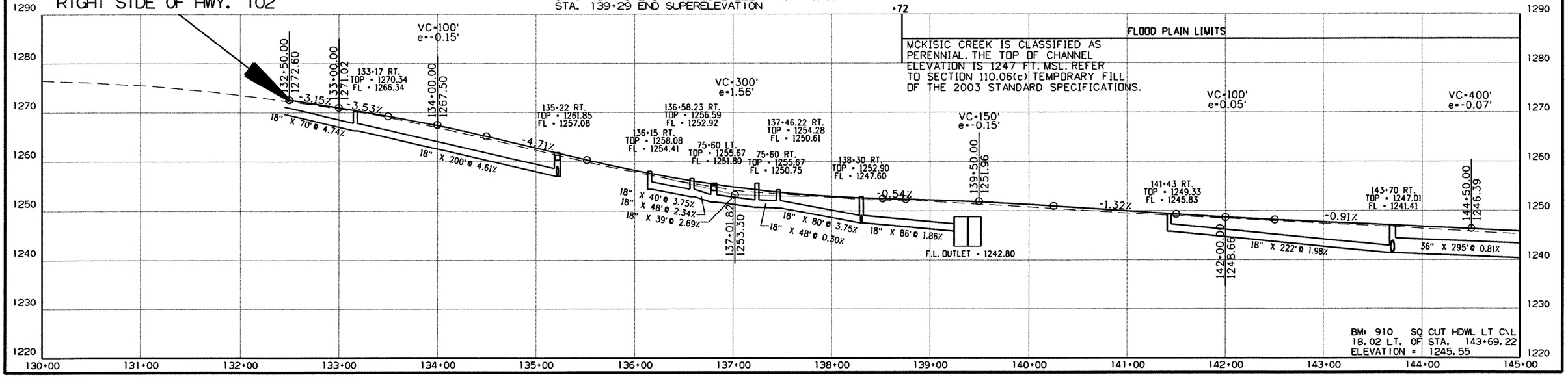
STA. 134+75 BEGIN SUPERELEVATION
STA. 136+25 BEGIN MAX. SUPERELEVATION (0.001'/')
STA. 137+75 END MAX. SUPERELEVATION (0.001'/')
STA. 139+29 END SUPERELEVATION



STA. 132+50
BEGIN JOB 090174

RIGHT SIDE OF HWY. 102

STA. 134+75 BEGIN SUPERELEVATION
STA. 136+25 BEGIN MAX. SUPERELEVATION (0.001'/')
STA. 137+75 END MAX. SUPERELEVATION (0.001'/')
STA. 139+29 END SUPERELEVATION



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	70	241

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12

N

P. I. = 153+44.42
Δ = 1°24'21.36" LT.
D = 1°00'00.0"
T = 70.30'
L = 140.59'
P. C. 152+74.12
P. T. 154+14.72
NO SUPER

STA. 146+70 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 213' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MD DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 147+12 CONSTRUCT
APPROACH ON LT. = 5 CU. YDS.

STA. 147+94 CONSTRUCT
APPROACH ON LT. = 5 CU. YDS.

STA. 147+54 IN PLACE
24" x 176' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 149+18 IN PLACE
24" x 44' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 150+00 IN PLACE
24" x 40' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 150+44 CONSTRUCT
DROP INLET ON LT. H=5'-0"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 72' R.C. PIPE CULVERT TO DROP INLET ON LT.
TYPE MD DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 150+75 IN PLACE
24" x 96' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

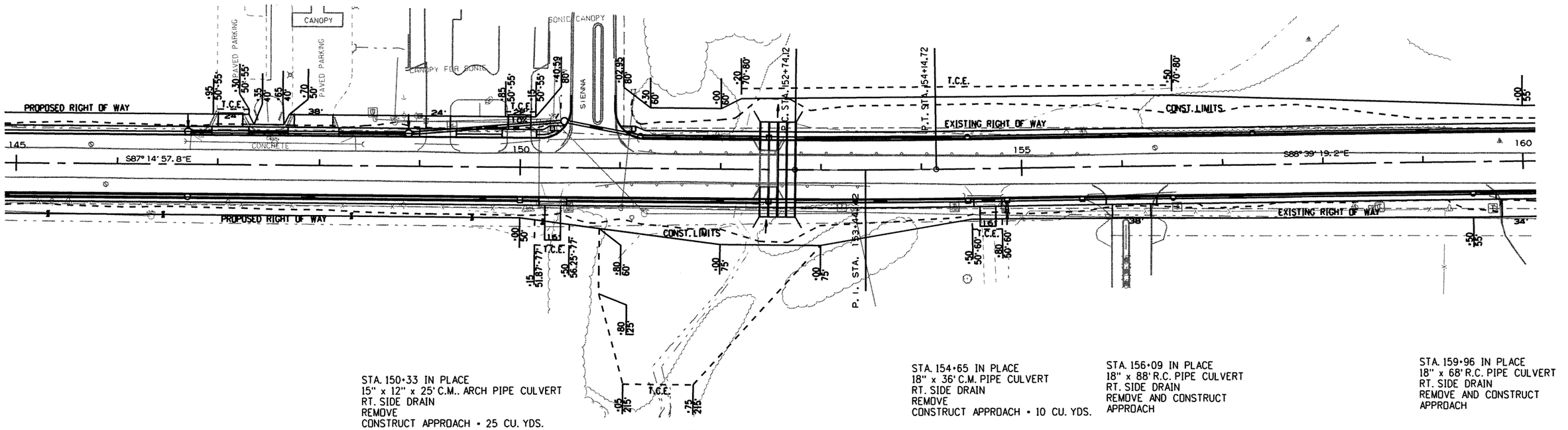
STA. 148+89 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 150' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MD DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 151+20 CONSTRUCT
DROP INLET ON LT. H=5'-3"
WITH 4' EXTENSION
24" x 118' R.C. PIPE CULVERT
TO R.C. BOX CULVERT ON LT.
TYPE MD DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 152+48 CONSTRUCT
DROP INLET ON LT. H=3'-9"
ON TOP OF R.C. BOX CULVERT
TYPE C DROP INLET = 4' x 4'

STA. 154+46 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 8' EXTENSION
18" x 170' R.C. PIPE CULVERT
TO R.C. BOX CULVERT ON LT.
TYPE MD DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 157+30 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 4' EXTENSION 18" x 280'
PIPE CULVERT TO DROP INLET ON LT.
TYPE MD DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'



STA. 150+33 IN PLACE
15" x 12" x 25' C.M.. ARCH PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 25 CU. YDS.

STA. 152+72 CONSTRUCT
TEMPORARY JUNCTION BOX ON RT. H=8'-0"
24" x 13' R.C PIPE CULVERT OUTLET. WITH FES
TYPE ST JUNCTION BOX = 4' x 4'

STA. 154+65 IN PLACE
18" x 36' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 10 CU. YDS.

STA. 156+09 IN PLACE
18" x 88' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 159+96 IN PLACE
18" x 68' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 146+70 CONSTRUCT
DROP INLET ON RT. H=5'-0"
WITH 4' EXTENSION AND 36" x 325'
R.C. PIPE CULVERT TO DROP INLET ON RT.
TYPE MD DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 150+00 CONSTRUCT
DROP INLET ON RT. H=5'-0"
WITH 4' EXTENSION AND 36" x 237'
R.C PIPE CULVERT TO R.C. BOX CULVERT ON RT.
TYPE C DROP INLET = 4' x 5'

STA. 152+48 CONSTRUCT
DROP INLET ON RT. H=3'-9"
WITH 4' EXTENSION
ON TOP OF R.C. BOX CULVERT
TYPE C DROP INLET = 4' x 4'

STA. 152+48 IN PLACE
DBL. 8' x 5' x 36' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
RETAIN & EXTEND 28' LT. & 30' RT.
CONSTRUCT DBL. 8' x 5' x 94' PRECAST R.C. BOX CULVERT
TO THE EAST SIDE OF EXISTING R.C. BOX CULVERT
WITH 3:1 WINGS
Q50 = 1419 CFS D.A. = 698 ACRES

STA. 154+46 CONSTRUCT
DROP INLET ON RT. H=4'-9"
24" x 170' R.C. PIPE CULVERT
TO R.C. BOX CULVERT ON RT.
TYPE C DROP INLET = 4' x 4'

STA. 154+85 CONSTRUCT
DROP INLET ON LT. H=4'-6"
18" x 6' R.C. PIPE CULVERT INLET
WITH FES AND 24" x 35' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE C DROP INLET = 4' x 4'

STA. 155+60 CONSTRUCT
DROP INLET ON RT. H=4'-3"
24" x 71' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE C DROP INLET = 4' x 4'

STA. 156+50 CONSTRUCT
DROP INLET ON RT. H=4'-0"
WITH 8' EXTENSION AND 18" x 86'
R.C. PIPE CULVERT TO DROP INLET ON RT.
TYPE MD DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 159+50 CONSTRUCT
DROP INLET ON RT. H=3'-6"
WITH 8' EXTENSION AND 18" x 296'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MD DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

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

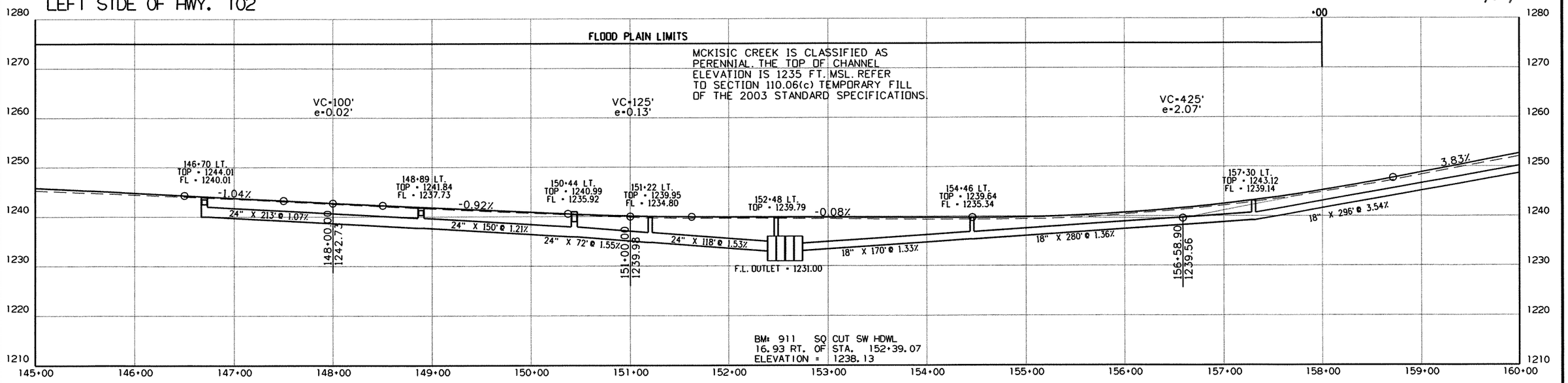
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	71	241

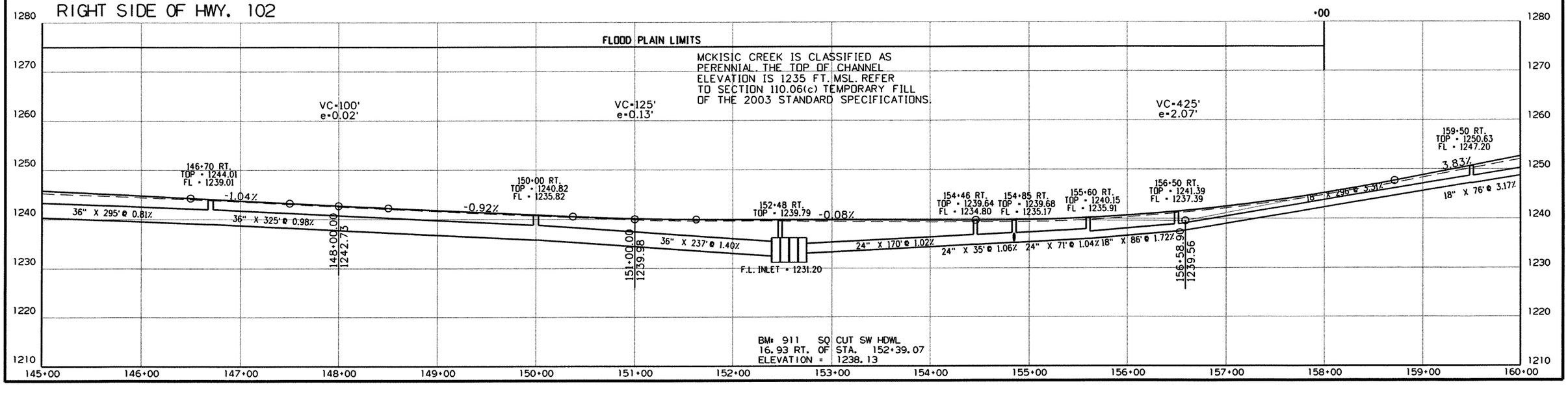
(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

LEFT SIDE OF HWY. 102



RIGHT SIDE OF HWY. 102



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	72	241

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5-4-12

STA. 160+30 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 4' EXTENSION 18" x 296'
PIPE CULVERT TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 163+26.27 CONSTRUCT
DROP INLET ON LT. H=6'-9"
DBL. 48" x 134' R.C. PIPE CULVERT
WITH FES .
TYPE C DROP INLET = 15' x 9'

STA. 164+05 CONSTRUCT
DROP INLET ON LT. H=5'-3"
WITH 4' EXTENSION 42" x 69'
PIPE CULVERT TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 167+00 CONSTRUCT
DROP INLET ON LT. H=5'-0"
42" x 290' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

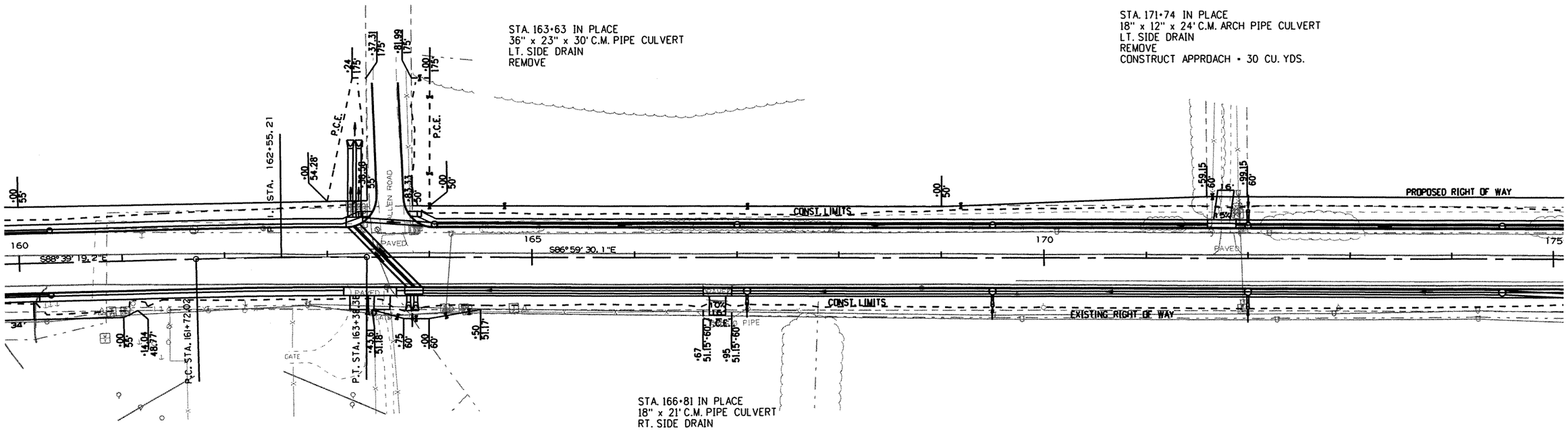
STA. 169+50 CONSTRUCT
DROP INLET ON LT. H=5'-0"
42" x 245' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 172+00 CONSTRUCT
DROP INLET ON LT. H=4'-9"
18" x 9' R.C. PIPE CULVERT INLET
WITH FES AND 42" x 245' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 174+50 CONSTRUCT
DROP INLET ON LT. H=4'-3"
36" x 245' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 163+63 IN PLACE
36" x 23" x 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 171+74 IN PLACE
18" x 12" x 24' C.M. ARCH PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 30 CU. YDS.



STA. 166+81 IN PLACE
18" x 21' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 10 CU. YDS.

STA. 163+41 CONSTRUCT
APPROACH ON RT. = 15 CU. YDS.

STA. 160+30 CONSTRUCT
DROP INLET ON RT. H=4'-0"
WITH 4' EXTENSION AND 18" x 76'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

P. I. = 162+55.21
Δ = 1°39' 49.08" RT.
D = 1°00' 00.0"
T = 83.19'
L = 166.36'
P.C. 161+72.02
P.T. 163+38.38
NO SUPER

STA. 163+85 CONSTRUCT
DROP INLET ON RT. H=6'-6"
DBL. 36" x 6' R.C. PIPE CULVERT
INLET WITH FES
DBL. 48" x 178' R.C. PIPE CULVERT
TO DROP INLET ON LT.
ON 45° RT. FWD. SKEW.
TYPE C DROP INLET = 17' x 6'
Q50 = 170 CFS D.A. = 66 ACRES

STA. 167+10 CONSTRUCT
DROP INLET ON RT. H=6'-3"
18" x 5' R.C. PIPE CULVERT INLET
WITH FES AND 54" x 313' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 169+50 CONSTRUCT
DROP INLET ON RT. H=6'-3"
18" x 7' R.C. PIPE CULVERT INLET
WITH FES AND 54" x 234' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 172+00 CONSTRUCT
DROP INLET ON RT. H=5'-9"
18" x 7' R.C. PIPE CULVERT INLET
WITH FES AND 54" x 244' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 174+50 CONSTRUCT
DROP INLET ON RT. H=5'-6"
WITH 4' EXTENSION AND 48" x 244'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

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

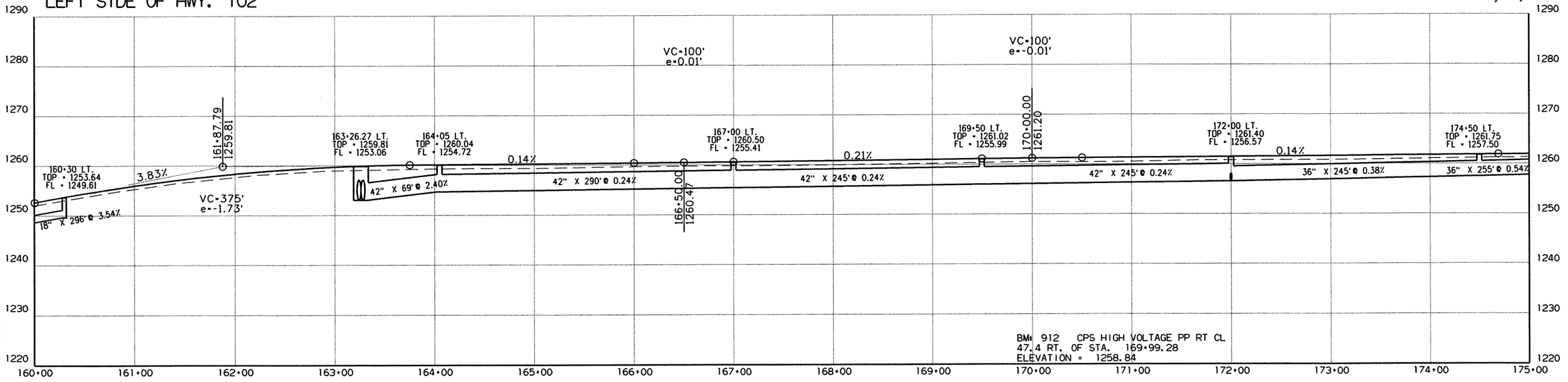
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	73	241

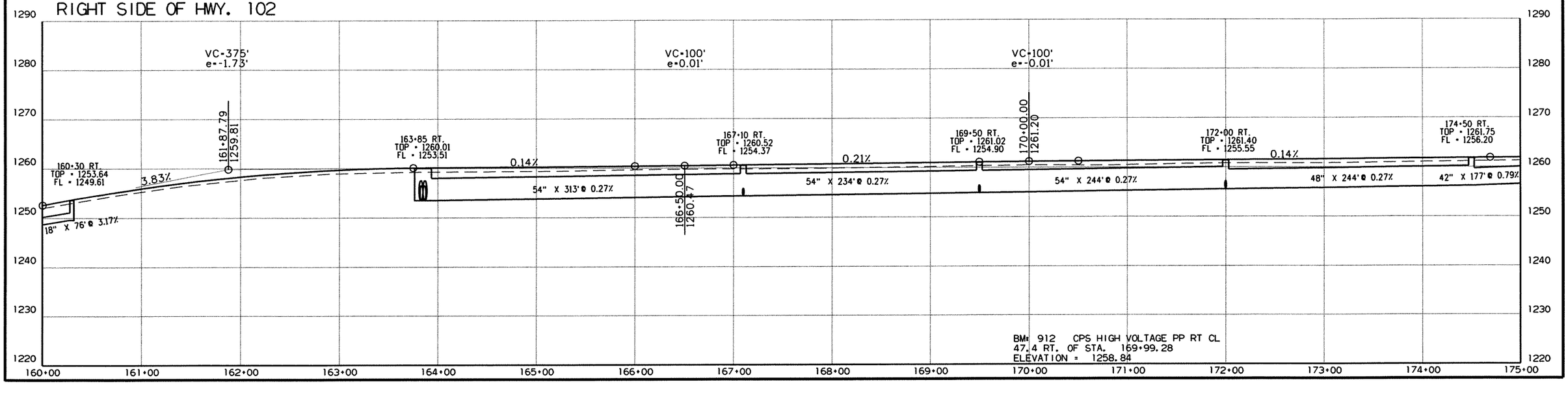
(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

LEFT SIDE OF HWY. 102



RIGHT SIDE OF HWY. 102



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	74	241

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

STA. 177+10 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 4' EXTENSION AND OPENING IN BACK
36" X 255' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 179+20 CONSTRUCT
DROP INLET ON LT. H=4'-9"
WITH OPENING IN BACK
30" x 204' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 181+30 CONSTRUCT
DROP INLET ON LT. H=4'-9"
WITH OPENING IN BACK
24" x 204' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 183+00 CONSTRUCT
DROP INLET ON LT. H=5'-0"
WITH OPENING IN BACK
24" x 164' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

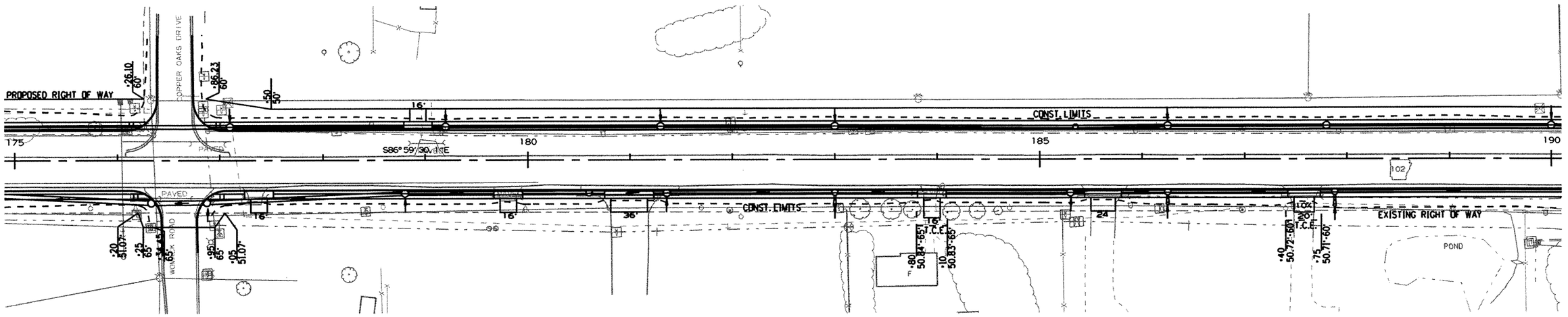
STA. 185+35 CONSTRUCT
DROP INLET ON LT. H=4'-3"
24" x 230' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 186+25 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 85' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 187+80 CONSTRUCT
DROP INLET ON LT. H=3'-3"
WITH 4' EXTENSION AND OPENING IN BACK
18" x 149' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 176+57 IN PLACE
18" x 106' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 178+93 IN PLACE
18" x 33' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.



STA. 176+60 IN PLACE
18" x 37' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 177+38 IN PLACE
18" x 23' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 179+81 IN PLACE
24" x 27' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 181+00 IN PLACE
24" x 100' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 183+95 IN PLACE
18" x 21' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 185+62 IN PLACE
18" x 49' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 187+58 IN PLACE
18" x 41' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 176+33 CONSTRUCT
DROP INLET ON RT. H=4'-6"
WITH 4' EXTENSION AND 42" x 177'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 178+80 CONSTRUCT
DROP INLET ON LT. H=5'-3"
WITH OPENING IN BACK
36" x 187' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 180+60 CONSTRUCT
DROP INLET ON RT. H=5'-5"
36" x 175' R.C. PIPE CULVERT INLET
TO DROP INLET ON RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 183+00 CONSTRUCT
DROP INLET ON RT. H=5'-9"
18" x 6' R.C. PIPE CULVERT INLET
WITH FES AND 36" x 159' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 185+30 CONSTRUCT
DROP INLET ON LT. H=5'-3"
WITH OPENING IN BACK
36" x 225' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 187+88 CONSTRUCT
DROP INLET ON RT. H=4'-6"
WITH 4' EXTENSION AND 18" x 6'
R.C. PIPE CULVERT INLET WITH FES
AND 30" x 157' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 176+87 CONSTRUCT
DROP INLET ON LT. H=4'-9"
WITH 8' EXTENSION AND OPENING IN BACK
42" x 48' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 181+36 CONSTRUCT
DROP INLET ON LT. H=5'-9"
WITH 4' EXTENSION AND OPENING IN BACK
36" x 71' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 186+25 CONSTRUCT
DROP INLET ON RT. H=4'-9"
WITH 4' EXTENSION AND 18" x 5'
R.C. PIPE CULVERT INLET WITH FES
AND 30" x 89' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

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

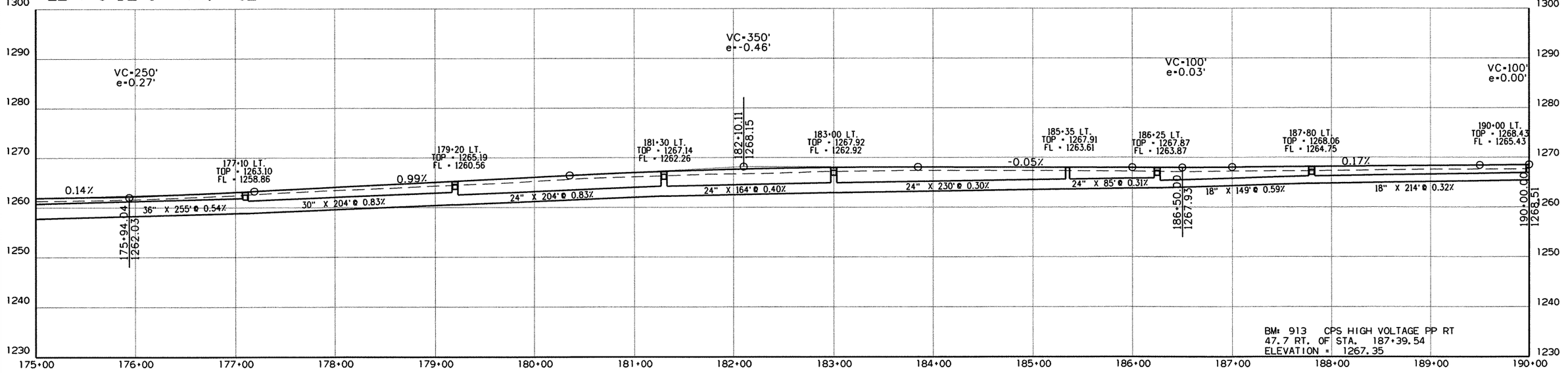
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	75	241

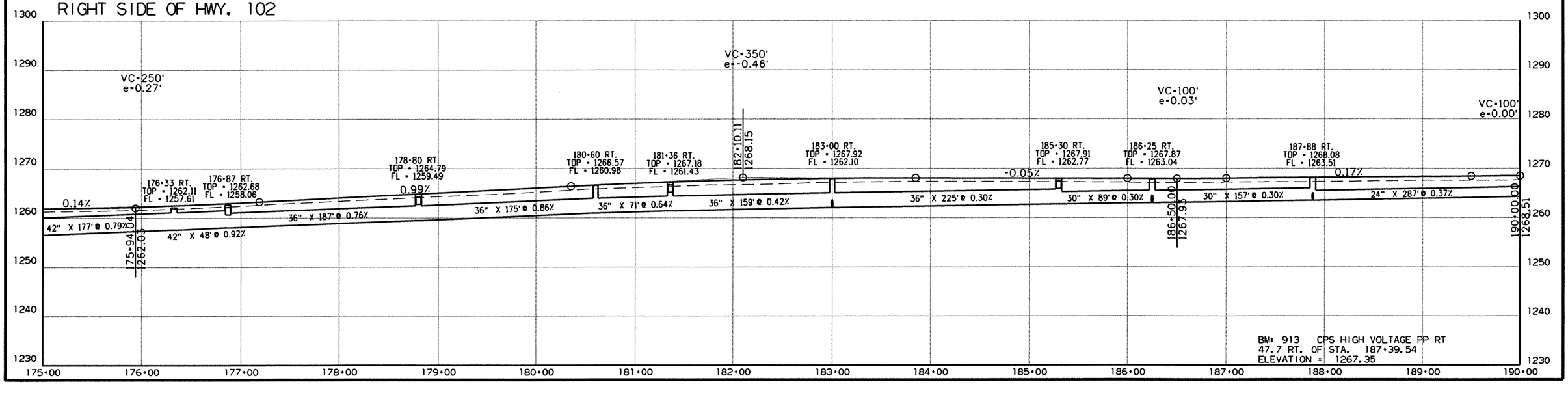
(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

LEFT SIDE OF HWY. 102



RIGHT SIDE OF HWY. 102



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	76	241

(2) PLAN SHEETS



5/14/12

STA. 190+00 CONSTRUCT
DROP INLET ON LT. H=3'-0"
WITH OPENING IN BACK
18" x 214' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 192+60 IN PLACE
24" x 61' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 193+07 CONSTRUCT
DROP INLET ON LT. H=3'-0"
18" x 302' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 194+24 CONSTRUCT
APPROACH ON LT. = 15 CU. YDS.

STA. 196+16 IN PLACE
24" x 83' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 10 CU. YDS.

STA. 196+88 IN PLACE
12" x 25' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 198+00 CONSTRUCT
APPROACH ON LT. = 10 CU. YDS.

STA. 198+93 IN PLACE
12" x 20' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 199+25 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 8' EXTENSION AND 18" x 200'
PIPE CULVERT TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 199+67 IN PLACE
24" x 68' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 201+32 CONSTRUCT
JUNCTION BOX ON LT. H=4'-9"
CONNECT TO DBL. 30" PIPE INLET
59" x 36" x 50' ARCH PIPE CULVERT
TO DROP INLET ON LT.
TYPE E JUNCTION BOX = 10' x 7'

STA. 201+92 CONSTRUCT
JUNCTION BOX ON LT. H=4'-9"
CONNECT TO DBL. 30" PIPE INLET
DBL. 59" x 36" x 44' ARCH PIPE CULVERT
TO DROP INLET ON LT. AND
30" x 59' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE E JUNCTION BOX = 10' x 15'

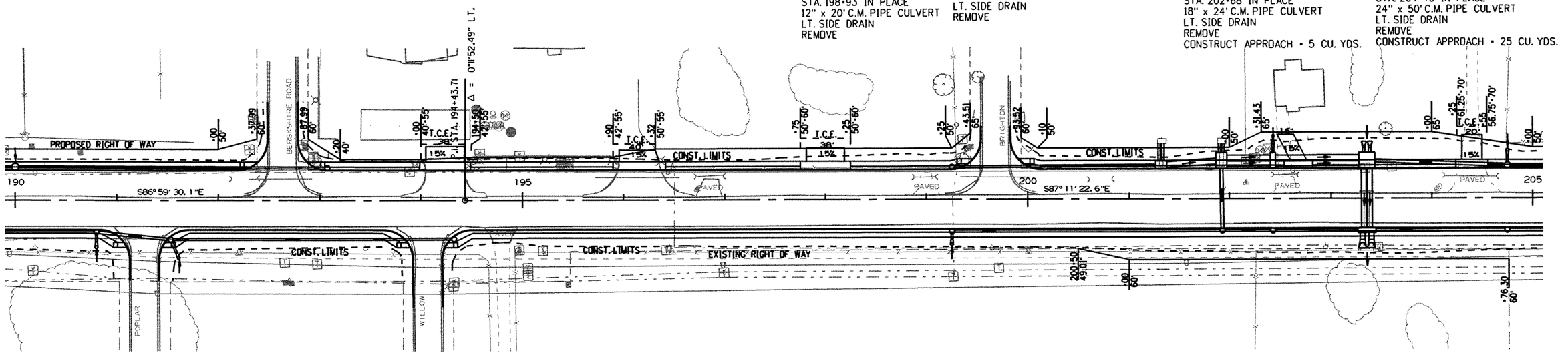
STA. 202+43 CONSTRUCT
DROP INLET ON LT. H=4'-9"
18" x 7' R.C. PIPE CULVERT INLET
WITH FES AND DBL. 59" x 36" x 83' ARCH PIPE CULVERT
TO DROP INLET ON LT.
TYPE C DROP INLET = 4' x 15'

STA. 202+68 IN PLACE
18" x 24' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 203+35 CONSTRUCT
JUNCTION BOX ON LT. H=5'-3"
DBL. 30" x 5' R.C. PIPE CULVERT INLET
WITH FES
DBL. 59" x 36" x 59' R.C. ARCH PIPE CULVERT
TO DROP INLET ON RT.
TYPE E JUNCTION BOX = 15' x 15'
Q50 = 218 CFS D.A. = 85 ACRES

STA. 204+75 CONSTRUCT
DROP INLET ON LT. H=4'-5"
WITH 4' EXTENSION AND 18" x 6'
R.C. PIPE CULVERT INLET
WITH FES AND 30" x 130' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'

STA. 204+40 IN PLACE
24" x 50' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 25 CU. YDS.



STA. 191+26 IN PLACE
24" x 84' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 190+80 CONSTRUCT
DROP INLET ON RT. H=4'-0"
18" x 8' R.C. PIPE CULVERT INLET WITH FES
AND 24" x 287' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 191+53 CONSTRUCT
DROP INLET ON RT. H=3'-9"
18" x 14' R.C. PIPE CULVERT INLET WITH FES
AND 24" x 69' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 194+33 CONSTRUCT
DROP INLET ON RT. H=3'-5"
18" x 276' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 199+25 CONSTRUCT
DROP INLET ON RT. H=4'-0"
WITH 8' EXTENSION AND 18" x 6'
R.C. PIPE CULVERT INLET WITH FES
AND 18" x 264' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 201+93 CONSTRUCT
DROP INLET ON RT. H=5'-3"
30" x 45' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 5' x 5'

STA. 202+43 CONSTRUCT
DROP INLET ON RT. H=5'-3"
WITH 4' EXTENSION 30" x 84'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 5' x 5'

STA. 203+35 CONSTRUCT
JUNCTION BOX ON RT. H=5'-9"
DBL. 59" x 36" x 7' R.C. ARCH
PIPE CULVERT OUTLET WITH FES
TYPE E JUNCTION BOX= 17' x 5'

STA. 204+75 CONSTRUCT
DROP INLET ON RT. H=4'-9"
WITH 4' EXTENSION AND 24" x 130'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

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

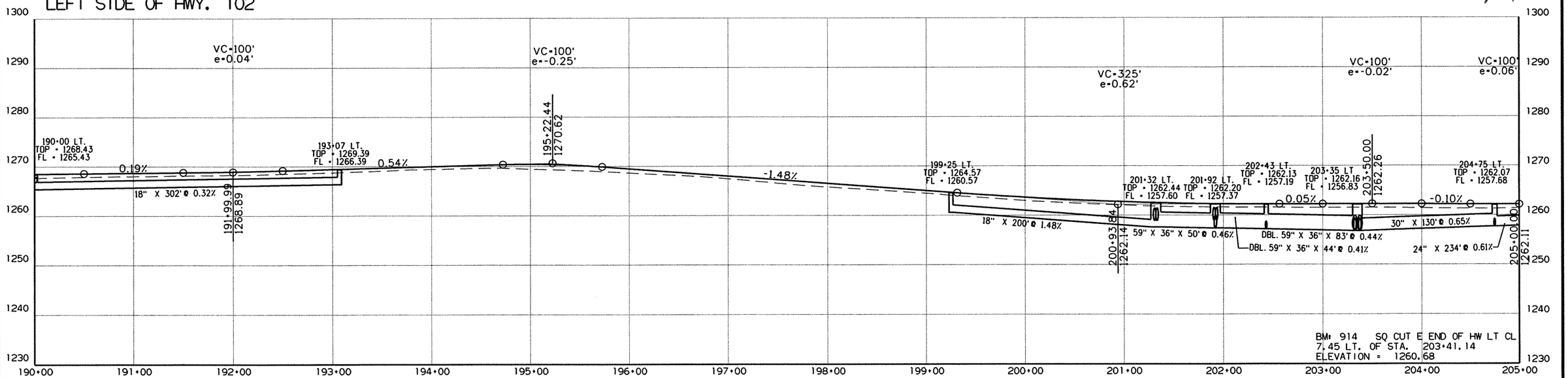
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	77	241

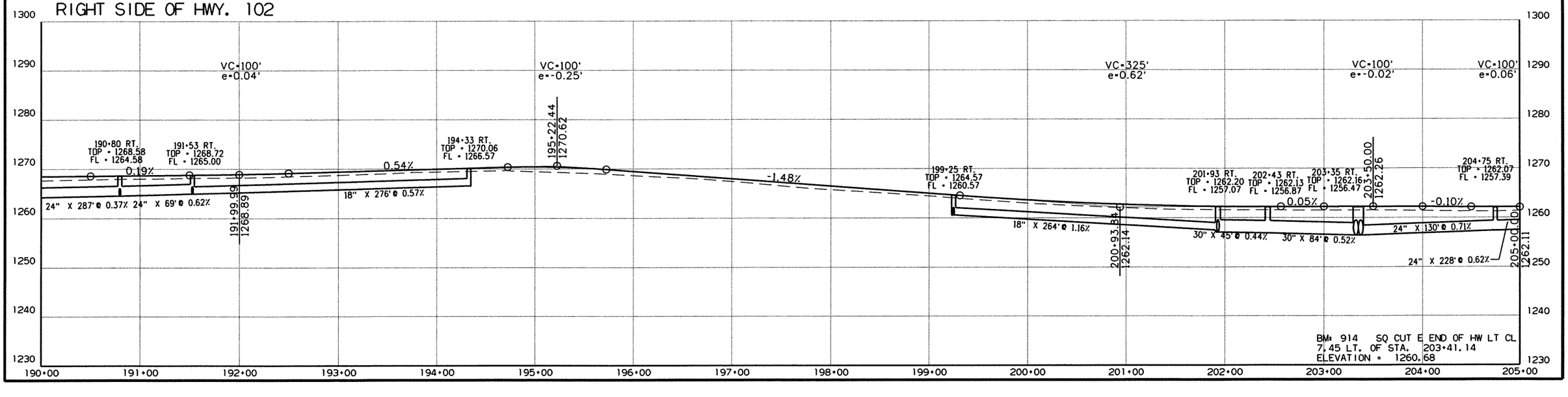
(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

LEFT SIDE OF HWY. 102



RIGHT SIDE OF HWY. 102



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	78	241

(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

STA. 207+15 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH OPENING IN BACK
24" x 234' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 208+58 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH OPENING IN BACK
24" x 137' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 210+04 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 140' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 216+37 CONSTRUCT
DROP INLET ON LT. H=3'-9"
WITH 4' EXTENSION AND OPENING IN BACK
18" x 34' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 216+77 CONSTRUCT
DROP INLET ON LT. H=5'-5"
WITH OPENING IN BACK
CONNECT TO DBL. 18" PIPE INLET
30" x 317' PIPE CULVERT
TO DROP INLET ON LT.
TYPE C DROP INLET = 7' x 6'

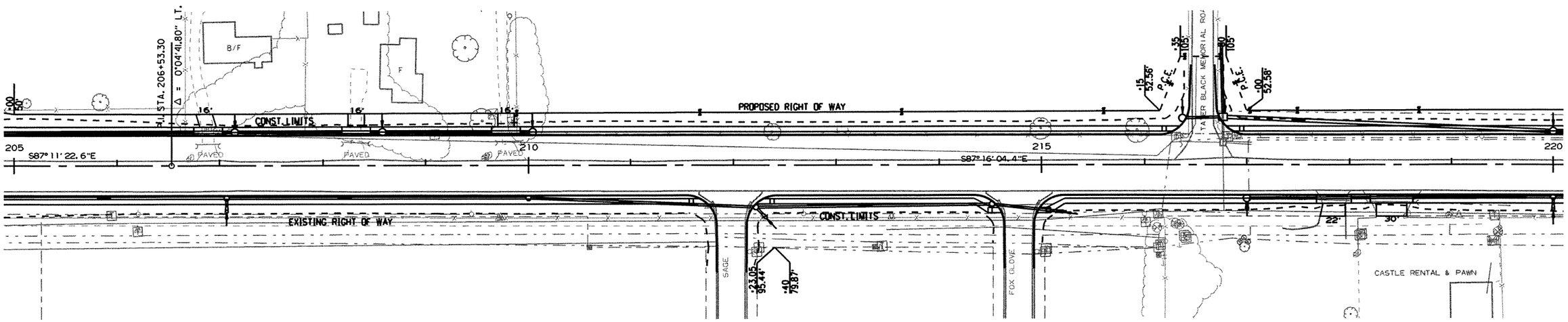
STA. 220+00 CONSTRUCT
DROP INLET ON LT. H=4'-9"
WITH 4' EXTENSION AND OPENING IN BACK
30" x 294' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 206+89 IN PLACE
18" x 21' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 208+32 IN PLACE
18" x 12" x 24' ARCH PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 209+78 IN PLACE
18" x 12" x 25' ARCH PIPE CULVERT
LT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 216+55 IN PLACE
18" x 12" x 37' R.C. ARCH PIPE CULVERT
LT. SIDE DRAIN
REMOVE



STA. 211+78 IN PLACE
18" x 77' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 214+75 IN PLACE
18" x 76' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 217+85 IN PLACE
18" x 30' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 218+41 IN PLACE
18" x 48' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH

STA. 207+07 CONSTRUCT
DROP INLET ON RT. H=4'-3"
WITH 4' EXTENSION AND 18" x 6'
R.C. PIPE CULVERT INLET WITH FES
AND 24" x 228' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 210+00 CONSTRUCT
DROP INLET ON RT. H=5'-3"
24" x 289' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 212+22 CONSTRUCT
DROP INLET ON RT. H=4'-9"
18" x 7' R.C. PIPE CULVERT INLET WITH FES
AND 18" x 218' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 214+52 CONSTRUCT
DROP INLET ON RT. H=3'-6"
18" x 61' R.C. PIPE CULVERT INLET WITH FES
AND 18" x 226' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 217+00 CONSTRUCT
DROP INLET ON LT. H=4'-0"
WITH 4' EXTENSION AND 18" x 3'
R.C. PIPE CULVERT INLET WITH FES
AND 18" X 295' R.C. PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 220+00 CONSTRUCT
DROP INLET ON RT. H=4'-0"
WITH 4' EXTENSION AND 18" x 5'
R.C. PIPE CULVERT INLET WITH FES
AND 18" x 271' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

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

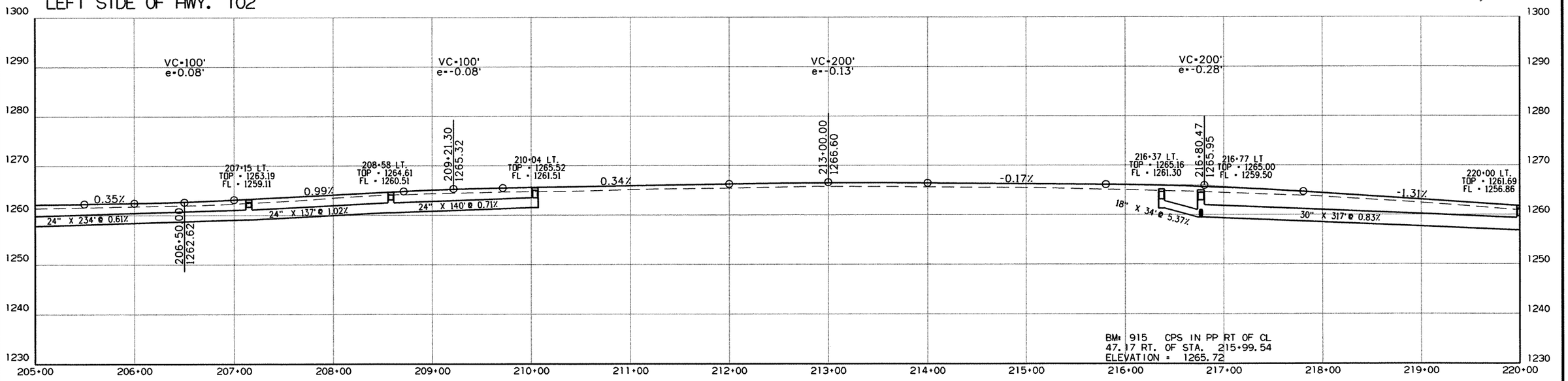
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	79	241

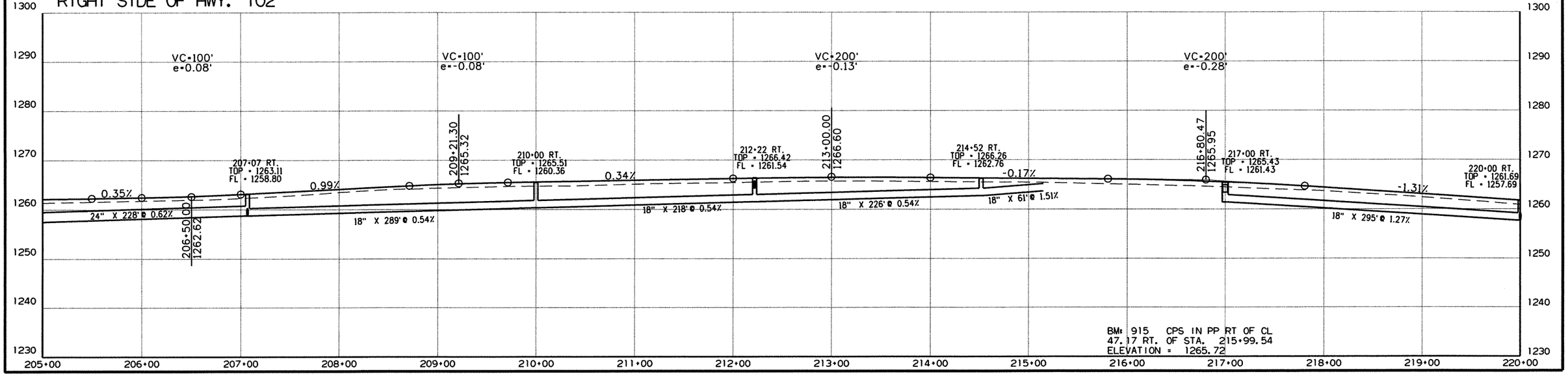
(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
14760
MICHAEL D. FUGETT
5/14/12

LEFT SIDE OF HWY. 102



RIGHT SIDE OF HWY. 102



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	80	241

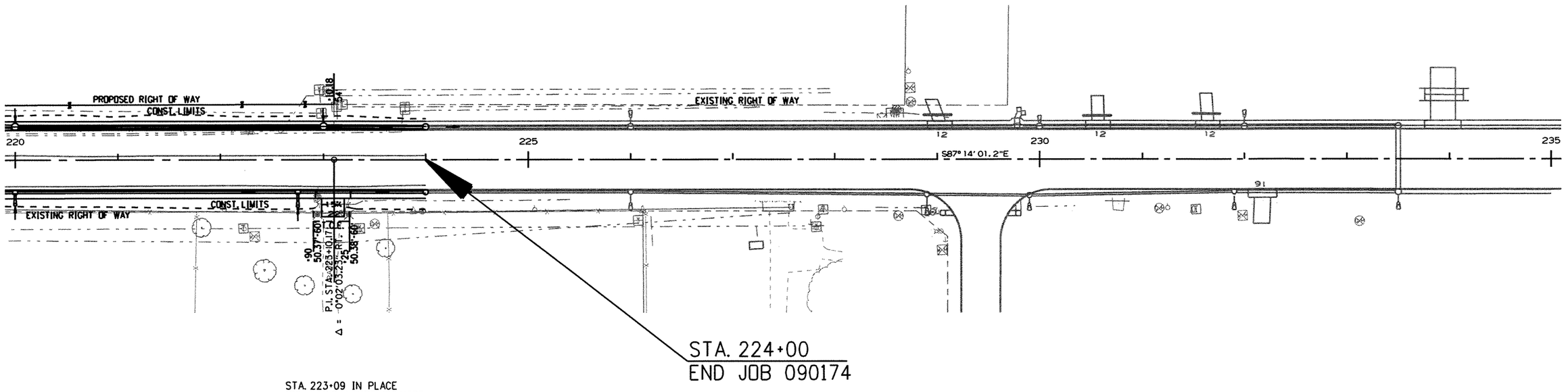
(2) PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

N

STA. 223+00 CONSTRUCT
DROP INLET ON LT. H=4'-9"
WITH 4' EXTENSION AND OPENING IN BACK
30" x 95' PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 224+00 CONSTRUCT
DROP INLET ON LT. H=4'-5"
CONNECT TO EXISTING
30" PIPE CULVERT
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' x 5'



STA. 223+09 IN PLACE
18" x 31' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 222+75 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 4' EXTENSION AND 18" x 7'
R.C. PIPE CULVERT OUTLET WITH FES
AND 18" X 121' PIPE CULVERT
TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 224+00 CONSTRUCT
DROP INLET ON LT. H=4'-3"
CONNECT TO EXISTING
18" PIPE CULVERT
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

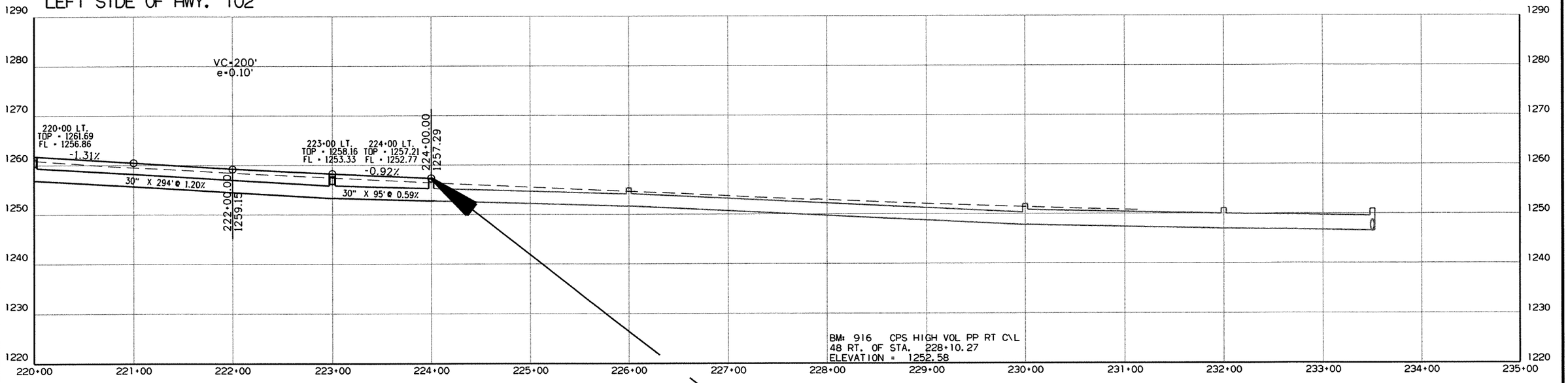
FOR ALL R.C. PIPE CULVERT INSTALLATIONS
USE TYPE 3 BEDDING UNLESS OTHERWISE
SPECIFIED. FOR ALL C.M. PIPE CULVERT
INSTALLATIONS USE TYPE 2 BEDDING UNLESS
OTHERWISE SPECIFIED.

R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	81	241
				(2) PROFILE SHEETS				

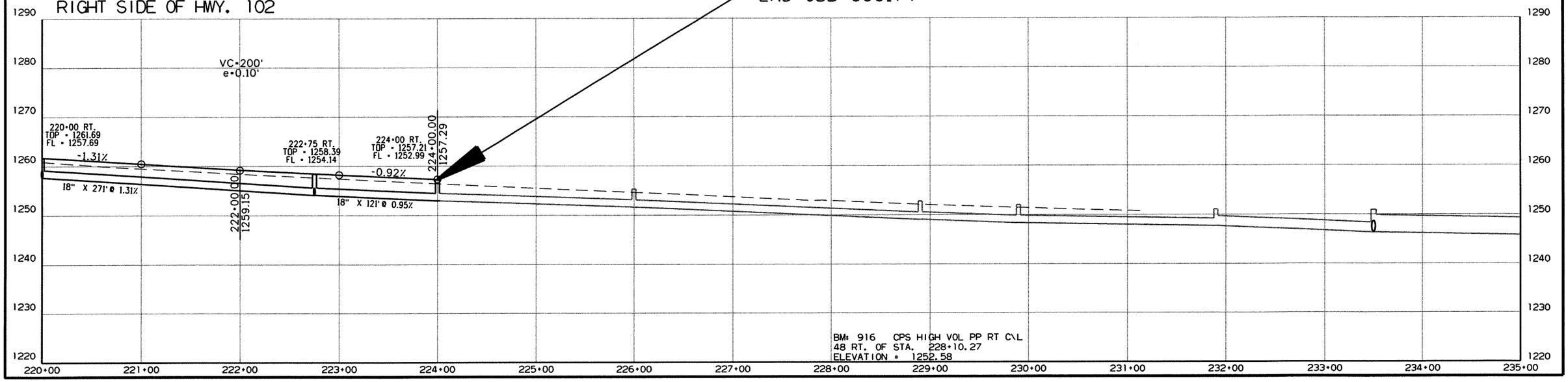
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

LEFT SIDE OF HWY. 102



STA. 224+00
END JOB 090174

RIGHT SIDE OF HWY. 102



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	82	241

(2) PLAN SHEETS

HWY. 102: STA. 135+22 CONSTRUCT
DROP INLET ON RT. H=4'-9"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 79' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'
Q50 = 9 CFS D.A. = 1.5 ACRES

STA. 136+15 CONSTRUCT
DROP INLET ON RT. H=4'-0"
WITH 4' EXTENSION AND 18" x 95'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 136+58.23 CONSTRUCT
JUNCTION BOX ON RT. H=3'-9"
18" x 48' PIPE CULVERT
TO DROP INLET ON RT.
TYPE E JUNCTION BOX = 4' x 4'

STA. 135+70 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 4' EXTENSION AND 24" x 134'
PIPE CULVERT TO DROP INLET ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 77+50 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 61' R.C. PIPE CULVERT TO R.C. BOX CULVERT ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 72+56 CONSTRUCT
APPROACH ON LT. = 10 CU. YDS.
UNCLASSIFIED EXCAVATION

STA. 75+19 CONSTRUCT
APPROACH ON LT.

STA. 75+60 CONSTRUCT
DROP INLET ON LT. H=3'-9"
WITH 8' EXTENSION AND OPENING IN BACK
18" x 39' R.C. PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 78+30 IN PLACE
DBL. 8' x 4' x 24' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
REMOVE AND CONSTRUCT
QUAD. 8' x 4' x 66' PRECAST R.C. BOX CULVERT
WITH 3:1 WINGS
Q50 = 1419 CFS D.A. = 582 ACRES

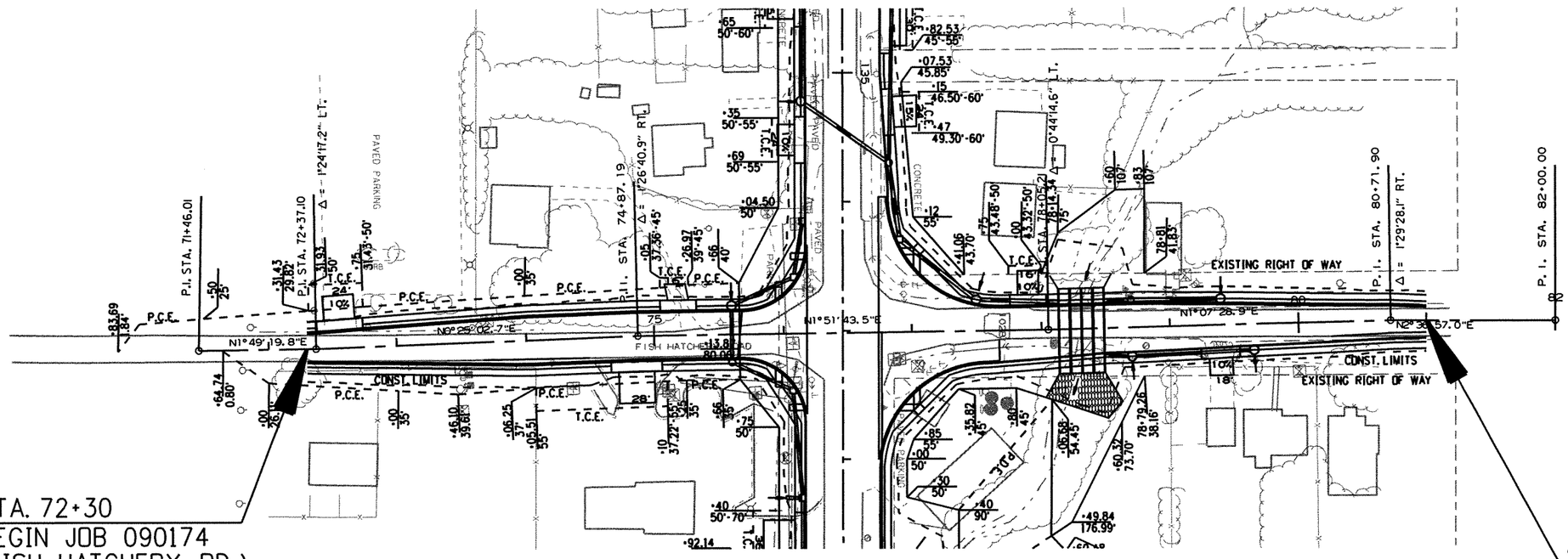
STA. 77+70 IN PLACE
18" x 41' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 77+90 CONSTRUCT
APPROACH ON LT.

STA. 78+70 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH 4' EXTENSION AND 24" x 20'
R.C. PIPE CULVERT TO R.C. BOX CULVERT ON LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 79+40 CONSTRUCT
DROP INLET ON LT. H=4'-3"
WITH OPENING IN BACK
24" x 65' PIPE CULVERT
TO PIPE CULVERT ON LT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12



HWY. 102: STA. 137+46.22 CONSTRUCT
JUNCTION BOX ON RT. H=3'-9"
18" x 80' PIPE CULVERT
TO DROP INLET ON RT.
TYPE ST JUNCTION BOX = 4' x 4'

STA. 138+30 CONSTRUCT
DROP INLET ON RT. H=5'-3"
WITH 4' EXTENSION AND 18" x 5'
R.C. PIPE CULVERT INLET WITH FES
18" x 86' PIPE CULVERT
TO R.C. BOX CULVERT ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 75+60 CONSTRUCT
DROP INLET ON RT. H=5'-0"
WITH 4' EXTENSION AND 18" x 135'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'

STA. 74+86 CONSTRUCT
APPROACH ON LT. = 10 CU. YDS.

STA. 77+53 IN PLACE
12" x 40' PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 78+57 IN PLACE
18" x 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 79+40 IN PLACE
12" x 24' PIPE CULVERT
RT. SIDE DRAIN
REMOVE
CONSTRUCT APPROACH = 5 CU. YDS.

STA. 78+70 CONSTRUCT
DROP INLET ON RT. H=4'-3"
WITH 4' EXTENSION AND OPENING IN BACK
18" x 19' R.C. PIPE CULVERT TO R.C. BOX CULVERT ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

STA. 79+65 CONSTRUCT
DROP INLET ON RT. H=3'-3"
WITH OPENING IN BACK
18" x 89' PIPE CULVERT
TO PIPE CULVERT ON RT.
TYPE MO DROP INLET = 6' DIA.
TYPE C DROP INLET = 4' x 6'

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

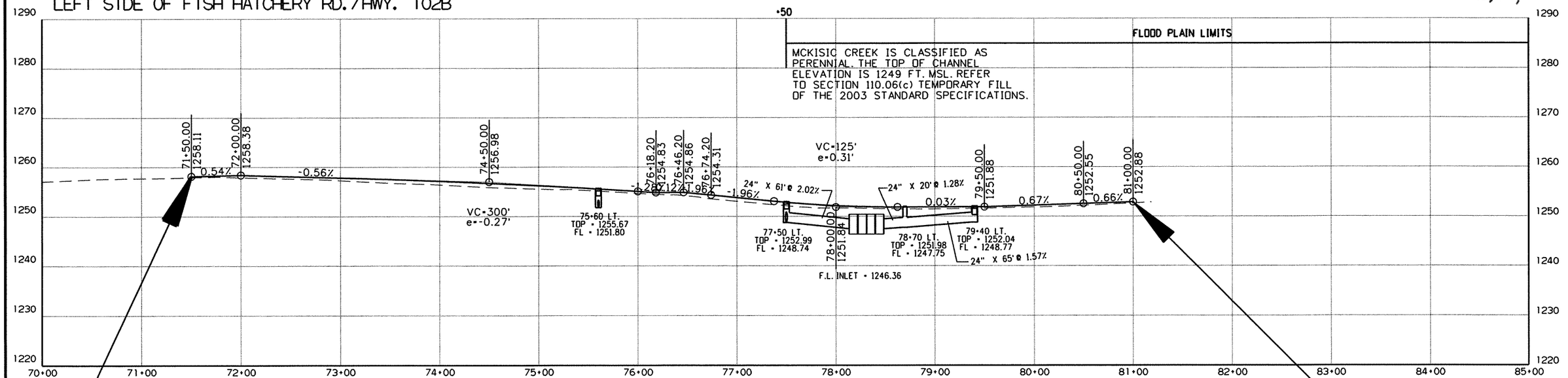
R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	83	241

(2) PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

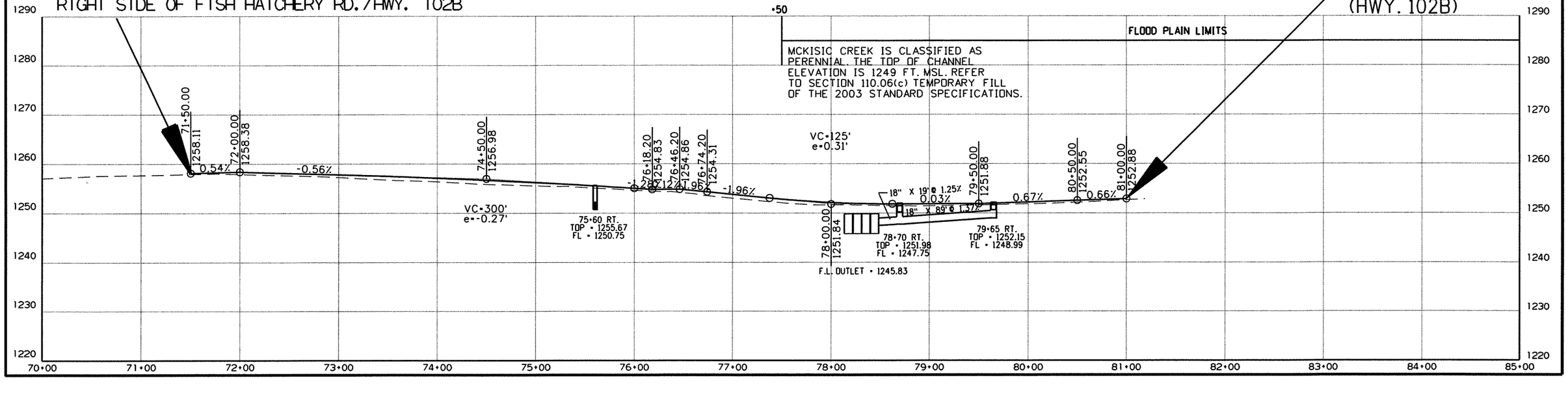
LEFT SIDE OF FISH HATCHERY RD./HWY. 102B



STA. 71+50
BEGIN JOB 090174
(FISH HATCHERY RD.)

STA. 81+00
END JOB 090174
(HWY. 102B)

RIGHT SIDE OF FISH HATCHERY RD./HWY. 102B



R090174.DGN 7/20/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	84	241
				(2)	TRAFFIC SIGNAL QUANTITIES			

STAGE 1 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&701	ACTUATED CONTROLLER TS 2-TYPE 2 (8 PHASE)	1	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1WAY)	10	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1380	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	324	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	580	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
710	NON-METALLIC CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (3")	405	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	5	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (52')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (58')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (64')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (66')	1	EACH
733	VIDEO CABLE	1319	LIN. FT.
SP&733	VIDEO DETECTOR (CLR)	4	EACH
733	VIDEO MONITOR (CLR)	1	EACH
SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	5	EACH
SP&733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	EACH
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	820	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	458	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	820	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	LIN. FT.
SP	LUMINAIRE ASSEMBLY	4	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.33	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH

• ONE SPARE PROCESSOR SHALL BE SUPPLIED.

STAGE 1
THE EXISTING TRAFFIC SIGNAL INSTALLATION SHALL REMAIN IN OPERATION UNTIL STAGE 1 TRAFFIC SIGNAL IS COMPLETED AND IN OPERATION (REFER TO PERMANENT TRAFFIC SIGNAL PLANS).
PERMANENT TRAFFIC SIGNAL INSTALLATION SHALL BE PLACED INTO OPERATION DURING STAGE 1 EXCEPT FOR THE PERMANENT TRAFFIC SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS, VIDEO DETECTORS AND STREET NAME SIGNS.
INSTALL TEMPORARY TRAFFIC SIGNAL HEADS, VIDEO DETECTORS AND ESTABLISH VIDEO ZONES.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 1 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

STAGE 2 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
713	SPAN WIRE ASSEMBLY	1	EACH
SP&733	VIDEO DETECTOR RELOCATION	2	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	4	EACH

STAGE 2
INSTALL A SPAN WIRE CONNECTING POLES "A" AND "B".
RELOCATE VIDEO DETECTORS AND SIGNAL HEADS.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

STAGE 3 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
713	SPAN WIRE ASSEMBLY	1	EACH
SP&733	VIDEO DETECTOR RELOCATION	2	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	4	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.33	LUMP SUM

STAGE 3
INSTALL SPAN WIRE ASSEMBLY TO CONNECT POLES "C" AND "D".
RELOCATE VIDEO DETECTORS AND SIGNAL HEADS.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 3 TRAFFIC SIGNAL PLAN.
REMOVE SPAN WIRE CONNECTING POLES A AND B.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

PERMANENT TRAFFIC SIGNAL QUANTITIES

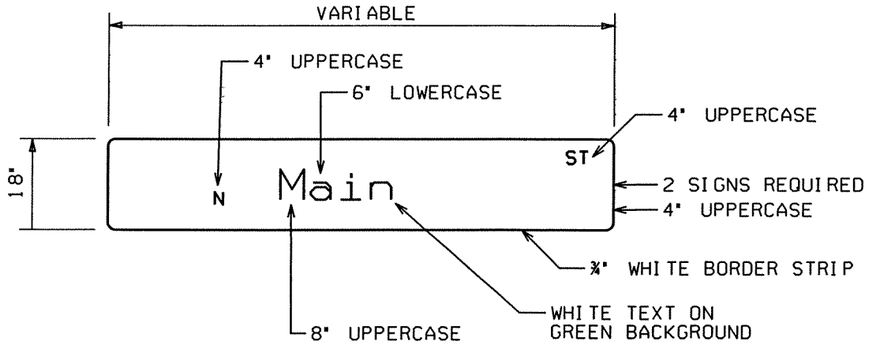
ITEM NO.	ITEM	QUANTITY	UNIT
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1WAY)	10	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1WAY)	4	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	8	EACH
SP&733	VIDEO DETECTOR (CLR)	8	EACH
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	1	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.34	LUMP SUM
SP	18" STREET NAME SIGN	6	EACH

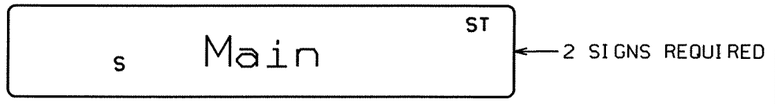
PERMANENT TRAFFIC SIGNAL
REMOVE SPAN WIRE ASSEMBLY, TEMPORARY TRAFFIC SIGNAL HEADS AND VIDEO DETECTORS.
INSTALL ALL NEW PERMANENT TRAFFIC SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS AND VIDEO DETECTORS.
ESTABLISH VIDEO ZONES AS SHOWN ON THE PERMANENT TRAFFIC SIGNAL PLAN AND INSTALL STREET NAME SIGNS.
(REFER TO PERMANENT PAVEMENT MARKING DETAILS).

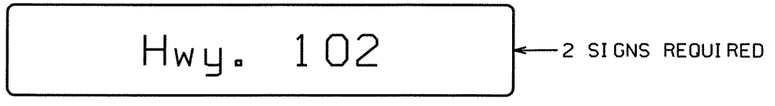


5/14/12

OVERHEAD STREET NAME MARKER STANDARD MAST ARM MOUNTED







NOTES:
1. REFLECTIVE SHEETING SHALL COMPLY WITH ASTM 4956 TYPE 8 OR 9 REFLECTIVE SHEETING. SHEETING AND LEGEND SHALL BE APPLIED IN SUCH A MANNER TO PROVIDE WRINKLE AND BUBBLE FREE SURFACES. APPLICATION OF SHEETING IS CAUSE FOR REJECTION OF MATERIALS DUE TO WORKMANSHIP.

2. ALUMINUM SIGN BLANK SHALL BE ALLOY 6061-T6 OR 5052-H38. THE ALUMINUM SIGN SHALL ALSO BE ANODIZED. THE ALUMINUM SHEETING SHALL BE 0.100 INCH NOMINAL THICKNESS AND OF THE SIZE SHOWN WITH 1.5" CORNER RADII. PRIOR TO FABRICATION OF THE SIGNS, THE LAYOUT SHALL FIRST BE APPROVED BY AN AGENT OF THE CITY.

3. WHEN CROSSROAD HAS TWO NAMES, THE SIGN FOR THE CROSSROAD TO THE LEFT MAY BE INSTALLED ON THE BACKSIDE OF THE MAST ARM OF THE NEARSIDE LEFT POLE.
SEE STD. DETAIL SHEET FOR MORE INFORMATION FOR MOUNTING ON MAST ARM ASSEMBLY.

4. THE CLEARVIEW 5-W-R FONT SHALL BE USED FOR ALL LETTERS.

DATE: 01-31-12
FILE NAME: t090174.dgn
MODEL: SIGNAL QUANTITIES AND SIGNS

LOCATION:	HWY. 102/HWY. 102B
CITY:	CENTERTON
COUNTY:	BENTON
DISTRICT: 9	SCALE: N/A DRAWN BY: GWE

t090174.dgn 10/28/2009

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	85	241
				(2)	TRAFFIC SIGNAL NOTES			

TRAFFIC SIGNAL NOTES:

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

1090174.dgn 10/28/2009

DATE: 01-31-12
FILE NAME: 1090174.dgn
MODEL: TRAFFIC SIGNAL NOTES

LOCATION: HWY. 102/HWY. 102B
CITY: CENTERTON
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

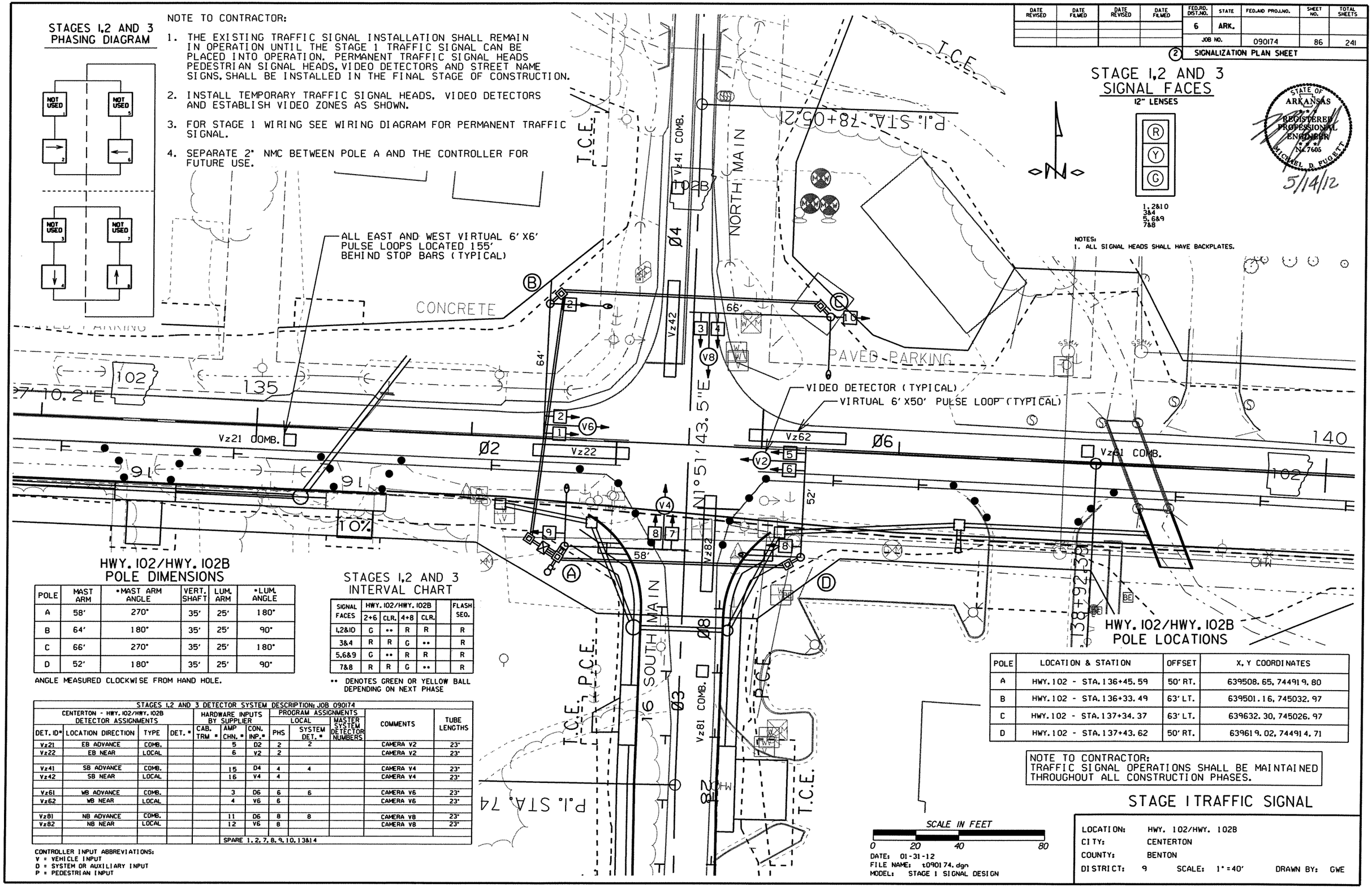
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	86	241

(2) SIGNALIZATION PLAN SHEET

STAGES 1,2 AND 3 PHASING DIAGRAM

NOTE TO CONTRACTOR:

1. THE EXISTING TRAFFIC SIGNAL INSTALLATION SHALL REMAIN IN OPERATION UNTIL THE STAGE 1 TRAFFIC SIGNAL CAN BE PLACED INTO OPERATION. PERMANENT TRAFFIC SIGNAL HEADS PEDESTRIAN SIGNAL HEADS, VIDEO DETECTORS AND STREET NAME SIGNS, SHALL BE INSTALLED IN THE FINAL STAGE OF CONSTRUCTION.
2. INSTALL TEMPORARY TRAFFIC SIGNAL HEADS, VIDEO DETECTORS AND ESTABLISH VIDEO ZONES AS SHOWN.
3. FOR STAGE 1 WIRING SEE WIRING DIAGRAM FOR PERMANENT TRAFFIC SIGNAL.
4. SEPARATE 2" NMC BETWEEN POLE A AND THE CONTROLLER FOR FUTURE USE.



STAGE 1,2 AND 3 SIGNAL FACES

12" LENSES

1, 2&10
3&4
5, 6&9
7&8

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGETT
5/14/12

HWY. 102/HWY. 102B POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	58'	270°	35'	25'	180°
B	64'	180°	35'	25'	90°
C	66'	270°	35'	25'	180°
D	52'	180°	35'	25'	90°

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

STAGES 1,2 AND 3 INTERVAL CHART

SIGNAL FACES	HWY. 102/HWY. 102B 2+6	CLR.	4+8	CLR.		FLASH SEQ.
1,2&10	G	••	R	R		R
3&4	R	R	G	••		R
5,6&9	G	••	R	R		R
7&8	R	R	G	••		R

•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE

HWY. 102/HWY. 102B POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 102 - STA. 136+45.59	50' RT.	639508.65, 744919.80
B	HWY. 102 - STA. 136+33.49	63' LT.	639501.16, 745032.97
C	HWY. 102 - STA. 137+34.37	63' LT.	639632.30, 745026.97
D	HWY. 102 - STA. 137+43.62	50' RT.	639619.02, 744914.71

STAGES 1,2 AND 3 DETECTOR SYSTEM DESCRIPTION: JOB 090174

CENTERTON - HWY. 102/HWY. 102B DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM. *	AMP CHN. *	CON. INP. *	PHS	SYSTEM DET. *			
Vz21	EB ADVANCE	COMB.			5	D2	2	2		CAMERA V2	23'
Vz22	EB NEAR	LOCAL			6	V2	2			CAMERA V2	23'
Vz41	SB ADVANCE	COMB.			15	D4	4	4		CAMERA V4	23'
Vz42	SB NEAR	LOCAL			16	V4	4			CAMERA V4	23'
Vz61	WB ADVANCE	COMB.			3	D6	6	6		CAMERA V6	23'
Vz62	WB NEAR	LOCAL			4	V6	6			CAMERA V6	23'
Vz81	NB ADVANCE	COMB.			11	D8	8	8		CAMERA V8	23'
Vz82	NB NEAR	LOCAL			12	V6	8			CAMERA V8	23'
SPARE 1, 2, 7, 8, 9, 10, 13&14											

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

NOTE TO CONTRACTOR:
TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES.

STAGE I TRAFFIC SIGNAL

SCALE IN FEET
0 20 40 80

DATE: 01-31-12
FILE NAME: t090174.dgn
MODEL: STAGE I SIGNAL DESIGN

LOCATION: HWY. 102/HWY. 102B
CITY: CENTERTON
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=40' DRAWN BY: GWE

t090174.dgn 10/28/2009

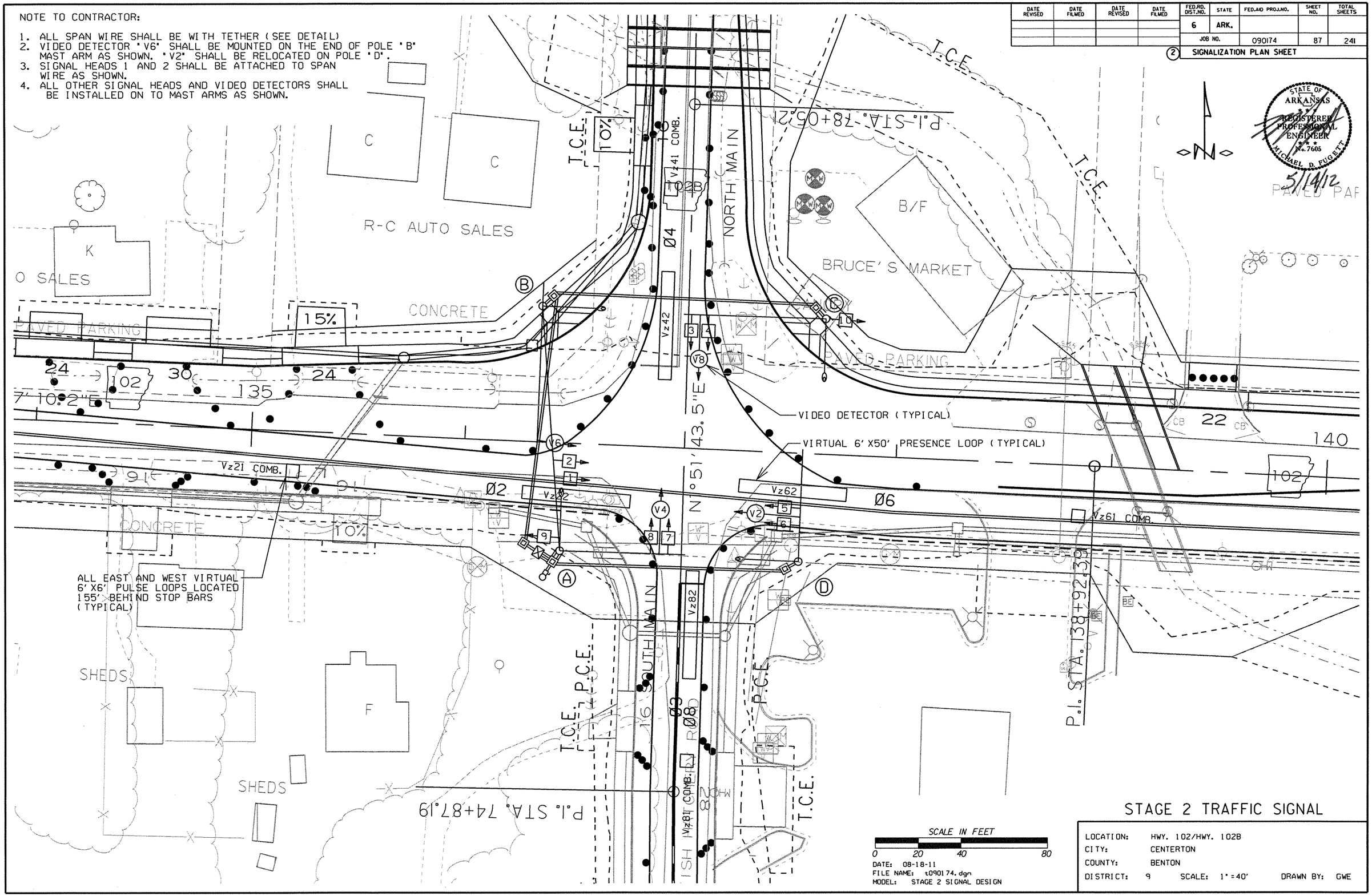
NOTE TO CONTRACTOR:

1. ALL SPAN WIRE SHALL BE WITH TETHER (SEE DETAIL)
2. VIDEO DETECTOR "V6" SHALL BE MOUNTED ON THE END OF POLE "B" MAST ARM AS SHOWN. "V2" SHALL BE RELOCATED ON POLE "D".
3. SIGNAL HEADS 1 AND 2 SHALL BE ATTACHED TO SPAN WIRE AS SHOWN.
4. ALL OTHER SIGNAL HEADS AND VIDEO DETECTORS SHALL BE INSTALLED ON TO MAST ARMS AS SHOWN.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	87	241

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12



SCALE IN FEET
0 20 40 80

DATE: 08-18-11
FILE NAME: t090174.dgn
MODEL: STAGE 2 SIGNAL DESIGN

STAGE 2 TRAFFIC SIGNAL

LOCATION:	HWY. 102/HWY. 102B			
CITY:	CENTERTON			
COUNTY:	BENTON			
DISTRICT:	9	SCALE:	1"=40'	DRAWN BY: GWE

t090174.dgn 10/28/2009

NOTE TO CONTRACTOR:

1. ALL SPAN WIRE SHALL BE WITH TETHER (SEE DETAIL)
2. VIDEO DETECTOR "V2" AND "V6" SHALL BE RELOCATED ON POLE "D" AND POLE "B" MAST ARMS AS SHOWN.
3. SIGNAL HEADS 5 AND 6 SHALL BE ATTACHED TO SPAN WIRE AS SHOWN.
4. ALL OTHER SIGNAL HEADS AND VIDEO DETECTORS SHALL BE INSTALLED ON TO MAST ARMS AS SHOWN.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	88	241

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12

ALL EAST AND WEST VIRTUAL 6' X6' PULSE LOOPS LOCATED 155' BEHIND STOP BARS (TYPICAL)

VIRTUAL 6' X50' PRESENCE LOOP (TYPICAL)

VIDEO DETECTOR (TYPICAL)

R-C AUTO SALES

BRUCE' S MARKET

B/F

F

SHEDS

CONCRETE

PAVED PARKING

NORTH MAIN

SOUTH MAIN

T.C.E.

P.C.E.

P.I. STA. 78+05.21

P.I. STA. 74+

P.I. STA. 138+92.39

N1°51'43.5"E

7"10.2"E

Vz21 COMB.

Vz22

Vz41 COMB.

Vz42

Vz62

Vz61 COMB.

Vz81 COMB.

Vz82

Ø2

Ø3

Ø4

Ø6

Ø8

SCALE IN FEET
0 20 40 80

DATE: 08-18-11
FILE NAME: t090174.dgn
MODEL: STAGE 3 SIGNAL DESIGN

STAGE 3 TRAFFIC SIGNAL

LOCATION: HWY. 102/HWY. 102B
CITY: CENTERTON
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=40' DRAWN BY: GWE

t090174.dgn 10/28/2009

PHASING DIAGRAM

SIGNAL FACES

12" LENSES

2, 3&22
5&6
8, 9&21
11&12

1, 4, 7&10

One Section
(Solid Symbol)

13&14
15&16
17&18
19&20

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS

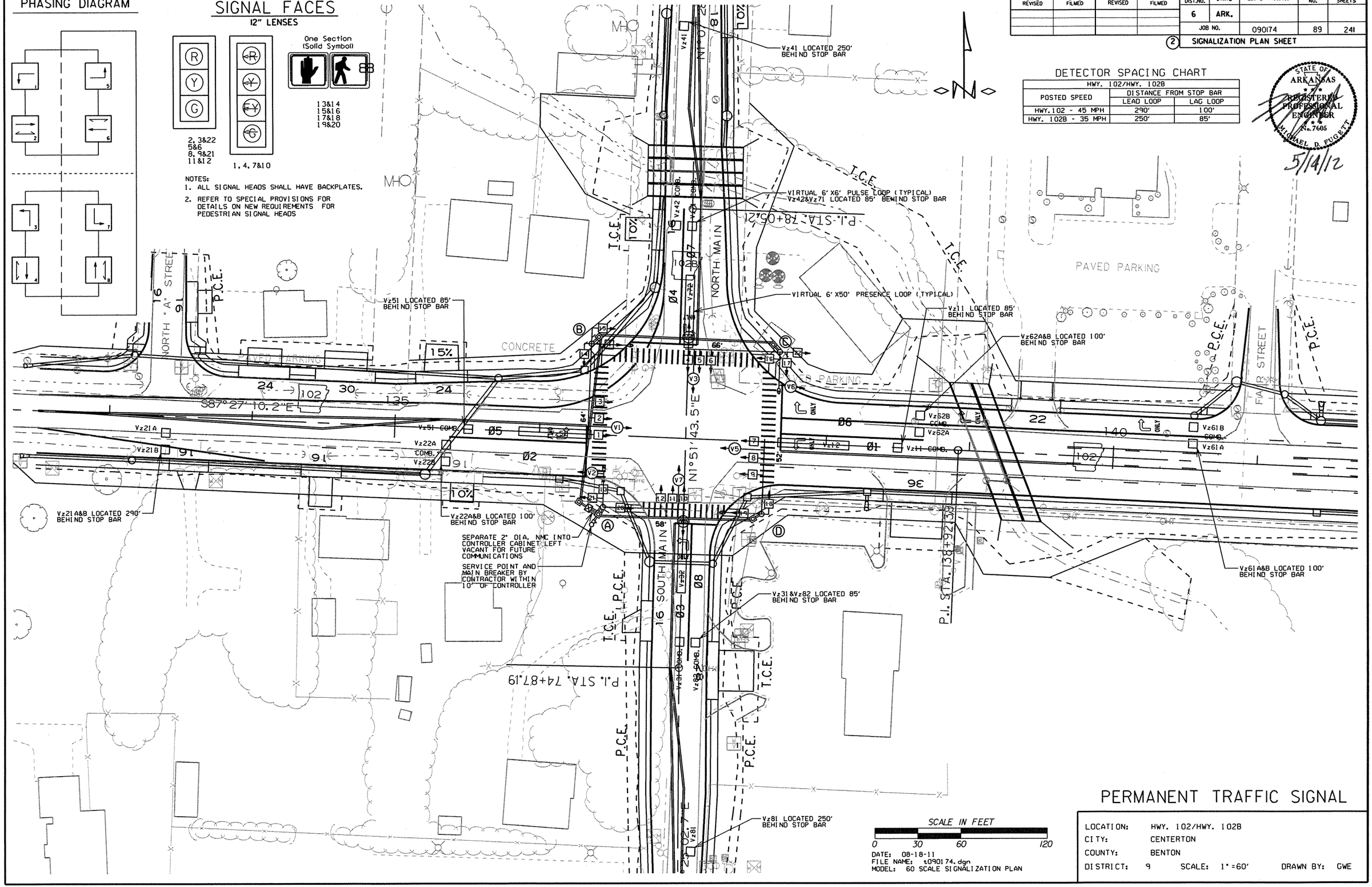
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	89	241

(2) SIGNALIZATION PLAN SHEET

DETECTOR SPACING CHART

HWY. 102/HWY. 102B		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
HWY. 102 - 45 MPH	290'	100'
HWY. 102B - 35 MPH	250'	85'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12



DATE: 08-18-11
FILE NAME: t090174.dgn
MODEL: 60 SCALE SIGNALIZATION PLAN

PERMANENT TRAFFIC SIGNAL

LOCATION: HWY. 102/HWY. 102B
CITY: CENTERTON
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=60' DRAWN BY: GWE

t090174.dgn 10/28/2009

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	90	241

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
5/14/12

VIRTUAL 6' X6' PULSE LOOP (TYPICAL)
Vz42&Vz71 LOCATED 85' BEHIND STOP BAR

VIRTUAL 6' X50' PRESENCE LOOP (TYPICAL)

Vz51 LOCATED 85' BEHIND STOP BAR

Vz11 LOCATED 85' BEHIND STOP BAR

Vz62A&B LOCATED 100' BEHIND STOP BAR

Vz22A&B LOCATED 100' BEHIND STOP BAR

Vz31&Vz82 LOCATED 85' BEHIND STOP BAR

SEPARATE 2" DIA. NMC INTO CONTROLLER CABINET LEFT VACANT FOR FUTURE COMMUNICATIONS

SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITHIN 10' OF CONTROLLER

NORTH MAIN

SOUTH MAIN

P.I. STA. 78+05.21

P.I. STA. 74+87.19

P.I. STA. 138+92.39

N1°51'43.5"E

T.C.E.

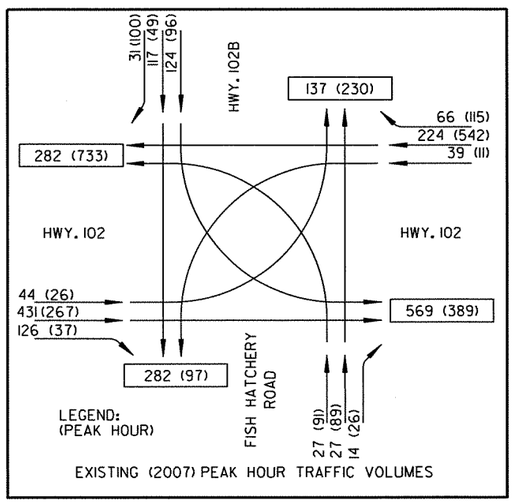
P.C.E.

CONCRETE

PAVED PARKING

Ø1 Ø2 Ø3 Ø4 Ø5 Ø6 Ø7 Ø8

TRAFFIC FLOW DIAGRAM



EXISTING (2007) PEAK HOUR TRAFFIC VOLUMES

DESIGN PARAMETERS

POSTED SPEED LIMIT:
45 MPH EAST AND WEST APPROACH
35 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS

LOCATION OF STOP BARS SHOWN ON PAVEMENT MARKING PLAN. SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE 1.5 FEET FROM HWYS. 102 AND 102B

PERMANENT TRAFFIC SIGNAL

SCALE IN FEET
0 20 40 80

DATE: 08-18-11
FILE NAME: t090174.dgn
MODEL: 40 SCALE SIGNALIZATION PLAN

LOCATION: HWY. 102/HWY. 102B
CITY: CENTERTON
COUNTY: BENTON
DISTRICT: 9 SCALE: 1"=40' DRAWN BY: GWE

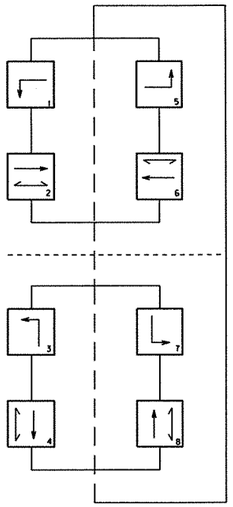
t090174.dgn 10/28/2009

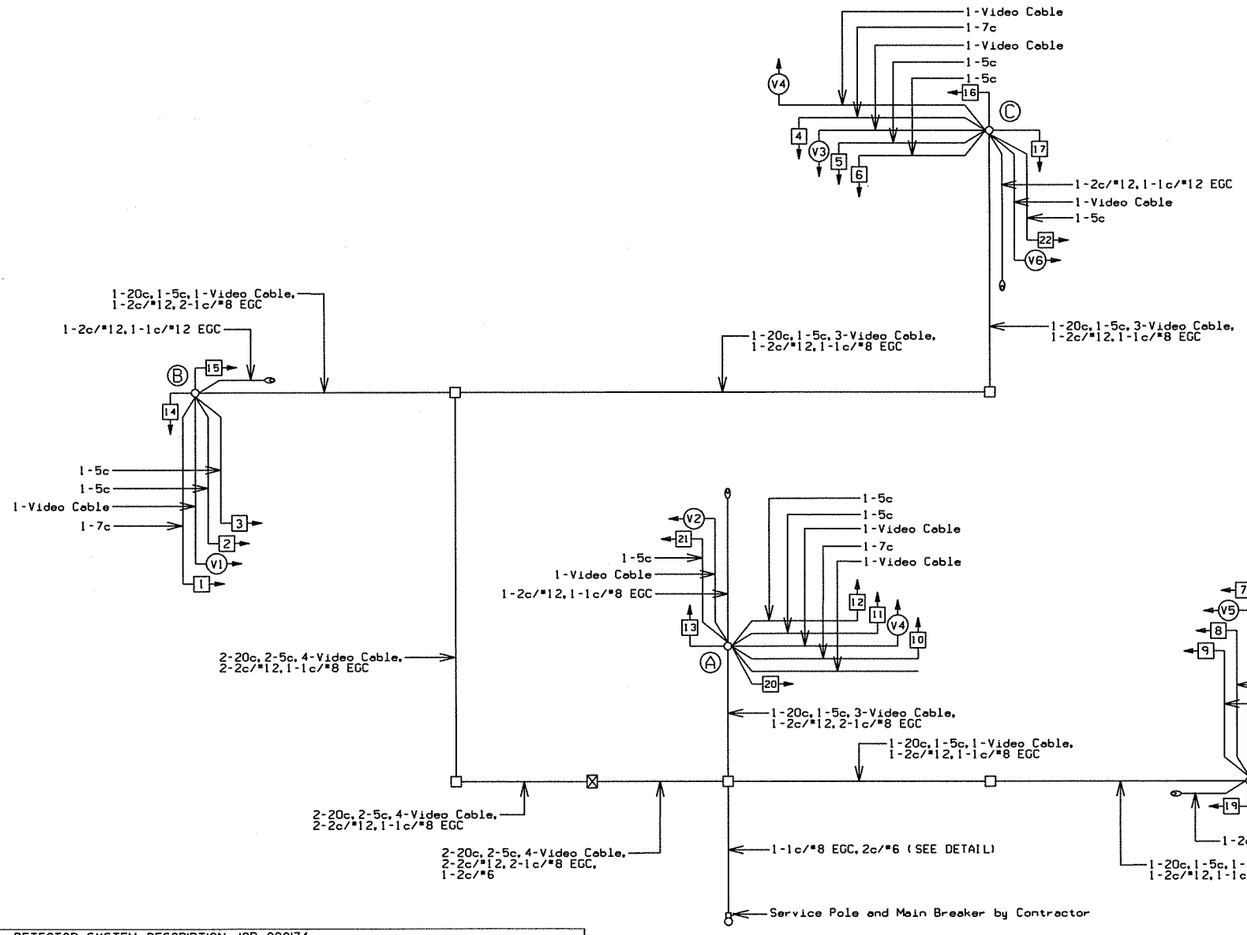
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	91	241

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5/14/12

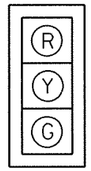
PHASING DIAGRAM



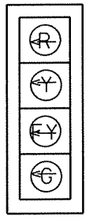


SIGNAL FACES

12" LENSES

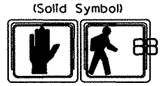


2, 3&22
5&6
8, 9&21
11&12



1, 4, 7&10

One Section (Solid Symbol)



13&14
15&16
17&18
19&20

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS

DETECTOR SYSTEM DESCRIPTION: JOB 090174											
CENTERTON - HWY. 102/HWY. 102B DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM DETECTOR NUMBERS		
DET. ID*	LOCATION DIRECTION	TYPE	DET. #	CAB. TRM #	AMP CHN. #	CON. INP.#	PHS	SYSTEM DET. #			
Vz11	WB LEFT TURN FAR	COMB.			1	D1	1	1		CAMERA V1	23'
Vz12	WB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21A&B	EB ADVANCE	LOCAL			5	V2	2			CAMERA V2	23'
Vz22A&B	EB NEAR	COMB.			6	D2	2	2		CAMERA V5	23'
Vz31	NB LEFT TURN FAR	COMB.			9	D3	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			10	V3	3			CAMERA V3	23'
Vz41	SB ADVANCE	LOCAL			15	V4	4			CAMERA V4	23'
Vz42	SB NEAR	COMB.			16	D4	4	4		CAMERA V7	23'
Vz51	EB LEFT TURN FAR	COMB.			7	D5	5	5		CAMERA V5	23'
Vz52	EB LEFT TURN	LOCAL			8	V5	5			CAMERA V5	23'
Vz61A&B	WB ADVANCE	LOCAL			3	V6	6			CAMERA V6	23'
Vz62A&B	WB NEAR	COMB.			4	D6	6	6		CAMERA V1	23'
Vz71	SB LEFT TURN FAR	COMB.			13	D7	7	7		CAMERA V7	23'
Vz72	SB LEFT TURN	LOCAL			14	V7	7			CAMERA V7	23'
Vz81	NB ADVANCE	LOCAL			11	V8	8			CAMERA V8	23'
Vz82	NB NEAR	COMB.			12	D8	8	8		CAMERA V3	23'
PB2A&B	S. MAIN ST. S. LEG	PED.				P2	2				
PB4A&B	HWY. 102 W. LEG	PED.				P4	4				
PB6A&B	HWY. 102B N. LEG	PED.				P6	6				
PB8A&B	HWY. 102 E. LEG	PED.				P8	8				
					SPARE						

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

WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

INTERVAL CHART

SIGNAL FACES	HWY. 102/HWY. 102B																FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	3+7	CLR.	3+8	CLR.	4+7	CLR.	4+8	CLR.	
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
2,3&22	R	R	G	••	R	R	G	••	R	R	R	R	R	R	R	R	R
4	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~
5&6	R	R	R	R	R	R	R	R	R	R	G	••	R	R	G	••	R
7	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
8,9&21	R	R	R	R	G	••	G	••	R	R	R	R	R	R	R	R	R
10	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~
11&12	R	R	R	R	R	R	R	R	R	R	R	R	G	••	G	••	R
13&14	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	W	FDW	BLK
15&16	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	BLK
17&18	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	W	FDW	BLK
19&20	DW	DW	DW	DW	W	FDW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	BLK

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

PERMANENT TRAFFIC SIGNAL

LOCATION: HWY. 102/HWY. 102B
CITY: CENTERTON
COUNTY: BENTON
DISTRICT: 9 SCALE: N/A DRAWN BY: GWE

DATE: 08-18-11
FILE NAME: t090174.dgn
MODEL: SIGNALIZATION WIRING DIAGRAM

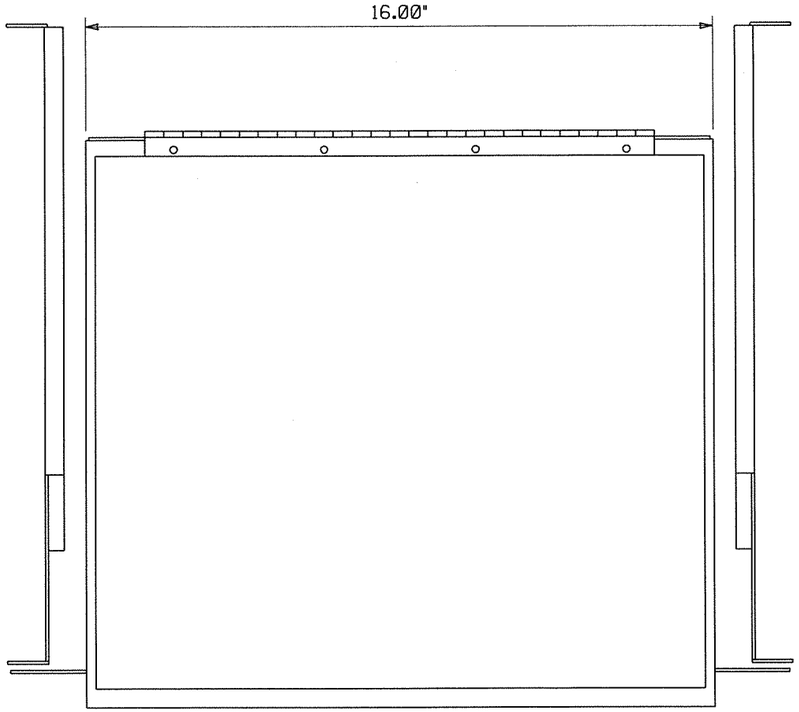
t090174.dgn 10/28/2009

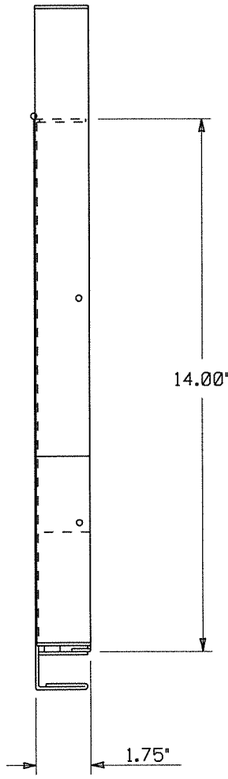
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	92	241

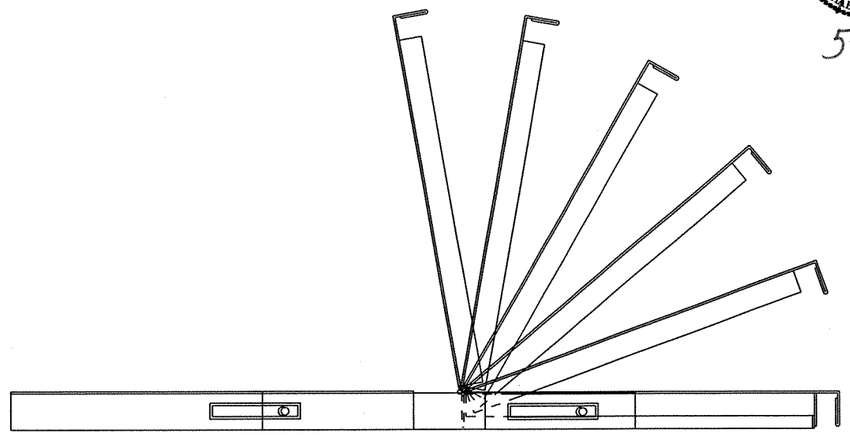
(2) SIGNALIZATION DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5-14-12

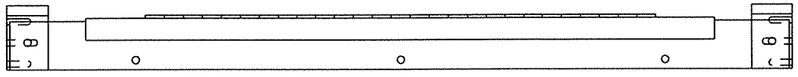
DRAWER PLAN VIEW



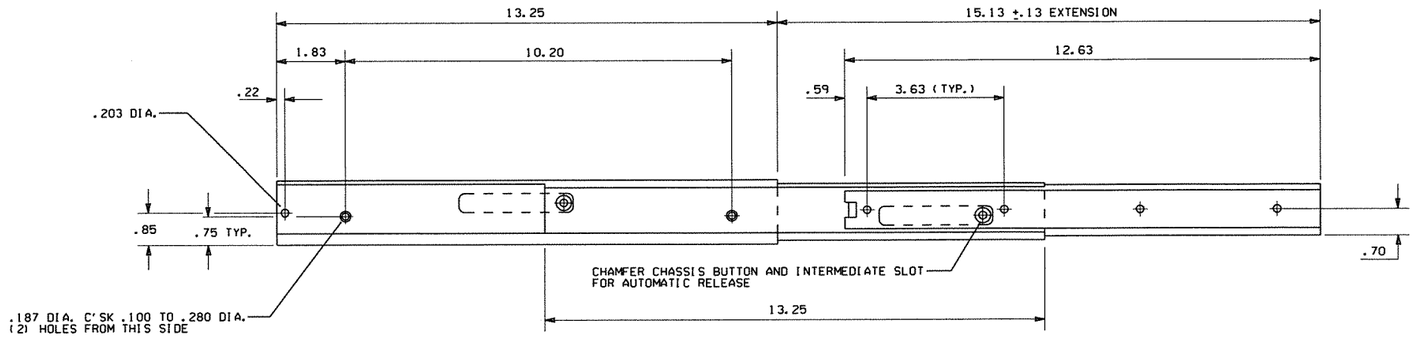




NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW



RIGHT SIDE ASSEMBLY

6-15-05	ISSUED	
DATE	REVISION	DATE FILM

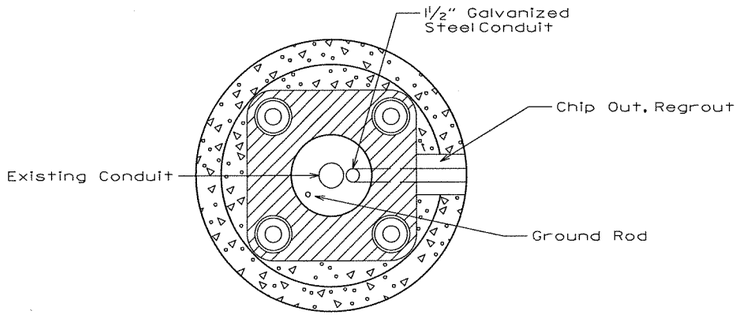
ARKANSAS STATE HIGHWAY COMMISSION

SIGNALIZATION DETAIL
(Controller Cabinet Utility Drawer)

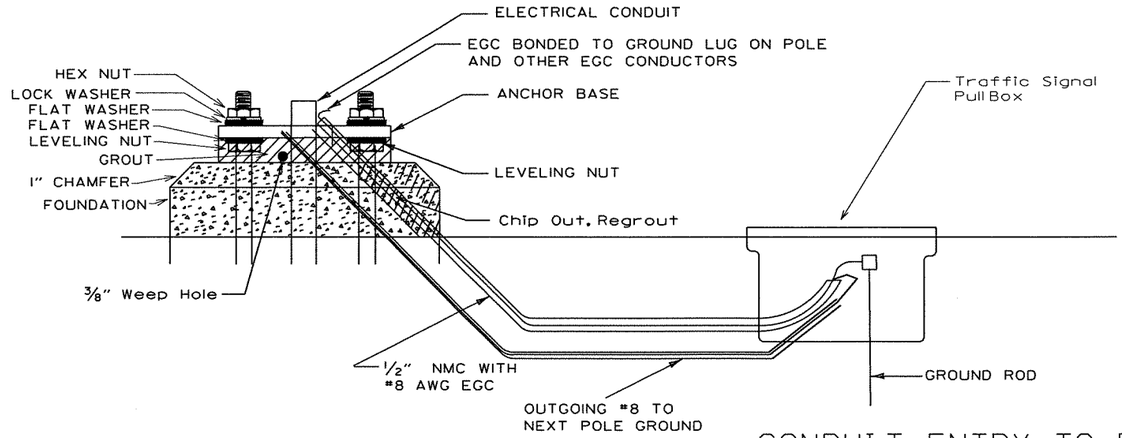
t090174.dgn 10/28/2009

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	93	241
				(2)	SIGNALIZATION DETAILS			

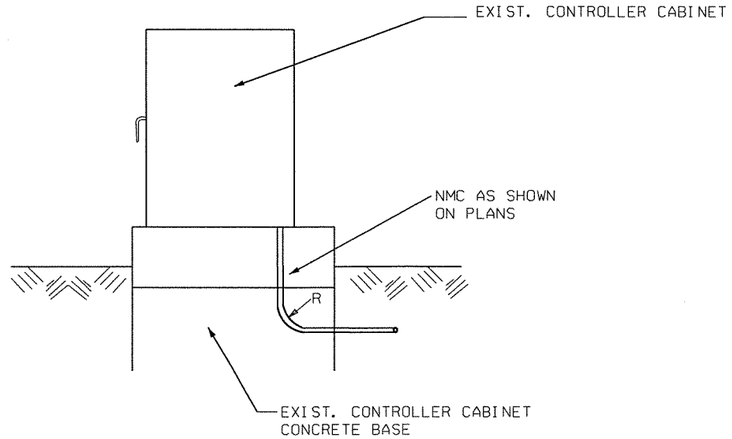
CONDUIT ENTRY TO EXISTING POLE BASE



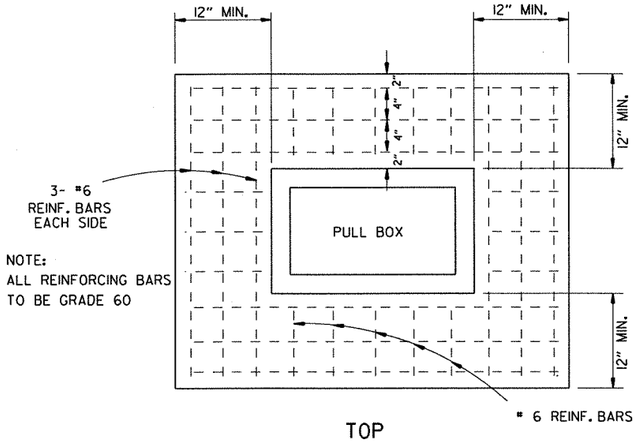
ANCHOR BASE



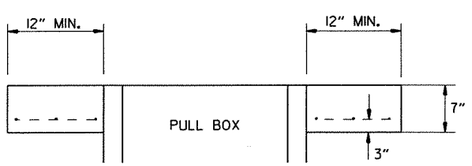
CONDUIT ENTRY TO EXISTING CONTROLLER CABINET



NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.

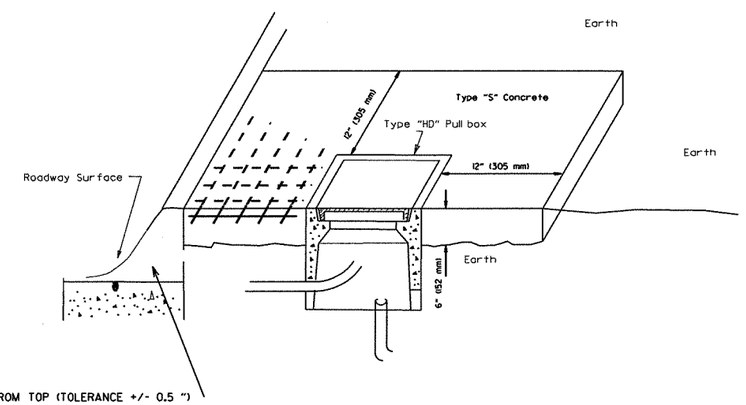


TOP



ELEVATION

Type "HD" Concrete Pull Box Detail



Note: All Type 1 and Type 2 HD pull boxes are installed with an apron of concrete 12" (305 mm) wide and 6" (152 mm) in depth. All payment shall be included in the price of the Type HD pull box. Pull box shall be installed flush to surrounding grade unless otherwise instructed by the engineer. The concrete shall be Class "S." Three #6 reinforcing bars in the apron on all sides of the pull box is required in concrete.

DATE	REVISION	DATE FILM
5-21-09	REVISED GROUNDING	
7-31-08	ADDED & REVISED CONDUIT ENTRY	
6-23-04	REVISED CLEARANCE AT CURB ENTRY	
1-4-02	ADDED REINFORCING TO BOX APRON	
7-2-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SIGNALIZATION DETAIL
(Heavy Duty Pull Box)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

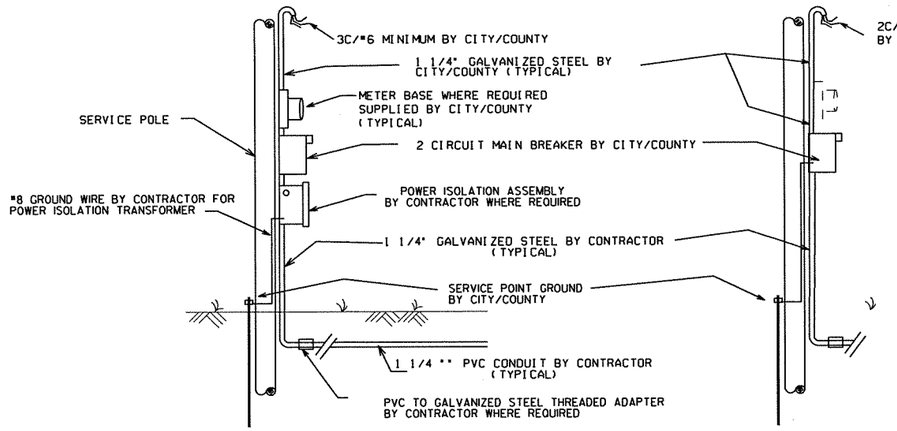
1090174.dgn 10/28/2009

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	94	241

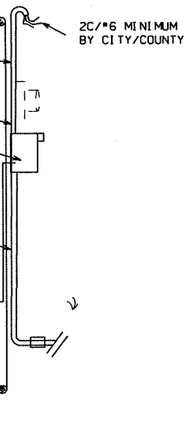
(2) SIGNALIZATION DETAILS

MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

WITH POWER ISOLATION ASSEMBLY

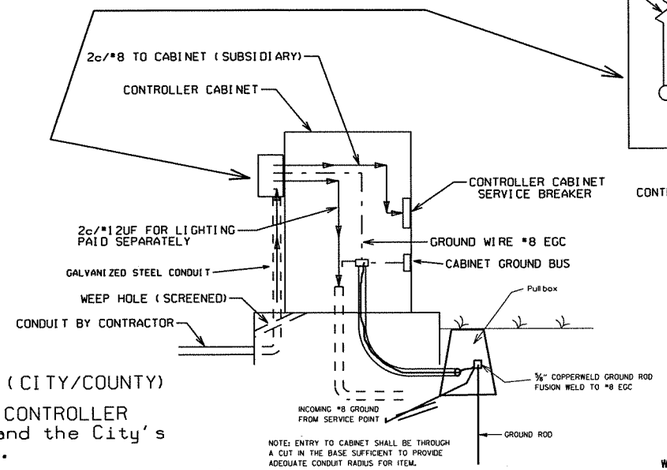


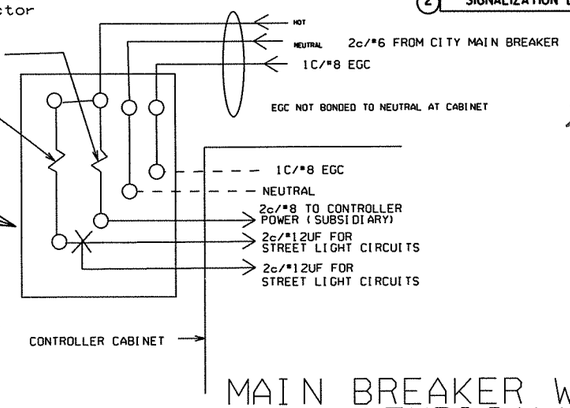
WITHOUT POWER ISOLATION ASSEMBLY



Ground Rod-A 10' x ⅝" ground rod shall be installed in the pull box for each pole and the controller. Payment for the ground rod and ½" NMC shall be included in Item 701. The pull box and conductor box shall be paid for separately.

SECONDARY BREAKER BY CONTRACTOR (SUBSIDIARY)





STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
5/14/12

MAIN BREAKER WIRING (TYPICAL)

Service Ground is typically tied to neutral at the Main Breaker. As such, controller ground IS NOT tied to Neutral at secondary Breaker or in controller cabinet.

NOTES TO CONTRACTOR AND AGENCY RESPONSIBLE FOR MAINTENANCE OF THE INTERSECTION (CITY/COUNTY)

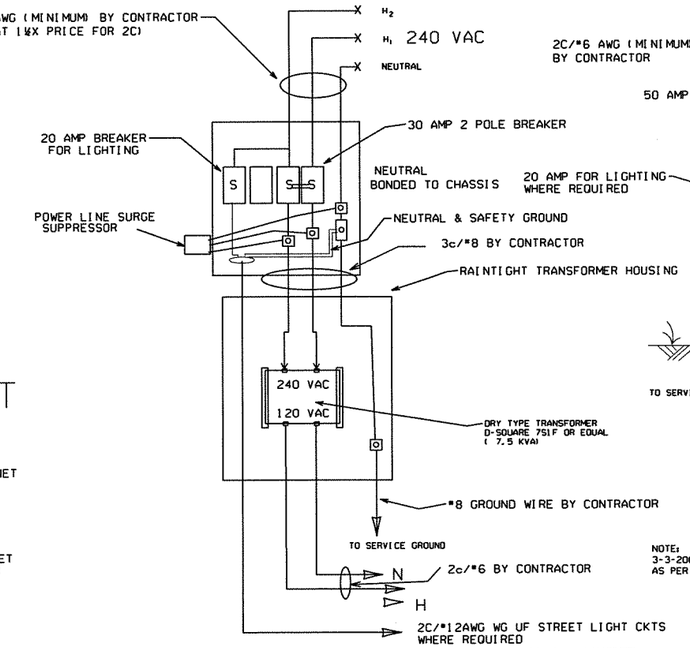
Electrical service typically falls into two categories: MAIN BREAKER NEAR CONTROLLER CABINET; and MAIN BREAKER NOT NEAR CONTROLLER CABINET. The Contractor's and the City's or County's responsibility varies accordingly as indicated on these details.

1. ALL SITUATIONS: Electrical service shall be provided by the City/County to a service pole with external raintight breaker (MAIN BREAKER) at a mutually acceptable point within the right-of-way. Service point includes galvanized steel conduit to a point 18" below ground line, two circuit main breaker, power isolation assembly where required, meter loop if required by local utility, electrical conductors and weatherhead. Where street lighting is included as part of signal installation, street lighting circuit (2c/#12 awg UF rated, typical) shall be kept separate from the circuit serving traffic signal. Service wire and wiring from the controller to main breaker is provided by the Contractor as a part of this contract. Wire and wiring from main breaker, and connection to the utility is the responsibility of the City/County.

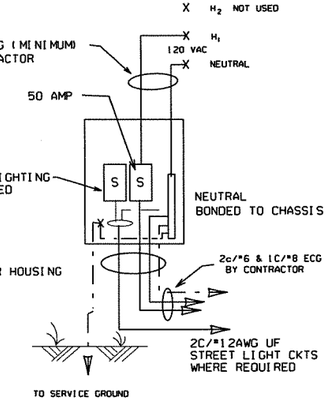
2. MAIN BREAKER NOT NEAR CONTROLLER CABINET: The Main Breaker assembly, galvanized steel conduit, weatherhead and wire above Main Breaker and connection to the utility shall be provided by City/County. Contractor shall provide as part of contract Secondary Breaker, conduit, wire and wiring to the Main Breaker.

3. MAIN BREAKER NEAR CONTROLLER CABINET: All components of the service point with the exception of the wire and wiring above the Main Breaker is furnished and installed by the Contractor. Wiring from Main Breaker including connection to the utility, is the responsibility of the City/County. If meter loop is required, meter base and hardware is provided by the City/County and installed by the contractor.

WITH POWER ISOLATION ASSEMBLY
4 CIRCUIT MAIN BREAKER

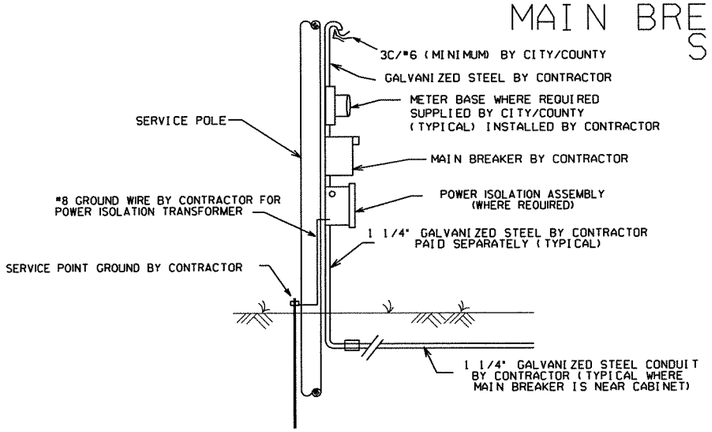


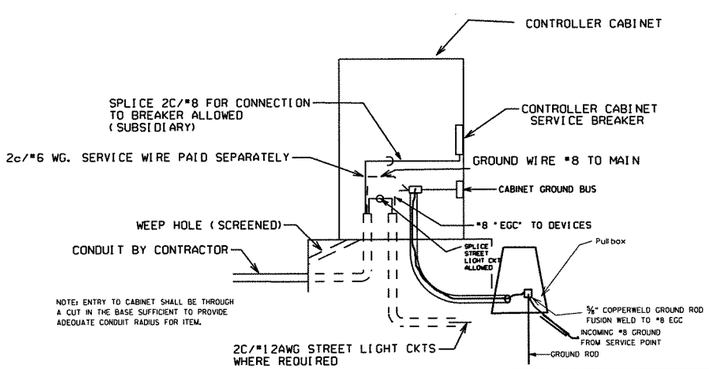
WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER



NOTE: ELECTRICAL GROUND CONDUCTOR (ECG) ADDED 3-3-2003, CONSISTING OF A 1C/#8AWG CU GREEN WIRE AS PER NATIONAL ELECT. CODES.

MAIN BREAKER NEAR CONTROLLER CABINET SECONDARY NOT REQUIRED





DATE	REVISION	DATE FILM
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
3-3-03	ADDED EGC NOTE	
9-26-01	REVISED	
12-27-99	REVISED	
7-28-99	REVISED	
2-5-99	ISSUED	

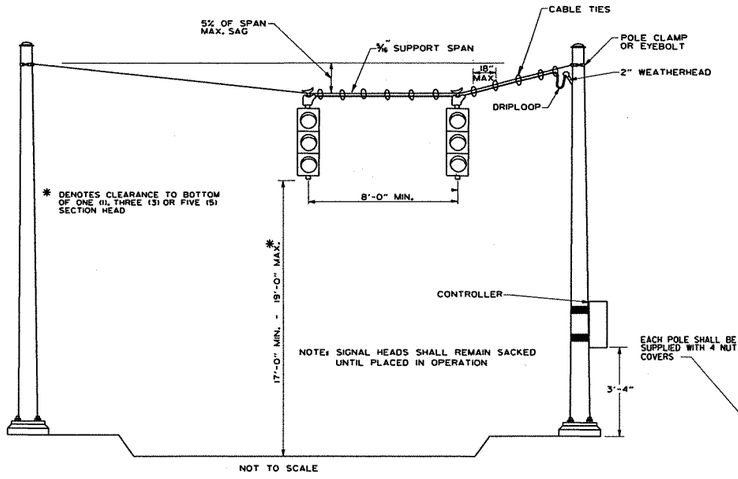
ARKANSAS STATE HIGHWAY COMMISSION

SIGNALIZATION DETAIL (Service Point)

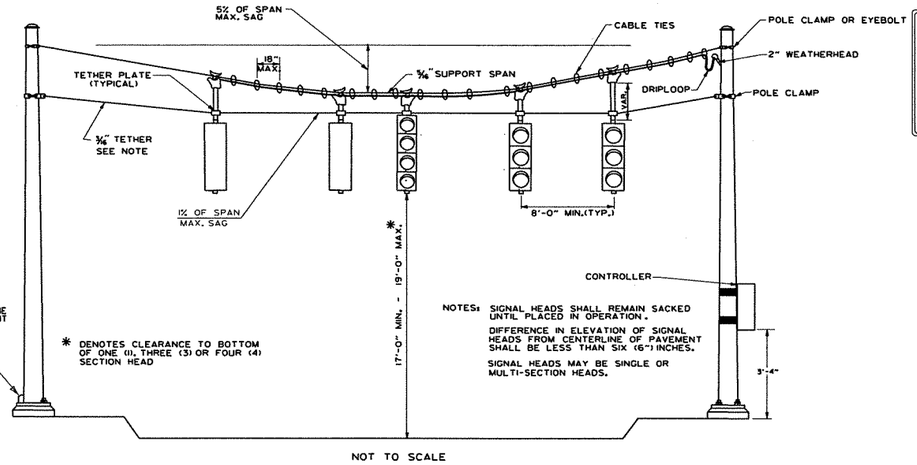
1090174.dgn 10/28/2009

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	95	241

(2) SIGNALIZATION DETAILS



TYPICAL SPAN WIRE ASSEMBLY



TYPICAL SPAN WIRE ASSEMBLY WITH TETHER

NOTES: SPAN WIRE POLES SHALL BE MOUNTED A MINIMUM OF 4' BEHIND CURB OR SHOULDER.

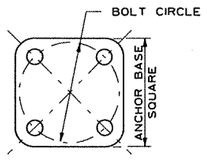
OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND POLES AND ARMS. ALL POLES AND ARMS IN A JOB MUST BE OF THE SAME SHAPE.

SPAN WIRE ASSEMBLIES WILL REQUIRE TETHER UNLESS OTHERWISE NOTED ON PLAN SHEETS.

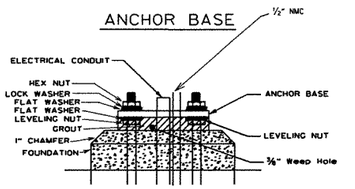
CABLE TIES SHALL BE SUITABLE FOR OUTSIDE USE (BLACK).

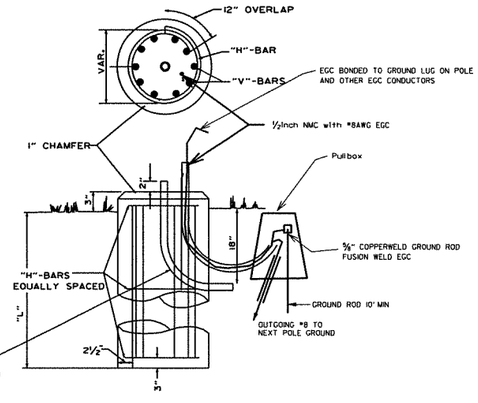
THE ANCHOR BOLTS AND SWEEPING "L" CONDUIT SHALL BE PLACED IN THE FOUNDATION IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. THE FOUND ROD SHALL EXTEND A MINIMUM OF 8' BELOW CABINET FOUNDATION.

THE CONTROLLER POWER SUPPLY GROUND BUSS SHALL BE BONDED TO THE FOUNDATION GROUND ROD WITH A #8 AWG SOLID COPPER WIRE. ON EXISTING FOUNDATIONS WITH NO GROUND ROD, CONTRACTOR SHALL INSTALL A 10' x 5/8" COPPERWELD GROUND ROD.



ANCHOR BASE



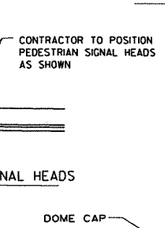


TYPICAL FOUNDATION DETAILS

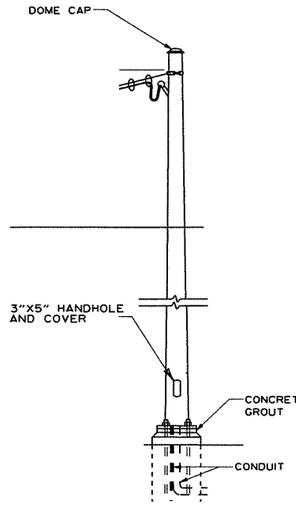
GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND ½" NMC SHALL BE INCLUDED IN ITEM 713 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND EGC CONDUCTOR SHALL BE PAID FOR SEPARATELY.

ALL CONCRETE SHALL BE CLASS "S" WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH F'c=3500 PSI. CONCRETE SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS CHAMFERED ¾" UNLESS NOTED OTHERWISE.

ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M53, GRADE 40 (YIELD STRENGTH=40,000 PSI).

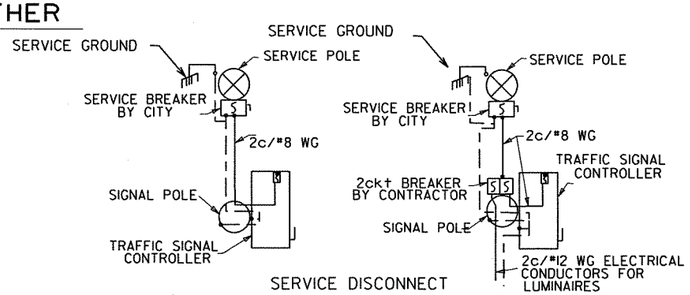


PEDESTRIAN SIGNAL HEADS



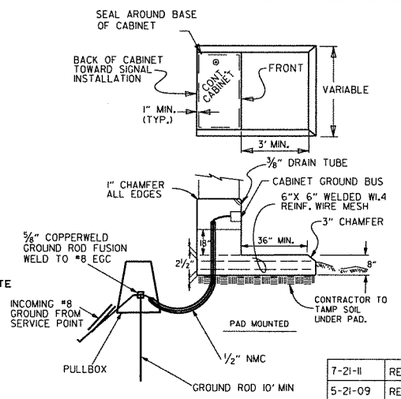
SPAN WIRE ASSEMBLY WITH SPAN WIRE SUPPORT POLE

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.



SERVICE DISCONNECT NO LUMINAIRE — SERVICE DISCONNECT WITH LUMINAIRE

NOTE: ELECTRICAL GROUND CONDUCTOR IS BONDED TO ALL METAL ENCLOSURES



CONCRETE BASE MOUNTED CABINET DETAILS

LEFT TURN SIGNAL — RIO-10

LEFT TURN YIELD ON FLASHING ARROW — SPECIAL

RIO-3e (SEE MUTCD)

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER NO. 7605 MICHAEL D. FUGETT 4/12

NOTES:
EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN SIGNAL PLAN NOTES.

SIGN BLANK SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209, ALLOY 5052-H38) WITH A THICKNESS OF 0.100 INCH.

SIGN FACE SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)", TO BE USED AS A LEFT TURN INDICATION ONLY, SHALL INCLUDE A SIGN (RIO-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

TETHER STRAND SHALL BE EITHER 5#32" OR 3#16" HIGH FATIGUE STAINLESS STEEL AIRCRAFT CABLE IN 7/19 CONFIGURATION, MIL-W-83420 CERTIFIED, WITH A MINIMUM STRENGTH OF 2400 LB.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME THE INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

FOUNDATION NOTES

1. ALL REINFORCING STEEL SHALL BE GRADE 40 MINIMUM.
2. SPAN WIRE POLES WITH A 9" OR 10" POLE BASE SHALL USE FOUNDATIONS THAT ARE 30" IN DIA. AND 9'-0" IN DEPTH. VERTICAL REINFORCING SHALL BE 12-#7 @ 102". HORIZONTAL REINFORCING STEEL SHALL BE 13-#4 @ 8.333" O.C.
3. SPAN WIRE POLES WITH AN 11", 12" OR 13" POLE BASE SHALL USE FOUNDATIONS THAT ARE 30" IN DIA. AND 12'-0" IN DEPTH. VERTICAL REINFORCING STEEL SHALL BE 12-#7 @ 138". HORIZONTAL REINFORCING STEEL SHALL BE 17-#4 @ 8.5" O.C.
4. ALL PED POLES SHALL USE FOUNDATIONS THAT ARE 30" IN DIAMETER AND 7'-0" IN DEPTH. VERTICAL REINFORCING STEEL SHALL BE 12-#7 @ 78". HORIZONTAL REINFORCING STEEL SHALL BE 10-#4 @ 8.44" O.C.

MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY II.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH THICKNESS GREATER THAN ½" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DATE	REVISION	DATE FILM
7-21-11	REVISED PEDESTRIAN SIGN & GROUNDING	
5-21-09	REVISED GROUNDING	
9-10-08	REV. STEEL AIRCRAFT CABLE CONFIGURATION NOTE	
7-31-08	REVISED GROUNDING	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REV. CABINET ORIENTATION & SIGNAL OPERATION	
5-22-02	REVISED	
12-27-99	REVISED	
11-18-98	REVISION TO NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

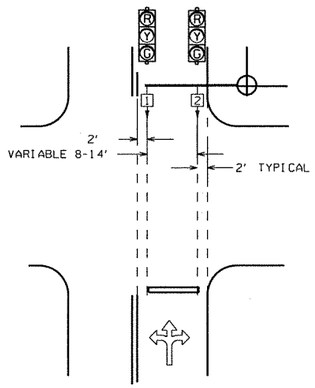
SIGNALIZATION DETAIL (Span Wire Assembly Steel Pole)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	96	241

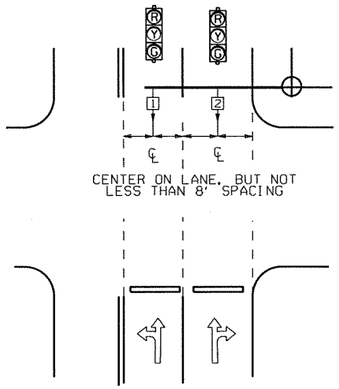
(2) SIGNALIZATION DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
5/14/12

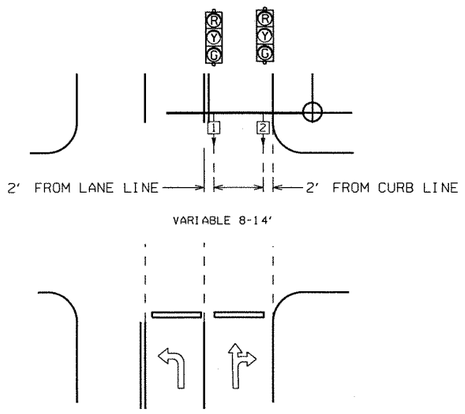
(A)



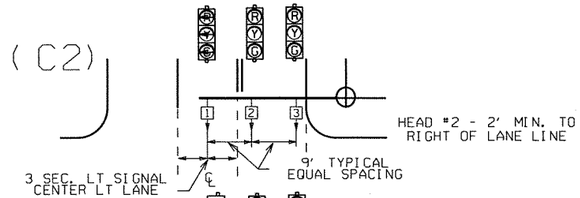
(B)



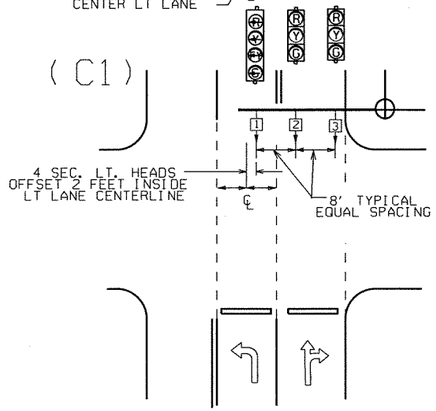
(C)



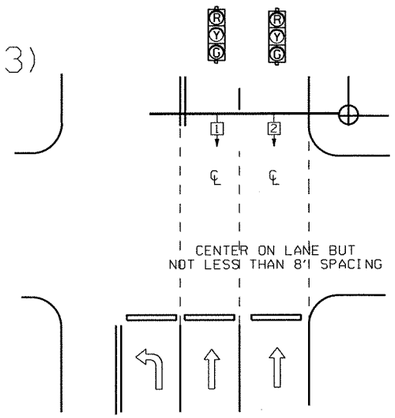
(C2)



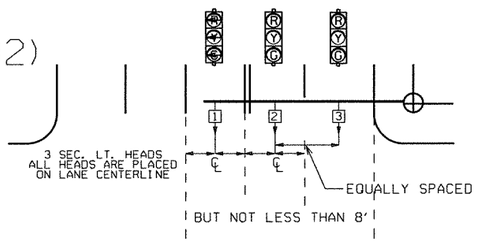
(C1)



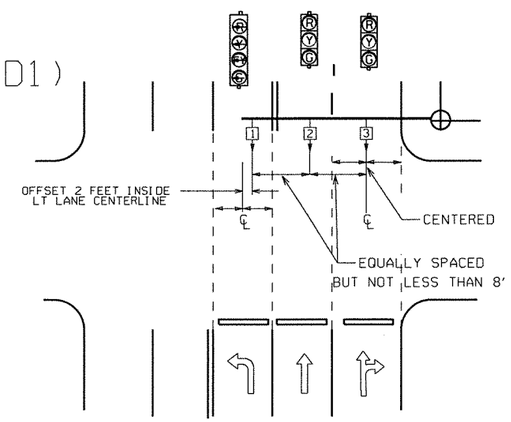
(C3)



(D2)

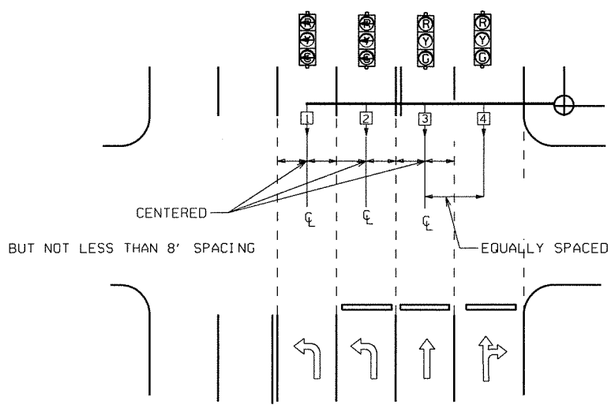


(D1)



NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS

(E)



℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION 'PROTECTED/PERMISSIVE' LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION 'PROTECTED' LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-1 OF 2009 MUTCD.

DATE	REVISION	DATE FILM
3-11-10	2009 MUTCD	
12-9-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SIGNALIZATION DETAIL
(Signal Head Placement)

090174.dgn 10/28/2009

NOTES, PED AND TRAFFIC SIGNAL HEAD SIGNS:
EACH ITEM 'TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)' SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM 'TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)' TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGN FACES SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209. ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

GENERAL NOTES:
1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

3. MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 IN. BACK PLATES:

HEADS AT END OF ARM - ONE 4 SEC., 85 LB., 16.0 SQ. FT. ONE SIGN MOUNTED 3 FT. FROM SIGNAL * 2' X 0' X 2' * 6'; 20 LB. REMAINING HEADS SPACED A 8 FT. * 3 SEC., 56 LB., TWO 5 SEC):
14.4 SQ. FT. DESIGN TO ACCOMMODATE (INCLUDING
2 HEADS FOR ARMS 10 TO 16 FT.
2 HEADS FOR ARMS 10 TO 16 FT., INCLUDING LB.
3 HEADS FOR 18 TO 24 FT. ARMS;
4 HEADS FOR OVER 26 FT. ARMS.

STREET NAME SIGN -- 72" X 18", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) * VARIABLE ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB. PED SIGNALS -- TWO 2 SEC. 12 INCH MOUNTED 8 FT. FROM BASE OF POLE.
POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

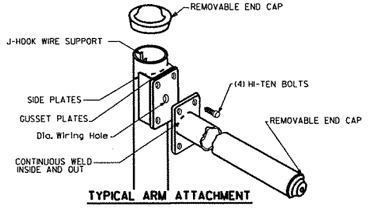
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE -- HAND HOLES SHALL BE 4 X 6 INCHES FOR STANDARD, AND 3 X 5 INCHES FOR PED POLES, MINIMUM. PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21 FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDE A HAND HOLD WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

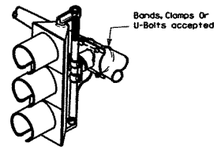
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE AFTER IT IS PLACED UNDER LOAD.

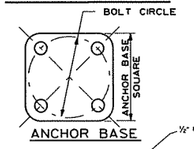
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



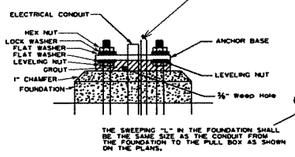
TYPICAL ARM ATTACHMENT

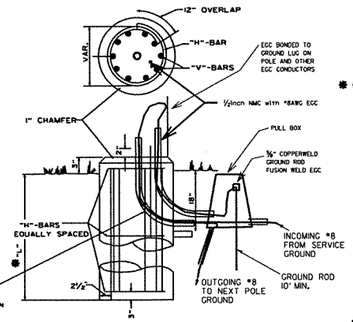


NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.



ANCHOR BASE



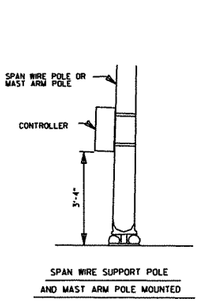


THE GROUND ROD SHALL BE FUSION WELDED TO A 1C/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

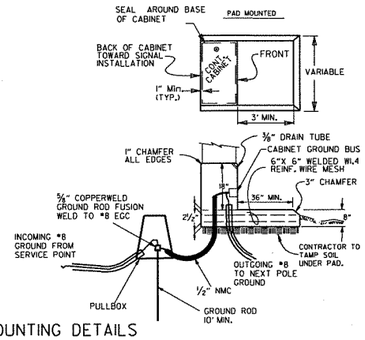
TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FDN. DIAMETER	DEPTH 'L' ✱	STEEL VERT.	STEEL HORZ.	STEEL O/C.
PED	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' to 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
over 12' to 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
over 20' to 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
over 35' to 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
over 50' to 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
Twins to 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
Twins over 20' to 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
Twins over 44' to 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
Twins over 50' to 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"



SPAN WIRE SUPPORT POLE AND MAST ARM POLE MOUNTED



CONTROLLER CABINET MOUNTING DETAILS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

8. GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX. NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 1/4" WEEP HOLE. ALL CONCRETE SHALL BE CLASS 'S' OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS 'S' OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PED PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM PEDESTRIAN SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	97	241

(2) SIGNALIZATION DETAILS

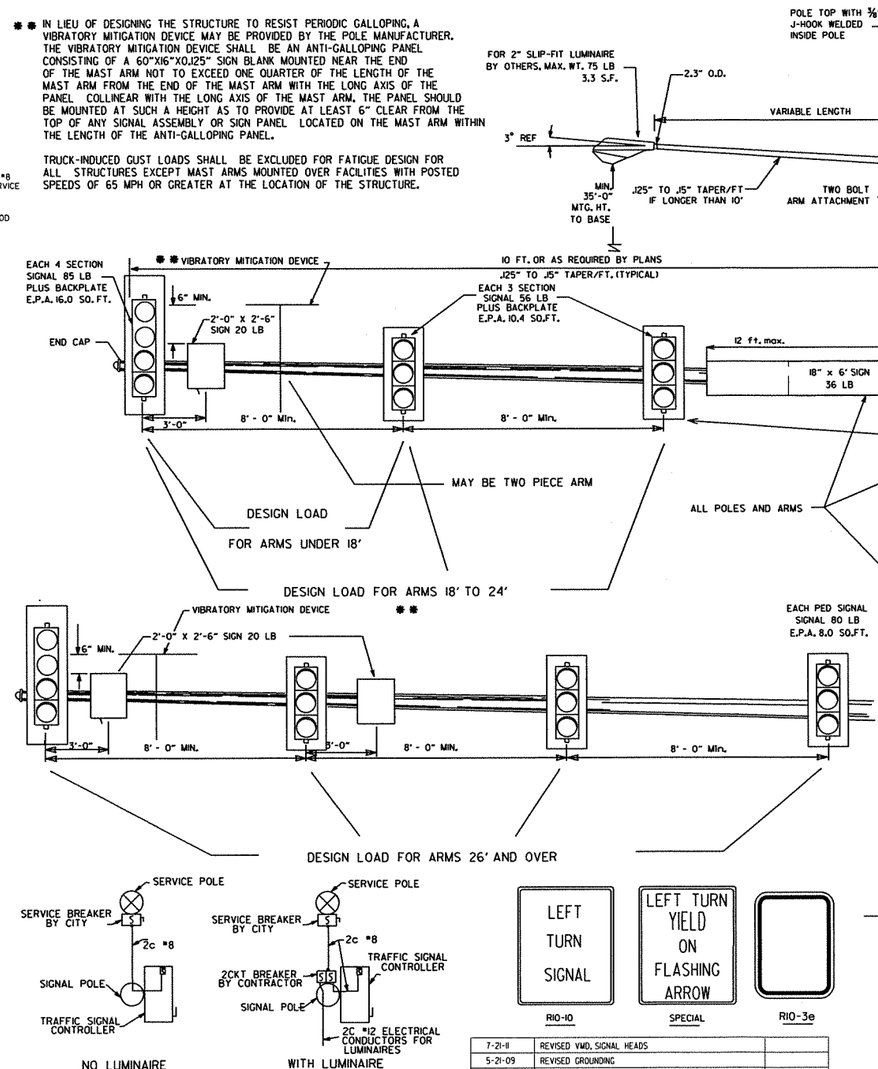
SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER 7605 MICHAEL D. FUGETT 5/14/12

✱ WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS.

✱✱ IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

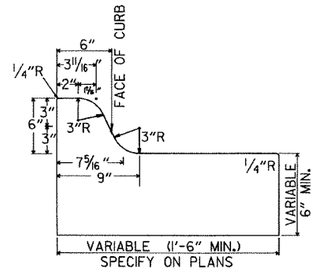
TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.



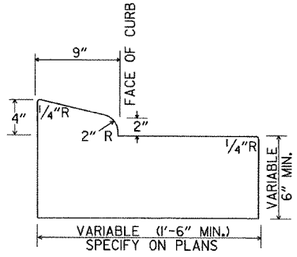
DATE	REVISION	DATE FILM
7-21-11	REVISED VMD, SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-11-04	REV. NOTE 3/AASHTO REQUIREMENTS	
6-11-01	REV. NOTES & POLE MAST ARM SLOPE	
4-11-01	REVISED POLE TAPERS	
4-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
11-22-99	REVISED FOUNDATION DETAILS	
11-17-98	REVISED DETAILS AND NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

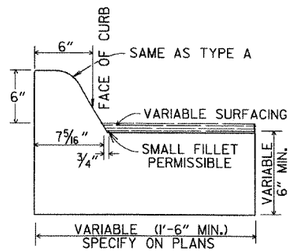
SIGNALIZATION DETAILS
(Steel Pole With Mast Arm)



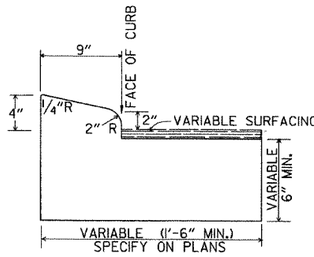
TYPE A



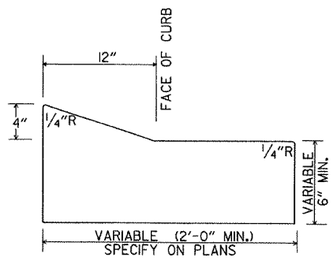
TYPE B-1



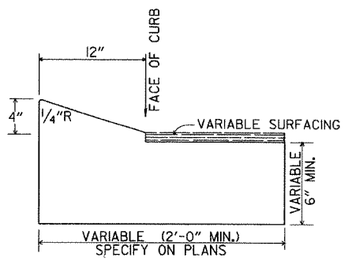
TYPE C



TYPE B-2

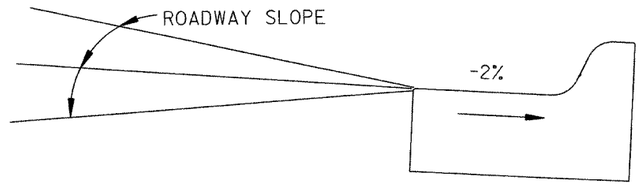


TYPE E-1



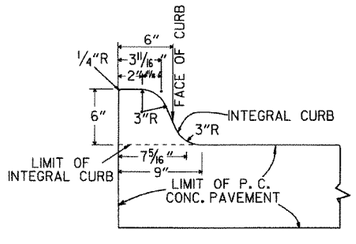
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

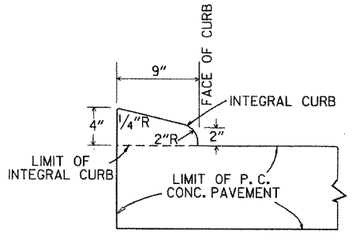


DETAIL OF GUTTER SLOPE

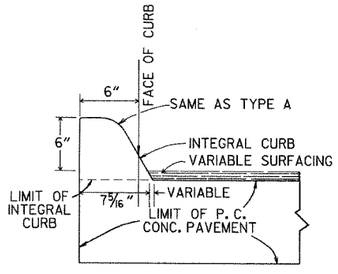
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

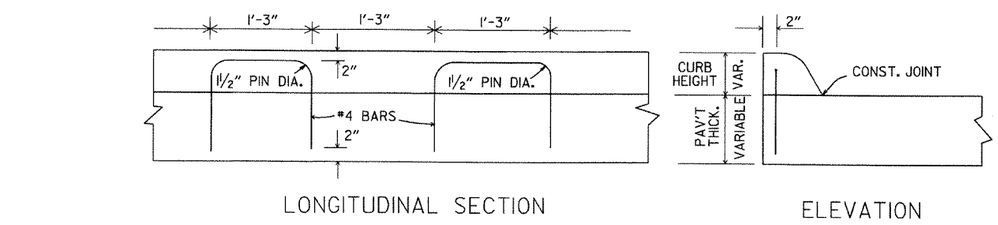


TYPE B



TYPE C

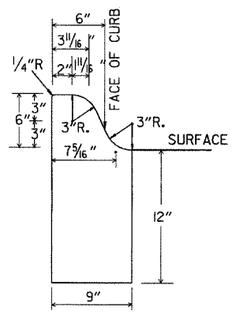
INTEGRAL CURB



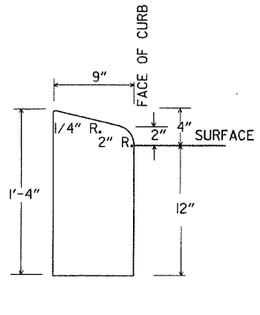
LONGITUDINAL SECTION

ELEVATION

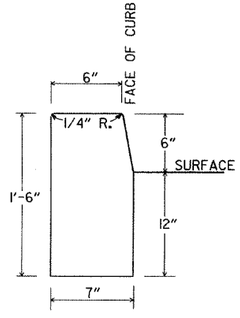
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



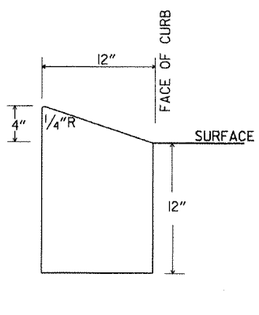
TYPE A



TYPE B

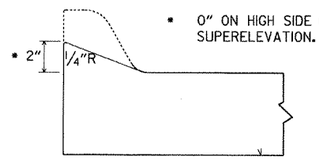


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

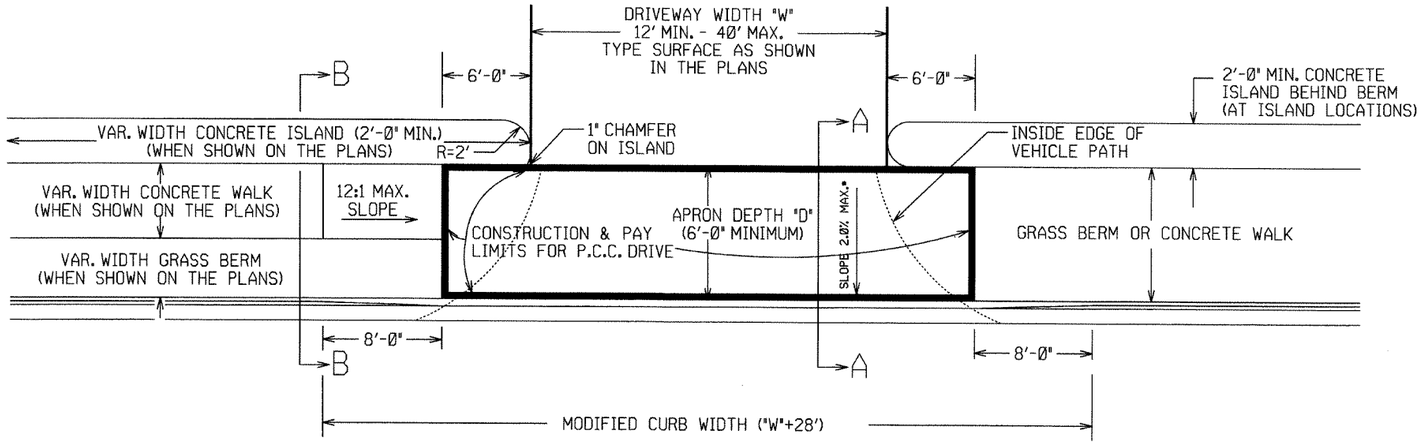
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B 1	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

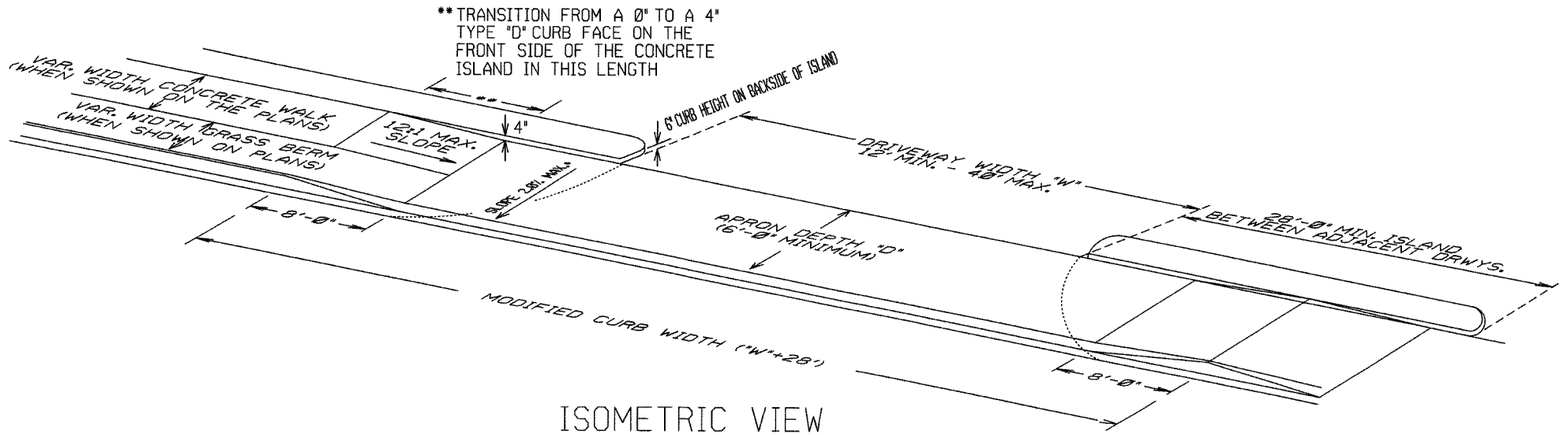
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

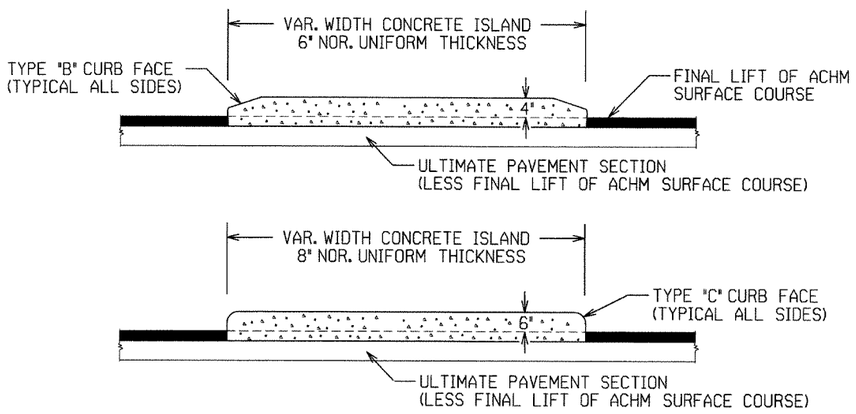
STANDARD DRAWING CG-1



PLAN VIEW

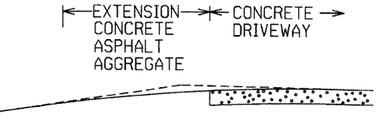


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

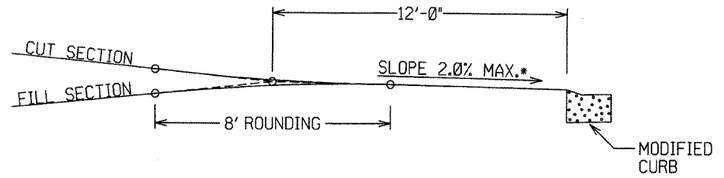
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

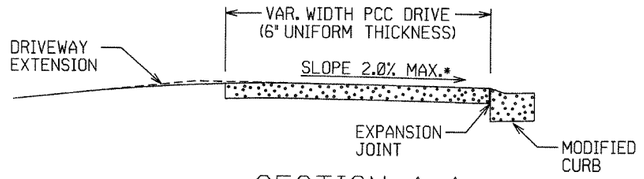
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

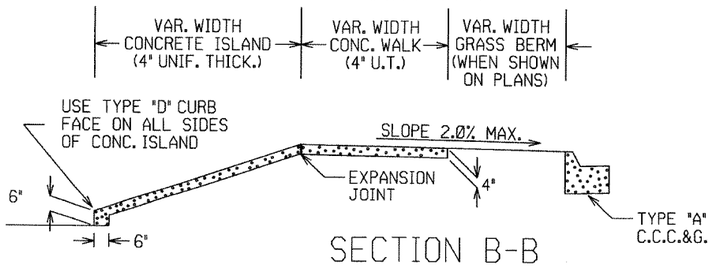


DRIVEWAY VERTICAL ALIGNMENT DETAILS

* NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



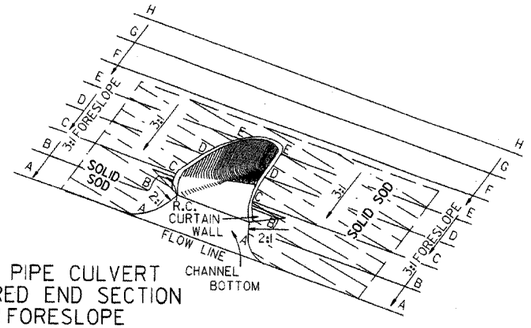
SECTION A-A



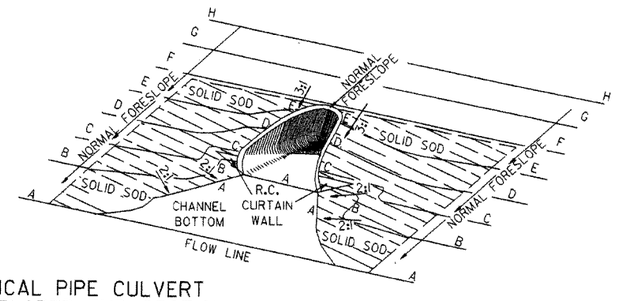
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
11-29-07		ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05		REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02		ADDED ISLAND DETAILS & NOTES
3-30-00		REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98		REVISED NOTES
11-18-98		REDRAWN AND REISSUED

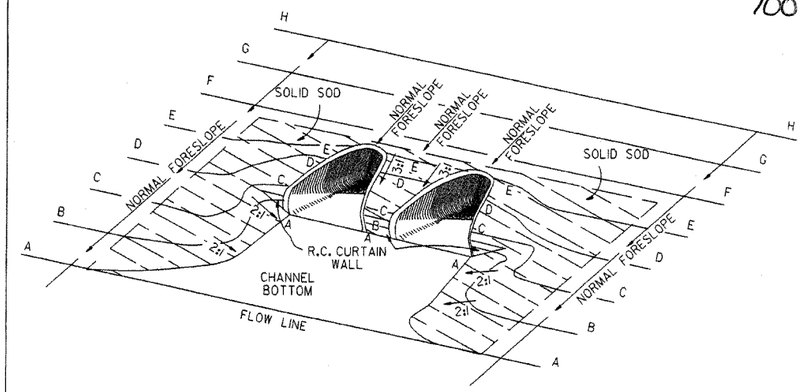
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

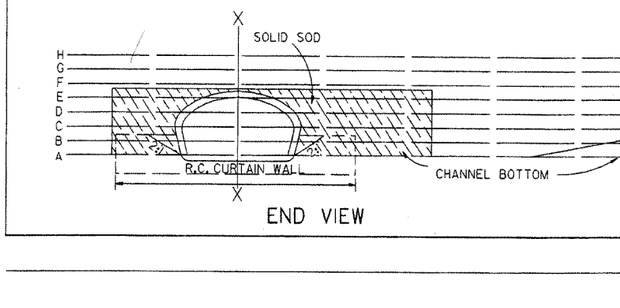
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

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

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	V401 L	NO.	V402 L	NO.	DOUBLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	H403 L	NO.	V401 L	NO.	V402 L	NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

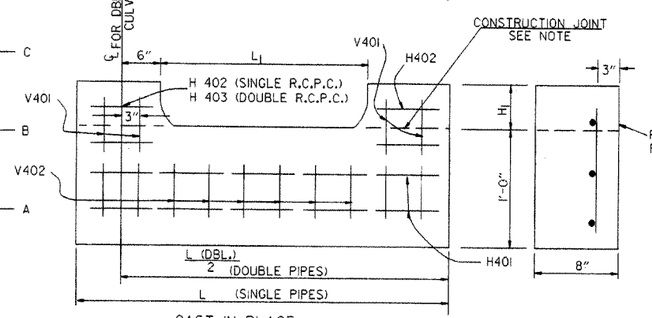
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

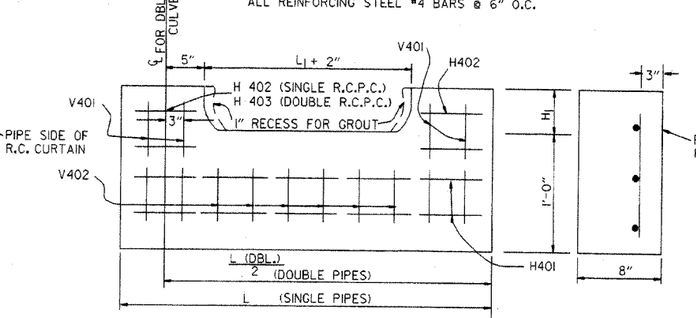
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



PRECAST

NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

R.C. CURTAIN WALL DETAILS

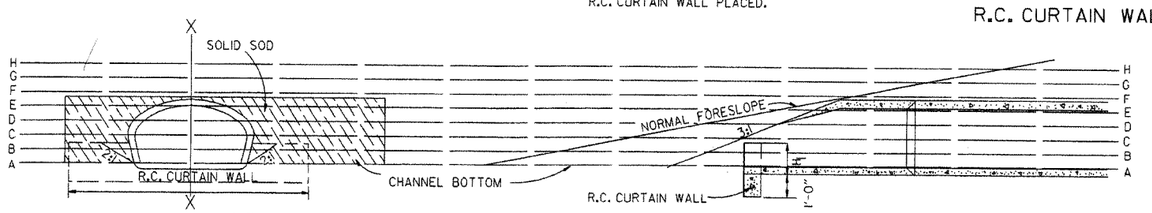
SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C. 3:1	4:1	6:1	DOUBLE R.C.P.C. 3:1	4:1	6:1
	SQ. YDS.			SQ. YDS.		
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	36	57	85	37	59	87
60"	45	69	104	48	65	107
72"	64	92	156	67	95	159

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE: FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	10-18-96
10-12-95	CORRECTED SPELLING	
11- 3-94	ADDED GENERAL NOTE NO. 4	
8-15-91	REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.	
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES	
5-15-80	ADDED PRECAST WALL & GENERAL NOTES	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1

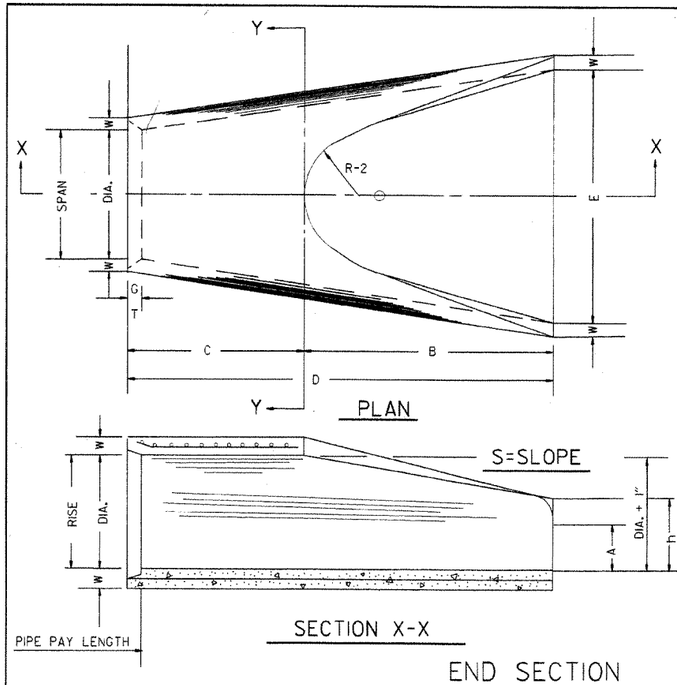
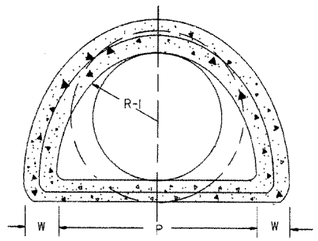
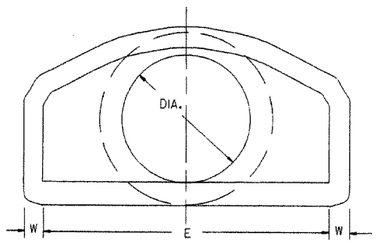


TABLE OF DIMENSIONS

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'-11½"	4'-0"	3:1	25"	33 3/16"	16 13/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-3¾"	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 1/8"	24 5/8"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅛"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 15/16"	24"	5"	13250	4'-6"



SECTION Y-Y



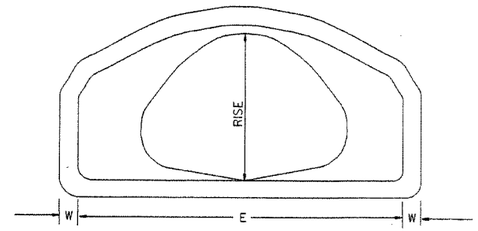
END VIEW

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

ARCH PIPE

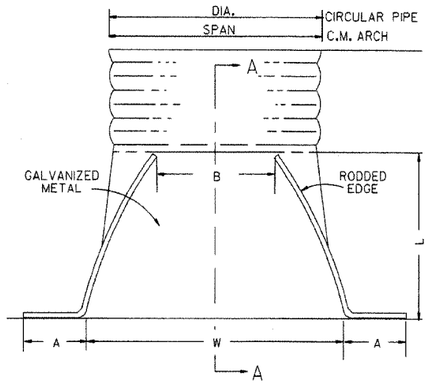
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 11/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-11½"	6'-0"	47 13/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-11½"	6'-6"	54⅜"	22"	3½"	2½:1
42	51⅛	51	31⅝	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70 5/16"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2¼:1

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

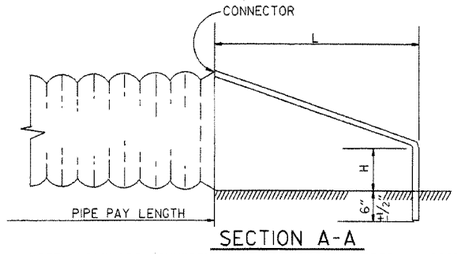


END VIEW
CONCRETE ARCH PIPE

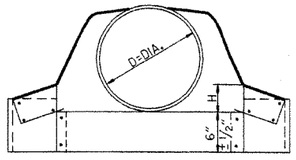
END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS



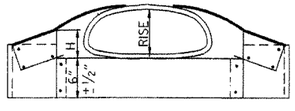
PLAN



SECTION A-A



CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

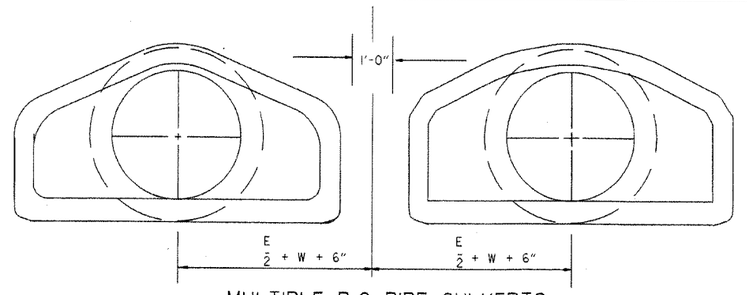
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" +	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	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

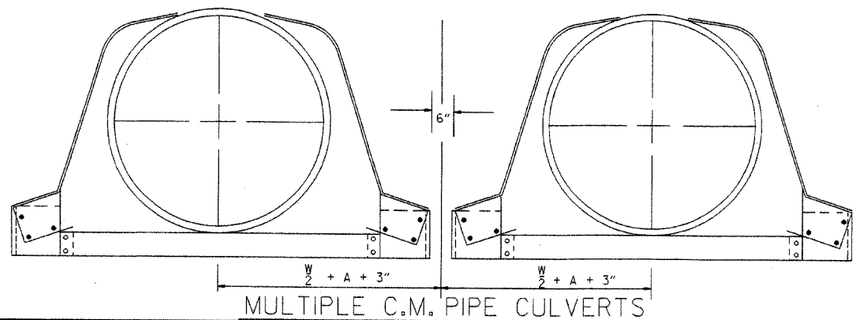
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
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

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

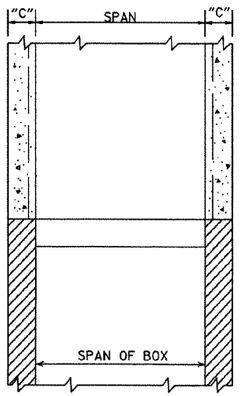
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73
10-2-72	REVISED AND REDRAWN	760-10-2-72

ARKANSAS STATE HIGHWAY COMMISION

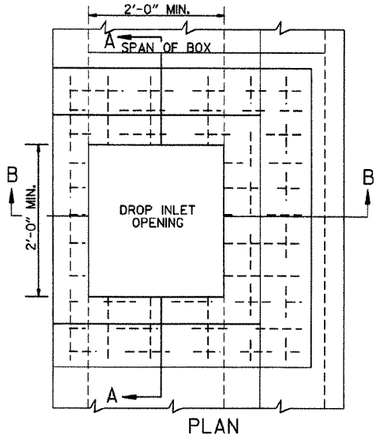
FLARED END SECTION

STANDARD DRAWING FES-2

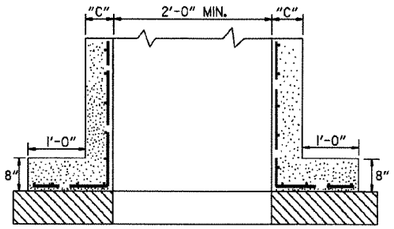
stdfes2.dgn



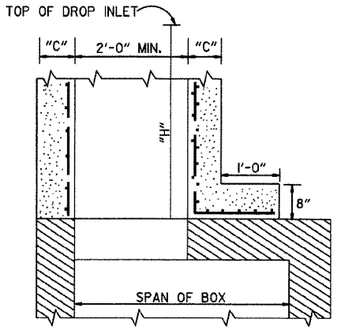
SECTION B-B



PLAN

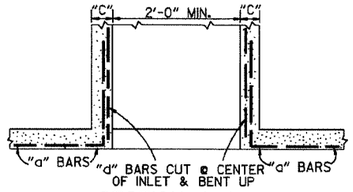


SECTION A-A

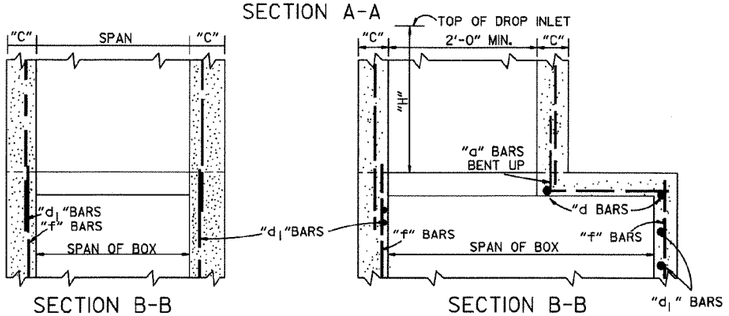


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



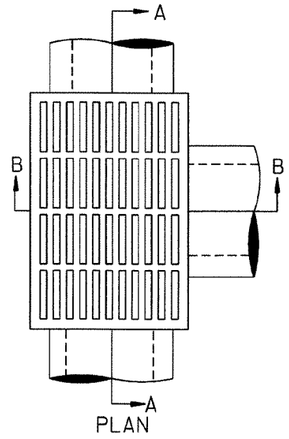
SECTION A-A



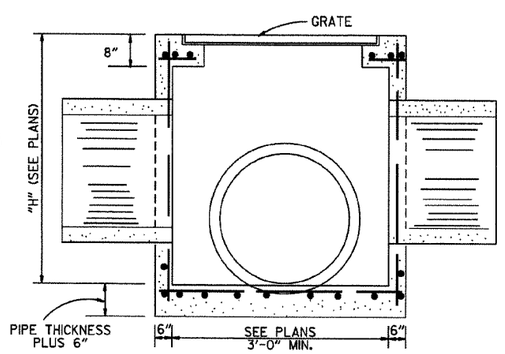
SECTION B-B SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON NEW R.C. BOX CULVERT

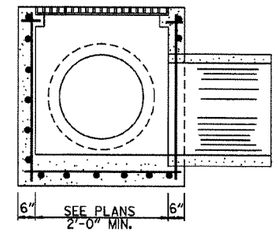
NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.



PLAN



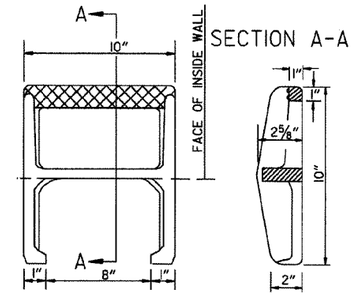
SECTION A-A



SECTION B-B

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

DROP INLET (TYPE E)

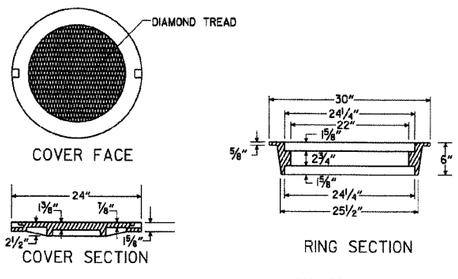


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

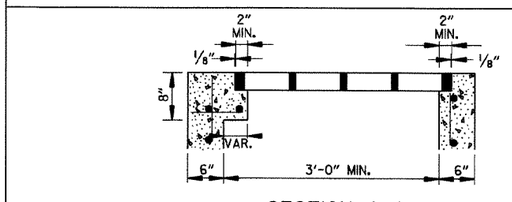
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

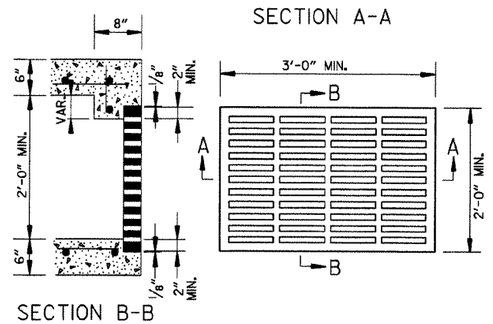


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



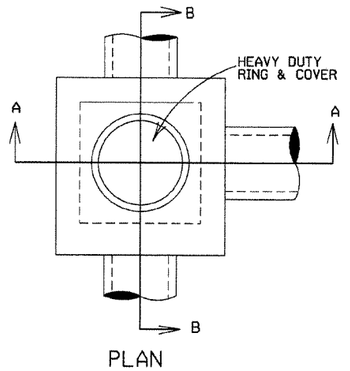
SECTION A-A



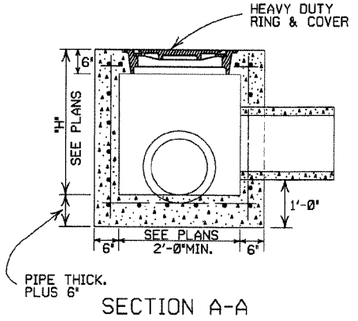
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

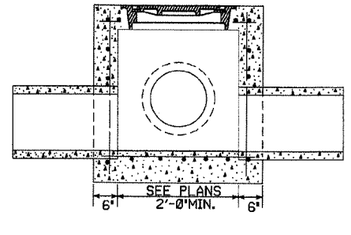


PLAN



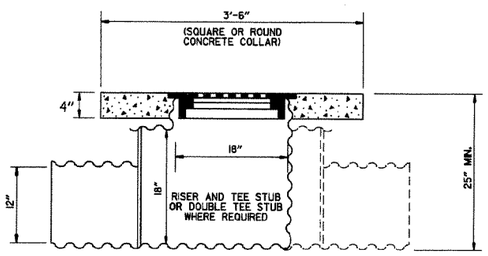
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

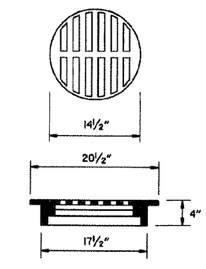


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

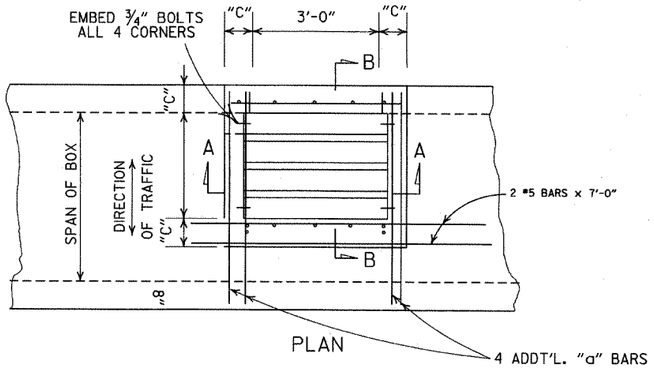
1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL, DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

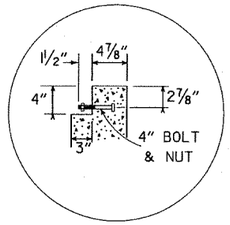
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS & JUNCTION BOXES

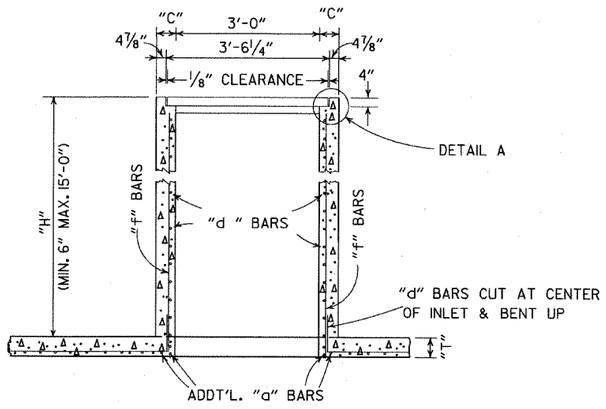
STANDARD DRAWING FPC-9



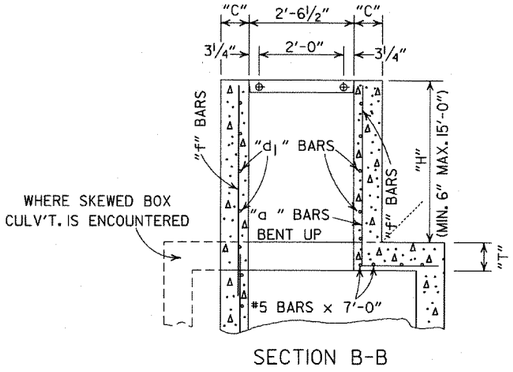
PLAN



DETAIL A



SECTION A-A

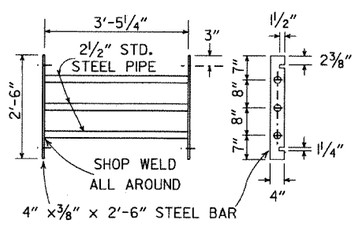


SECTION B-B

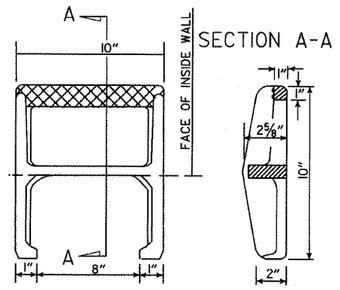
NOTE: ADDT'L.REINF. STEEL TO BE INCLUDED IN UNIT PRICE BID PER TYPE "TM" D.I.

DIMENSIONS & REINF. BARS FOR D.I. TO BE THE SAME AS THOSE SHOWN ON APPLICABLE STD. BARREL DRAWING FOR R.C. BOX CULVERTS.

DROP INLET TYPE "TM" FOR REINFORCED CONC. BOX CULVERTS



GRATE DETAIL



APPROX. WEIGHT = 11LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

GENERAL NOTES:

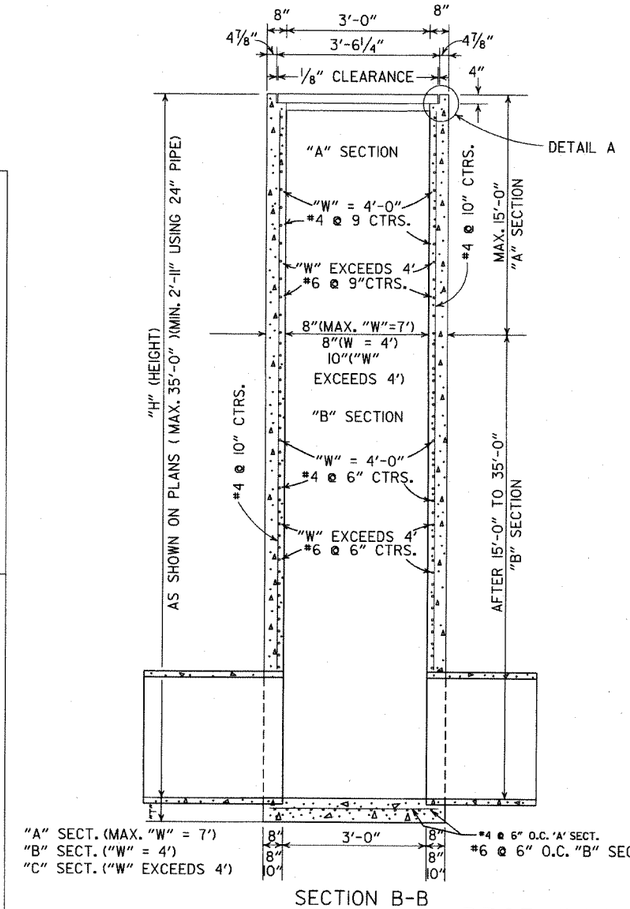
1. STEEL PIPE FOR GRATES AND BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 807. BOLTS SHALL CONFORM TO ONE OF THE FOLLOWING: ASTM A193, GRADE B8 CLASS 1OR 2, ASTM A307 OR AASHTO M 164.
2. STEEL PIPE FOR GRATES SHALL BE "STANDARD WEIGHT" PIPE CONFORMING TO ASTM A53 NATIONAL STANDARD PIPE.
3. BOLTS, NUTS, WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232 OR AASHTO M 298, CLASS 40 OR 50.
4. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
5. ALL #4 AND #5 REINFORCING BARS TO HAVE 1½" COVER. LARGER SIZES TO HAVE 2" COVER.
6. THE COMPLETE PIPE GRATE SHALL BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TABLE OF "W" DIMENSIONS

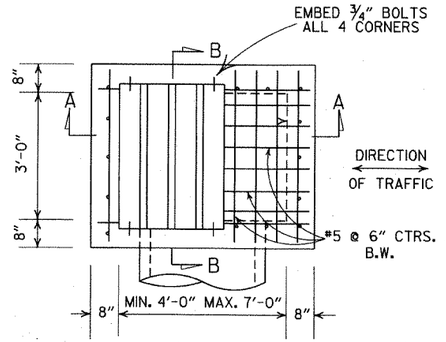
103

I.D. PIPE	SKEW OF CROSS DRAIN		
	STRAIGHT	30°	45°
	"W"	"W"	"W"
24"	4'-0"	4'-0"	4'-0"
30"	4'-0"	4'-0"	4'-5"
36"	4'-0"	4'-3"	5'-3"
42"	4'-3"	4'-11"	6'-1"
48"	4'-10"	5'-7"	6'-11"

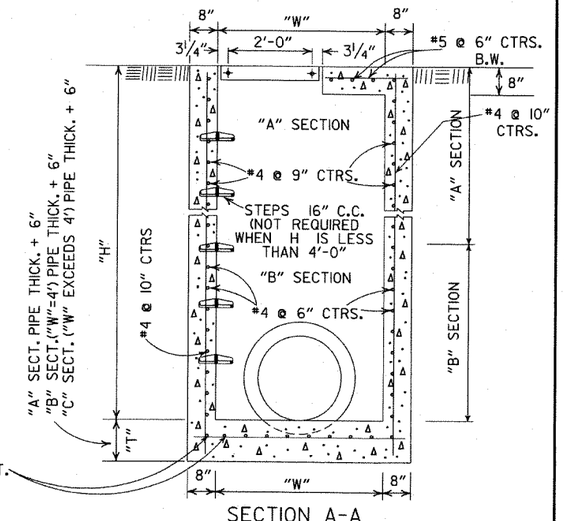
NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



SECTION B-B



PLAN



SECTION A-A

DROP INLET(TYPE RM)

8-22-02	ADDED & REVISED DIMENSION TO SECTION A-A	
1-12-00	CORRECTED DIMENSION ON SECTION B-B	
11-06-97	ADDED DIMENSION TO SECTION A-A	
10-18-96	REVISED ASTM REF. TO AASHTO AND ADDED NOTE TO TABLE OF "W" DIMENSIONS	
10-1-92	ADDED DIRECTION OF TRAFFIC	10-1-92
8-15-91	ADDED NOTE ABOUT PAINTING OF GRATE	8-15-91
11-30-89	ALTERED DETAIL A	11-30-89
7-15-88	REVISED STEP DETAIL,TM & RM D.I. & GRATE DETAIL	719-7-15-88
10-2-72	REVISED AND REDRAWN	542-10-2-72
REVISED		DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

STANDARD DRAWING FPC-9D

4'-0" LENGTH DROP INLET

PIPE SIZE	MIN. WIDTH	HEIGHT 5'-0" CLASS A CONC. CU. YDS.	HEIGHT 5'-0" REINF. STEEL POUNDS	PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC. CU. YDS.	PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL POUNDS
18"	2'-6"	1.77	156	0.28	22
24"	2'-6"	1.79	156	0.28	22
30"	3'-2"	2.39	205	0.30	26
36"	3'-8"	2.63	236	0.32	28
42"	4'-4"	2.95	250	0.34	30
48"	4'-10"	3.21	265	0.36	32

NOTE: QUANTITIES ARE APPROXIMATE AND ARE SHOWN FOR BIDDER INFORMATION ONLY.

DROP INLET EXTENSION

4'-0" CLASS A CONC. CU. YDS.	4'-0" REINF. STEEL POUNDS	8'-0" CLASS A CONC. CU. YDS.	8'-0" REINF. STEEL POUNDS
0.58	38	0.87	72

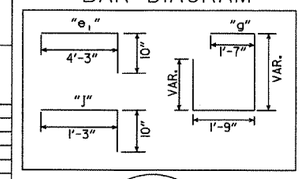
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.

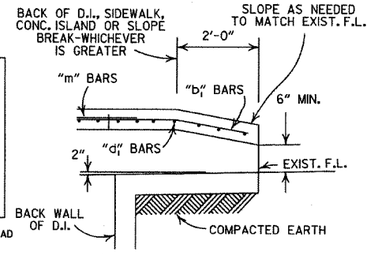
0.04	3		

DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET

INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

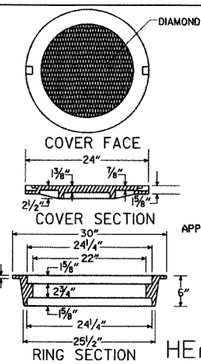
BAR DIAGRAM





BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).

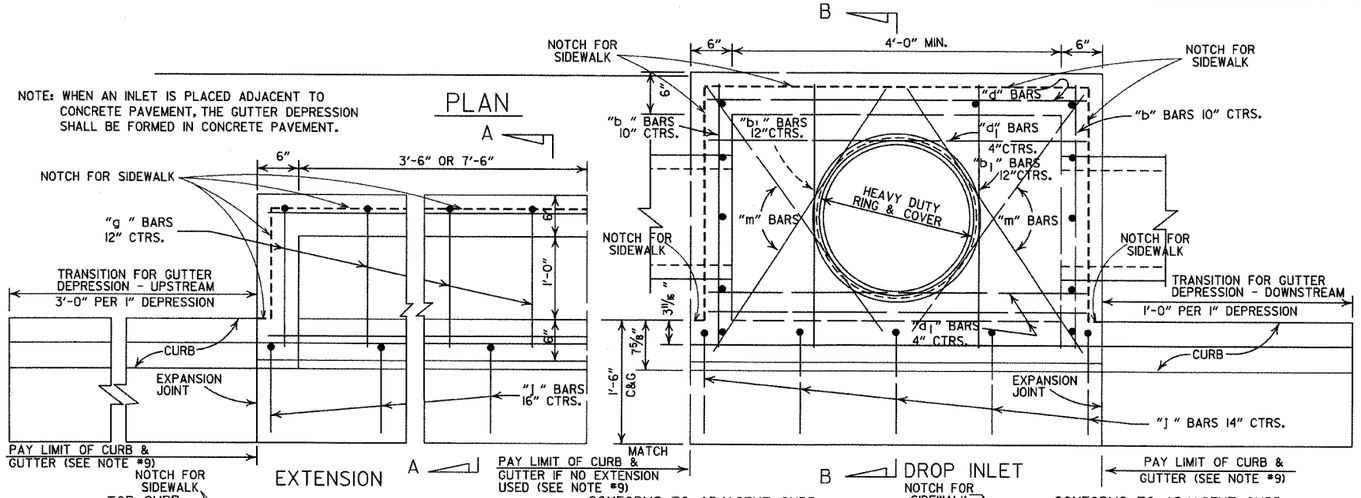


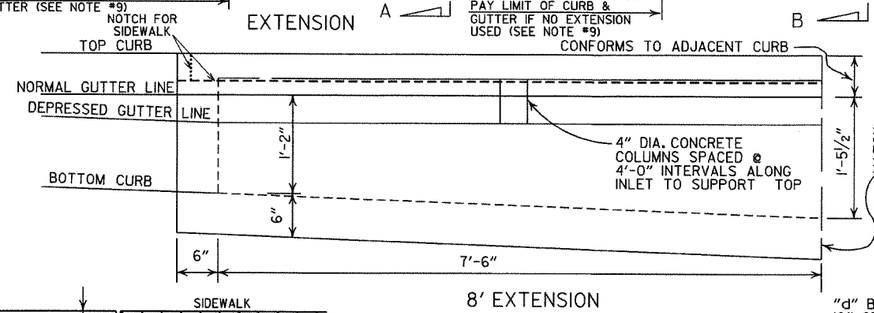
APPROXIMATE TOTAL WEIGHT = 333 LBS.

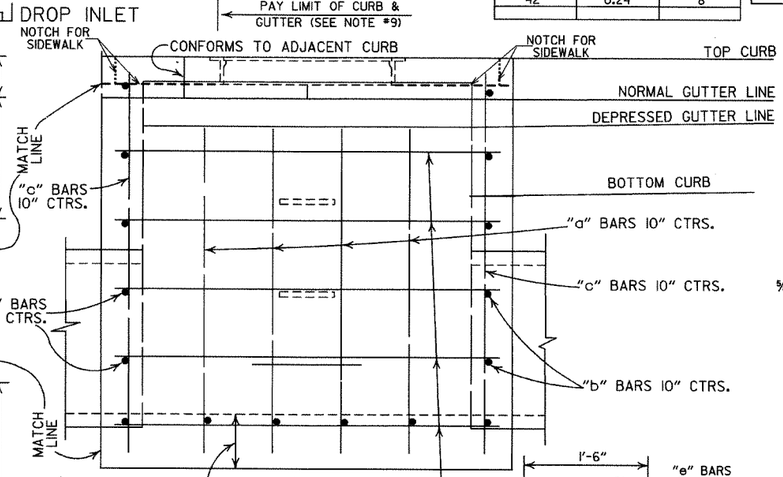
HEAVY DUTY RING & COVER

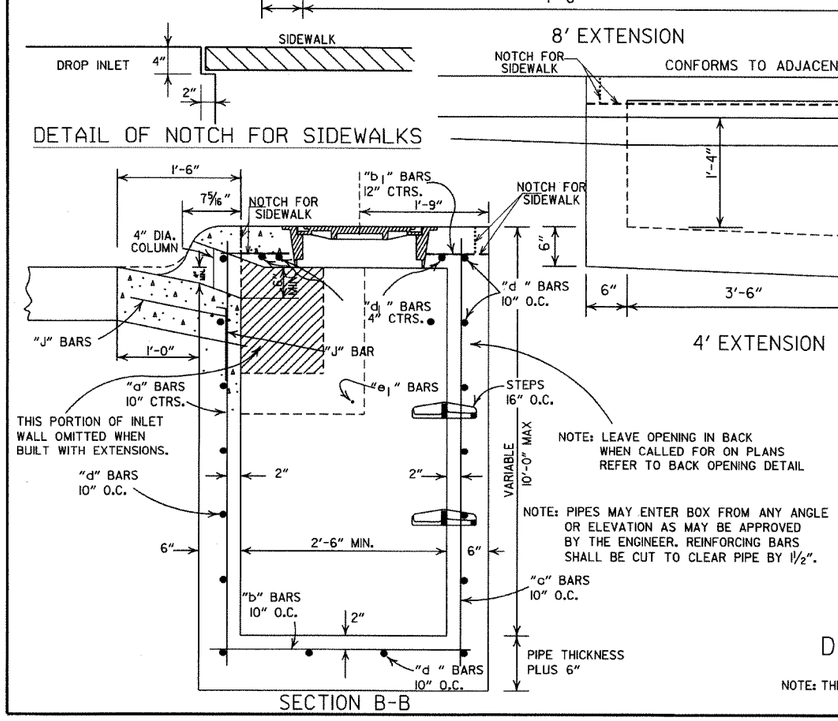
GENERAL NOTES:

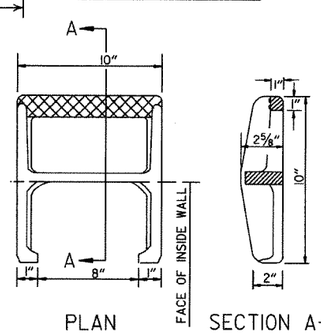
1. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1½" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (F.P.C.-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.



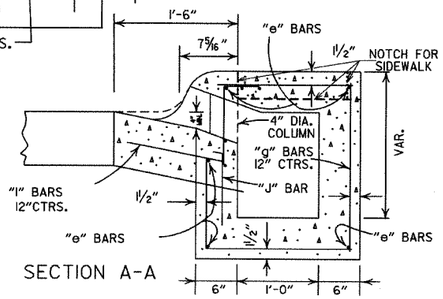








NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.



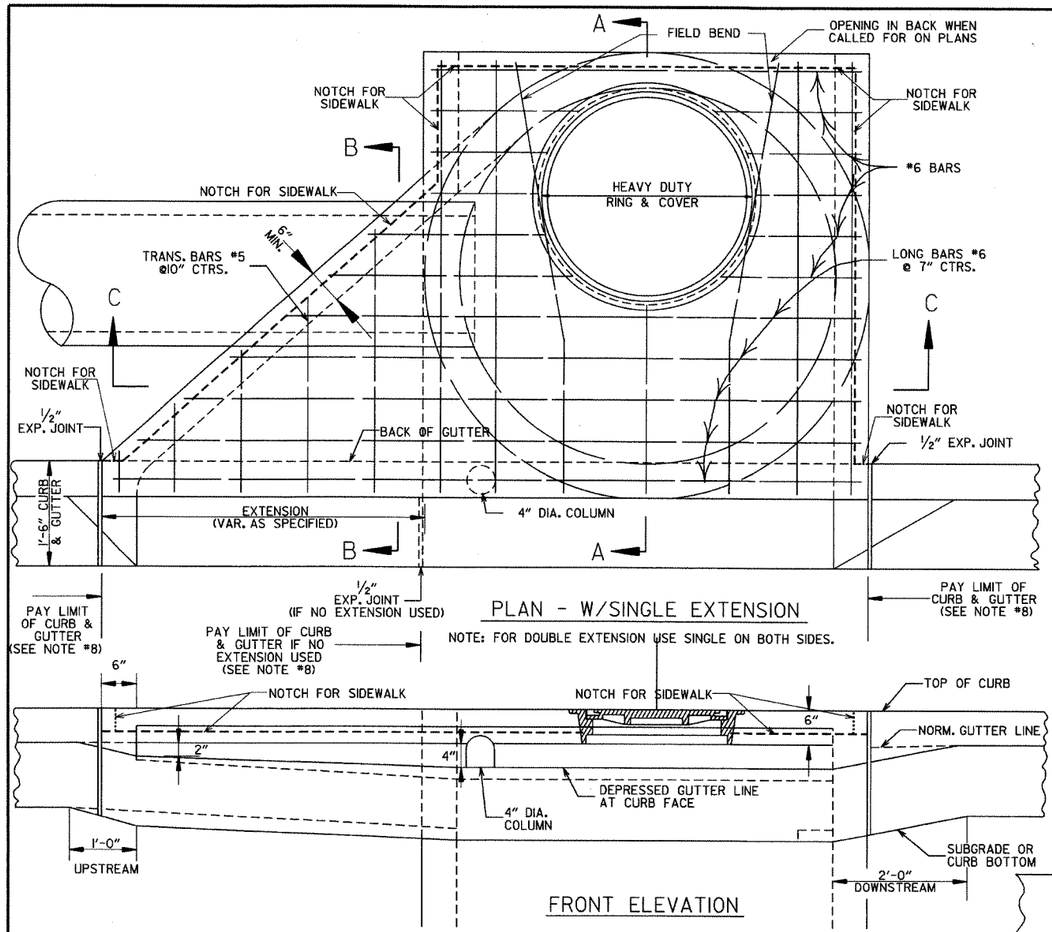
DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER ADDED NOTES 9,10,&11	
10-18-96	CORRECTED SPELLING	
4-26-96	ADDED NOTE 8 & REVISED (4'X8') EXTENSION TITLES	10-18-96
4-1-93	REVISED BACK OPENING & NOTE	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

(TYPE C)

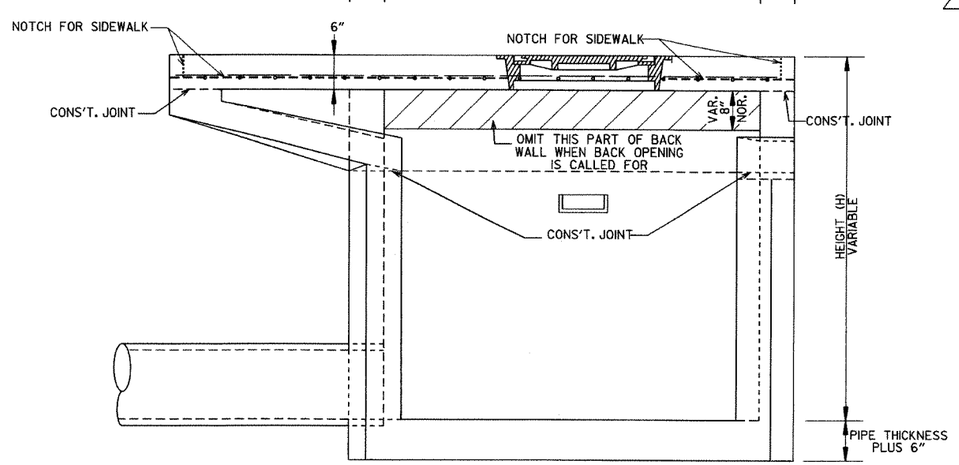
STANDARD DRAWING FPC-9E



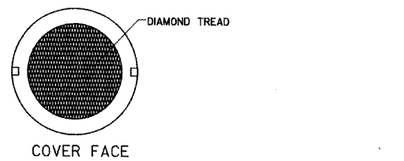
PLAN - W/SINGLE EXTENSION

NOTE: FOR DOUBLE EXTENSION USE SINGLE ON BOTH SIDES.

FRONT ELEVATION



SECTION C-C



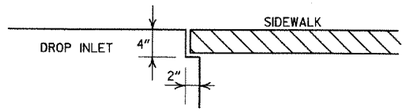
COVER SECTION

RING SECTION

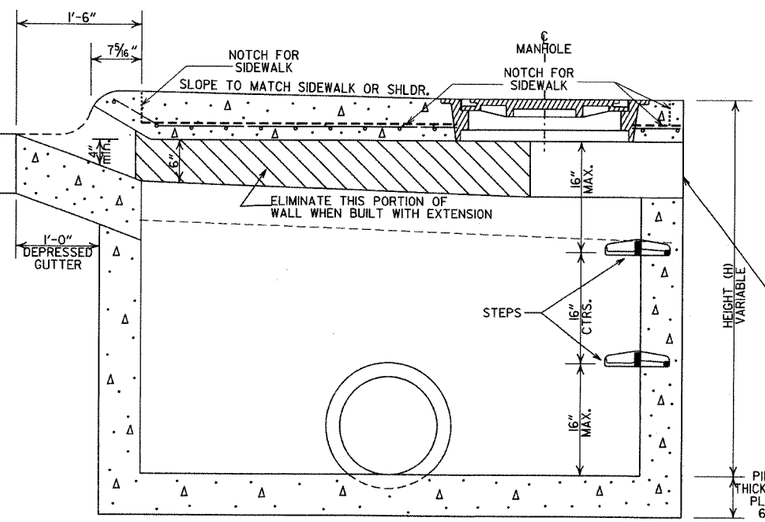
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

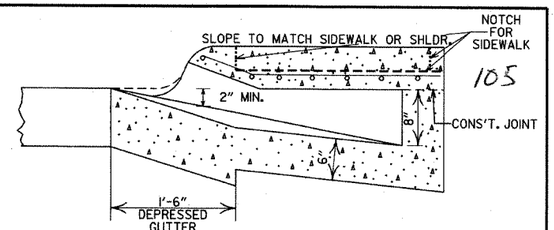
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.



DETAIL OF NOTCH FOR SIDEWALKS

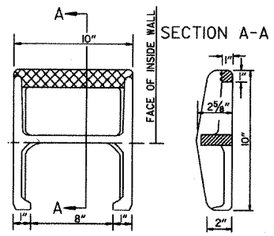


SECTION A-A



105

SECTION B-B

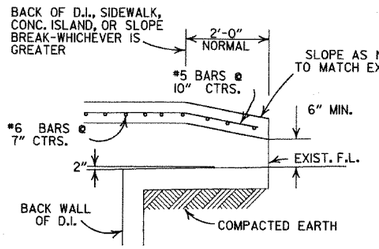


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET



BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE MO).

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OR AS DIRECTED BY THE ENGINEER.
3. ALL REINFORCING BARS SHALL BE GRADE 60 AND HAVE MIN. 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. 4" DIA. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLET AND EXTENSION TO SUPPORT TOP.
6. BASE AND INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE GUTTER.
8. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
9. PIPES MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.
10. APPROPRIATE SIZE TYPE C DROP INLETS MAY BE SUBSTITUTED FOR TYPE MO DROP INLETS AS APPROVED BY THE ENGINEER. PAYMENT TO BE AS DROP INLET (TYPE MO).
11. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
12. 4"×2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

LEAVE OPENING IN BACK WHEN CALLED FOR ON PLANS REFER TO BACK OPENING DETAIL

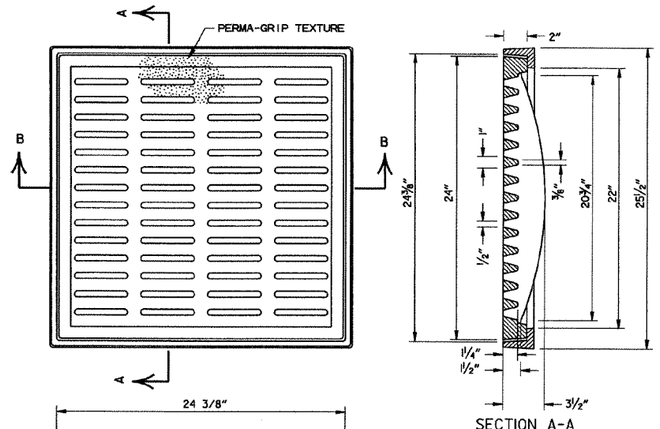
DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS	
		CAST IN PLACE	PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

DATE	REVISIONS	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE 11 ADJ. OPENING DIMENSION	
10-12-95	CORRECTED *6 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
8-2-95	TYPE S TO MO (OPEN BACK DETAIL)	
11-1-93	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN DETAIL & NOTE	4-1-93
8-15-91	REVISED NOTES 1,12 & ADDED BK.OPEN DETAIL	8-15-91
11-30-89	ADDED NOTE NO.12	11-30-89
5-23-89	ADDED NOTE 8 & MINIMUM WALL THICKNESS	5(3-5-23-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	6,39-7-15-88
11-14-87	MODIFIED WALL THICKNESS	7&1-11-14-87
6-12-87	ISSUED	4-6-12-87

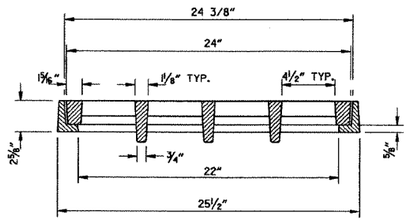
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M



SECTION A-A

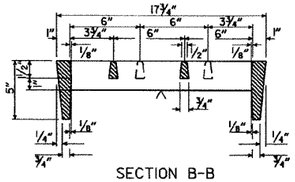


SECTION B-B

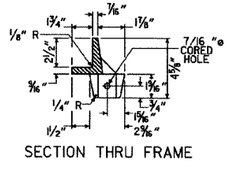
DETAILS OF PEDESTRIAN GRATE AND FRAME

GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

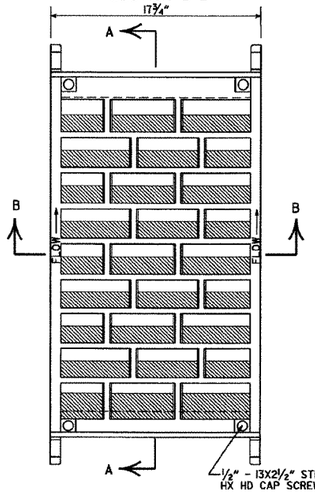
1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE 1/4" OPENINGS ARE PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL.
2. THE PEDESTRIAN GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
3. THE GRATE AND FRAME SHALL NOT BE PAINTED.
4. THE GRATE AND FRAME SHALL BE INSTALLED IN THE DROP INLET IN THE ASSEMBLED POSITION.
5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211 LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.

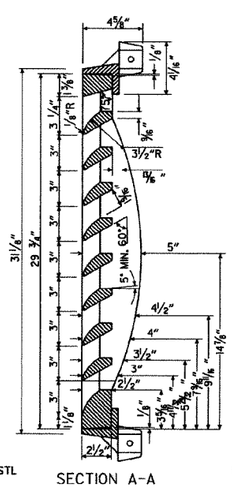


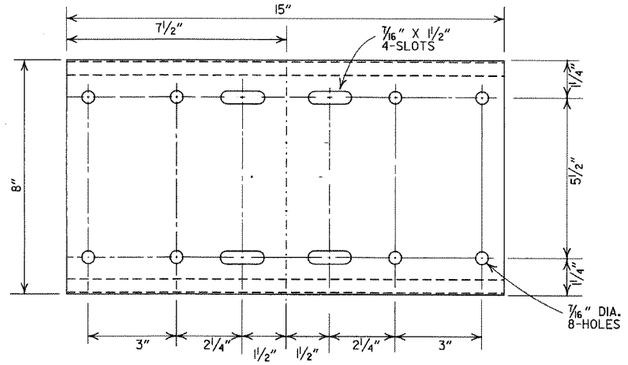
SECTION B-B



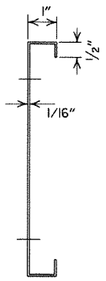
SECTION THRU FRAME

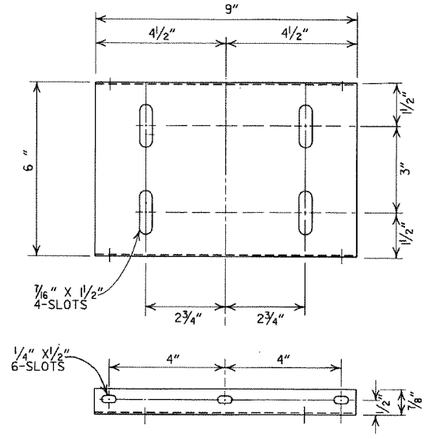



4⅝"
⅛"
4⅛"
1⅜"
3 ¼"
⅛" R
3"
3"
3"

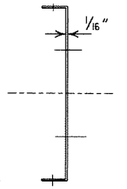


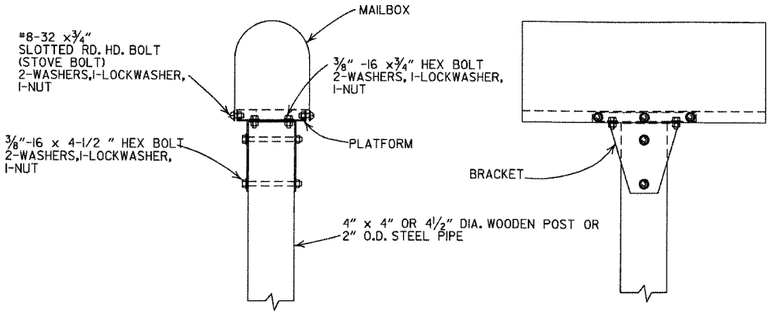
SHELF



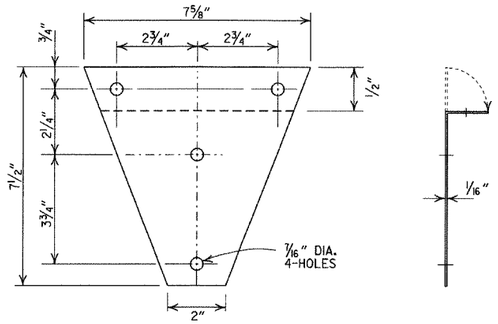


PLATFORM





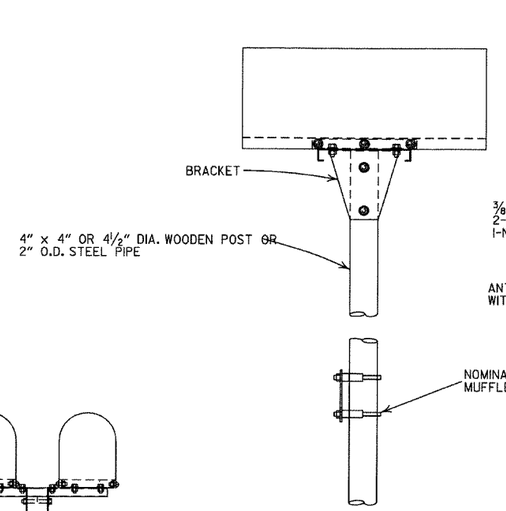
SINGLE INSTALLATION



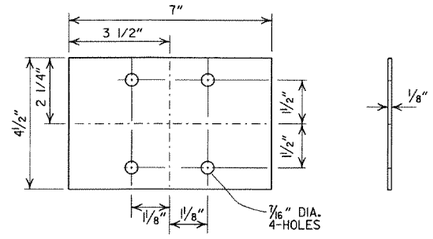
BRACKET

GENERAL NOTES

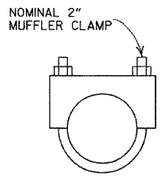
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X3½" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



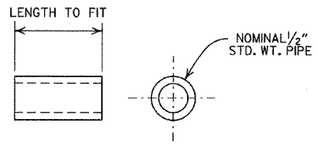
DOUBLE INSTALLATION



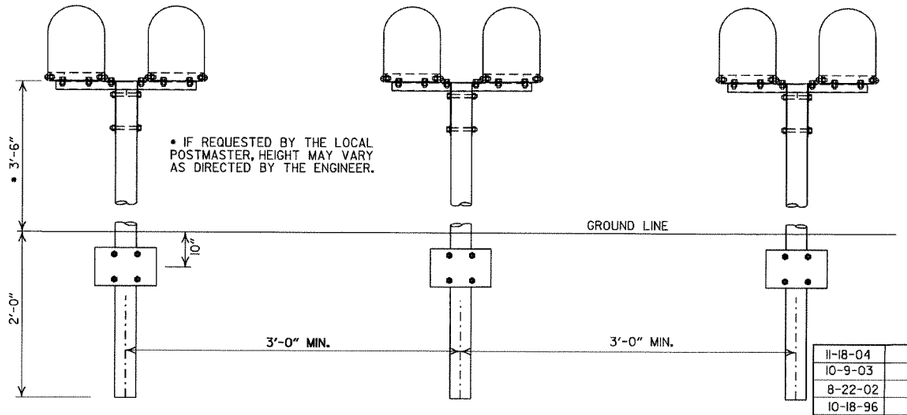
ANTI-TWIST PLATE



CLAMP



SPACER



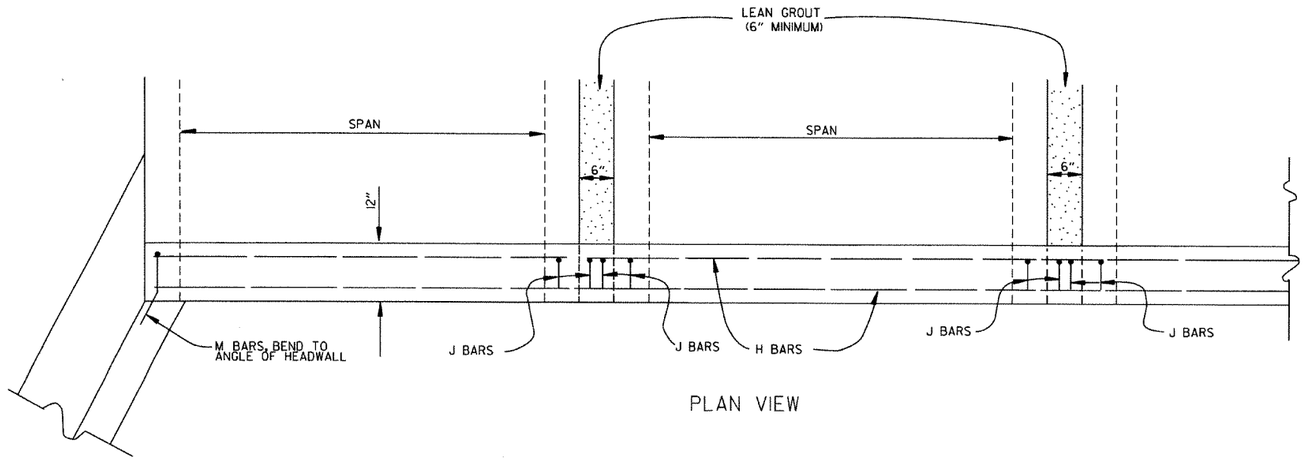
SPACING FOR MULTIPLE POST INSTALLATION

DATE	FILMED	REVISION
11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	20-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

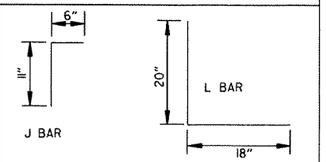
STANDARD DRAWING MB-1



PLAN VIEW

BAR LIST

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING. STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

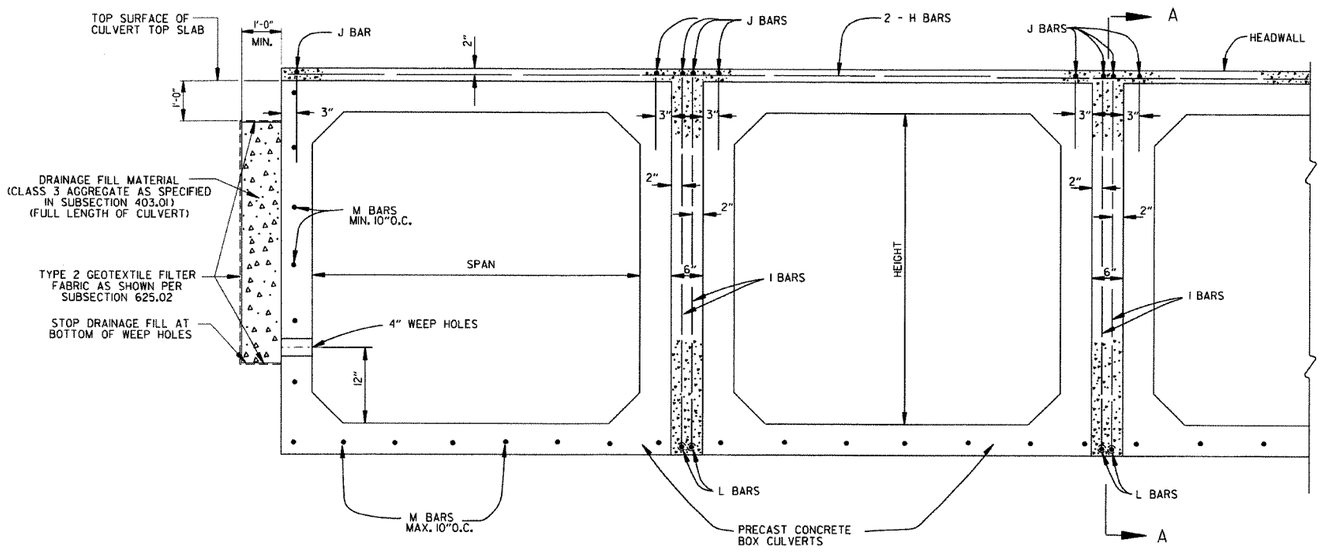
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

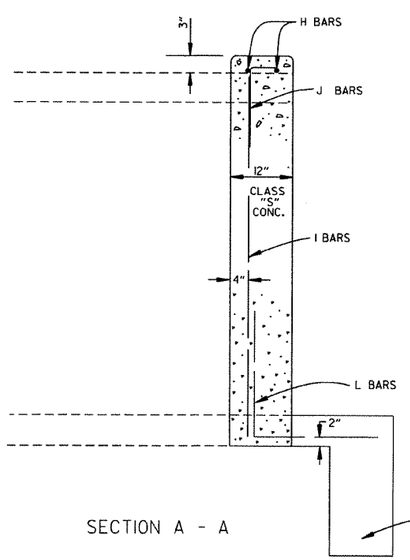
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
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.

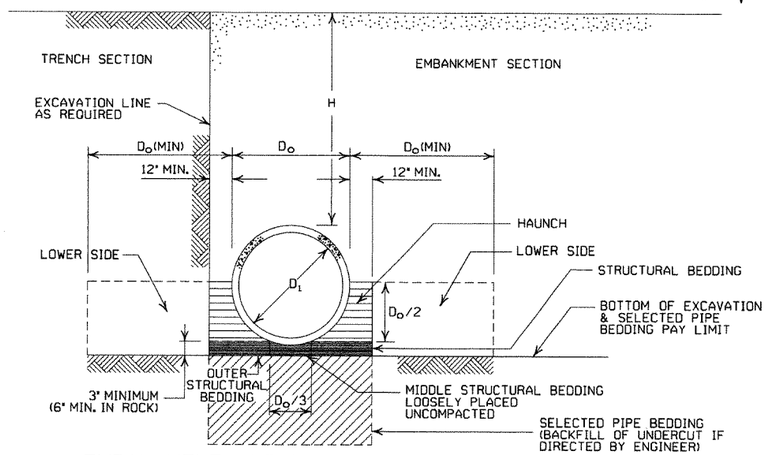
- LEGEND -

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.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

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

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

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

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

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

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

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

DATE	REVISION	DATE FILMED
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)	①MINUMUM 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
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					
				INSTALLATION 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

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.

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

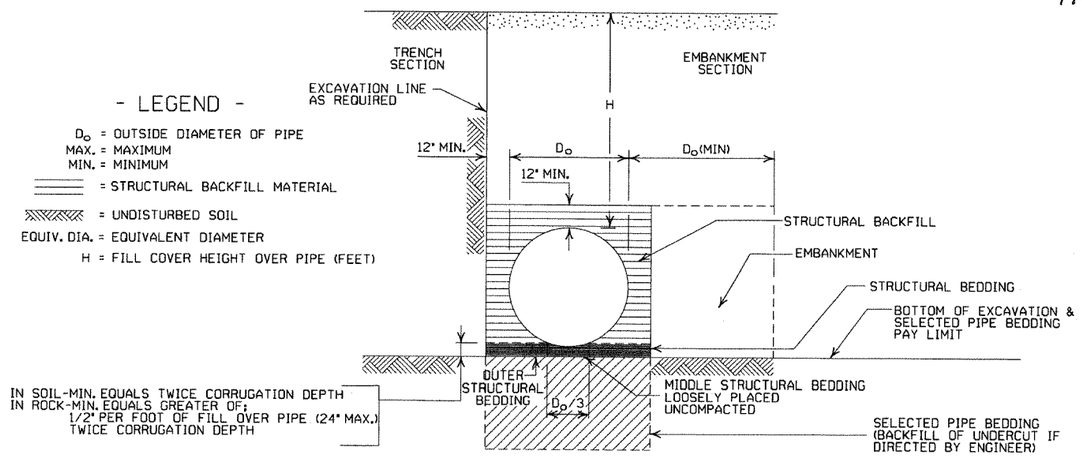
③ SM-3 WILL NOT BE ALLOWED.

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 (2003 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."

DATE	REVISION	DATE FILMED
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 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET) "H" < 10'-0"	TRENCH WIDTH (FEET) "H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

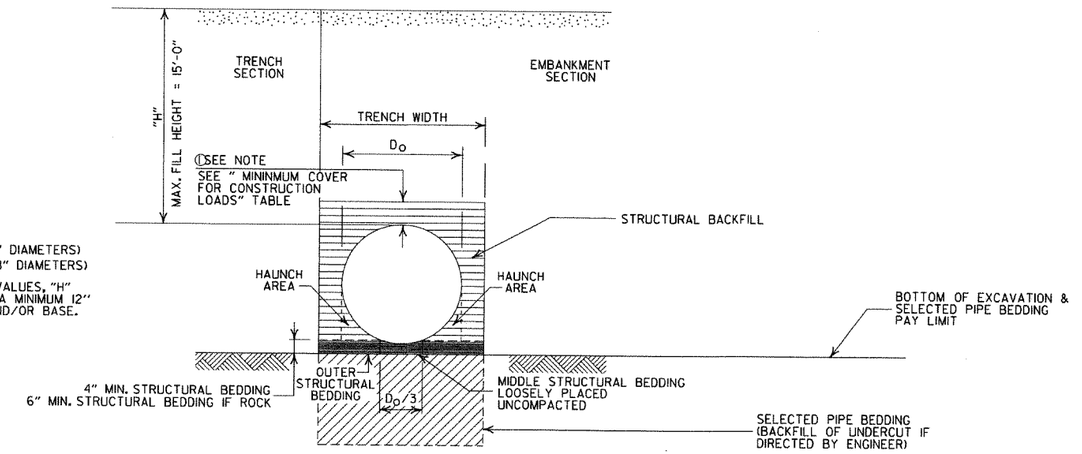
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS 18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
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 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

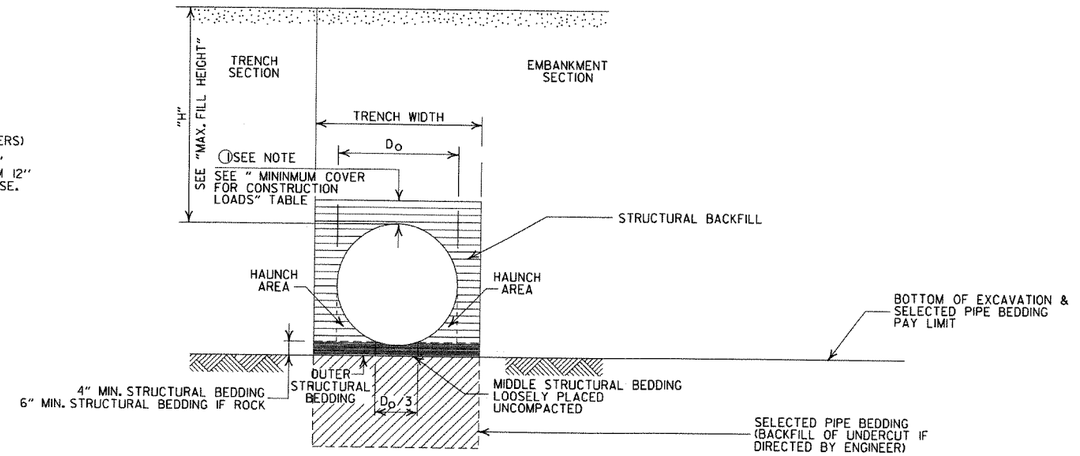
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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, 2003 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

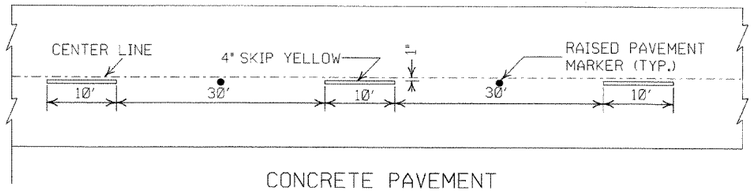
= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

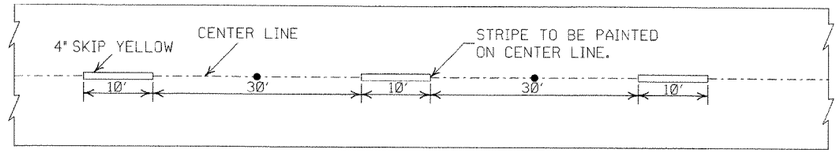
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

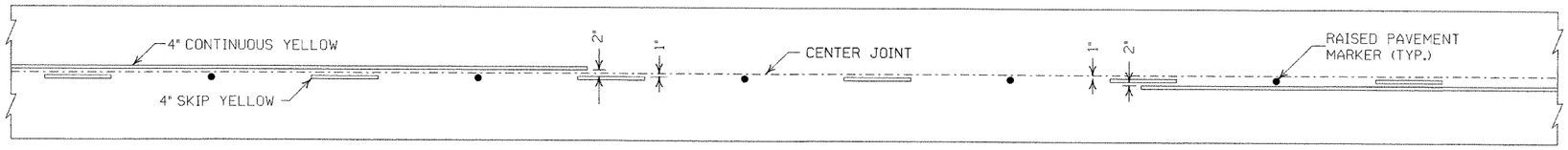


CONCRETE PAVEMENT

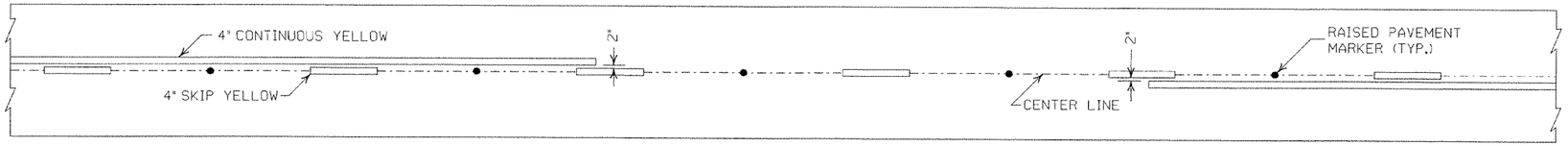


ASPHALT PAVEMENT

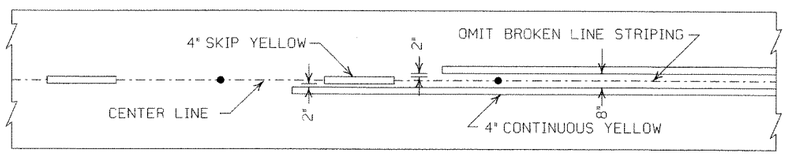
BROKEN LINE STRIPING



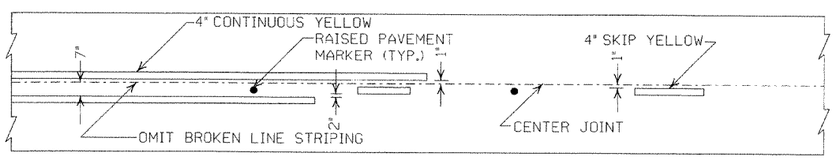
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

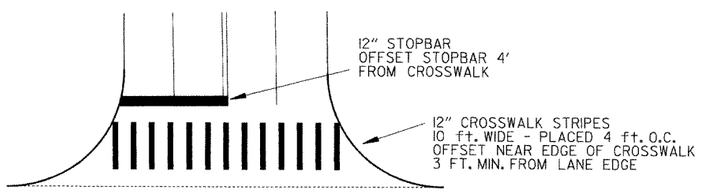


ASPHALT PAVEMENT



CONCRETE PAVEMENT

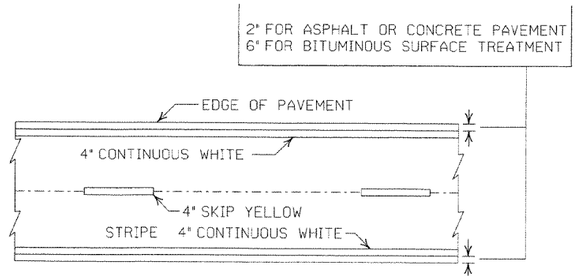
STRIPING AT ADJACENT NO PASSING LANES



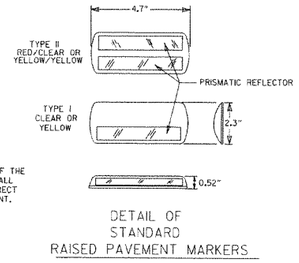
CROSSWALK AND STOPBAR DETAILS

NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.'
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.



PAVEMENT EDGE LINE MARKING



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

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:

DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

DATE	REVISION	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

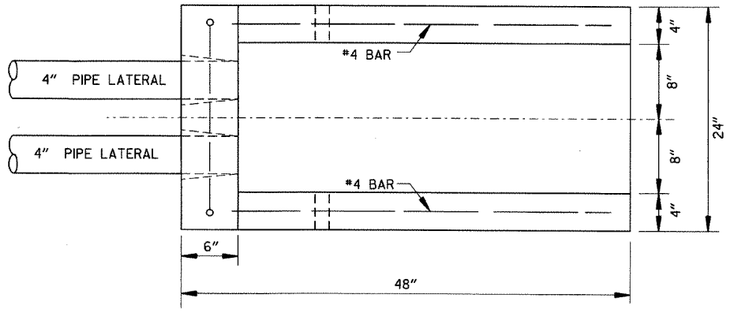
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

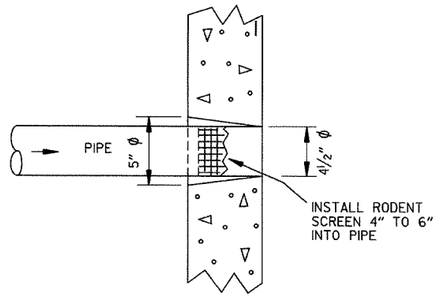
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

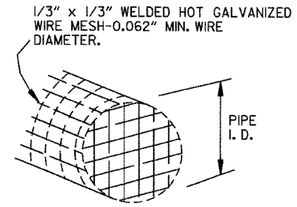
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



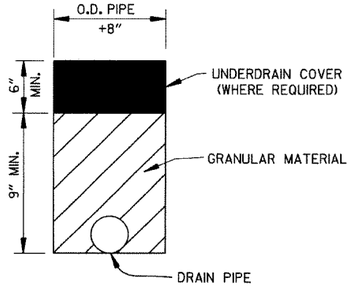
PLAN VIEW

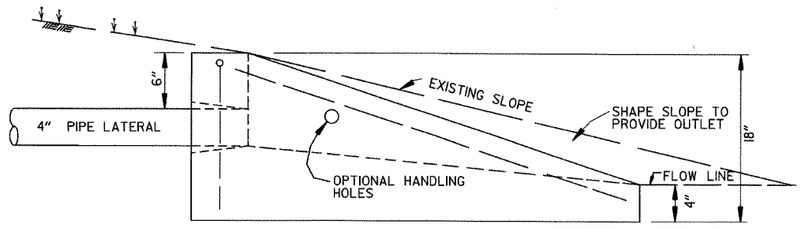


DETAIL OF HOLE FOR 4" PIPE

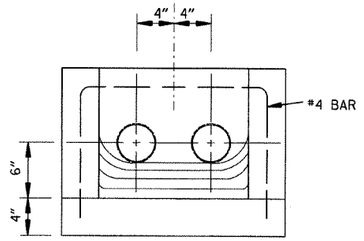


DETAIL OF RODENT SCREEN

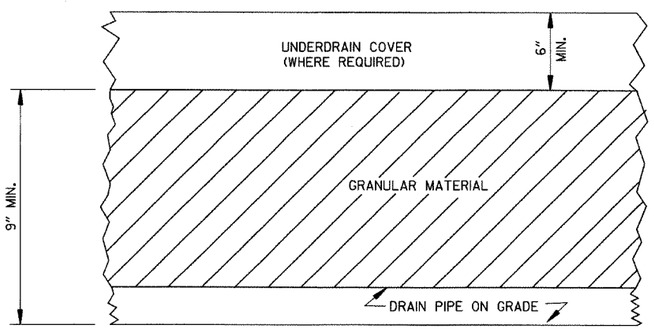




SIDE VIEW

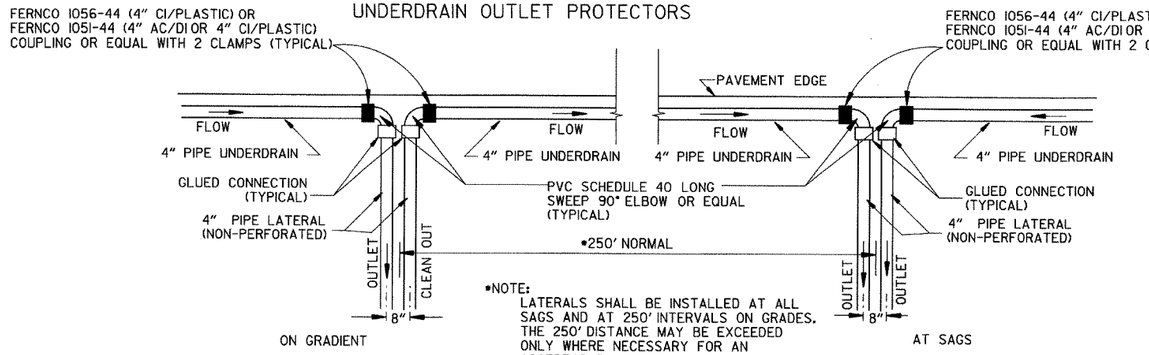


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

DATE	REVISION	DATE FILMED
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

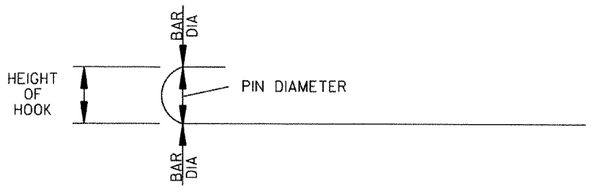
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

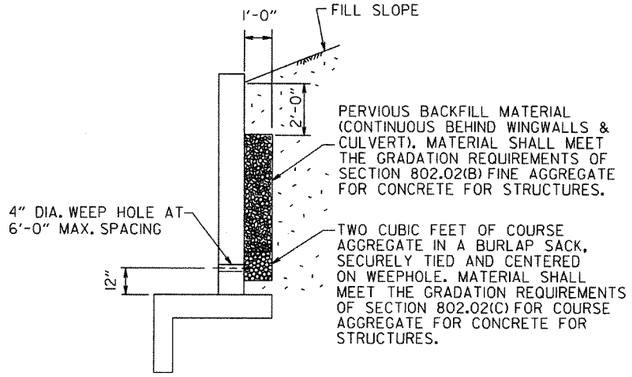
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

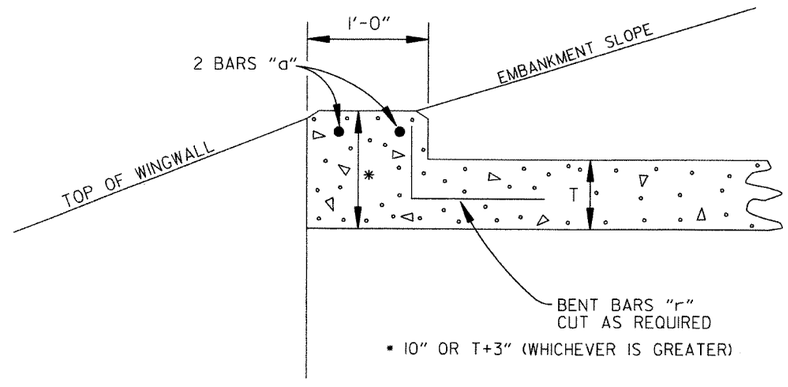
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



* 10" OR T+3" (WHICHEVER IS GREATER)

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.

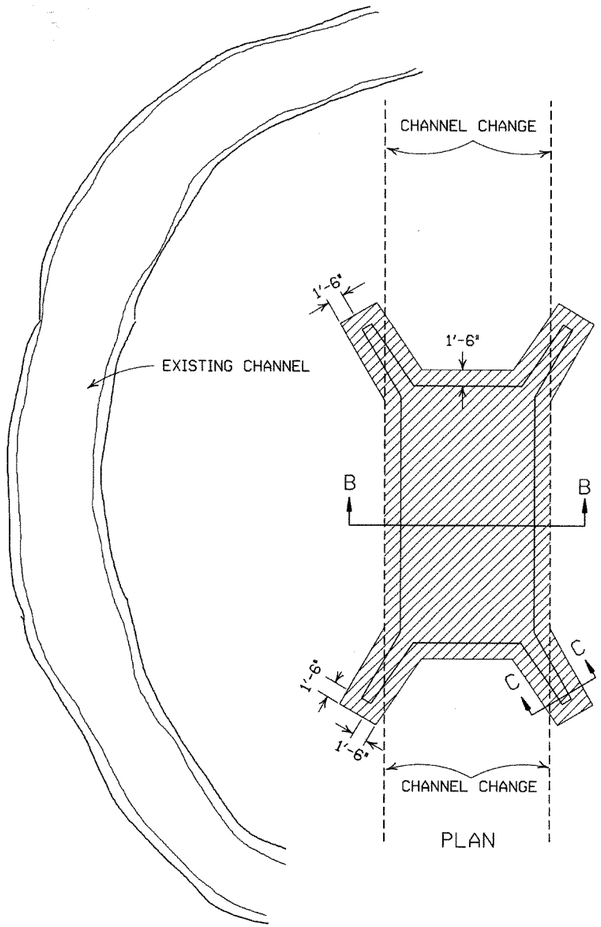
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
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

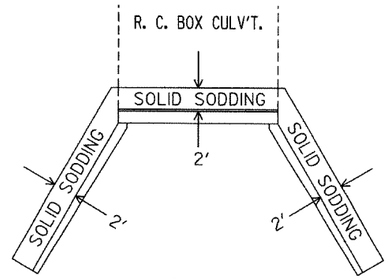
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

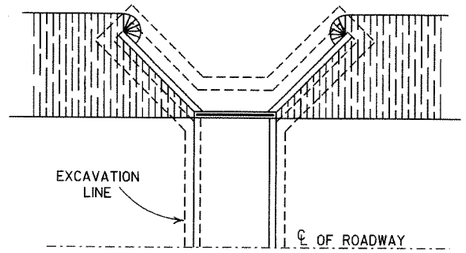
SOLID SODDING



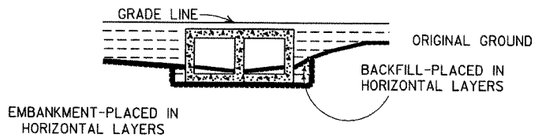
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

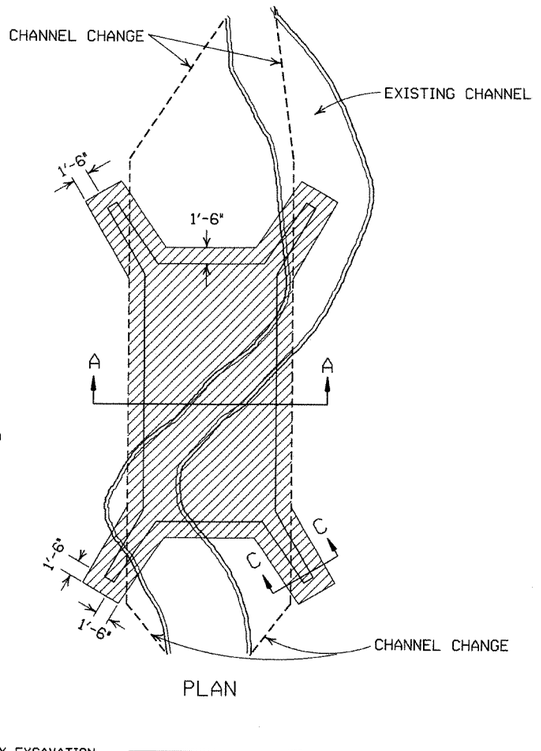


PLAN

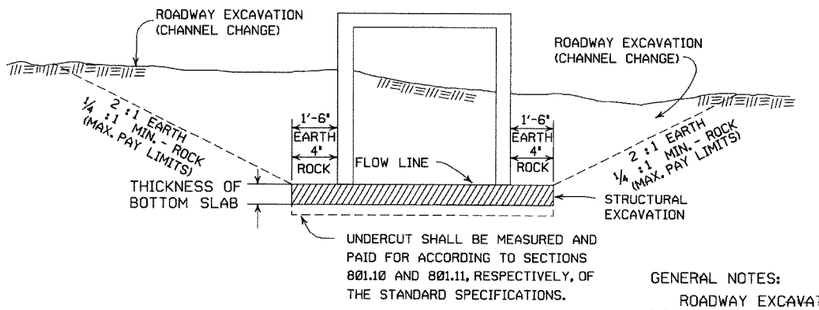


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

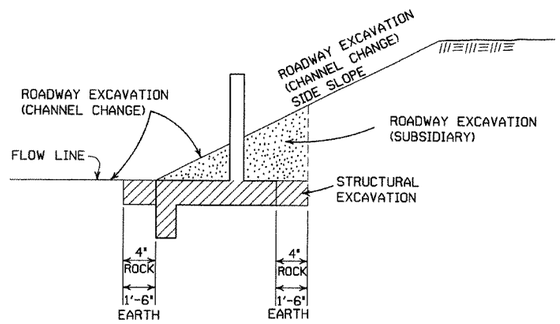


PLAN

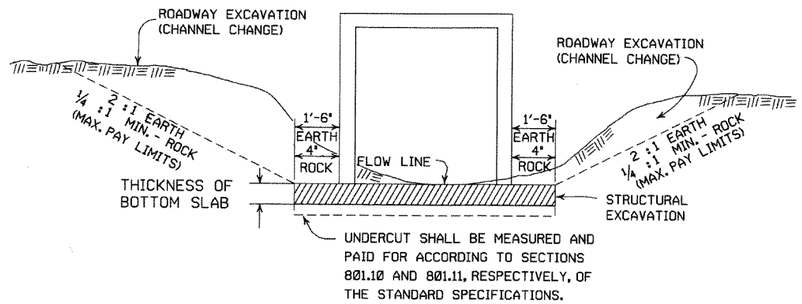


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

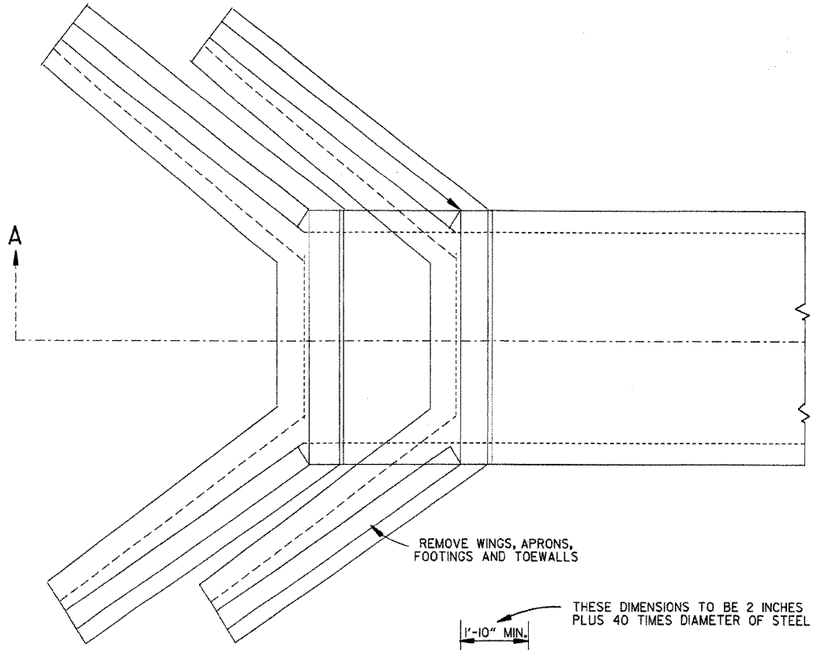
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

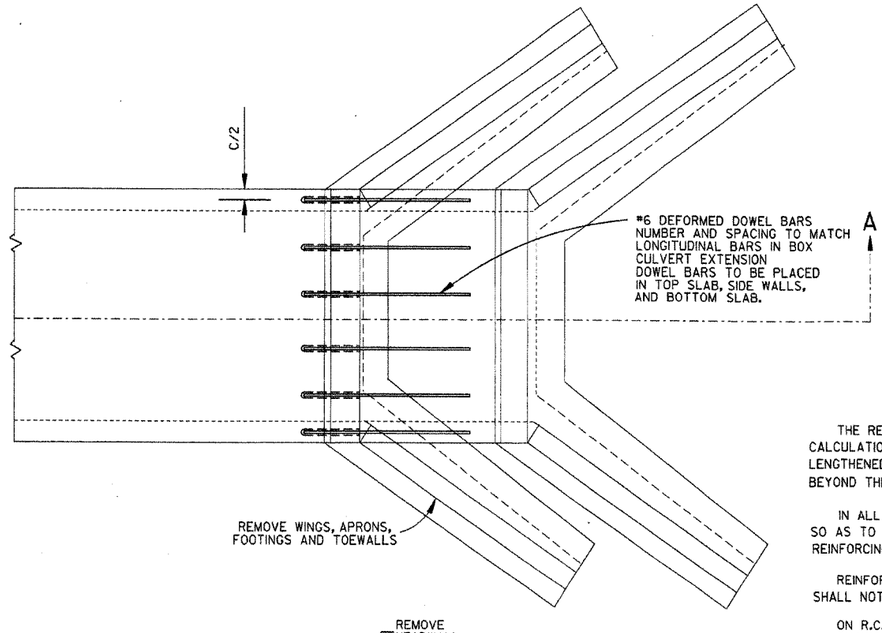
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS; THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2, REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

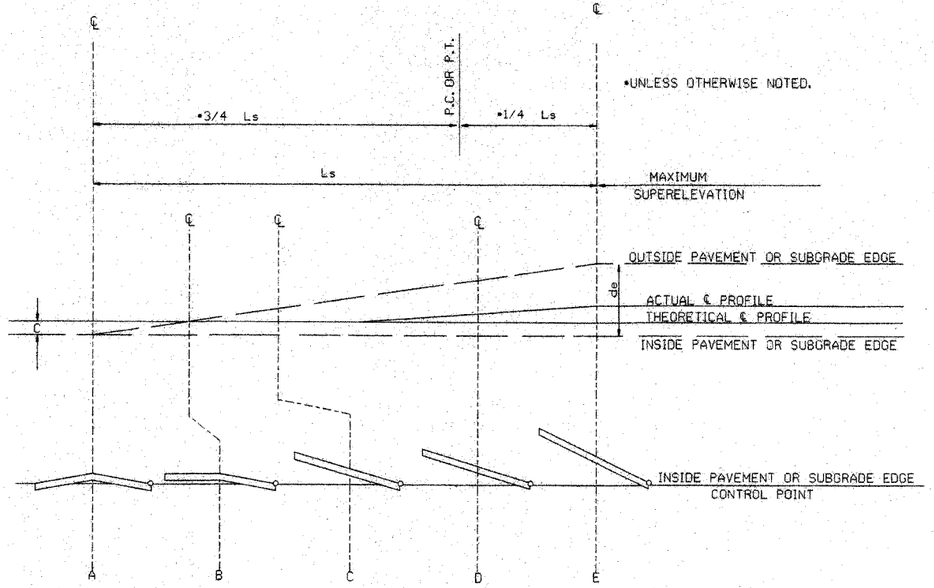
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 45′	N.C.			N.C.			R.C.			0.022			0.023			0.028		
1° 00′	N.C.			N.C.			0.021			0.026			0.030			0.037	275	300
1° 15′	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30′	N.C.			0.021			0.031	200		0.037	225		0.043	250		0.054		
1° 45′	N.C.			0.025			0.036			0.043			0.049			0.062		
2° 00′	R.C.			0.028	175		0.040			0.048			0.056			0.070		
2° 15′	R.C.			0.031			0.045			0.053			0.061			0.078	300	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037			0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.096	350	400
3° 15′	0.027	150		0.043			0.061			0.072	245		0.082	275		0.098	360	
3° 30′	0.029			0.046			0.065	205		0.076	255		0.086	285		0.100	360	
3° 45′	0.031		200	0.049			0.069	215		0.080	265		0.090	295	350			
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.096	315				
5° 00′	0.040			0.061			0.083	250		0.091	295		0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300	350						
6° 00′	0.046			0.070	190		0.092	270		0.096	305							
6° 30′	0.050			0.074	200		0.095	280	300	0.100	315							
7° 00′	0.053			0.078	210		0.098	285										
7° 30′	0.056			0.081	215		0.099	290										
8° 00′	0.058			0.084	220		0.100	290										
8° 30′	0.061			0.087	225	250												
9° 00′	0.063			0.089	230													
10° 00′	0.068	160		0.094	235													
11° 00′	0.072	170		0.097	250													
12° 00′	0.076	175		0.099	250													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

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



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

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

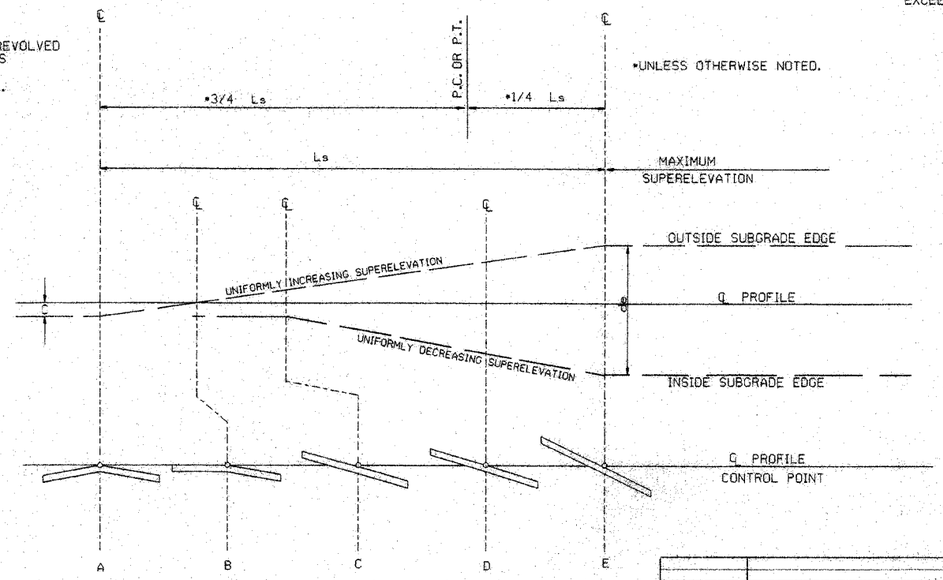
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

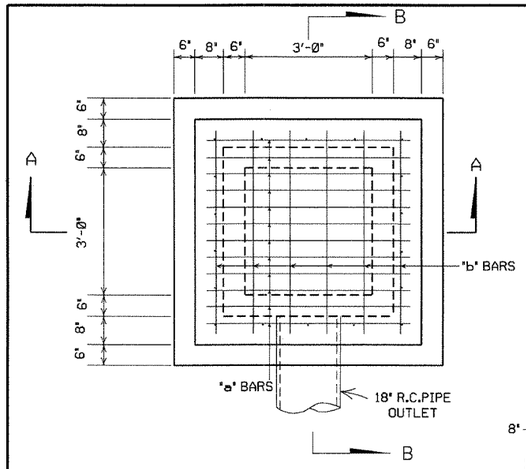
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

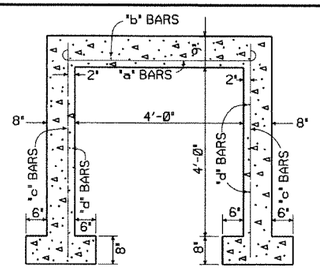
ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

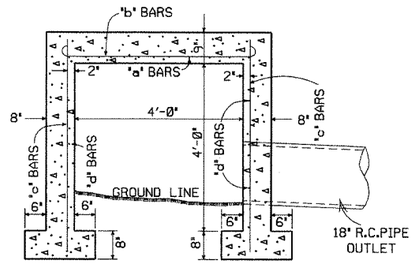
STANDARD DRAWING SE-2

FILE STDSE2.DGN





SEC A-A

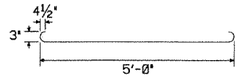


SEC B-B

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
'a'	11	6'-0"	5"
'b'	6	6'-0"	10"
'c'	16	5'-1"	12"
'd'	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



'a' & 'b' BARS

QUANTITIES

CONCRETE 3.40 CU. YDS.
REINFORCING STEEL 176 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

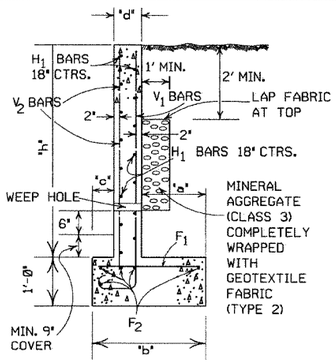
GENERAL NOTES

THE PAY ITEMS FOR THE CONSTRUCTION OF REINFORCED CONCRETE RETAINING WALL SHALL BE FOR THE QUANTITIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL AND EXCAVATION FOR STRUCTURES.

MINERAL AGGREGATE WRAPPED WITH GEOTEXTILE FABRIC (CONTINUOUS) TO BE PLACED 1'-0" IN WIDTH AND 1'-0" IN HEIGHT AS A SUBSIDIARY ITEM TO THE VARIOUS PAY ITEMS.

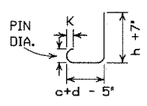
3" WEEP HOLES (MAX. SPACING 10'-0"CTRS.) TO BE PLACED WHERE SPECIFIED BY THE ENGINEER. THE CONTRACTOR WILL BE REQUIRED TO PLACE CONTRACTION JOINTS ON 20' CENTERS AND EXPANSION JOINTS ON 60' CENTERS.

ALL EXPOSED EDGES TO BE CHAMFERED ¾".



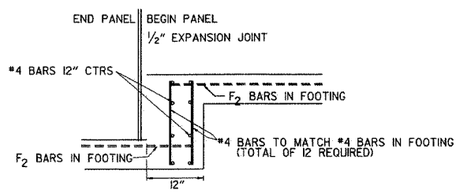
BENDING DIAGRAM

BAR SIZE	K	PIN DIA.
#4	4½"	2½"
#5	5"	3"

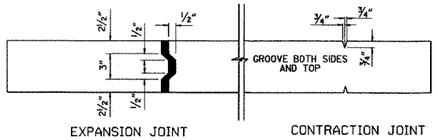


STEEL SCHEDULE

'c'	'd'	'h'	'a'	'b'	V_1 BARS SIZE	V_1 BARS SPACING	F_1 BARS SIZE	F_1 BARS SPACING	H_1 # 4 BARS SPAC.	V_2 # 4 BARS SPAC.	F_2 # 4 BARS NO. REQ'D.
8'	8'	1'-0"	8"	2'-0"	#4	12"	#4	18"	18"	18"	5
8'	8'	2'-0"	8"	2'-0"	#4	12"	#4	18"	18"	18"	5
8'	8'	3'-0"	8"	2'-0"	#4	12"	#4	18"	18"	18"	5
8'	8'	4'-0"	1'-2"	2'-6"	#4	12"	#4	12"	18"	18"	5
8'	8'	5'-0"	1'-8"	3'-0"	#4	9"	#4	9"	18"	18"	5
8'	8'	6'-0"	2'-2"	3'-6"	#4	6"	#4	6"	18"	18"	6
12'	8'	7'-0"	2'-4"	4'-0"	#4	8"	#4	8"	18"	18"	6
12'	8'	8'-0"	2'-10"	4'-6"	#4	6"	#4	6"	18"	18"	6
15'	10'	9'-0"	2'-11"	5'-0"	#4	5"	#4	5"	18"	18"	6
17'	10'	10'-0"	3'-3"	5'-6"	#5	6"	#5	6"	18"	18"	7



FOOTING STEPS

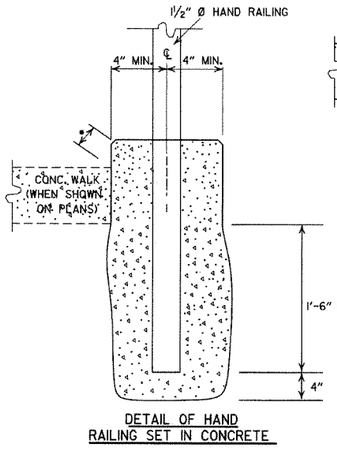


JOINT DETAILS

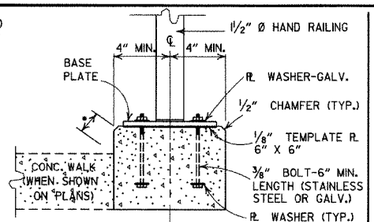
NOTE: JOINT MATERIAL SHALL BE PREFORMED MEETING THE REQUIREMENTS OF SUBSECTION 501.02(h) FOR TYPE 2

REINFORCED CONCRETE RETAINING WALL

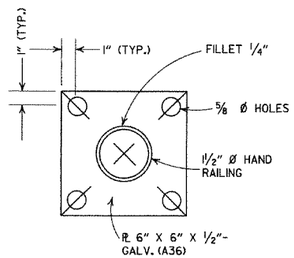
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

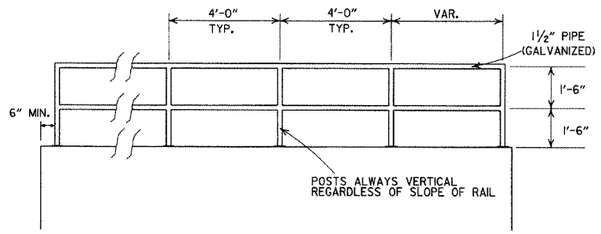


POST CONNECTION TO WALL

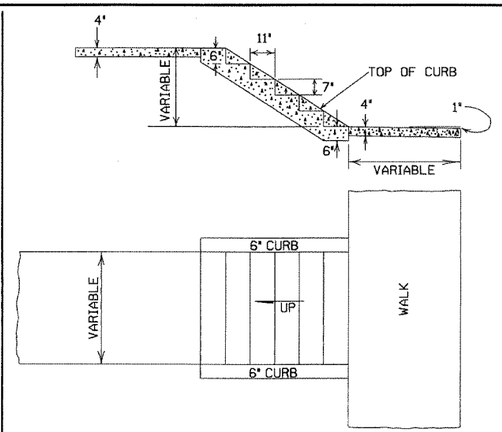


BASE PLATE

POST CONNECTION DETAILS



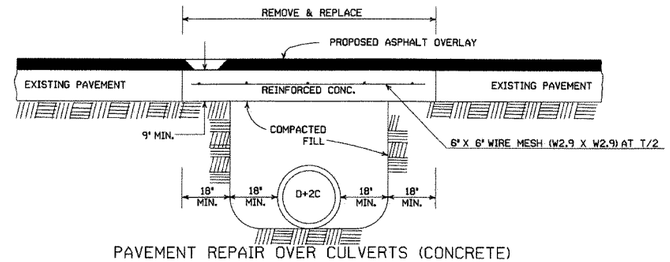
HAND RAILING DETAILS



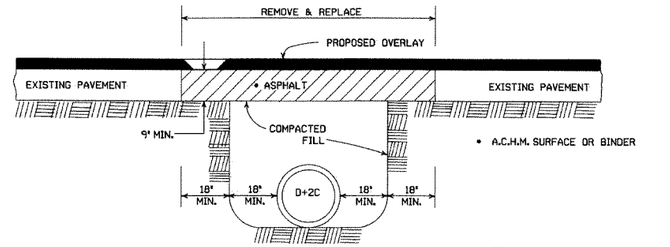
GENERAL NOTES

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. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

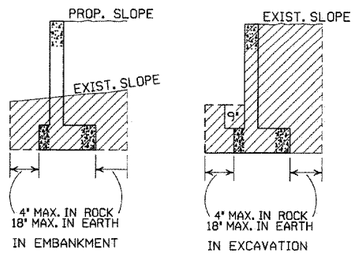


PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS



NOTE: HATCHED AREA DENOTES MAX. LIMITS OF EXCAVATION FOR STRUCTURES FOR RETAINING WALL.

DATE	REVISION	DATE FILMED
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_1 BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR	649-7-15-88
	ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	
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

4-17-08	REV. JOINT & FOOTING STEP DETAILS
11-29-07	REVISED RETAINING WALL DRAINAGE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI - 1

R1-1



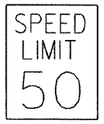
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5A



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5C



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



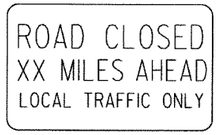
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2



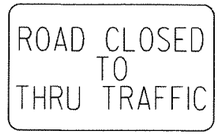
48"X30"

R11-3A



60"X30"

R11-4



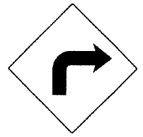
60"X30"

RSP-1



48"X30"

W1-1



STD. 36"X36"
FWY. 48"X48"

W1-2



STD. 36"X36"
FWY. 48"X48"

W1-3



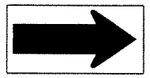
STD. 48"X48"

W1-4



STD. 48"X48"

W1-6



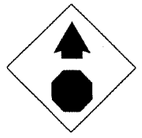
STD. 48"X24"
SPECIAL 60"X30"

W1-8



STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



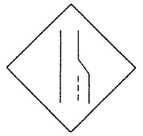
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



EXPWY. 36"X36"
FWY. 48"X48"

W9-2



STD. 36"X36"
FWY. 48"X48"

W13-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



STD. 36"X36"
FWY. 48"X48"

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b



STD. 48"X48"

R56-1



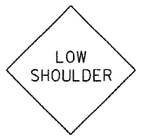
STD. 18"X18"

W8-11



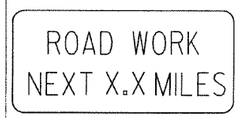
STD. 36"X36"
FWY. 48"X48"

W8-9



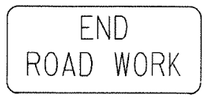
STD. 36"X36"
FWY. 48"X48"

G20-1



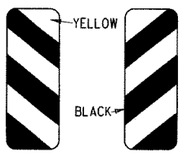
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

M4-9



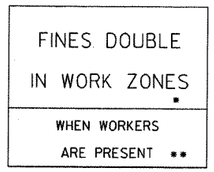
STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10



48"X18"

R55-1



36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

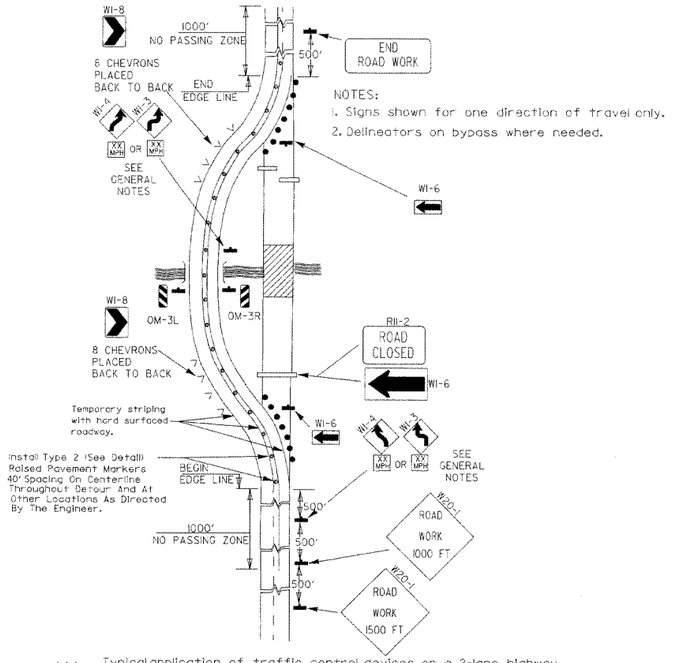
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
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	

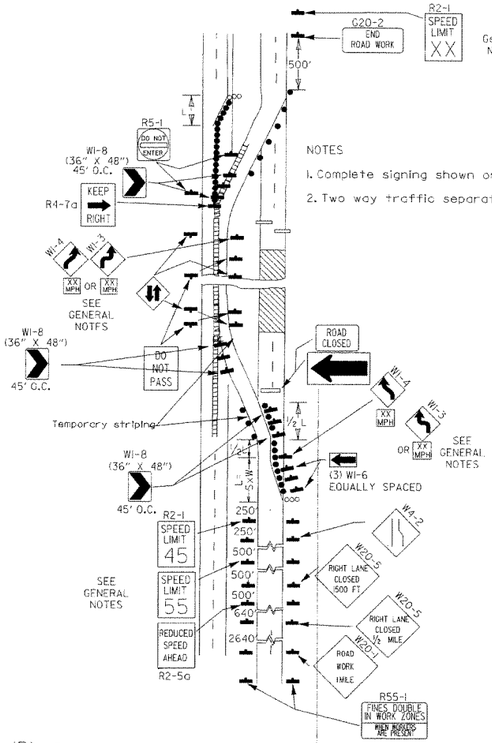
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

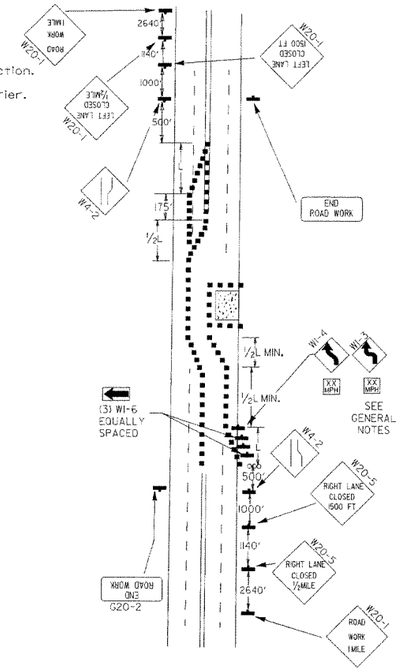
STANDARD DRAWING TC-1



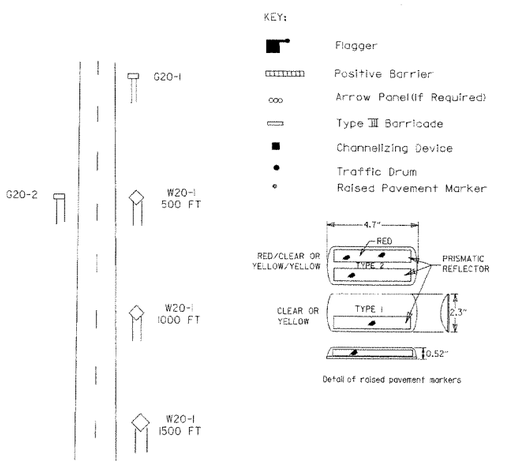
(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.



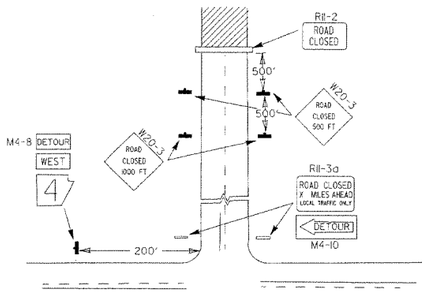
(B) Typical application - 4-lane divided roadway where one roadway is closed.

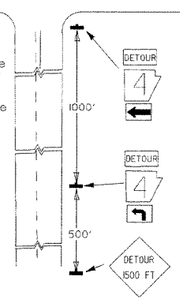


(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.



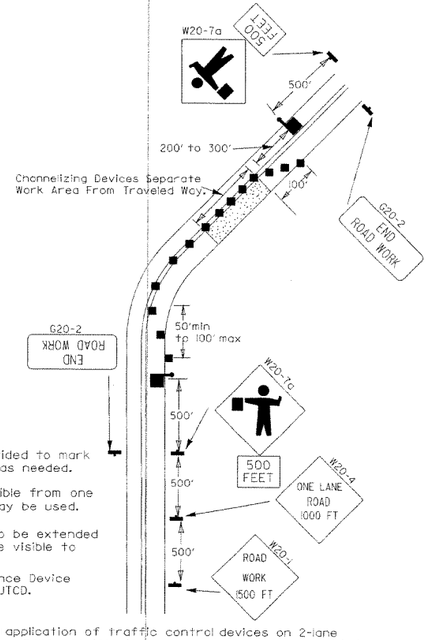
Typical advance warning sign placement



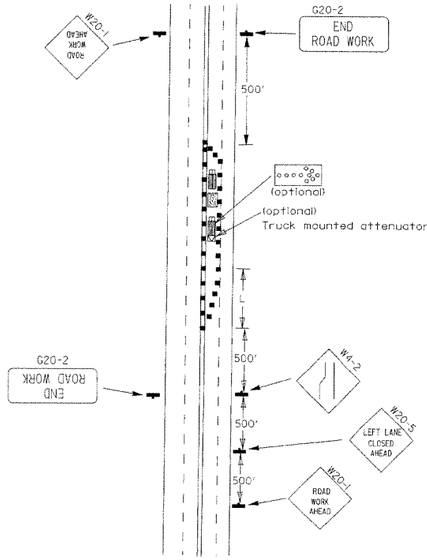


NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

(D) Typical application - roadway closed beyond detour point.



(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.

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:

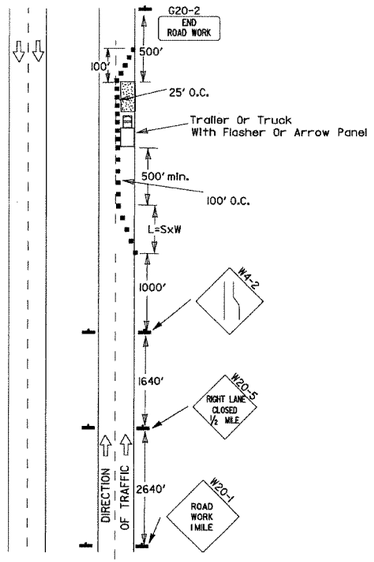
1. Advisory speed posted on WI-3 or WI-4 curve warning signs to be determined at site. Use WI-4 when speed is greater than 30mph and WI-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed 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.

DATE	REVISION	FILMED
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 WI-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

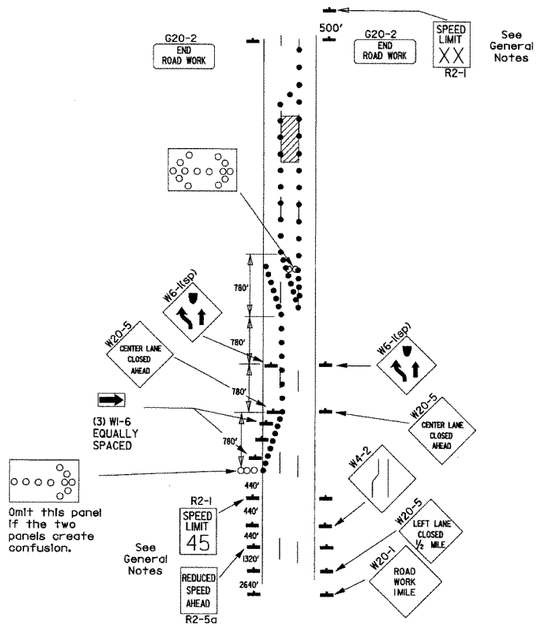
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

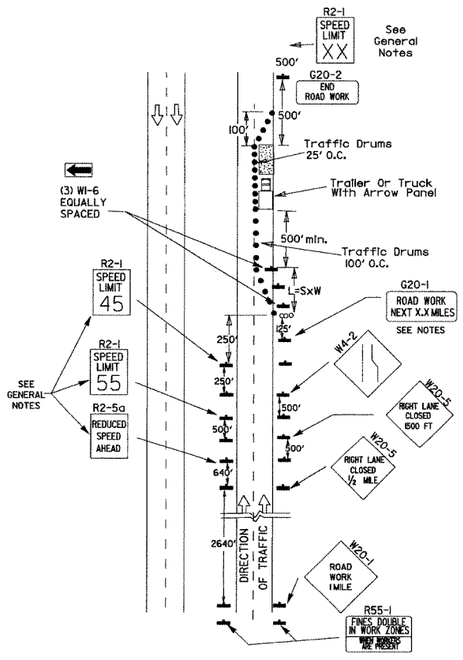
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

KEY:

ooo Arrow Panel (If Required)

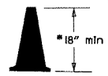
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

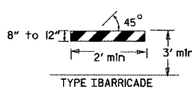
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional 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



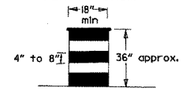
CONES

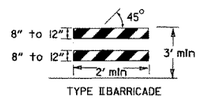
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.



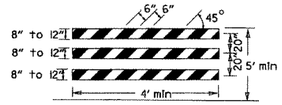
TYPE I BARRICADE

PLASTIC DRUM



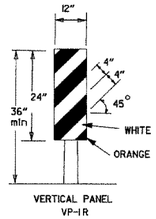


TYPE II BARRICADE



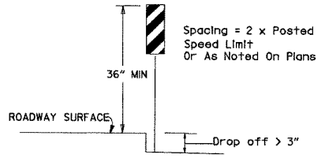
TYPE III BARRICADE

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



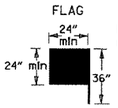
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

* When shown on the plans concrete barrier will be used.

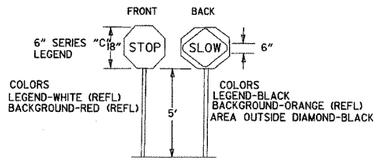
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

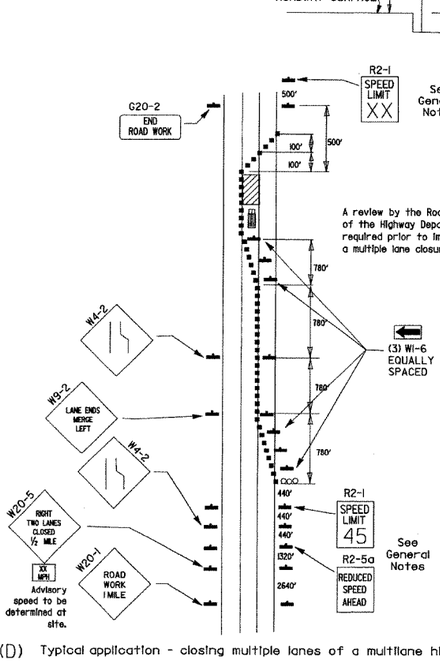
FLAG



Flag shall be of good grade red material

STOP SLOW PADDLE





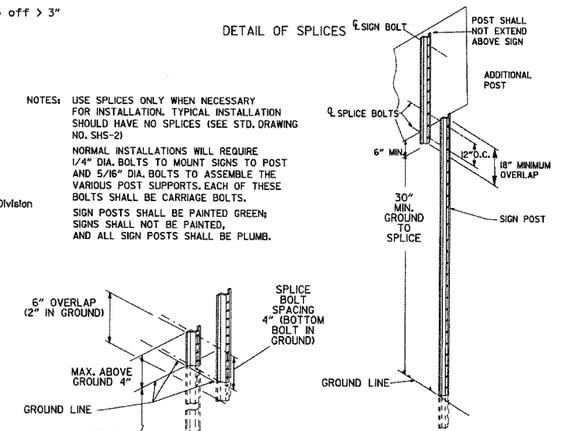
(D) Typical application - closing multiple lanes of a multilane highway.

DETAIL OF SPLICES

NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

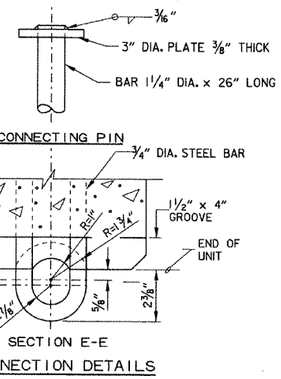
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

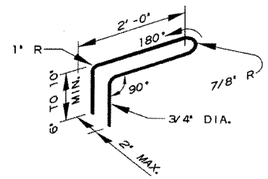
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

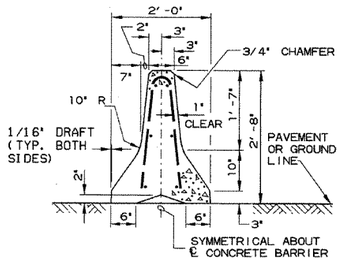
MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1" 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°, 19 1/2", 2'-1 3/8", 4 3/8"



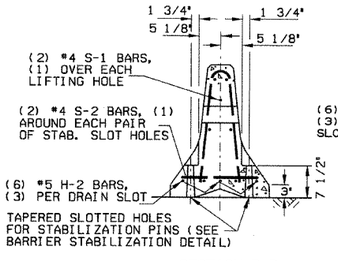
CONNECTION DETAILS



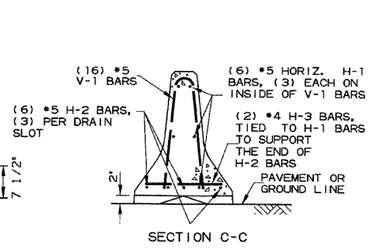
CONNECTION LOOP



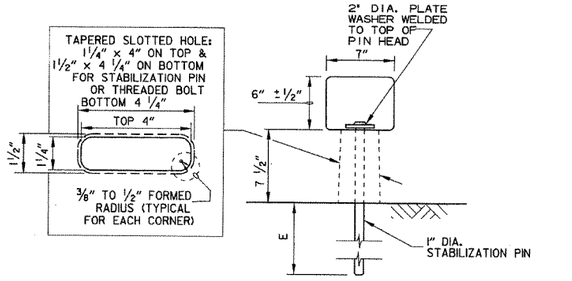
SECTION A-A



SECTION B-B



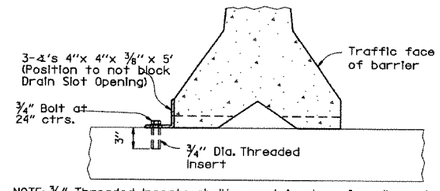
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

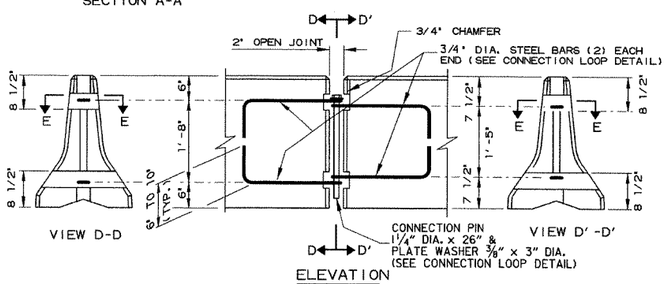
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks to be retained. 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.

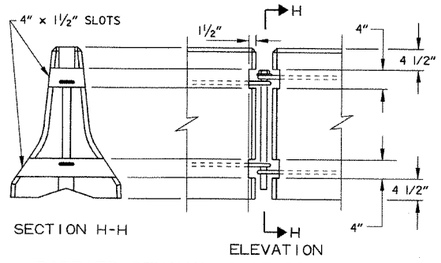
BARRIER STABILIZATION DETAIL

BRIDGE DECKS



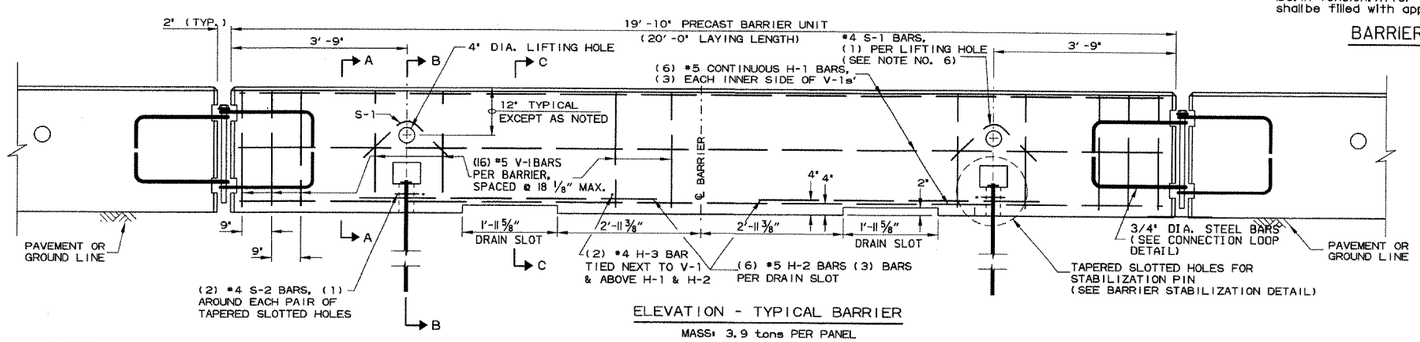
VIEW D-D VIEW D'-D'

ELEVATION



SECTION H-H ELEVATION

BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

(1) The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

(2) Materials shall meet the following minimum requirements:
Concrete: 2500 psi compressive strength at 28 days.
Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

(3) Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

(4) Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

(5) Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

(6) A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

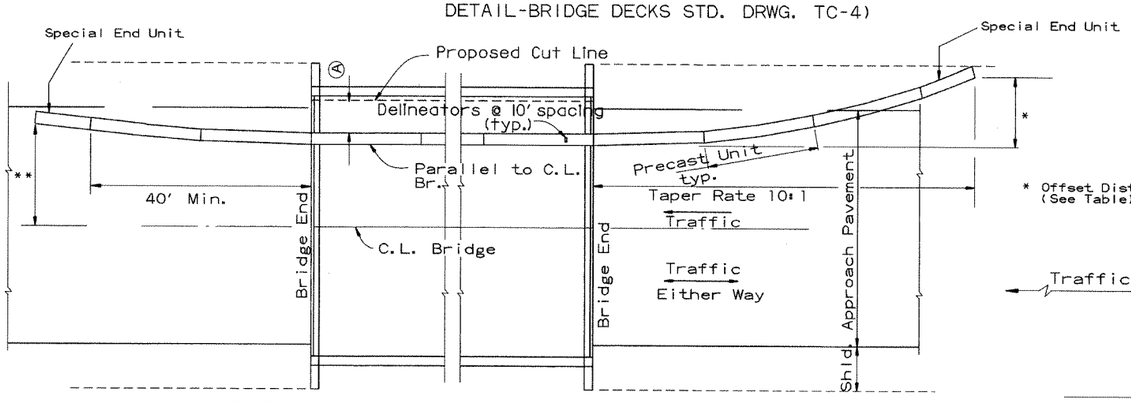
DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

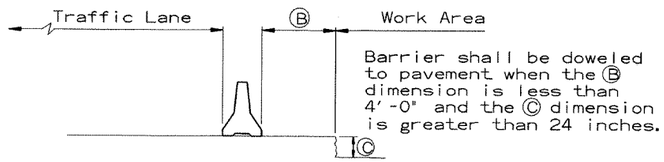
STANDARD DRAWING TC-4

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



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

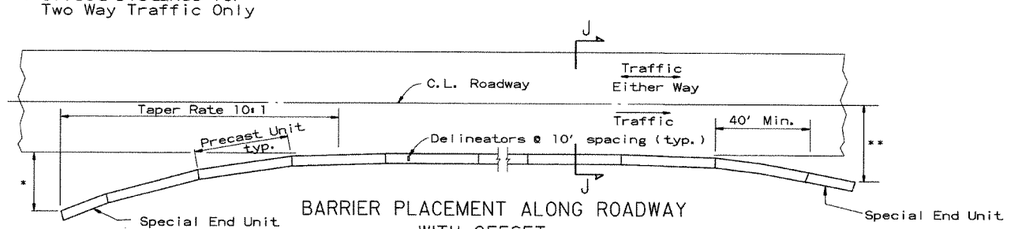


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

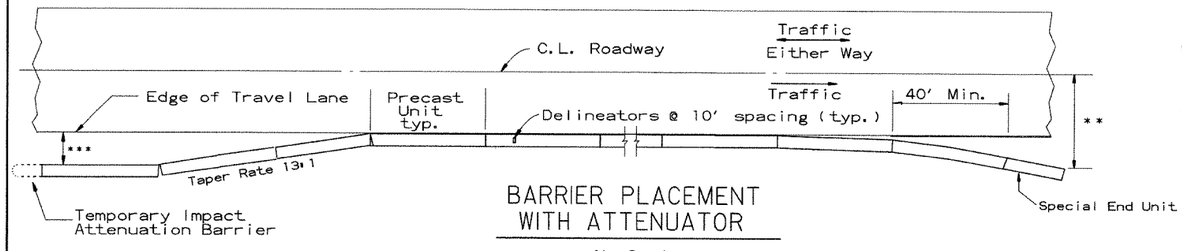
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

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

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

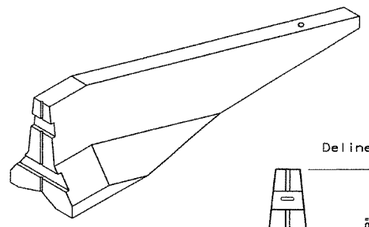


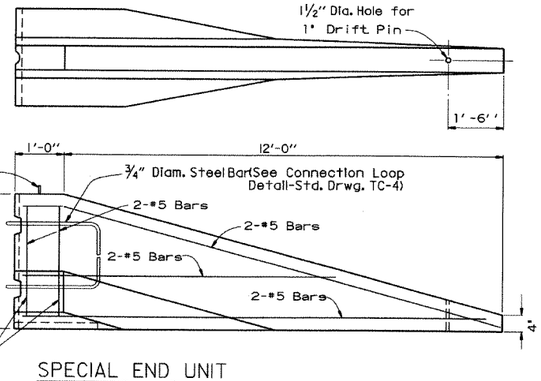
BARRIER PLACEMENT WITH ATTENUATOR

No Scale

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

** Offset Distance For Two Way Traffic Only





SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

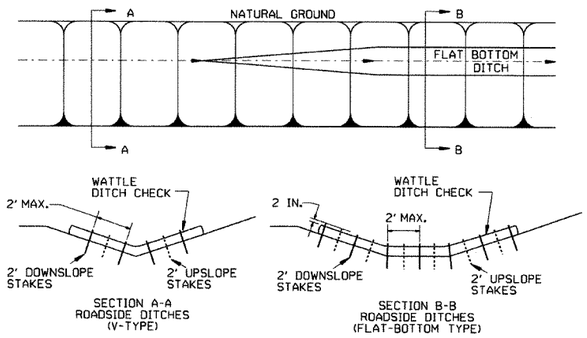
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

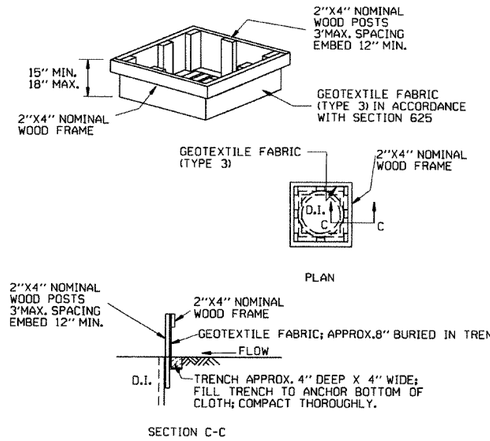
STANDARD DRAWING TC-5

GENERAL NOTES

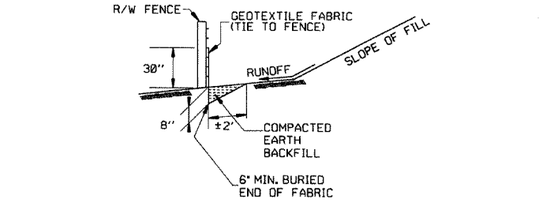
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

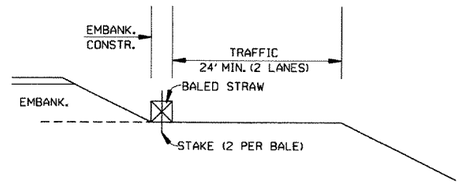
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

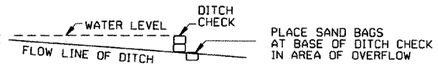
2. NO GAPS SHALL BE LEFT BETWEEN BALES.

3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.

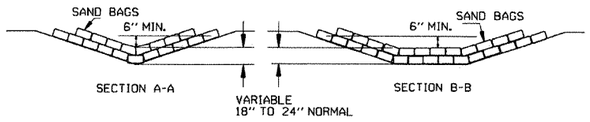


BALED STRAW FILTER BARRIER (E-2)

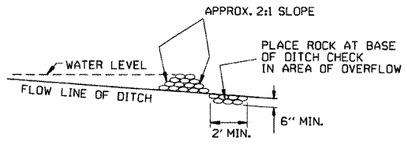
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.

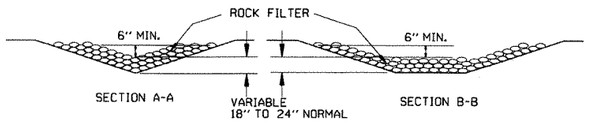


PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW

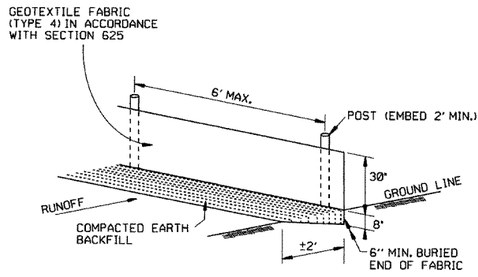


SAND BAG DITCH CHECK (E-5)





ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

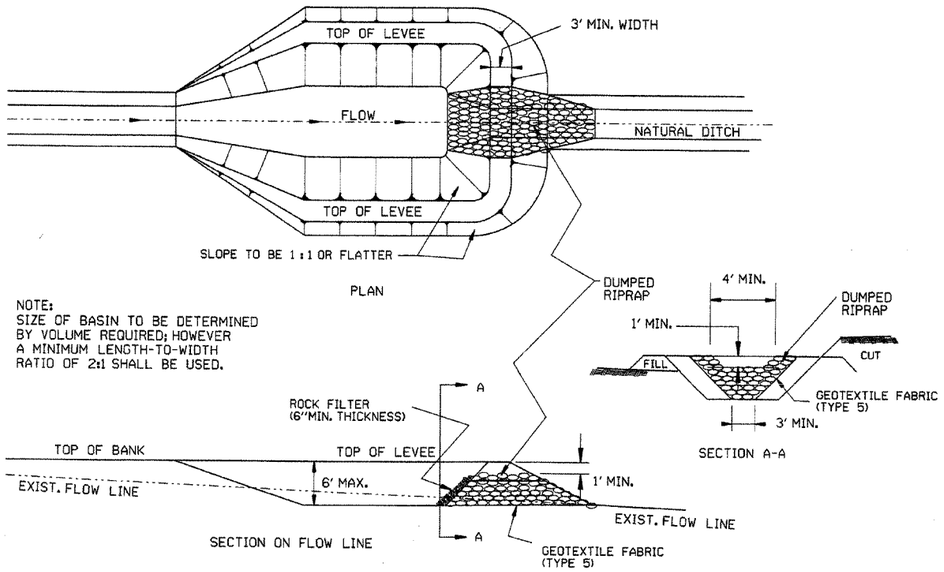
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

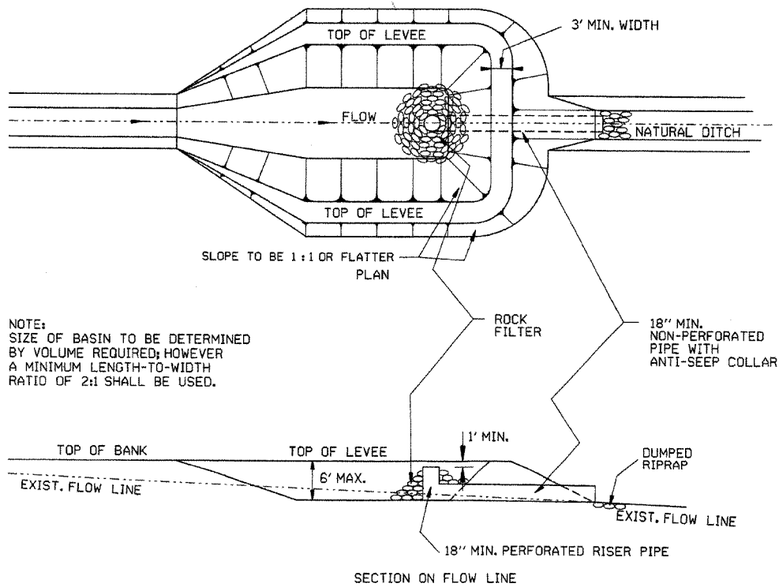
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

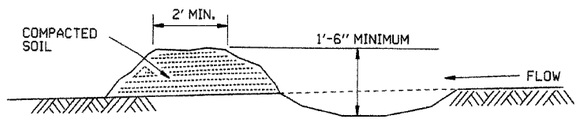
STANDARD DRAWING TEC-1



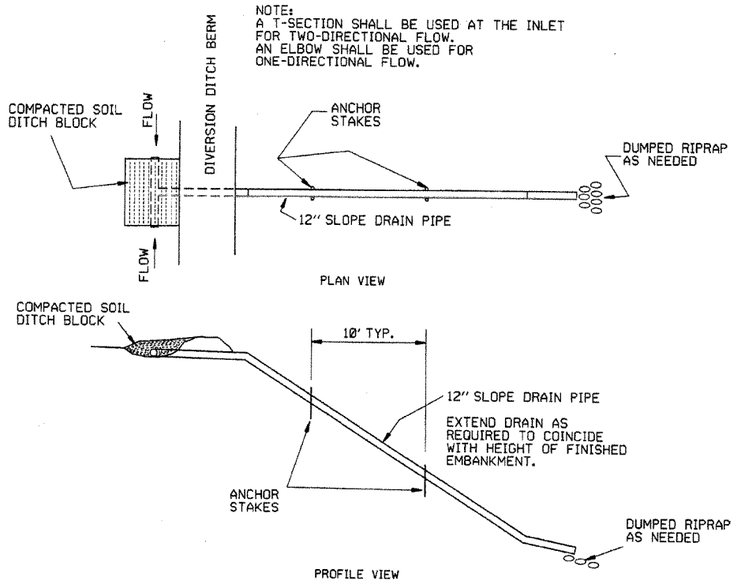
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



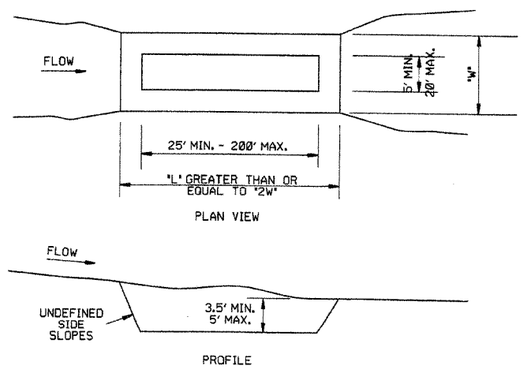
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

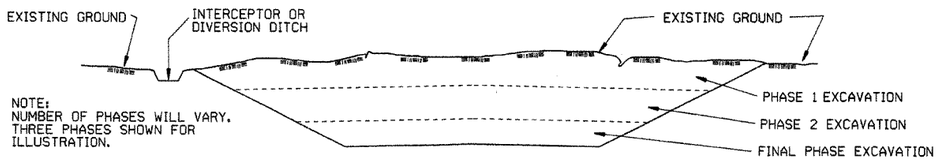
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



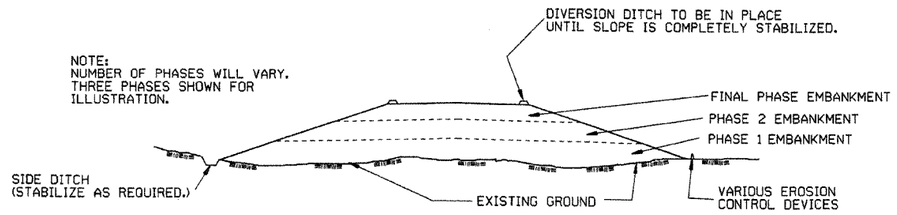
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

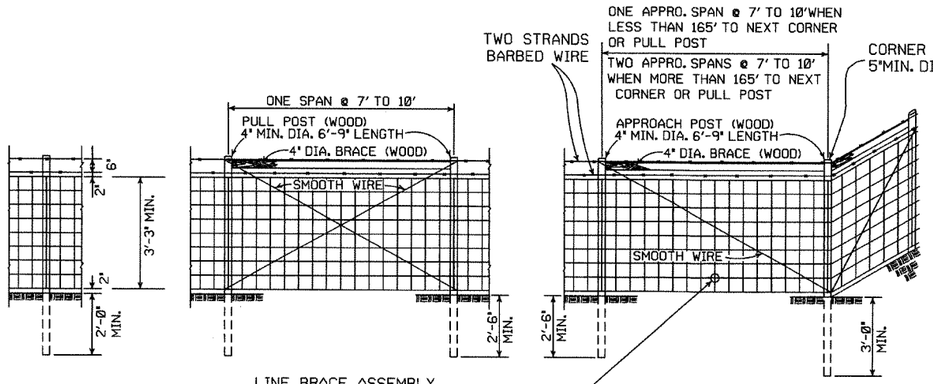
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

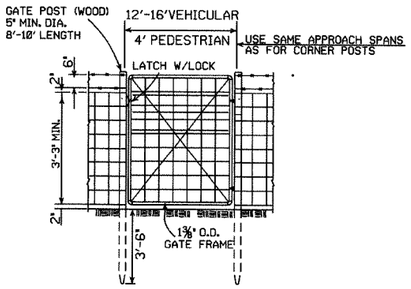
STANDARD DRAWING TEC-3

stdtec3.dgn

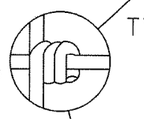


LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

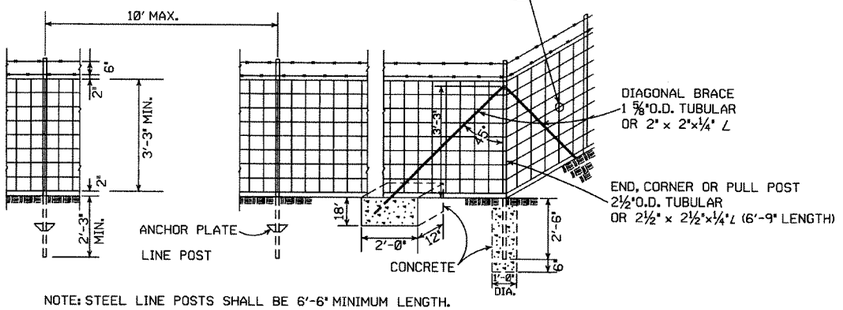
LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

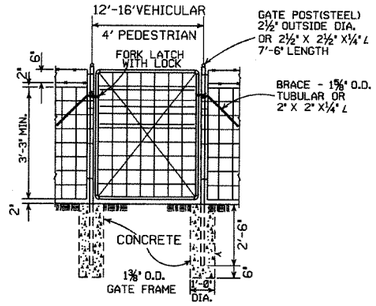


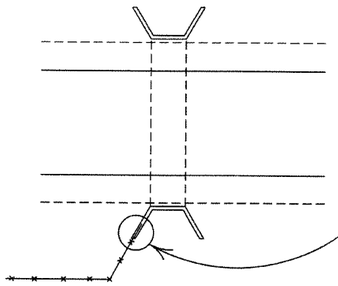
TYPE C FENCE (WOOD POSTS)

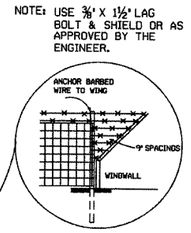


OTHER APPROVED TIES WILL BE PERMITTED







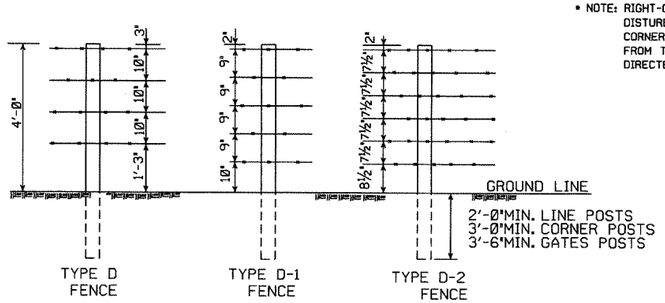


DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

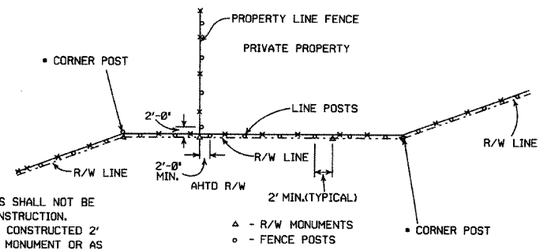
NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

TYPE C FENCE (STEEL POSTS)

4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)

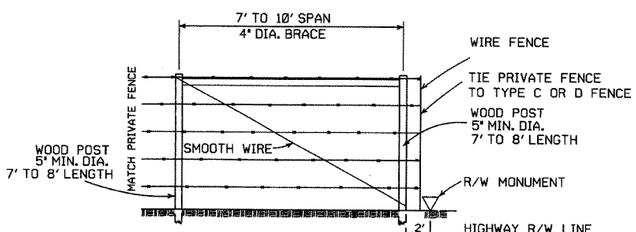


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

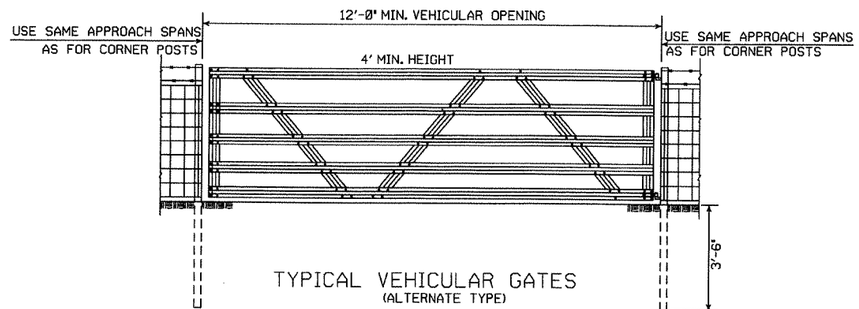


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION
WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

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.

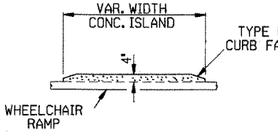
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

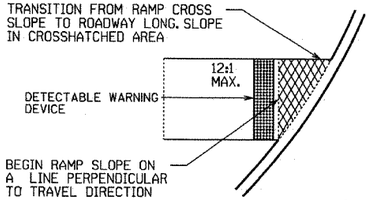
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4



CONCRETE ISLAND DETAIL



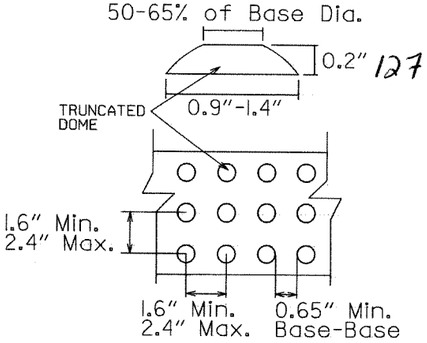
SLOPE TRANSITION DETAILS

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

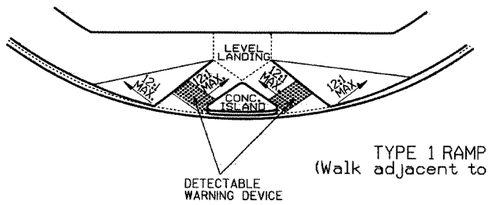
RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	42.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

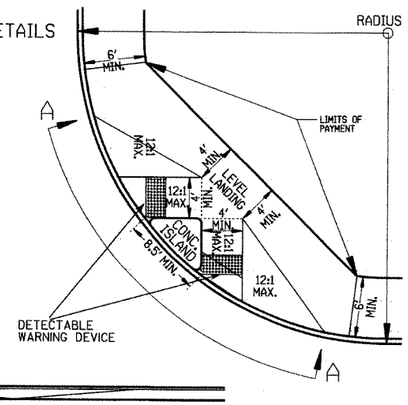
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).

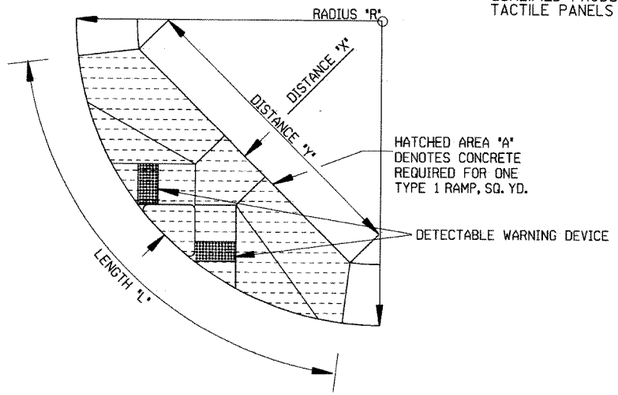


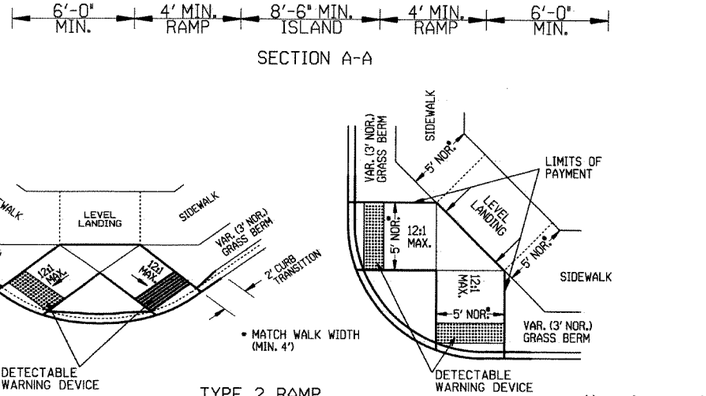
DETECTABLE WARNING DEVICE DETAIL



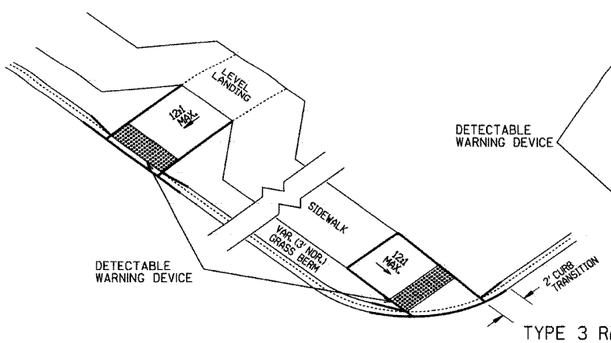
TYPE 1 RAMP
(Walk adjacent to curb)



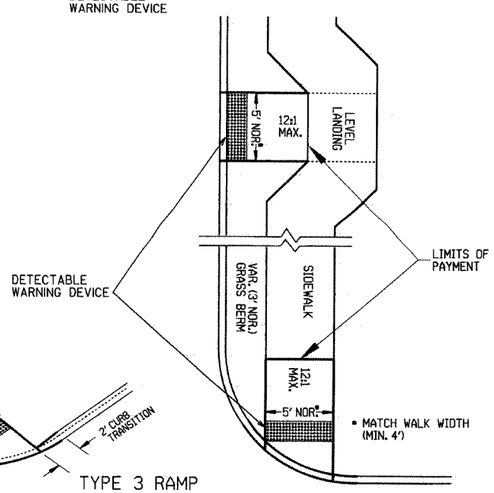


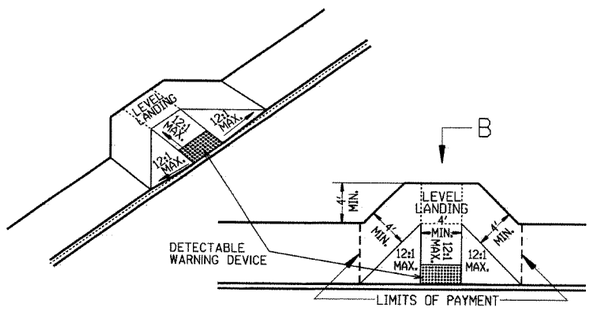


TYPE 2 RAMP

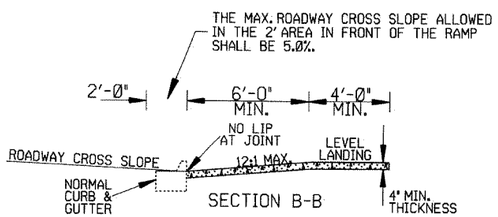


TYPE 3 RAMP





TYPE 4 RAMP
(Walk adjacent to curb)



SECTION B-B

SECTION A-A

NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.

GENERAL NOTES:

IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS.
THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19.
THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4".
THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER.
RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION.
THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.

RAMP SELECTION CRITERIA

FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY). THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.
AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD.SLOPE TRANS. & REV. ISL. DIMS.	
8-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM8:TO12:MAX.SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCLUD."CONC. ISLD."IN PAY ITEM	------
6-02-76	ISSUED-P.H.D.	299-7-28-76

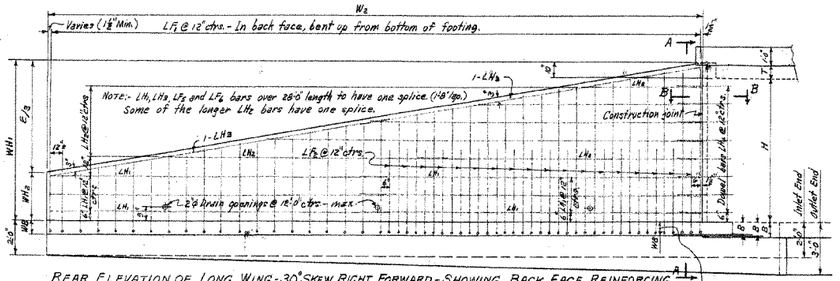
ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

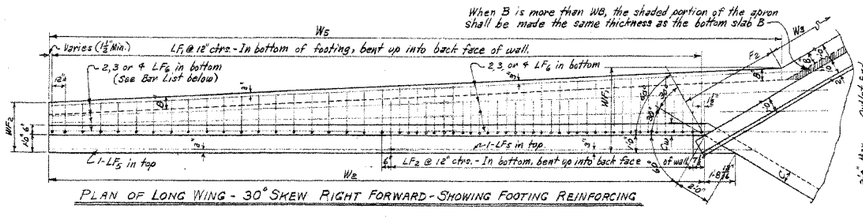
STANDARD DRAWING WR-1

Reshot 3-8-93

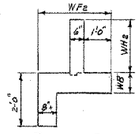
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			128	
JOB No.					

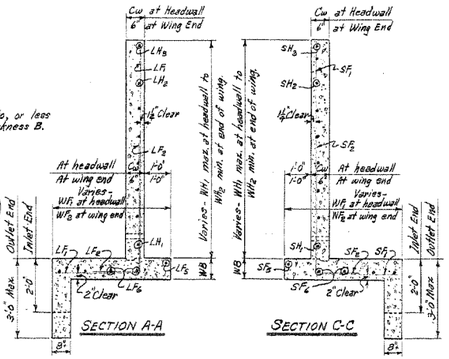


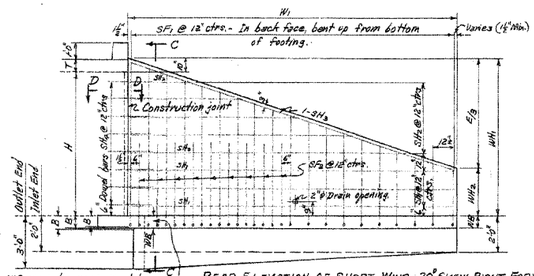
REAR ELEVATION OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING



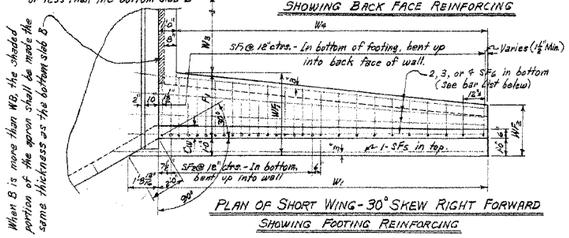
PLAN OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING



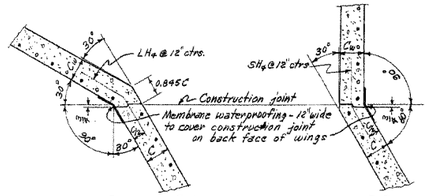




REAR ELEVATION OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING BACK FACE REINFORCING

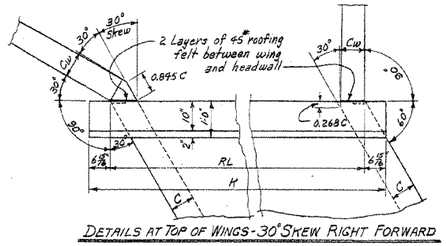


PLAN OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING FOOTING REINFORCING



SECTIONS THRU CONSTRUCTION JOINTS

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



DETAILS AT TOP OF WINGS - 30° SKEW RIGHT FORWARD

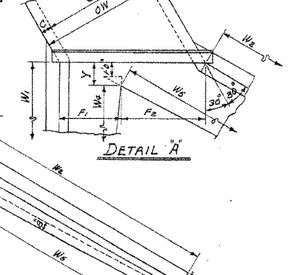
REGULAR WING DIMENSIONS - 3:1 SLOPES

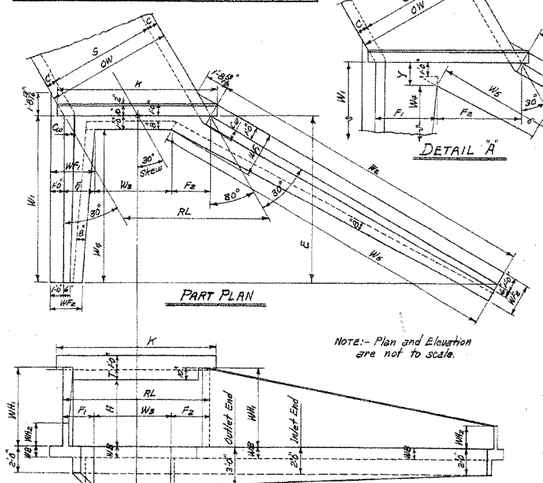
CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEAD = C	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING DIMENSION PARALLEL WITH HEADWALL	FOOTING DIMENSION PERPENDICULAR DIST. FROM HDWL TO END OF WING	LENGTHS OF WINGWALLS		INSIDE FOOTING DIMENSION		* QUANTITY PER WING CLASS S CONCRETE			
													INLET END		OUTLET END	
									SHORT WING	LONG WING	SHORT WING	LONG WING	SHORT WING	LONG WING	SHORT WING	LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
2'	7"	6"	2'-10	0'-8	2'-6"	2'-0"	1'-4"	0'-11½	6'-6"	6'-6"	13'-0"	5'-6"	19'-3⅜	0.752	1.599	0.836	1.717
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½	1'-8"	1'-7½	8'-6"	8'-6"	17'-0"	7'-6"	17'-10⅜	1.130	2.340	1.289	2.545
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-5"	2'-0"	2'-3⅛	10'-6"	10'-6"	21'-0"	9'-6"	22'-5¼	1.577	3.270	1.711	3.552
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-9½	2'-4"	2'-11⅛	12'-6"	12'-6"	25'-0"	11'-6"	27'-0⅝	2.093	4.341	2.252	4.680
		7"	5'-10"	1'-8"	3'-4"	2'-9½	2'-4"	2'-11⅛	12'-6"	12'-6"	25'-0"	11'-6"	27'-0⅝	2.179	4.524	2.337	4.862
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-2⅝	14'-6"	14'-6"	29'-0"	13'-6"	31'-7⅛	2.908	6.026	3.092	6.419
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-2⅝	14'-6"	14'-6"	29'-0"	13'-6"	31'-7⅛	2.966	6.147	3.150	6.543
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-2⅝	14'-6"	14'-6"	29'-0"	13'-6"	31'-7⅛	3.025	6.272	3.208	6.667
7'	8½"	7½"	7'-10	2'-4"	4'-2"	2'-7⅛	3'-2"	4'-7⅛	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜	3.811	7.895	4.019	8.350
		8"	7'-10	2'-4"	4'-2"	2'-7⅛	3'-2"	4'-7⅛	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜	3.889	8.057	4.098	8.512
8'	9"	8"	8'-10	2'-8	4'-8"	2'-9"	3'-8"	5'-7⅛	18'-6"	18'-6"	37'-0"	17'-6"	41'-9⅛	4.876	10.097	5.107	10.612

* Quantity per wing does not include headwall or that portion of apron or footwall for the length W3.
◎ See Table A for special values of F1 & F2 and W4 & W5 for Single 4'x6', 5'x7' and 6'x8' Box Culverts.

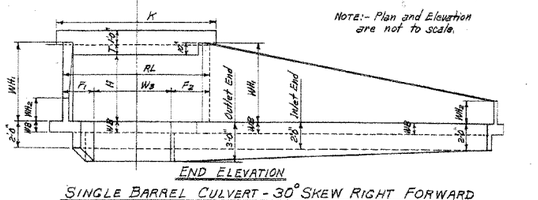
TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F1	F2	W3	Y	W4	W5
4'	6'	2'-7⅞"	3'-3⅝"	0"	1'-1⅞"	13'-4⅛"	31'-3⅛"
5'	7'	3'-1⅜"	4'-1"	0"	1'-3⅜"	15'-2⅝"	35'-10⅝"
6'	8'	3'-7⅛"	4'-10⅝"	0"	1'-6⅜"	17'-1⅛"	40'-4"





NOTE:- Plan and Elevation are not to scale.



SINGLE BARREL CULVERT - 30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Drawing No. W-X30.

TYPICAL WING DETAILS

NOTE:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X30. For values of RL, K and W3 for each box, see above Std. also.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints of wings.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	◎ REINFORCING STEEL FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
4'	2'	6"	7"	141	5.80	6.90	8.01	9.12	10.23
	3'	6"	7"	213	8.08	9.18	10.29	11.40	12.51
	4'	6"	7"	327	10.78	11.88	12.99	14.10	15.21
	5'	6"	7"	460	13.90	15.00	16.11	17.22	18.32
	6'	7"	8"	762	18.05	19.99	21.13	22.27	23.41
5'	3'	6"	7"	213	8.33	9.67	11.01	12.36	13.70
	4'	6"	7"	327	11.03	12.36	13.71	15.06	16.40
	5'	6"	7"	460	14.14	15.48	16.83	18.17	19.52
	6'	7"	8"	762	18.11	20.48	21.86	23.24	24.62
	7'	7½"	8½"	1474	24.61	26.84	27.35	28.75	30.16
6'	3'	6"	7"	213	8.57	10.17	11.73	13.33	14.92
	4'	6"	7"	327	11.27	12.86	14.43	16.03	17.62
	5'	6"	7"	460	14.38	15.98	17.55	19.15	20.73
	6'	7"	8"	762	18.35	20.98	22.59	24.21	25.83
	7'	7½"	8½"	1474	24.79	26.94	28.08	29.73	31.38
	8'	8"	9"	1870	31.15	32.87	34.51	36.17	37.83
7'	4'	6"	7"	327	11.52	13.37	15.19	17.05	18.85
	5'	6"	7"	460	14.63	16.49	18.31	20.16	21.97
	6'	7"	8"	762	19.61	21.98	23.82	25.20	27.04
	7'	7½"	8½"	1474	25.05	26.94	28.82	30.71	32.59
	8'	8"	9"	1870	31.97	33.37	35.25	37.16	39.05
8'	4'	6"	7"	327	11.77	13.89	15.97	18.09	20.12
	5'	7"	7"	460	15.96	17.60	19.70	21.83	23.89
	6'	7"	8"	762	19.86	21.98	24.05	26.17	28.20
	7'	7½"	8½"	1474	25.80	27.96	29.58	31.73	33.81
	8'	8"	9"	1870	31.72	33.88	36.00	38.16	40.27
9'	5'	7"	7"	460	15.72	18.13	20.47	22.87	25.15
	6'	7½"	8"	762	20.50	22.93	25.23	27.71	30.01
	7'	7½"	8½"	1474	25.55	27.98	30.84	32.76	35.07
	8'	8"	9"	1870	31.97	34.39	36.76	39.18	41.49
10'	5'	7"	7"	460	15.98	18.65	21.25	23.80	26.92
	6'	7½"	8"	762	20.74	23.95	26.07	28.69	31.28
	7'	7½"	8½"	1474	25.81	28.50	31.12	33.70	36.84
	8'	8"	9"	1870	32.22	34.91	37.54	40.12	42.76
11'	6'	8"	8"	762	21.39	24.98	27.25	30.11	——
	7'	8"	8½"	1474	26.55	29.53	32.41	35.27	——
	8'	8"	9"	1870	32.47	35.45	38.33	41.19	——
12'	6'	8"	6"	762	21.46	24.93	28.05	31.20	——
	7'	8"	8½"	1474	26.81	30.08	33.21	36.34	——
	8'	8"	9"	1870	32.73	35.99	39.13	42.28	——

◎ For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT	WING LOCATION	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar (or two bars) of each length						SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing heel.			SF4 & LF4 STRAIGHT: Longitudinal in bottom of wing footing toe.			SH1 & LH1 STRAIGHT: Horizontal in back face of wing.			SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. ✱					SH3 & LH3 STRAIGHT: In back face of wing at top - on slope.		SH4 & LH4 BENT: Dowels thru construction joint at headwall.				BAR BENDING DIAGRAM	QUANTITY: REINFORCING STEEL PER WING - LBS.	
H	SHORT OR LONG	SIZE	SPACING	NO. REQD	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SIZE	SPACING	NO. REQD	LENGTH	X	Y	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTHS VARY MAX.	LENGTHS VARY MIN.	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	X		SHORT WING	LONG WING
2'	Short	#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	1'-8"	3'-0"	—	—	—	—	—	—	#3	1	9'-0"	#3	2	8'-0"	#3	12"	1	6'-9"	#3	12"	1	—	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-4"	Y SF1 & SF2 LF1 & LF2 5" Pin ←X→	29.7	45.6
	Long	#3	12"	14	1'-5"	3'-11"	0'-8"	1'-0"	0'-8"	3'-0"	—	—	—	—	—	—	#3	1	15'-6"	#3	2	15'-6"	#3	12"	1	12'-8"	#3	12"	1	—	6'-4"	#3	1	12'-11"	#3	12"	2	"	"			
3'	Short	#3	12"	9	2'-1"	5'-3"	0'-10"	1'-6"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	11'-0"	#3	2	10'-0"	#3	12"	1	8'-3"	#3	12"	2	6'-8"	3'-3"	#3	1	9'-8"	#3	12"	3	"	"		37.0	69.5
	Long	#3	12"	18	1'-11"	5'-3"	0'-10"	1'-6"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	19'-6"	#3	2	20'-2"	#3	12"	1	16'-8"	#3	12"	2	13'-6"	6'-8"	#3	1	16'-11"	#3	12"	3	"	"			
4'	Short	#3	12"	11	2'-6"	6'-7"	0'-11"	1'-9"	1'-9"	5'-0"	—	—	—	—	—	—	#3	1	13'-0"	#3	3	12'-0"	#3	12"	2	9'-8"	#3	12"	3	9'-8"	4'-8"	#3	1	10'-9"	#3	12"	4	"	"		56.2	107.2
	Long	#3	12"	22	2'-5"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	23'-6"	#3	3	24'-6"	#3	12"	1	20'-8"	#3	12"	3	18'-6"	6'-6"	#3	1	21'-0"	#3	12"	4	"	"			
5'	Short	#3	12"	13	2'-11"	7'-11"	1'-0"	2'-0"	2'-0"	6'-0"	#3	12"	3	3'-6"	11"	2'-6"	#3	1	15'-0"	#3	3	14'-0"	#3	12"	2	12'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	12'-11"	#3	12"	5	"	"		78.0	152.2
	Long	#3	12"	26	2'-9"	7'-10"	1'-0"	1'-11"	1'-10"	6'-0"	#3	12"	6	3'-6"	11"	2'-6"	#3	1	27'-6"	#3	6	15'-7"	#3	12"	2	24'-8"	#3	12"	3	18'-6"	6'-6"	#3	1	25'-1"	#3	12"	5	"	"			
6'	Short	#4	12"	15	3'-6"	9'-4"	1'-2"	2'-4"	2'-5"	7'-1"	#3	12"	9	4'-6"	1'-4"	3'-3"	#3	1	17'-0"	#3	3	16'-0"	#3	12"	2	14'-3"	#3	12"	4	12'-3"	3'-3"	#3	1	15'-0"	#3	12"	6	"	"		127.8	253.1
	Long	#4	12"	30	3'-6"	9'-3"	1'-2"	2'-3"	2'-3"	7'-1"	#3	12"	6	4'-6"	1'-4"	3'-3"	#3	2	16'-8"	#3	6	18'-0"	#3	12"	4	15'-2"	#3	12"	4	24'-6"	6'-6"	#3	2	15'-5"	#3	12"	6	2'-8"	1'-4"			
7'	Short	#4	12"	17	3'-11"	10'-10"	1'-3"	2'-10"	2'-9"	8'-1"	#4	12"	6	5'-6"	1'-7"	4'-0"	#4	1	19'-0"	#4	4	18'-0"	#4	12"	2	16'-3"	#4	12"	5	15'-3"	3'-3"	#4	1	17'-1"	#4	12"	7	3'-6"	1'-9"		267.0	489.8
	Long	#4	12"	34	3'-9"	10'-8"	1'-3"	2'-8"	2'-7"	8'-1"	#4	12"	12	5'-6"	1'-7"	4'-0"	#4	2	18'-8"	#4	8	20'-4"	#4	12"	4	17'-2"	#4	12"	5	30'-6"	6'-6"	#4	2	17'-5"	#4	12"	7	"	"			
8'	Short	#4	12"	19	4'-6"	12'-5"	1'-5"	3'-4"	3'-2"	9'-2"	#4	12"	9	6'-6"	1'-10	4'-9"	#4	1	21'-0"	#4	4	20'-0"	#4	12"	3	18'-3"	#4	12"	5	15'-3"	3'-3"	#4	1	19'-3"	#4	12"	8	"	"		312.9	622.3
	Long	#4	12"	38	4'-6"	12'-3"	1'-5"	3'-3"	3'-0"	9'-2"	#4	12"	18	6'-6"	1'-10	4'-9"	#4	2	20'-6"	#4	8	22'-9"	#4	12"	6	19'-2"	#4	12"	5	30'-6"	6'-6"	#4	2	19'-6"	#4	12"	8	3'-6"	1'-9"			

NOTE:- Bars for short wing shall be marked with prefix letter 'S', while those for long wing shall be marked with letter 'L'.

✱ Length without splice. Bars over 28'-0" length may be spliced. (1'-8" lap).

REVISIONS:- Membrane added. 5-10-66 W.C.H.

Designed By:- W.C.H. 5-13-63 Checked By:- 8-19-63
Drawn By:- W.C.H. 7-26-63 Checked By:- 12-9-63
Quantities By:- W.C.H. 1-7-64 Checked By:- 7-15-64

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

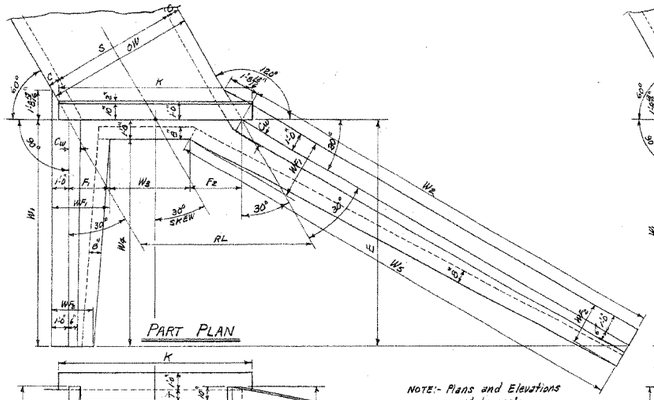
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X303-1

Reshot 3-8-93

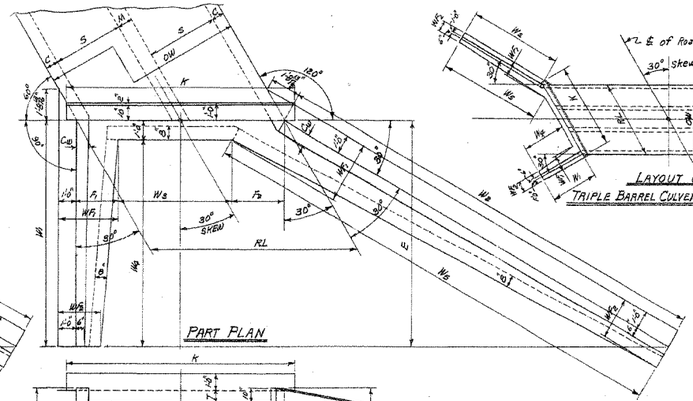
191

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			12A	
JOB No.					



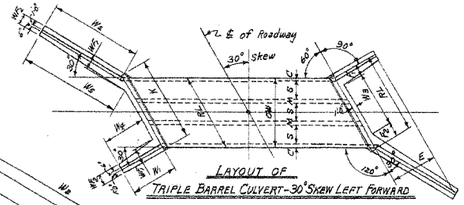
SINGLE BARREL CULVERT-30°SKEW RIGHT FORWARD

Details of Culvert with 30°Skew Left Forward is reversed, see Layout below.

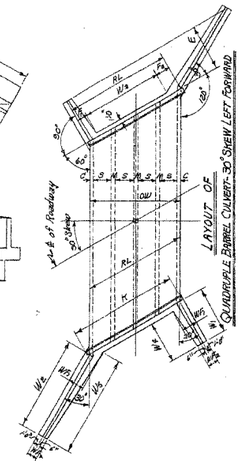


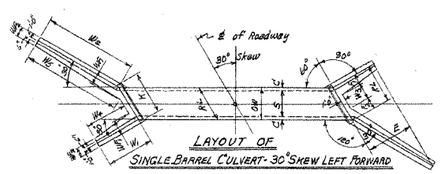
DOUBLE BARREL CULVERT-30°SKEW RIGHT FORWARD

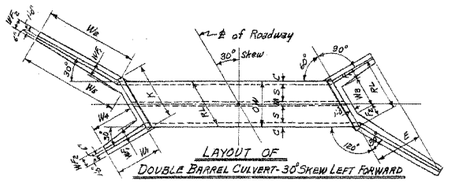
Details of Culvert with 30°Skew Left Forward is reversed, see Layout below.

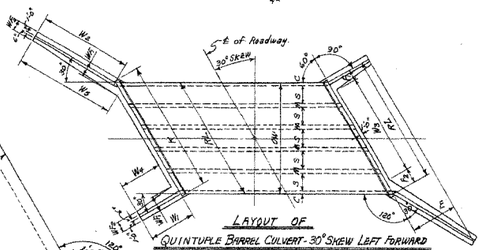


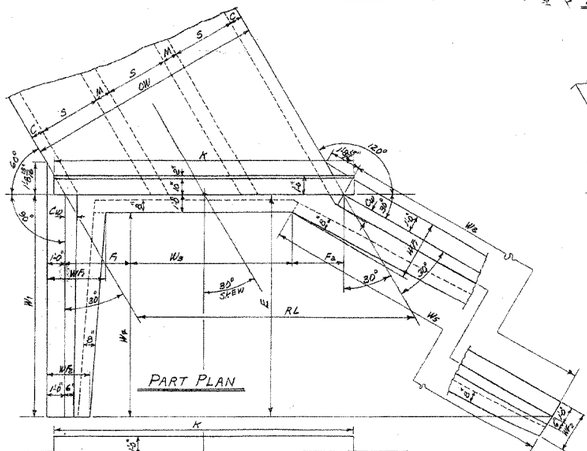
NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.





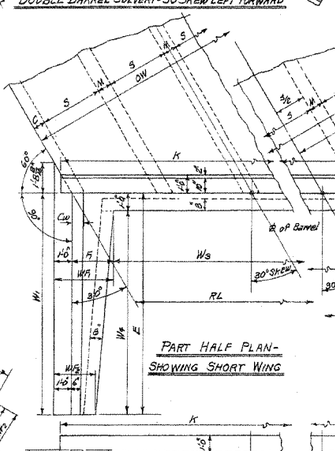






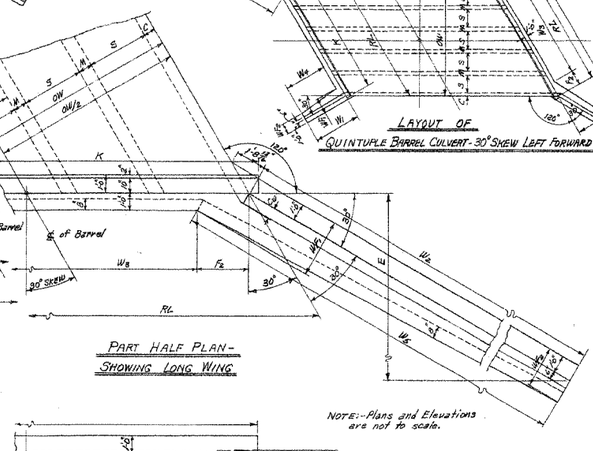
TRIPLE BARREL CULVERT-30°SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 30° Skew Left Forward is reversed, see Layout at above center.



QUINTUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 30°Skew Left Forward is reversed, see Layout above.

Designed by:- W.C.H. 5-16-63 Checked by-
Drawn by:- W.C.H. 7-15-63 Checked by-
Quantities by- Checked by- JSH 5-21-63

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

RL = OW x 1.1547 — K = RL + (1'-8⅛") — W_3 = RL - (F_1 + F_2)

USE WITH DRAWING NO.	CLEAR SPAN	CLEAR HEIGHT	SUM OF FOOTING DIMENSIONS	SINGLE BARREL CULVERT				DOUBLE BARREL CULVERT				TRIPLE BARREL CULVERT				QUADRUPLE BARREL CULVERT				QUINTUPLE BARREL CULVERT			
	S	H	F_1&F_2	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3
W-X302-1, W-X303-1 or W-X304-1. (FOR H=8'-0" OR LESS)	2'	2'-3⅜	5'-0"	5'-0⅝	6'-1⅛	3'-6"	9'-8"	11'-2"	12'-3⅝	8'-10⅝	14'-8"	16'-6⅝	17'-9⅝	14'-3⅝	19'-0"	21'-11⅝	23'-1"	19'-8"	23'-8"	27'-4"	28'-5⅝	25'-0⅝
	3'	3'-3⅜	5'-0"	"	"	2'-6"	9'-8"	"	"	7'-10⅝	14'-9"	"	"	13'-3⅜	19'-0"	"	"	18'-8"	23'-8"	"	"	24'-0⅝
	4'	4'-3⅜	5'-0"	"	"	1'-6"	9'-8"	"	"	6'-10⅝	14'-9"	"	"	12'-8⅝	19'-0"	"	"	17'-8"	23'-8"	"	"	23'-0⅝
	5'	5'-3⅜	5'-0"	5'-9⅛"	6'-11⅝	0'-6"	9'-8"	11'-2"	12'-3⅝	5'-10⅝	14'-9"	16'-6⅝	17'-8½	11'-3⅜	19'-0"	21'-11⅝	23'-1"	16'-8"	23'-8"	27'-4"	28'-5⅝	22'-0⅝
	6'	6'-3⅜	5'-2"	5'-11⅝"	7'-1⅝	Ⓐ 0"	9'-11"	11'-5⅛	12'-7⅝	5'-2⅛	14'-8"	16'-11⅝	18'-1"	10'-8"	19'-5"	22'-5"	23'-7"	16'-1⅝	24'-2"	27'-10⅝	29'-0⅝	21'-7⅝
	3'	3'-3⅜	6'-0"	6'-11⅝	8'-1"	3'-7⅜	11'-8"	13'-5⅝	14'-7⅝	10'-2⅝	17'-4"	20'-0⅝	21'-2"	16'-9"	23'-0"	26'-6⅝	27'-8⅝	23'-3⅝	28'-8"	33'-1⅛	34'-3"	29'-10"
	4'	4'-3⅜	6'-0"	"	"	2'-7⅜	11'-8"	"	"	9'-2⅝	17'-4"	"	"	15'-3⅜	23'-0"	"	"	22'-3⅝	28'-8"	"	"	28'-10"
	5'	5'-3⅜	6'-0"	6'-11⅝	8'-1"	1'-7⅜	11'-8"	13'-5⅝	14'-7⅝	8'-2⅝	17'-4"	20'-0⅝	21'-2"	14'-9"	23'-0"	26'-6⅝	27'-8⅝	21'-3⅝	28'-8"	33'-1⅛	34'-3"	27'-11"
	6'	6'-3⅜	6'-2"	7'-1⅝	8'-3⅝	0'-10⅝	11'-11"	13'-9⅝	14'-11"	7'-5⅜	17'-8"	20'-4⅝	21'-6⅜	14'-1⅝	23'-5"	27'-0⅝	28'-2⅝	20'-10⅝	29'-2"	33'-6⅛	34'-8"	27'-5"
	7'	7'-3⅜	6'-8"	7'-2⅝	8'-4⅝	Ⓐ 0"	12'-1"	13'-11⅝	15'-1⅛	6'-2⅛	17'-11"	20'-8⅜	21'-10"	12'-11"	23'-9"	27'-5⅜	28'-7"	19'-8"	29'-7"	34'-1"	35'-3⅜	26'-9⅜
	3'	3'-3½	7'-0"	8'-1"	9'-2⅜	4'-9⅜	13'-8"	15'-9⅜	16'-11⅝	12'-6⅜	20'-0"	23'-5⅛	24'-7⅝	20'-2⅝	27'-0"	31'-2⅜	32'-4"	27'-1"	33'-8"	38'-1⅝	39'-3⅜	34'-0⅝
	4'	4'-3½	7'-0"	"	"	3'-9⅜	13'-8"	"	"	11'-4⅝	20'-0"	"	"	19'-2⅝	27'-0"	"	"	26'-1"	33'-8"	"	"	33'-7½
	5'	5'-3½	7'-0"	8'-1"	9'-2⅜	2'-9⅜	13'-8"	15'-9⅜	16'-11⅝	10'-4⅜	20'-0"	23'-5⅛	24'-7⅝	18'-2⅝	27'-0"	31'-2⅜	32'-4"	25'-1"	33'-8"	38'-1⅝	39'-3⅜	33'-1⅝
	6'	6'-3½	7'-2"	8'-3⅝	9'-5⅛	2'-0"	13'-11"	16'-0⅝	17'-2⅝	9'-9⅝	20'-8"	23'-10⅝	25'-0⅛	17'-2⅝	27'-5"	31'-7½	32'-9⅝	25'-0⅜	34'-2"	39'-5⅝	40'-7⅝	32'-5⅝
	7'	7'-3½	7'-8"	8'-4⅝	9'-6⅝	0'-7⅝	14'-1"	16'-3⅜	17'-5"	8'-4"	20'-11"	24'-1½	25'-3⅜	16'-4⅝	27'-9"	32'-0½	33'-2⅝	24'-3⅝	34'-7"	39'-10⅝	41'-1"	32'-1"
	8'	9-3½	8'-1⅝"	8'-5⅝	9'-7½	Ⓐ 0"	14'-2"	16'-4⅝	17'-6⅝	7'-1"	21'-0"	24'-3"	25'-5⅝	14'-11⅝	27'-11"	32'-1⅝	33'-3⅝	22'-10⅝	34'-8"	40'-0⅜	41'-2⅝	30'-10⅝
	4'	4'-3⅝	8'-0"	9'-2⅜	10'-5⅝	4'-11⅝	15'-8"	18'-1⅛	19'-3"	14'-9⅜	23'-4"	26'-11⅜	28'-1⅛	22'-8"	31'-0"	35'-8½"	36'-11⅛"	31'-4⅝	38'-8"	44'-7⅜	45'-9⅜	40'-4½
	5'	5'-3⅝	8'-0"	9'-2⅜	10'-5⅝	3'-11⅝	15'-8"	18'-1⅛	19'-3"	13'-9⅜	23'-4"	26'-11⅜	28'-1⅛	21'-8"	31'-0"	35'-8½"	36'-11⅛"	30'-4⅝	38'-8"	44'-7⅜	45'-9⅜	39'-4⅝
	6'	6'-3⅝	8'-2"	9'-4⅝	10'-7"	3'-0"	15'-11"	18'-4⅝	19'-6⅝	12'-10⅝	23'-8"	27'-2"	28'-5⅜	21'-0⅝"	31'-5"	36'-3⅜	37'-5⅝	30'-0"	39'-2"	45'-2⅝	46'-4⅝	38'-11⅝
	7'	7'-3½	8'-3"	9'-4⅝	10'-7⅝	1'-3"	16'-1"	18'-6⅛	19'-8⅝	10'-3⅝	23'-11"	27'-5⅝	28'-9¼	19'-10⅝	31'-9"	36'-8"	37'-10⅝	28'-10⅝	39'-7"	45'-8¼	46'-10⅝	37'-11⅝
	8'	9-3½	8'-9"	9'-9⅞	10'-11⅝	0'-4⅛	16'-2"	18'-8"	19'-9⅝	9'-4⅝	24'-0"	27'-8⅝	28'-10⅝	18'-5⅝	31'-11"	36'-10⅝	38'-0⅝	27'-6"	39'-8"	45'-9⅝	46'-11⅝	36'-10⅝
	4'	4'-3⅝	9'-0"	10'-4⅝	11'-6⅝	6'-1½	17'-5"	20'-0⅝	21'-0⅝	16'-1⅝	26'-4"	30'-4⅝	31'-6⅝	26'-1⅝	35'-6"	40'-5"	41'-6⅝	36'-1⅝	43'-8"	50'-0⅝	51'-2"	44'-1⅝
	5'	5'-3⅝	9'-2"	10'-7"	11'-8⅝	5'-3⅛	17'-11"	20'-8⅛	21'-10"	15'-5"	26'-8"	30'-8⅛	31'-11⅛	25'-6⅝	35'-11"	40'-10⅝	42'-0⅛	35'-7⅝	44'-2"	51'-0"	52'-1⅛	43'-8⅛
	6'	6'-3⅝	9'-2"	10'-7"	11'-8⅝	4'-3⅜	17'-11"	20'-8⅛	21'-10"	14'-5"	26'-8"	30'-8½	31'-11⅛	24'-6⅝	35'-11"	40'-10⅝	42'-0⅛	34'-7⅝	44'-2"	51'-0"	52'-1⅛	43'-7⅛
	7'	7'-3½	9'-3"	10'-8⅝	11'-10"	2'-11"	18'-1"	20'-10⅝	22'-0⅛	13'-1⅛	26'-11"	31'-1"	32'-2⅜	23'-3⅝	36'-0"	41'-3⅝	42'-5⅝	33'-6⅝	44'-7"	51'-3⅝	52'-5⅛	43'-3⅛
	8'	9'-3½	9'-4"	10'-9⅜	11'-11⅝	1'-6⅜	18'-2"	20'-11⅜	22'-1½	11'-8⅝	27'-0"	31'-2⅝	32'-4"	21'-11"	36'-1"	41'-4⅝	42'-6⅝	32'-6"	44'-8"	51'-4"	52'-5⅝	42'-11⅝
	5'	5'-3⅝	10'-2"	11'-8⅝	12'-10⅝	6'-5⅝	19'-11"	23'-0"	24'-1⅝	17'-8⅝	29'-8"	34'-3⅜	35'-5"	28'-1⅛	39'-5"	45'-4⅝	46'-8"	40'-1"	49'-2"	56'-1⅛	57'-4⅛	49'-0"
	6'	6'-3⅝	10'-3"	11'-10"	13'-0"	5'-6⅝	20'-1"	23'-2⅝	24'-4⅛	16'-11"	29'-11"	34'-6⅝	35'-8⅝	28'-3⅝	39'-8"	45'-7⅛	47'-0⅝	39'-7½	49'-5"	56'-4⅜	57'-7⅜	49'-3"
	7'	7'-3½	10'-3"	11'-10"	13'-0"	4'-0⅜	20'-1"	23'-2⅝	24'-4⅛	15'-5"	29'-11"	34'-6⅝	35'-8⅝	26'-9⅝	39'-8"	45'-7⅛	47'-0⅝	38'-1½	49'-5"	56'-4⅜	57'-7⅜	48'-7½
	8'	9-3½	10'-4"	11'-11⅝	13'-1"	2'-8"	20'-2"	23'-3⅝	24'-5⅝	14'-0⅝	30'-0"	34'-7⅝	35'-9⅝	25'-5⅜	39'-10"	45'-8⅝	47'-1⅛	36'-8⅝	49'-6"	56'-5⅝	57'-8⅝	48'-1"
	5'	5'-3⅝	11'-2"	12'-10⅝	14'-0⅝	7'-7½	21'-11"	25'-3⅜	26'-5½	20'-0⅝	32'-8"	37'-8⅝	38'-10⅝	32'-5⅛	43'-5"	50'-1⅜	51'-3⅝	44'-1⅝	54'-2"	62'-1⅝	63'-5⅛	54'-2"
	6'	6'-3⅝	11'-3"	12'-11⅝	14'-1⅝	6'-6⅝	22'-1"	25'-4"	26'-7⅜	19'-2⅜	32'-11"	38'-0⅛	39'-2"	31'-0"	43'-8"	50'-4⅝	51'-7"	43'-2⅝	54'-5"	62'-4⅝	63'-8⅛	54'-5"
	7'	7'-3½	11'-3"	12'-11⅝	14'-1⅝	5'-5⅜	22'-1"	25'-4"	26'-7⅜	17'-11⅜	32'-11"	38'-0⅛	39'-2"	30'-3"	43'-8"	50'-4⅝	51'-7"	42'-3"	54'-5"	62'-4⅝	63'-8⅛	54'-3"
	8'	9-3½	11'-4"	12'-1"	14'-3"	3'-10⅝	22'-2"	25'-5⅛	26'-8"	16'-4"	33'-0"	38'-1⅛	39'-3"	28'-10"	43'-10"	50'-7⅝	51'-9⅝	41'-4⅝	54'-8"	62'-7⅛	64'-0⅝	53'-10⅝
	6'	6'-3⅝	12'-8"	14'-2⅝	15'-4⅝	7'-11⅝	24'-2"	27'-10⅝	29'-0⅝	21'-7⅝	36'-0"	41'-6⅝	42'-8⅝	35'-3⅝	47'-10"	55'-2⅝	56'-4⅝	48'-1⅝	—	—	—	—
	7'	7'-3½	12'-8"	"	"	6'-5⅝	24'-2"	"	"	20'-1⅜	36'-0"	"	"	32'-3½	47'-10"	"	"	47'-1⅝	—	—	—	—
	8'	9-3½	12'-8"	"	"	4'-11⅝	24'-2"	"	"	18'-7⅜	36'-0"	"	"	32'-3½	47'-10"	"	"	45'-11⅝	—	—	—	—
	6'	6'-3⅝	13'-6"	15'-1⅝	16'-6⅝	9'-1⅛	26'-2"	30'-2⅝	31'-4⅝	23'-1⅛	39'-0"	45'-0⅜	46'-2⅝	38'-3⅝	51'-10"	59'-10⅝	61'-0"	53'-7"	—	—	—	—
	7'	7'-3½	13'-6"	"	"	7'-7½	26'-2"	"	"	22'-5⅝	39'-0"	"	"	37'-3⅜	51'-10"	"	"	52'-1"	—	—	—	—
	8'	9-3½	13'-6"	"	"	6'-1⅝	26'-2"	"	"	20'-11⅛	39'-0"	"	"	35'-9⅝	51'-10"	"	"	50'-7"	—	—	—	—
W-X302-2, W-X303-2 or W-X304-2. (FOR H=9'-0" & OVER)	7'	9"	10'-3⅝	8'-6"	9'-0⅝	10'-11⅝	Ⓐ 0"	16'-5"	18'-11⅝	20'-1⅛	8'-2⅝	24'-4"	28'-1⅜	29'-5"	17'-9"	32'-3"	33'-2⅝	30'-8⅝	26'-5⅝	40'-2"	41'-4⅝	37'-1⅝	35'-7⅛
	8'	9	10'-3⅝	8'-6"	10'-1⅝	12'-1⅛	0'-2⅝	18'-5"	21'-3⅝	22'-5"	10'-6"	27'-4"	31'-6⅝	32'-8⅝	20'-9⅜	36'-3"	41'-10⅝	42'-11⅝	33'-1"	45'-2"	52'-1⅝	53'-3⅝	41'-8⅝
	10'	12'-3⅝	9'-5"	11'-2"	12'-3⅜	Ⓐ 0"	18'-8"	21'-6⅝	22'-8½	9'-3⅝	27'-5"	31'-11⅝	33'-1⅛	19'-8⅝	36'-8"	42'-3⅝	43'-5"	30'-0⅝	45'-8"	52'-8⅝	53'-10⅝	40'-5⅝
	9'	10'-3⅝	10'-6"	12'-1⅝	13'-3⅜	1'-4⅜	20'-5"	23'-6⅝	24'-8½	12'-3⅝	30'-4"	35'-0⅛	36'-2⅝	24'-3"	40'-3"	46'-5⅛	47'-7⅝	35'-6⅝	50'-2"	57'-1⅛	58'-1"	47'-2"
	10'	12'-3⅝	10'-8"	12'-3⅜	13'-5⅝	0'-0⅝	20'-8"	23'-10⅝	25'-0⅛	11'-7⅛	30'-8"	35'-4⅝	36'-6⅛	23'-1⅛	40'-8"	46'-11⅝	48'-1⅛	34'-8⅝	50'-8"	58'-1⅝	59'-5"	46'-8⅝
	11'	13'-3⅝	10'-10"	12'-6⅝	13'-8"	Ⓐ 0"	20'-11"	24'-0⅝	25'-2⅛	10'-2⅝	30'-10"	35'-7⅝	36'-9"	21'-10"	40'-10"	47'-1⅛	48'-3⅝	33'-9⅝	50'-10"	58'-3⅝	59'-10⅛	44'-11⅛
	9'	10'-3⅝	11'-6"	13'-3⅝	14'-5⅝	2'-2⅝	22'-5"	25'-10⅝	27'-0⅝	15'-3⅝	33'-4"	38'-10⅝	39'-11⅝	27'-3⅝	44'-3"	51'-1⅛	52'-3"	40'-0"	55'-2"	63'-0⅝	64'-3⅛	52'-1⅛
	10'	12'-3⅝	11'-8"	13'-5⅝	14'-7⅝	1'-2⅝	22'-8"	26'-2⅝	27'-4"	13'-10⅜	33'-8"	38'-10⅝	40'-0⅛	24'-7⅛	44'-8"	51'-5⅝	52'-7⅛	39'-3⅝	55'-8"	63'-5⅝	64'-8⅝	52'-0"
	11'	13'-3⅝	11'-10"	13'-8"	14'-9⅜	Ⓐ 0"	22'-10"	26'-4⅝	27'-6⅛	12'-6⅜	33'-10"	39'-0⅛	40'-0⅝	25'-3⅝	44'-10"	51'-9⅝	52'-11"	38'-10"	55'-10"	64'-1⅝	65'-2⅝	52'-10⅝
	12'	15'-3⅝	12'-0"	13'-10⅝	15'-0⅝	Ⓐ 0"	23'-0"	26'-6⅝	27'-8⅝	11'-3⅝	34'-0"	39'-3⅝	40'-5"	26'-0"	45'-0"	51'-11⅝	53'-1⅛	36'-9⅝	56'-0"	64'-5"	65'-5⅝	53'-9⅝
	9'	10'-3⅝	12'-6"	14'-5⅛	15'-7"	3'-8"	24'-5"	28'-2⅜	29'-4⅜	17'-5"	34'-4"	41'-1⅛	42'-3⅛	31'-2⅝	48'-3"	55'-0⅝	56'-2⅝	44'-1⅛	—	—	—	—
	10'	12'-3⅝	12'-8"	14'-7⅛	15'-9⅝	2'-6⅝	24'-8"	28'-5⅝	29'-7⅝	16'-2⅝	34'-8"	41'-5⅝	42'-7⅝	30'-5⅝	48'-7"	55'-4⅝	56'-6⅝	43'-5⅝	—	—	—	—
	11'	13'-3⅝	12'-10"	14'-9⅜	15'-11⅝	1'-10⅝	24'-10"	28'-8⅝	29'-10⅜	14'-11"	35'-0"	42'-0⅝	43'-1⅛	29'-8⅝	49'-0"	55'-9⅝	56'-11⅝	42'-10⅝	—	—	—	—
	12'	15'-3⅝	13'-0"	15'-0⅝	16'-2"	Ⓐ 0"	25'-0"	28'-10⅝	30'-0⅝	13'-7⅝	37'-0"	42'-8⅝	43'-10⅝	27'-7⅝	49'-0"	55'-7"	57'-0⅜	41'-5⅝	—	—	—	—
	9'	10'-3⅝	13'-4"	15'-1⅝	16'-3⅝	4'-3⅜	26'-5"	30'-0"	31'-2"	19'-0⅝	35'-4"	43'-5"	44'-7"	33'-1⅝	50'-3"	57'-3⅝	58'-5⅝	46'-3⅝	—	—	—	—
	10'	12'-3⅝	13'-8"	15'-3⅝	16'-5⅝	3'-1⅝	26'-8"	30'-3⅝	31'-5⅝	18'-6⅝	35'-8"	43'-9⅝	44'-11⅝	33'-5⅛	50'-8"	57'-8⅝	58'-10⅝	46'-8⅛	—	—	—	—
	11'	13'-3⅝	13'-10"	15'-5⅝	16'-7⅝	2'-0⅝	26'-10"	30'-6⅛	31'-8⅛	17'-10⅜	35'-10"	44'-0"	45'-1"	33'-10⅜	51'-0"	58'-0⅛	59'-2⅛	47'-0⅜	—	—	—	—
	12'	15'-3⅝	14'-0"	16'-1⅝	17'-3⅜	0'-10⅜	27'-0"	31'-2⅝	32'-4"	15'-11"	40'-0"	46'-2⅝	47'-4"	30'-11"	53'-0"	61'-2⅝	62'-4⅝	49'-5⅛	—	—	—	—

Ⓐ Special case for these boxes, See Detail 'R' and Table 'R' for revised values of F_1, F_2, W_2 and W_3, when apron width is more than 1'-0" and W_3=0". For Details 'R' and Tables 'R' for each slope, see Drawing Nos. W-X302-1, W-X302-2, or W-X303-1, W-X303-2, or W-X304-1, W-X304-2.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 30° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X302-1 or W-X302-2	W-X303-1 or W-X303-2	W-X304-1 or W-X304-2.

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

CLASS S CONCRETE

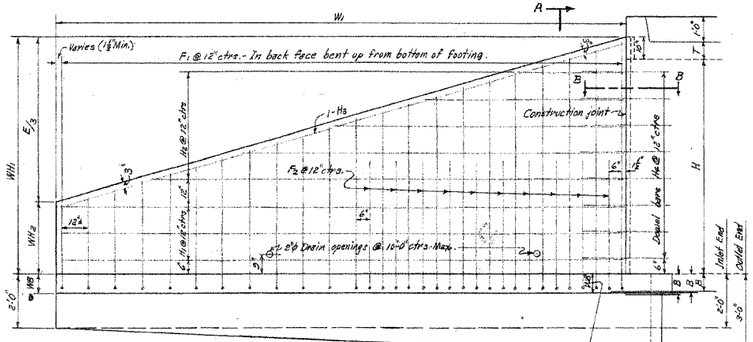
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

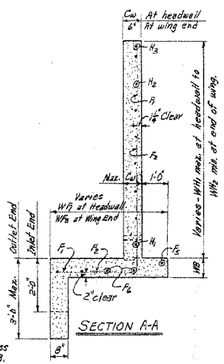
4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H=2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'.

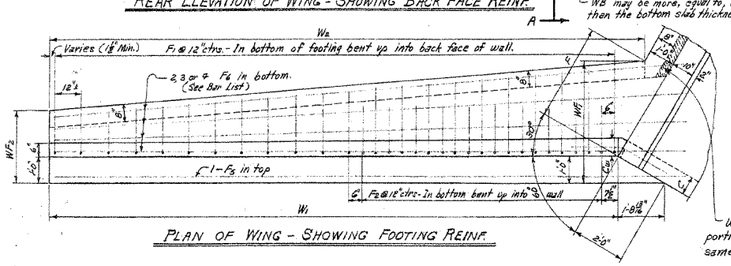
STANDARD DRAWING NO. W-X30



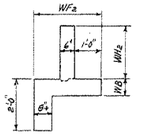
REAR ELEVATION OF WING - SHOWING BACK FACE REINF.



SECTION A-A

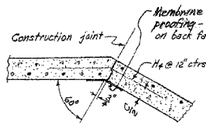


PLAN OF WING - SHOWING FOOTING REINF.

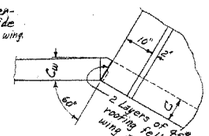


END VIEW OF WING

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the barrel base B.



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEADWALL = C	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM HDWL. TO END OF WING	LENGTH OF WINGWALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE INLET END	* QUANTITY PER WING CLASS S CONCRETE OUTLET END
H	WB	C_W	WH_1	WH_2	W_{F5}	W_{F5}	F	E	W_1	W_2	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-8"	2'-0"	0'-11⅞"	6'-6"	7'-6"	7'-1½"	0.889	0.986
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1⅜"	1'-4⅜"	8'-6"	9'-9⅜"	9'-3½"	1.338	1.466
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-9"	10'-6"	12'-1½"	12'-1½"	1.868	2.027
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅝"	12'-6"	14'-5¾"	14'-7½"	2.978	2.669
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅝"	12'-6"	14'-5¾"	14'-7½"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-4⅝"	14'-6"	16'-9"	17'-1⅝"	3.940	3.661
		7⅝"	6'-10"	2'-0"	3'-8"	2'-6"	2'-4⅝"	14'-6"	16'-9"	17'-1⅝"	3.811	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-4⅝"	14'-6"	16'-9"	17'-1⅝"	3.582	3.803
7'	8⅝"	7⅝"	7'-10"	2'-8"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0⅝"	19'-0⅝"	9.505	9.758
		8"	7'-10"	2'-8"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0⅝"	19'-0⅝"	9.597	9.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	18'-6"	21'-4½"	22'-4"	5.761	6.047

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_3.

APRON DIMENSION W_3

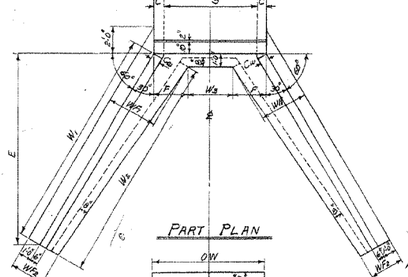
$W_3 = (CW - 2F)$

CLEAR SPAN S	CLEAR HEIGHT H	FOOTING DIMENSION 2F	SINGLE BARREL CULVERT OW	SINGLE BARREL CULVERT W_3	DOUBLE BARREL CULVERT OW	DOUBLE BARREL CULVERT W_3	TRIPLE BARREL CULVERT OW	TRIPLE BARREL CULVERT W_3	QUADRUPLE BARREL CULVERT OW	QUADRUPLE BARREL CULVERT W_3	QUINTUPLE BARREL CULVERT OW	QUINTUPLE BARREL CULVERT W_3
4'	2'	1'-11½"	5'-0"	3'-0½"	9'-8"	7'-8½"	14'-4"	12'-4½"	19'-0"	17'-0½"	23'-8"	21'-8½"
	3'	2'-8½"	5'-0"	2'-3½"	9'-8"	6'-11⅝"	14'-4"	11'-7⅝"	19'-0"	16'-3⅝"	23'-8"	20'-11⅝"
	4'	3'-6"	5'-0"	1'-6"	9'-8"	6'-2"	14'-4"	10'-10"	19'-0"	15'-6"	23'-8"	20'-2"
	5'	4'-3⅜"	5'-0"	0'-8½"	9'-8"	5'-4⅜"	14'-4"	10'-0⅜"	19'-0"	14'-8⅜"	23'-8"	19'-8⅜"
	6'	5'-0½"	5'-0"	0'-1½"	9'-11"	4'-11½"	14'-8"	9'-7½"	19'-5"	14'-4½"	24'-2"	19'-1½"
5'	3'	2'-8½"	6'-0"	3'-3⅜"	11'-8"	8'-11⅛"	17'-4"	14'-7⅛"	23'-0"	20'-3⅛"	28'-8"	25'-11⅛"
	4'	3'-6"	6'-0"	2'-6"	11'-8"	8'-1"	17'-4"	13'-10"	23'-0"	19'-6"	28'-8"	25'-2"
	5'	4'-3⅜"	6'-0"	1'-8½"	11'-8"	7'-4⅜"	17'-4"	13'-0⅜"	23'-0"	18'-8⅜"	28'-8"	24'-8⅜"
	6'	5'-0½"	6'-0"	1'-1½"	11'-11"	6'-10½"	17'-8"	12'-7½"	23'-5"	18'-4½"	29'-2"	24'-1½"
	7'	6'-2½"	6'-3"	0'-1½"	12'-1"	5'-10½"	17'-11"	11'-8½"	23'-9"	17'-6½"	29'-7"	23'-5½"
6'	3'	2'-8½"	7'-0"	4'-3⅜"	13'-8"	10'-11⅛"	20'-8"	17'-7⅛"	27'-0"	25'-3⅛"	33'-8"	30'-11⅛"
	4'	3'-6"	7'-0"	3'-6"	13'-8"	10'-1"	20'-8"	16'-10"	27'-0"	23'-6"	33'-8"	30'-2"
	5'	4'-3⅜"	7'-0"	2'-8½"	13'-9"	9'-4⅜"	20'-9"	16'-0⅜"	27'-1"	22'-8⅜"	33'-8"	29'-8⅜"
	6'	5'-0½"	7'-2"	2'-1½"	13'-11"	8'-10½"	20'-8"	15'-7½"	27'-5"	22'-4½"	34'-2"	29'-1½"
	7'	6'-2½"	7'-3"	1'-0½"	14'-1"	7'-10½"	20'-11"	14'-8½"	27'-9"	21'-6½"	34'-7"	28'-4½"
	8'	7'-1"	7'-4"	0'-0"	14'-2"	6'-10"	21'-0"	13'-8"	27'-10"	20'-6"	34'-8"	27'-6"
7'	4'	3'-6"	8'-0"	4'-6"	15'-8"	12'-2"	23'-4"	19'-10"	31'-0"	27'-6"	38'-8"	35'-2"
	5'	4'-3⅜"	8'-0"	3'-8½"	15'-9"	11'-4⅜"	23'-5"	19'-0⅜"	31'-0"	26'-8⅜"	38'-8"	34'-8⅜"
	6'	5'-0½"	8'-2"	3'-1½"	15'-11"	10'-10½"	23'-8"	18'-7½"	31'-5"	26'-4½"	39'-2"	34'-1½"
	7'	6'-2½"	8'-3"	2'-0½"	16'-1"	9'-10½"	23'-11"	17'-8½"	31'-9"	25'-6½"	39'-7"	33'-4½"
	8'	7'-1"	8'-4"	1'-0"	16'-2"	8'-10"	24'-0"	16'-8"	31'-10"	24'-6"	39'-8"	32'-4"
8'	4'	3'-6"	9'-0"	5'-0"	17'-8"	14'-2"	26'-4"	22'-10"	35'-0"	31'-6"	43'-8"	40'-2"
	5'	4'-3⅜"	9'-2"	4'-0⅜"	17'-11"	13'-7⅜"	26'-8"	22'-0⅜"	35'-5"	31'-1⅜"	44'-2"	39'-8⅜"
	6'	5'-0½"	9'-2"	4'-1½"	17'-11"	12'-10½"	26'-8"	21'-1½"	35'-5"	30'-1½"	44'-2"	39'-1½"
	7'	6'-2½"	9'-3"	3'-0½"	18'-1"	11'-10½"	26'-11"	20'-0½"	35'-9"	29'-1½"	44'-7"	38'-4½"
	8'	7'-1"	9'-3"	2'-0"	18'-2"	10'-10"	27'-0"	19'-0"	35'-10"	28'-0"	44'-8"	37'-4"
9'	5'	4'-3⅜"	10'-2"	5'-0⅜"	19'-11"	15'-7⅜"	29'-8"	25'-4⅜"	39'-5"	35'-1⅜"	49'-2"	44'-8⅜"
	6'	5'-0½"	10'-3"	5'-1½"	20'-1"	15'-0½"	29'-11"	24'-5½"	39'-9"	34'-5½"	49'-7"	44'-1½"
	7'	6'-2½"	10'-3"	4'-0½"	20'-1"	13'-10½"	29'-11"	23'-5½"	39'-9"	33'-5½"	49'-7"	43'-1½"
	8'	7'-1"	10'-4"	3'-0"	20'-2"	12'-10"	30'-0"	22'-8"	39'-10"	32'-6"	49'-8"	42'-4"
10'	5'	4'-3⅜"	11'-2"	6'-0⅜"	21'-11"	17'-7⅜"	32'-8"	28'-4⅜"	43'-5"	39'-1⅜"	54'-2"	49'-8⅜"
	6'	5'-0½"	11'-3"	6'-2½"	22'-1"	17'-0½"	32'-11"	27'-10½"	43'-9"	38'-5½"	54'-7"	49'-1½"
	7'	6'-2½"	11'-3"	5'-0½"	22'-1"	15'-10½"	32'-11"	26'-0½"	43'-9"	37'-5½"	54'-7"	48'-1½"
	8'	7'-1"	11'-4"	4'-0"	22'-2"	14'-10"	33'-0"	25'-6"	43'-10"	36'-6"	54'-8"	47'-4"
11'	6'	5'-0½"	12'-3"	7'-3½"	24'-2"	19'-1½"	36'-0"	30'-11½"	47'-10"	42'-9½"		
	7'	6'-2½"	12'-3"	6'-1½"	24'-2"	17'-11½"	36'-0"	29'-3½"	47'-10"	41'-7½"		
	8'	7'-1"	12'-3"	5'-0"	24'-2"	16'-10"	36'-0"	28'-8"	47'-10"	40'-6"		
12	6'	5'-0½"	13'-0"	8'-3½"	26'-2"	21'-1½"	39'-0"	33'-11½"	51'-10"	46'-9½"		
	7'	6'-2½"	13'-0"	7'-1½"	26'-2"	19'-11½"	39'-0"	32'-3½"	51'-10"	45'-7½"		
	8'	7'-1"	13'-0"	6'-0"	26'-2"	18'-10"	39'-0"	31'-8"	51'-10"	44'-6"		

QUANTITIES

CLEAR SPAN S	CLEAR HEIGHT H	THICKNESS OF WING OR HEADWALL C_W	THICKNESS OF WING FOOTING WB	® REINFORCING STEEL - LB. FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
	S	H	C_W	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	100.0	4.50	5.46	6.42	7.38	8.34
	3'	6"	7"	169.4	6.26	7.21	8.17	9.13	10.09
	4'	6"	7"	254.6	8.33	9.28	10.24	11.20	12.16
	5'	6"	7"	357.8	10.12	11.68	12.69	13.60	14.56
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49
5'	3'	6"	7"	169.4	6.47	7.43	8.79	9.36	11.12
	4'	6"	7"	254.6	8.54	9.70	10.87	10.03	13.20
	5'	6"	7"	357.8	10.94	12.10	13.26	14.43	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7½"	8½"	1139.6	18.94	20.15	21.37	22.59	23.80
6'	3'	6"	7"	169.4	6.68	8.06	9.42	10.80	12.18
	4'	6"	7"	254.6	8.75	10.14	11.49	12.87	14.25
	5'	6"	7"	357.8	11.15	12.53	13.89	15.27	16.65
	6'	7"	8"	583.1	14.98	16.39	17.78	19.18	20.59
	7'	7½"	8½"	1139.6	19.15	20.58	22.00	23.43	24.86
	8'	8"	9"	1925.6	24.09	25.53	26.96	28.39	29.83
7'	4'	6"	7"	254.6	8.97	10.58	12.15	13.76	15.35
	5'	6"	7"	357.8	11.36	12.97	14.58	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66
	7'	7½"	8½"	1139.6	19.38	21.02	22.69	24.28	25.92
	8'	8"	9"	1925.6	24.32	25.97	27.60	29.25	30.89
8'	4'	6"	7"	254.6	9.19	11.03	12.82	14.65	16.45
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.34
	6'	7"	8"	583.1	15.92	17.27	19.09	20.93	22.75
	7'	7½"	8½"	1139.6	19.59	21.46	23.30	25.16	26.99
	8'	8"	9"	1925.6	24.54	26.91	28.29	30.11	31.96
9'	5'	7"	7"	357.8	12.26	14.32	16.37	18.45	20.47
	6'	7½"	8"	583.1	15.98	18.04	20.09	22.19	24.23
	7'	7½"	8½"	1139.6	19.81	21.91	23.96	26.06	28.10
	8'	8"	9"	1925.6	24.76	26.86	28.91	31.00	33.05
10'	5'	7"	7"	357.8	12.49	14.90	17.05	19.26	21.52
	6'	7½"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7½"	8½"	1139.6	20.09	22.37	24.64	26.87	29.15
	8'	8"	9"	1925.6	24.98	27.31	29.58	31.81	34.10
11'	6'	8"	8"	583.1	16.69	19.27	21.74	24.23	
	7'	8"	8½"	1139.6	20.64	23.22	25.71	28.18	
	8'	8"	9"	1925.6	25.19	27.77	30.27	32.74	
12	6'	8"	8"	583.1	16.92	19.75	22.95	25.18	
	7'	8"	8½"	1139.6	20.87	23.69	26.90	29.13	
	8'	8"	9"	1925.6	25.42	28.25	30.96	33.69	

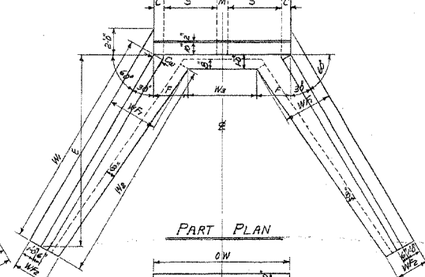
® For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT

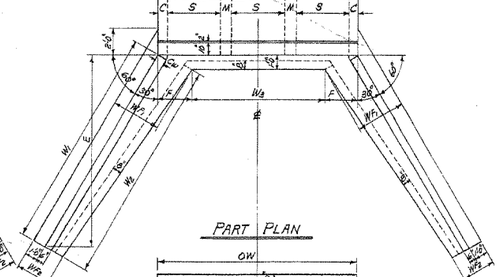


PART PLAN

END ELEVATION

DOUBLE BARREL CULVERT

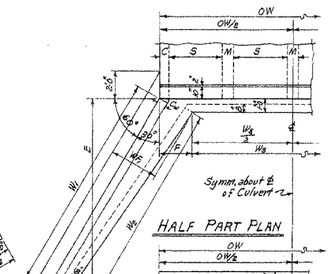
NOTE:- Plans and Elevations are not to scale.



PART PLAN

END ELEVATION

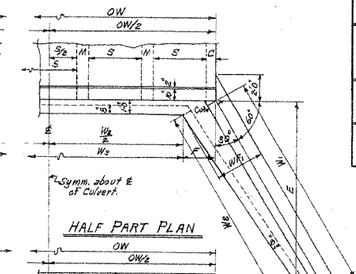
TRIPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUINTUPLE BARREL CULVERT

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos. as listed below.

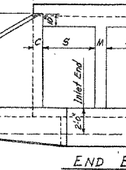
SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

CLASS S CONCRETE

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT H	F_1 BENT: In bottom of footing bent up into back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	F_2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F_1 bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	F_3 STRAIGHT: Longitudinal in top of wing footing heel. SIZE	NO. REQ'D	LENGTH	F_4 STRAIGHT: Longitudinal in bottom of wing footing toe. SIZE	NO. REQ'D	LENGTH	H_1 STRAIGHT: Horizontal in back face of wing. SIZE	SPACING	NO. REQ'D	LENGTH	H_2 STRAIGHT: Horizontal in back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MAX.	LENGTHS VARY MIN.	H_3 STRAIGHT: In back face of wing at top on slope. SIZE	NO. REQ'D	LENGTH	H_4 BENT: Dowels thru construction joint at headwall. SIZE	SPACING	NO. REQ'D	LENGTH	X	QUANTITY REINFORCING STEEL PER WING LB.
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	—	—	—	—	—	—	#3	1	9'-8"	#3	2	8'-6"	#3	12"	1	7'-2"	#3	12"	1	—	9'-6"	#8	1	9'-9"	#3	12"	2	2'-8"	1'-4"	27.0
3'	#3	12"	10	2'-2"	5'-2"	0'-10"	1'-3"	1'-5"	3'-6"	—	—	—	—	—	—	#3	1	12'-0"	#3	2	11'-0"	#3	12"	1	9'-6"	#3	12"	2	7'-6"	9'-0"	#8	1	9'-9"	#8	12"	3	2'-8"	1'-4"	41.1
4'	#3	12"	13	2'-9"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	14'-9"	#3	3	13'-6"	#3	12"	1	11'-10"	#3	12"	3	10'-11"	9'-0"	#3	1	10'-2"	#3	12"	4	2'-8"	1'-4"	63.7
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-8"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#5	12"	2	14'-2"	#3	12"	3	10'-11"	9'-0"	#3	1	10'-2"	#3	12"	5	2'-8"	1'-4"	89.5
6'	#4	12"	17	3'-6"	9'-3"	1'-2"	2'-3"	2'-5"	7'-1"	#3	12"	4	4'-6"	1'-6"	3'-3"	#3	1	18'-0"	#3	3	18'-6"	#3	12"	2	16'-6"	#3	12"	4	14'-5"	9'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-4"	145.8
7'	#4	12"	20	3'-9"	10'-9"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	21'-6"	#4	4	21'-0"	#4	12"	2	18'-9"	#4	12"	5	17'-9"	9'-0"	#4	1	18'-5"	#4	12"	7	3'-6"	1'-9"	283.7
8'	#4	12"	22	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	23'-8"	#4	12"	3	21'-0"	#4	12"	5	17'-9"	9'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4

BAR BENDING DIAGRAMS



REVISIONS:- Membrane added. 5-10-66 W.C.H.

Designed By:- W.C.H. 8-20-62 Checked By:- RMS 1-9-63
Drawn By:- W.C.H. 12-4-62 Checked By:- RMS 1-31-63
Quantities By:- W.C.H. 12-14-62 Checked By:- RMS 2-20-63
Revised By:- RMS 3-20-63

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H= 8'-0" OR LESS

STANDARD DRAWING NO. W-X003-1

W.V.I.B.R. (5)

RESHOT 3-8-93

176

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			130	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 30° SKEWED ENDS.

Note:- For Details of Standard Wings and bar lists, see Drawing No. W-X302-1 or W-X302-2; W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	'a' bars STRAIGHT In Top and Bottom Slabs of Barrel. SIZE	SPACING	No. Reqd.	LENGTH	'a1' bars STRAIGHT In Top and Bottom Slab of Barrel- (Four of each Length) SIZE	SPACING	No. Reqd.	LENGTH MAX.	LENGTH MIN.
0'-0 TO 5'-0" MAXIMUM	4'	2'			108	4'-9"			4	2'-11"	—
		3'			108	4'-9"			4	"	—
		4'	# 5	13"	108	4'-9"	# 5	13"	4	"	—
		5'			108	4'-9"			4	"	—
		6'			108	4'-11"			4	3'-1"	—
	5'	3'			108	5'-9"			4	3'-11"	—
		4'			108	5'-9"			4	"	—
		5'	# 6	12"	108	5'-9"	# 6	12"	4	"	—
		6'			108	5'-11"			4	4'-1"	—
		7'			108	6'-0"			4	4'-2"	—
	6'	5'			114	6'-9"			8	5'-0"	3'-3"
		6'			114	6'-9"			8	"	"
		7'	# 6	12"	114	6'-9"	# 6	12"	8	"	"
		8'			114	7'-0"			8	5'-3"	3'-6"
		9'			114	7'-1"			8	5'-4"	3'-7"
	7'	6'			124	7'-9"			12	6'-2"	3'-0"
		7'			124	7'-9"			12	"	"
		8'	# 6	12"	124	7'-11"	# 6	12"	12	6'-4"	3'-2"
		9'			124	8'-1"			12	6'-6"	3'-4"
		10'			124	8'-3"			12	6'-8"	3'-5"
	8'	7'			112	8'-9"			12	7'-0"	3'-6"
		8'			112	8'-11"			12	7'-2"	3'-8"
		9'	# 7	12"	112	9'-0"	# 6	12"	12	7'-3"	3'-9"
		10'			112	9'-2"			12	7'-5"	3'-10"
		11'			112	9'-5"			12	7'-6"	4'-0"
	9'	8'			122	9'-11"			16	8'-9"	3'-7"
		9'			122	10'-0"			16	8'-11"	3'-8"
		10'	# 7	12"	122	10'-2"	# 7	12"	16	9'-0"	3'-9"
		11'			122	10'-4"			16	9'-2"	3'-10"
		12'			122	10'-5"			16	9'-3"	4'-0"
	10'	9'			110	10'-6"			20	9'-4"	3'-7"
		10'			110	10'-8"			20	9'-6"	3'-8"
		11'	# 7	12"	110	10'-9"	# 7	12"	20	9'-7"	3'-9"
		12'			110	10'-11"			20	9'-9"	3'-10"
		13'			110	11'-0"			20	9'-10"	4'-0"
	11'	10'			110	11'-2"			20	9'-11"	3'-7"
		11'			110	11'-3"			20	10'-0"	3'-8"
		12'	# 7	12"	110	11'-4"	# 7	12"	20	10'-1"	3'-9"
		13'			110	11'-5"			20	10'-2"	3'-10"
		14'			110	11'-7"			20	10'-3"	4'-0"
	12'	11'			118	12'-4"			24	10'-6"	3'-7"
		12'			118	12'-4"			24	"	"
		13'	# 7	11"	118	12'-4"	# 7	11"	24	"	"
		14'			118	12'-3"			24	10'-8"	3'-9"
		15'			118	12'-3"			24	10'-9"	3'-10"
		16'			118	12'-3"			24	10'-10"	4'-0"
	13'	12'			108	13'-1"			24	11'-6"	3'-7"
		13'			108	13'-1"			24	"	"
		14'	# 8	12"	108	13'-1"	# 8	12"	24	11'-7"	3'-8"
		15'			108	13'-2"			24	11'-8"	3'-9"
		16'			108	13'-2"			24	11'-9"	3'-10"
		17'			108	13'-2"			24	11'-10"	4'-0"
	14'	13'			106	13'-10"			24	12'-0"	3'-8"
		14'			106	13'-10"			24	12'-1"	3'-9"
		15'	# 8	12"	106	13'-10"	# 8	12"	24	12'-2"	3'-10"
		16'			106	13'-11"			24	12'-3"	4'-0"
		17'			106	13'-11"			24	12'-4"	4'-1"
	15'	14'			106	14'-6"			24	12'-5"	3'-9"
		15'			106	14'-6"			24	12'-6"	3'-10"
		16'	# 8	12"	106	14'-6"	# 8	12"	24	12'-7"	4'-0"
		17'			106	14'-7"			24	12'-8"	4'-1"
		18'			106	14'-7"			24	12'-9"	4'-2"
	16'	15'			106	15'-2"			24	13'-0"	3'-10"
		16'			106	15'-2"			24	13'-1"	3'-11"
		17'	# 8	12"	106	15'-2"	# 8	12"	24	13'-2"	4'-0"
		18'			106	15'-3"			24	13'-3"	4'-1"
		19'			106	15'-3"			24	13'-4"	4'-2"

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	'b' bars BENT - See Diagrams below In Top and Bottom Slabs of Barrel- hooked. Alternate with 'a' bars SIZE	SPACING	No. Reqd.	LENGTH	X	'b1' bars BENT In Top and Bottom Slabs of Barrel- one end hooked. (Four of each Length) Alternate with 'a1' bars. SIZE	SPACING	No. Reqd.	LENGTH MAX.	LENGTH MIN.	X MAX.	X MIN.
0'-0 TO 5'-0" MAXIMUM	4'	2'			108	5'-10"	6'-8"			4	4'-5"	—	3'-10"	—
		3'			108	5'-10"	"			4	"	—	"	—
		4'	# 6	13"	108	5'-10"	"	# 6	13"	4	"	—	"	—
		5'			108	5'-10"	"			4	"	—	"	—
		6'			108	6'-0"	6'-10"			8	4'-8"	2'-8"	4'-0"	2'-1"
	5'	3'			106	6'-10"	5'-8"			8	5'-5"	3'-6"	4'-10"	2'-11"
		4'			106	6'-10"	"			8	"	"	"	"
		5'	# 6	13"	106	6'-10"	"	# 6	13"	8	"	"	"	"
		6'			106	7'-0"	5'-10"			8	5'-7"	3'-8"	5'-0"	3'-1"
		7'			106	7'-1"	5'-11"			8	5'-8"	3'-9"	5'-1"	3'-2"
	6'	5'			114	7'-10"	6'-8"			12	6'-5"	2'-11"	5'-10"	2'-6"
		6'			114	7'-10"	"			12	"	"	"	"
		7'	# 6	12"	114	7'-10"	"	# 6	12"	12	"	"	"	"
		8'			114	8'-0"	6'-10"			12	6'-7"	3'-1"	6'-0"	2'-6"
		9'			114	8'-1"	6'-11"			12	6'-8"	3'-2"	6'-1"	2'-7"
		10'			114	8'-2"	7'-0"			12	6'-9"	3'-3"	6'-2"	2'-8"
	7'	6'			122	8'-10"	7'-8"			12	7'-6"	2'-9"	6'-11"	2'-9"
		7'			122	8'-10"	"			12	"	"	"	"
		8'	# 6	12"	122	9'-0"	7'-10"	# 6	12"	12	7'-7"	2'-10"	7'-0"	2'-10"
		9'			122	9'-1"	7'-11"			16	7'-9"	3'-0"	7'-2"	2'-5"
		10'			122	9'-2"	8'-0"			16	7'-10"	3'-1"	7'-3"	2'-6"
		11'			122	9'-3"	8'-1"			16	7'-11"	3'-2"	7'-4"	2'-7"
		12'			122	9'-4"	8'-2"			16	8'-0"	3'-3"	7'-5"	2'-8"
	8'	7'			112	9'-10"	8'-8"			16	8'-5"	3'-2"	7'-10"	2'-7"
		8'			112	10'-0"	8'-10"			16	8'-7"	3'-4"	8'-0"	2'-9"
		9'	# 7	12"	112	10'-1"	9'-0"	# 6	12"	16	8'-8"	3'-5"	8'-1"	2'-10"
		10'			112	10'-3"	9'-2"			16	8'-9"	3'-6"	8'-2"	2'-11"
		11'			112	10'-4"	9'-3"			16	8'-11"	3'-8"	8'-3"	3'-0"
		12'			112	10'-6"	9'-4"			16	9'-0"	3'-9"	8'-4"	3'-1"
	9'	8'			120	11'-0"	9'-10"			20	9'-8"	3'-4"	9'-1"	2'-9"
		9'			120	11'-1"	9'-11"			20	9'-9"	3'-5"	9'-2"	2'-10"
		10'	# 7	11"	120	11'-1"	9'-11"	# 7	12"	20	"	"	"	"
		11'			120	11'-1"	9'-11"			20	9'-10"	3'-4"	9'-3"	2'-11"
		12'			120	11'-2"	10'-0"			20	10'-0"	3'-6"	9'-4"	3'-0"
	10'	9'			108	11'-9"	10'-6"			20	10'-1"	3'-7"	9'-5"	3'-1"
		10'			108	12'-0"	10'-8"			20	10'-2"	3'-10"	9'-7"	2'-10"
		11'	# 7	12"	108	12'-0"	10'-8"	# 7	12"	20	10'-3"	4'-0"	9'-8"	2'-11"
		12'			108	12'-1"	10'-9"			20	10'-4"	4'-2"	9'-9"	3'-0"
		13'			108	12'-1"	10'-9"			20	10'-5"	4'-3"	9'-10"	3'-1"
	11'	10'			108	12'-6"	11'-2"			20	10'-7"	3'-8"	10'-0"	3'-0"
		11'			108	12'-6"	11'-2"			20	10'-8"	3'-9"	10'-1"	3'-1"
		12'	# 7	12"	108	12'-6"	11'-2"	# 7	12"	20	10'-9"	3'-10"	10'-2"	3'-2"
		13'			108	12'-7"	11'-3"			20	10'-10"	4'-0"	10'-3"	3'-3"
		14'			108	12'-7"	11'-3"			20	10'-11"	4'-2"	10'-4"	3'-4"
	12'	11'			118	13'-4"	12'-0"			24	11'-11"	4'-0"	11'-3"	3'-4"
		12'			118	13'-4"	"			24	"	"	"	"
		13'	# 7	11"	118	13'-4"	"	# 7	11"	24	"	"	"	"
		14'			118	13'-4"	"			24	12'-0"	4'-0"	11'-5"	3'-4"
		15'			118	13'-4"	"			24	12'-1"	4'-2"	11'-6"	3'-5"
		16'			118	13'-4"	"			24	12'-2"	4'-3"	11'-7"	3'-6"
	13'	12'			108	13'-8"	12'-6"			24	12'-3"	4'-0"	11'-8"	3'-5"
		13'			108	13'-8"	"			24	"	"	"	"
		14'	# 8	12"	108	13'-8"	"	# 8	12"	24	"	"	"	"
		15'			108	13'-8"	"			24	12'-4"	4'-0"	11'-9"	3'-6"
		16'			108	13'-8"	"			24	12'-5"	4'-2"	11'-10"	3'-7"
		17'			108	13'-8"	"			24	12'-6"	4'-3"	11'-11"	3'-8"
	14'	13'			106	14'-4"	13'-0"			24	12'-10"	4'-1"	12'-2"	3'-5"
		14'			106	14'-4"	"			24	"	"	"	"
		15'	# 8	12"	106	14'-4"	"	# 8	12"	24	"	"	"	"
		16'			106	14'-5"	"			24	13'-0"	4'-0"	12'-3"	3'-7"
		17'			106	14'-5"	"			24	13'-1"	4'-2"	12'-4"	3'-8"
		18'			106	14'-5"	"			24	13'-2"	4'-3"	12'-5"	3'-9"
	15'	14'			106	14'-10"	13'-6"			24	13'-6"	4'-1"	12'-9"	3'-7"
		15'			106	14'-10"	"			24	"	"	"	"
		16'	# 8	12"	106	14'-10"	"	# 8	12"	24	"	"	"	"
		17'			106	14'-11"	"			24	13'-7"	4'-0"	12'-10"	3'-8"
		18'			106	14'-11"	"			24	13'-8"	4'-2"	12'-11"	3'-9"
		19'			106	14'-11"	"			24	13'-9"	4'-3"	13'-0"	3'-10"
	16'	15'			106	15'-7"	14'-3"			24	14'-2"	4'-1"	13'-4"	3'-8"
		16'			106	15'-7"	"			24	"	"	"	"
		17'	# 8	12"	106	15'-7"	"	# 8	12"	24	"	"	"	"
		18'			106	15'-8"	"			24	14'-3"	4'-0"	13'-5"	3'-8"
		19'			106	15'-8"	"			24	14'-4"	4'-2"	13'-6"	3'-9"
		20'			106	15'-8"	"			24	14'-5"	4'-3"	13'-7"	3'-10"

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	'd' bars STRAIGHT Longitudinal in Top Slab of Barrel. SIZE	SPACING	No. Reqd.	LENGTH	'd1' bars STRAIGHT Longitudinal in Sidewalls. SIZE	SPACING	No. Reqd.	LENGTH	'd2' bars STRAIGHT Longitudinal in Bottom Slab of Barrel. SIZE	SPACING	No. Reqd.	LENGTH
0'-0 TO 5'-0" MAXIMUM	4'	2'			6				4				5	
		3'			6				4				5	
		4'	# 5	10½"	6		# 5	12"	4		# 4	12"	5	
		5'			6				4				5	
		6'			6				4				5	
	5'	3'			6				4				6	
		4'			6				4				6	
		5'	# 5	10½"	6		# 5	12"	4		# 4	12"	6	
		6'			6				4				6	
		7'			6				4				6	
	6'	5'			8				6				7	
		6'			8				6				7	
		7'	# 6	10½"	8		# 5	12"	6		# 4	12"	7	
		8'			8				6				7	
		9'			8				6				7	
	7'	6'			9				8				8	
		7'			9				8				8	
		8'	# 6	10½"	9		# 5	12"	8		# 4	12"	8	
		9'			9				8				8	
		10'			9				8				8	
	8'	7'			11				9				9	
		8'			11				9				9	
		9'	# 7	10"	11		# 6	12"	9		# 5	12"	9	
		10'			11				9				9	
		11'			11				9				9	
	9'	8'			12				10				10	
		9'			12				10				10	
		10'	# 7	10"	12		# 6	12"	10		# 5	12"	10	
		11'			12				10				10	
		12'			12				10				10	
	10'	9'			12				11				11	
		10'			12				11				11	
		11'	# 7	10"	12		# 6	12"	11		# 5	12"	11	
		12'			12				11				11	
		13'			12				11				11	
	11'	10'			12				12				12	
		11'			12				12				12	
		12'	# 7	10"	12		# 6	12"	12		# 5	12"	12	
		13'			12				12				12	
		14'			12				12				12	
	12'	11'			12				13				13	
		12'			12				13				13	
		13'	# 7	10"	12		# 6	12"	13		# 5	12"	13	
		14'			12				13				13	
		15'			12				13				13	
	13'	12'			12				14				14	
		13'			12				14				14	
		14'	# 8	10"	12		# 6	12"	14		# 5	12"	14	
		15'			12				14				14	
		16'			12				14				14	
	14'	13'			12				15				15	
		14'			12				15				15	
		15'	# 8	10"	12		# 6	12"	15		# 5	12"	15	
		16'			12				15				15	
		17'			12				15				15	
	15'	14'			12				16				16	
		15'			12				16				16	
		16'	# 8	10"	12		# 6	12"	16		# 5	12"	16	
		17'			12				16				16	
		18'			12				16				16	
	16'	15'			12				16				16	
		16'			12				16				16	
		17'	# 8	10"	12		# 6	12"	16		# 5	12"	16	
		18'			12				16				16	
		19'			12				16				16	

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	'e' bars STRAIGHT Vertical in Sidewalls. SIZE	SPACING	No. Reqd.	LENGTH	'f' bars STRAIGHT In Bottom of Headwall. SIZE	No. Reqd.	LENGTH	'k1' bars STRAIGHT In Top of Headwall and Apron (2 Each) SIZE	No. Reqd.	LENGTH	K_2 bars STRAIGHT SIZE	No. Reqd.	LENGTH
0'-0 TO 5'-0" MAXIMUM	4'	2'													
		3'													
		4'	# 4	12"	120	2'-11"	# 5	6	5'-6"	# 5	8	6'-8"	# 5	8	6'-8"
		5'			120	3'-11"			"			"			"
		6'			120	4'-11"			"			"			"
	5'	3'			120	4'-0"		6	6'-8"		8	7'-0"		8	7'-0"
		4'			120	5'-0"			"			"			"
		5'	# 4	12"	120	6'-0"	# 5	6	"	# 5	8	"	# 5	8	"
		6'			120	7'-0"			6'-10"			7'-2"			7'-2"
		7'			120	8'-0"			6'-11"			7'-3"			8'-0"
	6'	5'			120	5'-1"		6	7'-10"		8	8'-2"		8	9'-0"
		6'			120	6'-1"			"			"			"
		7'	# 4	12"	120	7'-1"	# 6	6	8'-0"	# 6	8	8'-2"	# 6	8	9'-2"
		8'			120	8'-1"			8'-1"			"			9'-3"
		9'			120	9'-1"			8'-2"			"			9'-4"
	7'	6'			120	5'-2"		6	9'-0"		8	9'-2"		8	10'-2"
		7'			120	6'-2"			"			"			"
		8'	# 4	12"	120	7'-2"	# 6	6	9'-2"	# 6	8	"	# 6	8	10'-4"
		9'			120	8'-2"			9'-3"			"			10'-5"
		10'			120	9'-2"			9'-4"			"			10'-6"
	8'	7'			120	5'-4"		6	10'-0"		8	10'-2"		8	11'-2"
		8'			120	6'-4"			10'-1"			"			11'-3"
		9'			120	7'-4"			10'-2"			"			11'-4"
		10'	12"	144	9'-6"	# 7	6	10'-3"	# 7	8	11'-4"	# 7	8	11'-5"
		11'	# 5	120	10'-6"			10'-4"			"			"
		12'			10'-6"			10'-5"			"			"
	9'	8'			120	6'-5"		6	11'-5"		8	11'-7"		8	12'-7"
		9'			120	7'-5"			11'-7"			"			12'-8"
		10'			120	8'-5"			11'-8"			"			12'-9"
		11'	12"	144	9'-5"	# 7	6	11'-9"	# 7	8	11'-10"	# 7	8	12'-10"
		12'	# 5	120	10'-5"			11'-10"			"			"
		13'			11'-5"			12'-0"			"			"
	10'	9'			120	6'-6"		6	12'-7"		8	12'-9"		8	13'-9"
		10'			120	7'-6"			12'-8"			"			13'-10"
		11'	12"	144	8'-6"	# 7	6	12'-10"	# 7	8	14'-0"	# 7	8	14'-2"
		12'	# 5	120	10'-6"			13'-0"			"			"
		13'			11'-6"			13'-2"			"			"
	11'	10'			120	6'-7"		6	13'-7"		8	13'-9"		8	14'-9"
		11'			120	7'-7"			13'-8"			"			14'-10"
		12'	12"	144	8'-7"	# 7	6	13'-10"	# 7	8	14'-11"	# 7	8	15'-0"
		13'	# 5	120	10'-7"			14'-0"			"			"
		14'			11'-7"			14'-2"			"			"
	12'	11'			120	6'-8"		6	14'-2"		8	14'-4"		8	15'-4"
		12'			120	7'-8"			14'-3"			"			15'-5"
		13'	12"	144	8'-8"	# 7	6	14'-5"	# 7	8	15'-6"	# 7	8	15'-7"
		14'	# 5	120	10'-8"			14'-7"			"			"
		15'			11'-8"			14'-9"			"			"
	13'	12'			120	6'-9"		6	14'-9"		8	14'-11"		8	16'-0"
		13'			120	7'-9"			14'-10"			"			16'-1"
		14'	12"	144	8'-9"	# 7	6	15'-0"	# 7	8	16'-1"	# 7	8	16'-2"
		15'	# 5	120	10'-9"			15'-1"			"			"
		16'			11'-9"			15'-3"			"			"
	14'	13'			120	6'-10"		6	15'-4"		8	15'-6"		8	16'-6"
		14'			120	7'-10"			15'-5"			"			16'-7"
		15'	12"	144	8'-10"	# 7	6	15'-7"	# 7	8	16'-8"	# 7	8	16'-9"
		16'	# 5	120	10'-10"			15'-8"			"			"
		17'			11'-10"			15'-10"			"			"
	15'	14'			120	6'-11"		6	15'-11"		8	16'-1"		8	17'-0"
		15'			120	7'-11"			16'-0"			"			17'-1"
		16'	12"	144	8'-11"	# 7	6	16'-2"	# 7	8	17'-3"	# 7	8	17'-4"
		17'	# 5	120	10'-11"			16'-3"			"			"
		18'			11'-11"			16'-5"			"			"
	16'	15'			120	7'-0"		6	16'-5"		8	16'-7"		8	17'-7"
		16'			120	8'-0"			16'-6"			"			17'-8"
		17'	12"	144	9'-0"	# 7	6	16'-8"	# 7	8	17'-9"	# 7	8	17'-10"
		18'	# 5	120	11'-0"			16'-9"			"			"
		19'			12'-0"			16'-11"			"			"

BARREL DIMENSIONS

MAX. DESIGN DEPTH OF COVER D	CLEAR SPANS S	CLEAR HEIGHT H	SQ.FT. OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	ROADWAY LENGTH RL	LENGTH OF HEADWALLS K
5'-0"	4'	2'	8	5'-0"	6"	6"	6"	3'-1½"	5'-9⅝"	6'-11⅝"
		3'	12	5'-0"		6"		4'-1½"	"	"
		4'	16	5'-0"	7"	6"	6½"	5'-1½"	"	"
		5'	20	5'-0"		6"		6'-1½"	"	"
		6'	24	5'-2"		7"		7'-1½"	7'-1⅝"	8'-3⅝"
	5'	3'	15	6'-0"		6"		4'-2½"	6'-11⅝"	8'-1"
		4'	20	6'-0"		6"		5'-2½"	"	"
		5'	25	6'-0"	7½"	6"	7"	6'-2½"	"	"
		6'	30	6'-2"		7"		7'-2½"	7'-1⅝"	8'-3⅝"
		7'	35	6'-3"		7½"		8'-2½"	7'-2⅝"	8'-4⅝"
	6'	3'	18	7'-0"		6"		4'-3½"	8'-1"	9'-2⅝"
		4'	24	7'-0"		6"		5'-3½"	"	"
		5'	30	7'-0"	8"	6"	7½"	6'-3½"	"	"
		6'	36	7'-2"		7"		7'-3½"	8'-3⅝"	9'-5⅝"
		7'	42	7'-3"		7½"		8'-3½"	8'-4⅝"	9'-6⅝"
		8'	48	7'-4"		8"		9'-3½"	8'-5⅝"	9'-7⅝"
	7'	4'	28	8'-0"		6"		5'-5"	9'-2⅝"	10'-4⅝"
		5'	35	8'-0"		6"		6'-5"	"	"
		6'	42	8'-2"	8½"	7"	8½"	7'-5"	9'-5⅝"	10'-7"
		7'	49	8'-3"		7½"		8'-5"	9'-6⅝"	10'-8⅝"
		8'	56	8'-4"		8"		9'-5"	9'-7⅝"	10'-9⅝"
		9'	63	8'-6"		9"		10'-5"	9'-9⅝"	10'-11⅝"
	8'	4'	32	9'-0"		6"		5'-7"	10'-2⅝"	11'-4⅝"
		5'	40	9'-2"		7"		6'-7"	10'-1"	11'-0⅝"
		6'	48	9'-2"		7"		7'-7"	"	"
		7'	56	9'-3"	9½"	7½"	9½"	8'-7"	10'-6⅝"	11'-10"
		8'	64	9'-4"		8"		9'-7"	10'-7⅝"	11'-11⅝"
		9'	72	9'-6"		9"		10'-7"	10'-10⅝"	12'-1⅝"
		10'	80	9'-8"		10"		11'-7"	11'-2"	12'-3⅝"
	9'	5'	45	10'-2"		7"		6'-8"	11'-3⅝"	12'-10⅝"
		6'	54	10'-3"		7½"		7'-8"	11'-10"	13'-1"
		7'	63	10'-3"		7½"		8'-8"	"	"
		8'	72	10'-6"		8"		9'-8"	11'-11⅝"	13'-2⅝"
		9'	81	10'-6"		9"		10'-8"	12'-1⅝"	13'-3⅝"
		10'	90	10'-8"		10"		11'-8"	12'-3⅝"	13'-5⅝"
		11'	99	10'-10"		11"		12'-8"	12'-6⅝"	13'-8"
	10'	5'	50	11'-2"		7"		6'-9"	12'-10⅝"	14'-0⅝"
		6'	60	11'-3"		7½"		7'-9"	12'-11⅝"	14'-1⅝"
		7'	70	11'-3"		7½"		8'-9"	"	"
		8'	80	11'-4"		8"		9'-9"	13'-0"	14'-2"
		9'	90

RESHOT 3-5-93

157

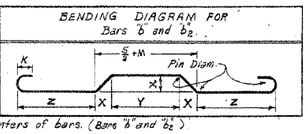
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			131	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	"a" bars STRAIGHT: In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall - Each.				"b" bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars.							"b2" bars BENT - See Diagram below. In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars.							"c" bars STRAIGHT: In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars.				"d" bars STRAIGHT: Longitudinal in Top Slab of Barrel.			"d1" bars STRAIGHT: Longitudinal in Sidewalls and Division Walls.			"e" bars STRAIGHT: Longitudinal in Bottom Slab of Barrel.			"f" bars STRAIGHT: Vertical in Sidewalls and Division Walls.		
			SIZE	SPACING	NUMBER REQ'D #11	NUMBER REQ'D #9	SIZE	SPACING	NUMBER REQ'D #11	NUMBER REQ'D #9	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D #11	NUMBER REQ'D #9	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D #11	NUMBER REQ'D #9	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NUMBER REQ'D #11	NUMBER REQ'D #9
D	S	H																																				
0'-0" TO 5'-0" MAXIMUM.	2 @ 4'	2'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-6"			59	59	10'-6"	0'-2½"	2'-3½"	3'-6"			120	120	4'-8"			290	290	2'-10"			14					
		3'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-6"			59	59	10'-6"	0'-2½"	2'-3½"	3'-6"			120	120	4'-8"			290	290	3'-10"			12					
		4'	#5	12"	128	128	9'-5"	#5	12"	59	59	10'-6"	0'-3"	2'-2½"	3'-6"	#5	12"	59	59	10'-6"	0'-2½"	2'-3½"	3'-6"	#5	12"	120	120	4'-8"	#5	12"	290	290	4'-10"	#4	12"	16	#4	12"	14	14
		5'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-6"			59	59	10'-6"	0'-2½"	2'-3½"	3'-6"			120	120	4'-8"			290	290	5'-10"			16					
		6'			128	128	9'-8"			59	59	10'-9"	0'-3"	2'-3½"	3'-9"			59	59	10'-9"	0'-2½"	2'-3½"	3'-9"			120	120	4'-8"			290	290	6'-10"			20					
		3'			128	128	11'-5"			59	59	12'-7"	0'-3"	2'-2½"	4'-1"			59	59	12'-6"	0'-3"	2'-2½"	4'-1"			120	120	5'-8"			290	290	3'-11"			12					
		4'			128	128	11'-5"			59	59	12'-7"	0'-3½"	2'-2½"	4'-1"			59	59	12'-6"	0'-3"	2'-2½"	4'-1"			120	120	5'-8"			290	290	4'-11"			16					
		5'	#6	12"	128	128	11'-5"	#5	12"	59	59	12'-10"	0'-3½"	2'-2½"	4'-1"	#5	12"	59	59	12'-9"	0'-3"	2'-2½"	4'-1"	#6	12"	120	120	5'-9"	#5	11½"	290	290	5'-11"	#4	12"	16	#4	12"	16	16
		6'			128	128	11'-8"			59	59	12'-10"	0'-3½"	2'-2½"	4'-2"			59	59	12'-9"	0'-3"	2'-2½"	4'-2"			120	120	5'-9"			290	290	6'-11"			24					
		7'			128	128	11'-10"			59	59	13'-0"	0'-3½"	2'-2½"	4'-2½"			59	59	12'-11"	0'-3"	2'-2½"	4'-2½"			120	120	5'-10"			290	290	7'-11"			28					
		3'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"			290	290	4'-0"			12					
		4'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"			290	290	5'-0"			16					
		5'	#6	11"	140	140	13'-5"	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"	#6	11"	132	132	6'-8"	#5	11⅛"	290	290	6'-1"	#4	12"	20	#4	12"	18	18
		6'			140	140	13'-8"			65	65	15'-0"	0'-4"	3'-1½"	4'-11½"			65	65	15'-0"	0'-4"	3'-1½"	4'-11½"			132	132	6'-10"			290	290	7'-2"			24					
		7'			140	140	13'-10"			65	65	15'-0"	0'-4"	3'-2½"	5'-0"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			132	132	6'-10"			290	290	7'-5"			28					
		8'			140	140	13'-11"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			132	132	6'-10"			290	290	7'-8"			32					
		4'			128	128	15'-5"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			120	120	7'-8"			290	290	5'-1"			16					
		5'			128	128	15'-5"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			120	120	7'-8"			290	290	6'-1"			20					
		6'	#6	12"	128	128	15'-8"	#6	12"	59	59	17'-0"	0'-4½"	3'-6"	5'-8"	#6	12"	59	59	17'-0"	0'-4½"	3'-6"	5'-8"	#6	12"	120	120	7'-9"	#5	11⅞"	290	290	7'-1"	#4	12"	24	#4	12"	20	20
		7'			128	128	15'-8"			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"			120	120	7'-9"			290	290	8'-1"			28					
		8'			128	128	15'-11"			59	59	17'-3"	0'-4½"	3'-7"	5'-9"			59	59	17'-3"	0'-4½"	3'-7"	5'-9"			120	120	7'-10"			290	290	9'-1"			32					
		9'			128	128	16'-2"			59	59	17'-6"	0'-4½"	3'-8"	5'-10"			59	59	17'-6"	0'-4½"	3'-8"	5'-10"			120	120	7'-11"			290	290	10'-1"			36					
		4'			140	140	17'-5"			65	65	18'-10"	0'-5"	3'-10"	6'-4"			65	65	18'-10"	0'-5"	3'-10"	6'-4"			132	132	8'-8"			290	290	5'-2"			16					
		5'			140	140	17'-8"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			132	132	8'-9"			290	290	6'-2"			20					
		6'	#6	11"	140	140	17'-8"	#6	11"	65	65	19'-1"	0'-5"	3'-11"	6'-5"	#6	11"	65	65	19'-1"	0'-5"	3'-11"	6'-5"	#6	11"	132	132	8'-9"	#5	11⅛"	290	290	7'-2"	#4	12"	24	#4	12"	22	22
		7'			140	140	17'-10"			65	65	19'-3"	0'-5"	4'-0"	6'-6½"			65	65	19'-3"	0'-5"	4'-0"	6'-6½"			132	132	8'-10"			290	290	8'-2"			28					
		8'			140	140	17'-11"			65	65	19'-4"	0'-5"	4'-0½"	6'-6"			65	65	19'-4"	0'-5"	4'-0½"	6'-6"			132	132	8'-11"			290	290	9'-2"			32					
		9'			140	140	18'-2"			65	65	19'-7"	0'-5"	4'-1"	6'-7"			65	65	19'-7"	0'-5"	4'-1"	6'-7"			132	132	8'-11"			290	290	10'-2"			36					
		10'			140	140	18'-5"			65	65	19'-10"	0'-5"	4'-2"	6'-8"			65	65	19'-10"	0'-5"	4'-2"	6'-8"			132	132	9'-0"			290	290	10'-5"			40					
		5'			140	140	19'-8"			65	65	21'-1"	0'-5½"	4'-4½"	7'-2"			65	65	21'-1"	0'-5½"	4'-3½"	7'-2"			132	132	9'-5"			290	290	6'-3"			20					
		6'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5½"	4'-4½"	7'-2½"			132	132	9'-6"			290	290	7'-3"			24					
		7'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			132	132	9'-10"			290	290	8'-3"			28					
		8'	#6	11"	140	140	19'-11"	#6	11"	65	65	21'-4"	0'-5½"	4'-5½"	7'-3"	#6	11"	65	65	21'-4"	0'-5½"	4'-5½"	7'-3"	#6	11"	132	132	9'-10"	#5	11⅛"	290	290	9'-3"	#4	12"	32	#4	12"	26	26
		9'			140	140	20'-2"			65	65	21'-7"	0'-5½"	4'-6"	7'-4"			65	65	21'-7"	0'-5½"	4'-5½"	7'-4"			132	132	9'-11"			290	290	10'-3"			36					
		10'			140	140	20'-5"			65	65	21'-10"	0'-5½"	4'-7"	7'-5"			65	65	21'-10"	0'-5½"	4'-6"	7'-5"			132	132	10'-0"			290	290	10'-12"			40					
		11'			140	140	20'-7"			65	65	22'-0"	0'-5½"	4'-7"	7'-6"			65	65	22'-0"	0'-5½"	4'-6½"	7'-6"			132	132	10'-0"			290	290	12'-3"			44					
		5'			128	128	21'-8"			59	59	23'-2"	0'-6"	4'-9"	7'-11"			59	59	23'-2"	0'-6"	4'-8"	7'-11"			120	120	10'-9"			290	290	6'-4"			20					
		6'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"			59	59	23'-4"	0'-6"	4'-9"	7'-11½"			120	120	10'-10"			290	290	7'-4"			24					
		7'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"			59	59	23'-4"	0'-6"	4'-9"	7'-11½"			120	120	10'-10"			290	290	8'-4"			28					
		8'			128	128	21'-11"			59	59	23'-5"	0'-6"	4'-10"	8'-0"			59	59	23'-5"	0'-6"	4'-9"	8'-0"			120	120	10'-11"			290	290	9'-4"			32					
		9'	#7	12"	128	128	22'-2"	#6	12"	59	59	23'-8"	0'-6"	4'-10"	8'-1"	#6	12"	59	59	23'-8"	0'-6"	4'-9"	8'-1"	#7	12"	120	120	10'-11"	#5	11½"	290	290	10'-4"	#4	12"	36	#4	12"	28	28
		10'			128	128	22'-5"			59	59	23'-11"	0'-6"	5'-0"	8'-2"			59	59	23'-11"	0'-6"	4'-11"	8'-2"			120	120	11'-0"			290	290	10'-12"			40					
		11'			128	128	22'-7"			59	59	24'-1"	0'-6"	5'-0"	8'-3"			59	59	24'-1"	0'-6"	4'-11"	8'-3"			120	120	11'-0"			290	290	11'-4"			44					
		12'			128	128	22'-9"			59	59	24'-3"	0'-6"	5'-0"	8'-4"			59	59	24'-3"	0'-6"	4'-11"	8'-4"			120	120	11'-0"			290	290	12'-5"			48					
		6'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-4"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"			290	290	7'-6"			24					
		7'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-4"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"			290	290	8'-6"			28					
		8'			128	128	23'-11"			59	59	25'-6"	0'-6½"	5'-3"	8'-9"			59	59	25'-5"	0'-7½"	5'-2"	8'-9"			120	120	11'-10"			290	290	9'-6"			32					
		9'	#7	12"	128	128	24'-2"	#6	12"	59	59	25'-8"	0'-6½"	5'-4"	8'-10"	#6	12"	59	59	25'-8"	0'-7½"	5'-3"	8'-10"	#7	12"	120	120	11'-11"	#5	11½"	290	290	10'-6"	#4	12"	36	#4	12"	30	30
		10'			128	128	24'-5"			59	59	25'-11"	0'-6½"	5'-5"	8'-11"			59	59	26'-0"	0'-7½"	5'-3"	8'-11"			120	120	12'-0"			290	290	10'-12"			40					
		11'			128	128	24'-7"			59	59	26'-1"	0'-6½"	5'-5"	9'-0"			59	59	26'-12"	0'-7½"	5'-3"	9'-0"			120	120	12'-0"			290	290	11'-4"			44					
		12'			128	128	24'-9"			59	59	26'-3"	0'-6½"	5'-5"	9'-1"			59	59	26'-4"	0'-7½"	5'-3"	9'-1"			120	120	12'-0"			290	290	12'-5"			48					
		6'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"			65	65	27'-4"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"			290	290	7'-7"			24					
		7'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"			65	65	27'-4"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"			290	290	8'-7"			28					
		8'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"			65	65	27'-5"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"			290	290	9'-7"			32					
		9'	#7	11"	140	140	26'-2"	#6	11"	65	65	27'-8"	0'-7"	5'-9"	9'-7"	#6	11"	65	65	27'-10"	0'-8½"	5'-6"	9'-7"	#7	11"	132	132	12'-11"	#5	11½"	290	290	10'-7"	#4	12"	36	#4	12"	32	32
		10'			140	140	26'-5"			65	65	28'-1"	0'-7"	5'-10"	9'-8"			65	65	28'-3"	0'-8½"	5'-7"	9'-8"			132	132	13'-0"			290	290	12'-7"			44					
		11'			140	140	26'-7"			65	65	28'-3"	0'-7"	5'-10"	9'-9"			65	65	28'-5"	0'-8½"	5'-7"	9'-9"			132	132	13'-0"			290	290	12'-10"			48					
		12'			140	140	26'-9"			65	65	28'-3"	0'-7"	5'-10"	9'-10"			65	65	28'-5"	0'-8½"	5'-7"	9'-10"			132	132	13'-0"			290	290	13'-2"			48					

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#5	2⅝"	4½"	0'-11½"
#6	3"	5"	1'-2"

BENDING DIAGRAM FOR Bars "b" and "b2".

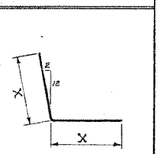


NOTE:- Dimensions are to centers of bars. (Bars "b" and "b2")

DOWEL BARS FOR TWO HEADWALLS

"2 SPANS @"	SIZE	SPACING	NO. REQ'D	LENGTH	X
4'	#4	12"	20	2'-5"	1'-2½"
5'	#4	12"	24	2'-6"	1'-3"
6'	#4	12"	28	2'-7"	1'-3½"
7'	#4	12"	32	2'-8"	1'-4"
8'	#4	12"	36	2'-9"	1'-4½"
9'	#4	12"	40	2'-10"	1'-5"
10'	#4	12"	46	2'-11"	1'-5½"
11'	#4	12"	50	3'-0"	1'-6"
12'	#4	12"	54	3'-1"	1'-6½"

Bars "r" Dowel bars in Headwalls.



Designed by:- W.C.H. 1-12-63.
Drawn by:- W.C.H. 2-15-63.
Quantities by:- W.C.H. 2-19-63.

Checked by:- TJHS 5-14-63
Checked by:- TJHS 5-24-63
Checked by:- TJHS 5-20-63

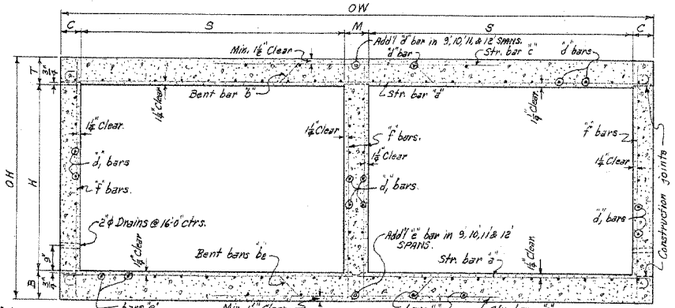
DIMENSIONS

BARREL DIMENSIONS

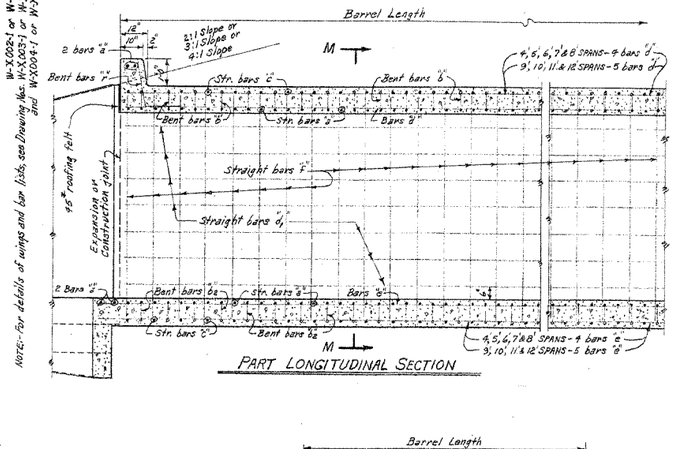
MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	SQ.FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALL	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT
D	S	H	A	OW	T	C	M	B	OH
5'-0"	2 @ 4'	2'	16	9'-8"	6½"	6"	8"	6"	3'-0½"
		3'	24	9'-8"		6"	8"		4'-0½"
		4'	32	9'-8"		6"	8"		5'-0½"
		5'	40	9'-8"		6"	8"		6'-0½"
		6'	48	9'-11"		7"	9"		7'-0½"
	2 @ 5'	3'	30	11'-8"	7"	6"	8"	6½"	4'-1½"
		4'	40	11'-8"		6"	8"		5'-1½"
		5'	50	11'-8"		6"	8"		6'-1½"
		6'	60	11'-11"		7"	9"		7'-1½"
		7'	70	12'-1"		7½"	10"		8'-1½"
	2 @ 6'	3'	36	13'-8"	7½"	6"	8"	7½"	4'-3½"
		4'	48	13'-8"		6"	8"		5'-3"
		5'	60	13'-8"		6"	8"		6'-3"
		6'	72	13'-11"		7"	9"		7'-3"
		7'	84	14'-1"		7½"	10"		8'-3"
		8'	96	14'-2"		8"	10"		9'-3"
	2 @ 7'	4'	56	15'-8"	8"	6"	8"	8"	5'-4½"
		5'	70	15'-8"		6"	8"		6'-4½"
		6'	84	15'-11"		7"	9"		7'-4½"
		7'	98	16'-1"		7½"	10"		8'-4½"
		8'	112	16'-2"		8"	10"		9'-4½"
		9'	126	16'-5"		9"	11"		10'-4½"
	2 @ 8'	4'	64	17'-8"	8½"	6"	8"	8½"	5'-5½"
		5'	80	17'-11"		7"	9"		6'-5½"
		6'	96	17'-11"		7"	9"		7'-5½"
		7'	112	18'-1"		7½"	10"		8'-5½"
		8'	128	18'-2"		8"	10"		9'-5½"
		9'	144	18'-5"		9"	11"		10'-5½"
		10'	160	18'-8"		10"	12"		11'-5½"
	2 @ 9'	5'	90	19'-11"	9"	7"	9"	9½"	6'-6½"
		6'	108	20'-1"		7½"	10"		7'-6½"
		7'	126	20'-1"		7½"	10"		8'-6½"
		8'	144	20'-1"		8"	10"		9'-6½"
		9'	162	20'-5"		9"	11"		10'-6½"
		10'	180	20'-8"		10"	12"		11'-6½"
		11'	198	20'-10"		11"	12"		12'-6½"
	2 @ 10'	5'	100	21'-11"	9½"	7"	9"	10"	6'-7½"
		6'	120	22'-1"		7½"	10"		7'-7½"
		7'	140	22'-1"		8"	10"		8'-7½"
		8'	160	22'-2"		8"	10"		9'-7½"
		9'	180	22'-5"		9"	11"		10'-7½"
		10'	200	22'-8"		10"	12"		11'-7½"
		11'	220	22'-10"		10"	12"		12'-7½"
		12'	240	23'-0"		12"	12"		13'-7½"
	2 @ 11'	6'	132	24'-2"	10½"	8"	10"	11"	7'-8½"
		7'	154	24'-2"		8"	10"		8'-8½"
		8'	176	24'-2"		8"	10"		9'-8½"
		9'	198	24'-5"		9"	11"		10'-8½"
		10'	220	24'-8"		10"	12"		11'-8½"
		11'	242	24'-10"		11"	12"		12'-8½"
		12'	264	25'-0"		12"	12"		13'-8½"
	2 @ 12'	6'	144	26'-2"	11"	8"	10"	11½"	7'-9"
		7'	168	26'-2"		8"	10"		8'-9"
		8'	192	26'-2"		8"	10"		9'-9"
		9'	216	26'-5"		9"	11"		10'-9"
		10'	240	26'-8"		10"	12"		11'-9"
		11'	264	26'-10"		11"	12"		12'-9"
		12'	288	27'-0"		12"	12"		13'-9"

UNIT QUANTITIES

CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	REINFORCING STEEL ADDITIONAL PER LAP	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & APRONS
CU.YD.	LB.	LB.	LB.
0.996	88.15	42.71	189.56
0.558	93.49	46.05	189.56
0.620	98.84	49.39	189.56
0.682	104.18	52.73	189.56
0.809	110.76	56.07	131.65
0.671	123.34	51.19	198.64
0.733	128.68	54.53	198.64
0.795	134.03	57.87	198.64
0.922	140.89	61.21	201.64
1.049	147.74	64.55	203.65
0.818	148.50	56.39	233.58
0.880	163.85	59.68	233.58
0.941	159.19	63.02	233.58
1.070	166.20	66.36	236.59
1.132	172.74	69.70	238.59
1.298	183.36	73.04	239.59
1.021	176.15	69.83	268.97
1.082	183.49	68.17	268.97
1.212	190.59	71.51	271.97
1.339	197.19	74.85	273.98
1.440	207.89	78.19	274.98
1.616	215.25	81.53	277.98
1.176	210.37	71.71	304.80
1.295	217.63	75.05	307.81
1.466	222.97	78.39	307.81
1.989	229.68	81.73	308.81
1.695	249.97	85.07	310.81
1.772	258.08	88.41	313.82
1.967	271.07	91.75	316.82
1.977	239.37	82.77	345.42
1.584	246.08	86.11	347.43
1.671	251.93	89.45	347.43
1.778	262.26	92.79	348.43
1.956	273.35	96.13	351.43
2.152	282.97	99.47	354.43
2.328	306.84	102.81	356.44
1.674	279.66	87.92	979.99
1.792	286.50	91.26	982.71
1.869	291.85	94.60	982.71
1.976	302.77	97.94	984.08
2.155	320.79	101.28	988.16
2.352	333.99	104.62	992.25
2.529	348.01	107.96	994.98
2.718	370.23	111.30	997.70
2.048	309.36	96.41	530.03
2.128	314.70	99.76	530.03
2.208	325.12	103.09	530.03
2.388	343.25	106.43	534.12
2.299	353.31	101.55	576.93
2.379	368.65	104.89	576.93
2.459	369.12	108.23	576.93
2.690	387.52	111.57	580.52
2.890	401.07	114.91	584.60
3.018	415.31	118.25	587.39
3.208	437.88	121.59	590.05

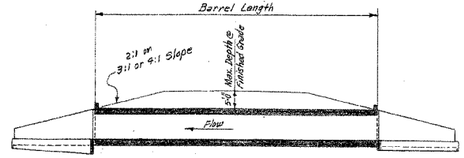


TYPICAL SECTION M-M



PART LONGITUDINAL SECTION

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X003-1 or W-X004-1 and W-X002-2, W-X003-2 or W-X004-2.



LONGITUDINAL SECTION

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. W-X003-1 or W-X003-2 and W-X004-1 or W-X004-2. Also Drawing Nos. W-X002-1 or W-X002-2.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of ste

Reshot 3-8-93 441 201

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			132	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 30° SKEWED ENDS.

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars STRAIGHT: In Top and Bottom Slab of Barrel. SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	110	19'-8"
		6'			110	19'-11"
		7'			110	19'-10"
		8'			110	19'-11"
		9'			110	20'-2"
		10'			110	20'-5"
		11'			108	20'-7"
	10' @ 2	5'	#7	12"	98	21'-8"
		6'			98	21'-10"
		7'			98	21'-10"
		8'			98	21'-11"
		9'			98	22'-1"
		10'			98	22'-3"
		11'			98	22'-5"
		12'			98	22'-7"
	11' @ 2	5'	#7	12"	96	23'-4"
		6'			96	23'-6"
		7'			96	23'-6"
		8'			96	23'-11"
		9'			96	24'-2"
		10'			96	24'-5"
		11'			96	24'-7"
		12'			96	24'-9"
	12' @ 2	5'	#7	12"	102	26'-1"
		6'			102	25'-11"
		7'			102	25'-11"
		8'			102	26'-2"
		9'			102	26'-5"
		10'			102	26'-8"
		11'			102	26'-7"
		12'			102	26'-9"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a1" bars STRAIGHT: In Top and Bottom Slab of Barrel. (Pair of each Length.) SIZE	SPACING	NO. REQ'D	LENGTH MAX.	LENGTH MIN.
D	S	H					
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	40	18'-1"	3'-1"
		6'			40	18'-8"	4'-0"
		7'			40	"	"
		8'			44	18'-8"	2'-6"
		9'			44	18'-7"	2'-3"
		10'			44	18'-10"	3'-0"
		11'			44	19'-0"	3'-2"
	10' @ 2	5'	#7	12"	44	20'-2"	3'-5"
		6'			44	20'-5"	3'-9"
		7'			44	20'-10"	4'-0"
		8'			44	20'-11"	4'-2"
		9'			44	21'-0"	4'-2"
		10'			44	21'-3"	4'-2"
		11'			44	21'-6"	4'-2"
		12'			44	21'-10"	4'-2"
	11' @ 2	5'	#7	12"	48	22'-2"	2'-11"
		6'			48	"	"
		7'			48	"	"
		8'			48	"	"
		9'			48	22'-5"	3'-2"
		10'			48	22'-8"	3'-5"
		11'			48	22'-11"	3'-7"
		12'			48	23'-0"	3'-9"
	12' @ 2	5'	#7	12"	56	24'-6"	3'-9"
		6'			56	"	"
		7'			56	"	"
		8'			56	24'-9"	4'-0"
		9'			56	24'-11"	4'-0"
		10'			56	25'-2"	4'-0"
		11'			56	25'-5"	4'-0"
		12'			56	25'-8"	4'-0"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b" bars BENT - See Diagrams below: In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	Z
D	S	H							
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	52	21'-1"	0'-5⅝"	6'-6"	7'-2"
		6'			52	21'-3"	"	6'-5"	7'-1"
		7'			52	21'-3"	"	"	"
		8'			52	21'-4"	"	"	7'-2"
		9'			52	21'-5"	"	6'-6"	7'-2"
		10'			52	21'-6"	"	"	"
		11'			52	22'-0"	0'-5⅞"	"	7'-6"
	10' @ 2	5'	#7	12"	67	23'-2"	0'-6"	6'-3"	7'-1"
		6'			67	23'-4"	"	6'-4"	7'-1½"
		7'			67	23'-6"	"	"	"
		8'			67	23'-5"	"	"	8'-0"
		9'			67	23'-8"	"	6'-11"	8'-1"
		10'			67	23'-11"	"	7'-0"	8'-2"
		11'			67	24'-1"	"	"	8'-3"
		12'			67	24'-4"	"	7'-1"	8'-4"
	11' @ 2	5'	#7	12"	77	25'-5"	0'-6½"	6'-8"	8'-1"
		6'			77	25'-5"	"	"	"
		7'			77	25'-6"	"	"	"
		8'			77	25'-6"	"	6'-9"	8'-10"
		9'			77	25'-8"	"	6'-10"	8'-11"
		10'			77	25'-11"	"	7'-0"	9'-0"
		11'			77	26'-1"	"	"	9'-1"
		12'			77	26'-3"	0'-6⅝"	6'-11"	9'-1"
	12' @ 2	5'	#7	12"	89	27'-5"	0'-7"	6'-8"	9'-6"
		6'			89	27'-5"	"	"	"
		7'			89	27'-6"	"	"	"
		8'			98	27'-8"	"	6'-9"	9'-7"
		9'			98	27'-11"	"	6'-10"	9'-8"
		10'			98	28'-2"	"	7'-0"	9'-9"
		11'			98	28'-4"	"	"	9'-9"
		12'			98	28'-7"	0'-7½"	7'-1"	9'-10"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b1" bars BENT - See Diagrams below: In Bottom of Top Slab - some bent up over Division Wall - one end hooked. (½ of Each Length.) Alternate with "a" and "c" bars. SIZE	SPACING	NO. REQ'D	LENGTH	L MAX.	L MIN.
D	S	H						
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	22	19'-9"	3'-7"	18'-10"
		6'			22	19'-11"	3'-8"	19'-0"
		7'			22	"	"	"
		8'			22	20'-0"	3'-10"	19'-1"
		9'			22	20'-3"	4'-1"	19'-4"
		10'			22	20'-6"	4'-4"	19'-7"
		11'			22	20'-8"	4'-6"	19'-9"
	10' @ 2	5'	#6	12"	22	21'-9"	3'-10"	20'-9"
		6'			22	21'-11"	4'-0"	20'-11"
		7'			22	"	"	"
		8'			22	22'-0"	4'-1"	21'-0"
		9'			22	22'-3"	4'-4"	21'-3"
		10'			22	22'-6"	4'-7"	21'-6"
		11'			22	22'-8"	4'-9"	21'-8"
		12'			22	23'-0"	5'-0"	21'-11"
	11' @ 2	5'	#7	12"	24	24'-0"	4'-2"	23'-0"
		6'			24	"	"	"
		7'			24	"	"	"
		8'			24	24'-3"	4'-5"	23'-4"
		9'			24	24'-6"	4'-7"	23'-7"
		10'			24	24'-8"	4'-10"	23'-9"
		11'			24	24'-11"	5'-0"	23'-11"
		12'			24	25'-2"	5'-3"	24'-2"
	12' @ 2	5'	#7	12"	30	26'-1"	3'-6"	25'-1"
		6'			30	"	"	"
		7'			30	"	"	"
		8'			30	26'-4"	3'-9"	25'-4"
		9'			30	26'-7"	4'-0"	25'-7"
		10'			30	26'-9"	4'-2"	25'-9"
		11'			30	26'-11"	4'-4"	25'-11"
		12'			30	27'-1"	4'-6"	25'-11"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b2" bars BENT - See Diagrams below. In Top of Bottom Slab bent down under Division Wall - Hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	Z
D	S	H							
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	54	21'-1"	0'-5⅝"	4'-8⅝"	7'-2"
		6'			54	21'-3"	"	4'-7⅝"	7'-2⅛"
		7'			54	21'-3"	"	"	"
		8'			54	21'-4"	"	4'-8⅛"	7'-2"
		9'			54	21'-5"	"	4'-8⅝"	7'-6"
		10'			54	21'-6"	"	4'-9⅛"	7'-5"
		11'			54	22'-0"	0'-5⅞"	"	7'-6"
	10' @ 2	5'	#6	12"	49	23'-2"	0'-6"	4'-3"	7'-1"
		6'			49	23'-4"	"	4'-3"	7'-1½"
		7'			49	23'-6"	"	"	"
		8'			49	23'-5"	"	4'-4"	8'-0"
		9'			49	23'-8"	"	4'-6"	8'-1"
		10'			49	23'-11"	"	4'-7"	8'-2"
		11'			49	24'-1"	"	"	8'-3"
		12'			49	24'-4"	0'-6⅛"	4'-8"	8'-4"
	11' @ 2	5'	#7	12"	48	25'-6"	0'-7⅛"	4'-7"	8'-9"
		6'			48	25'-6"	"	"	"
		7'			48	25'-6"	"	"	"
		8'			48	25'-8"	"	4'-8"	8'-10"
		9'			48	25'-11"	"	4'-9"	8'-11"
		10'			48	26'-2"	"	4'-10"	9'-0"
		11'			48	26'-5"	"	4'-11"	9'-1"
		12'			48	26'-8"	0'-6⅝"	5'-0"	9'-1"
	12' @ 2	5'	#7	12"	59	27'-10"	0'-7⅜"	4'-8"	9'-6"
		6'			59	27'-10"	"	"	"
		7'			59	27'-11"	"	"	"
		8'			59	28'-1"	"	4'-9"	9'-7"
		9'			59	28'-4"	"	4'-10"	9'-8"
		10'			59	28'-7"	"	5'-0"	9'-9"
		11'			59	28'-9"	"	"	9'-9"
		12'			59	29'-0"	0'-7½"	5'-1"	9'-10"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"b3" bars BENT - See Diagrams below. In Top of Bottom Slab - some bent down under Division Wall - one end hooked. (½ of Each Length.) Alternate with "a" and "c" bars. SIZE	SPACING	NO. REQ'D	LENGTH	L MAX.	L MIN.
D	S	H						
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	22	19'-9"	3'-7"	18'-10"
		6'			22	19'-11"	3'-9"	19'-0"
		7'			22	"	"	"
		8'			22	20'-0"	3'-10"	19'-1"
		9'			22	20'-3"	4'-1"	19'-4"
		10'			22	20'-6"	4'-4"	19'-7"
		11'			22	20'-8"	4'-6"	19'-9"
	10' @ 2	5'	#6	12"	22	21'-9"	3'-10"	20'-9"
		6'			22	21'-11"	4'-0"	20'-11"
		7'			22	"	"	"
		8'			22	22'-0"	4'-1"	21'-0"
		9'			22	22'-3"	4'-4"	21'-3"
		10'			22	22'-6"	4'-7"	21'-6"
		11'			22	22'-8"	4'-9"	21'-8"
		12'			22	23'-0"	5'-0"	21'-11"
	11' @ 2	5'	#7	12"	24	24'-0"	4'-2"	23'-0"
		6'			24	"	"	"
		7'			24	"	"	"
		8'			24	24'-3"	4'-5"	23'-4"
		9'			24	24'-6"	4'-7"	23'-7"
		10'			24	24'-8"	4'-10"	23'-9"
		11'			24	24'-11"	5'-0"	23'-11"
		12'			24	25'-2"	5'-3"	24'-2"
	12' @ 2	5'	#7	12"	30	26'-1"	3'-6"	25'-1"
		6'			30	"	"	"
		7'			30	"	"	"
		8'			30	26'-4"	3'-9"	25'-4"
		9'			30	26'-7"	4'-0"	25'-7"
		10'			30	26'-9"	4'-2"	25'-9"
		11'			30	26'-11"	4'-4"	25'-11"
		12'			30	27'-1"	4'-6"	25'-11"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"c" bars STRAIGHT: In Top and Bottom Slab of Barrel Alternate with "b" and "b2" bars. SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	122	9'-8"
		6'			122	9'-10"
		7'			122	9'-10"
		8'			122	9'-11"
		9'			122	10'-0"
		10'			120	10'-0"
		11'			120	10'-0"
	10' @ 2	5'	#7	12"	110	10'-9"
		6'			110	10'-10"
		7'			110	10'-10"
		8'			110	11'-0"
		9'			110	11'-0"
		10'			110	11'-0"
		11'			110	11'-0"
		12'			110	11'-0"
	11' @ 2	5'	#7	12"	108	11'-10"
		6'			108	11'-10"
		7'			108	11'-10"
		8'			108	12'-0"
		9'			108	12'-0"
		10'			108	12'-0"
		11'			108	12'-0"
		12'			108	12'-0"
	12' @ 2	5'	#7	12"	118	12'-10"
		6'			118	12'-10"
		7'			118	12'-10"
		8'			118	13'-0"
		9'			118	13'-0"
		10'			118	13'-0"
		11'			118	13'-0"
		12'			118	13'-0"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"c1" bars STRAIGHT: In Top and Bottom Slab of Barrel Alt. with ⅝"x1½" bars (Four of each Length) SIZE	SPACING	NO. REQ'D	LENGTH MAX.	LENGTH MIN.
D	S	H					
5'-0" MAXIMUM	9' @ 2	5'	#6	11"	16	9'-5"	3'-8"
		6'			16	9'-7"	3'-10"
		7'			16	"	"
		8'			16	9'-7"	3'-10"
		9'			16	9'-9"	4'-1"
		10'			20	9'-10"	2'-1"
		11'			20	9'-10"	2'-5"
	10' @ 2	5'	#7	12"	16	9'-5"	4'-0"
		6'			16	9'-6"	4'-1"
		7'			16	"	"
		8'			16	9'-5"	4'-2"
		9'			20	9'-7"	2'-7"
		10'			20	9'-9"	2'-9"
		11'			20	9'-10"	2'-10"
		12'			20	9'-11"	2'-11"
	11' @ 2	5'	#7	12"	20	10'-11"	3'-11"
		6'			20	"	"
		7'			20	"	"
		8'			20	10'-11"	4'-1"
		9'			20	11'-3"	4'-3"
		10'			24	11'-4"	2'-7"
		11'			24	11'-5"	2'-8"
		12'			24	11'-6"	2'-11"
	12' @ 2	5'	#7	12"	24	11'-6"	3'-7"
		6'			24	"	"
		7'			24	"	"
		8'			24	11'-8"	3'-9"
		9'			24	11'-10"	3'-11"
		10'			24	11'-11"	4'-0"
		11'			24	12'-0"	4'-1"
		12'			24	12'-0"	4'-2"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d" bars STRAIGHT: Longitudinal in Top Slab of Barrel SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#5	11½"	24	
		6'			24	
		7'			24	
		8'			24	
		9'			24	
		10'			24	
		11'			24	
	10' @ 2	5'	#5	11½"	28	
		6'			28	
		7'			28	
		8'			28	
		9'			28	
		10'			28	
		11'			28	
		12'			28	
	11' @ 2	5'	#5	11½"	30	
		6'			30	
		7'			30	
		8'			30	
		9'			30	
		10'			30	
		11'			30	
		12'			30	
	12' @ 2	5'	#5	11½"	32	
		6'			32	
		7'			32	
		8'			32	
		9'			32	
		10'			32	
		11'			32	
		12'			32	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d1" bars STRAIGHT: Longitudinal in Sidewalls and Division Wall. SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#4	12"	20	
		6'			24	
		7'			24	
		8'			24	
		9'			24	
		10'			24	
		11'			24	
	10' @ 2	5'	#4	12"	24	
		6'			24	
		7'			24	
		8'			24	
		9'			24	
		10'			24	
		11'			24	
		12'			24	
	11' @ 2	5'	#4	12"	24	
		6'			24	
		7'			24	
		8'			24	
		9'			24	
		10'			24	
		11'			24	
		12'			24	
	12' @ 2	5'	#4	12"	24	
		6'			24	
		7'			24	
		8'			24	
		9'			24	
		10'			24	
		11'			24	
		12'			24	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"d2" bars STRAIGHT: Longitudinal in Sidewalls and Aprons. (2 Each) SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#4	12"	25	
		6'			25	
		7'			25	
		8'			25	
		9'			25	
		10'			25	
		11'			25	
	10' @ 2	5'	#4	12"	25	
		6'			25	
		7'			25	
		8'			25	
		9'			25	
		10'			25	
		11'			25	
		12'			25	
	11' @ 2	5'	#4	12"	25	
		6'			25	
		7'			25	
		8'			25	
		9'			25	
		10'			25	
		11'			25	
		12'			25	
	12' @ 2	5'	#4	12"	25	
		6'			25	
		7'			25	
		8'			25	
		9'			25	
		10'			25	
		11'			25	
		12'			25	

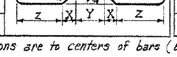
DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"e" bars STRAIGHT: Vertical in Sidewalls and Division Wall. SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#4	12"	240	6'-3"
		6'			240	7'-3"
		7'			240	8'-2"
		8'			288	9'-2"
		9'			240	10'-8"
		10'			264	11'-8"
		11'			288	12'-8"
	10' @ 2	5'	#4	12"	240	6'-4"
		6'			240	7'-5"
		7'			240	8'-5"
		8'			288	9'-6"
		9'			240	10'-6"
		10'			264	11'-6"
		11'			288	12'-6"
		12'			240	13'-6"
	11' @ 2	5'	#4	12"	240	7'-6"
		6'			240	8'-7"
		7'			240	9'-7"
		8'			288	10'-6"
		9'			240	11'-6"
		10'			264	12'-6"
		11'			288	13'-6"
		12'			240	14'-6"
	12' @ 2	5'	#4	12"	240	7'-7"
		6'			240	8'-8"
		7'			240	9'-8"
		8'			288	10'-7"
		9'			240	11'-7"
		10'			264	12'-7"
		11'			288	13'-7"
		12'			240	14'-7"

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"f" bars STRAIGHT: In Bottom of Headwalls SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#6	22½"	6	
		6'			6	
		7'			6	
		8'			6	
		9'			6	
		10'			6	
		11'			6	
	10' @ 2	5'	#6	22½"	6	
		6'			6	
		7'			6	
		8'			6	
		9'			6	
		10'			6	
		11'			6	
		12'			6	
	11' @ 2	5'	#6	22½"	6	
		6'			6	
		7'			6	
		8'			6	
		9'			6	
		10'			6	
		11'			6	
		12'			6	
	12' @ 2	5'	#6	22½"	6	
		6'			6	
		7'			6	
		8'			6	
		9'			6	
		10'			6	
		11'			6	
		12'			6	

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"f1" bars STRAIGHT: In Top of Headwalls and Aprons. (2 Each) SIZE	SPACING	NO. REQ'D	LENGTH
D	S	H				
5'-0" MAXIMUM	9' @ 2	5'	#6	22½"	8	
		6'			8	
		7'			8	
		8'			8	
		9'			8	
		10'			8	
		11'			8	
	10' @ 2	5'	#6	22½"	8	
		6'			8	
		7'			8	
		8'			8	
		9'			8	
		10'			8	
		11'			8	
		12'			8	
	11' @ 2	5'	#6	22½"	8	
		6'			8	
		7'			8	
		8'			8	
		9'			8	
		10'			8	
		11'			8	
		12'			8	
	12' @ 2	5'	#6	22½"	8	
		6'			8	
		7'			8	
		8'			8	
		9'			8	
		10'			8	
		11'			8	
		12'			8	

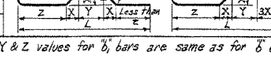
BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#6	3"	5"	1'-2"

BENDING DIAGRAM FOR BARS "b" AND "b2"



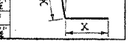
BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK
#6	3"	5"	0'-7"

BENDING DIAGRAM FOR BARS "b1" AND "b3".



SPAN	SIZE	SPACING	NO. REQ'D	LENGTH	X
9'	#6	12"	98	2'-10"	1'-5"
10'	#6	12"	52	2'-11"	1'-5½"
11'	#6	12"	58	3'-0"	1'-6"
12'	#6	12"	62	3'-1"	1'-6½"

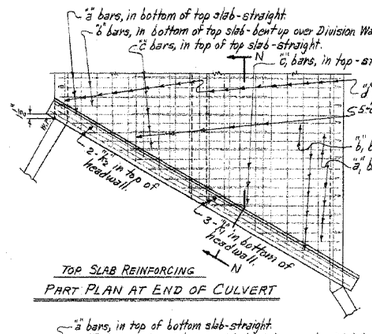
Dowel bars "f" in Two Headwalls



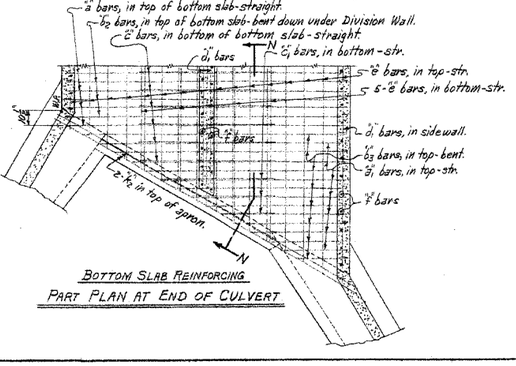
NOTE:- Dimensions are to centers of bars (b, b1, b2, & b3). The X, Y & Z values for "b1" bars are same as for "b" bars and for "b3" bars same as for "b2" bars.

These bars are in the skewed portion of barrel only. The length of "a" and "c" bars and overall length L of "b1" and "b3" bars vary by 1'-9" for 12" spacing and 1'-7" for 11" spacing.

In the regular portion of the barrel begin and end with a set of "a" & "c" bars. If the spacing is such that the last set of bars would be "b" & "b2" bars, use a set of "a" & "c" bars instead.

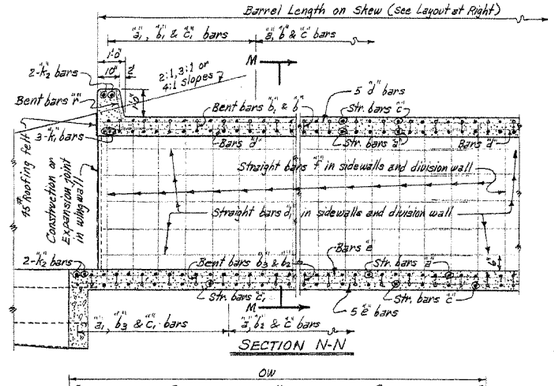


TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT

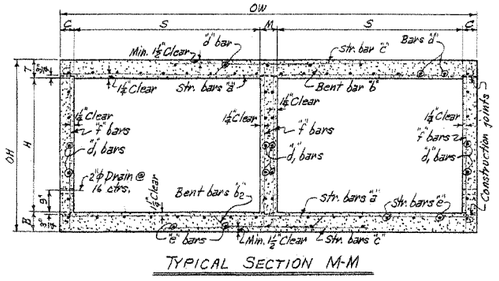


BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

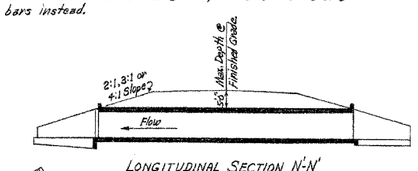
NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X302-1 or W-X302-2; W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.



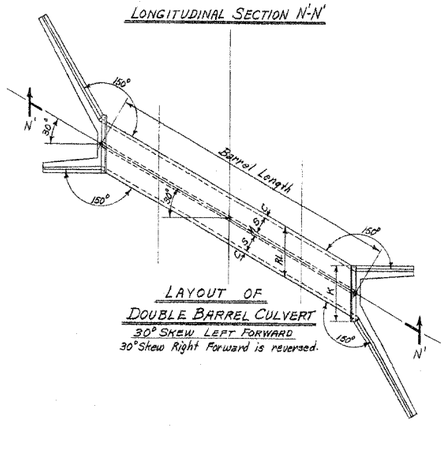
SECTION N-N



TYPICAL SECTION M-M



LONGITUDINAL SECTION N-N'



LAYOUT OF
DOUBLE BARREL CULVERT
30° SKEW LEFT FORWARD
30° Skew Right Forward is reversed.

Designed by:- W.C.H. 1-17-63.
Drawn by:- W.C.H. 3-20-64.
Quantities by:- W.C.H. 4-7-64.
Checked by:- R.H.S. 5-14-63
Checked by:-
Checked by:-

MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF SIDEWALLS	THICKNESS OF SLAB	THICKNESS OF BOTTOM SLAB	THICKNESS OF DIVISION WALL	OVERALL HEIGHT	ROADWAY LENGTH	LENGTH OF HEADWALLS
D	S	H	A	OW	T	C	M	B	OH	RL	K
5'-0"	9' @ 2	5'	90	19'-11"	7"	9"			6'-6⅝	25'-0

RESHOT 3-5-93

101

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			133	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	'a' bars STRAIGHT: In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall - Each.					'b' bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Walls - hooked. Alternate with 'a' and 'c' bars.							'b2' bars BENT - See Diagram below. In Top of Bottom Slab bent down under Division Walls - hooked. Alternate with 'a' and 'c' bars.							'c' bars STRAIGHT: In Top and Bottom Slab of Barrel. Alternate with 'b' and 'b2' bars.						'j' bars Longitudinal in Top Slab of Barrel			'd' bars STRAIGHT: Longitudinal in Sidewalls and Division Walls.			'e' bars Longitudinal in Bottom Slab of Barrel.			'f' bars STRAIGHT: Vertical in Sidewalls and Division Walls.				
D	S	H	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
0'-0 TO 5'-0 MAXIMUM	4 @ 4'	2'			126	126	18'-9"			59	59	20'-2"	0'-3"	2'-2"	3'-6"			59	59	20'-1"	0'-2½"	2'-3"	3'-6"			120	120	14'-0"			30										980	480	2'-10"
		3'			128	128	18'-9"			59	59	20'-2"	0'-3"	2'-2"	3'-6"			59	59	20'-1"	0'-2½"	2'-3"	3'-6"			120	120	14'-0"			30										980	480	3'-10"
		4'	#5	12"	128	128	18'-9"	#5	12"	59	59	20'-2"	0'-3"	2'-2"	3'-6"	#5	12"	59	59	20'-1"	0'-2½"	2'-3"	3'-6"	#5	12"	120	120	14'-0"	#5	12"	30	#4	12"	32	#4	12"	30	#4	12"	30	980	480	4'-10"
		5'			128	128	18'-9"			59	59	20'-2"	0'-3"	2'-2"	3'-6"			59	59	20'-1"	0'-2½"	2'-3"	3'-6"			120	120	14'-0"			30			40			30				980	480	5'-10"
		6'			128	128	19'-2"			59	59	20'-7"	0'-3"	2'-3"	3'-5¾"			59	59	20'-6"	0'-2½"	2'-4"	3'-5¾"			120	120	14'-3"			30			48			30				980	480	6'-10"
	4 @ 5'	3'			186	128	22'-9"			59	59	24'-3"	0'-3½"	2'-7"	4'-1½"			59	59	24'-2"	0'-3"	2'-8"	4'-1½"			120	120	17'-0"			34			24			34				980	480	3'-11"
		4'			128	128	22'-9"			59	59	24'-3"	0'-3½"	2'-7"	4'-1½"			59	59	24'-2"	0'-3"	2'-8"	4'-1½"			120	120	17'-0"			34			32			34				980	480	4'-11"
		5'	#6	12"	128	128	22'-9"	#5	12"	59	59	24'-3"	0'-3½"	2'-7"	4'-1½"	#5	12"	59	59	24'-2"	0'-3"	2'-8"	4'-1½"	#6	12"	120	120	17'-0"	#5	11½"	34	#4	12"	40	#4	12"	34	#4	12"	34	980	480	5'-11"
		6'			128	128	23'-3"			59	59	24'-8"	0'-3½"	2'-8"	4'-2½"			59	59	24'-7"	0'-3"	2'-9"	4'-2½"			120	120	17'-3"			34			48			34				980	480	6'-11"
		7'			128	128	23'-8"			59	59	25'-0"	0'-3½"	2'-9"	4'-2½"			59	59	24'-11"	0'-3"	2'-10"	4'-2½"			120	120	17'-6"			34			56			34				980	480	7'-11"
	4 @ 6'	3'			140	140	26'-9"			65	65	28'-4"	0'-4"	3'-0"	4'-10⅝"			65	65	28'-3"	0'-3½"	3'-1"	4'-10⅝"			132	132	20'-0"			38			24			38				980	480	4'-0"
		4'			140	140	26'-9"			65	65	28'-4"	0'-4"	3'-0"	4'-10⅝"			65	65	28'-3"	0'-3½"	3'-1"	4'-10⅝"			132	132	20'-0"			38			32			38				980	480	5'-0"
		5'	#6	11"	140	140	26'-9"	#5	11"	65	65	28'-4"	0'-4"	3'-0"	4'-10⅝"	#5	11"	65	65	28'-3"	0'-3½"	3'-1"	4'-10⅝"	#6	11"	132	132	20'-0"	#5	11½"	38	#4	12"	40	#4	12"	38	#4	12"	38	980	480	6'-0"
		6'			140	140	27'-2"			65	65	28'-9"	0'-4"	3'-1"	4'-11⅝"			65	65	28'-8"	0'-3½"	3'-2"	4'-11⅝"			132	132	20'-3"			38			48			38				980	480	7'-0"
		7'			140	140	27'-6"			65	65	29'-1"	0'-4"	3'-2"	4'-11⅝"			65	65	29'-0"	0'-3½"	3'-3"	4'-11⅝"			132	132	20'-6"			38			56			38				980	480	8'-0"
		8'			140	140	27'-7"			65	65	29'-2"	0'-4"	3'-2"	5'-0⅝"			65	65	29'-1"	0'-3½"	3'-3"	5'-0⅝"			132	132	20'-6"			38			64			38				980	480	8'-10"
	4 @ 7'	4'			128	128	30'-9"			59	59	32'-8"	0'-4½"	3'-5"	5'-1"			59	59	32'-7"	0'-4½"	3'-5½"	5'-1"			120	120	23'-0"			42			32			42				980	480	5'-1"
		5'			128	128	30'-9"			59	59	32'-8"	0'-4½"	3'-5"	5'-1"			59	59	32'-7"	0'-4½"	3'-5½"	5'-1"			120	120	23'-0"			42			40			42				980	480	6'-1"
		6'	#6	12"	128	128	31'-2"	#6	12"	59	59	33'-1"	0'-4½"	3'-6"	5'-8"	#6	12"	59	59	33'-0"	0'-4½"	3'-6½"	5'-8"	#6	12"	120	120	23'-3"	#5	11½"	44	#4	12"	48	#4	12"	42	#4	12"	42	980	480	7'-1"
		7'			128	128	31'-6"			59	59	33'-5"	0'-4½"	3'-7"	5'-8½"			59	59	33'-4"	0'-4½"	3'-7½"	5'-8½"			120	120	23'-6"			44			56			42				980	480	8'-1"
		8'			128	128	31-7"			59	59	33'-6"	0'-4½"	3'-7"	5'-9"			59	59	33'-5"	0'-4½"	3'-7½"	5'-9"			120	120	23'-6"			44			64			42				980	480	9'-1"
		9'			128	128	32'-0"			59	59	33'-11"	0'-4½"	3'-8"	5'-10"			59	59	33'-10"	0'-4½"	3'-8½"	5'-10"			120	120	23'-9"			44			72			42	#5	12"	480	480	10'-1"
		4'			140	140	34'-9"			65	65	36'-8"	0'-5"	3'-10"	6'-4"			65	65	36'-9"	0'-5"	3'-10"	6'-4"			132	132	26'-0"			48			32			46				980	480	5'-2"
		5'			140	140	35'-2"			65	65	37'-2"	0'-5"	3'-11"	6'-5"			65	65	37'-2"	0'-5"	3'-11"	6'-5"			132	132	26'-3"			48			40			46				980	480	6'-2"
		6'			140	140	35'-2"			65	65	37'-2"	0'-5"	3'-11"	6'-5"			65	65	37'-2"	0'-5"	3'-11"	6'-5"			132	132	26'-3"			48			48			46				980	480	7'-2"
		7'	#6	11"	140	140	35'-6"	#6	11"	65	65	37'-6"	0'-5"	4'-0"	6'-5½"	#6	11"	65	65	37'-6"	0'-5"	4'-0"	6'-5½"	#6	11"	132	132	26'-6"	#5	11½"	48	#4	12"	56	#4	12"	46	#4	12"	46	980	480	8'-2"
		8'			140	140	35'-7"			65	65	37'-7"	0'-5"	4'-0"	6'-6"			65	65	37'-7"	0'-5"	4'-0"	6'-6"			132	132	26'-6"			48			64			46				980	480	9'-2"
		9'			140	140	36'-0"			65	65	38'-0"	0'-5"	4'-1"	6'-7"			65	65	38'-0"	0'-5"	4'-1"	6'-7"			132	132	26'-9"			48			72			46				980	480	10'-2"
		10'			140	140	36'-5"			65	65	38'-5"	0'-5"	4'-2"	6'-8"			65	65	38'-5"	0'-5"	4'-2"	6'-8"			132	132	27'-0"			48			80			46				980	480	11'-2"
	4 @ 8'	5'			280	280	20'-7"			130	130	21'-8"	0'-5½"	4'-4"	7'-2"			130	130	21'-8"	0'-5½"	4'-4"	7'-2"			192	192	29'-3"			55			40			53				980	480	6'-3"
		6'			280	280	20'-7"			130	130	21'-10"	0'-5½"	4'-5"	7'-2½"			130	130	21'-10"	0'-5½"	4'-5"	7'-2½"			192	192	29'-6"			55			48			53				980	480	7'-3"
		7'			280	280	20'-7"			130	130	21'-10"	0'-5½"	4'-5"	7'-2½"			130	130	21'-10"	0'-5½"	4'-5"	7'-2½"			192	192	29'-6"			55			56			53				980	480	8'-3"
		8'	#6	11"	280	280	20'-10"	#6	11"	130	130	21'-10"	0'-5½"	4'-5"	7'-3"	#6	11"	130	130	21'-10"	0'-5½"	4'-5"	7'-3"	#6	11"	192	192	29'-6"	#5	11½"	55	#4	12"	64	#4	12"	53	#4	12"	53	980	480	9'-3"
		9'			280	280	21'-0"			130	130	22'-1"	0'-5½"	4'-6"	7'-4"			130	130	22'-1"	0'-5½"	4'-6"	7'-4"			192	192	29'-9"			55			72			53				980	480	10'-3"
		10'			280	280	21'-3"			130	130	22'-3"	0'-5½"	4'-7"	7'-5"			130	130	22'-3"	0'-5½"	4'-7"	7'-5"			192	192	30'-0"			55			80			53				980	480	11'-3"
		11'			280	280	21'-6"			130	130	22'-6"	0'-5½"	4'-7"	7'-6"			130	130	22'-6"	0'-5½"	4'-7"	7'-6"			192	192	30'-0"			55			88			53	10'	576	576	12'-3"
		5'			256	256	22'-5"			118	118	23'-8"	0'-6"	4'-3"	7'-11"			118	118	23'-8"	0'-6"	4'-3"	7'-11"			120	120	32'-3"			59			40			57				980	480	6'-4"
		6'			256	256	22'-11"			118	118	23'-10"	0'-6"	4'-10"	7'-11½"			118	118	23'-10"	0'-6"	4'-10"	7'-11½"			120	120	32'-6"			59			48			57				980	480	7'-4"
		7'			256	256	22'-11"			118	118	23'-10"	0'-6"	4'-10"	7'-11½"			118	118	23'-10"	0'-6"	4'-10"	7'-11½"			120	120	32'-6"			59			56			57				980	480	8'-4"
		8'	#7	12"	256	256	23'-0"	#6	12"	118	118	23'-11"	0'-6"	4'-11"	8'-0"	#6	12"	118	118	23'-11"	0'-6"	4'-11"	8'-0"	#7	12"	120	120	32'-6"	#5	11½"	59	#4	12"	64	#4	12"	57	#4	12"	57	980	480	9'-4"
		9'			256	256	23'-5"			118	118	24-1"	0'-6"	5'-0"	8'-1"			118	118	24'-1"	0'-6"	5'-0"	8'-1"			120	120	32'-9"			59			72			57				980	480	10'-4"
		10'			256	256	23'-5"			118	118	24'-3"	0'-6"	5'-0"	8'-2"			118	118	24'-3"	0'-6"	5'-0"	8'-2"			120	120	33'-0"			59			80			57				980	480	11'-4"
		11'			256	256	23'-6"			118	118	24'-6"	0'-6"	5'-0"	8'-3"			118	118	24'-6"	0'-6"	5'-0"	8'-3"			120	120	33'-0"			59			88			57				980	480	12'-4"
		12'			256	256	23'-7"			118	118	24'-8"	0'-6"	5'-0"	8'-4"			118	118	24'-8"	0'-6"	5'-0"	8'-4"			120	120	33'-0"			59			96			57	12"	480	480	13'-0"
		6'			280	280	25'-0"			130	130	25'-11"	0'-6½"	5'-3"	8'-9"			130	130	25'-10"	0'-7"	5'-3"	8'-9"			192	192	35'-6"			68			48			61				980	480	7'-5"
		7'			280	280	25'-0"			130	130	25'-11"	0'-6½"	5'-3"	8'-9"			130	130	25'-10"	0'-7"	5'-3"	8'-9"			192	192	35'-6"			68			56			61				980	480	8'-5"
	4 @ 9'	8'			280	280	25'-0"			130	130	25'-11"	0'-6½"	5'-3"	8'-9"			130	130	25'-10"	0'-7"	5'-3"	8'-9"			192	192	35'-6"			68			64			61				980	480	9'-5"
		9'	#7	11"	280	280	25'-2"	#6	11"	130	130	26'-2"	0'-6½"	5'-4"	8'-10"	#6	11"	130	130	26'-1"	0'-7"	5'-3"	8'-10"	#7	11"	192	192	35'-9"	#5	11½"	68	#4	12"	72	#4	12"	61	#4	12"	61	980	480	10'-5"
	10	10'			280	280	25'-5"			130	130	26'-5"	0'-6½"	5'-5"	8'-11"			130	130	26'-4"	0'-7"	5'-4"	8'-11"			192	192	36'-0"			68			80			61				980	480	11'-5"
		11'			280	280	25'-8"			130	130	26'-8"	0'-6½"	5'-5"	9'-0"			130	130	26'-7"	0'-7"	5'-4"	9'-0"			192	192	36'-3"			68			88			61				980	480	12'-5"
		12'			280	280	25'-11"			130	130	26'-10"	0'-6½"	5'-5"	9'-1"			130	130	26'-10"	0'-7"	5'-5"	9'-1"			192	192	36'-6"			68			96			61				980	480	13'-5"
		6'			280	280	27'-0"			130	130	28'-0"	0'-7"	5'-8"	9'-6"			130	130	28'-1"	0'-8"	5'-6"	9'-6"			192	192	38'-6"			67			48			65				980	480	7'-7"
		7'			280	280	27'-0"			130	130	28'-0"	0'-7"	5'-8"	9'-6"			130	130	28'-1"	0'-8"	5'-6"	9'-6"			192	192	38'-6"			67			56			65				980	480	8'-7"
	4 @ 10'	8'			280	280	27'-0"			130	130	28'-0"	0'-7"	5'-8"	9'-6"			130	130	28'-1"	0'-8"	5'-6"	9'-6"			192	192	38'-6"			67			64			65				980	480	9'-7"
		9'	#7	11"	280	280	27'-2"	#6	11"	130	130	28'-3"	0'-7"	5'-8"	9'-7"	#6	11"	130	130	28'-2"	0'-8"	5'-7"	9'-7"	#7	11"	192	192	38'-9"	#5	11½"	67	#4	12"	72	#4	12"	65	#4	12"	65	980	480	10'-7"
	12	10'			280	280	27'-5"			130	130	28'-5"	0'-7"	5'-8"	9'-8"			130	130	28'-4"	0'-8"	5'-7"	9'-8"			192	192	39'-0"			67			80			65				980	480	11'-7"
		11'			280	280	27'-8"			130	130	28'-6"	0'-7"	5'-10"	9'-9"			130	130	28'-5"	0'-8"	5'-8"	9'-9"			192	192	39'-3"			67			88			65				980	480	12'-7"
		12'			280	280	27'-11"			130	130	28'-7"	0'-7"	5'-10"	9'-10"			130	130	28'-6"	0'-8"	5'-8"	9'-10"			192	192	39'-6"			67			96			65	12"	480	480	13'-7"

ⓢ These 'a', 'b' and 'b2' bars are to be spliced at center of middle division wall to make a full length bar. Lap #6 bars 2'-6" min. and #7 bars 2'-9" min.

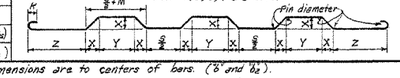
DIMENSIONS — QUANTITIES

MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	BARREL DIMENSIONS: SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	UNIT QUANTITIES: CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	REINFORCING STEEL ADDITIONAL PER LAP	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & APRONS
D	S	H	A	OW	T	C	M	B	OH	CU.YD.	LB.	LB.	LB.
5'-0"	4 @ 4'	2'	32	19'-0"	6½"	6"	6"	6"	3'-0½"	0.955	187.46	90.56	261.10
		3'	48	19'-0"		6"	8"		4'-0½"	1.066	198.14	97.24	261.10
		4'	64	19'-0"		6"	8"		5'-0½"	1.177	208.83	103.92	261.10
		5'	80	19'-0"		6"	8"		6'-0½"	1.289	219.52	110.60	261.10
		6'	96	19'-5"		7"	9"		7'-0½"	1.508	232.47	117.25	269.58
	4 @ 5'	3'	60	23'-0"	7"	6"	8"	6½"	4'-1½"	1.292	265.05	107.53	398.95
		4'	80	23'-0"		6"	8"		5'-1½"	1.403	275.73	114.81	398.95
		5'	100	23'-0"		6"	8"		6'-1½"	1.514	286.42	120.89	398.95
		6'	120	23'-5"		7"	9"		7'-1½"	1.735	299.98	127.57	408.96
		7'	140	23'-5"		7½"	10"		8'-1½"	1.962	313.12	134.25	402.96
	4 @ 6'	3'	72	27'-0"	7½"	6"	8"	7"	4'-2½"	1.542	320.01	117.83	468.83
		4'	96	27'-0"		6"	8"		5'-2½"	1.653	330.70	124.51	468.83
		5'	120	27'-0"		6"	8"		6'-2½"	1.764	341.39	131.19	468.83
		6'	144	27'-5"		7"	9"		7'-2½"	1.986	355.21	137.87	473.84
		7'	168	27'-9"		7½"	10"		8'-2½"	2.215	368.57	144.55	477.85
		8'	192	27'-10"		8"	10"		9'-2½"	2.381	383.39	151.23	478.86
	4 @ 7'	4'	112	31'-0"	8"	6"	8"	7½"	5'-3½"	1.961	381.96	138.28	539.61
		5'	140	31'-0"		6"	8"		6'-3½"	2.063	392.65	144.96	538.61
		6'	168	31'-5"		7"	9"		7'-3½"	2.286	406.59	151.69	594.62
		7'	196	31'-9"		7½"	10"		8'-3½"	2.516	420.08	158.32	598.62
		8'	224	31'-10"		8"	10"		9'-3½"	2.683	440.93	165.00	598.62
		9'	252	32'-3"		9"	11"		10'-3½"	2.984	475.91	171.68	553.63
	4 @ 8'	4'	128	35'-0"	8½"	6"	8"	8"	5'-5"	2.281	449.30	148.57	611.28
		5'	160	35'-5"		7"	9"		6'-5"	2.491	463.53	155.25	616.28
		6'	192	35'-5"		7"	9"		7'-5"	2.618	479.22	161.93	616.28
		7'	224	35'-9"		7½"	10"		8'-5"	2.848	492.91	168.61	620.29
		8'	256	35'-10"		8"	10"		9'-5"	3.016	508.95	175.29	621.29
		9'	288	36'-3"		9"	11"		10'-5"	3.213	543.89	181.97	626.30
		10'	320	36'-8"		10"	12"		11'-5"	3.652	569.59	188.65	631.30
	4 @ 9'	5'	180	39'-5"	9"	7"	9"	9"	6'-6"	2.823	525.46	178.86	716.88
		6'	216	39'-9"		7½"	10"		7'-6"	3.042	539.35	179.94	720.89
		7'	252	39'-9"		7½"	10"		8'-6"	3.181	550.04	186.62	720.89
		8'	288	39'-10"		8"	10"		9'-6"	3.349	571.16	193.30	722.89
		9'	324	40'-3"		9"	11"		10'-6"	3.653	606.26	199.98	726.89
		10'	360	40'-8"		10"	12"		11'-6"	3.998	632.03	206.66	732.90
		11'	396	40'-10"		11"	12"		12'-6"	4.238	658.72	213.34	736.90
	4 @ 10'	5'	200	43'-5"	9½"	7"	9"	9½"	6'-7"	3.179	620.21	185.06	991.62
		6'	240	43'-9"		7½"	10"		7'-7"	3.399	634.28	190.29	993.07
		7'	280	43'-9"		7½"	10"		8'-7"	3.538	644.97	196.92	993.07
		8'	320	43'-10"		8"	10"		9'-7"	3.706	666.82	203.60	999.00
		9'	360	44'-3"		9"	11"		10'-7"	4.012	701.92	210.28	1005.20
		10'	400	44'-8"		10"	12"		11'-7"	4.348	728.27	216.96	1013.92
		11'	440	44'-10"		11"	12"		12'-7"	4.598	755.18	223.64	1014.13
		12'	480	45'-0"		12"	12"		13'-7"	4.861	798.37	230.32	1016.87
	4 @ 11'	6'	264	47'-10"	10"	8"	10"	10½"	7'-8½"	3.878	729.59	200.53	1091.98
		7'	308	47'-10"		8"	10"		8'-8½"	4.020	740.28	207.21	1091.98
		8'	352	47'-10"		8"	10"		9'-8½"	4.162	761.03	213.89	1091.98
		9'	396	48'-3"		9"	11"		10'-8½"	4.470	797.14	220.57	1096.99
		10'	440	48'-8"		10"	12"		11'-8½"	4.808	823.93	227.25	1105.11
		11'	484	48'-10"		11"	12"		12'-8½"	5.059	850.97	233.93	1107.83
		12'	528	49'-0"		12"	12"		13'-8½"	5.323	890.99	240.61	1110.56
	4 @ 12'	6'	288	51'-10"	10½"	8"	10"	11"	7'-10"	4.371	782.20	210.82	1189.05
		7'	336	51'-10"		8"	10"		8'-10"	4.513	792.88	217.50	1189.05
		8'	384	51'-10"		8"	10"		9'-10"	4.655	818.82	224.18	1189.05
		9'	432	52'-3"		9"	11"		10'-10"	4.965	850.25	230.86	1189.50
		10'	480	52'-8"		10"	12"		11'-10"	5.305	877.16	237.54	1193.68
		11'	528	52'-10"		11"	12"		12'-10"	5.557	904.35	244.22	1200.91
		12'	576	53'-0"		12"	12"		13'-10"	5.821	998.21	250.90	1203.13

BAR SIZE	PIN DIAM.	K	ADD FOR HOOKS
#5	2½"	4⅝"	0'-11⅝"
#6	3"	5"	1'-2" (Hooks)
#7	3"	5"	0'-7" (Hook)

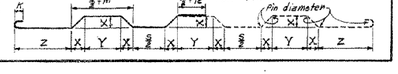
BENDING DIAGRAM FOR BARS 'b' and 'b2'

FOR 4, 5, 6, 7 & 8' SPANS.



BENDING DIAGRAM FOR BARS 'b' and 'b2'

FOR 9, 10, 11 & 12' SPANS.

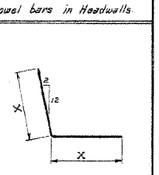


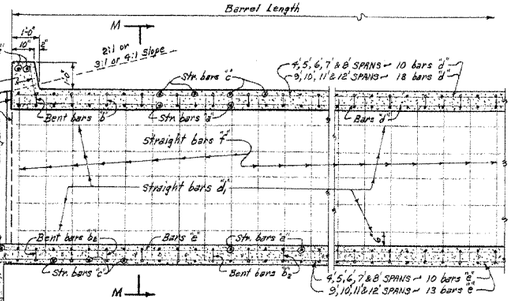
NOTE:- Dimensions are to centers of bars. ('b' and 'b2').

DOWEL BARS FOR TWO HEADWALLS

SPANS @	SIZE	SPACING	NO. REQ'D	LENGTH	X
4'	#4	12"s	40	2'-5"	1'-2½"
5'	#4	12"s	98	2'-6"	1'-3"
6'	#4	12"s	56	2'-7"	1'-3½"
7'	#4	12"s	64	2'-8"	1'-4"
8'	#4	12"s	72	2'-9"	1'-4½"
9'	#4	12"s	80	2'-10"	1'-5"
10'	#4	12"s	88	2'-11"	1'-5½"
11'	#4	12"s	96	3'-0"	1'-6"
12'	#4	12"s	104	3'-1"	1'-6½"

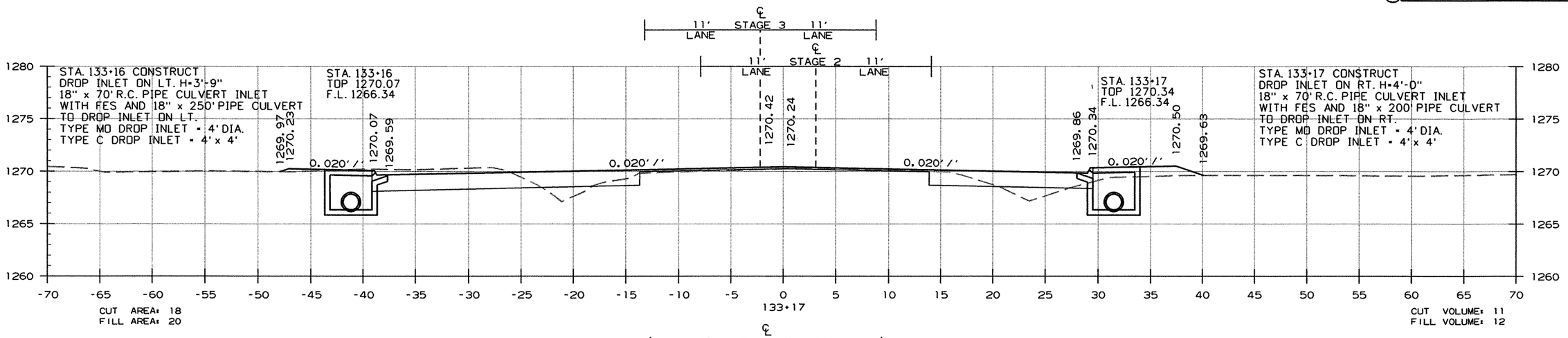
Bars 'f' Dowel bars in Headwalls

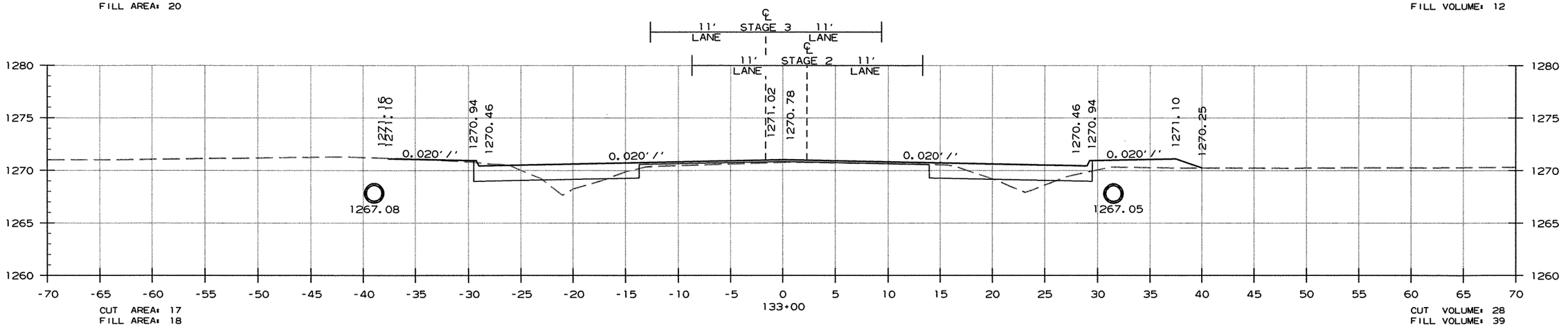


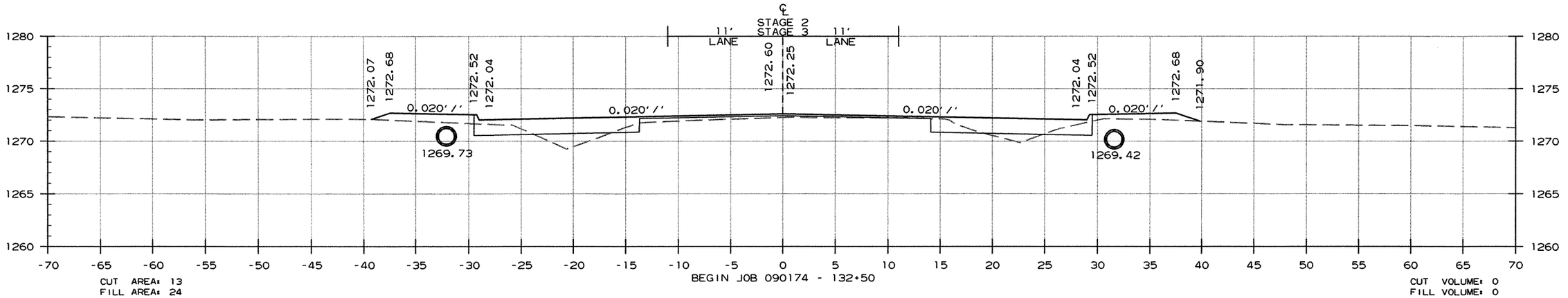

Barrel Length
M
1'-0"
2:1 or 3:1 or 4:1 slope
2 Bars 'c'
Bent bars 'f'
Str. bars 'c'
4, 5, 6, 7 & 8' SPANS - 10 bars 'd'
9, 10, 11 & 12' SPANS - 18 bars 'd'
Bent bars 'b'
Str. bars 'd'
Straight bars 'f'
Straight bars 'd'
Bare 'd'
2 Bars 'a'
Bent bars 'b2'
Bars 'e'
Str. bars 'e'
Bent bars 'b2'
4, 5, 6, 7 & 8' SPANS - 10 bars '

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	134	241

(2) CROSS SECTIONS





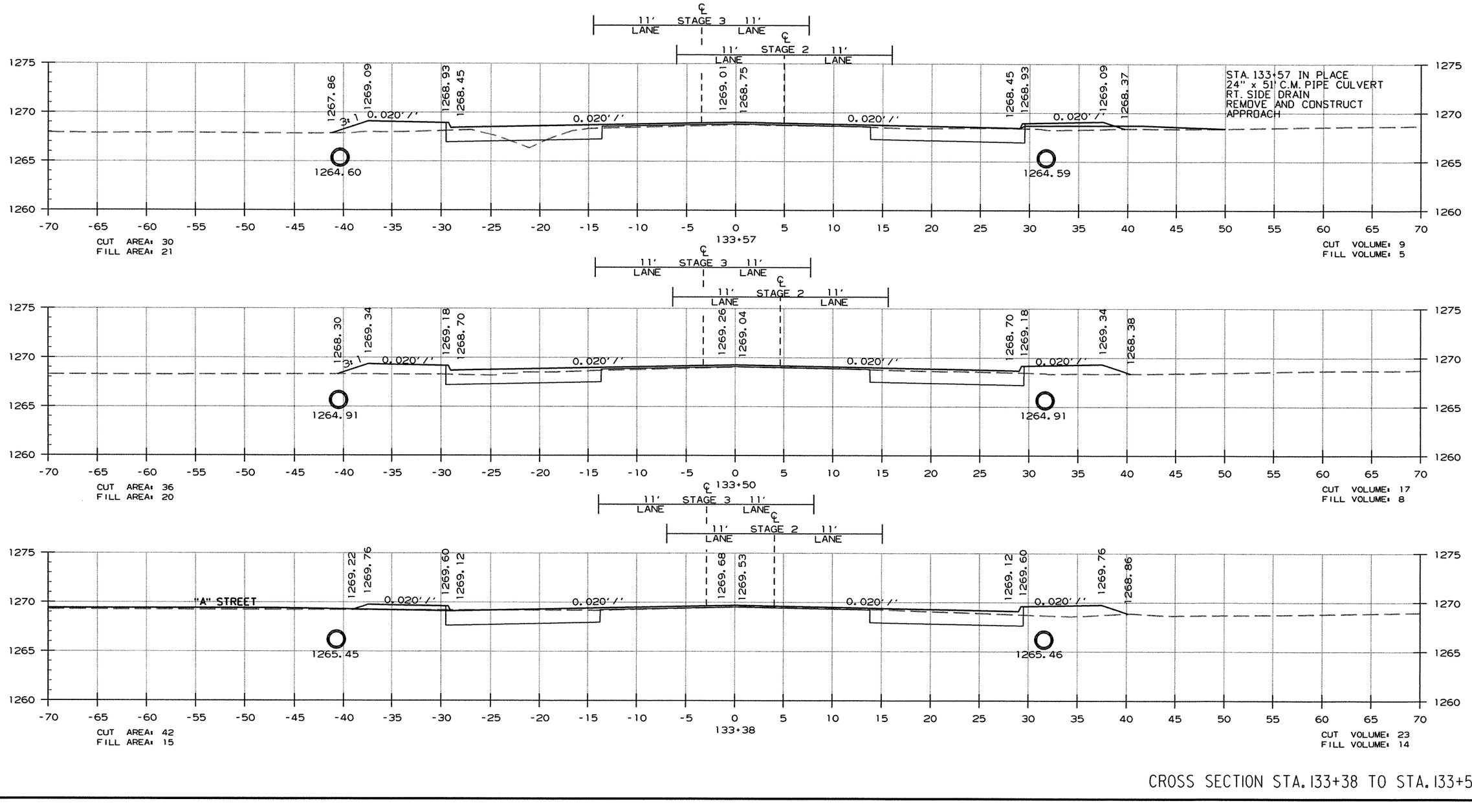


CROSS SECTION STA. 132+50 TO STA. 133+17

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	135	241

(2) CROSS SECTIONS

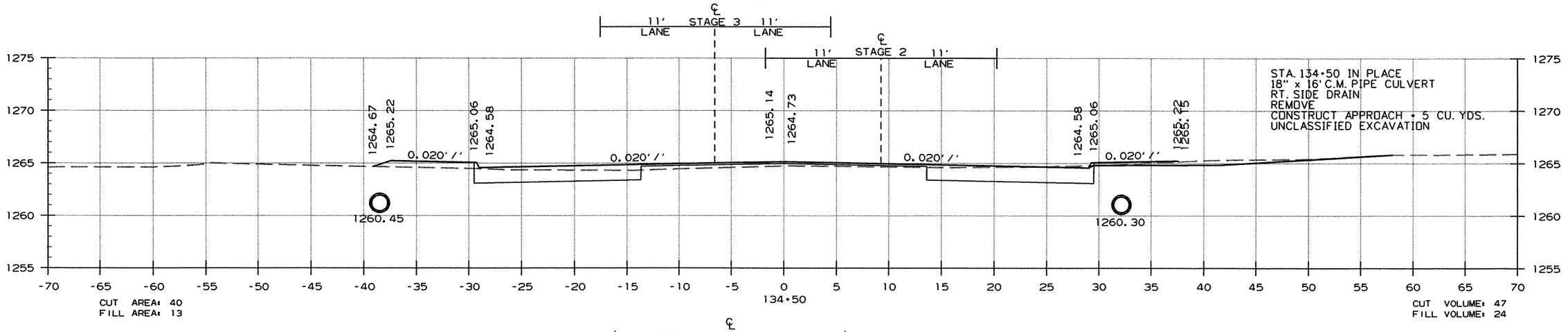


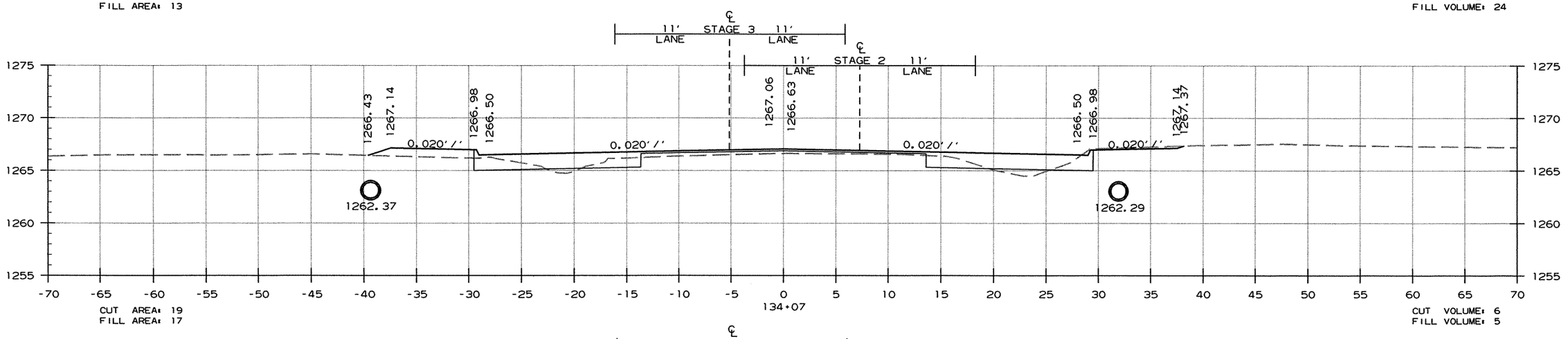
CROSS SECTION STA. 133+38 TO STA. 133+57

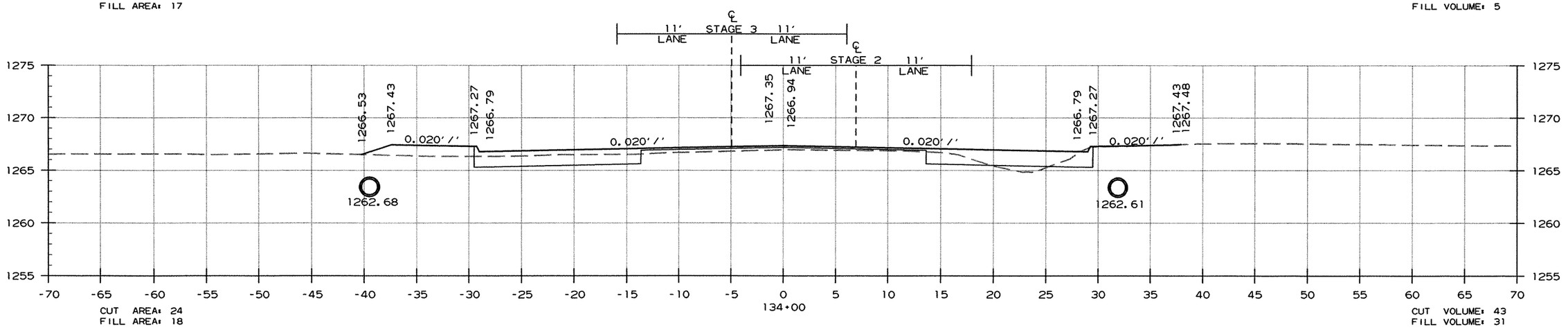
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	136	241

(2) CROSS SECTIONS





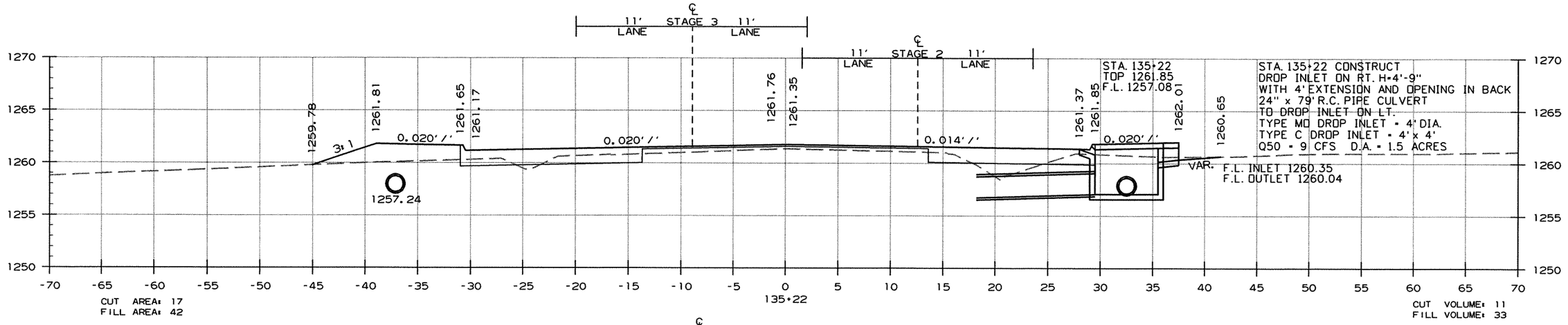


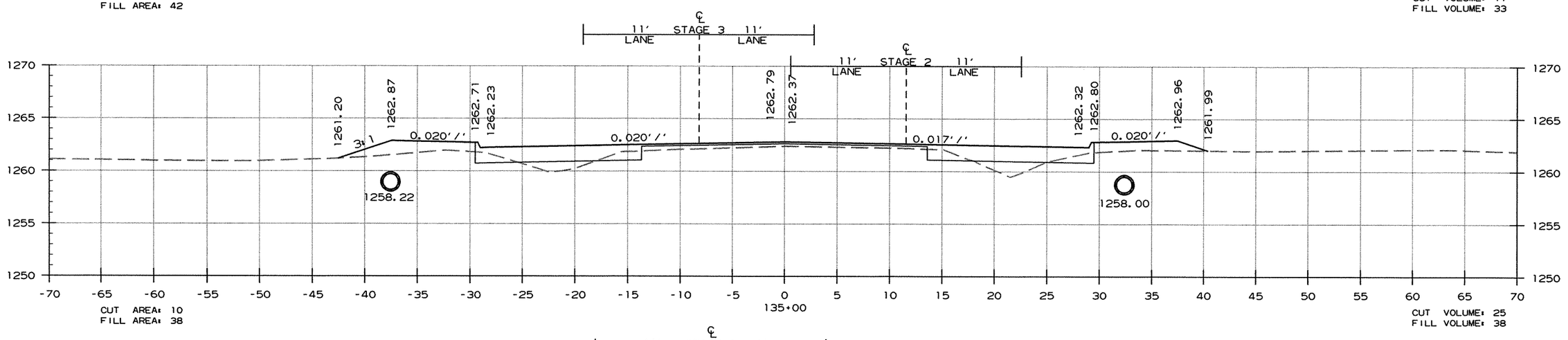
CROSS SECTION STA. 134+00 TO STA. 134+50

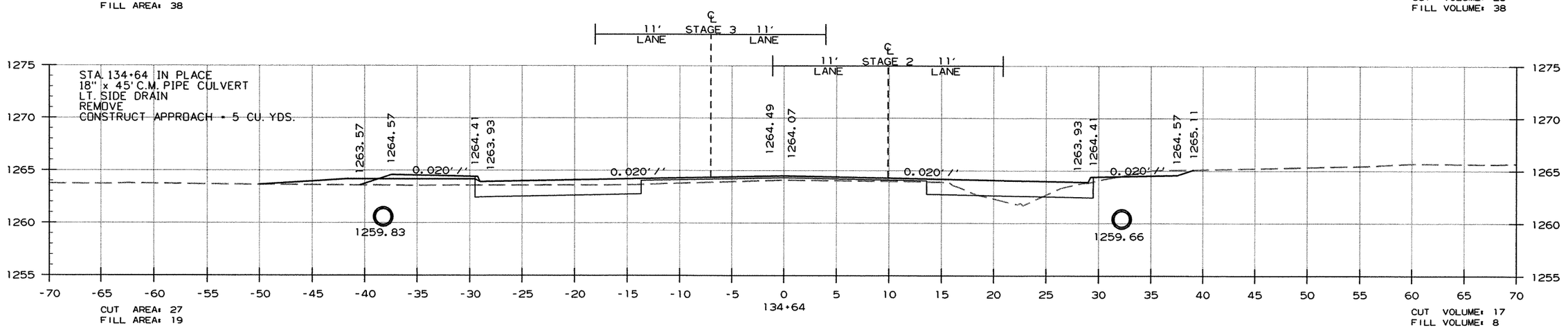
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	137	241

(2) CROSS SECTIONS





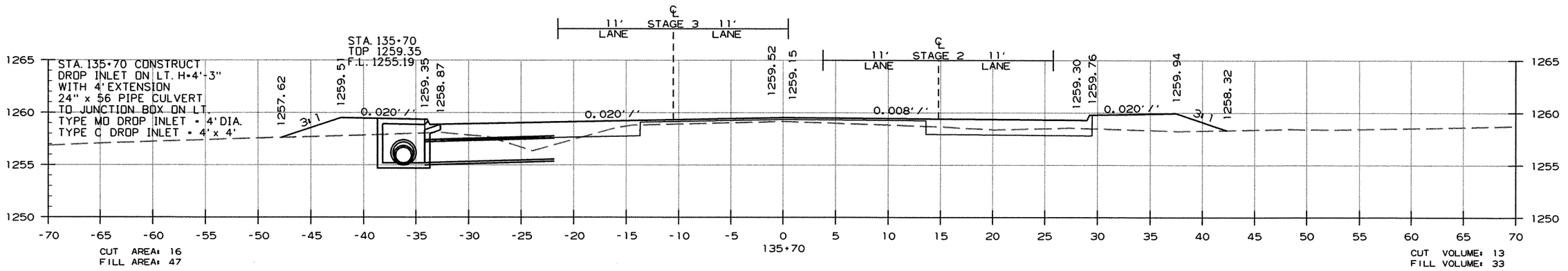


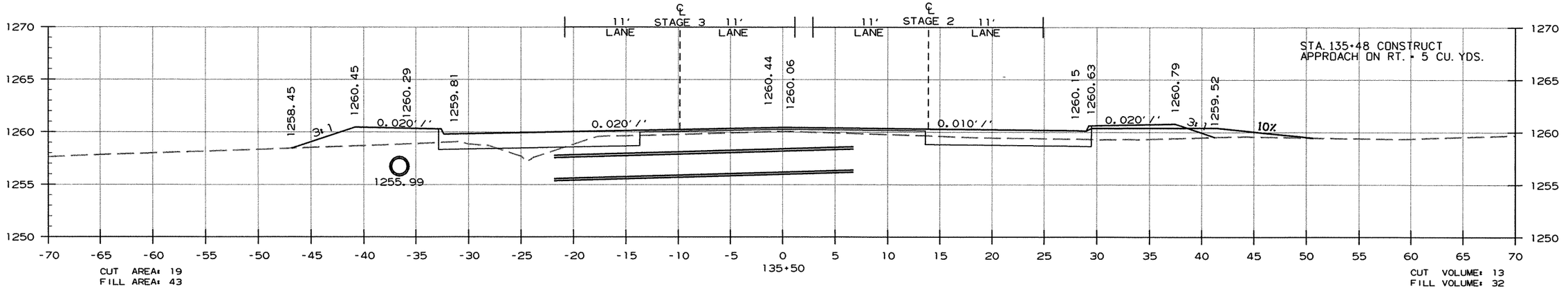
CROSS SECTION STA. 134+64 TO STA. 135+22

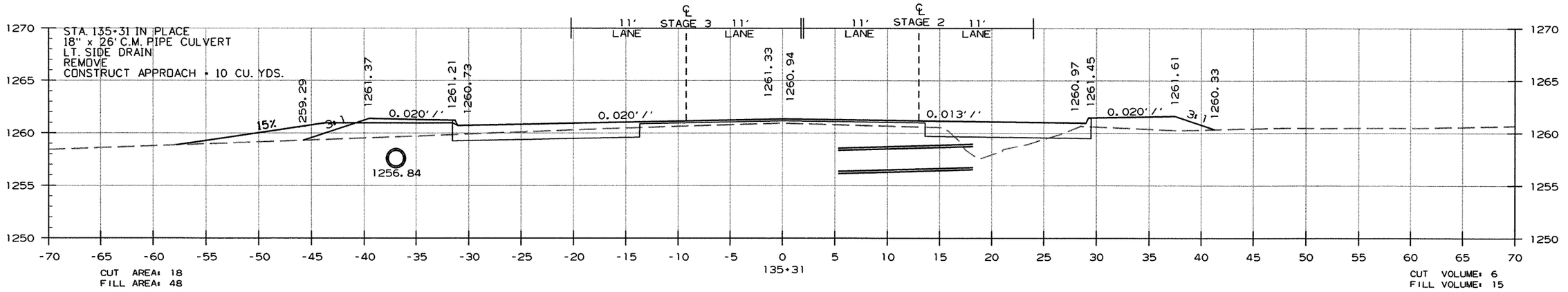
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	138	241

(2) CROSS SECTIONS





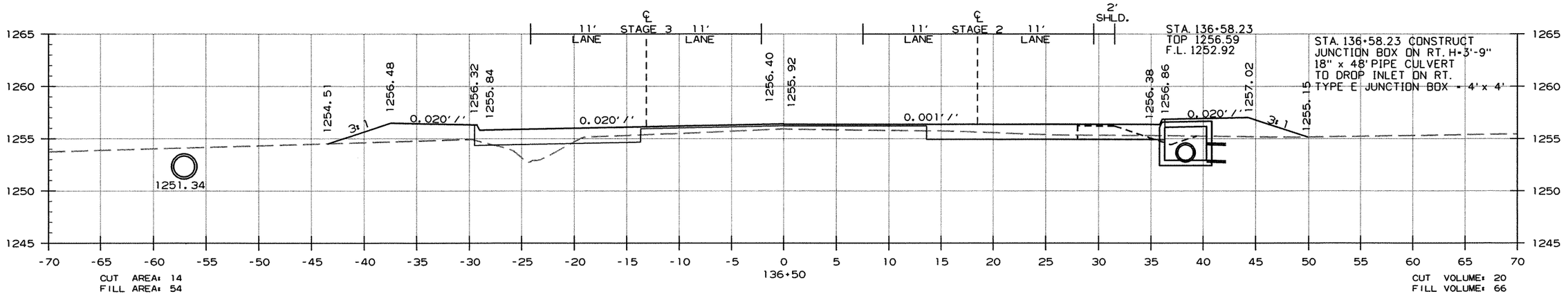


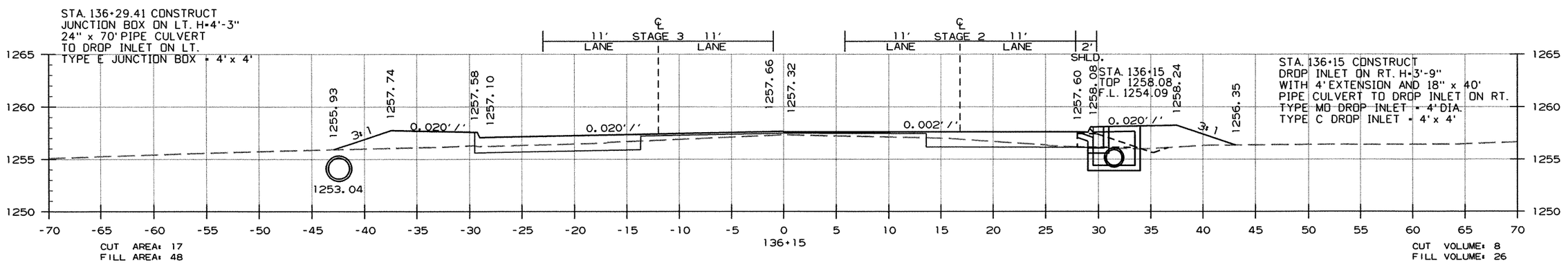
CROSS SECTION STA. 135+31 TO STA. 135+70

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	139	241

(2) CROSS SECTIONS



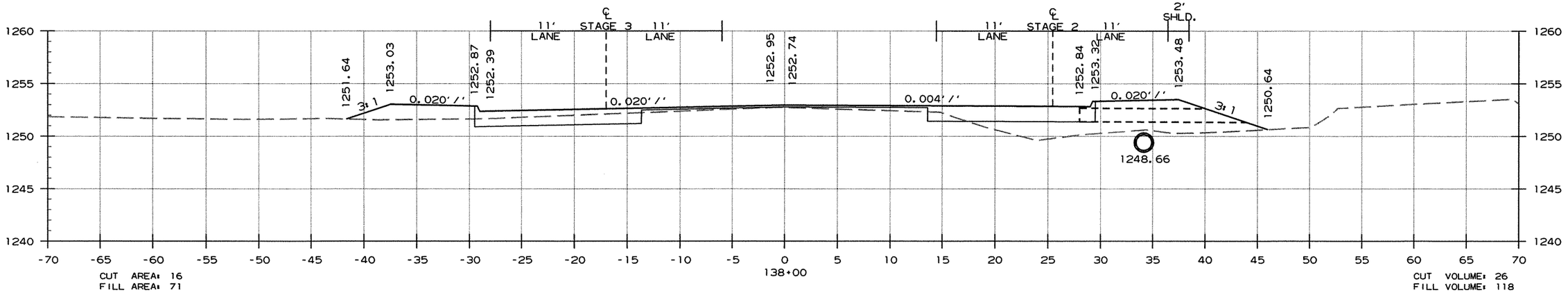


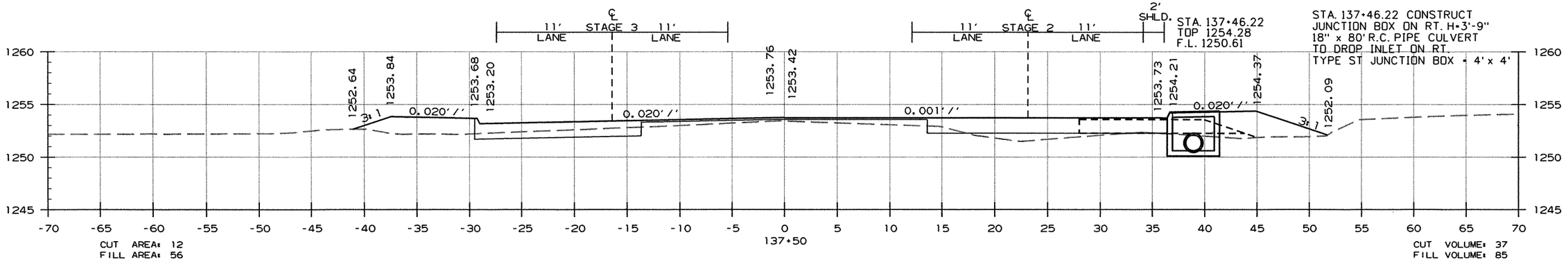
CROSS SECTION STA. 136+00 TO STA. 136+50

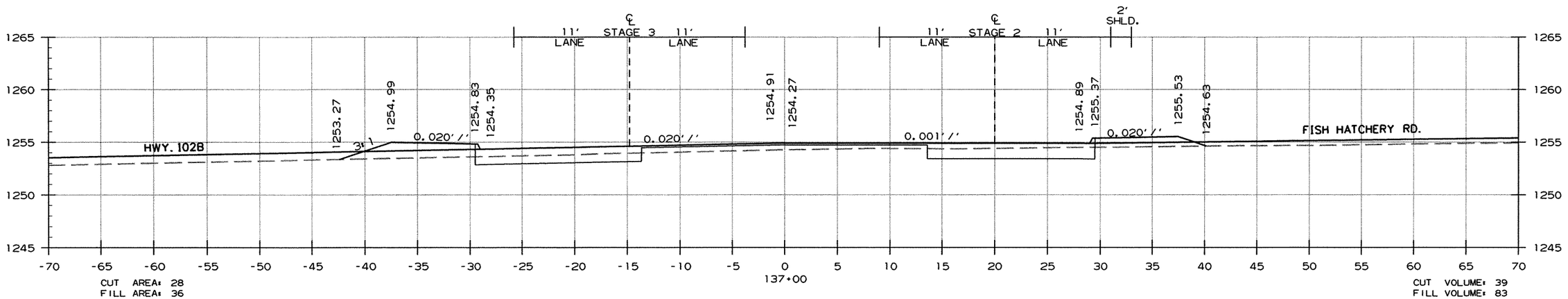
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	140	241

(2) CROSS SECTIONS





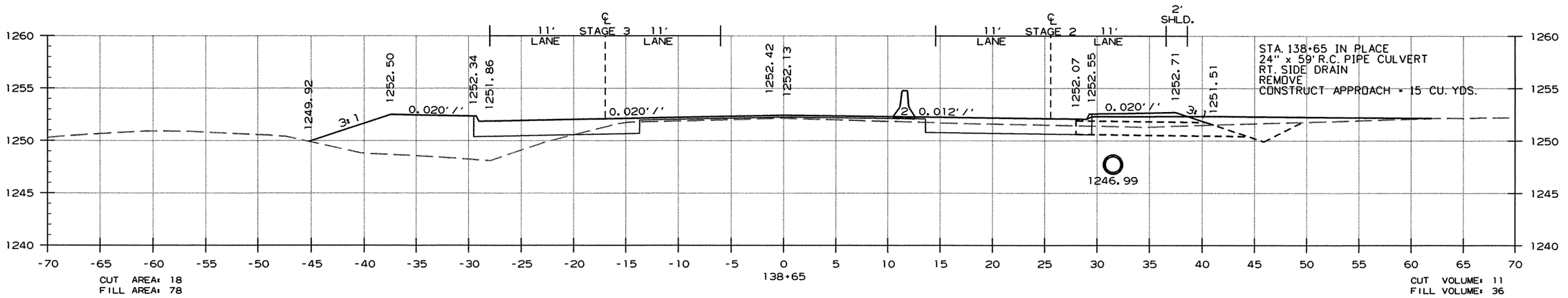


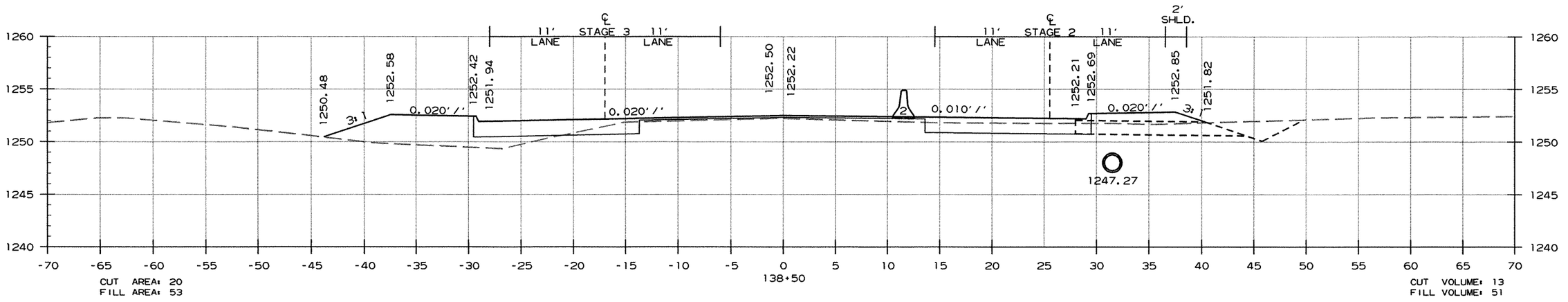
CROSS SECTION STA. 137+00 TO STA. 138+00

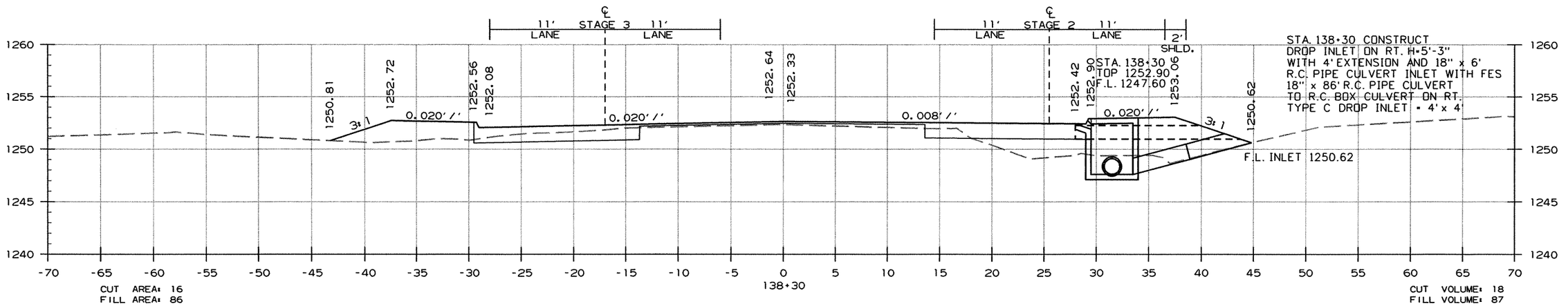
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	141	241

(2) CROSS SECTIONS





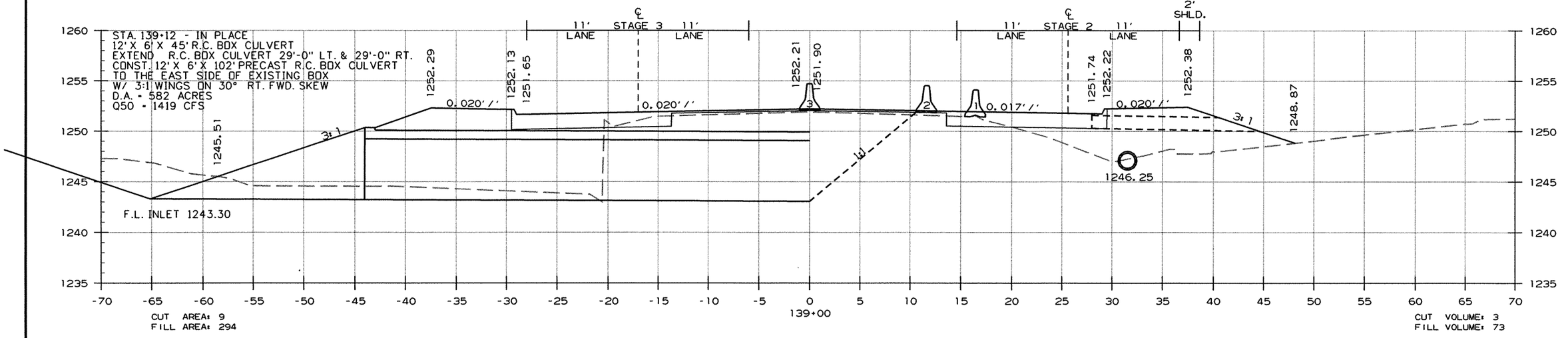


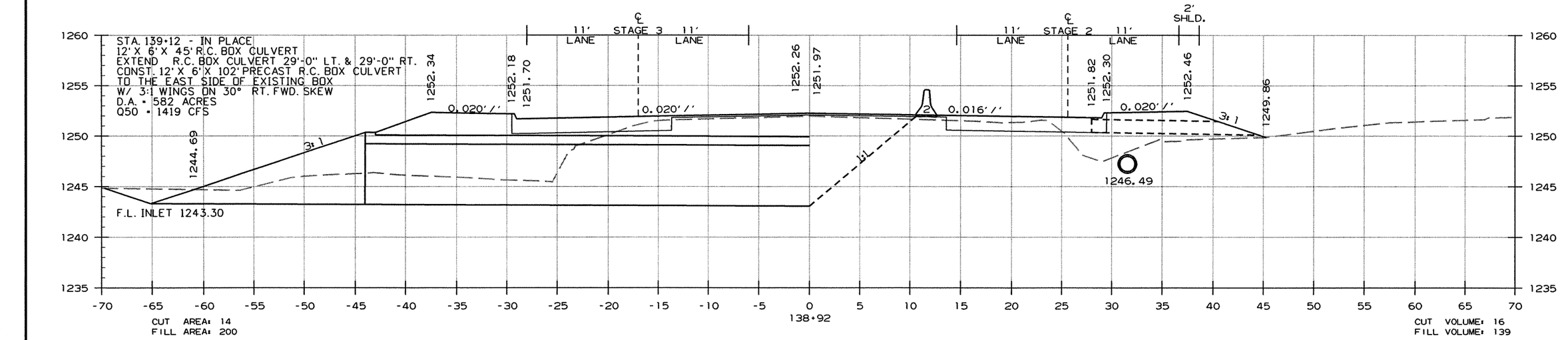
CROSS SECTION STA. 138+30 TO STA. 138+65

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	142	241

(2) CROSS SECTIONS



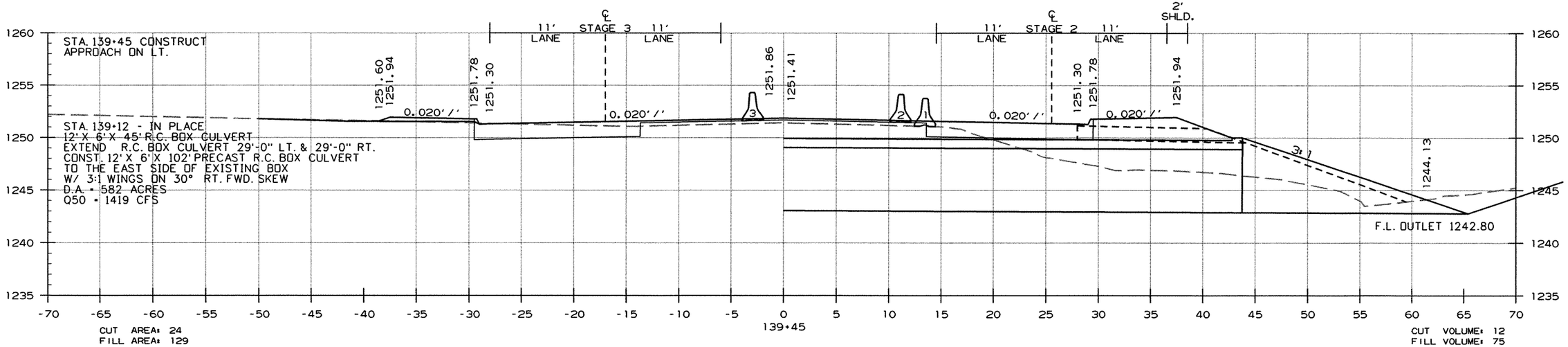


CROSS SECTION STA. 138+92 TO STA. 139+00

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	143	241

(2) CROSS SECTIONS

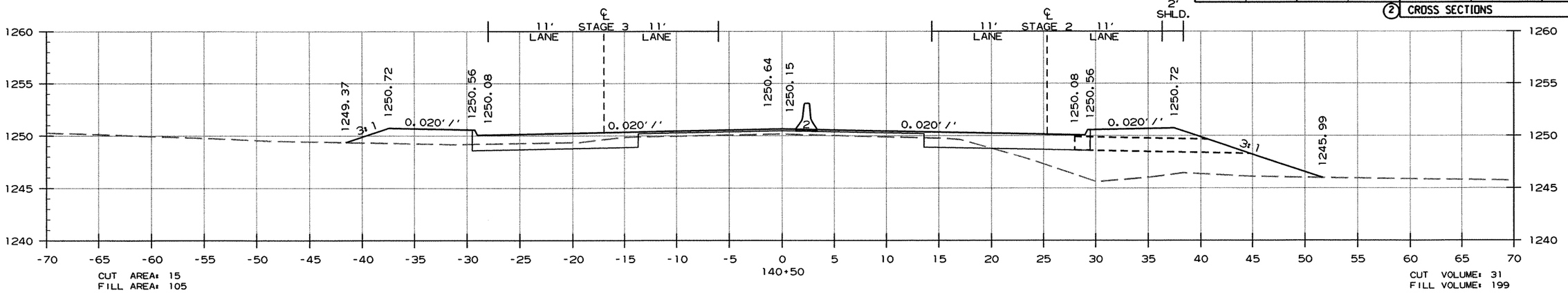


CROSS SECTION STA. 139+32 TO STA. 139+45

r090174.dgn 3/3/2010

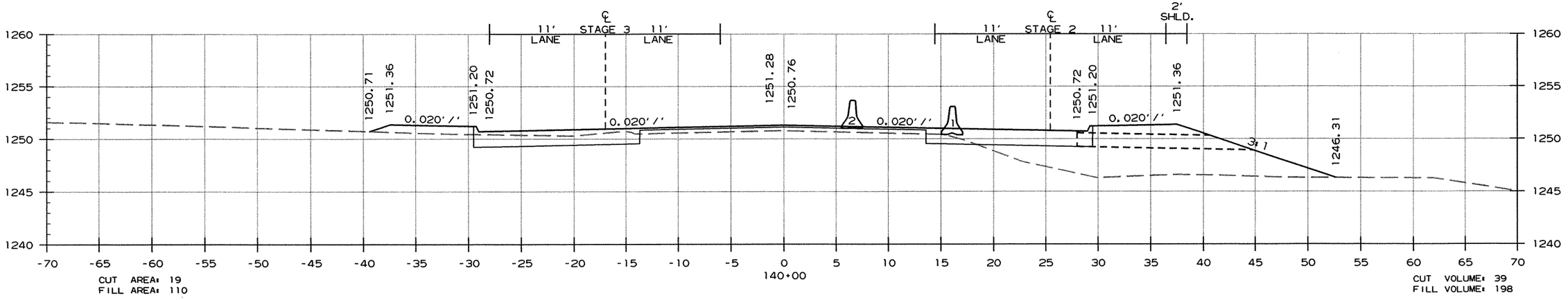
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	144	241

(2) CROSS SECTIONS



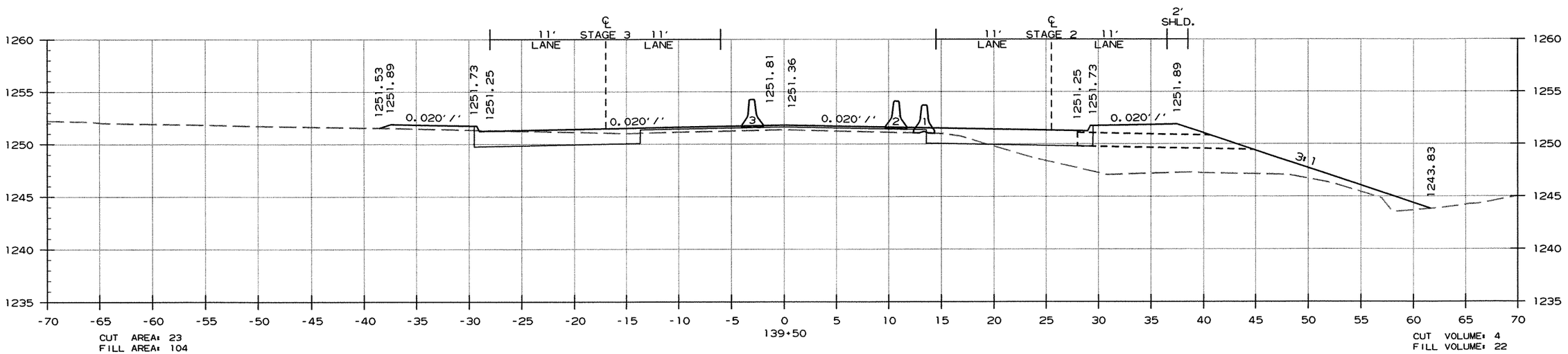
CUT AREA: 15
FILL AREA: 105

CUT VOLUME: 31
FILL VOLUME: 199



CUT AREA: 19
FILL AREA: 110

CUT VOLUME: 39
FILL VOLUME: 198



CUT AREA: 23
FILL AREA: 104

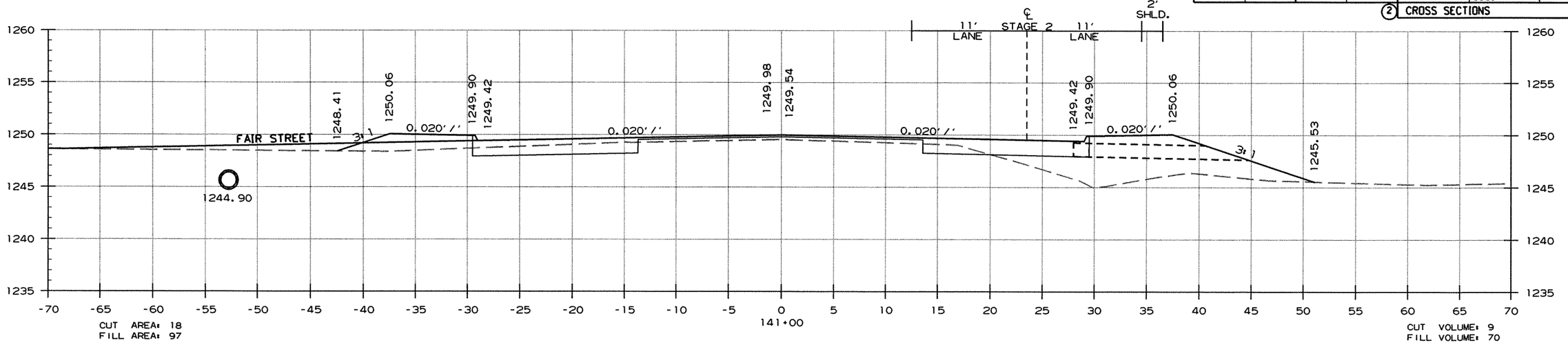
CUT VOLUME: 4
FILL VOLUME: 22

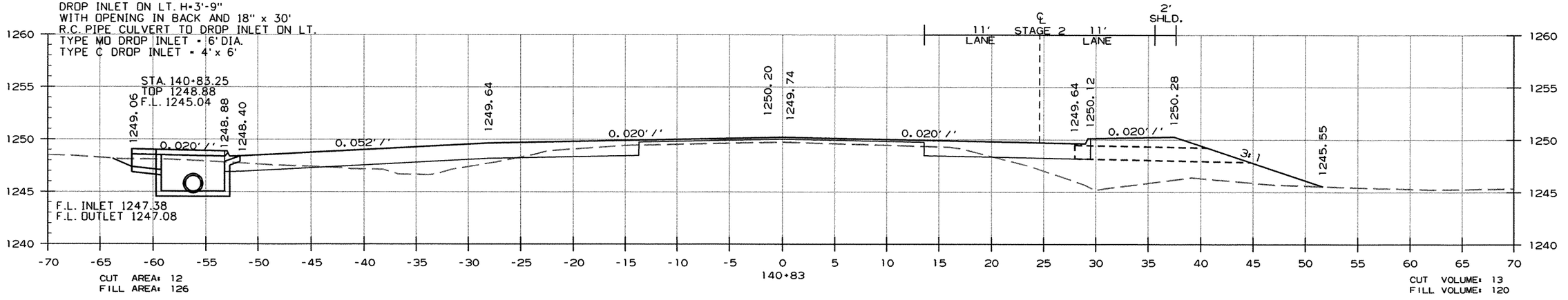
CROSS SECTION STA. 139+50 TO STA. 140+50

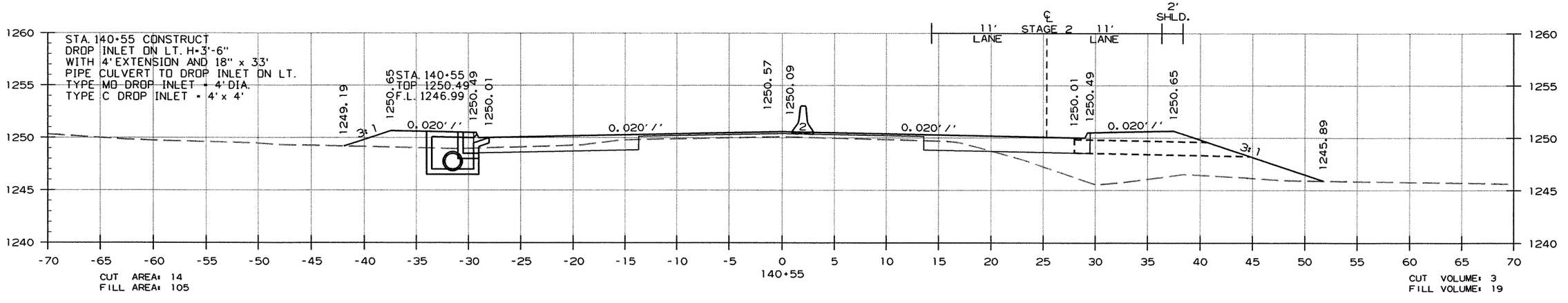
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	145	241

(2) CROSS SECTIONS





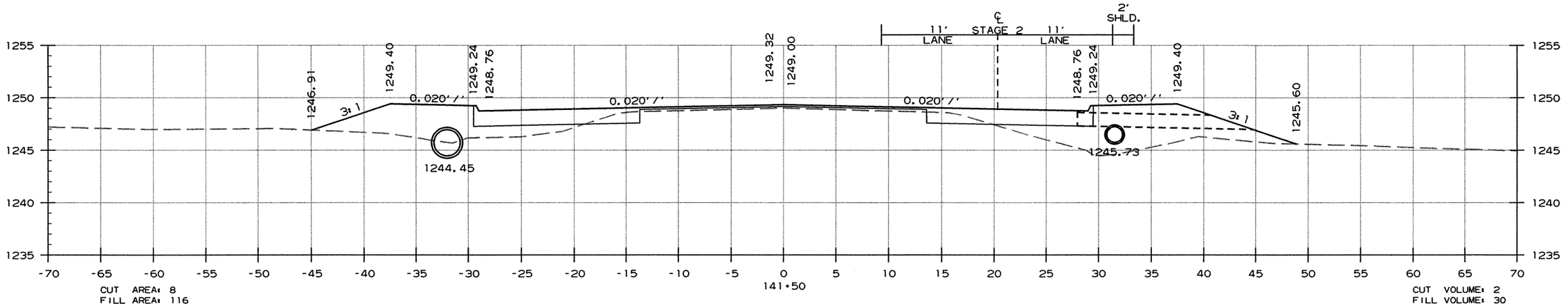


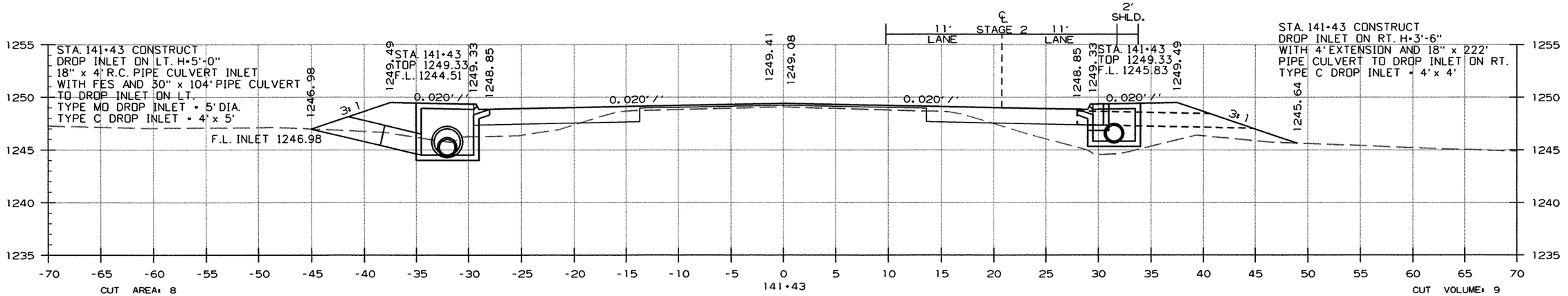
CROSS SECTION STA. 140+55 TO STA. 141+00

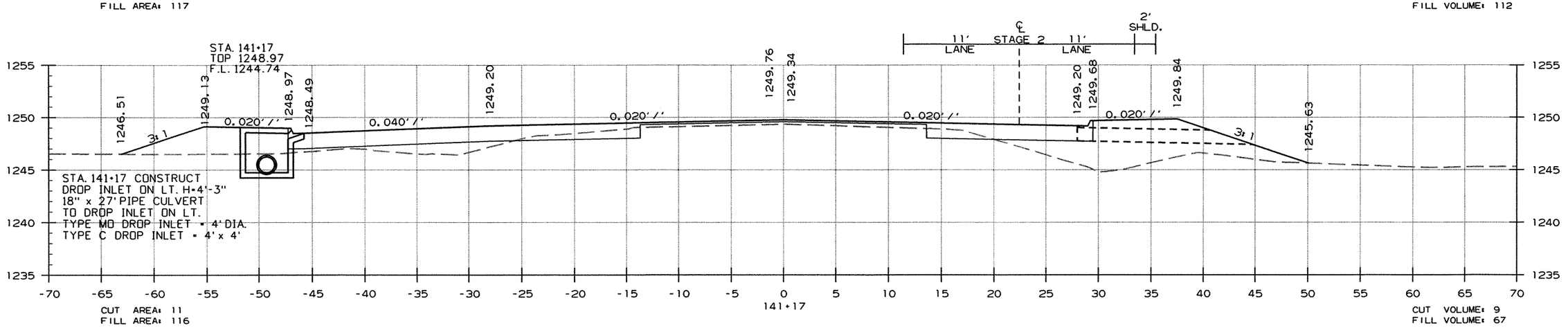
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	146	241

(2) CROSS SECTIONS





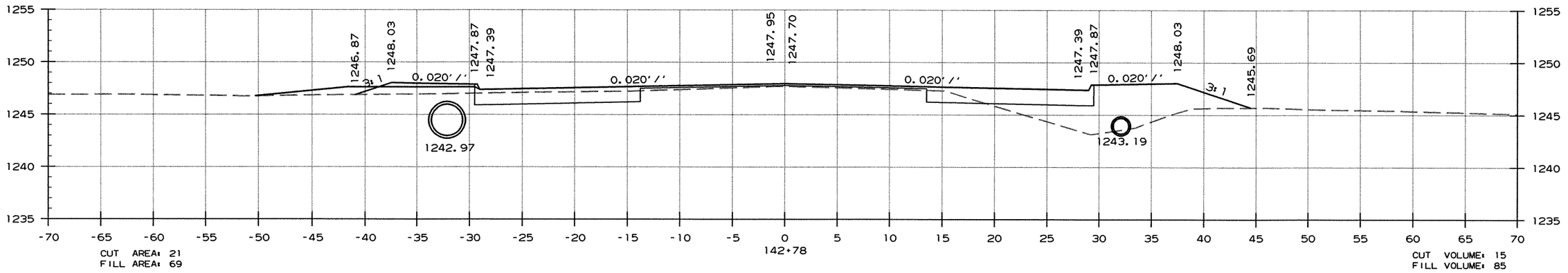


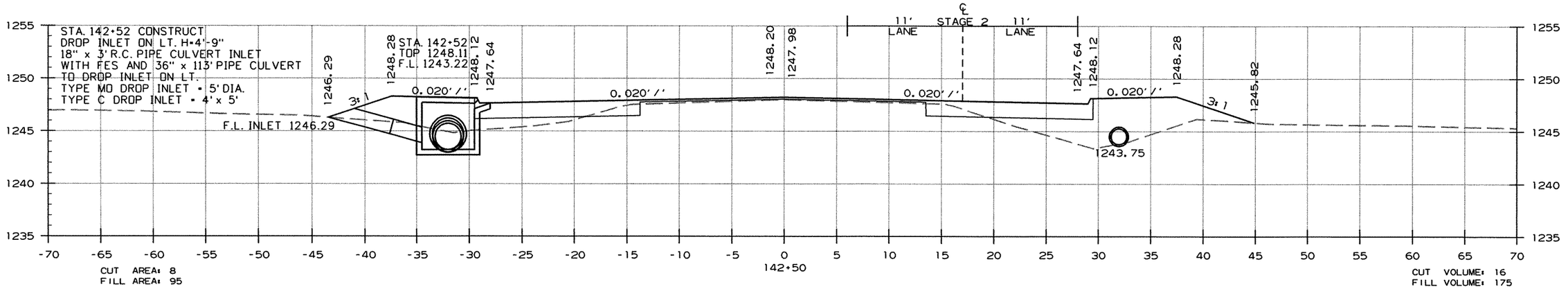
CROSS SECTION STA. 141+17 TO STA. 141+50

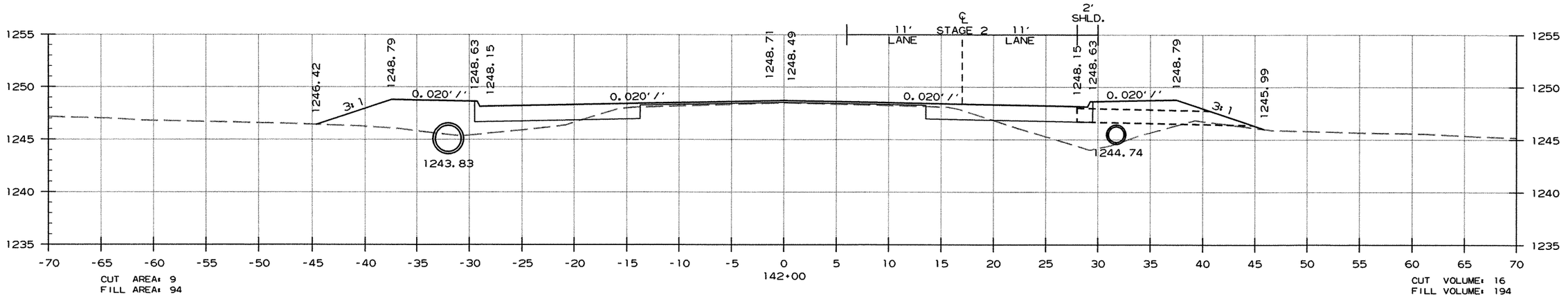
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	147	241

(2) CROSS SECTIONS





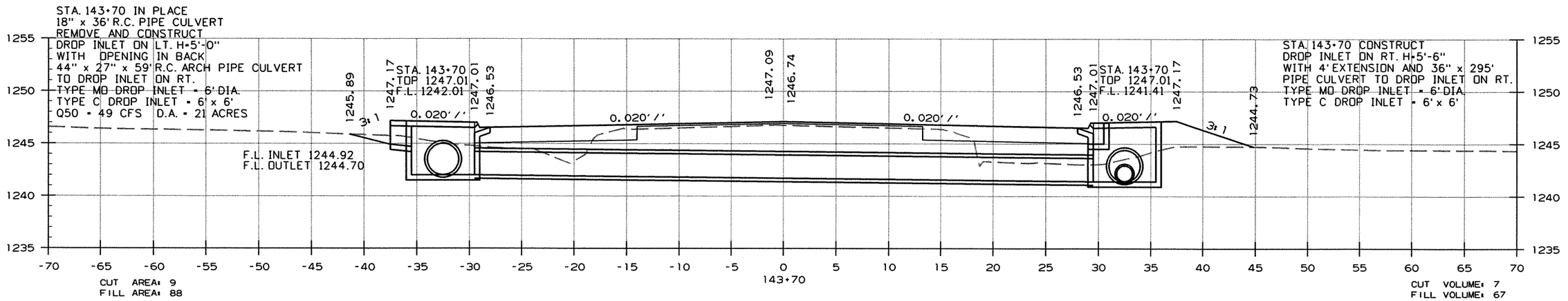


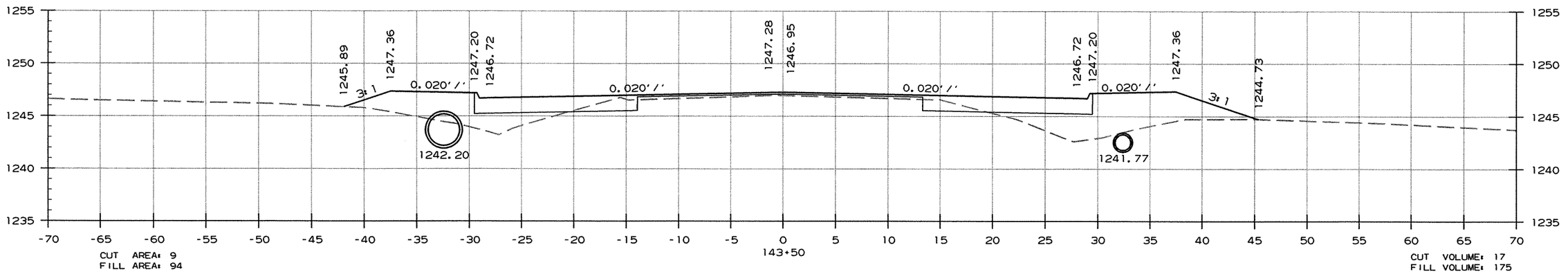
CROSS SECTION STA. 142+00 TO STA. 142+78

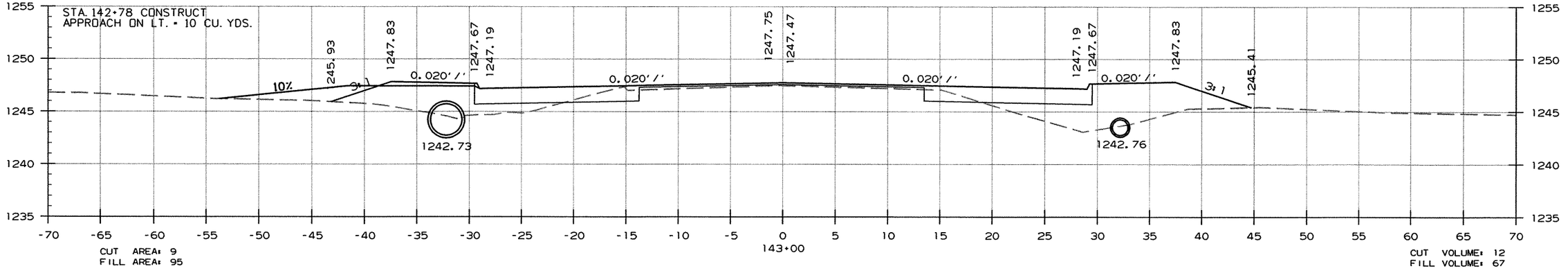
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	148	241

(2) CROSS SECTIONS





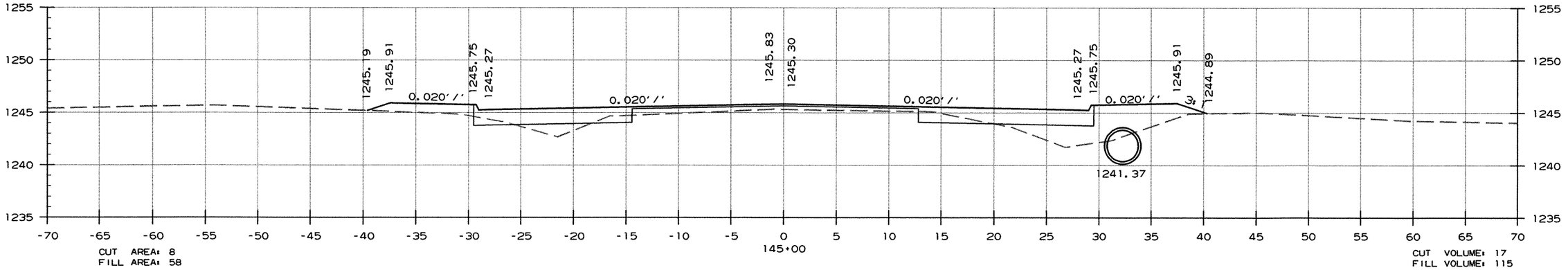


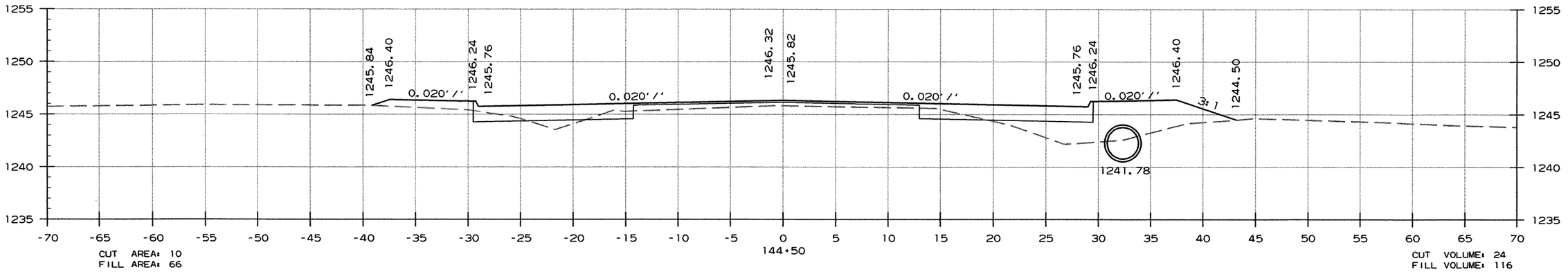
CROSS SECTION STA. 143+00 TO STA. 143+70

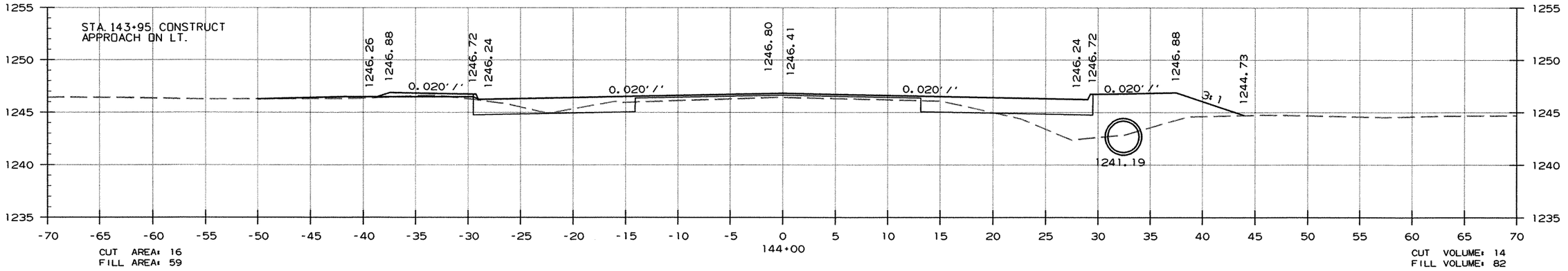
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	149	241

(2) CROSS SECTIONS





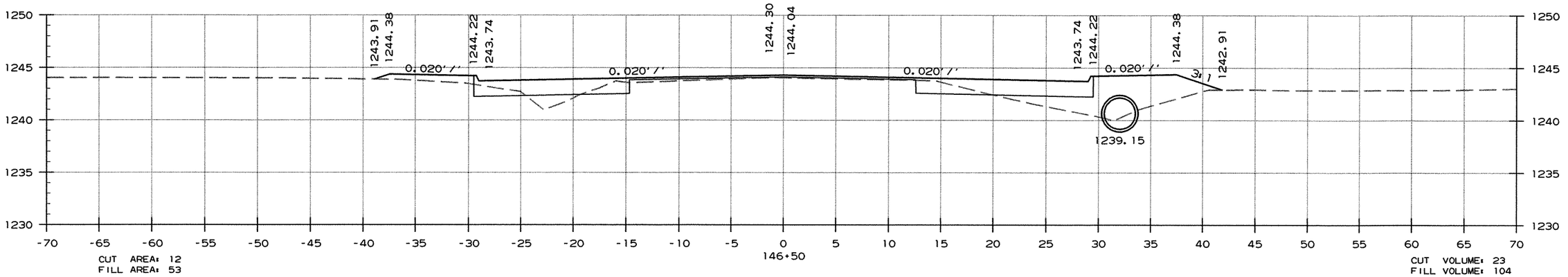


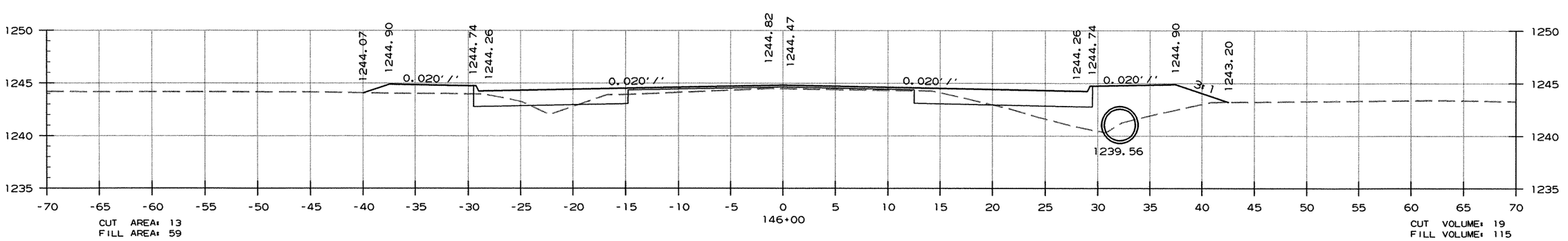
CROSS SECTION STA. 144+00 TO STA. 145+00

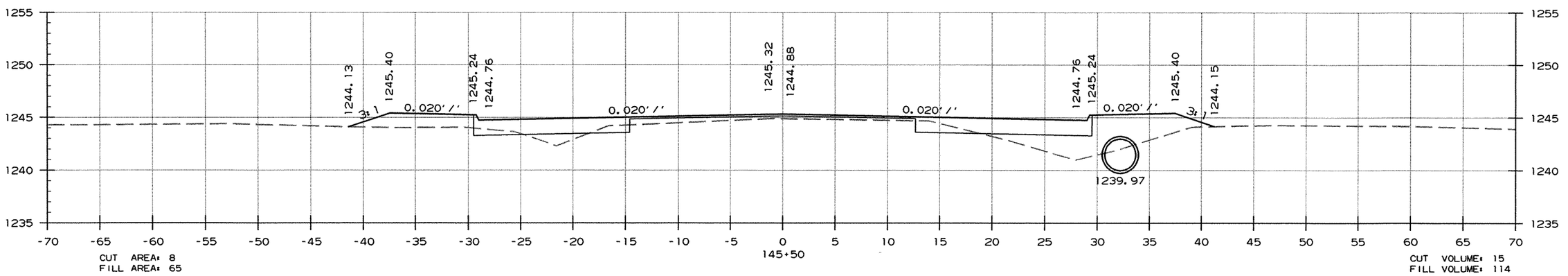
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	150	241

(2) CROSS SECTIONS





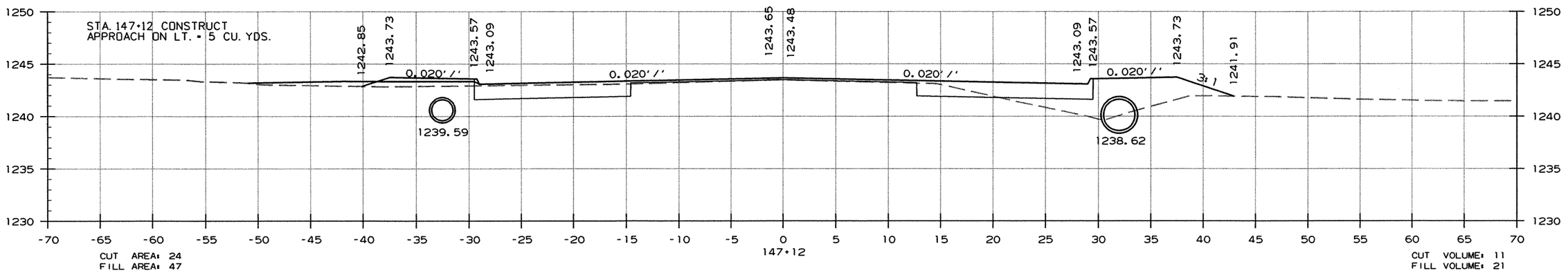


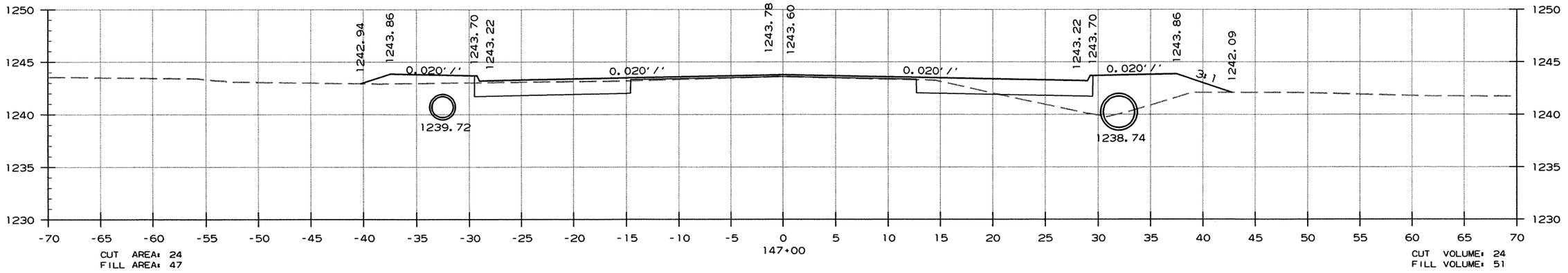
CROSS SECTION STA. 145+50 TO STA. 146+50

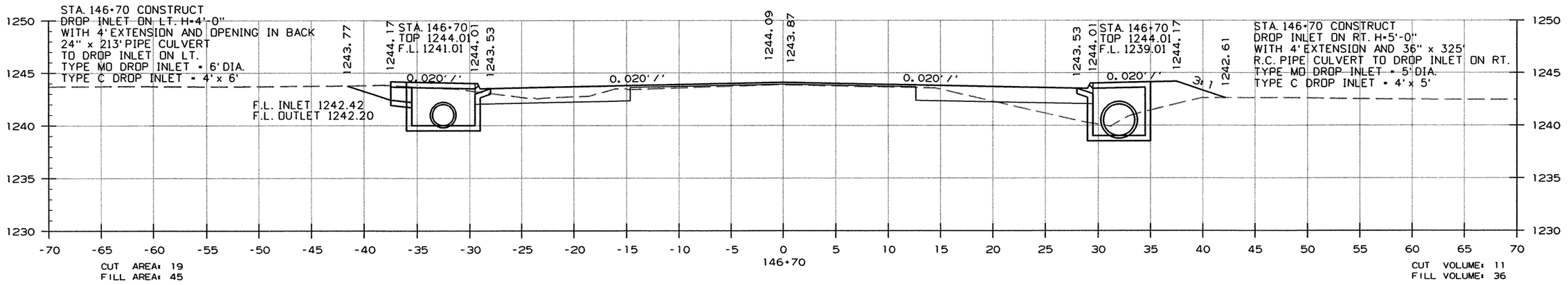
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	151	241

(2) CROSS SECTIONS





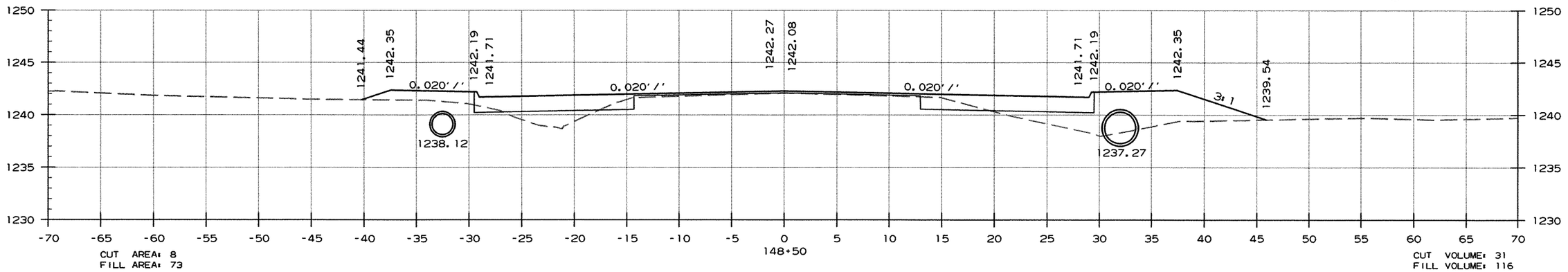


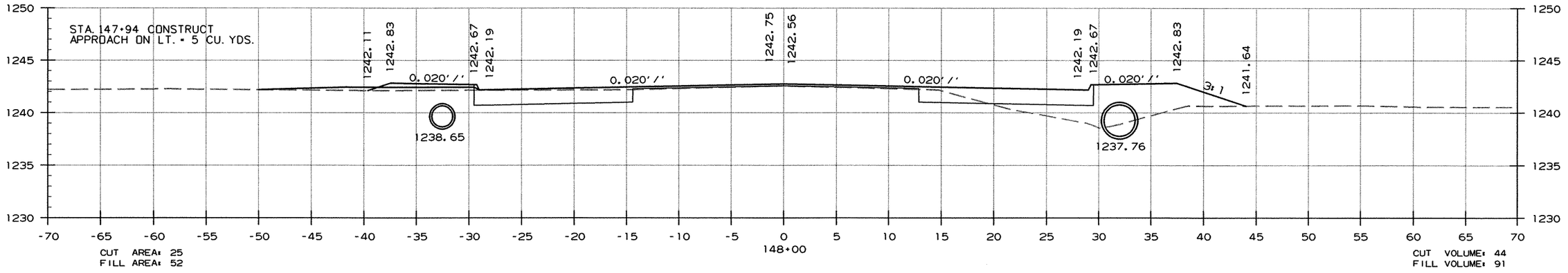
CROSS SECTION STA. 146+70 TO STA. 147+12

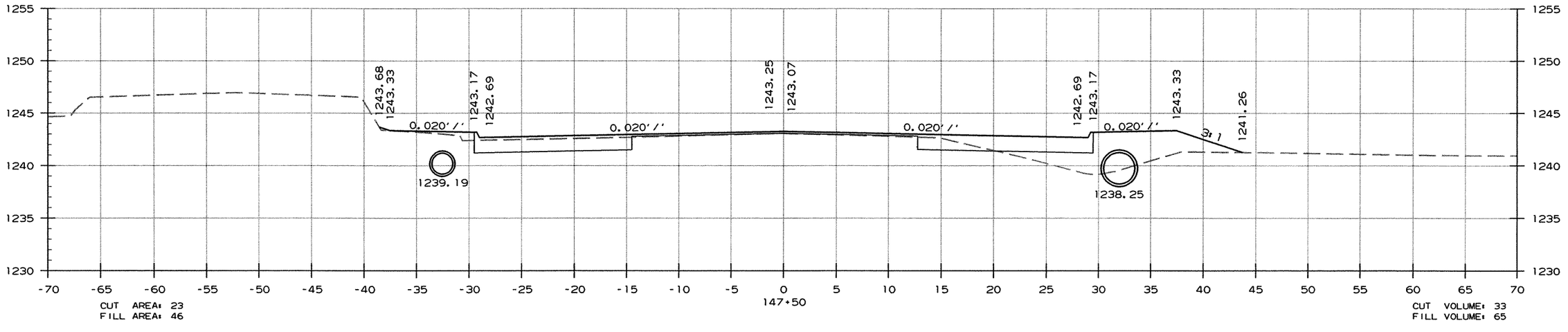
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	152	241

(2) CROSS SECTIONS





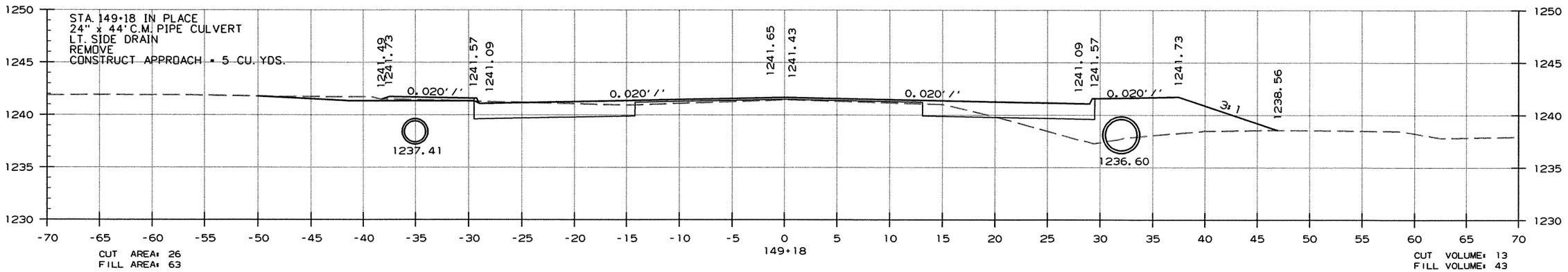


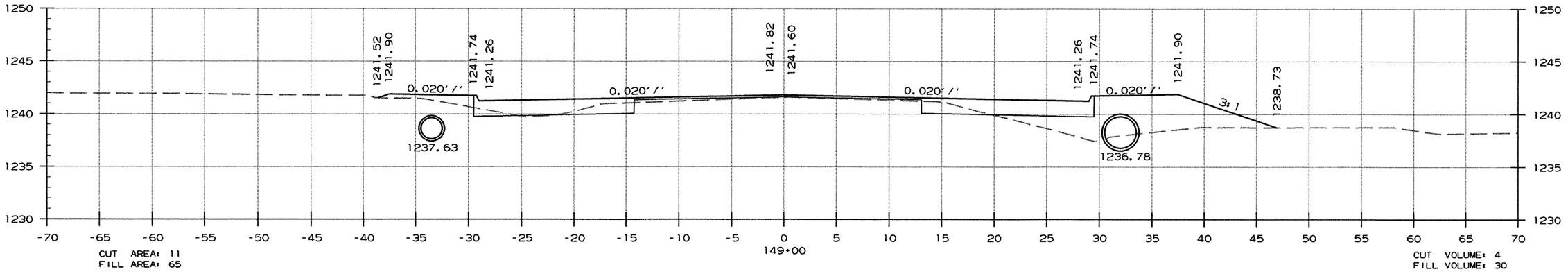
CROSS SECTION STA. 147+50 TO STA. 148+50

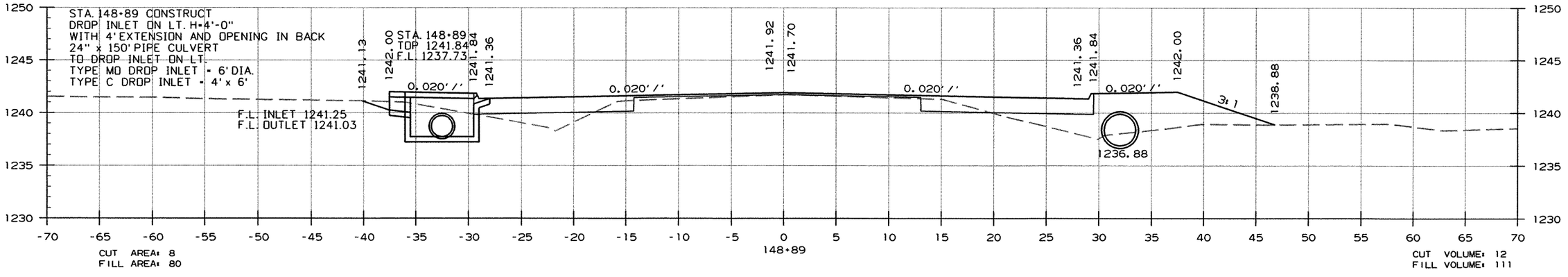
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	153	241

(2) CROSS SECTIONS





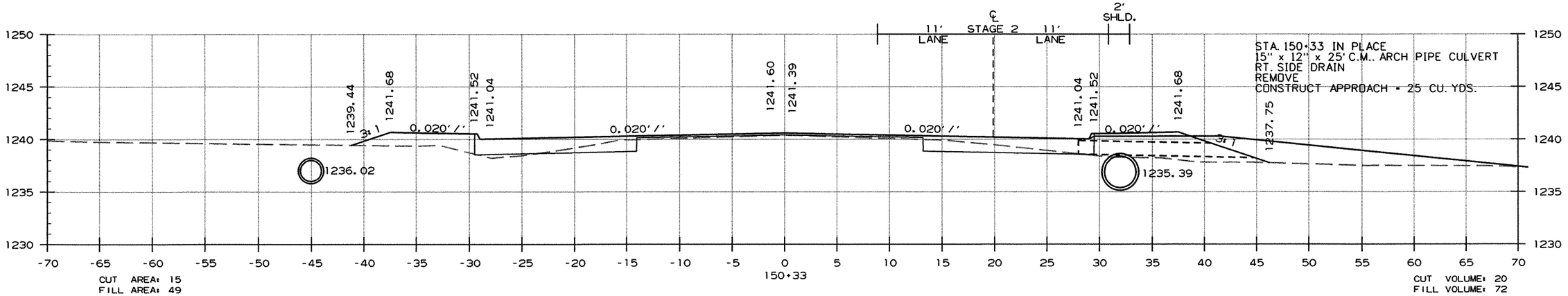


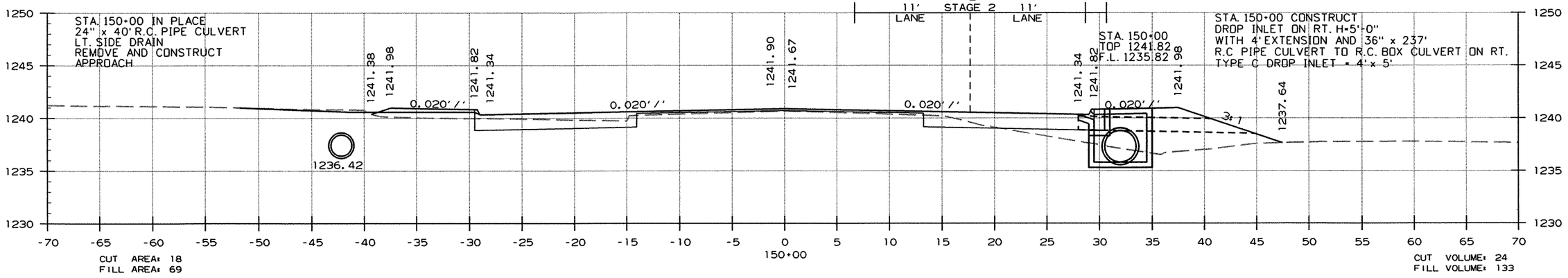
CROSS SECTION STA. 148+89 TO STA. 149+18

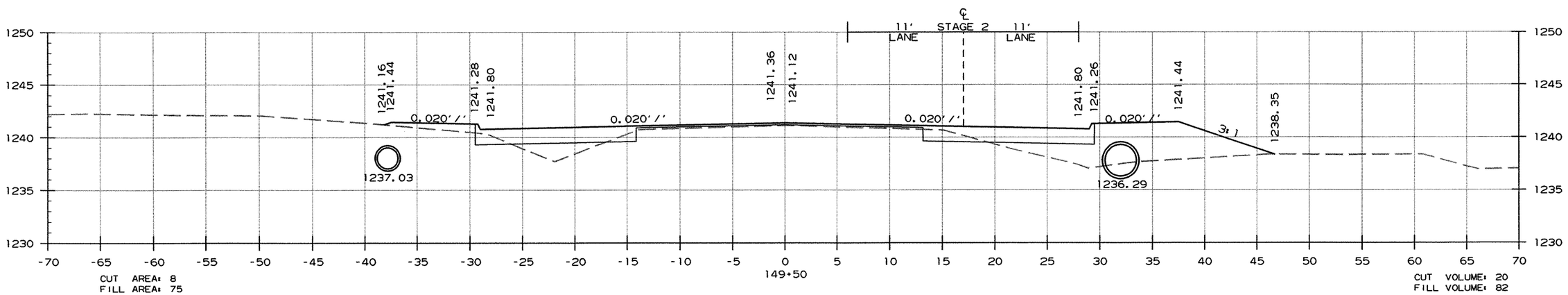
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	154	241

(2) CROSS SECTIONS





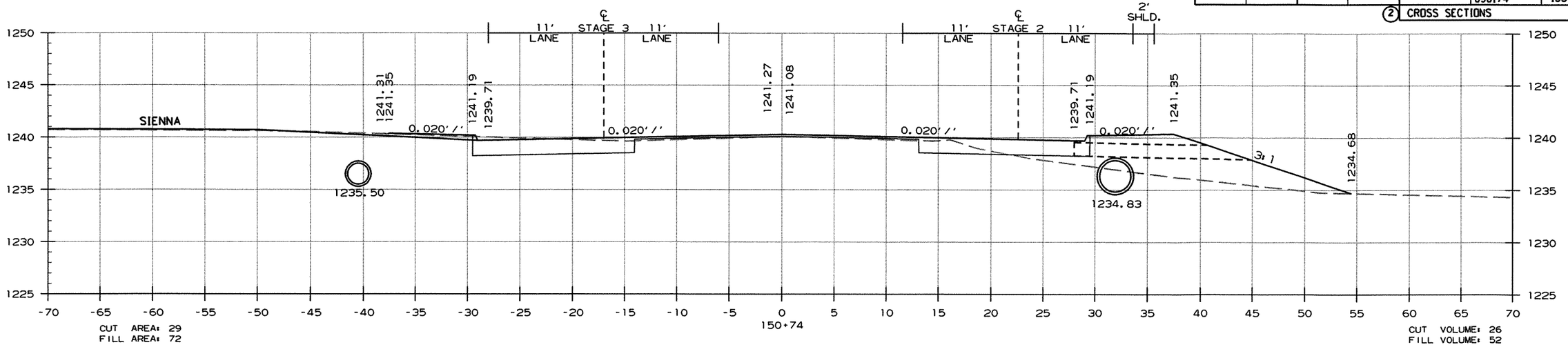


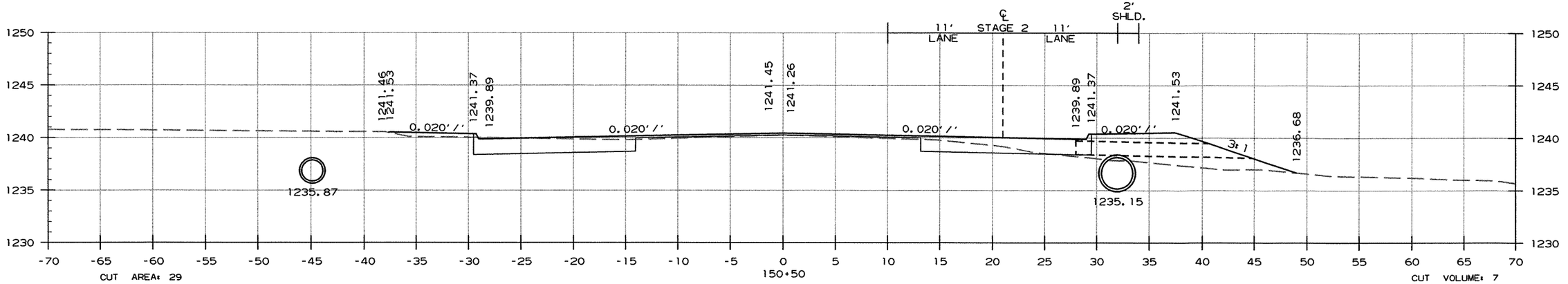
CROSS SECTION STA. 149+50 TO STA. 150+33

r090174.dgn 3/3/2010

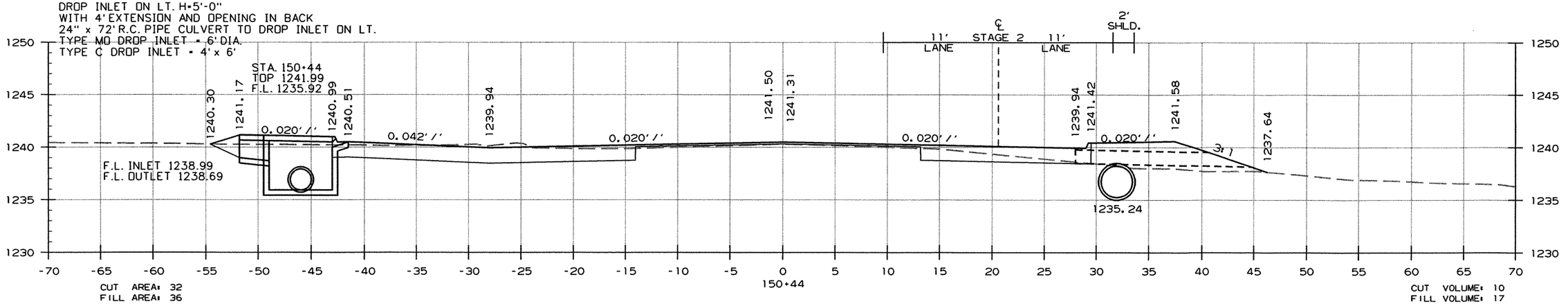
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	155	241

(2) CROSS SECTIONS





STA. 150+44 CONSTRUCT
DROP INLET ON LT. H-5'-0"
WITH 4' EXTENSION AND OPENING IN BACK
24" x 72' R.C. PIPE CULVERT TO DROP INLET ON LT.
TYPE MO DROP INLET - 6' DIA.
TYPE C DROP INLET - 4' x 6'

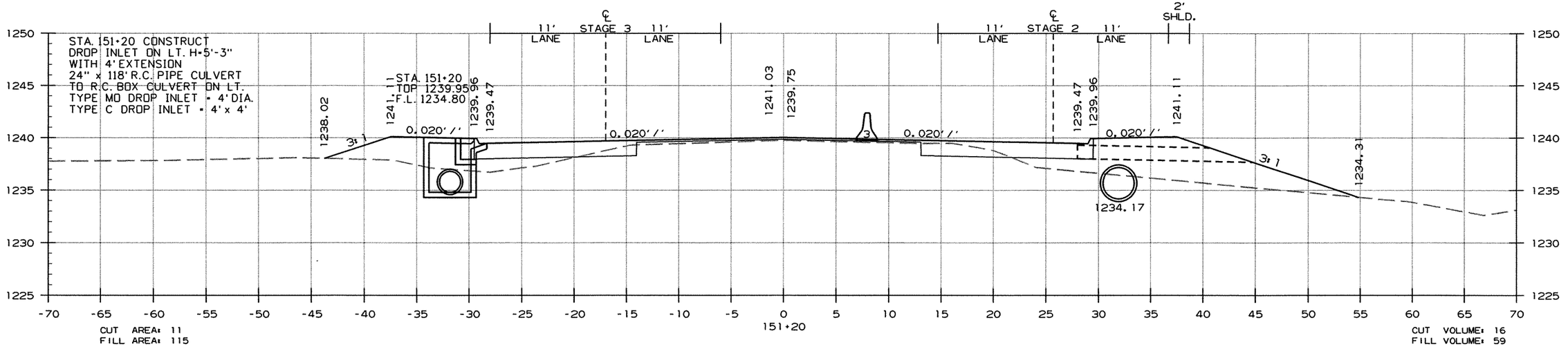


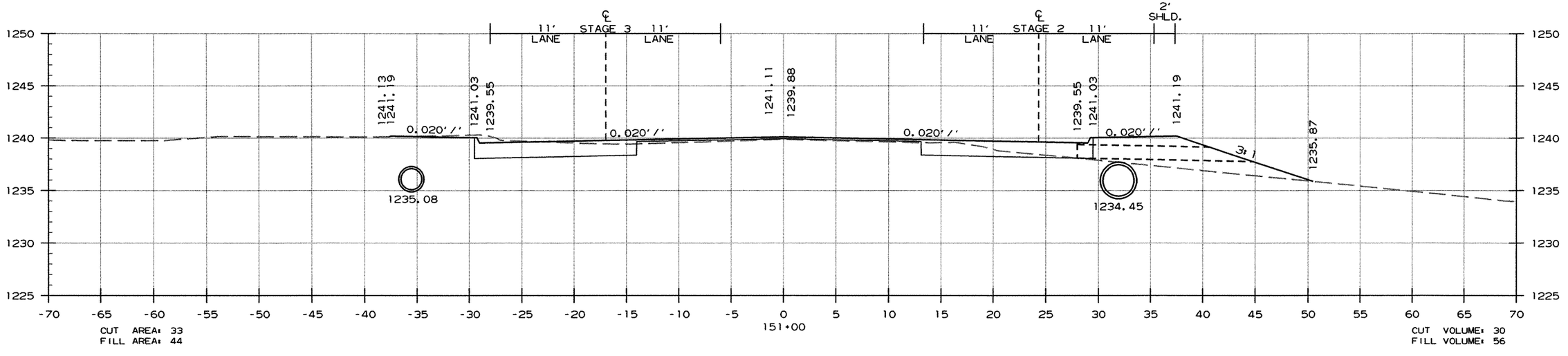
CROSS SECTION STA. 150+44 TO STA. 150+74

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	156	241

(2) CROSS SECTIONS





CROSS SECTION STA. 151+00 TO STA. 151+20

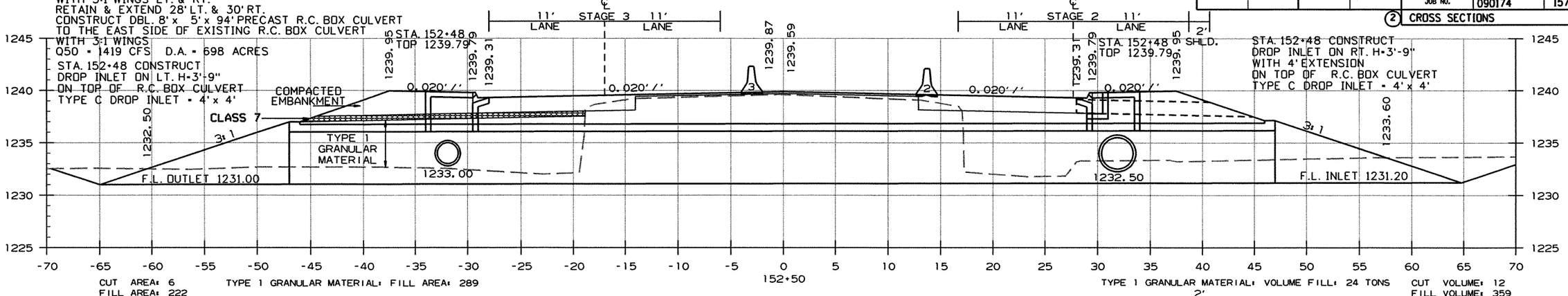
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	157	241

(2) CROSS SECTIONS

STA. 152+48 IN PLACE
DBL. 8' x 5' x 36' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
RETAIN & EXTEND 28' LT. & 30' RT.
CONSTRUCT DBL. 8' x 5' x 94' PRECAST R.C. BOX CULVERT
TO THE EAST SIDE OF EXISTING R.C. BOX CULVERT
WITH 3:1 WINGS
Q50 = 1419 CFS D.A. = 698 ACRES

STA. 152+48 CONSTRUCT
DROP INLET ON LT. H=3'-9"
ON TOP OF R.C. BOX CULVERT
TYPE C DROP INLET = 4' x 4'

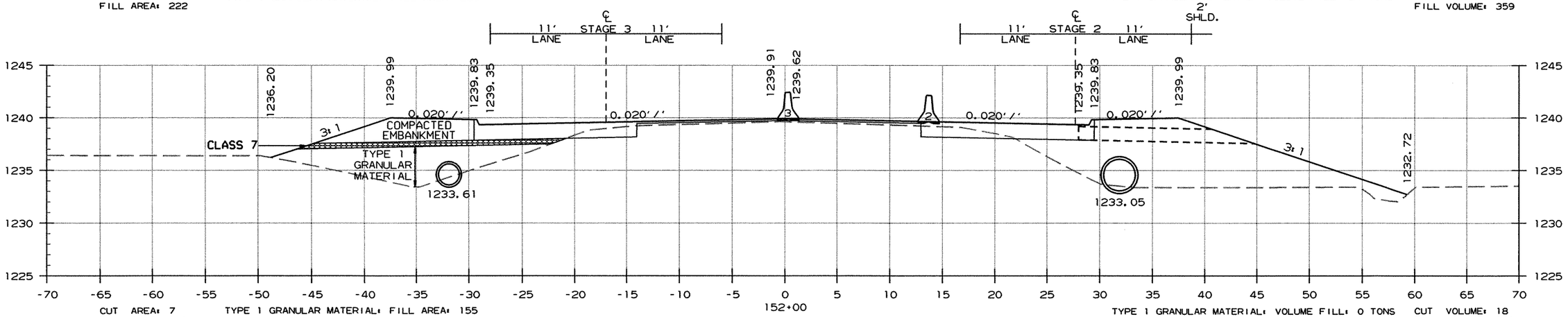


CUT AREA: 6
FILL AREA: 222

TYPE 1 GRANULAR MATERIAL: FILL AREA: 289

TYPE 1 GRANULAR MATERIAL: VOLUME FILL: 24 TONS

CUT VOLUME: 12
FILL VOLUME: 359

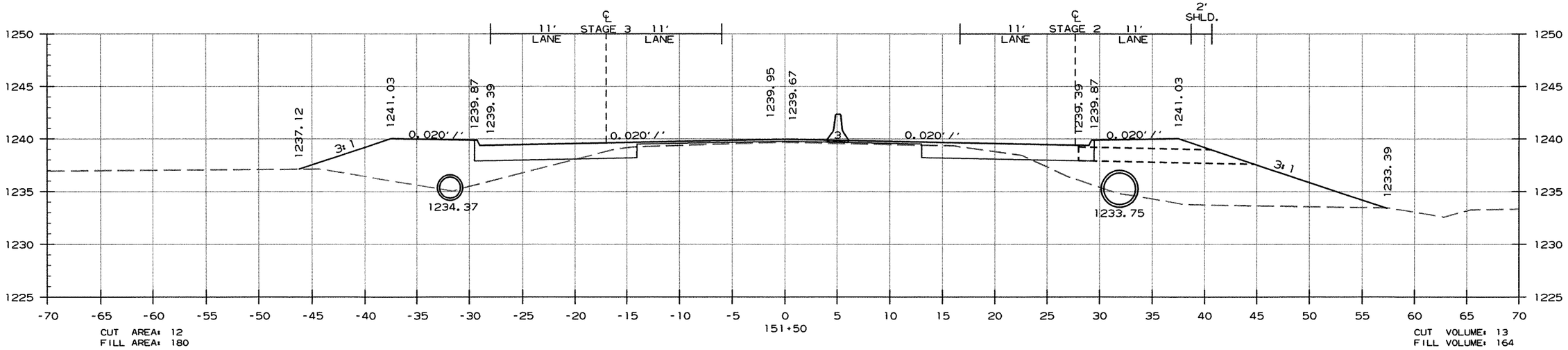


CUT AREA: 7
FILL AREA: 166

TYPE 1 GRANULAR MATERIAL: FILL AREA: 155

TYPE 1 GRANULAR MATERIAL: VOLUME FILL: 0 TONS

CUT VOLUME: 18
FILL VOLUME: 320



CUT AREA: 12
FILL AREA: 180

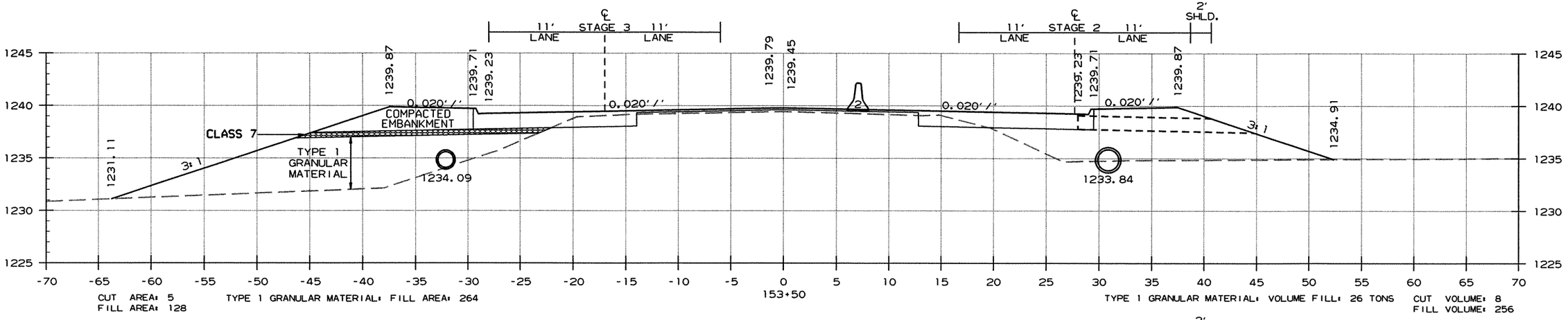
CUT VOLUME: 13
FILL VOLUME: 164

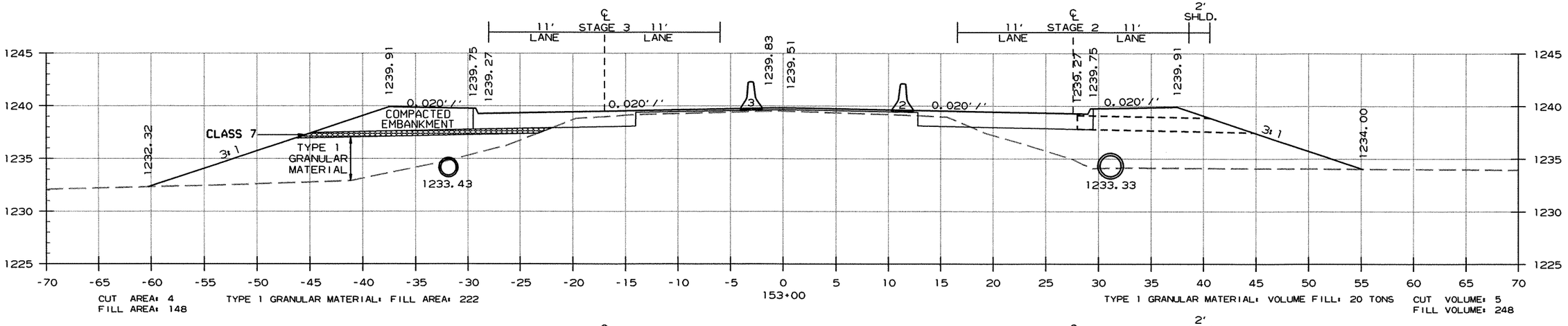
CROSS SECTION STA. 151+50 TO STA. 152+50

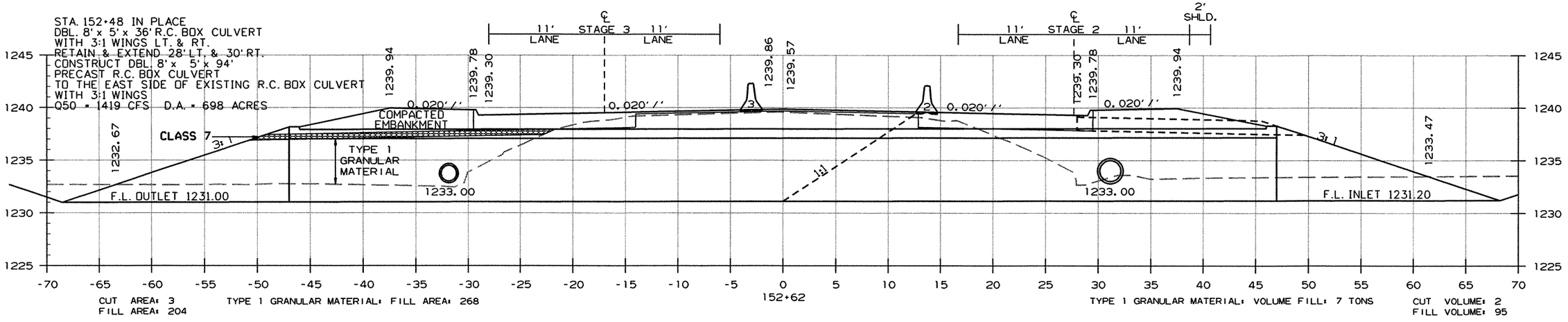
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	158	241

(2) CROSS SECTIONS





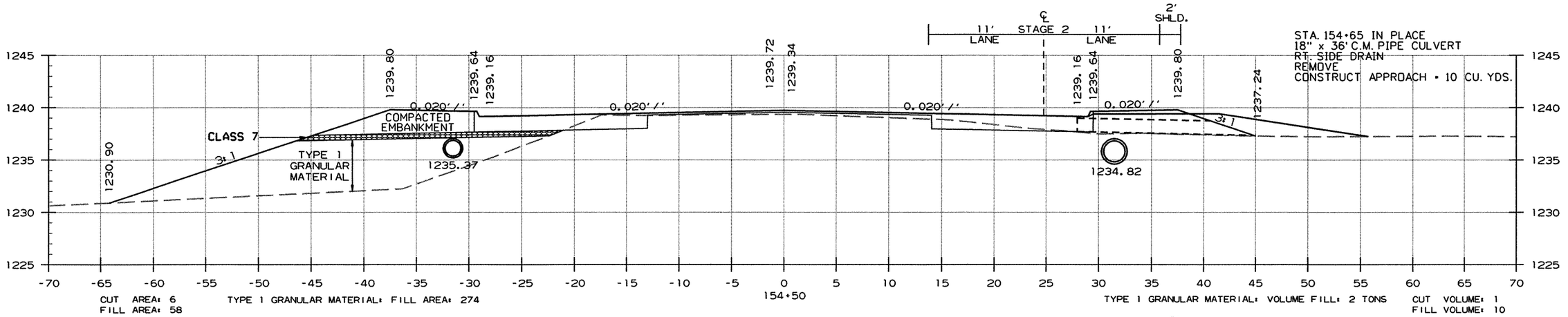


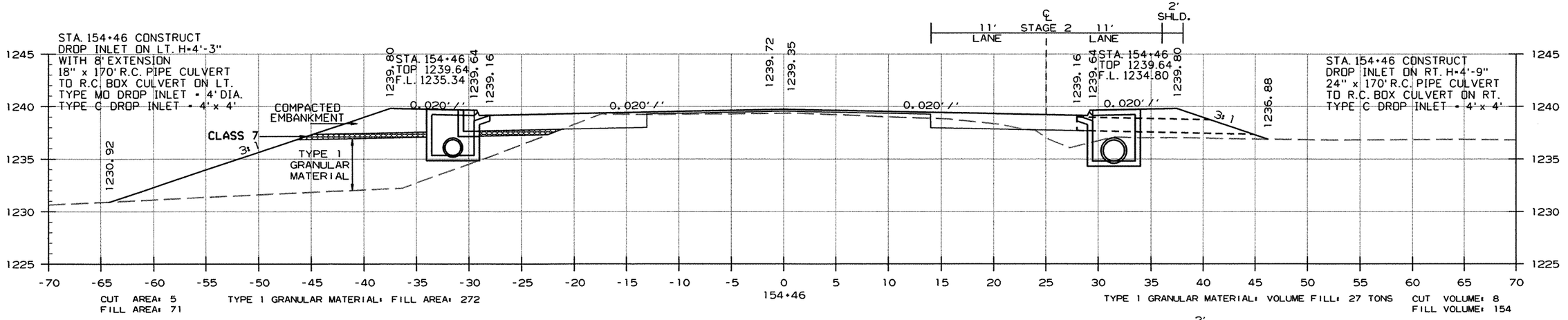
CROSS SECTION STA. 152+62 TO STA. 153+50

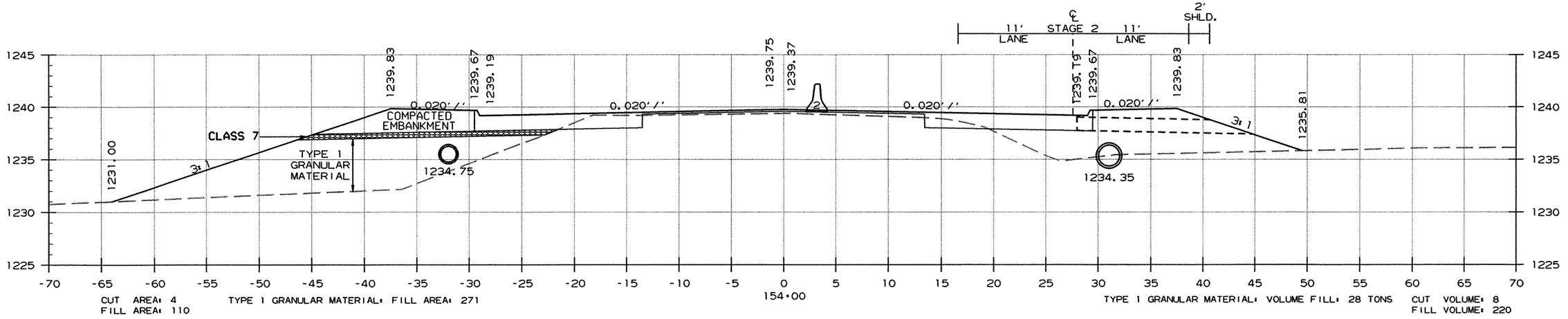
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	159	241

(2) CROSS SECTIONS





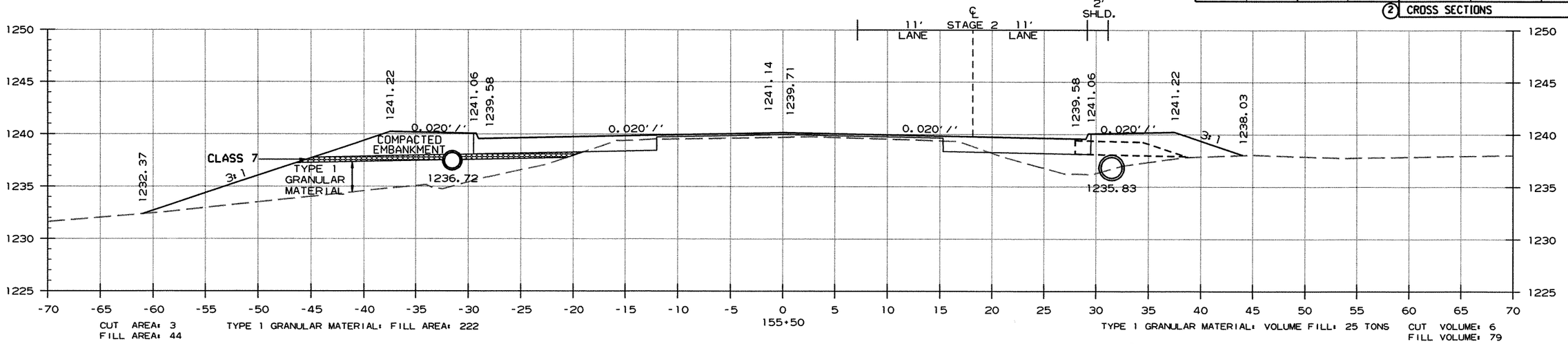


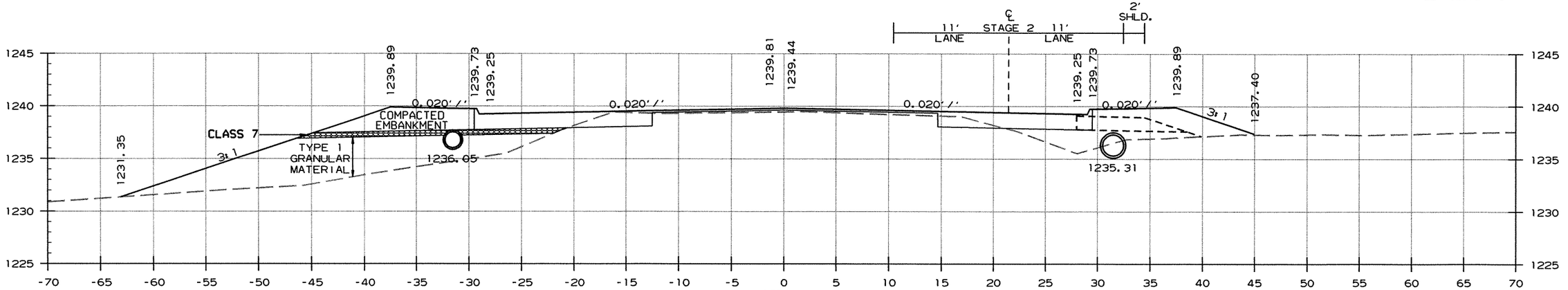
CROSS SECTION STA. 154+00 TO STA. 154+50

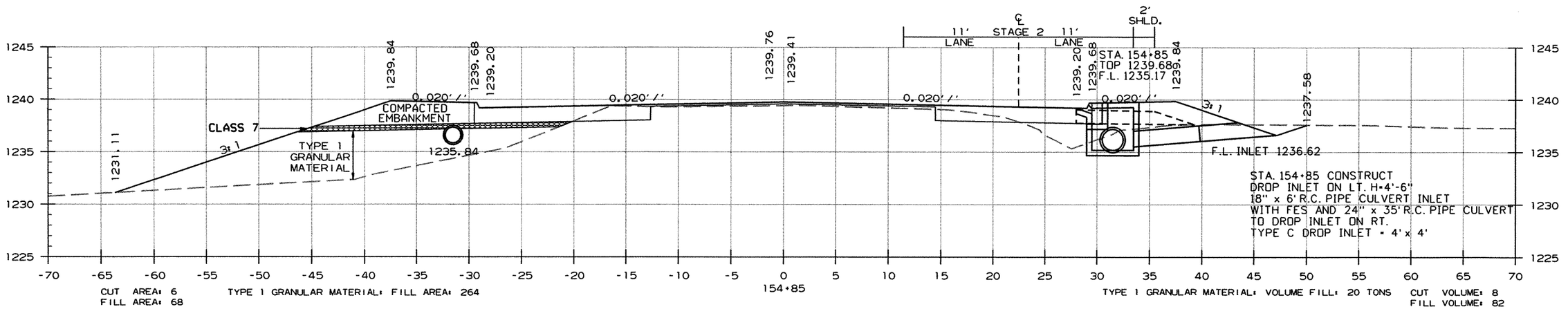
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	160	241

(2) CROSS SECTIONS





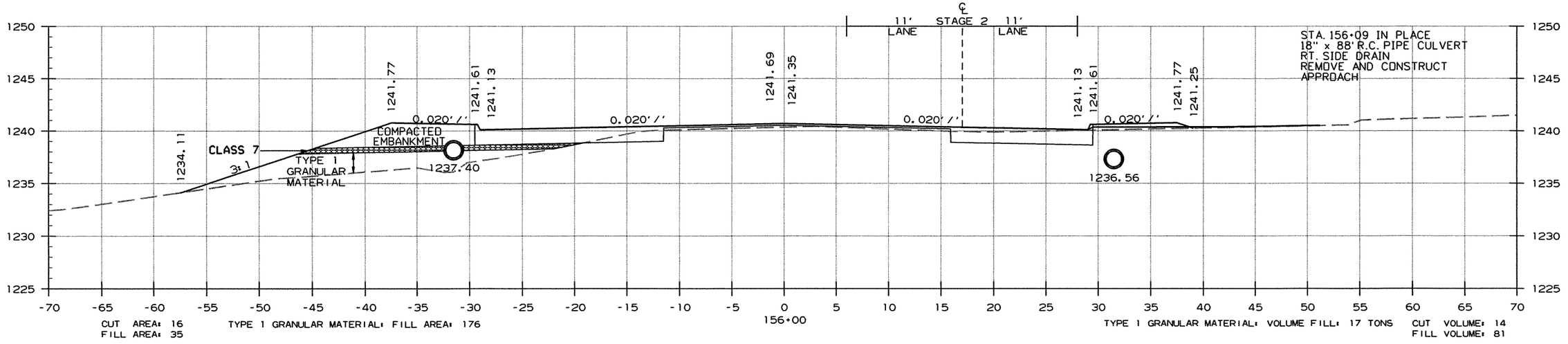


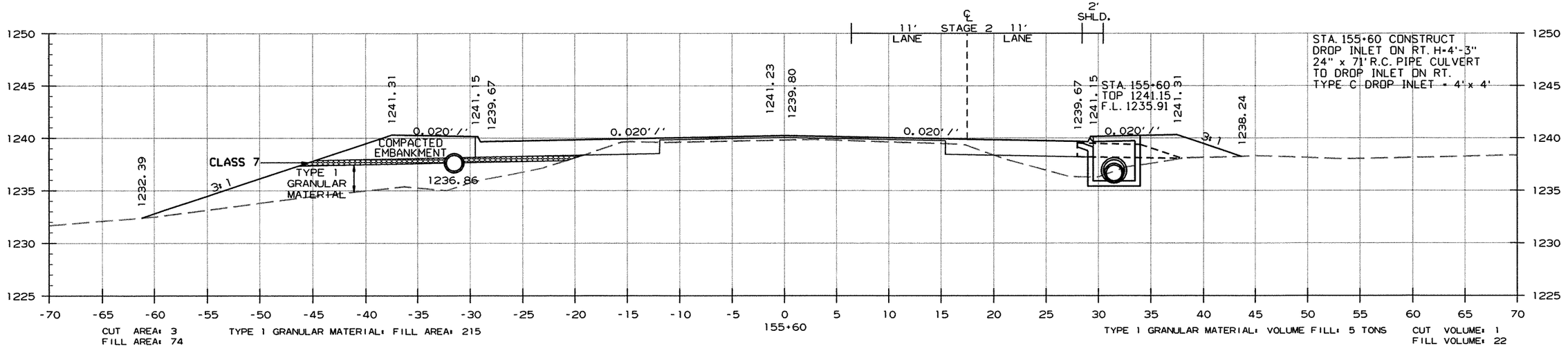
CROSS SECTION STA. 154+85 TO STA. 155+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	161	241

(2) CROSS SECTIONS



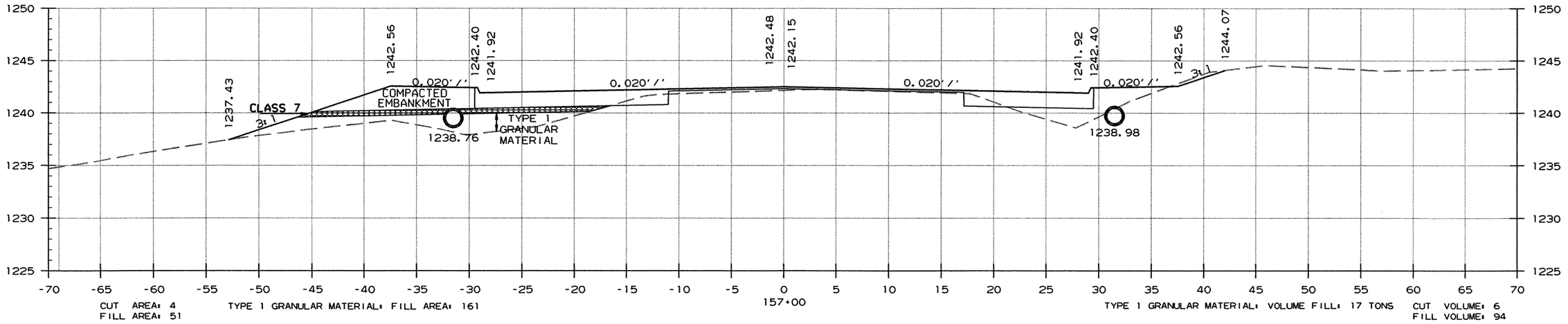


CROSS SECTION STA. 155+60 TO STA. 156+00

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	162	241

(2) CROSS SECTIONS

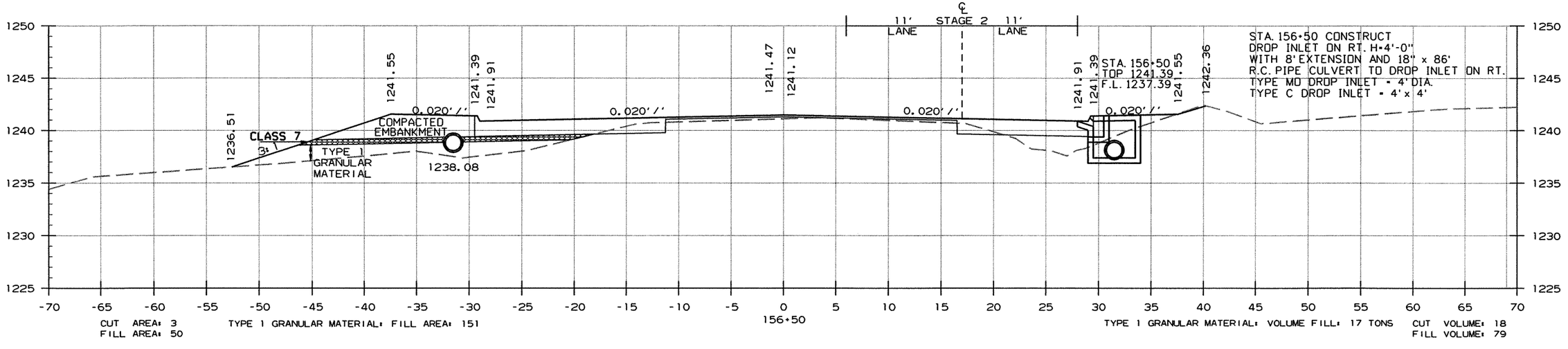


CUT AREA: 4
FILL AREA: 51

TYPE 1 GRANULAR MATERIAL: FILL AREA: 161

TYPE 1 GRANULAR MATERIAL: VOLUME FILL: 17 TONS

CUT VOLUME: 6
FILL VOLUME: 94



CUT AREA: 3
FILL AREA: 50

TYPE 1 GRANULAR MATERIAL: FILL AREA: 151

TYPE 1 GRANULAR MATERIAL: VOLUME FILL: 17 TONS

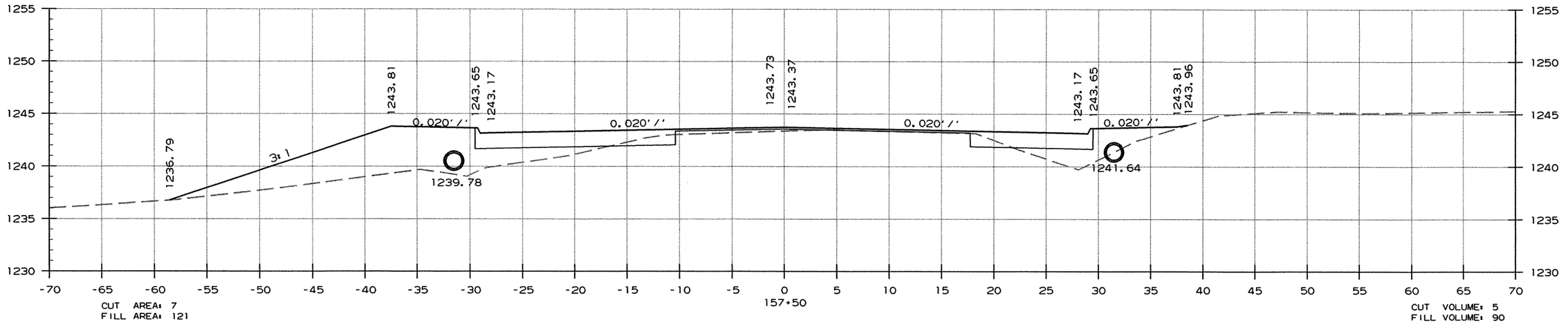
CUT VOLUME: 18
FILL VOLUME: 79

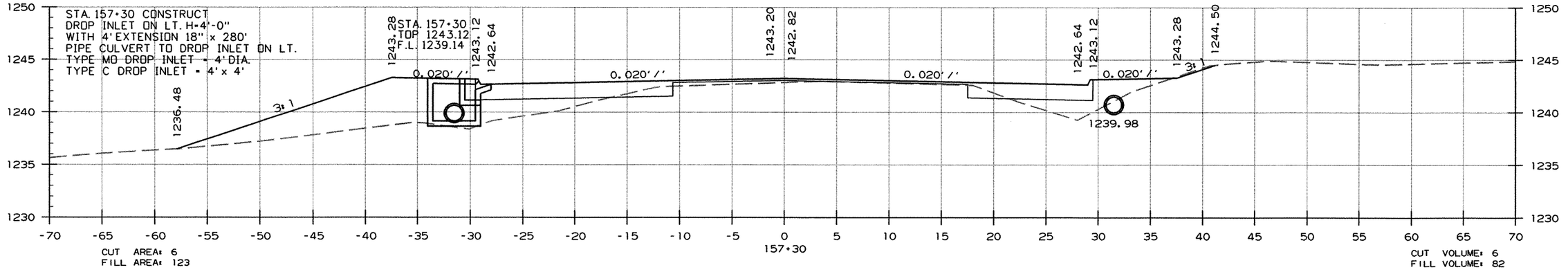
CROSS SECTION STA. 156+50 TO STA. 157+00

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	163	241

(2) CROSS SECTIONS



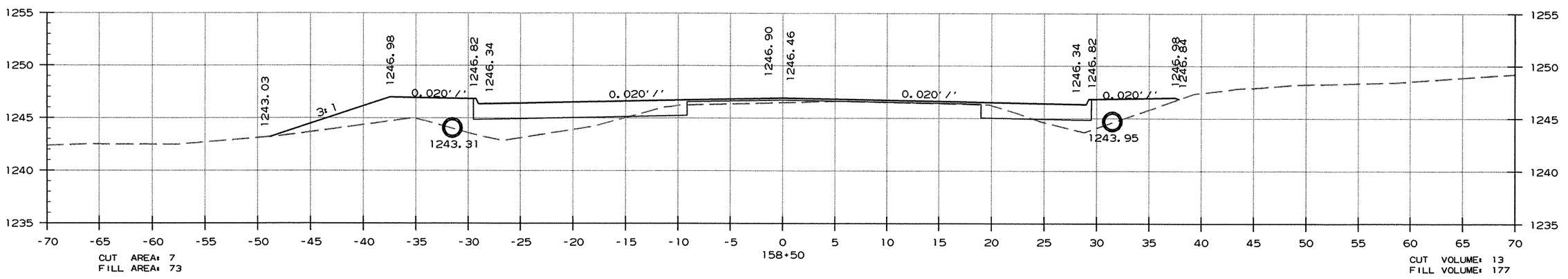


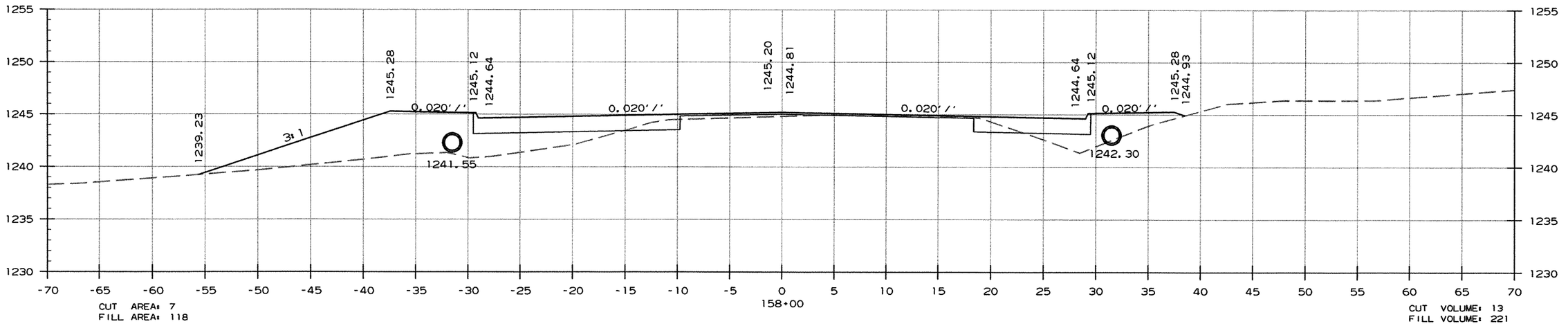
CROSS SECTION STA. 157+30 TO STA. 157+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	164	241

(2) CROSS SECTIONS



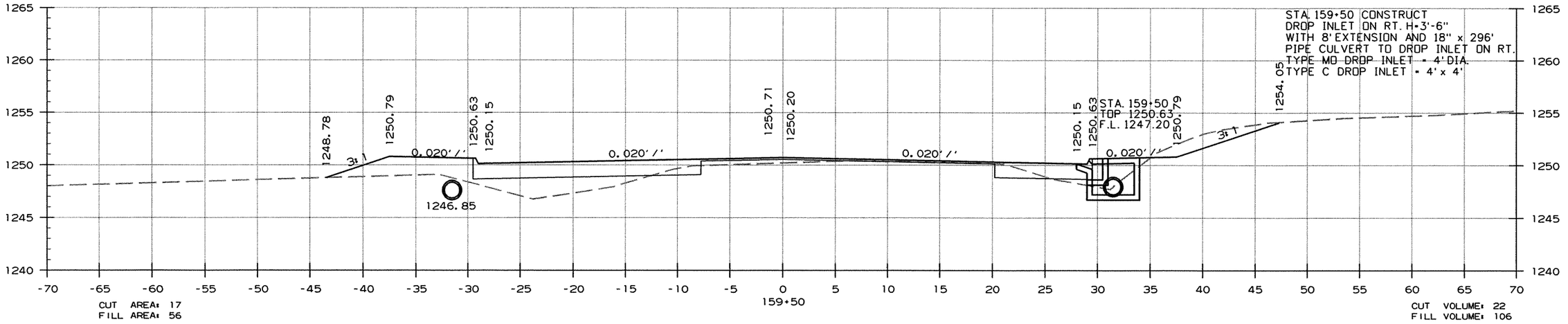


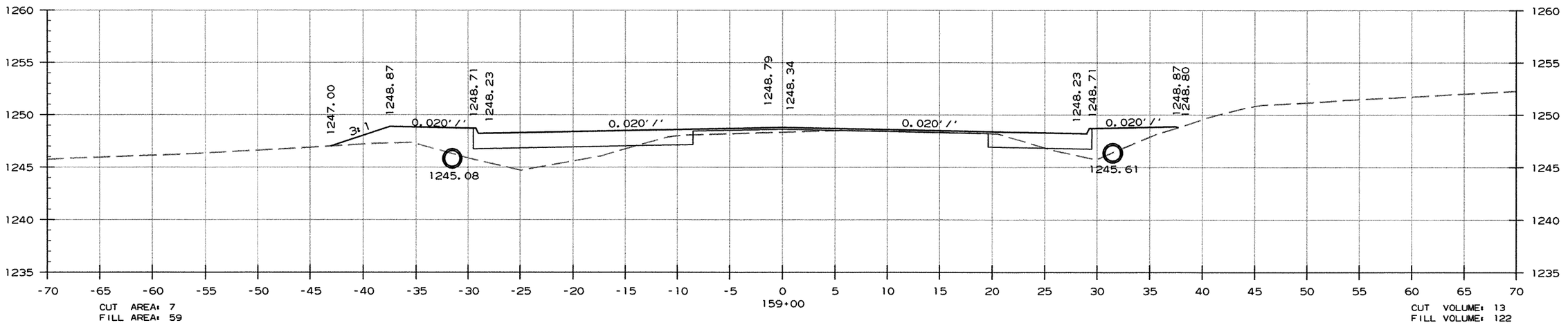
CROSS SECTION STA. 158+00 TO STA. 158+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	165	241

(2) CROSS SECTIONS



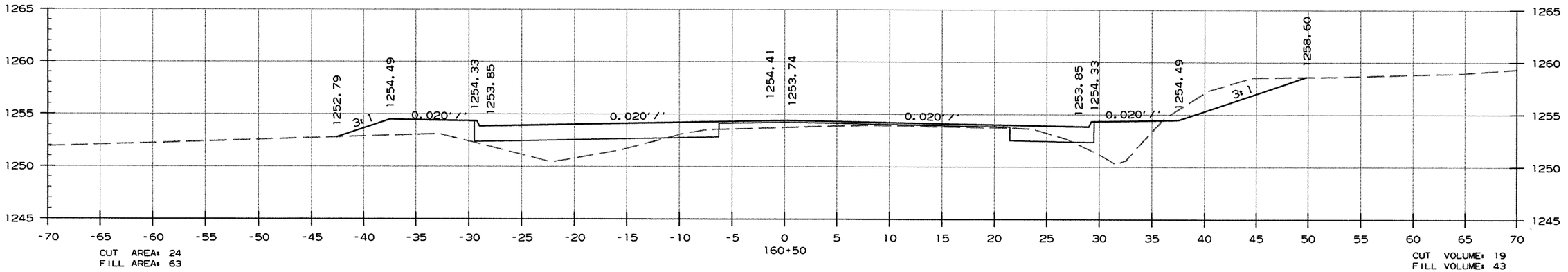


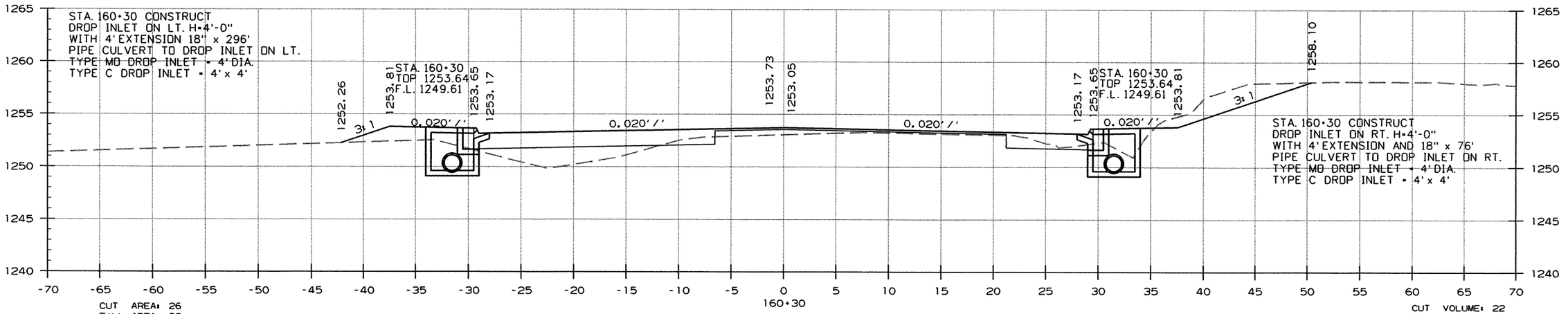
CROSS SECTION STA. 159+00 TO STA. 159+50

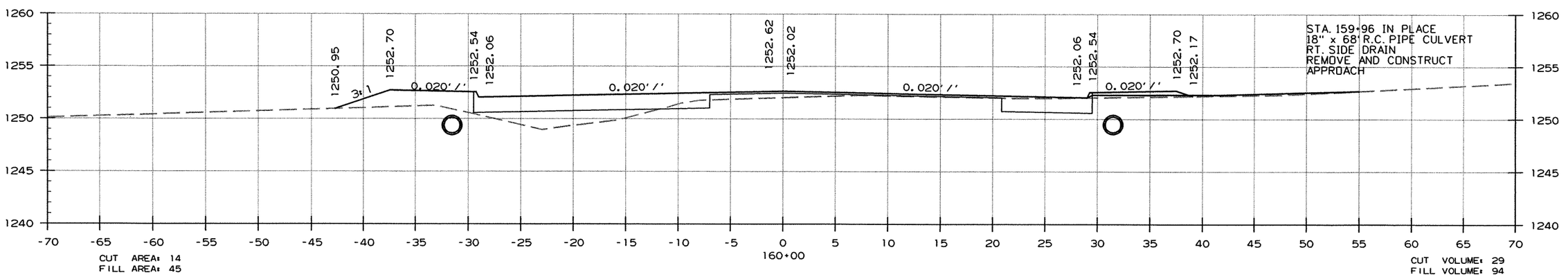
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	166	241

(2) CROSS SECTIONS





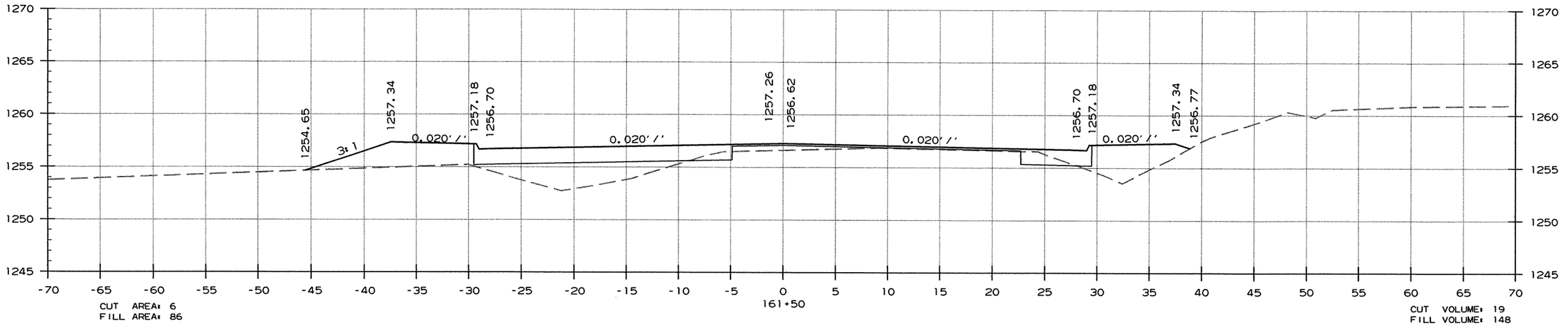


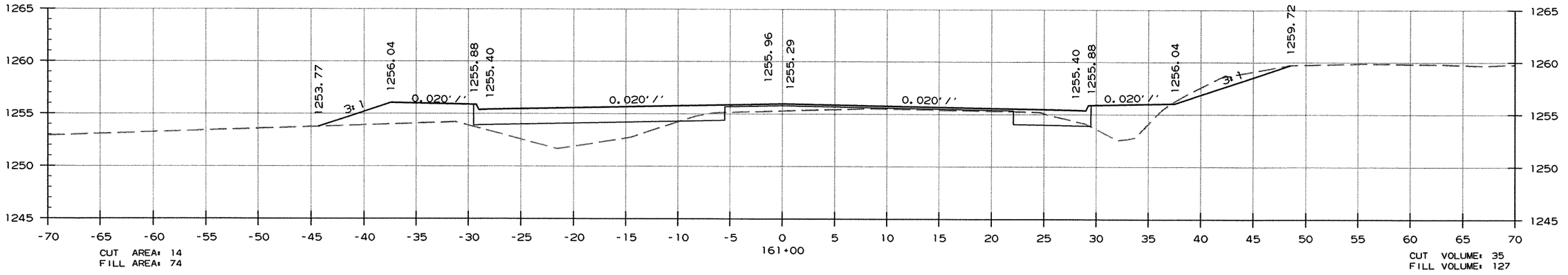
CROSS SECTION STA. 160+00 TO STA. 160+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	167	241

(2) CROSS SECTIONS



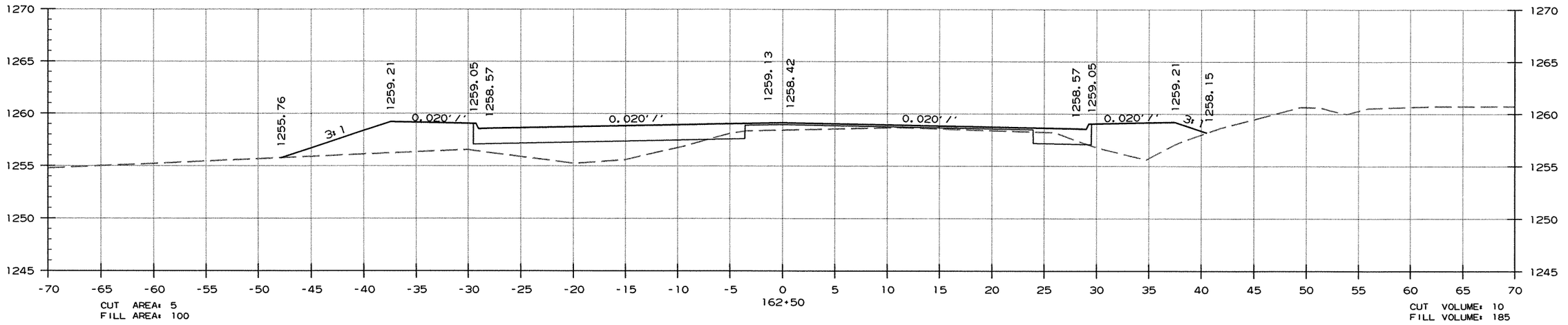


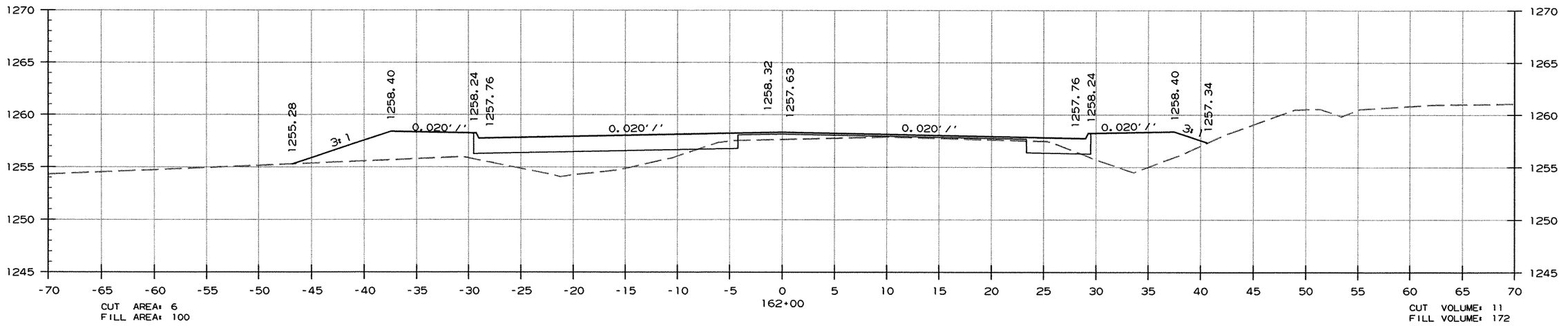
CROSS SECTION STA. 161+00 TO STA. 161+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	168	241

(2) CROSS SECTIONS



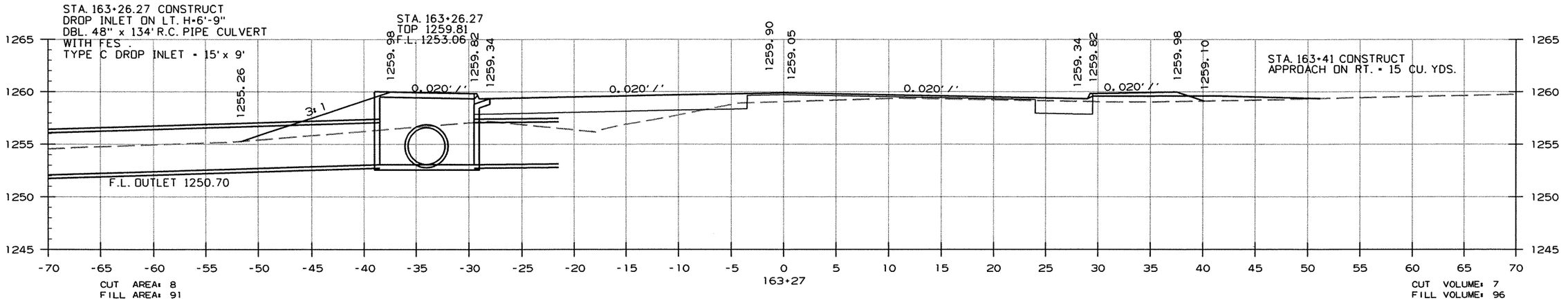


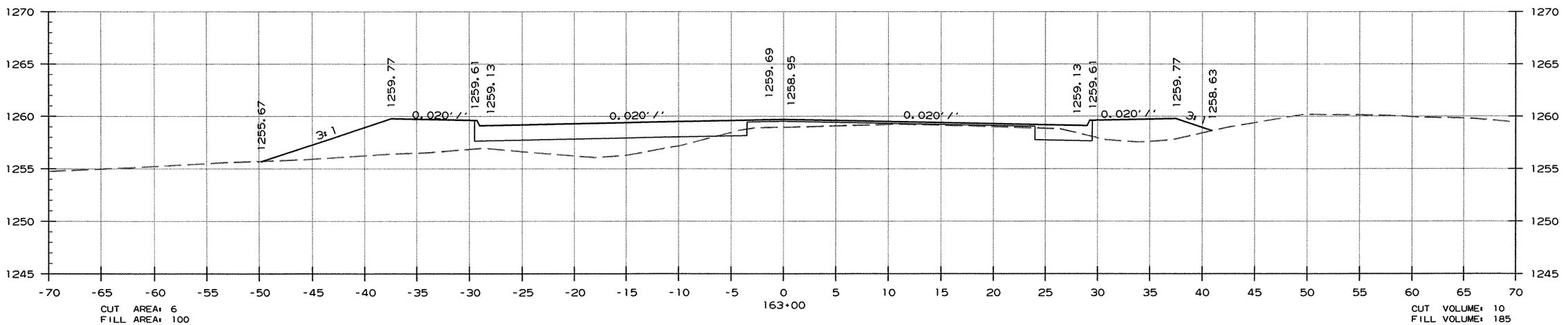
CROSS SECTION STA. 162+00 TO STA. 162+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	169	241

(2) CROSS SECTIONS



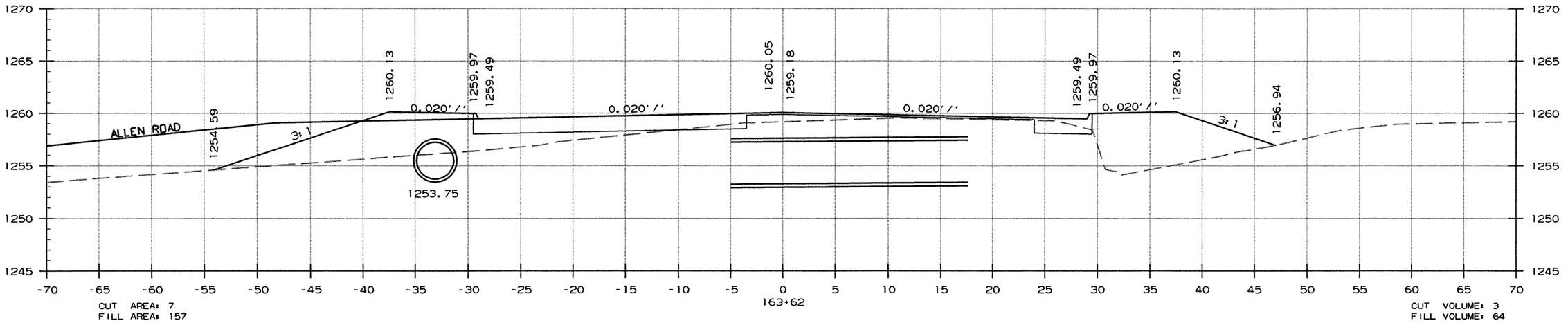


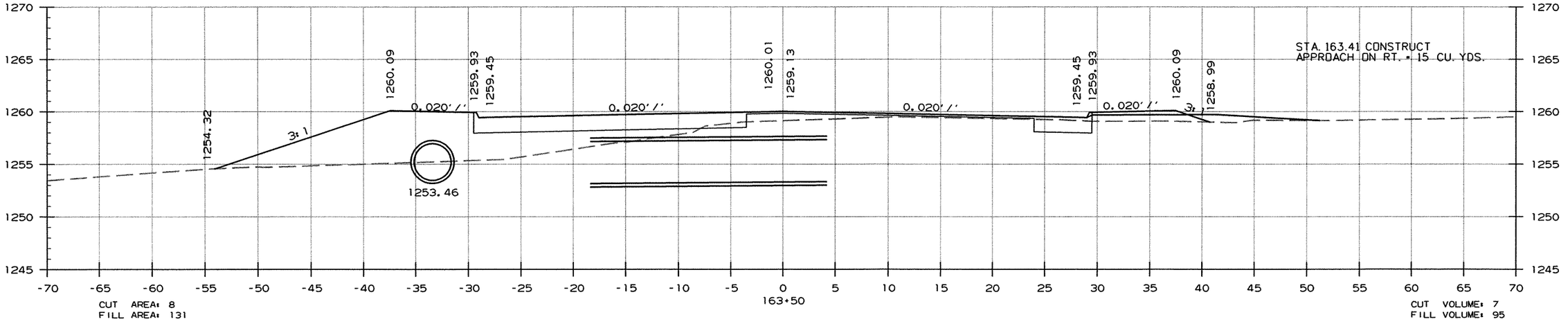
CROSS SECTION STA. 163+00 TO STA. 163+27

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	170	241

(2) CROSS SECTIONS



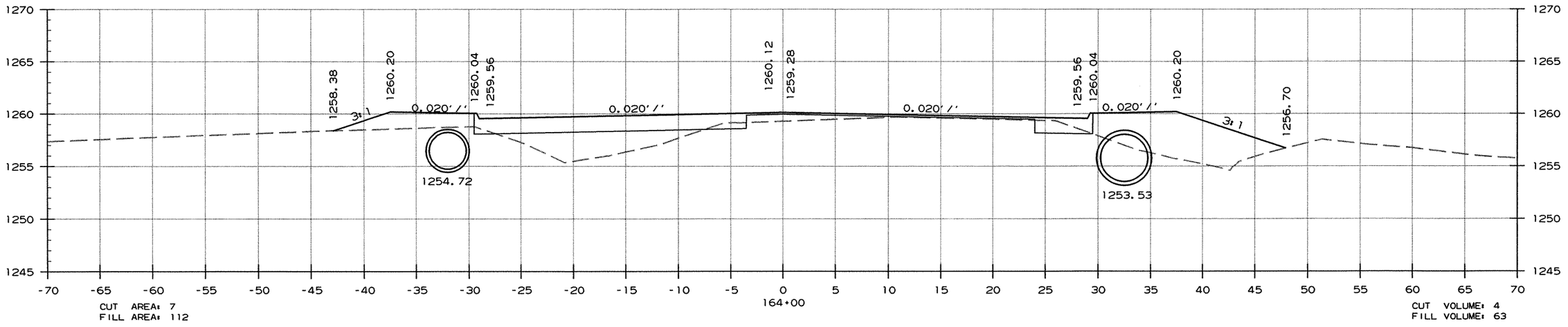


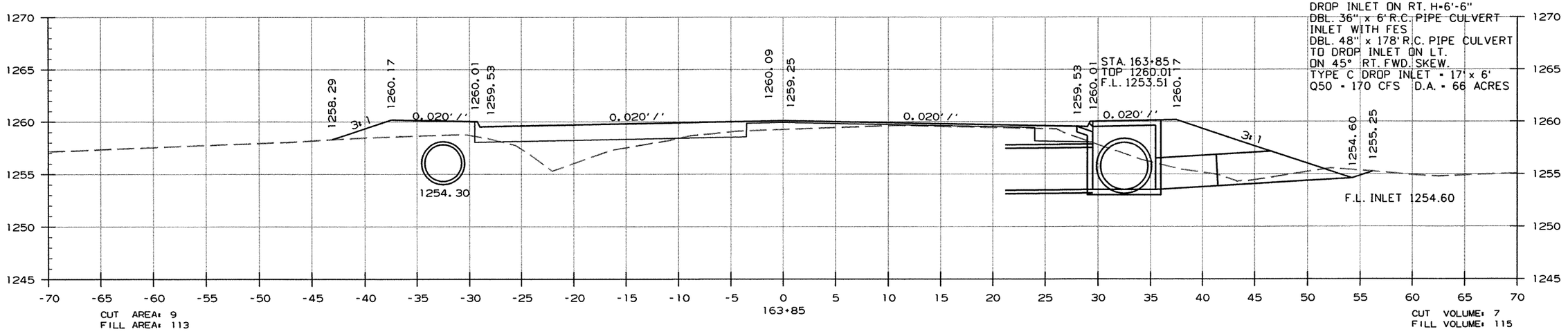
CROSS SECTION STA. 163+50 TO STA. 163+62

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	171	241

(2) CROSS SECTIONS



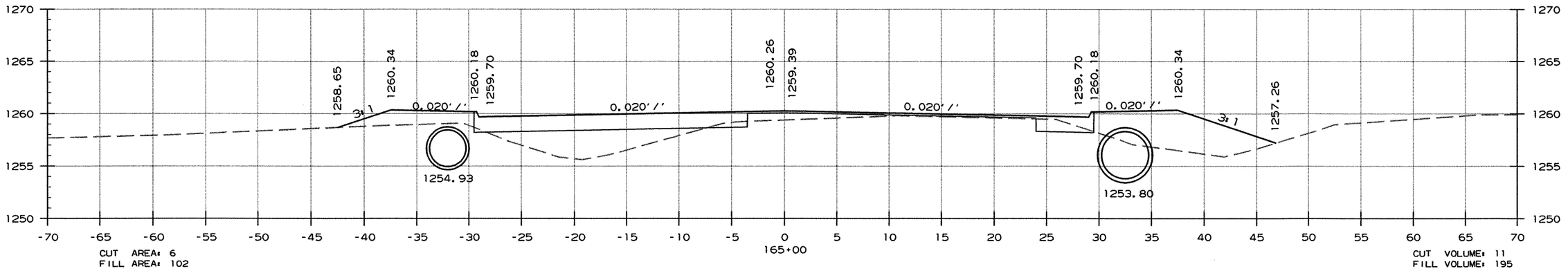


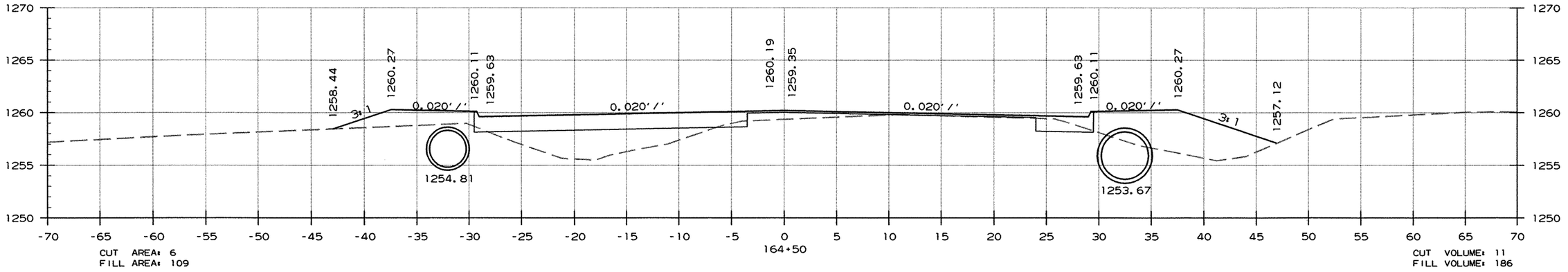
CROSS SECTION STA. 163+85 TO STA. 164+00

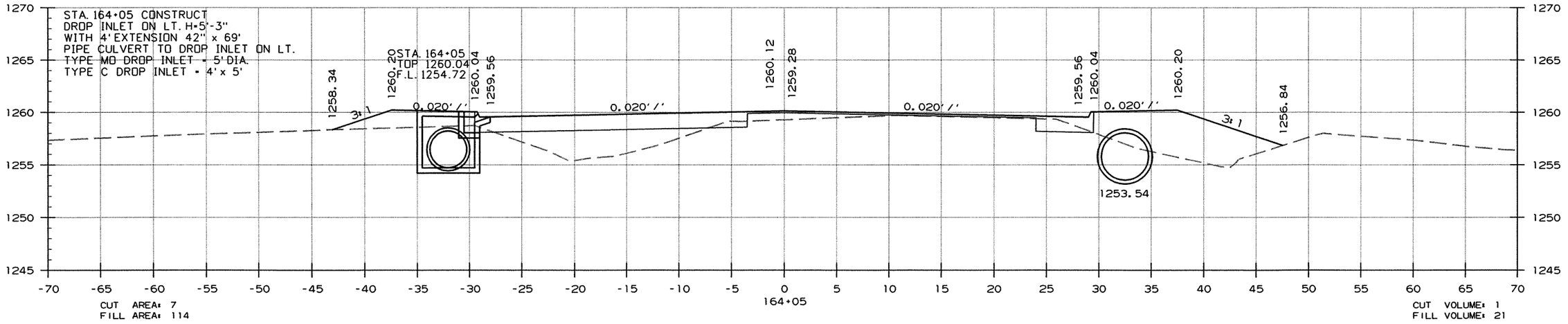
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	172	241

(2) CROSS SECTIONS





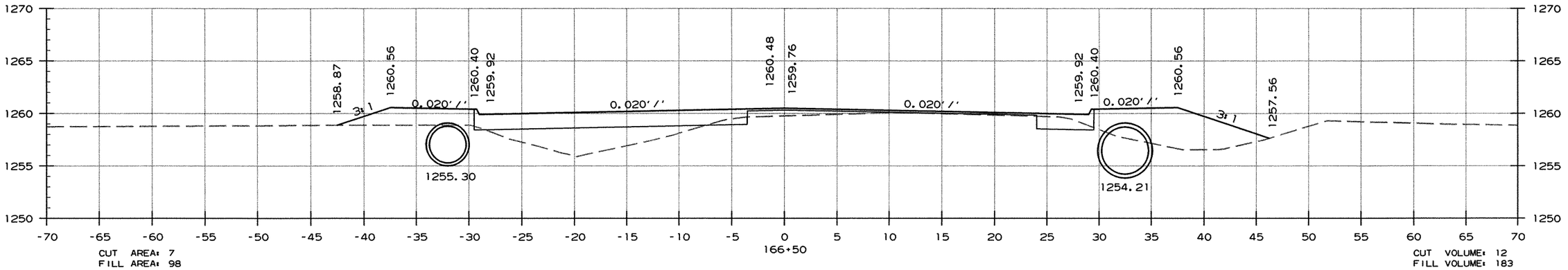


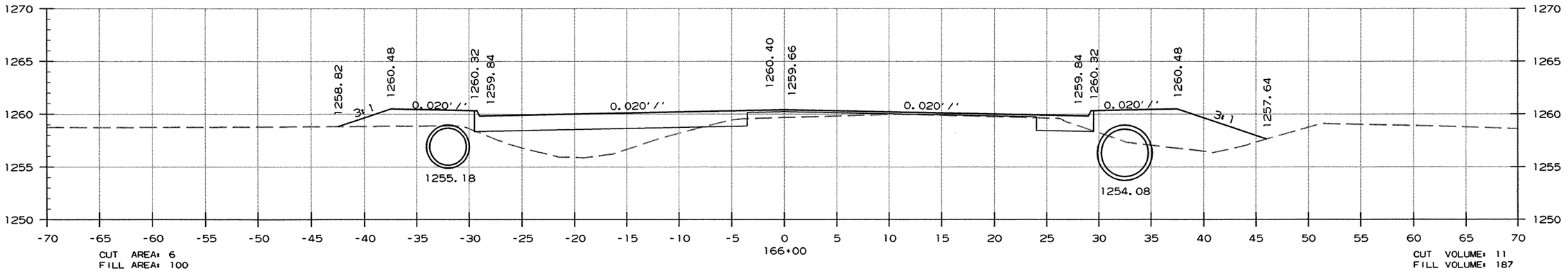
CROSS SECTION STA. 164+05 TO STA. 165+00

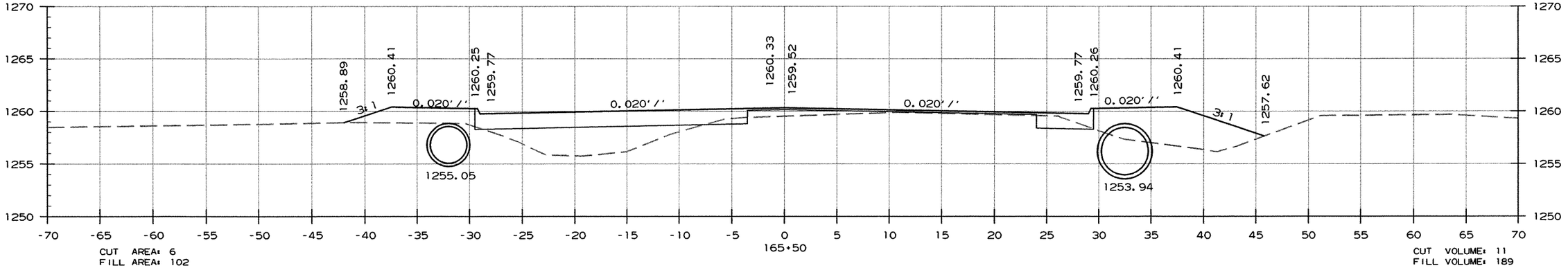
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	173	241

(2) CROSS SECTIONS





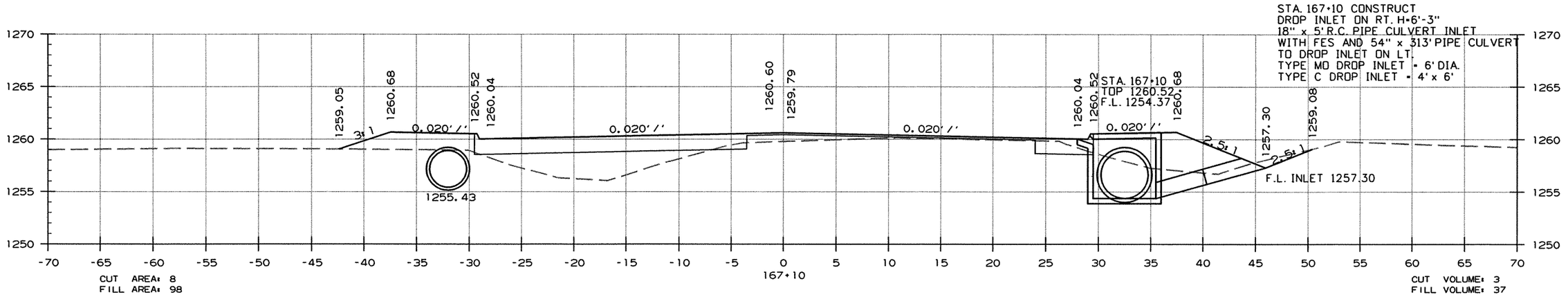


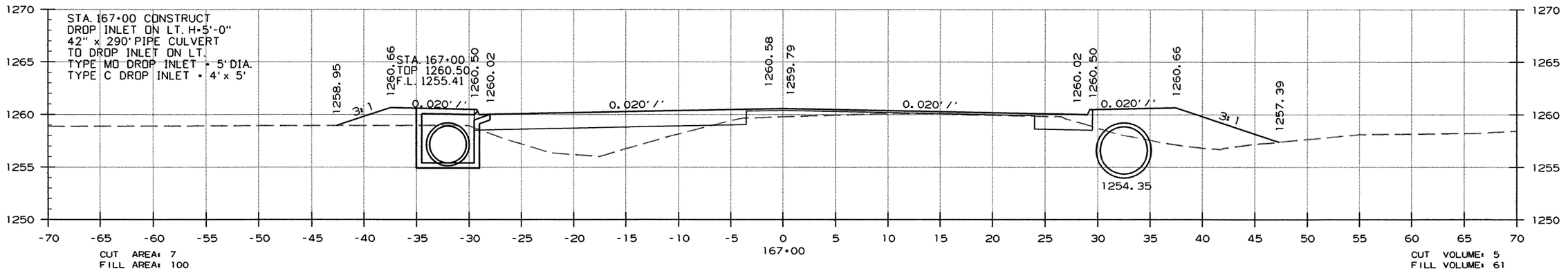
CROSS SECTION STA. 165+50 TO STA. 166+50

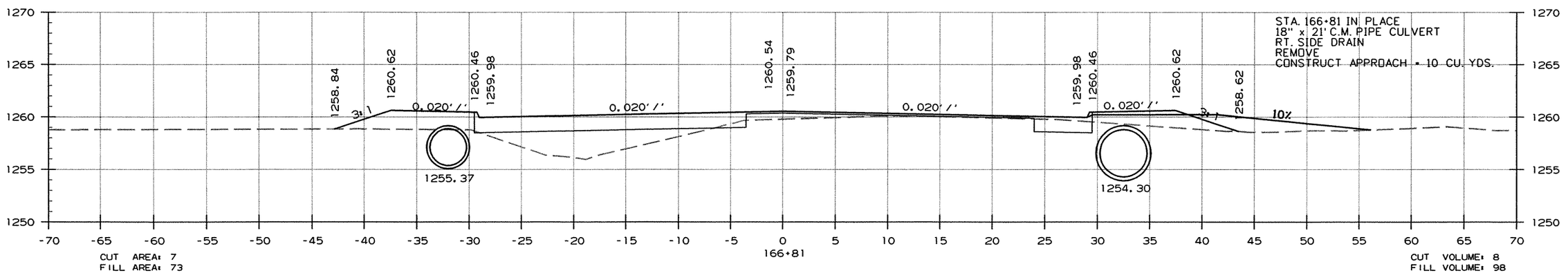
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	174	241

(2) CROSS SECTIONS





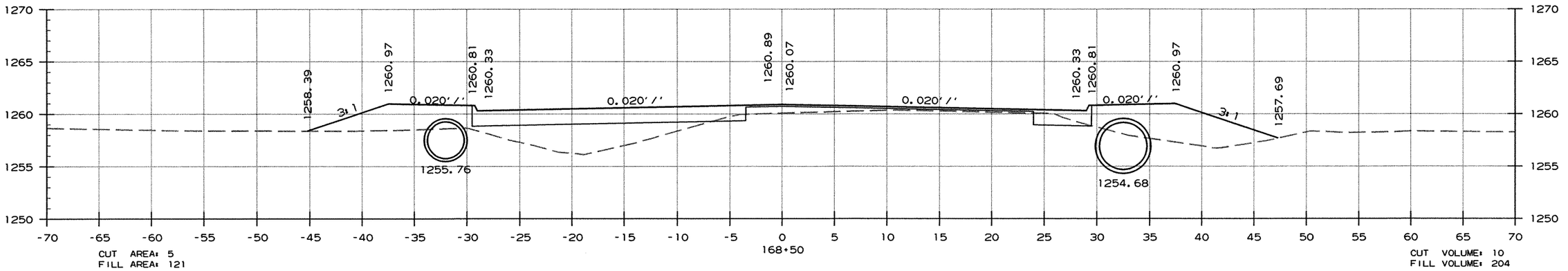


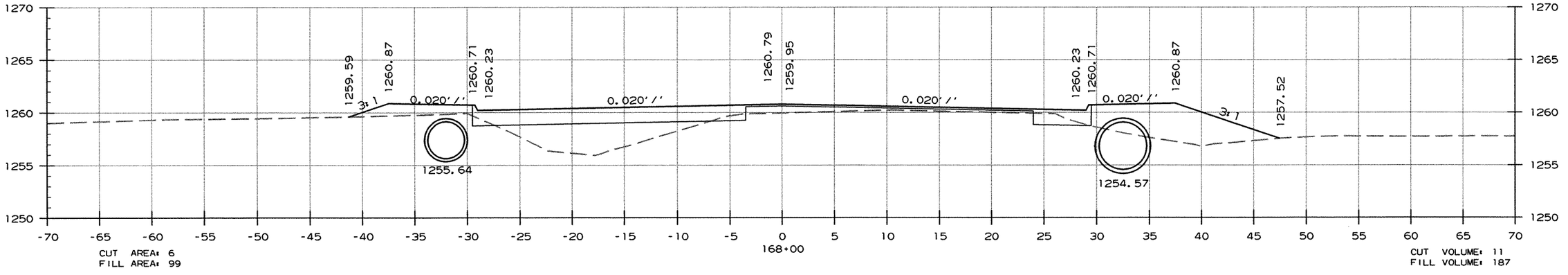
CROSS SECTION STA. 166+81 TO STA. 167+10

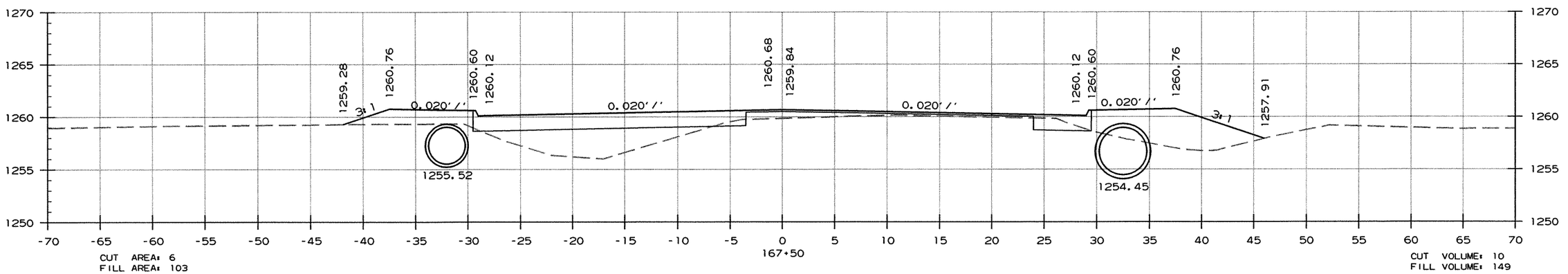
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	175	241

(2) CROSS SECTIONS





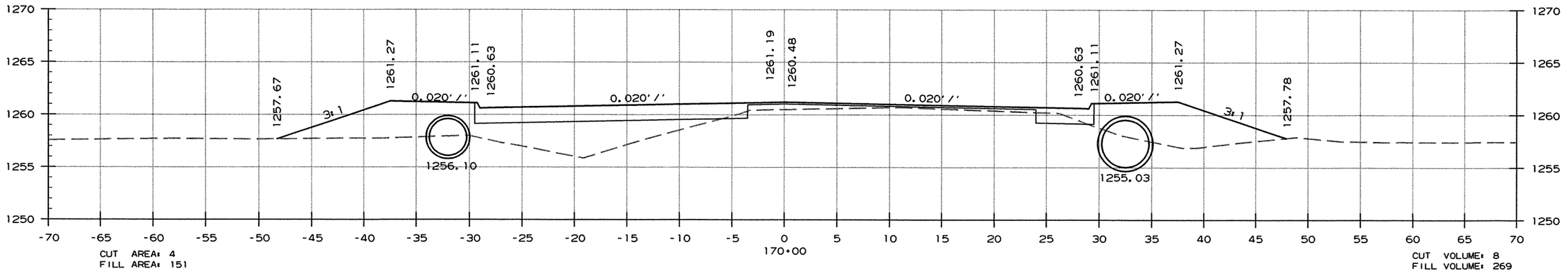


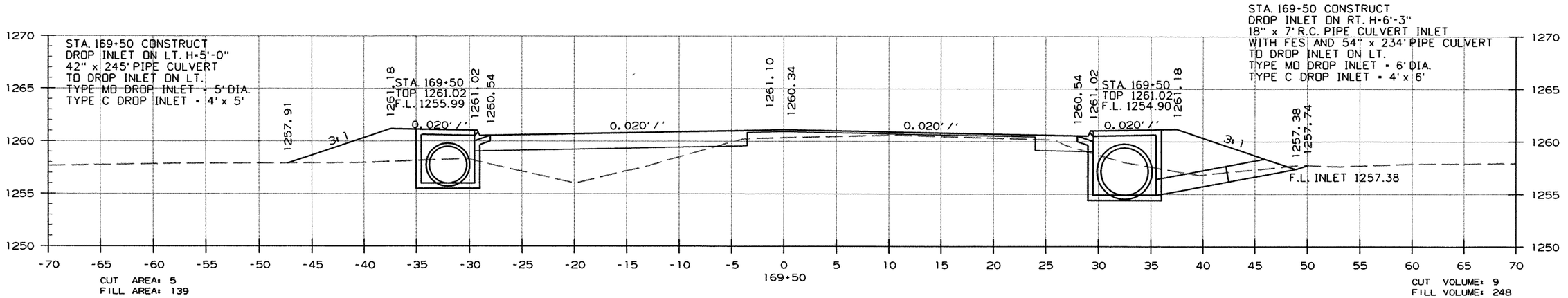
CROSS SECTION STA. 167+50 TO STA. 168+50

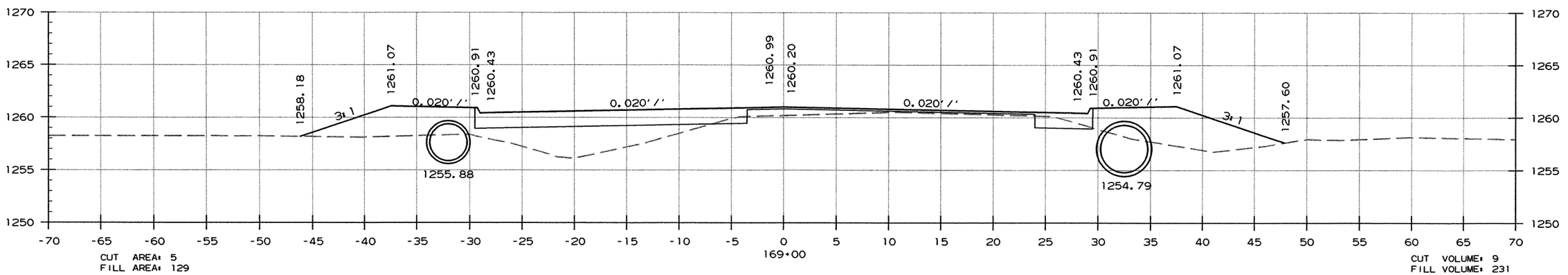
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	176	241

(2) CROSS SECTIONS





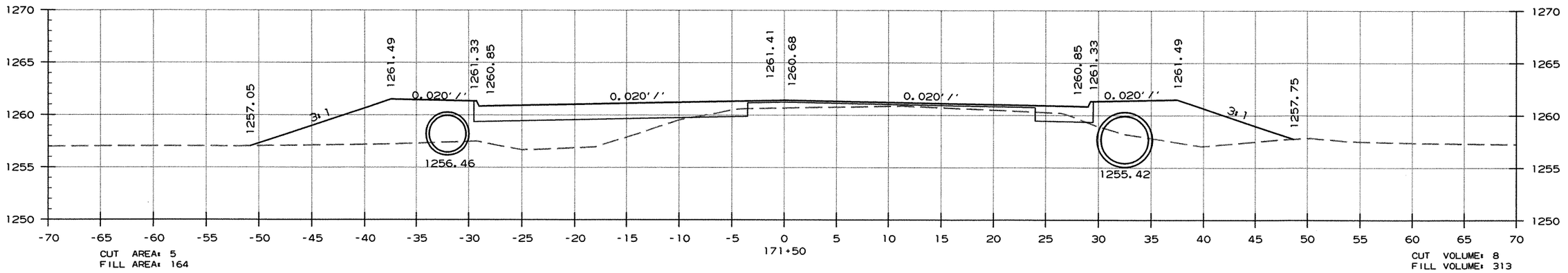


CROSS SECTION STA. 169+00 TO STA. 170+00

r090174.dgn 3/3/2010

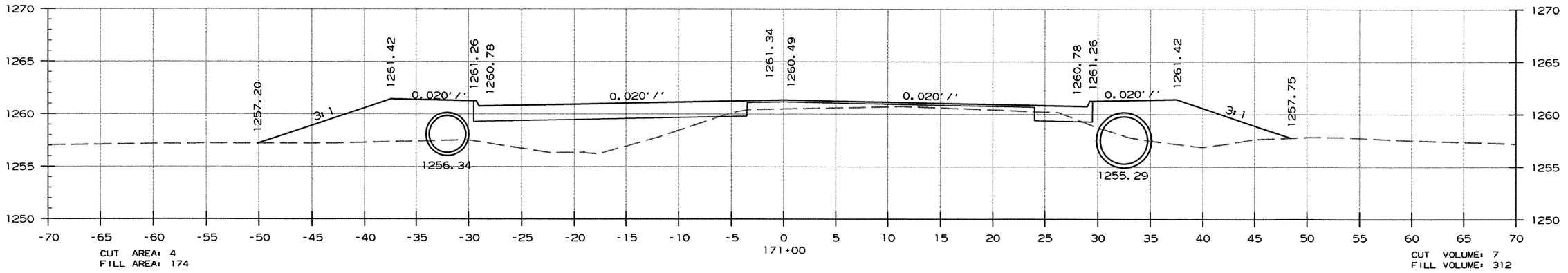
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	177	241

(2) CROSS SECTIONS



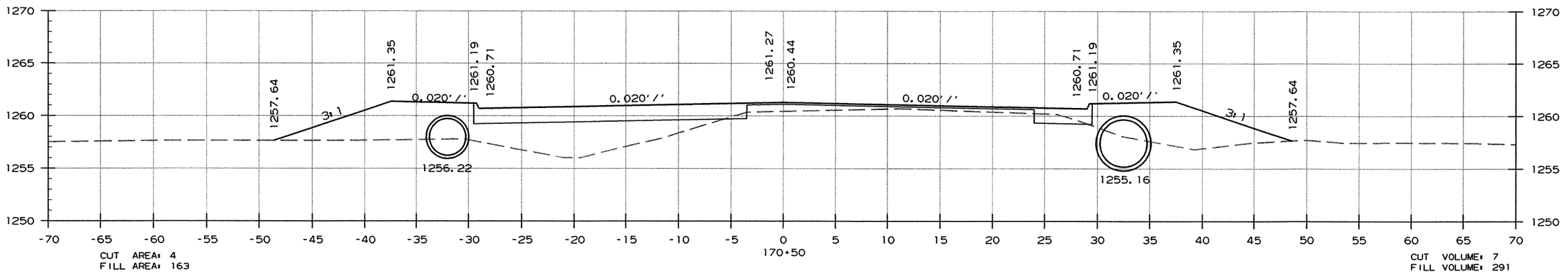
CUT AREA: 5
FILL AREA: 164

CUT VOLUME: 8
FILL VOLUME: 313



CUT AREA: 4
FILL AREA: 174

CUT VOLUME: 7
FILL VOLUME: 312



CUT AREA: 4
FILL AREA: 163

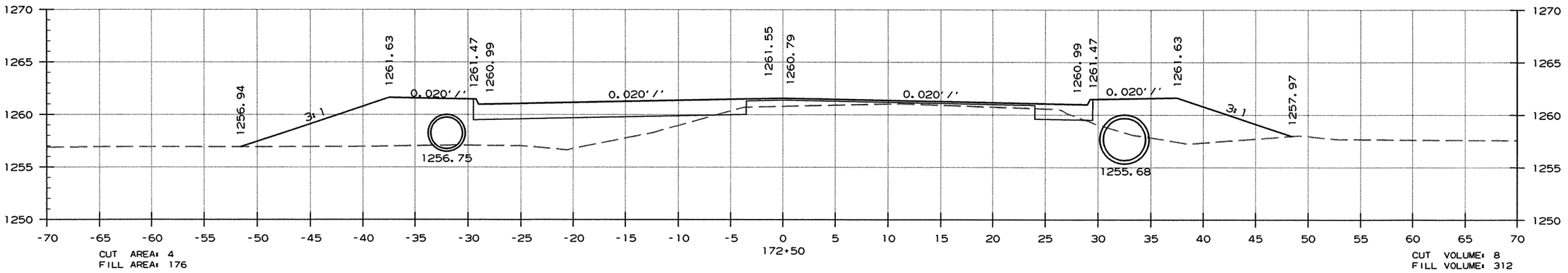
CUT VOLUME: 7
FILL VOLUME: 291

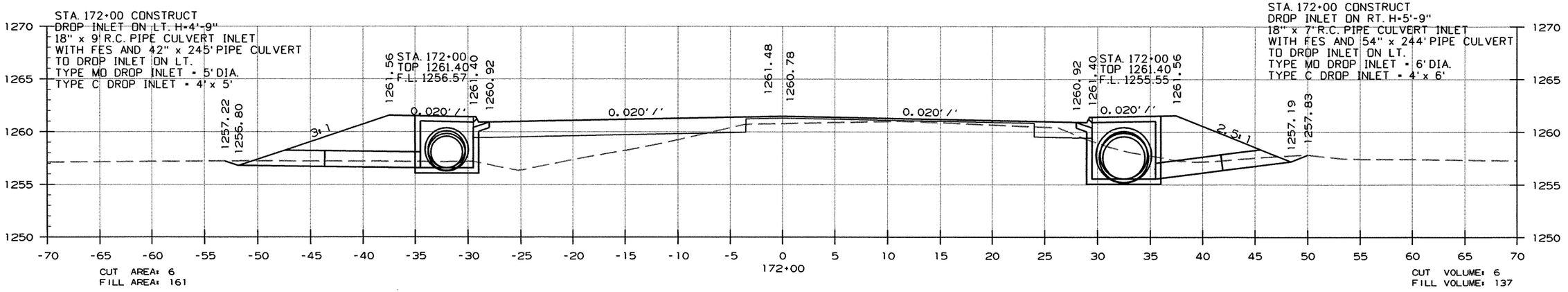
CROSS SECTION STA. 170+50 TO STA. 171+50

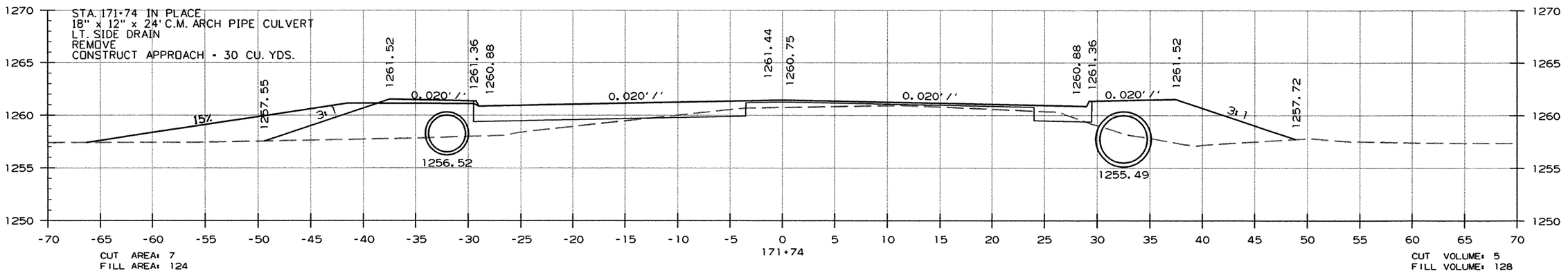
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	178	241

(2) CROSS SECTIONS





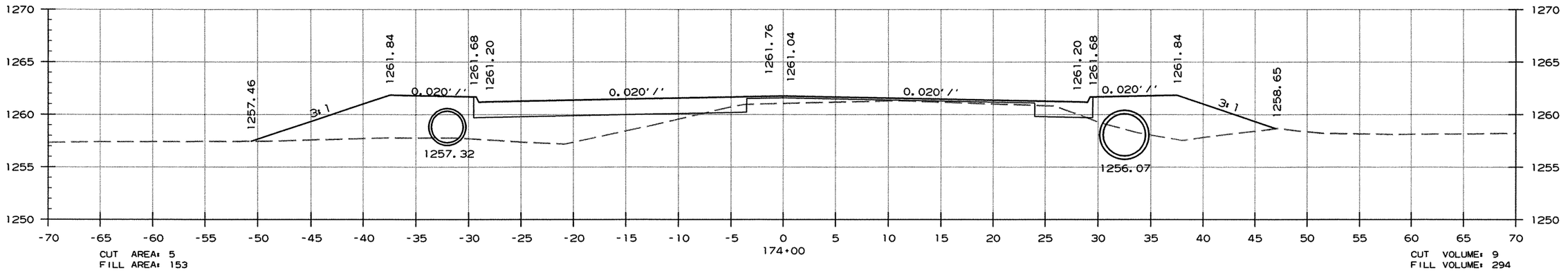


CROSS SECTION STA. 171+74 TO STA. 172+50

r090174.dgn 3/3/2010

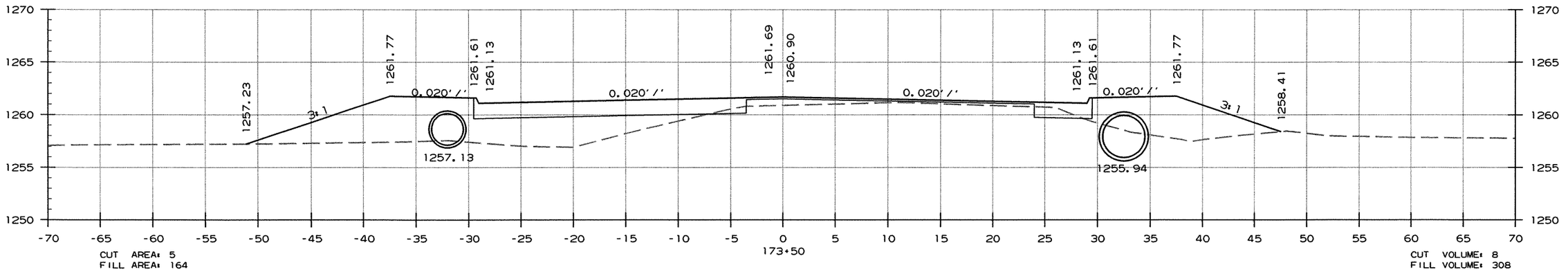
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	179	241

(2) CROSS SECTIONS



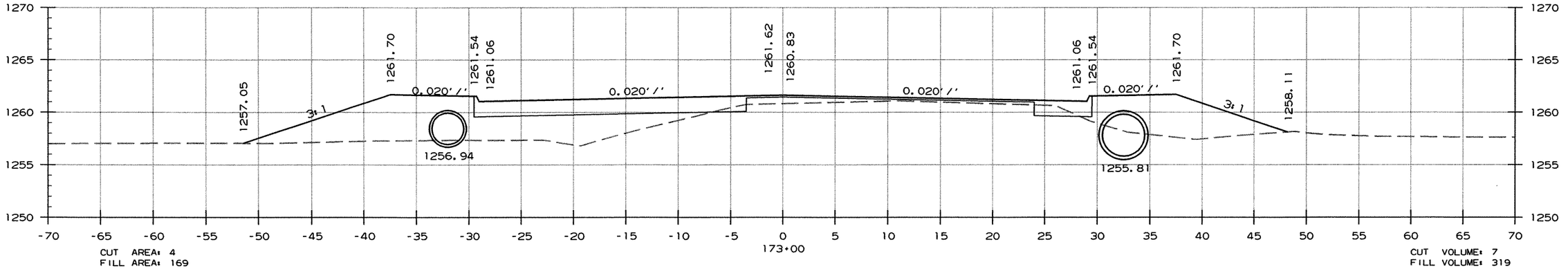
CUT AREA: 5
FILL AREA: 153

CUT VOLUME: 9
FILL VOLUME: 294



CUT AREA: 5
FILL AREA: 164

CUT VOLUME: 8
FILL VOLUME: 308



CUT AREA: 4
FILL AREA: 169

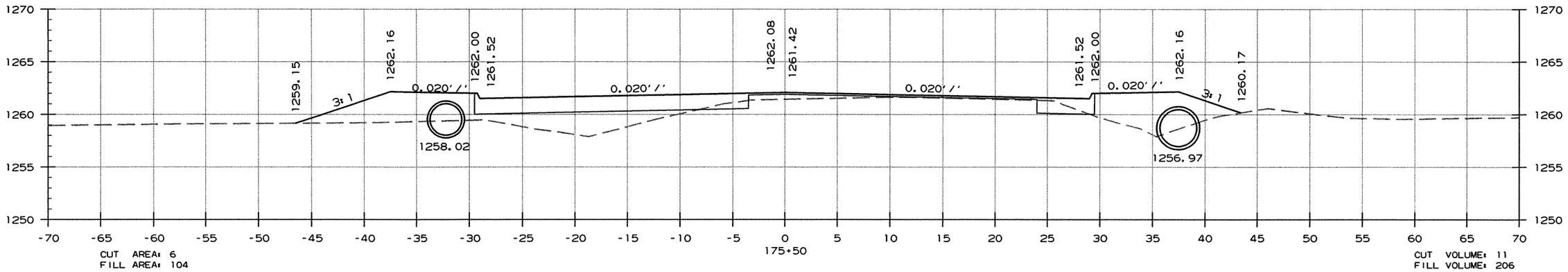
CUT VOLUME: 7
FILL VOLUME: 319

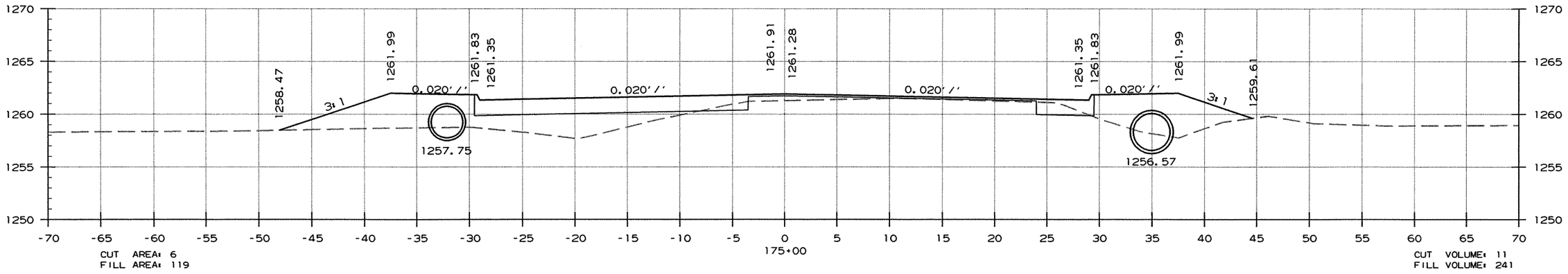
CROSS SECTION STA. 173+00 TO STA. 174+00

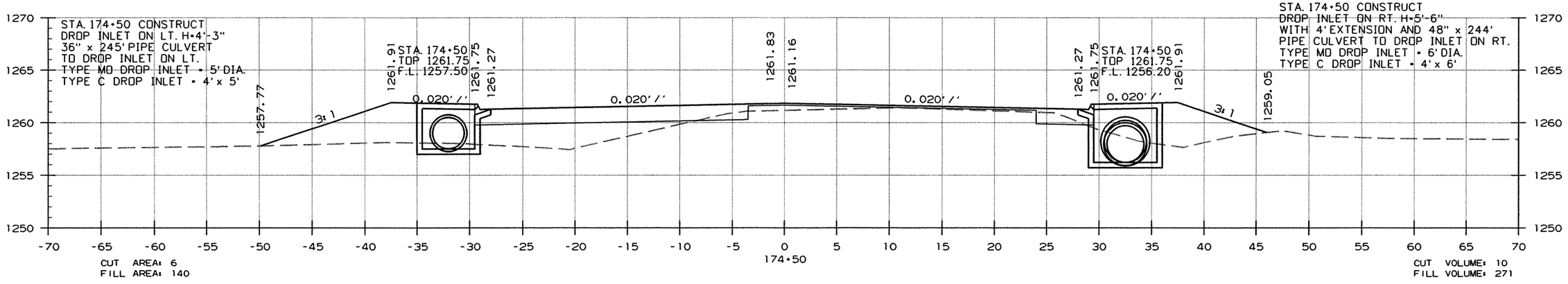
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	180	241

(2) CROSS SECTIONS





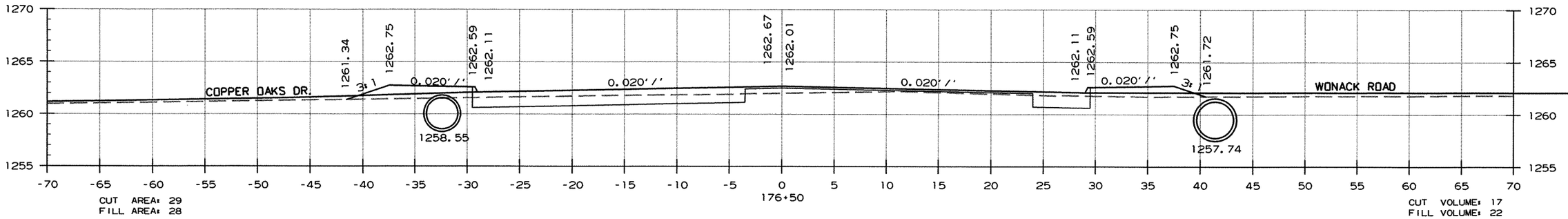


CROSS SECTION STA. 174+50 TO STA. 175+50

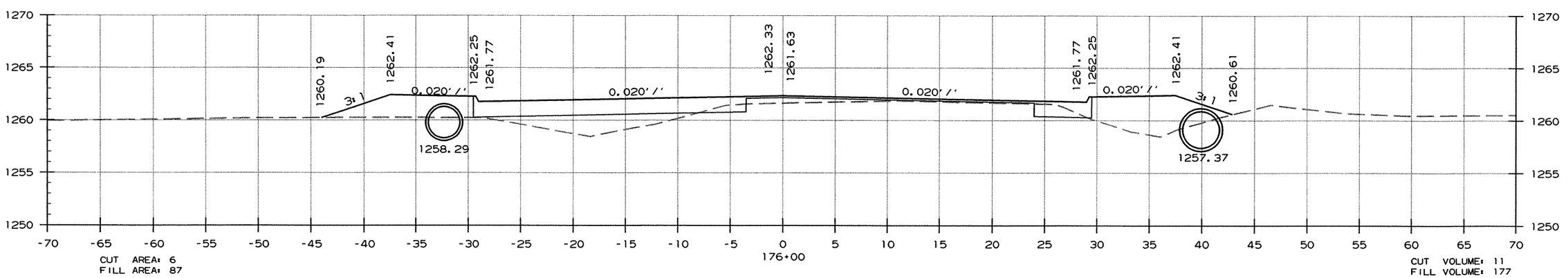
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	181	241

(2) CROSS SECTIONS



STA. 176+33 CONSTRUCT
DROP INLET ON RT. H=4'-6"
WITH 4'EXTENSION AND 42" x 177'
PIPE CULVERT TO DROP INLET ON RT.
TYPE MO DROP INLET = 6'DIA.
TYPE C DROP INLET = 4'x 6'

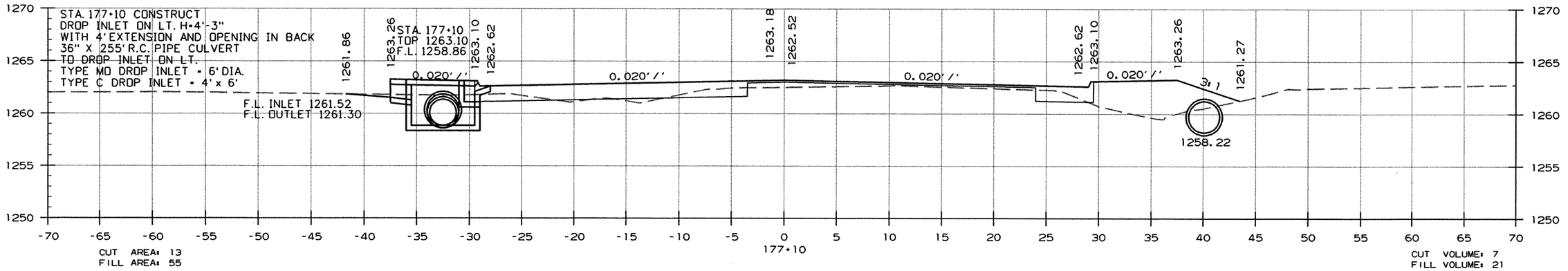


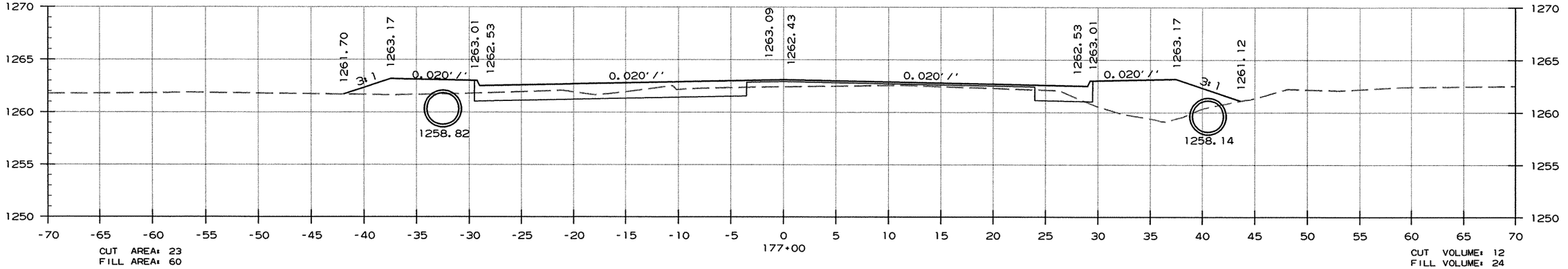
CROSS SECTION STA. 176+00 TO STA. 176+50

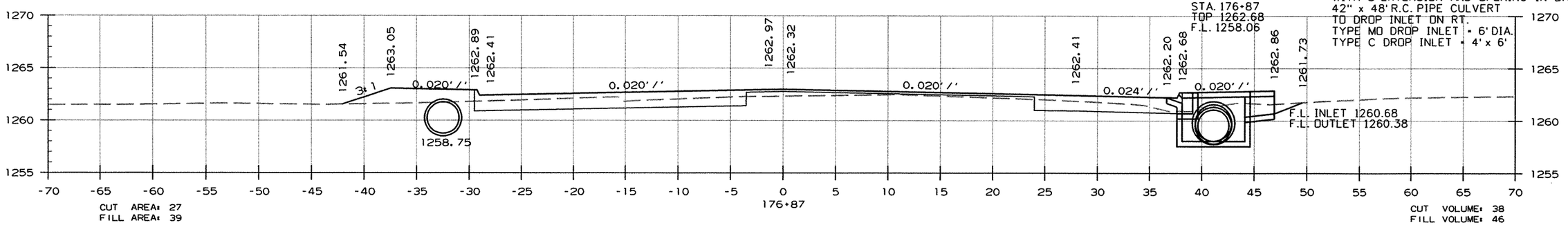
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	182	241

(2) CROSS SECTIONS





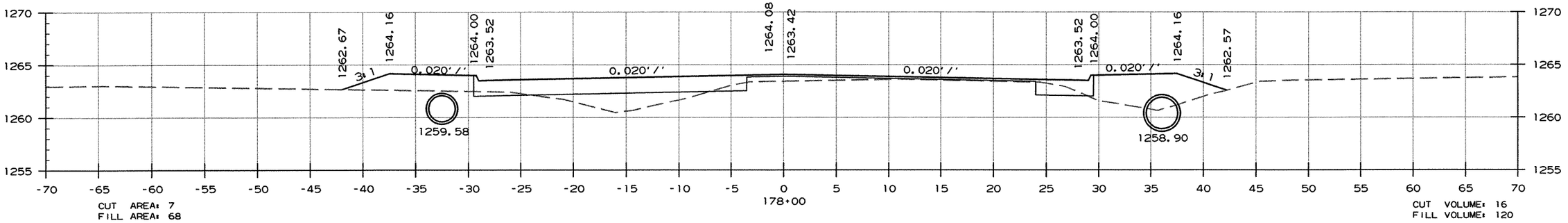


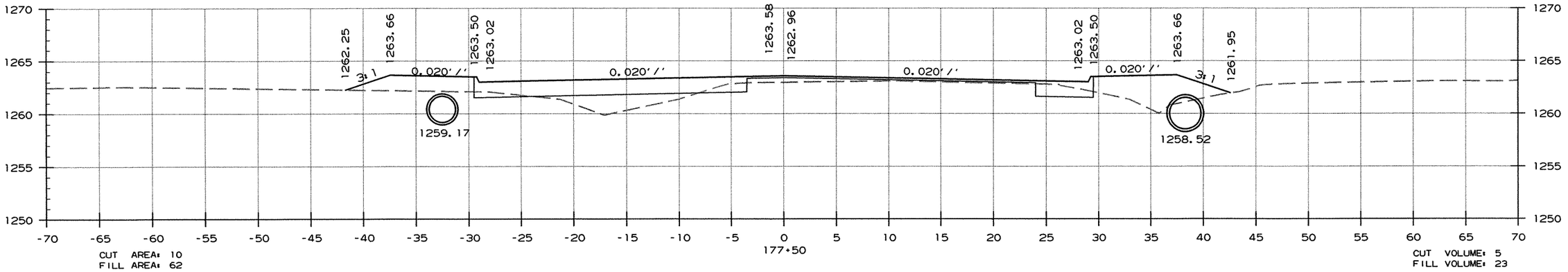
CROSS SECTION STA. 176+87 TO STA. 177+10

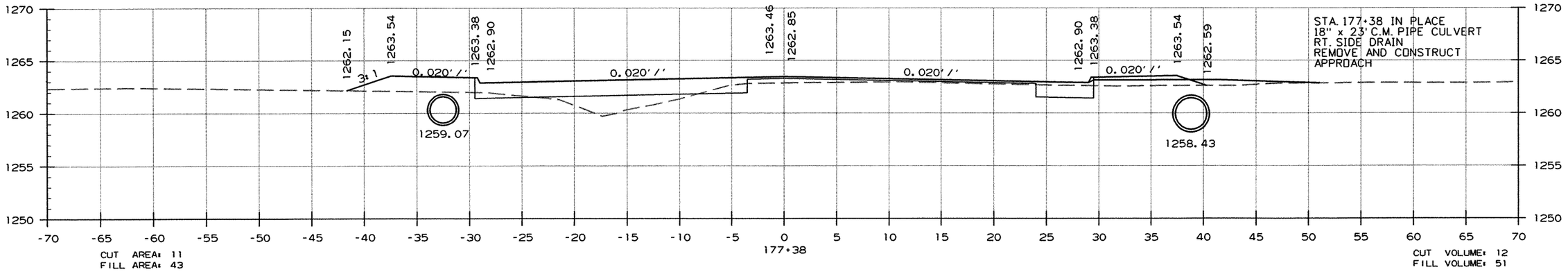
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	183	241

(2) CROSS SECTIONS





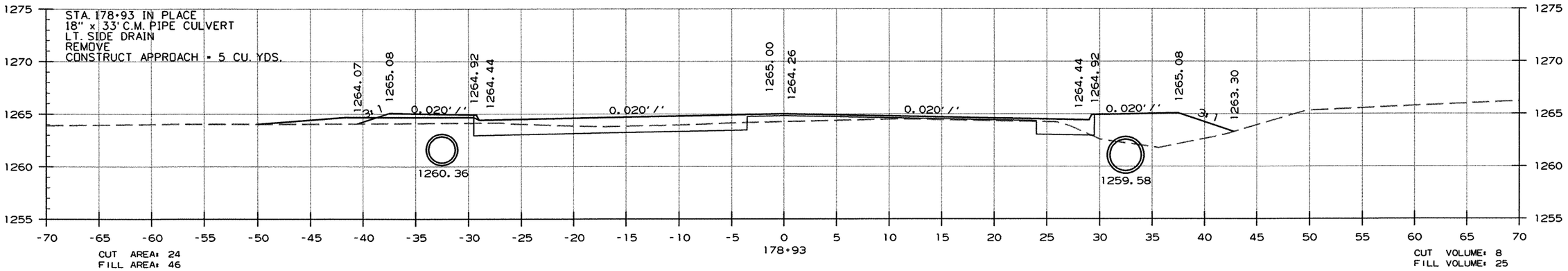


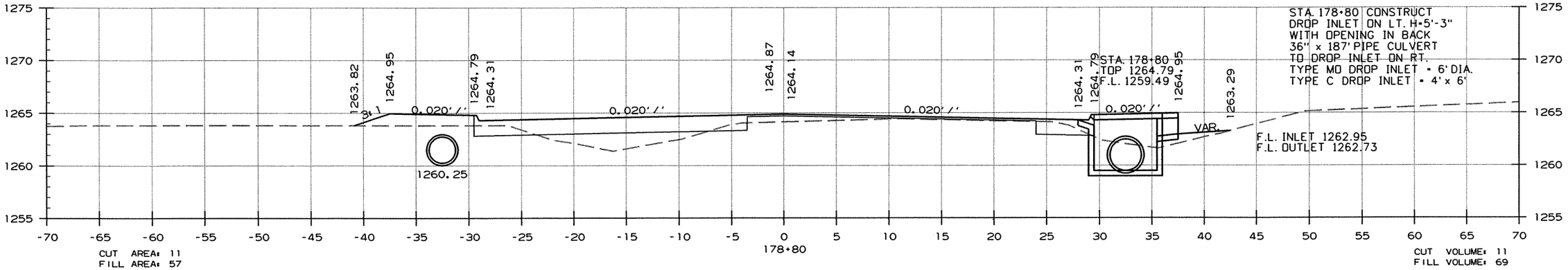
CROSS SECTION STA. 177+38 TO STA. 178+00

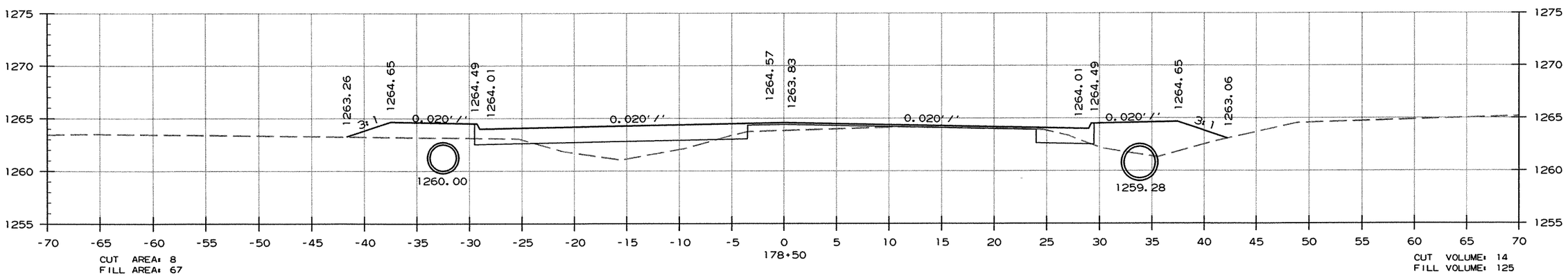
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	184	241

(2) CROSS SECTIONS





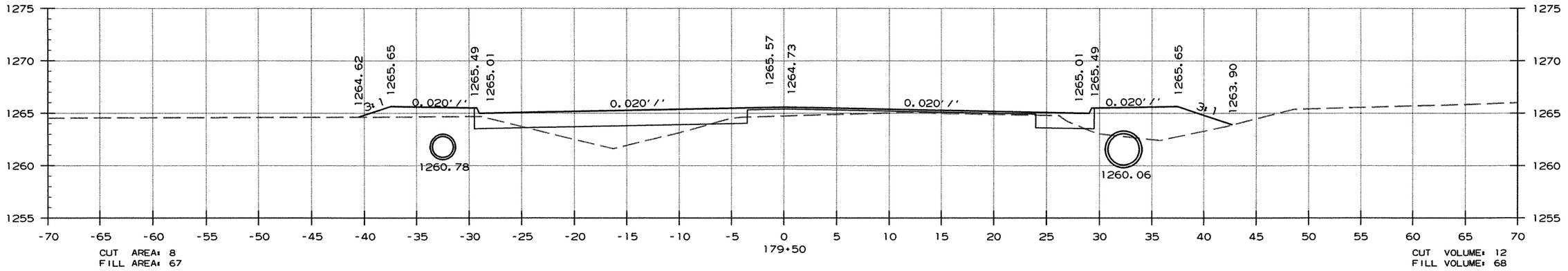


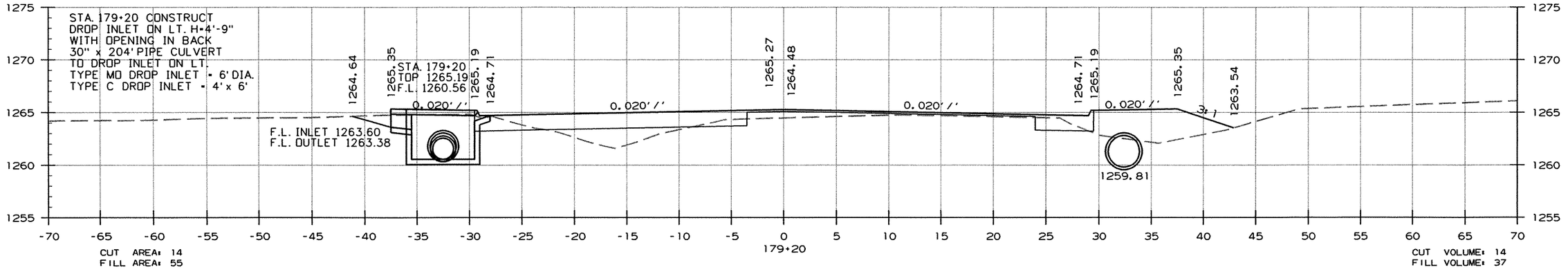
CROSS SECTION STA. 178+50 TO STA. 178+93

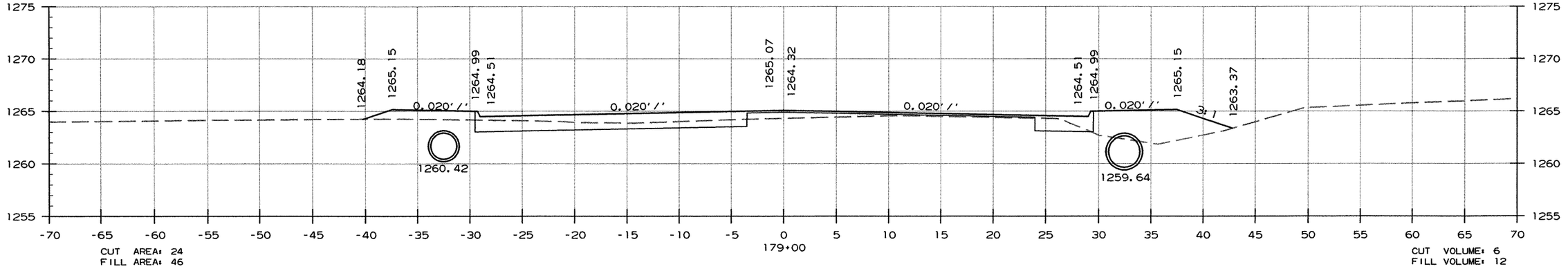
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	185	241

(2) CROSS SECTIONS





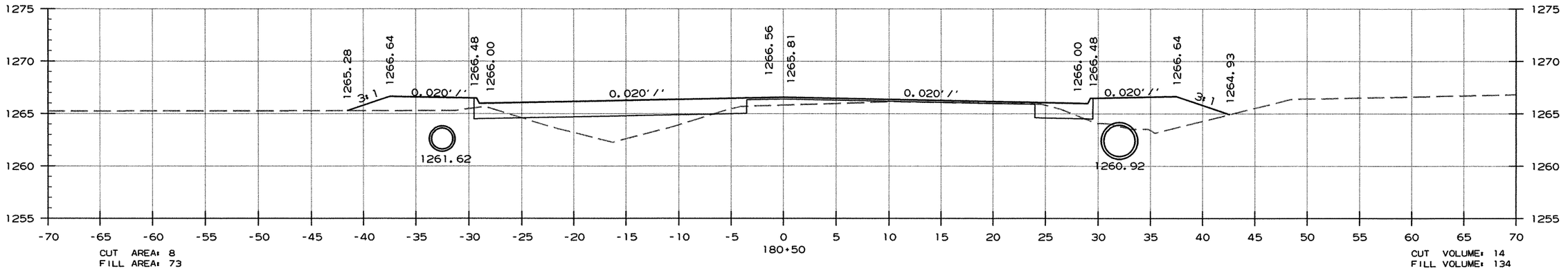


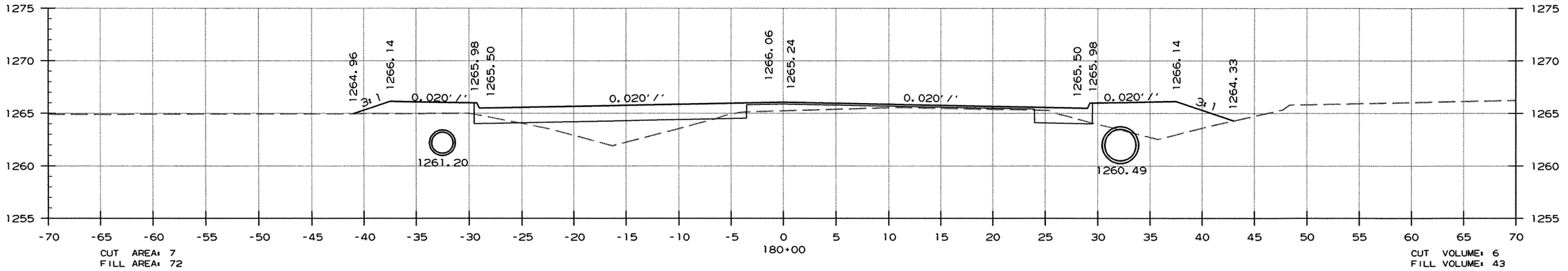
CROSS SECTION STA. 179+00 TO STA. 179+50

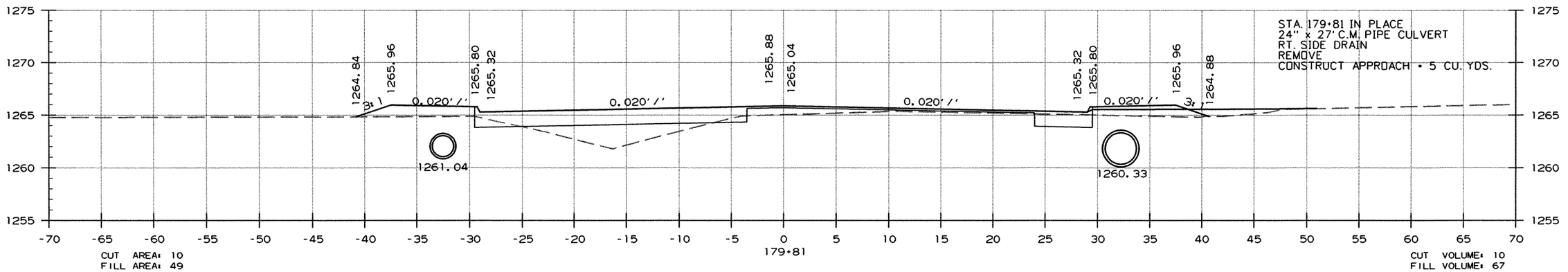
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	186	241

(2) CROSS SECTIONS





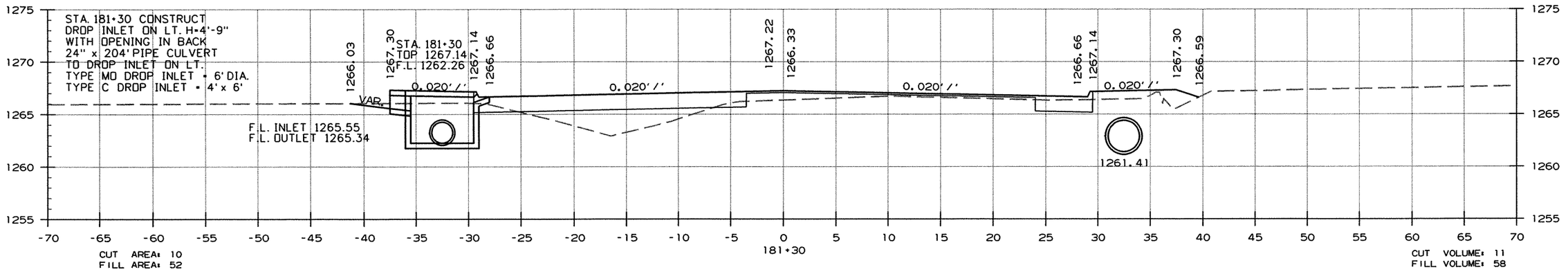


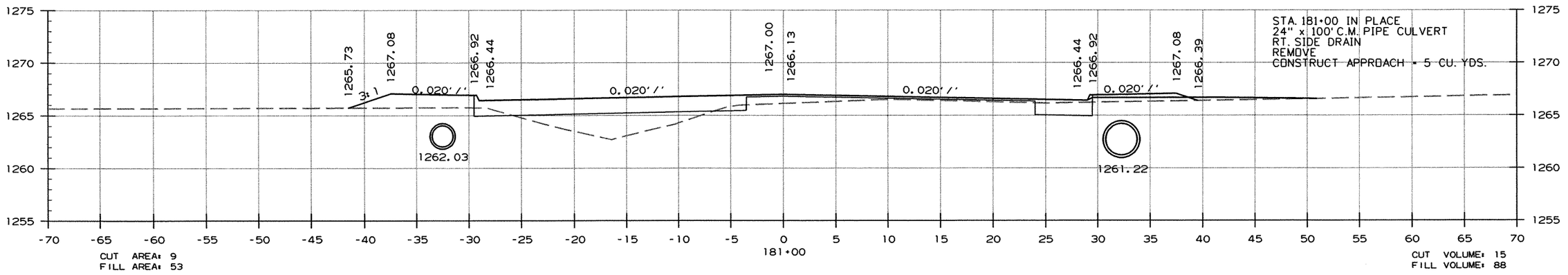
CROSS SECTION STA. 179+81 TO STA. 180+50

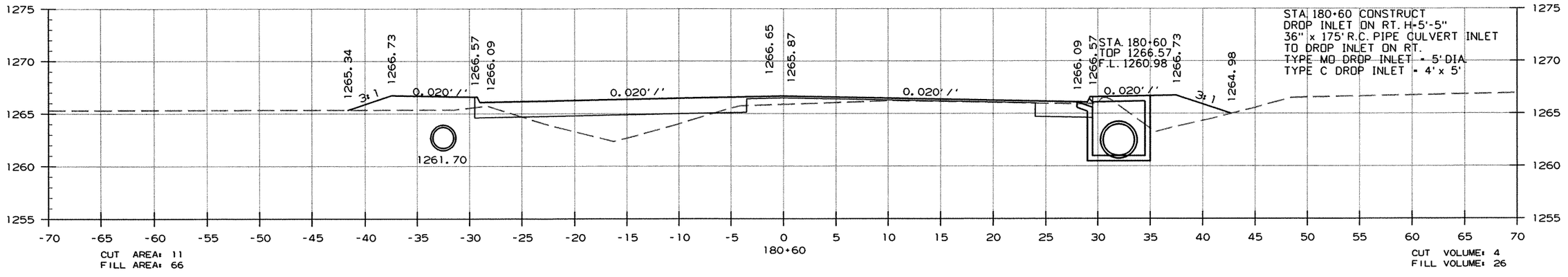
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	187	241

(2) CROSS SECTIONS





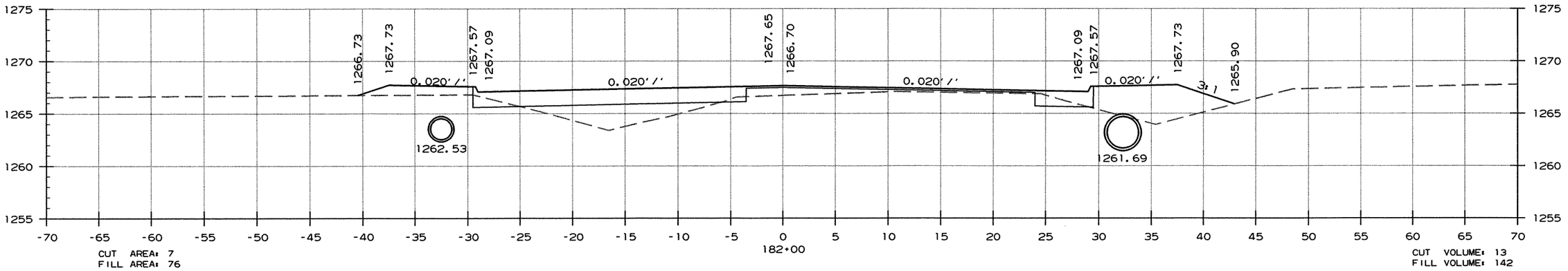


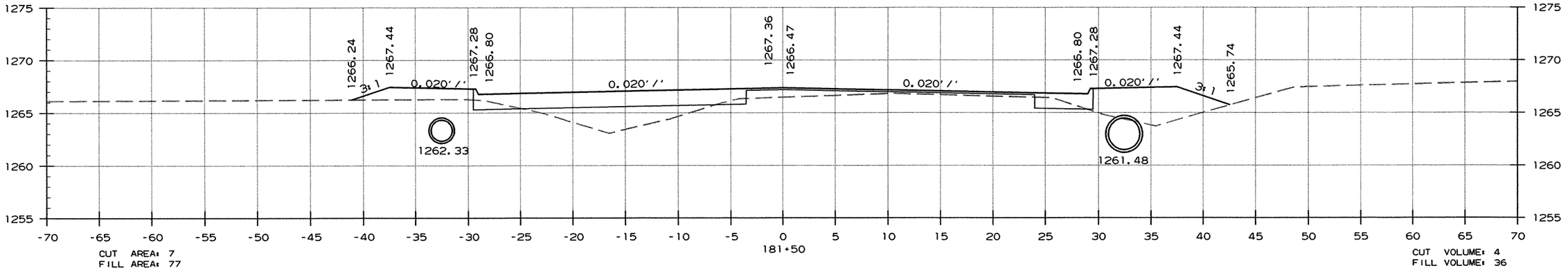
CROSS SECTION STA. 180+60 TO STA. 181+30

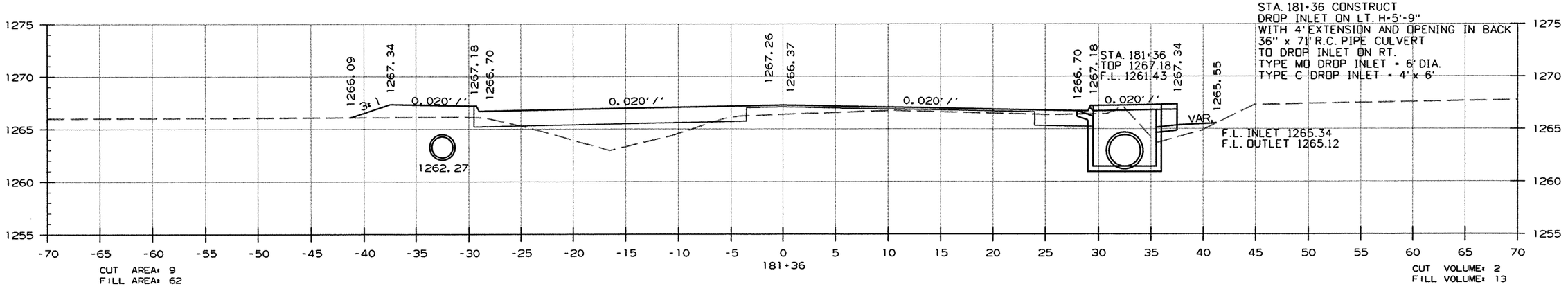
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	188	241

(2) CROSS SECTIONS





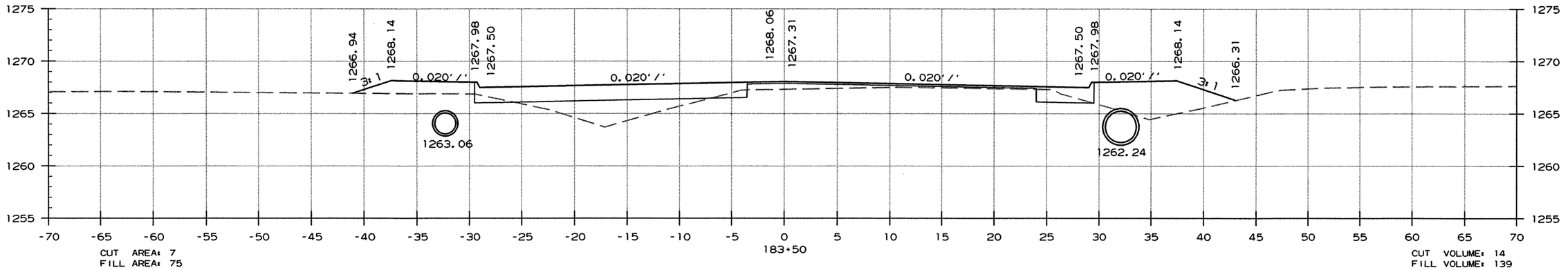


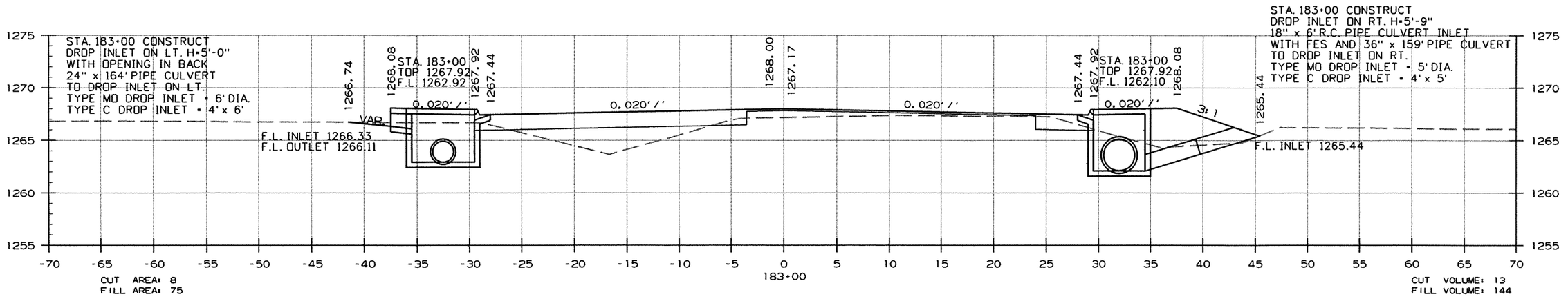
CROSS SECTION STA. 181+36 TO STA. 182+00

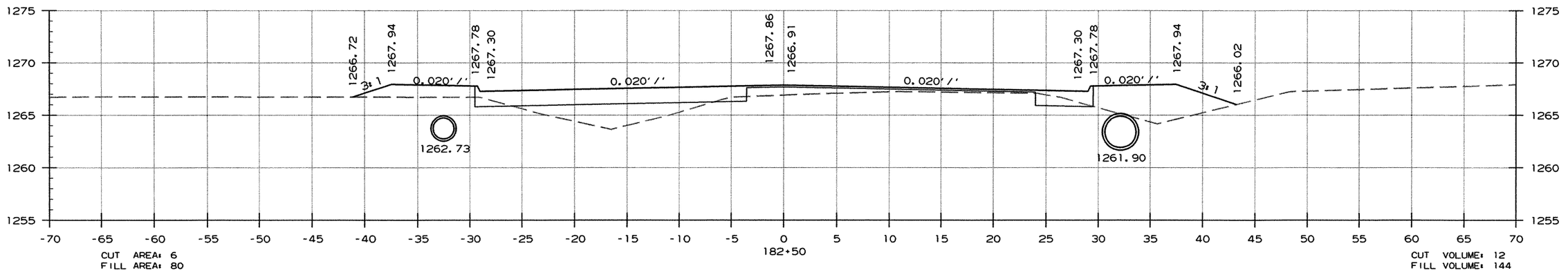
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	189	241

(2) CROSS SECTIONS





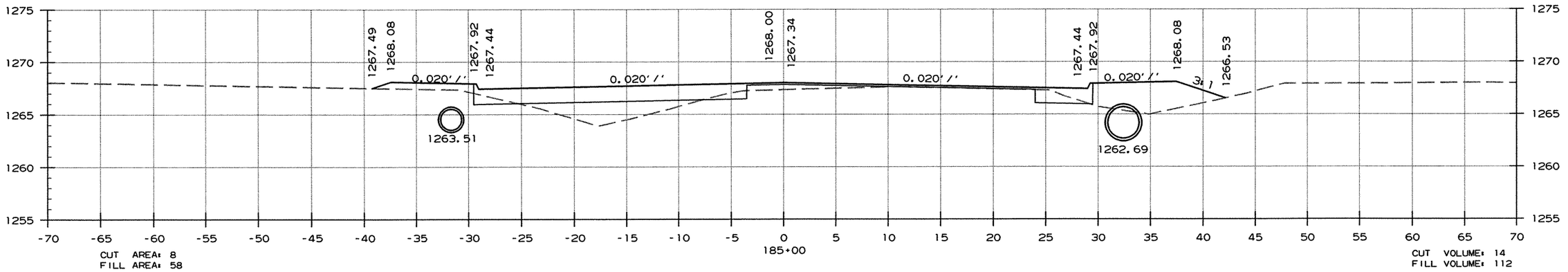


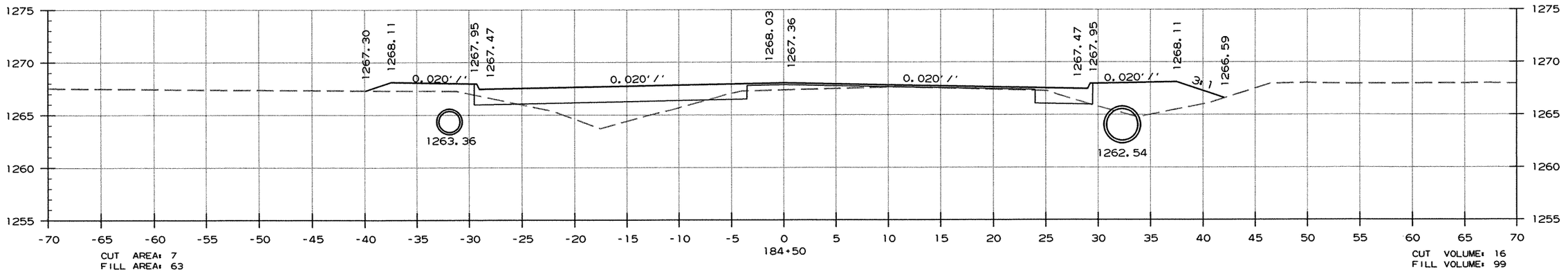
CROSS SECTION STA. 182+50 TO STA. 183+50

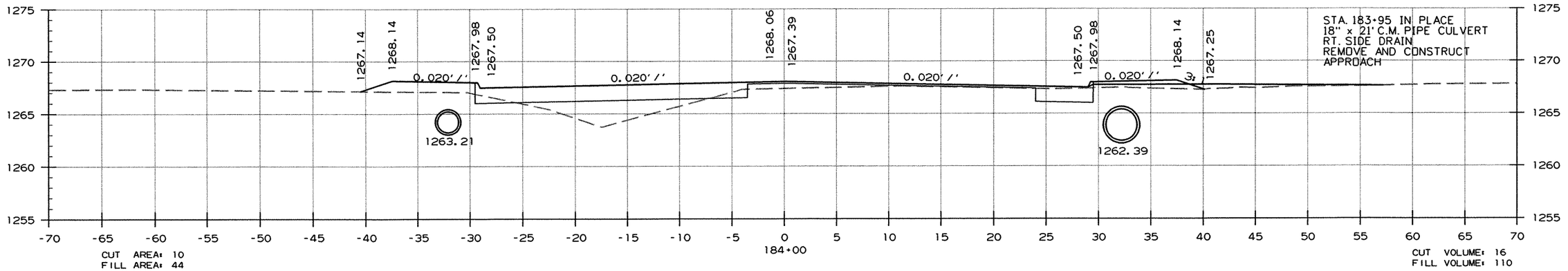
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	190	241

(2) CROSS SECTIONS





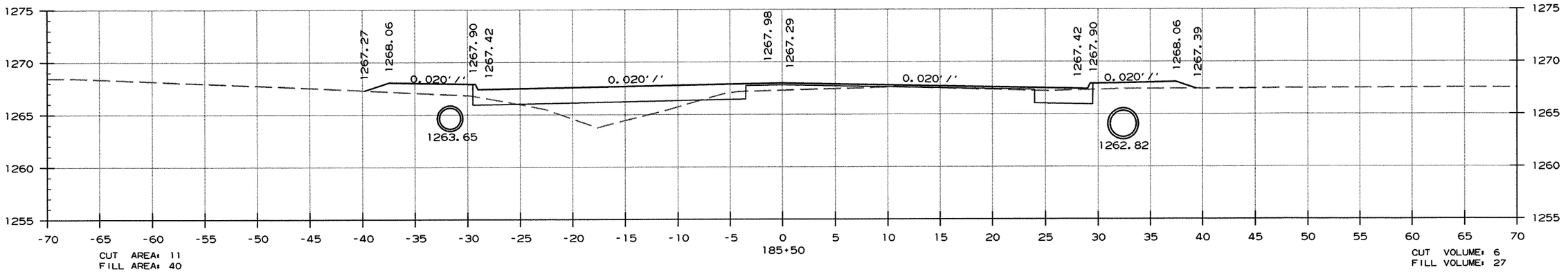


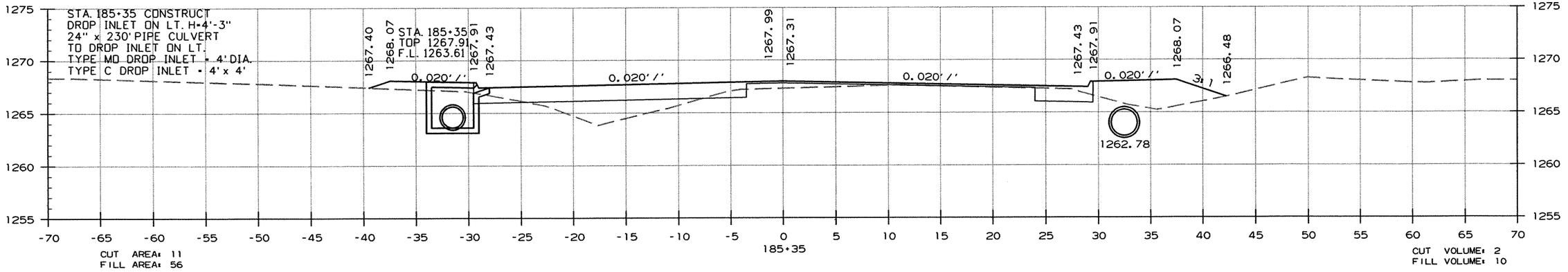
CROSS SECTION STA. 184+00 TO STA. 185+00

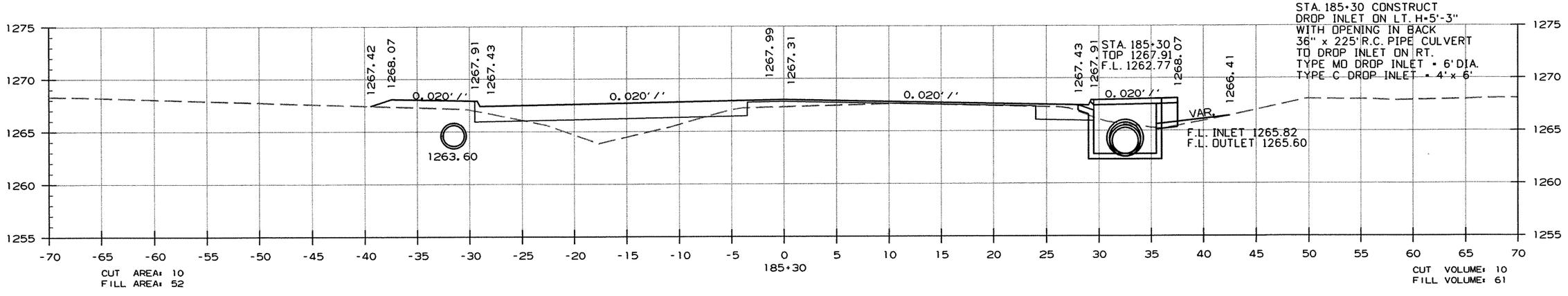
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	191	241

(2) CROSS SECTIONS





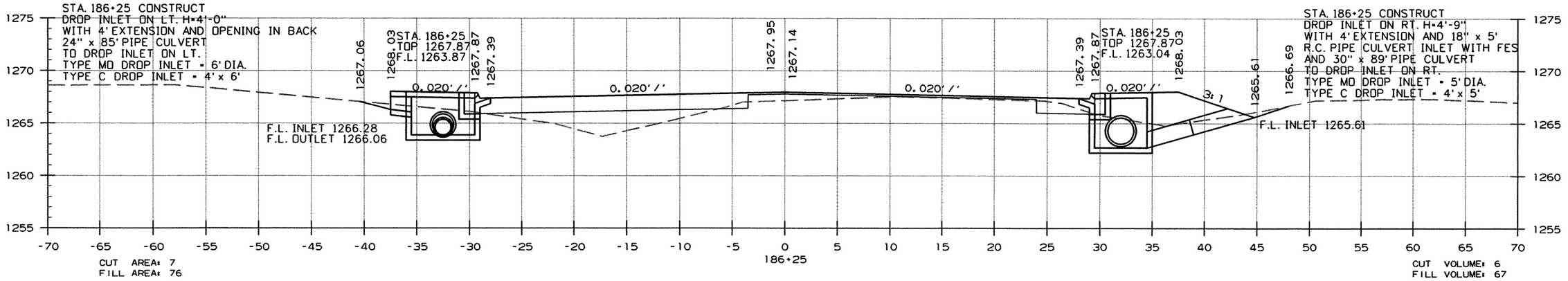


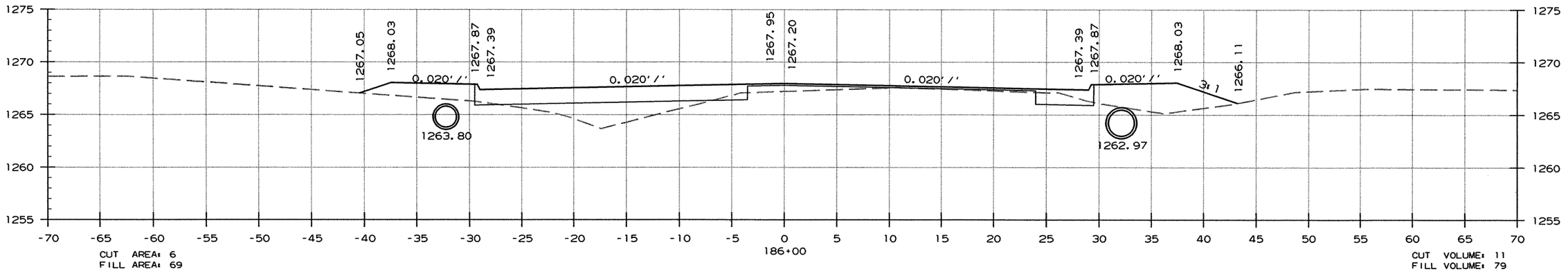
CROSS SECTION STA. 185+30 TO STA. 185+50

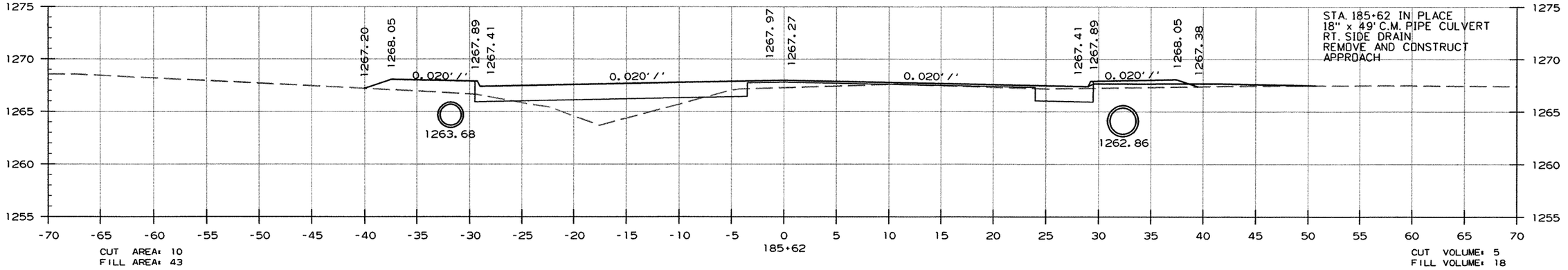
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	192	241

(2) CROSS SECTIONS





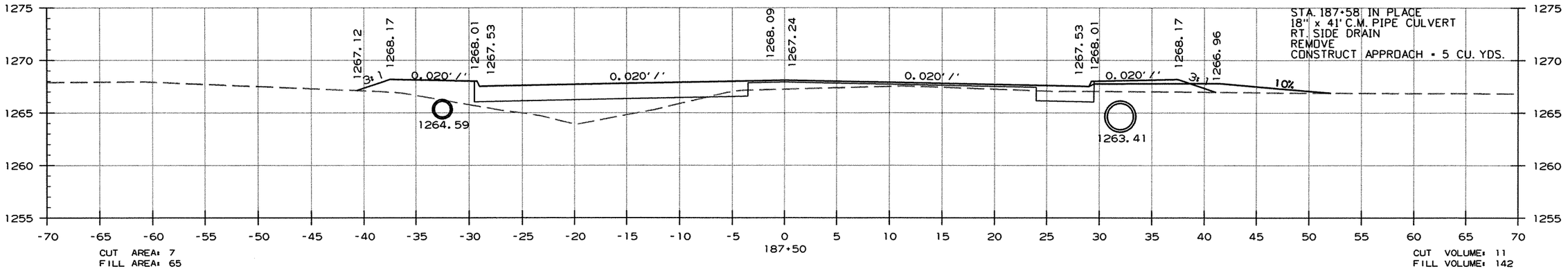


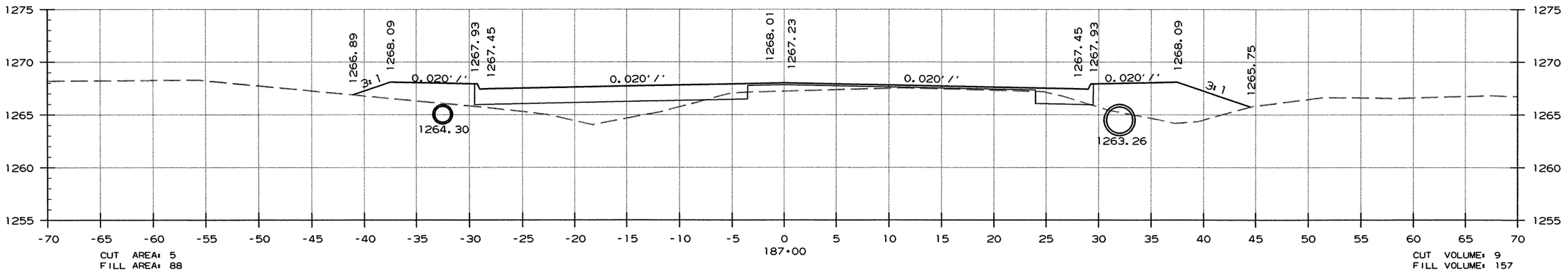
CROSS SECTION STA. 185+62 TO STA. 186+25

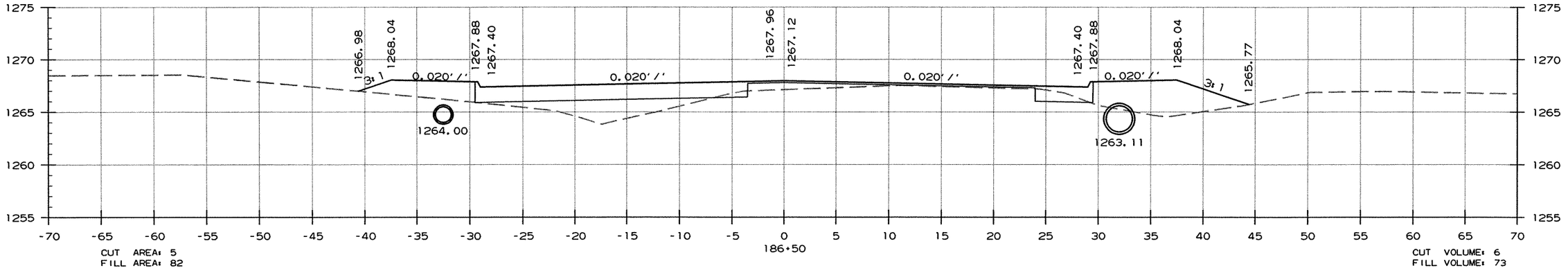
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	193	241

(2) CROSS SECTIONS





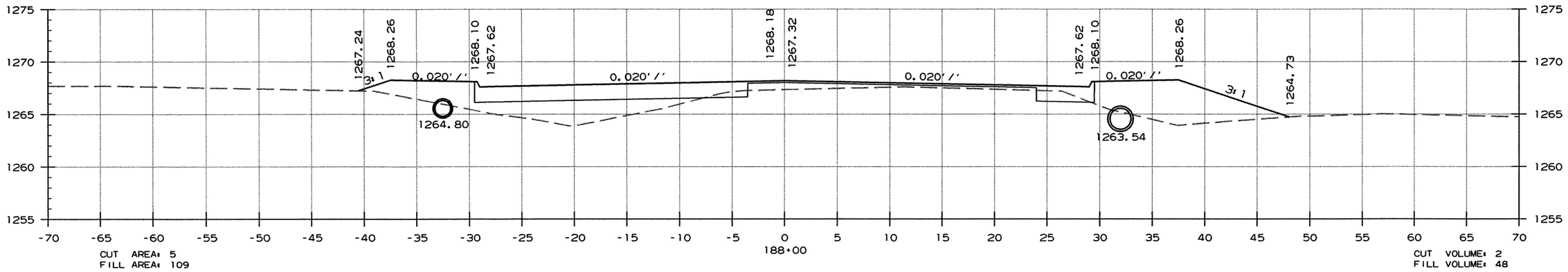


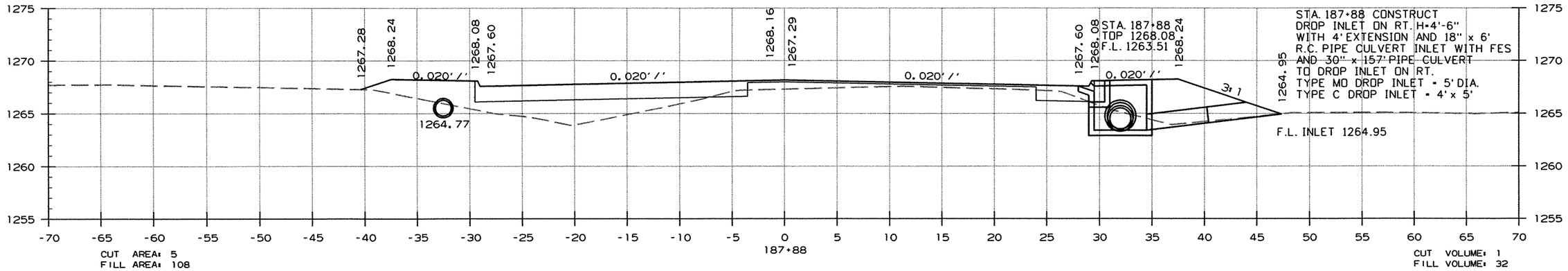
CROSS SECTION STA. 186+50 TO STA. 187+50

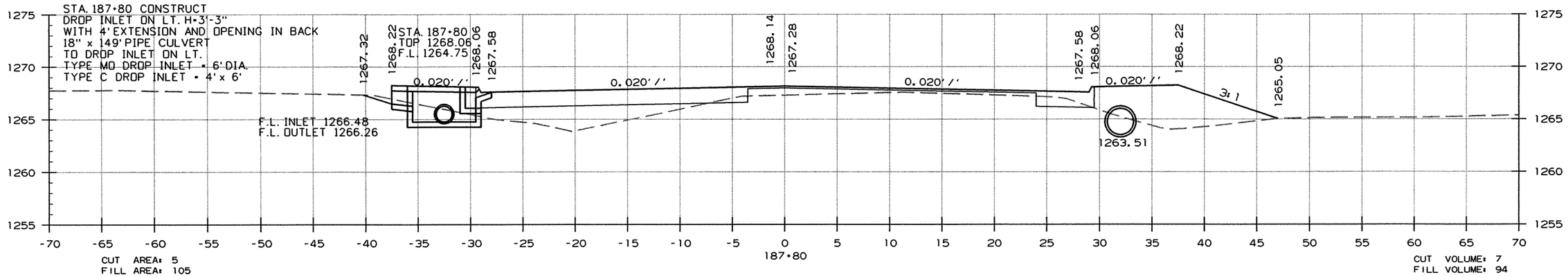
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	194	241

(2) CROSS SECTIONS





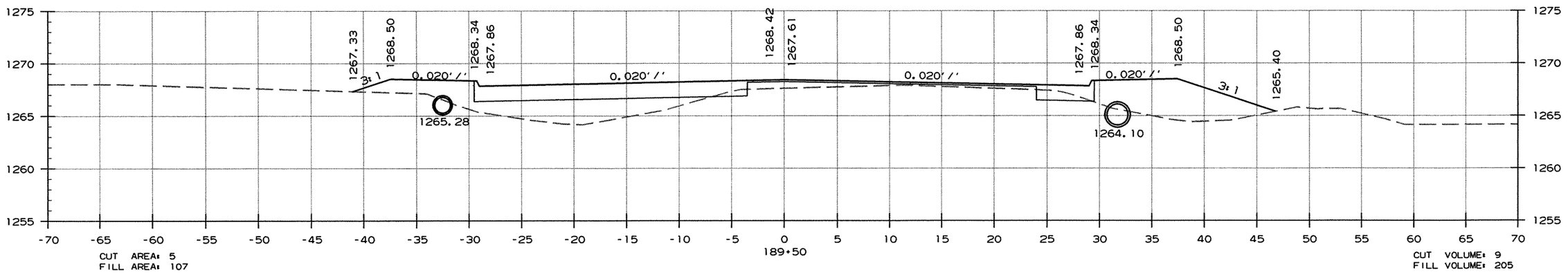


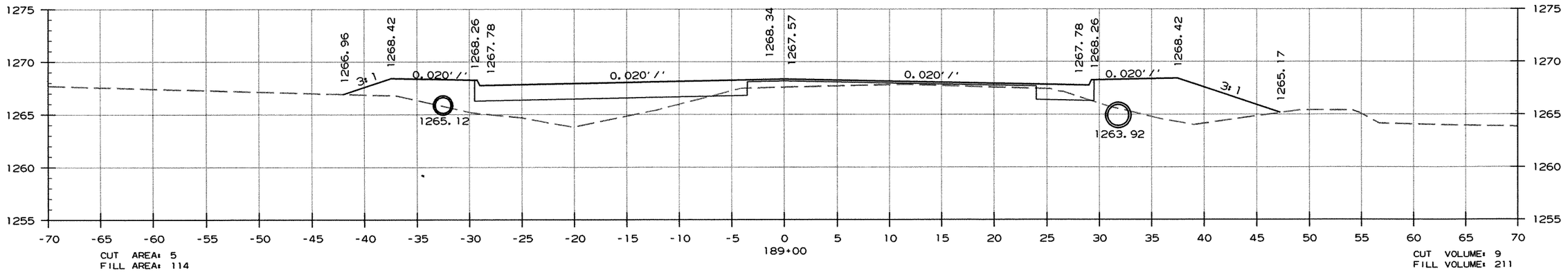
CROSS SECTION STA. 187+80 TO STA. 188+00

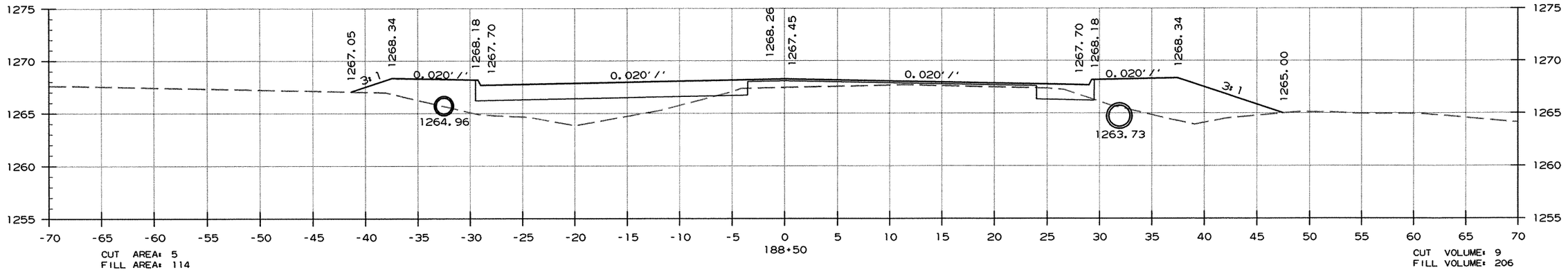
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	195	241

(2) CROSS SECTIONS





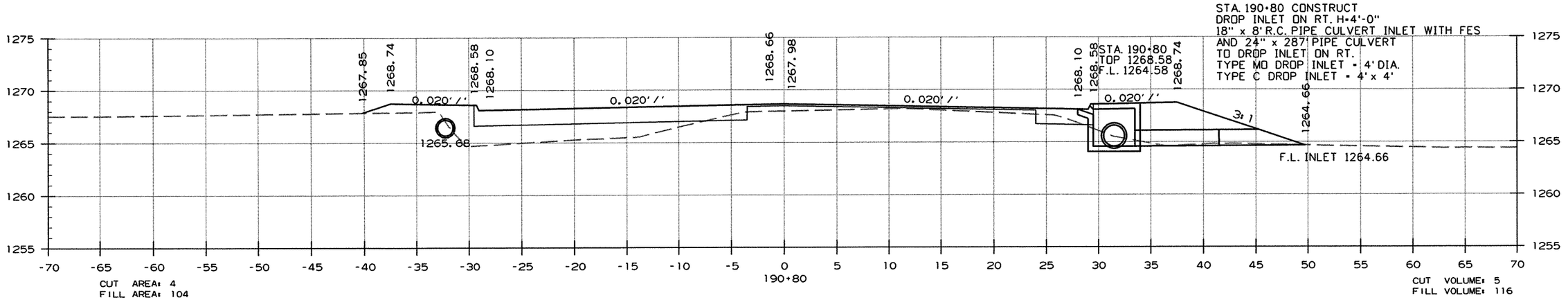


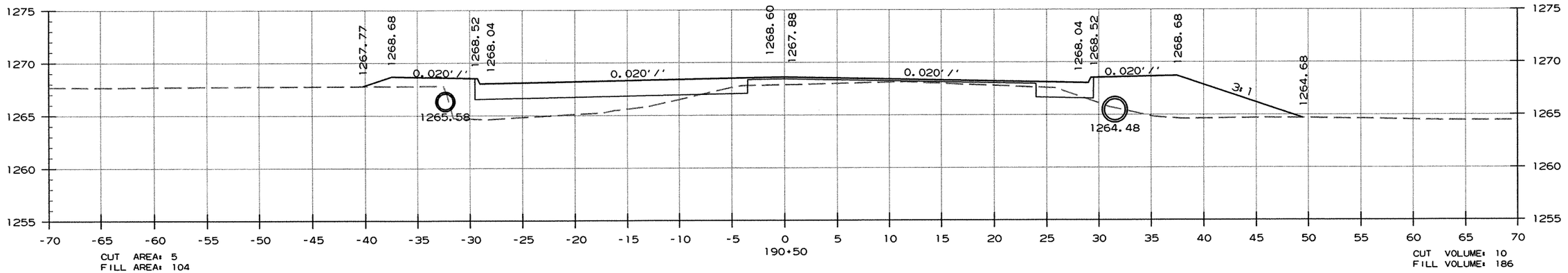
CROSS SECTION STA. 188+50 TO STA. 189+50

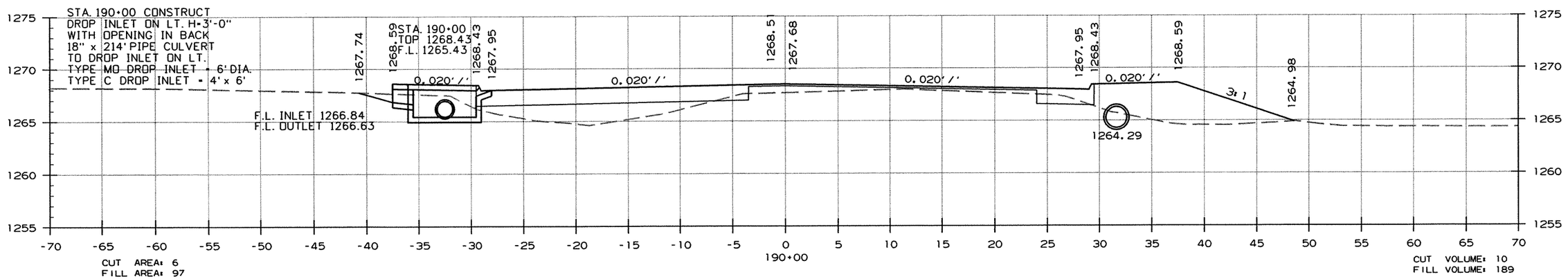
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	196	241

(2) CROSS SECTIONS





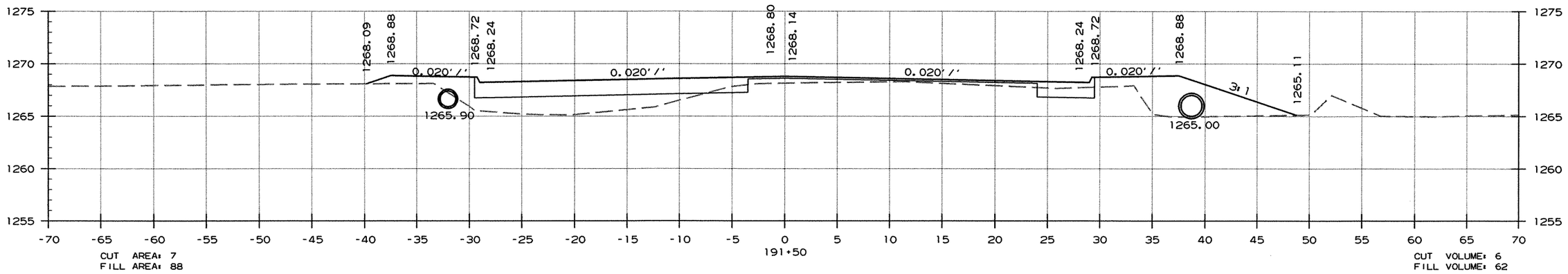


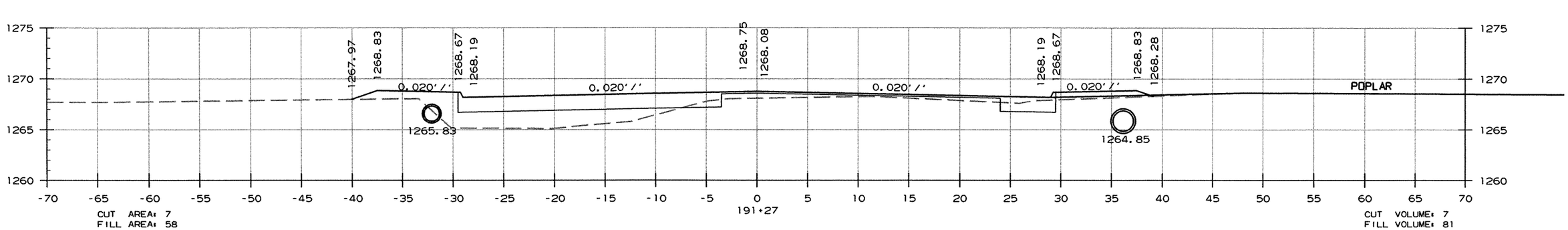
CROSS SECTION STA. 190+00 TO STA. 190+80

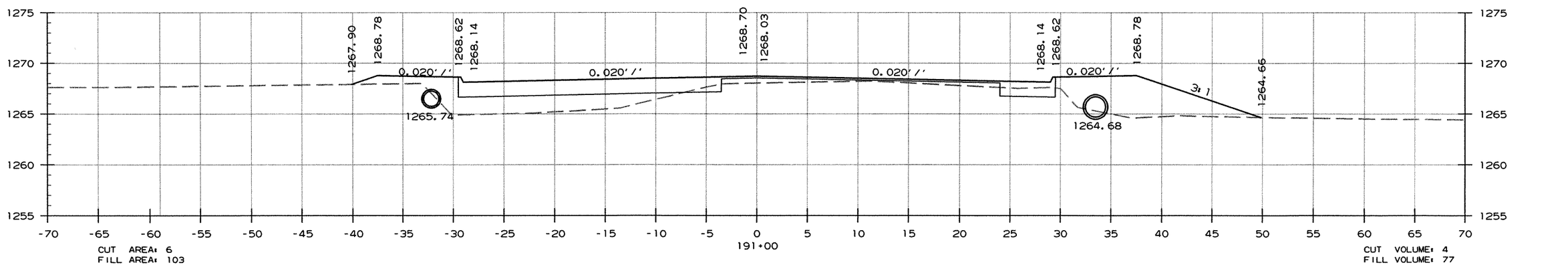
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	197	241

(2) CROSS SECTIONS





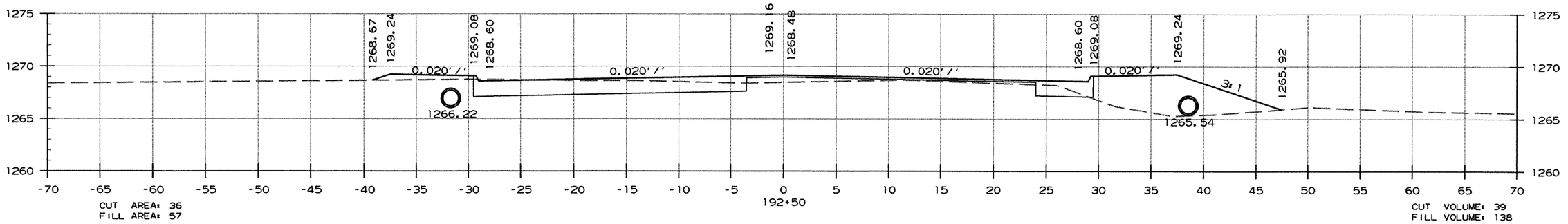


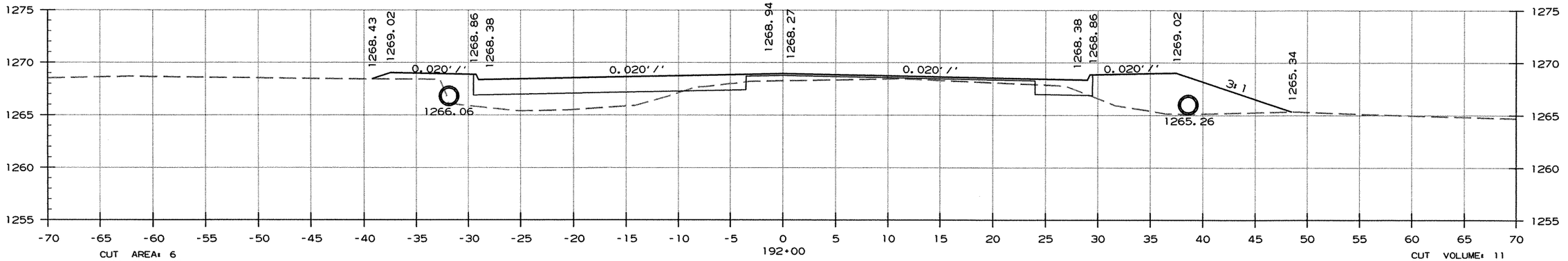
CROSS SECTION STA. 191+00 TO STA. 191+50

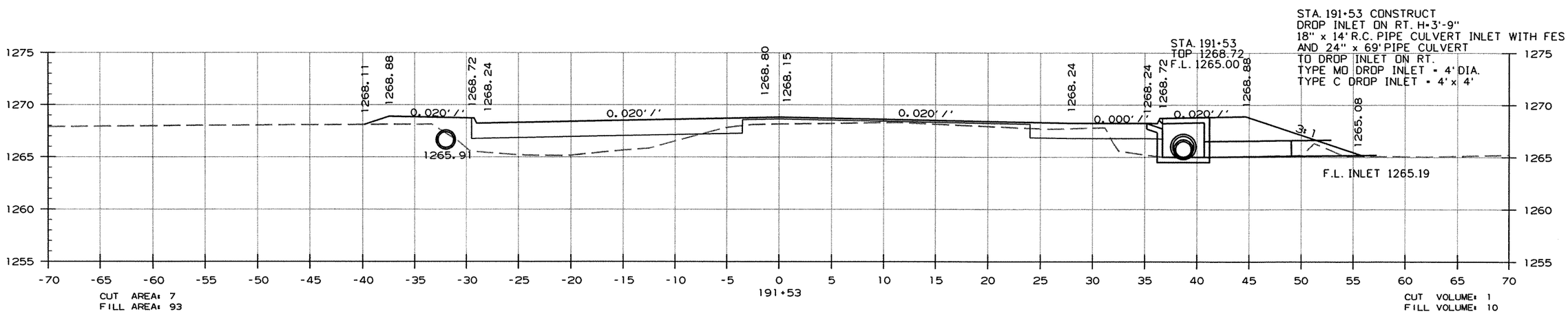
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	198	241

(2) CROSS SECTIONS





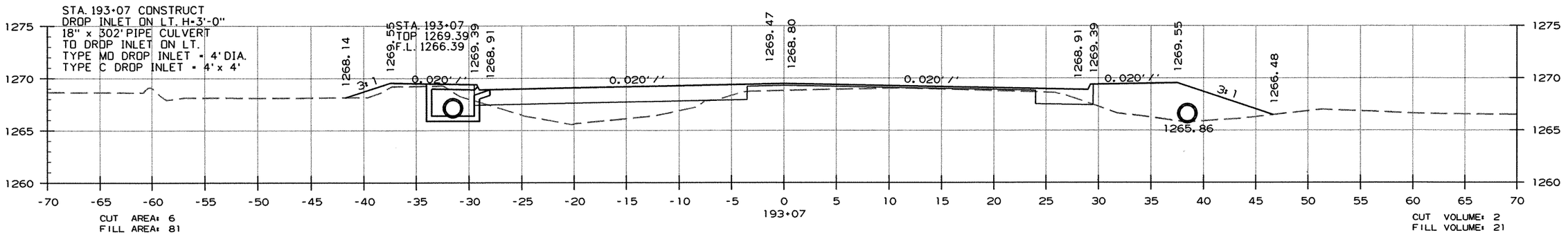


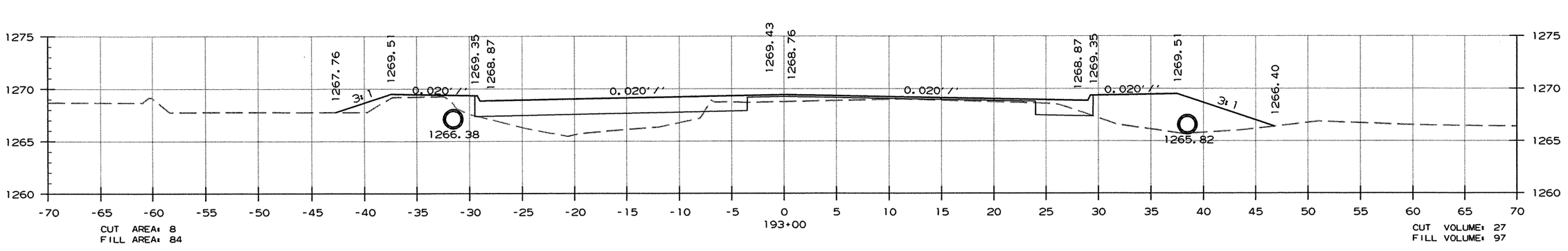
CROSS SECTION STA. 191+53 TO STA. 192+50

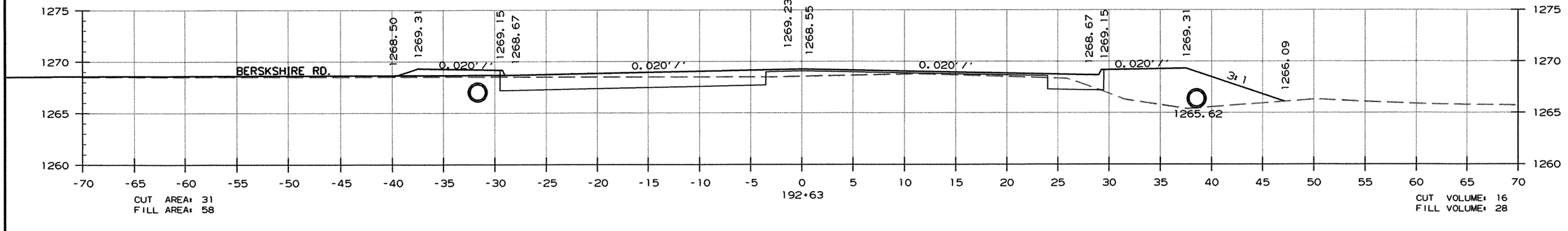
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	199	241

2 CROSS SECTIONS





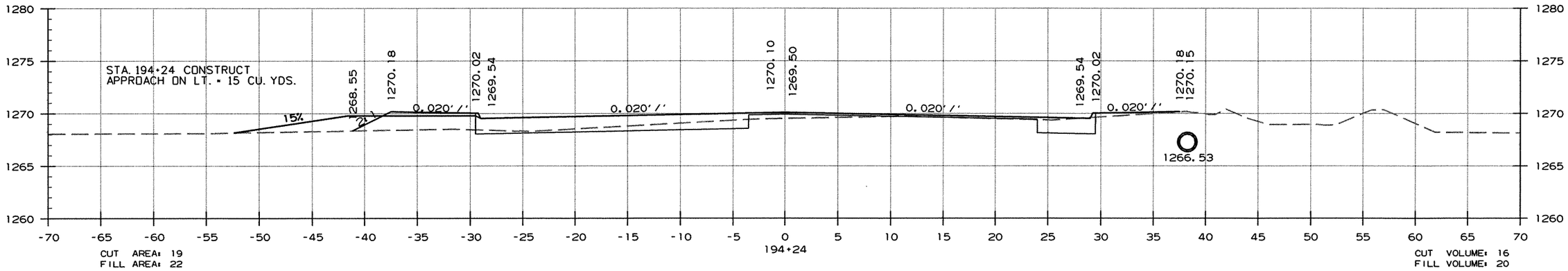


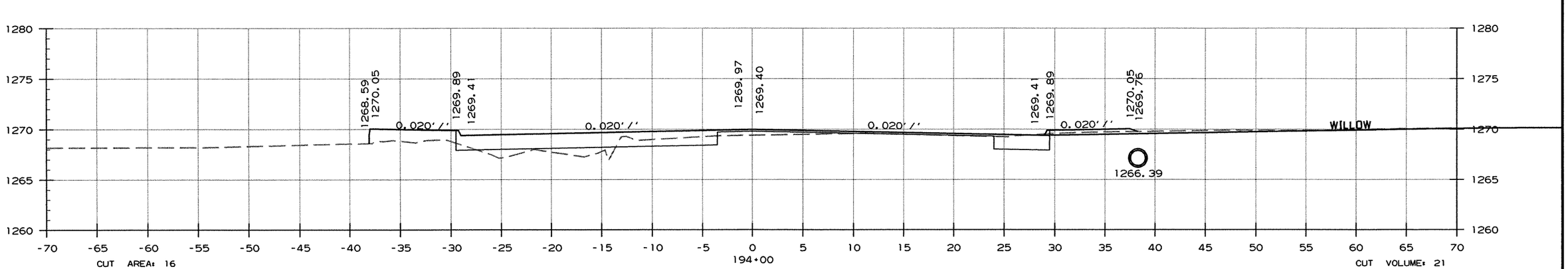
CROSS SECTION STA. 192+63 TO STA. 193+07

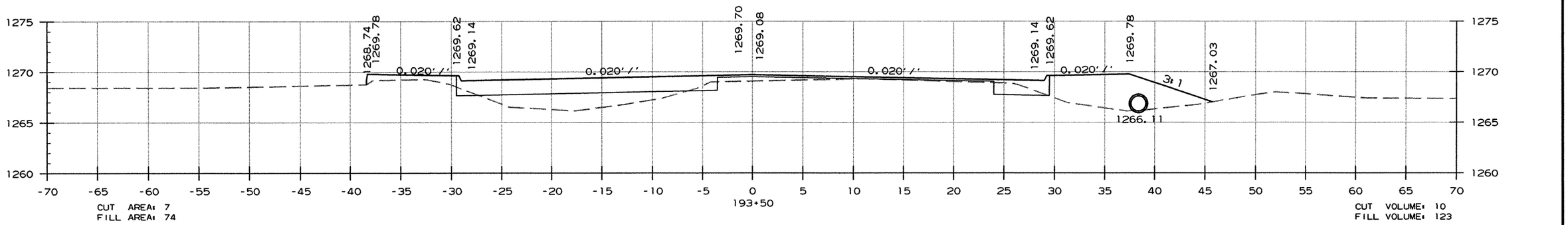
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	200	241

(2) CROSS SECTIONS





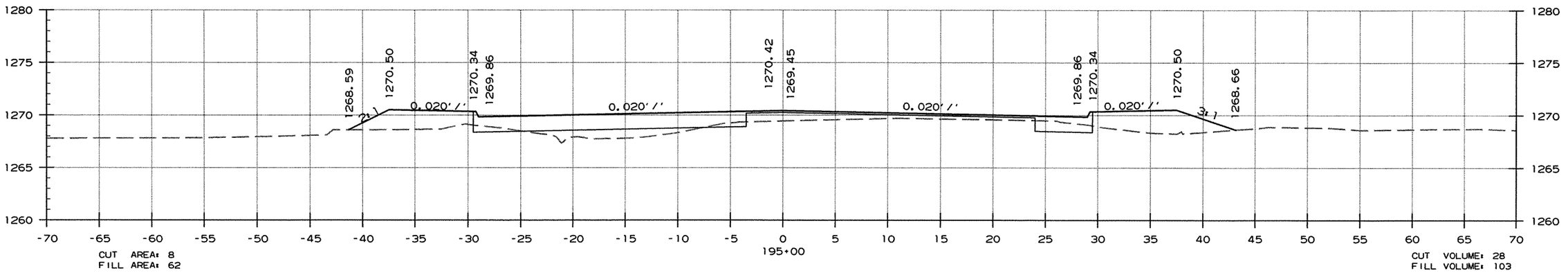


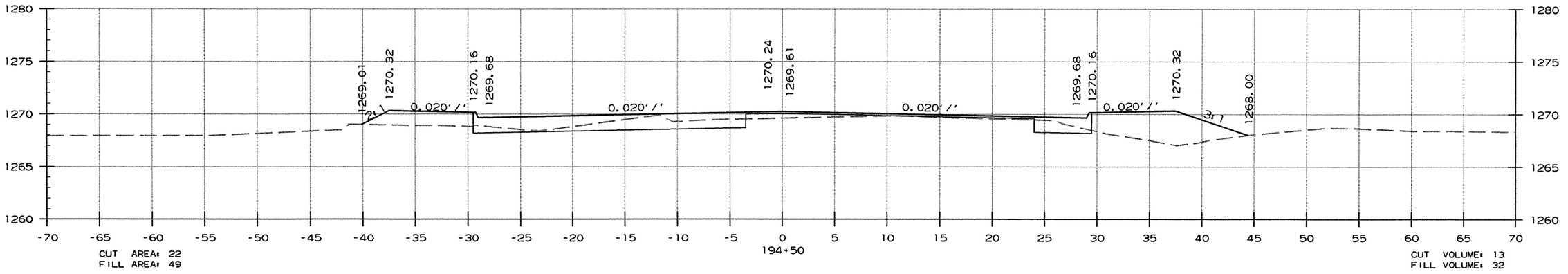
CROSS SECTION STA. 193+50 TO STA. 194+24

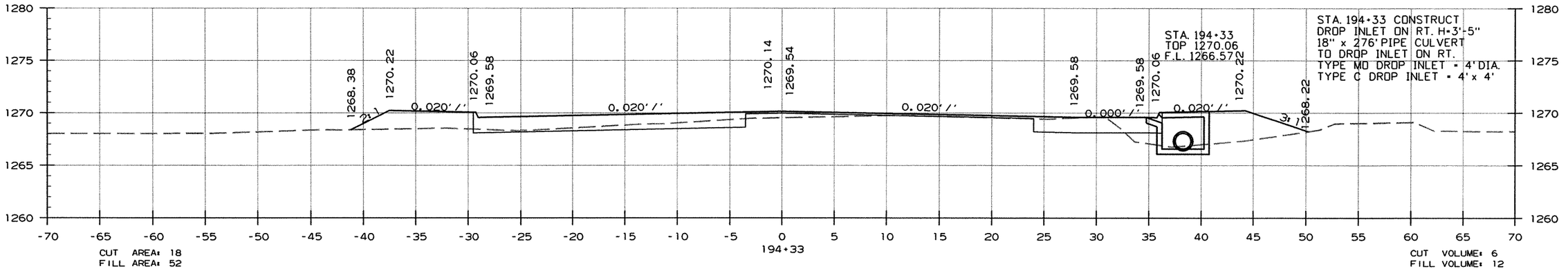
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	201	241

(2) CROSS SECTIONS





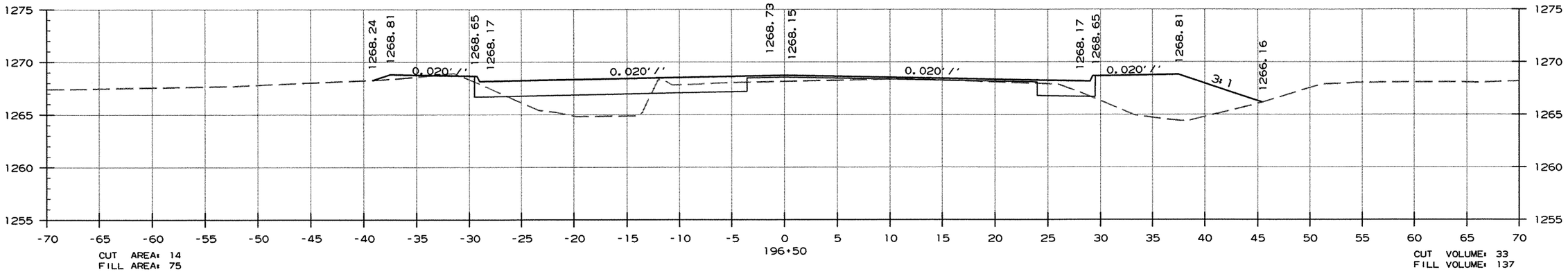


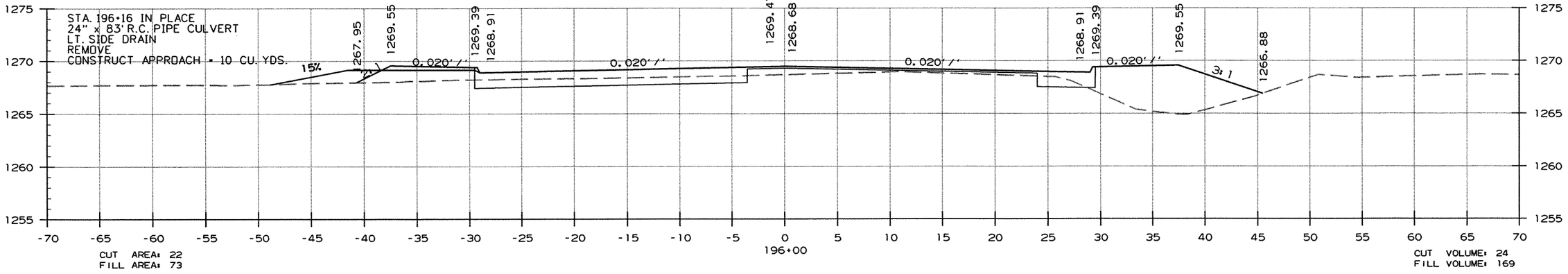
CROSS SECTION STA. 194+33 TO STA. 195+00

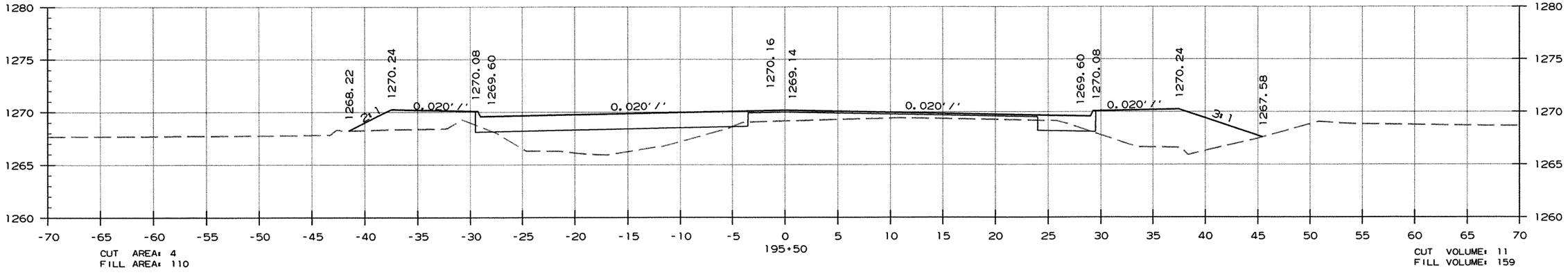
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	202	241

(2) CROSS SECTIONS





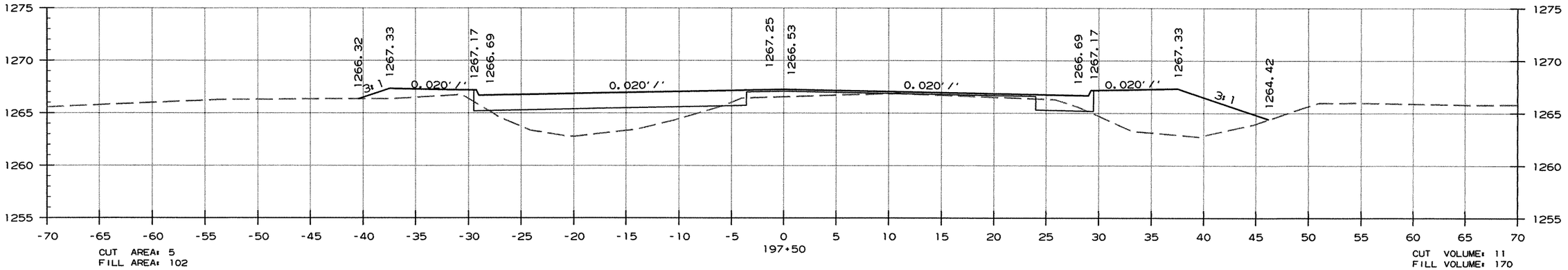


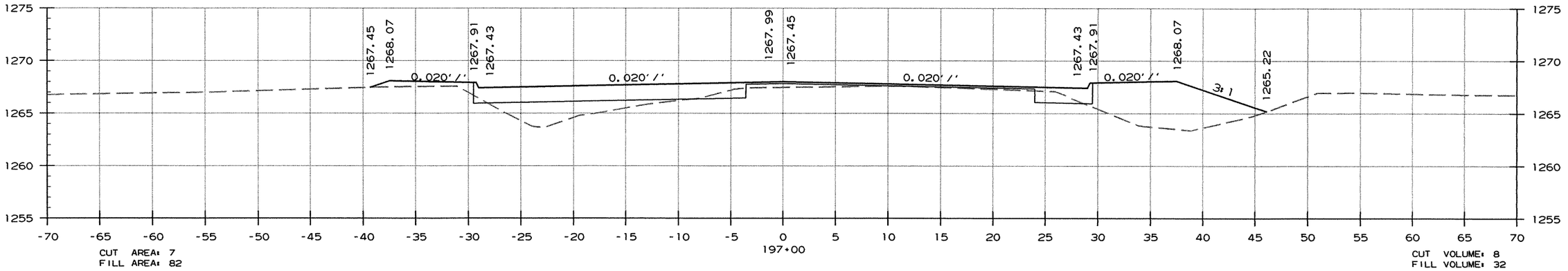
CROSS SECTION STA. 195+50 TO STA. 196+50

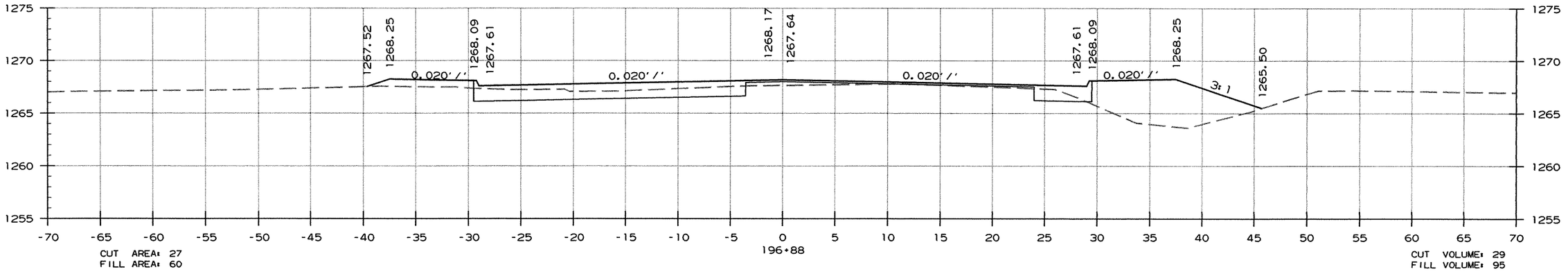
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	203	241

(2) CROSS SECTIONS





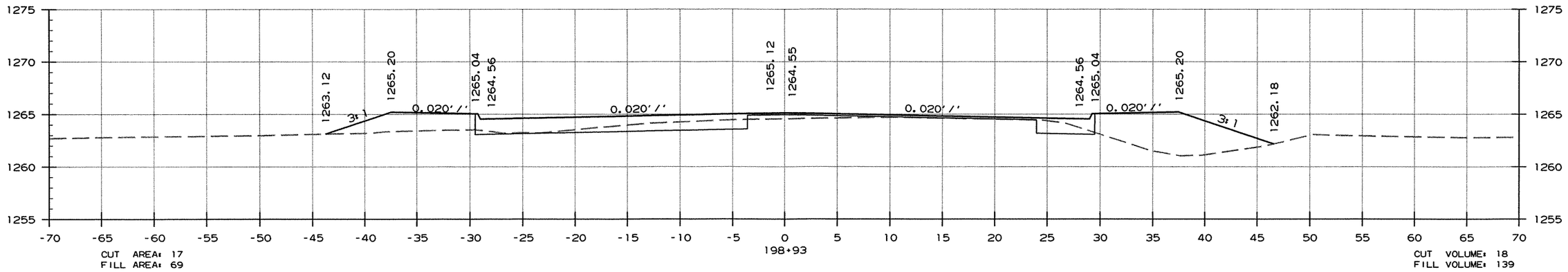


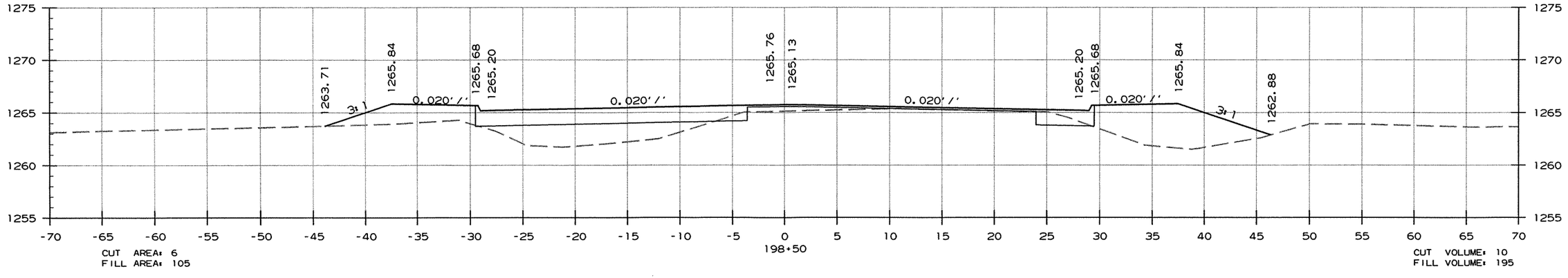
CROSS SECTION STA. 196+88 TO STA. 197+50

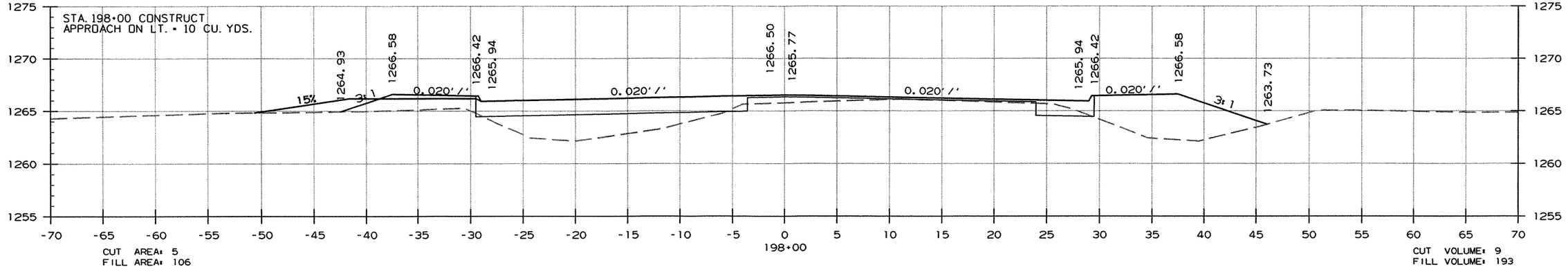
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	204	241

(2) CROSS SECTIONS





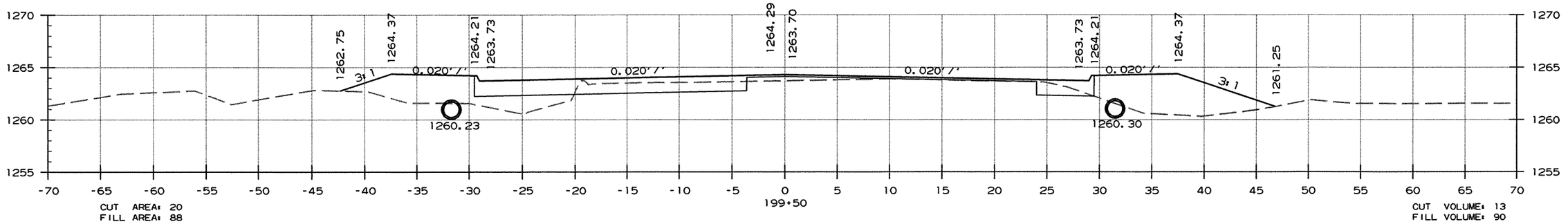


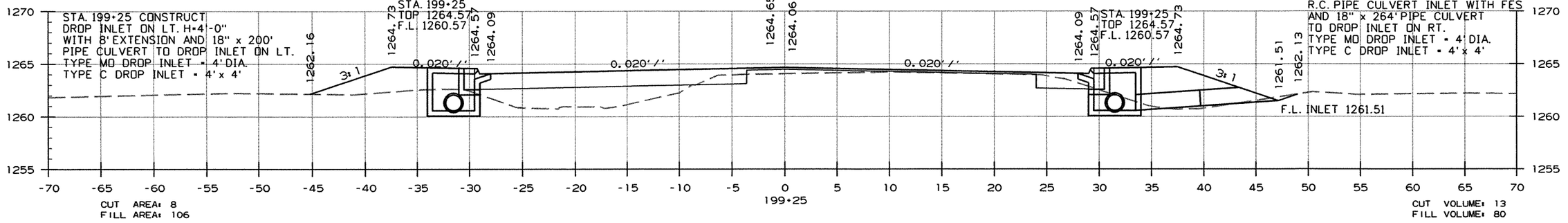
CROSS SECTION STA. 198+00 TO STA. 198+93

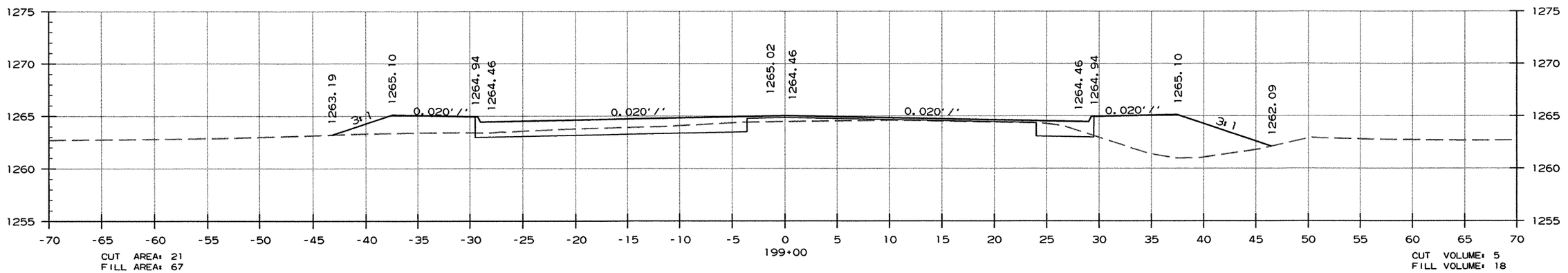
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	205	241

(2) CROSS SECTIONS





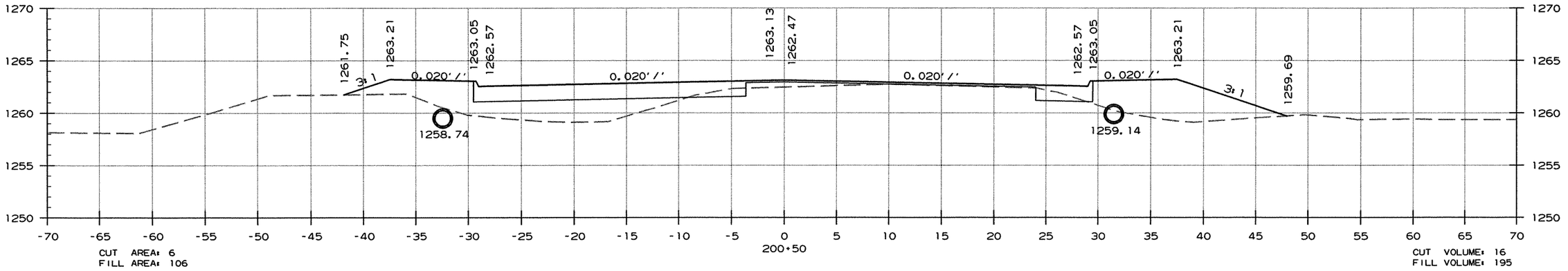


CROSS SECTION STA. 199+00 TO STA. 199+50

r090174.dgn 3/3/2010

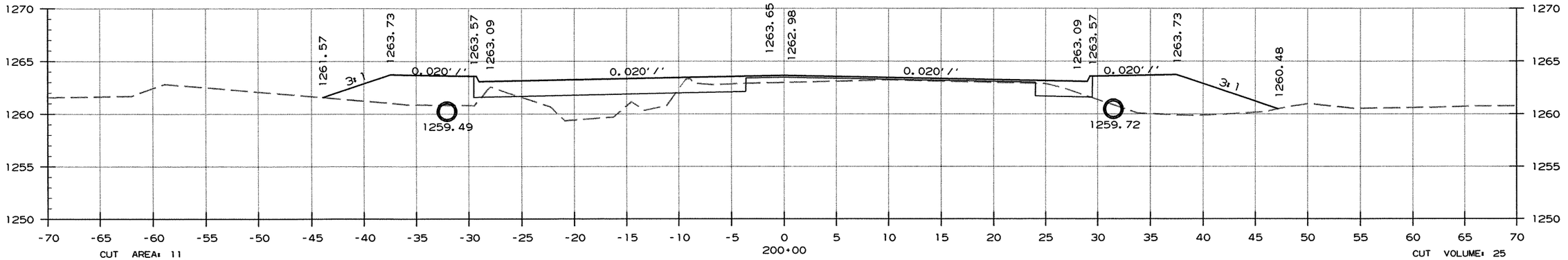
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	206	241

(2) CROSS SECTIONS



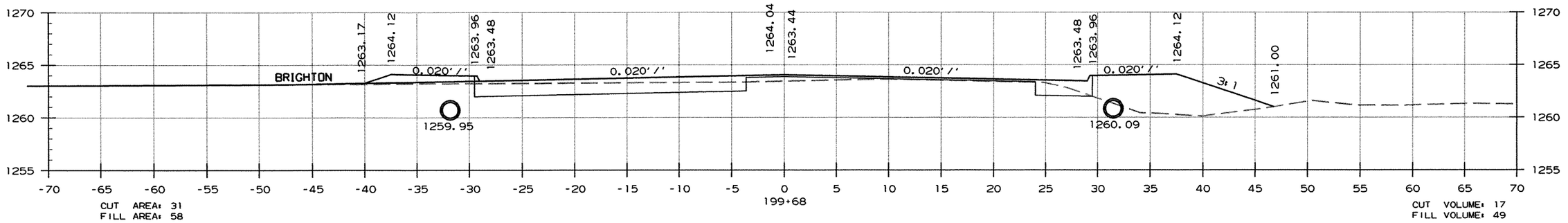
CUT AREA: 6
FILL AREA: 106

CUT VOLUME: 16
FILL VOLUME: 195



CUT AREA: 11
FILL AREA: 105

CUT VOLUME: 25
FILL VOLUME: 97



CUT AREA: 31
FILL AREA: 58

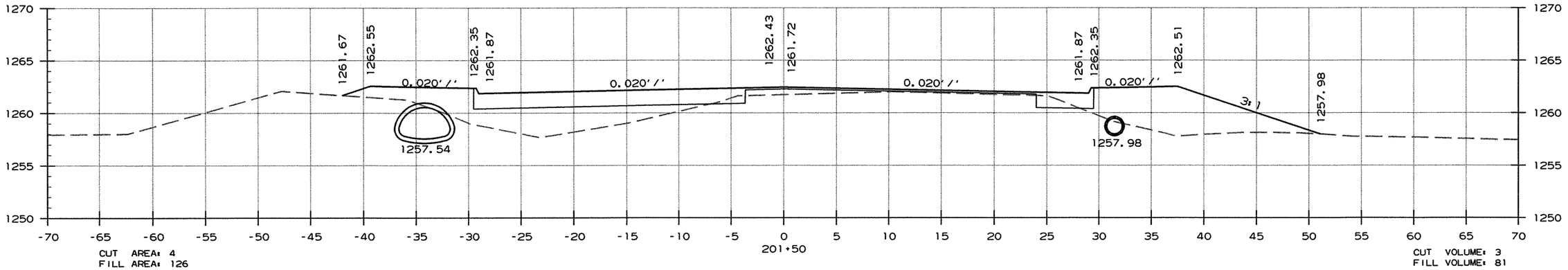
CUT VOLUME: 17
FILL VOLUME: 49

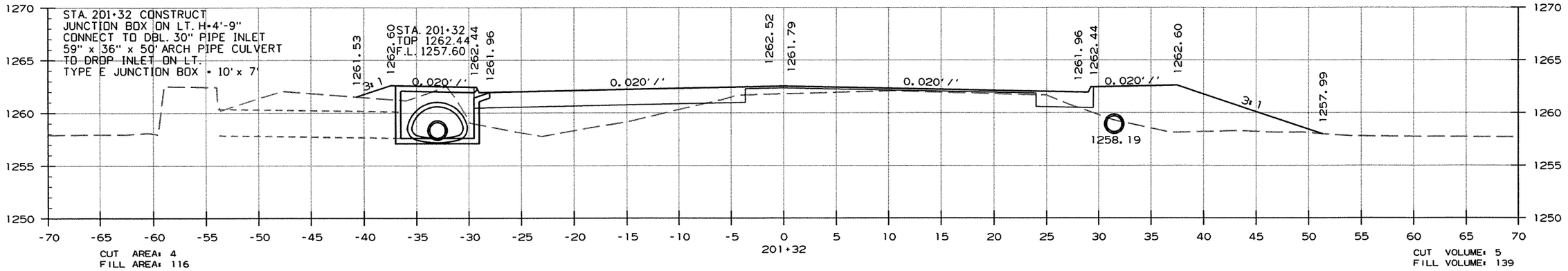
CROSS SECTION STA. 199+68 TO STA. 200+50

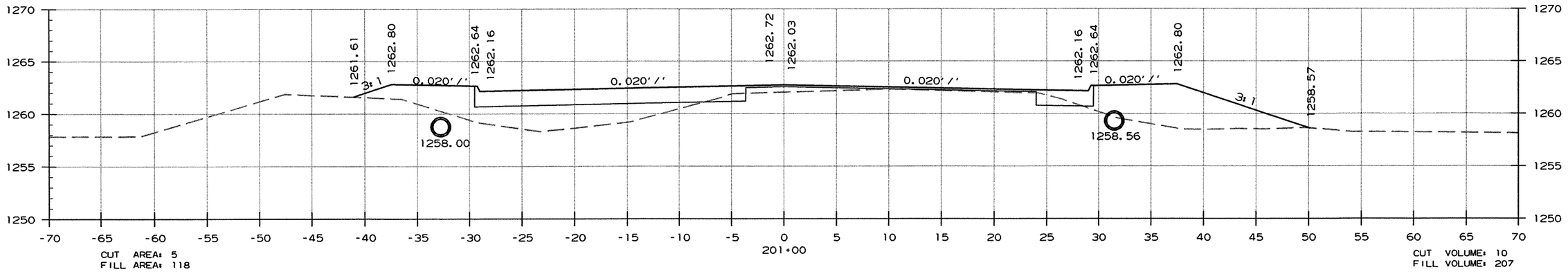
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	207	241

(2) CROSS SECTIONS





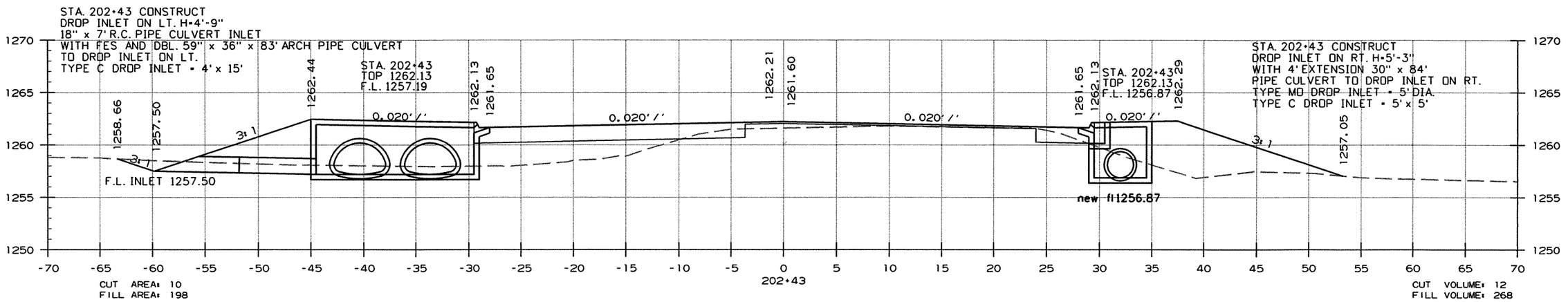


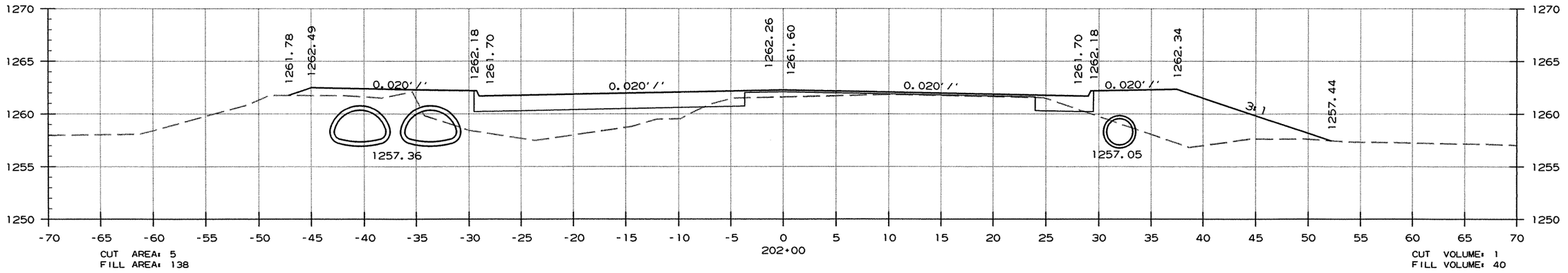
CROSS SECTION STA. 201+00 TO STA. 201+50

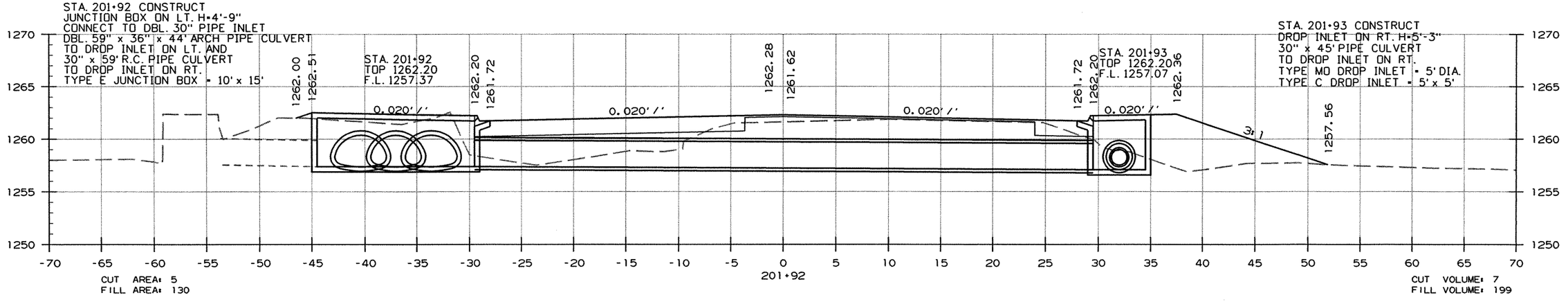
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	208	241

(2) CROSS SECTIONS





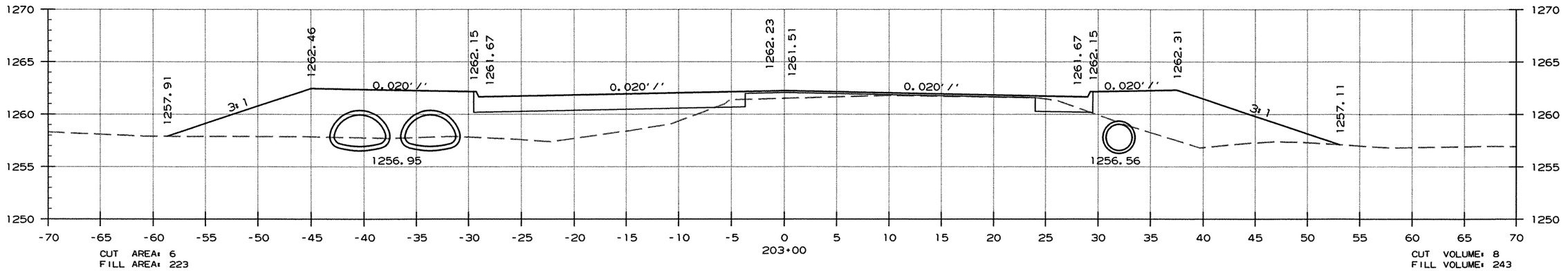


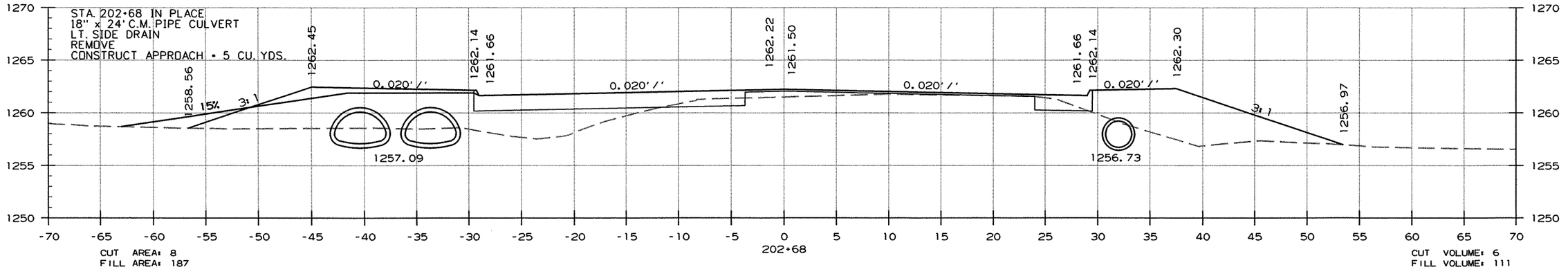
CROSS SECTION STA. 201+92 TO STA. 202+43

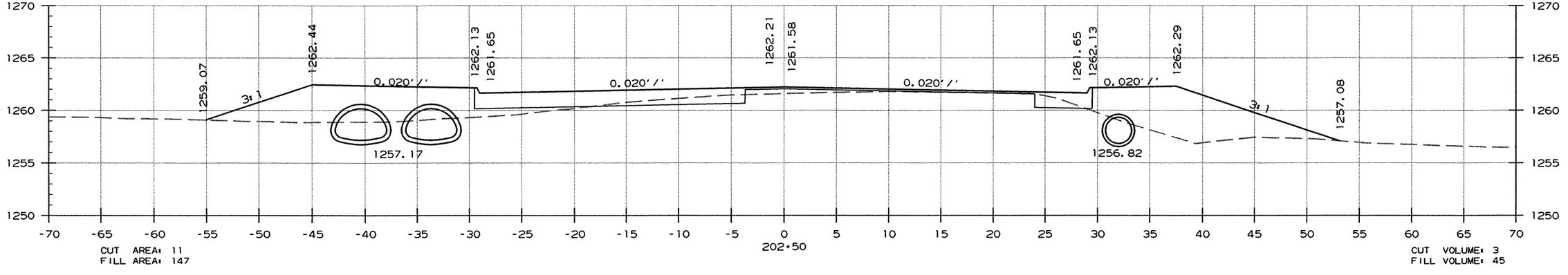
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	209	241

(2) CROSS SECTIONS





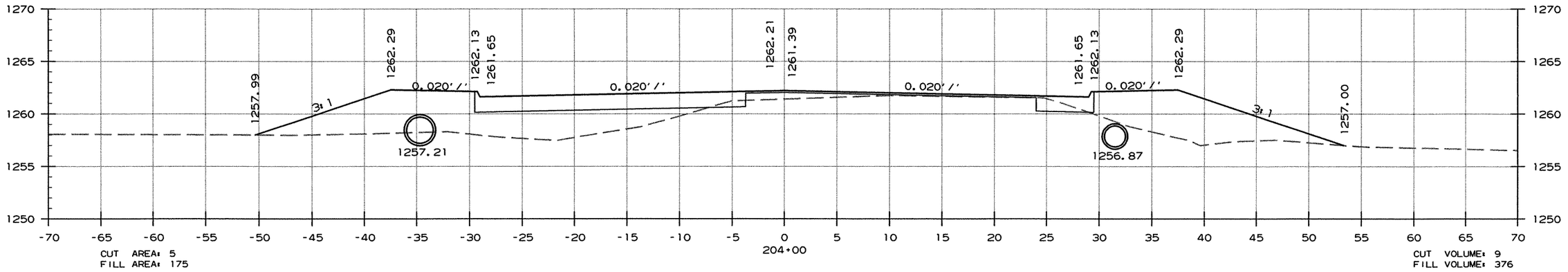


CROSS SECTION STA. 202+50 TO STA. 203+00

r090174.dgn 3/3/2010

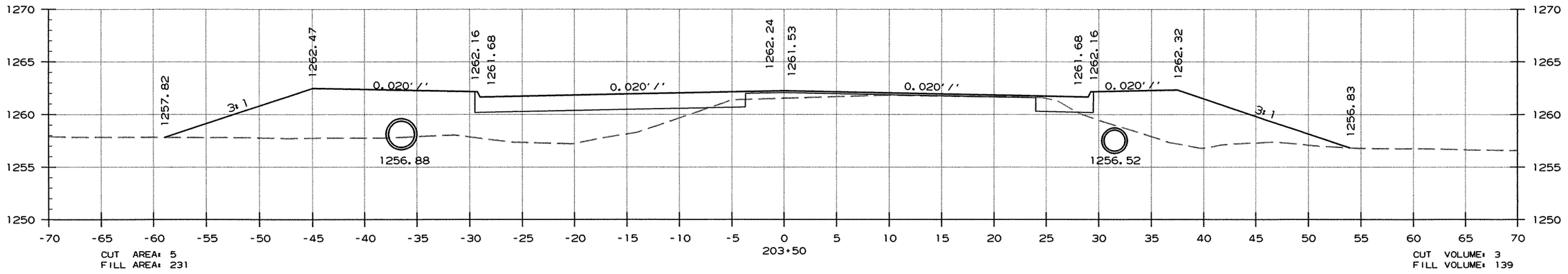
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	210	241

(2) CROSS SECTIONS



CUT AREA: 5
FILL AREA: 175

CUT VOLUME: 9
FILL VOLUME: 376



CUT AREA: 5
FILL AREA: 231

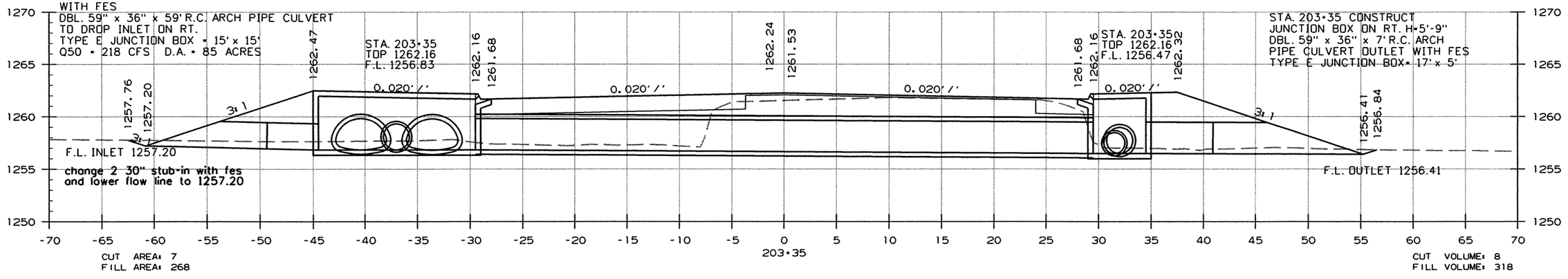
CUT VOLUME: 3
FILL VOLUME: 139

STA. 203+35 CONSTRUCT
JUNCTION BOX ON LT. H=5'-3"
DBL. 30" x 5' R.C. PIPE CULVERT INLET
WITH FES
DBL. 59" x 36" x 59' R.C. ARCH PIPE CULVERT
TO DROP INLET ON RT.
TYPE E JUNCTION BOX = 15' x 15'
Q50 = 218 CFS D.A. = 85 ACRES

STA. 203+35
TOP 1262.16
F.L. 1256.83

STA. 203+35
TOP 1262.16
F.L. 1256.47

STA. 203+35 CONSTRUCT
JUNCTION BOX ON RT. H=5'-9"
DBL. 59" x 36" x 7' R.C. ARCH
PIPE CULVERT OUTLET WITH FES
TYPE E JUNCTION BOX= 17' x 5'



F.L. INLET 1257.20

change 2 30" stub-in with fes and lower flow line to 1257.20

F.L. OUTLET 1256.41

CUT AREA: 7
FILL AREA: 268

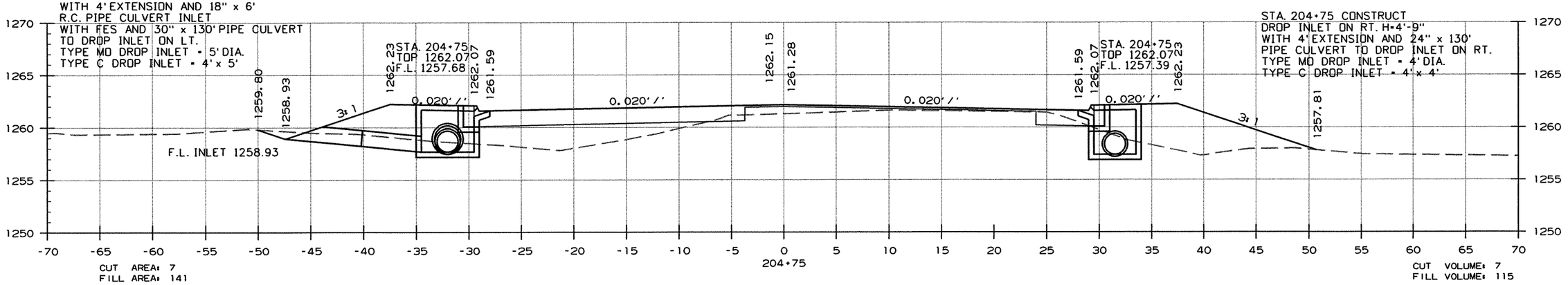
CUT VOLUME: 8
FILL VOLUME: 318

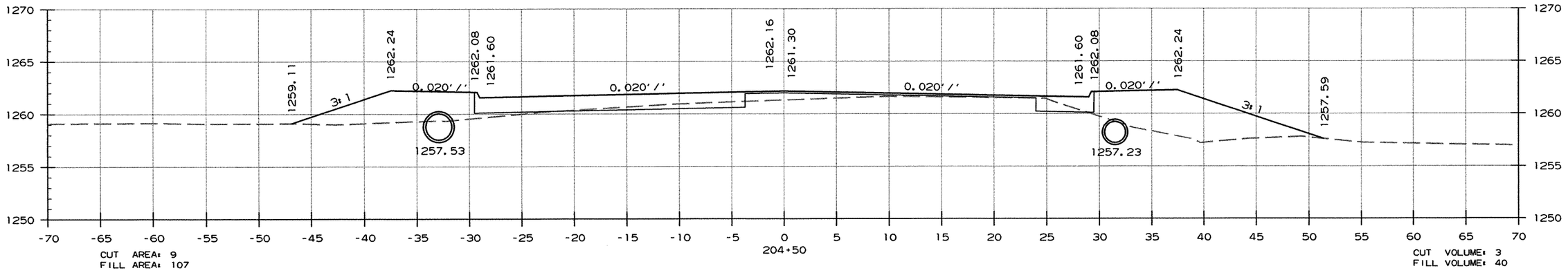
CROSS SECTION STA. 203+35 TO STA. 204+00

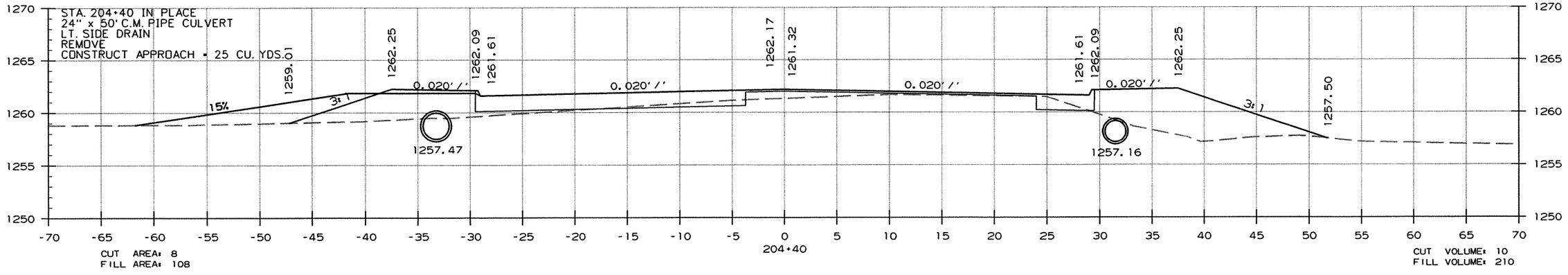
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	211	241

(2) CROSS SECTIONS





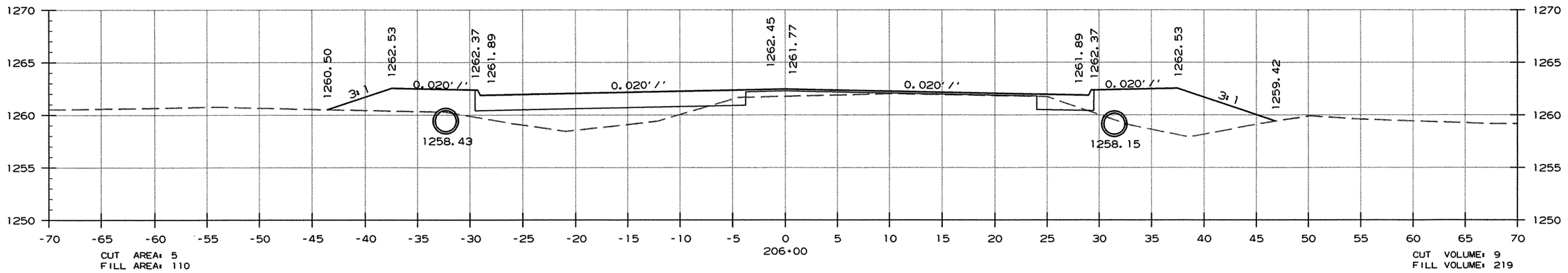


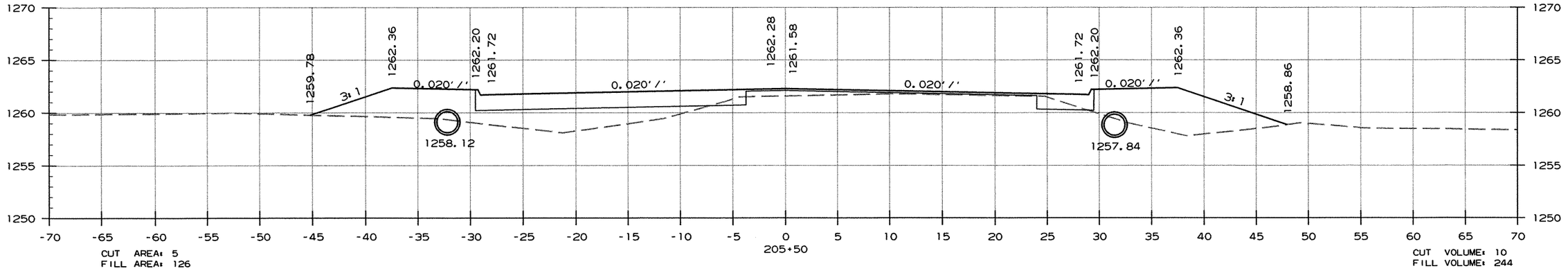
CROSS SECTION STA. 204+40 TO STA. 204+75

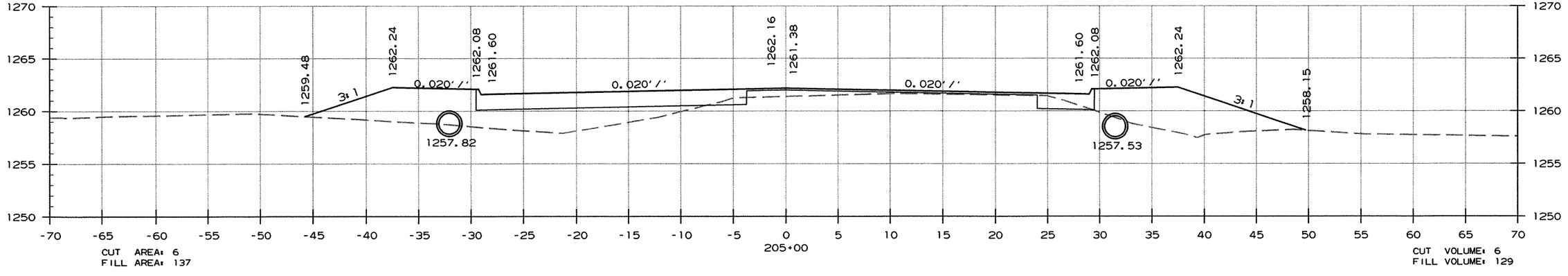
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	212	241

(2) CROSS SECTIONS





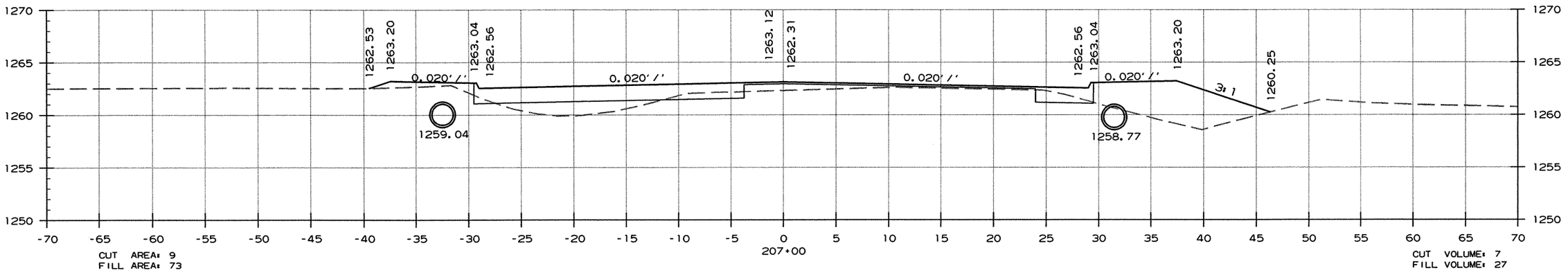


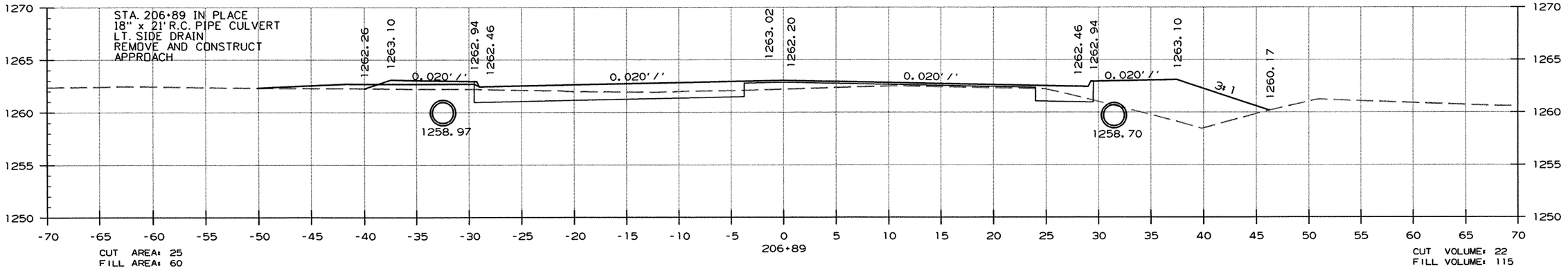
CROSS SECTION STA. 205+00 TO STA. 206+00

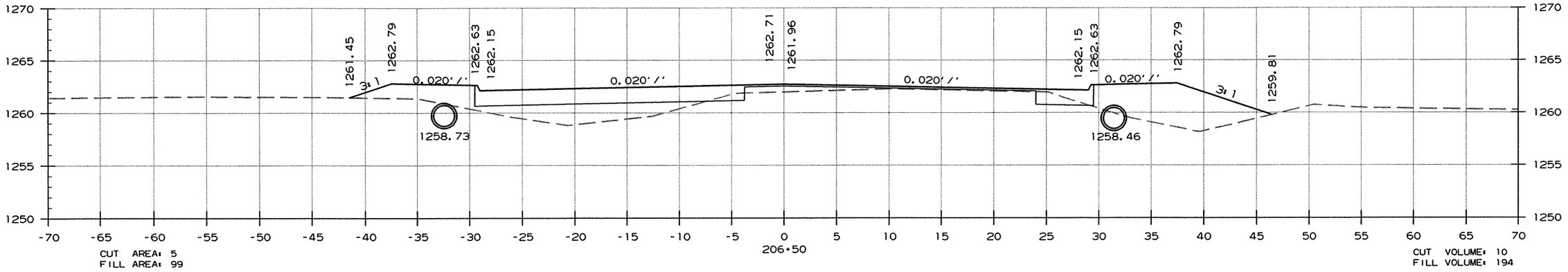
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	213	241

(2) CROSS SECTIONS





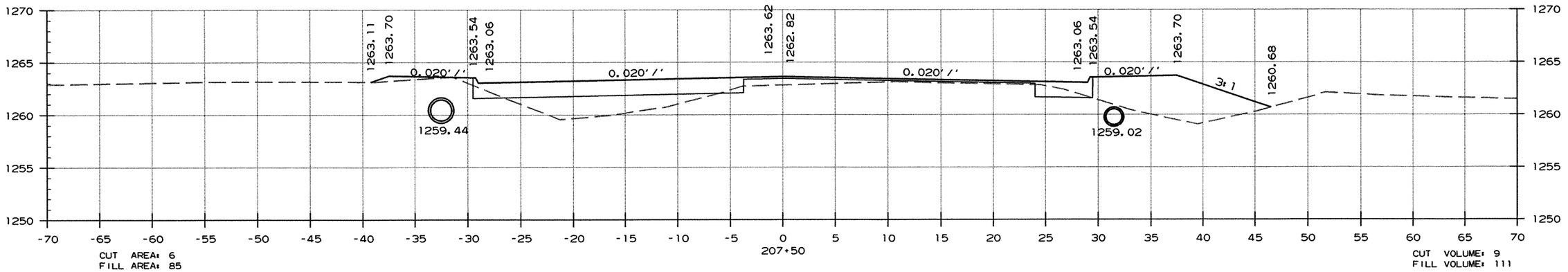


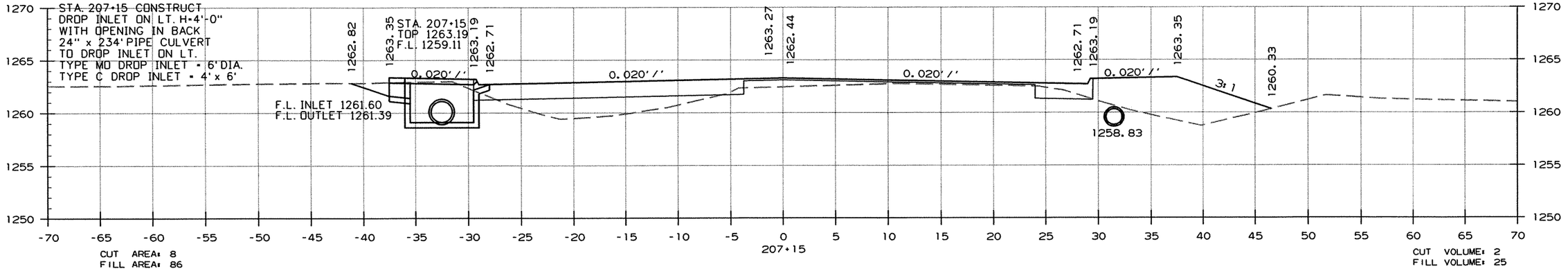
CROSS SECTION STA. 206+50 TO STA. 207+00

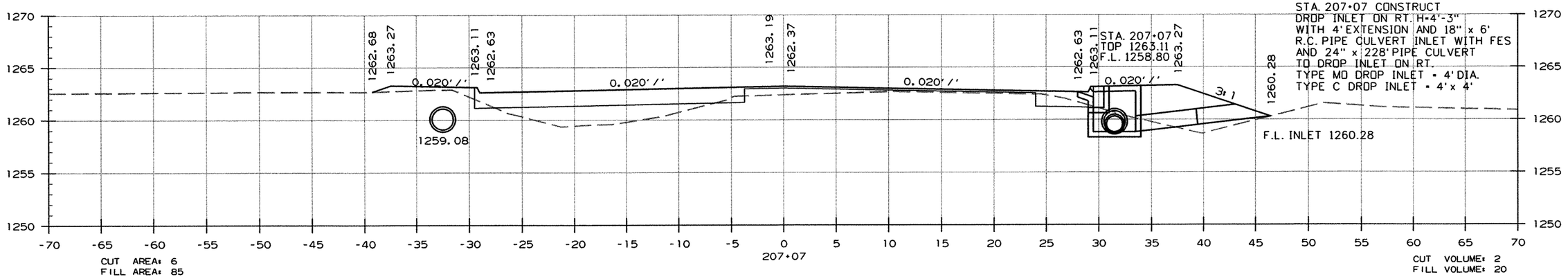
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	214	241

(2) CROSS SECTIONS





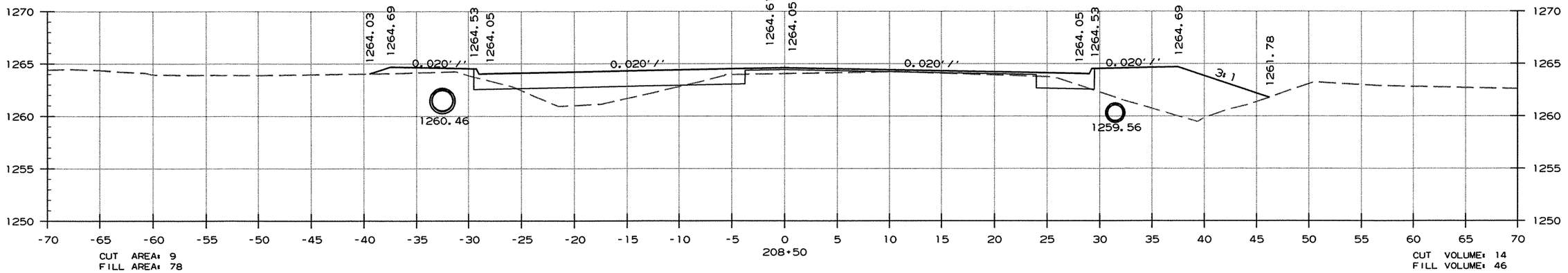


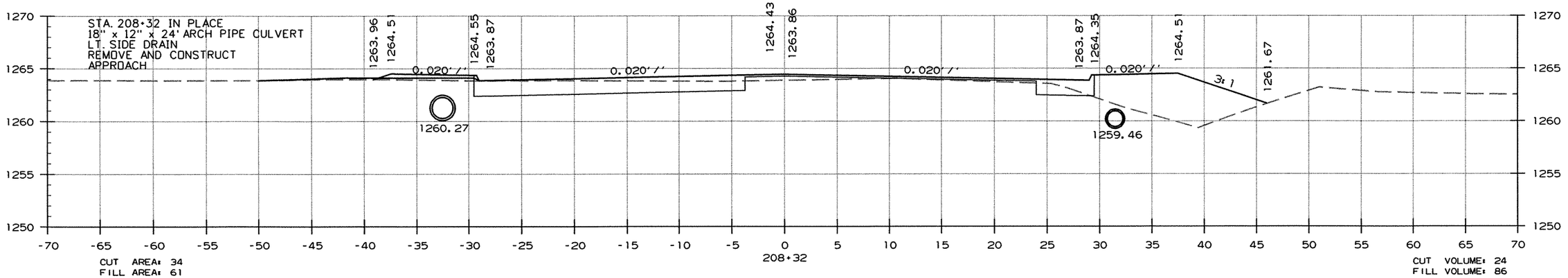
CROSS SECTION STA. 207+07 TO STA. 207+50

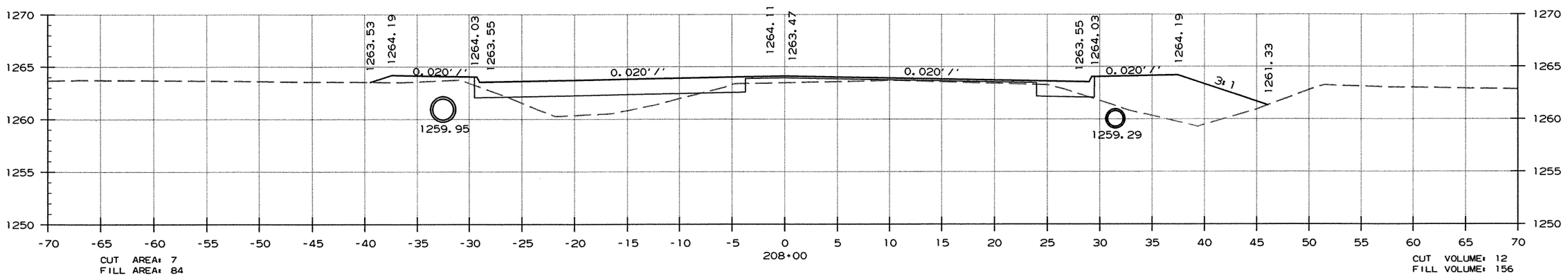
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	215	241

(2) CROSS SECTIONS





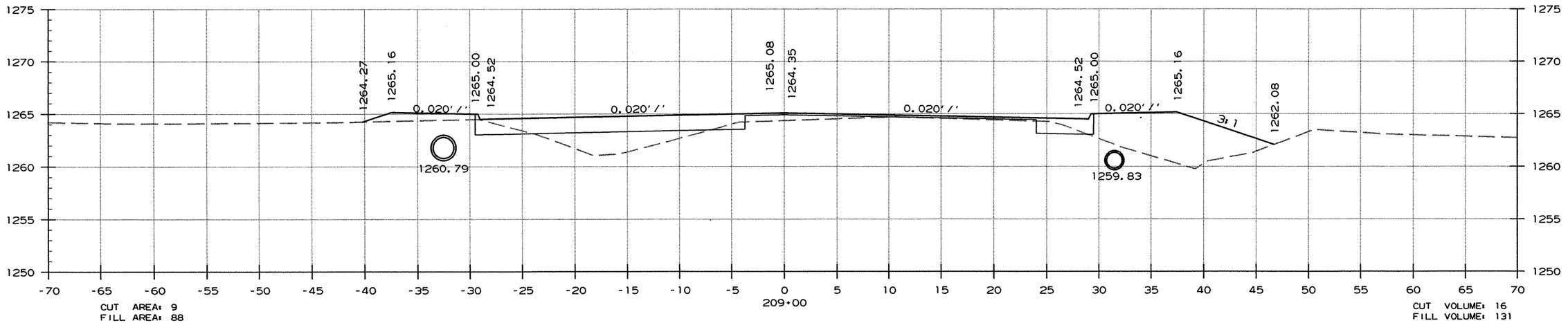


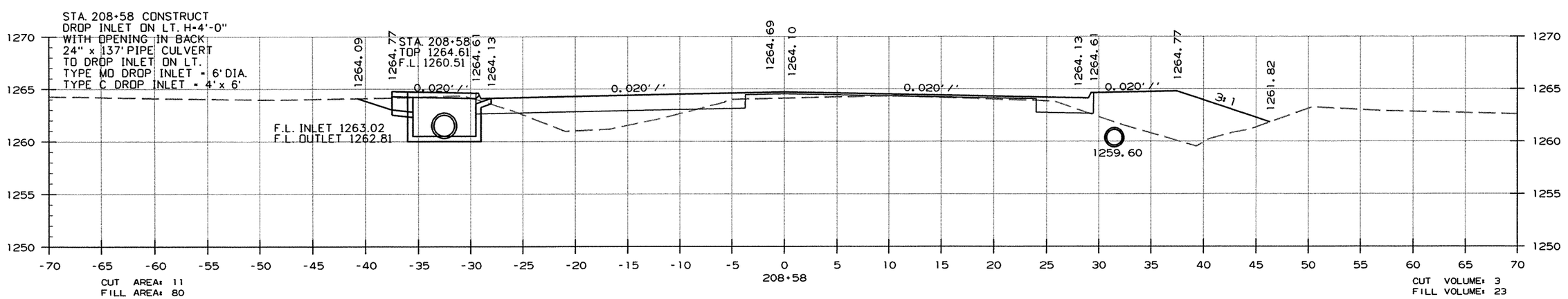
CROSS SECTION STA. 208+00 TO STA. 208+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	216	241

(2) CROSS SECTIONS



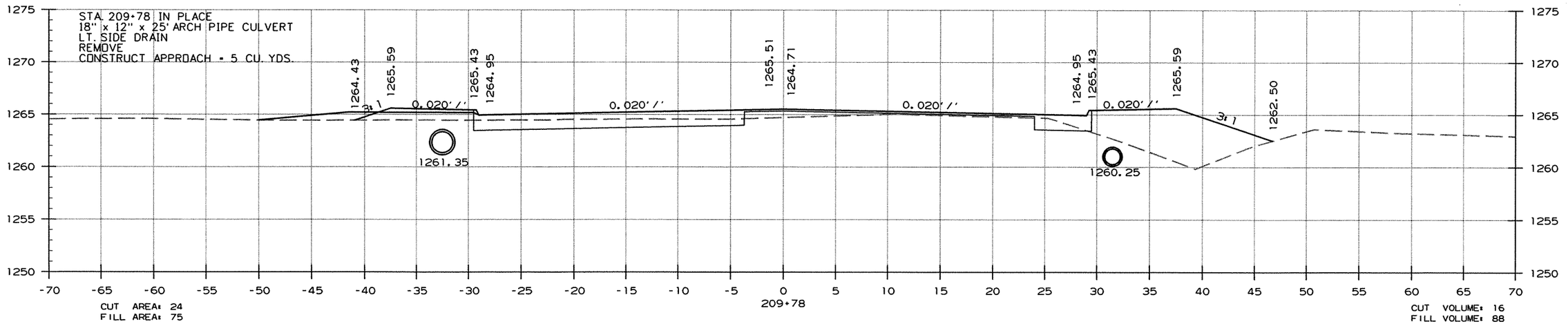


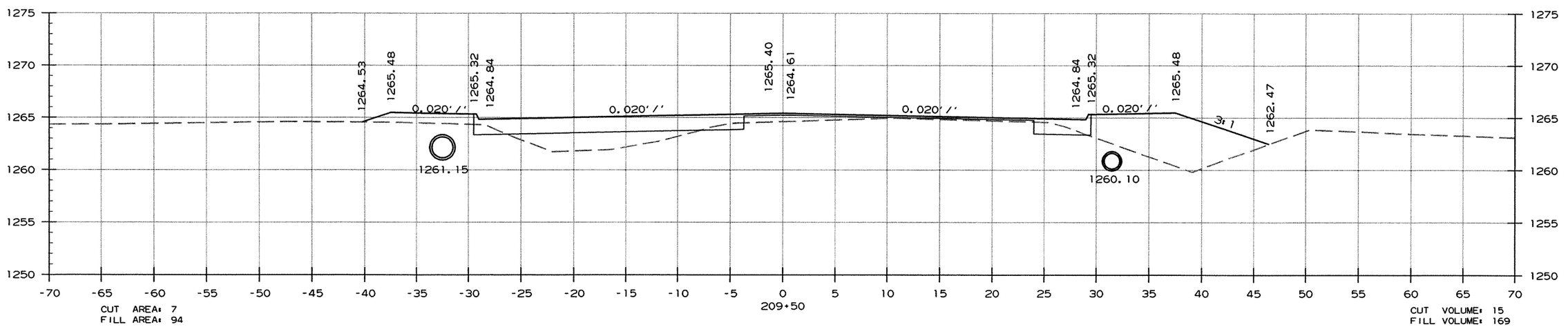
CROSS SECTION STA. 208+58 TO STA. 209+00

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	217	241

(2) CROSS SECTIONS



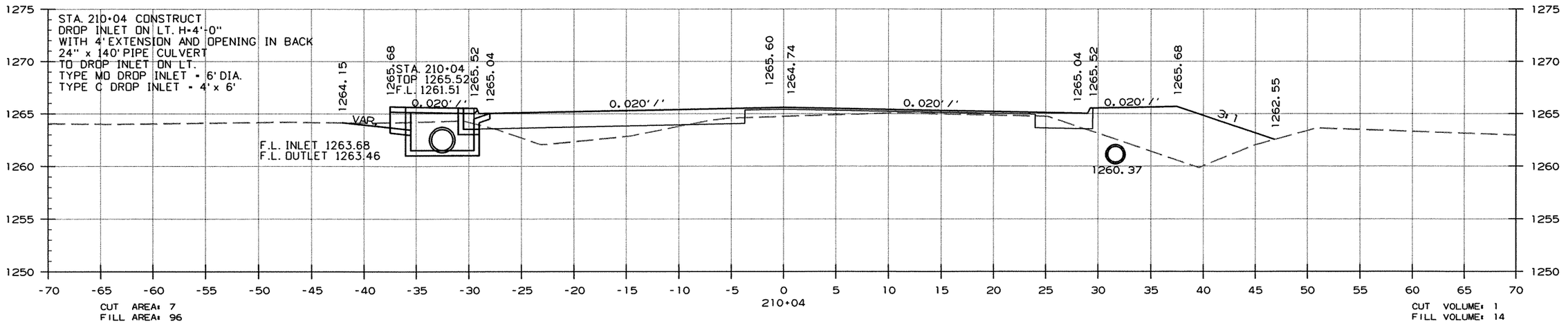


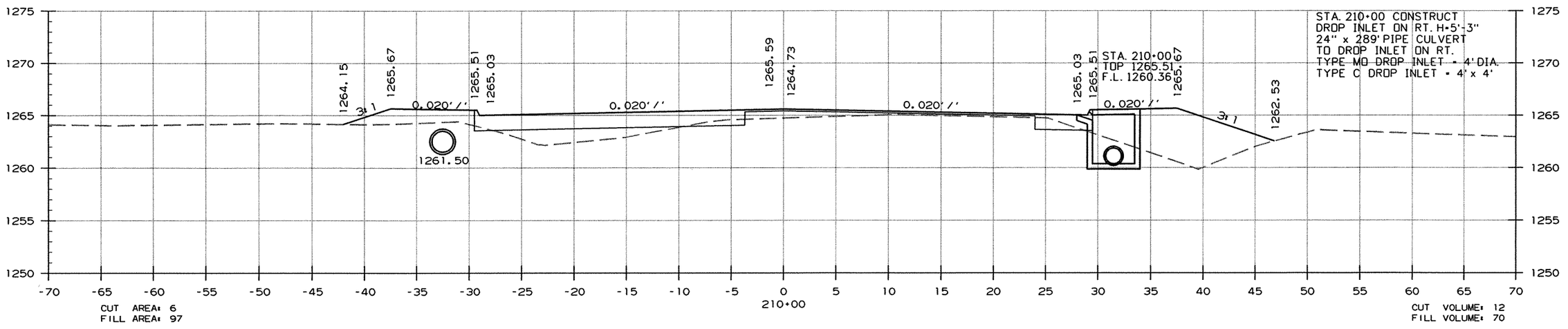
CROSS SECTION STA. 209+50 TO STA. 209+78

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	218	241

(2) CROSS SECTIONS



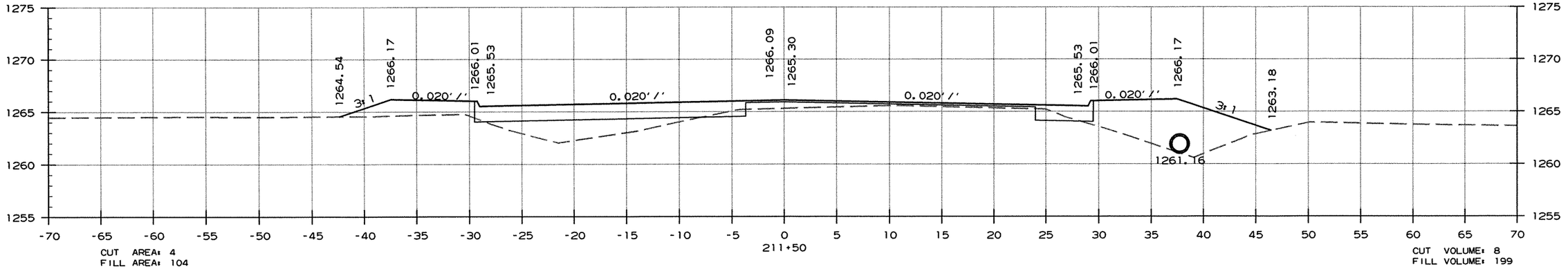


CROSS SECTION STA. 210+00 TO STA. 210+04

r090174.dgn 3/3/2010

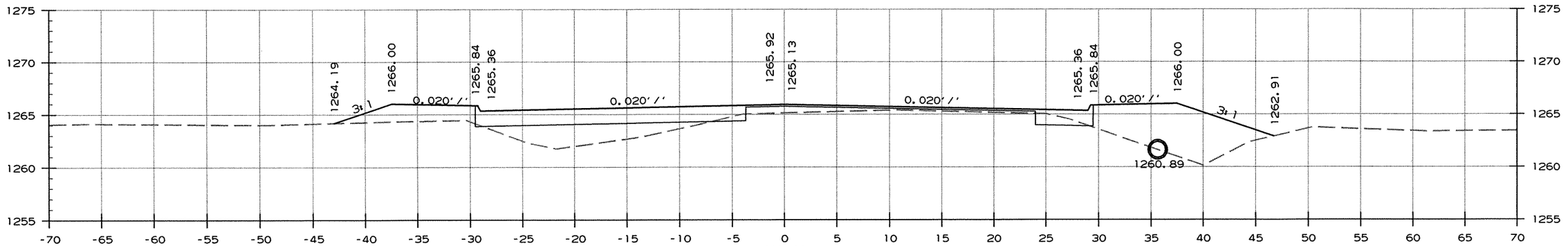
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	219	241

(2) CROSS SECTIONS



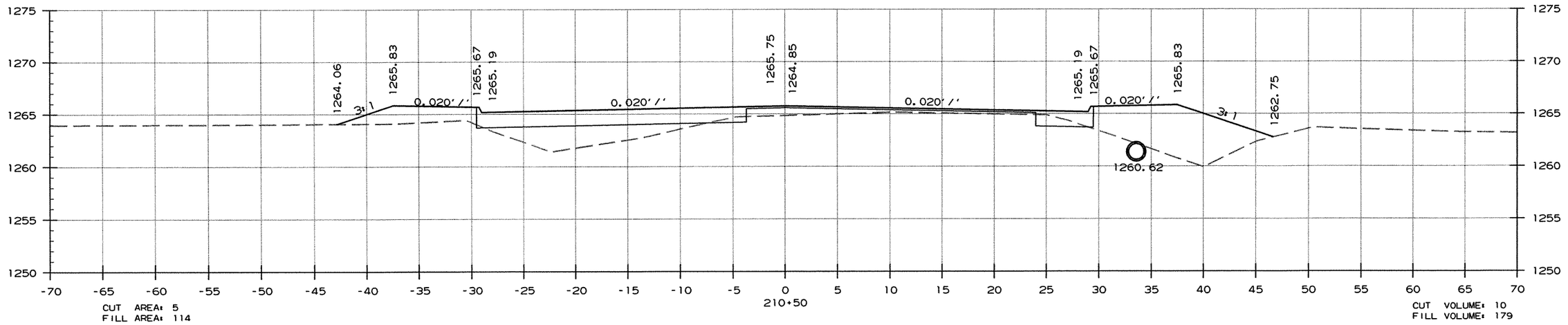
CUT AREA: 4
FILL AREA: 104

CUT VOLUME: 8
FILL VOLUME: 199



CUT AREA: 5
FILL AREA: 111

CUT VOLUME: 9
FILL VOLUME: 208



CUT AREA: 5
FILL AREA: 114

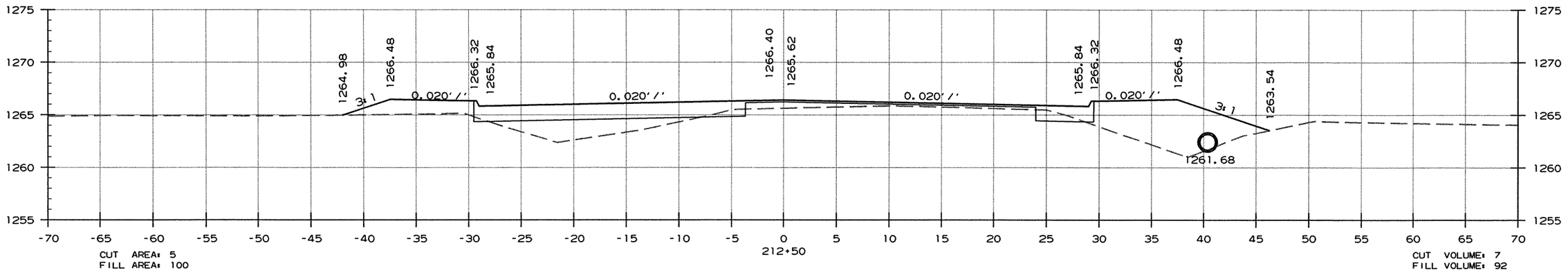
CUT VOLUME: 10
FILL VOLUME: 179

CROSS SECTION STA. 210+50 TO STA. 211+50

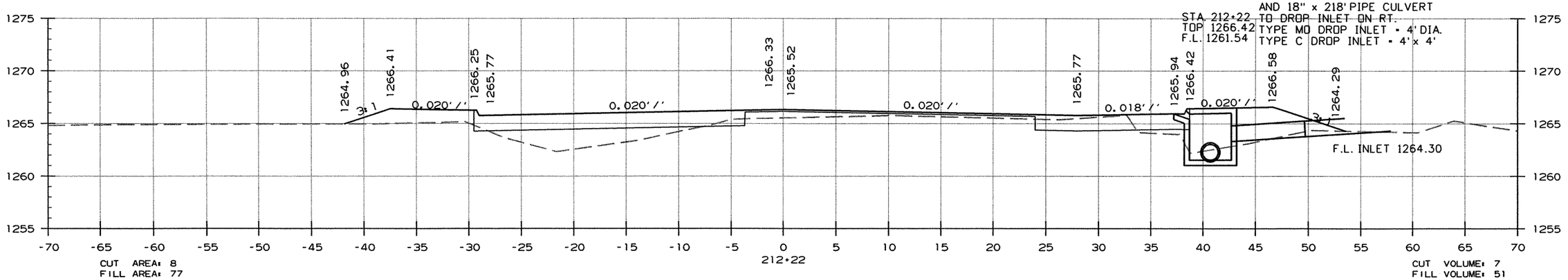
r090174.dgn 3/3/2010

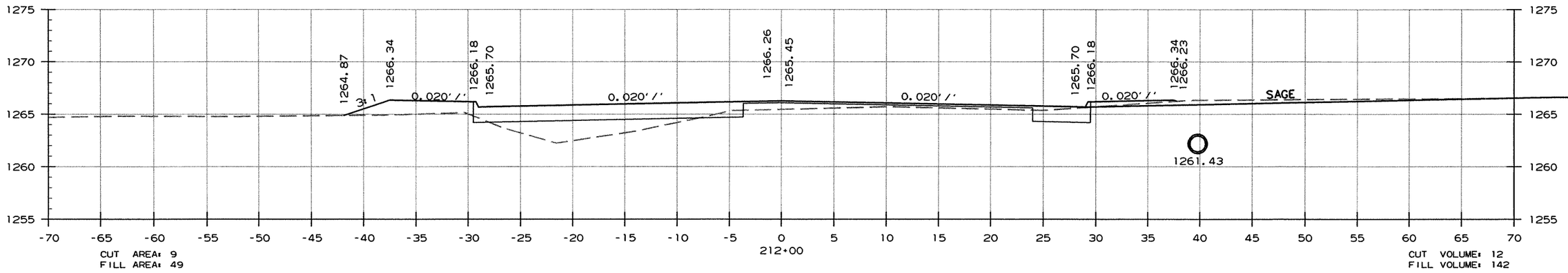
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	220	241

(2) CROSS SECTIONS



STA. 212+22 CONSTRUCT
DROP INLET ON RT. H=4'-9"
18" x 7' R.C. PIPE CULVERT INLET WITH FES
AND 18" x 218' PIPE CULVERT
STA. 212+22 TO DROP INLET ON RT.
TOP 1266.42
F.L. 1261.54
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' x 4'



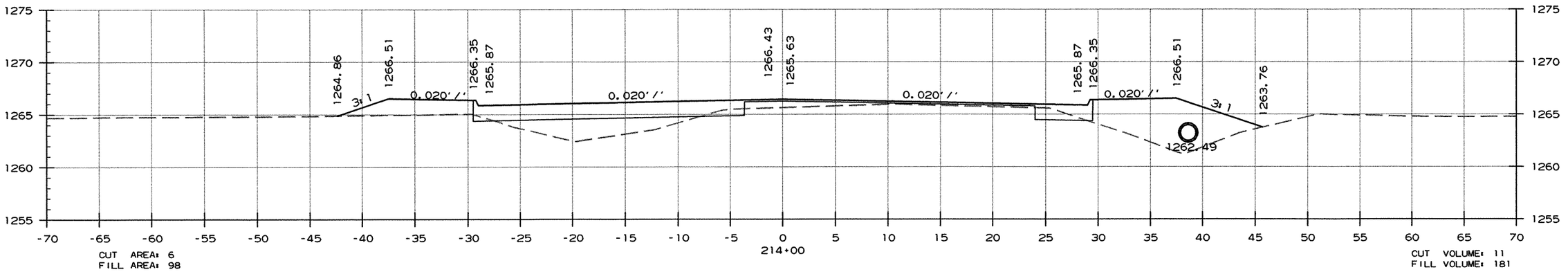


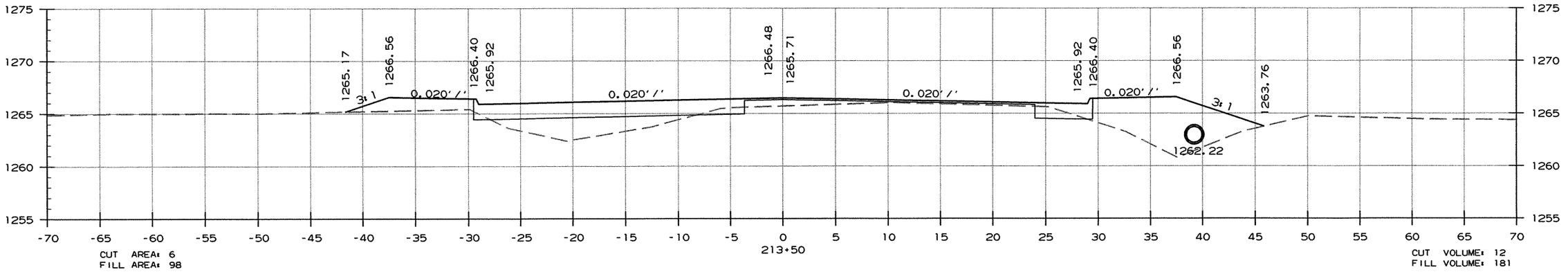
CROSS SECTION STA. 212+00 TO STA. 212+50

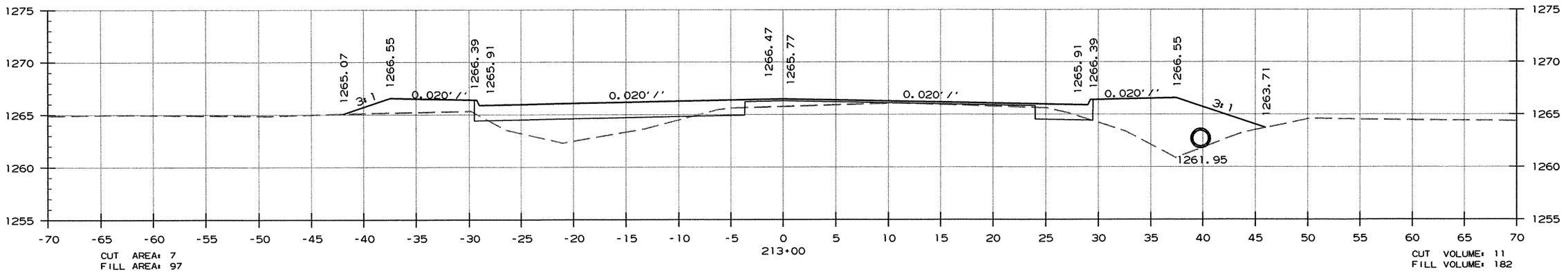
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	221	241

(2) CROSS SECTIONS





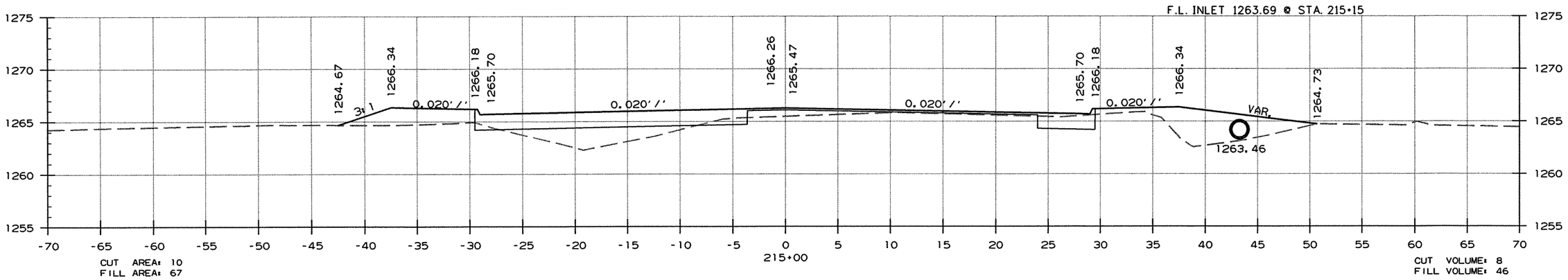


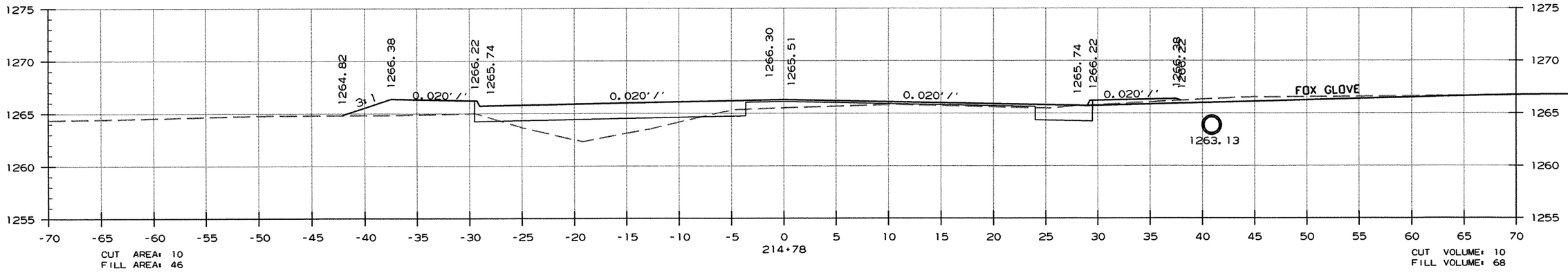
CROSS SECTION STA. 213+00 TO STA. 214+00

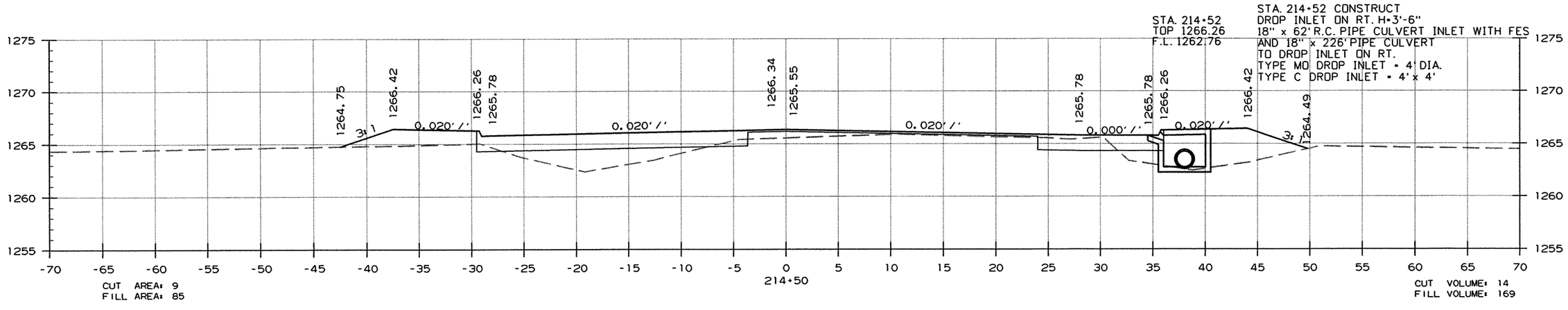
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	222	241

(2) CROSS SECTIONS





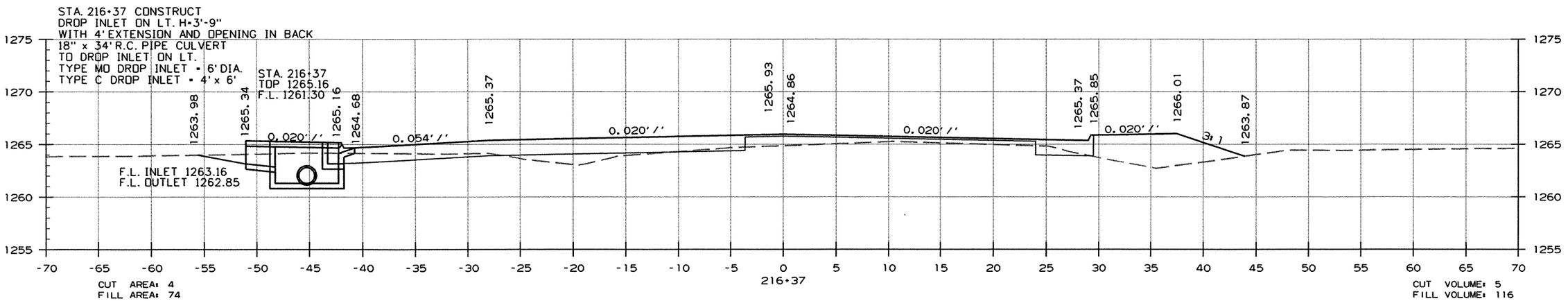


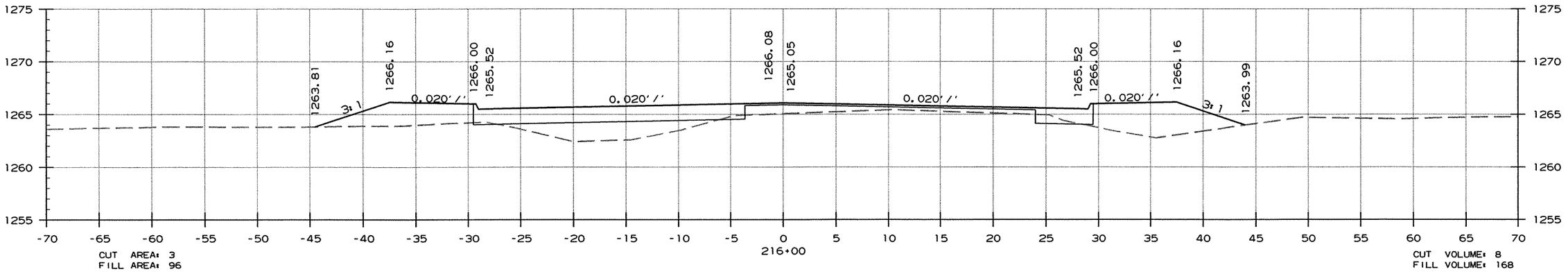
CROSS SECTION STA. 214+50 TO STA. 215+00

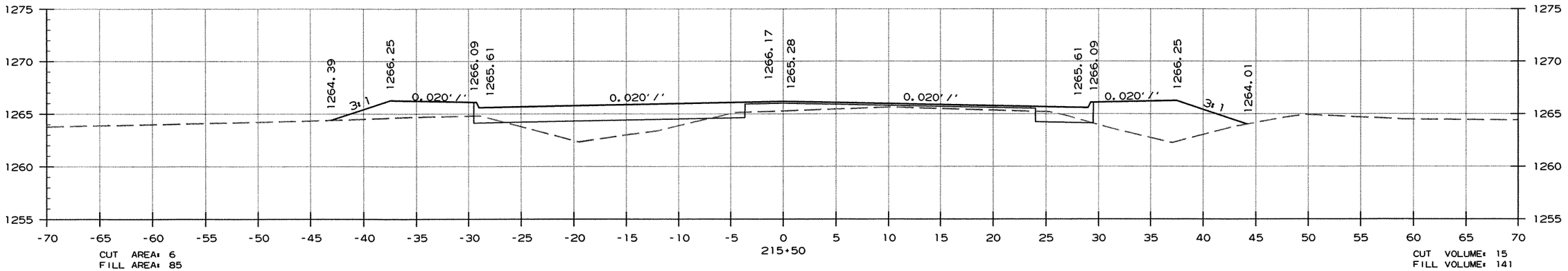
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	223	241

(2) CROSS SECTIONS





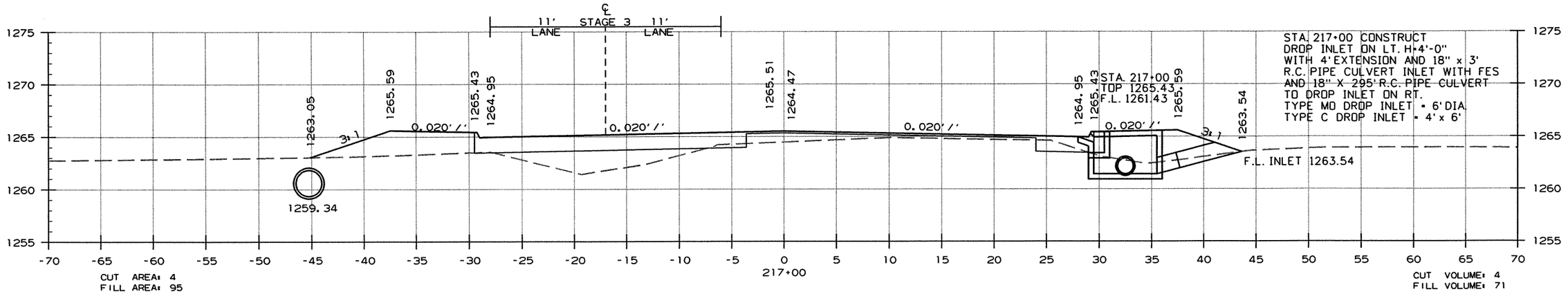


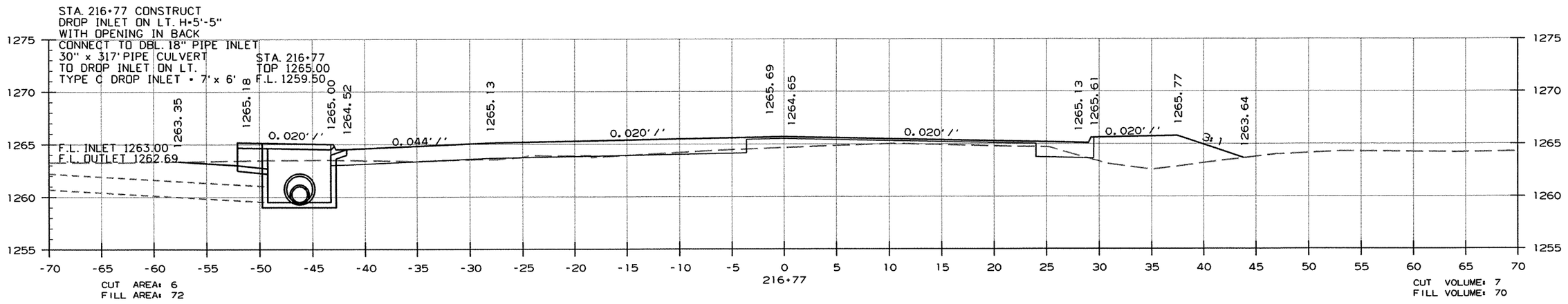
CROSS SECTION STA. 215+50 TO STA. 216+37

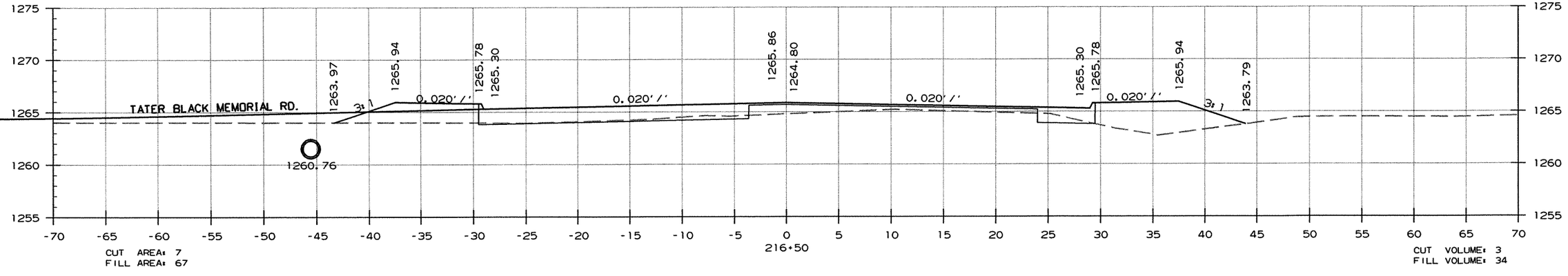
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	224	241

(2) CROSS SECTIONS





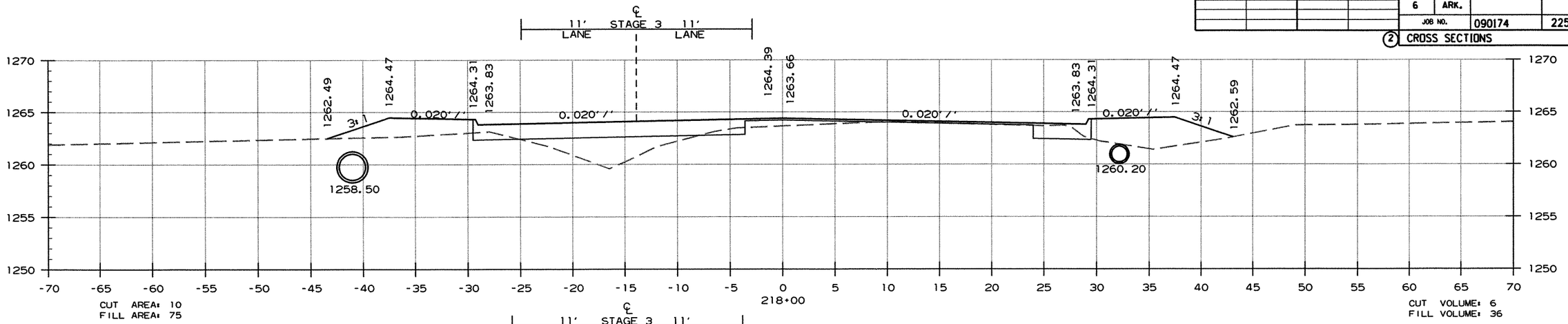


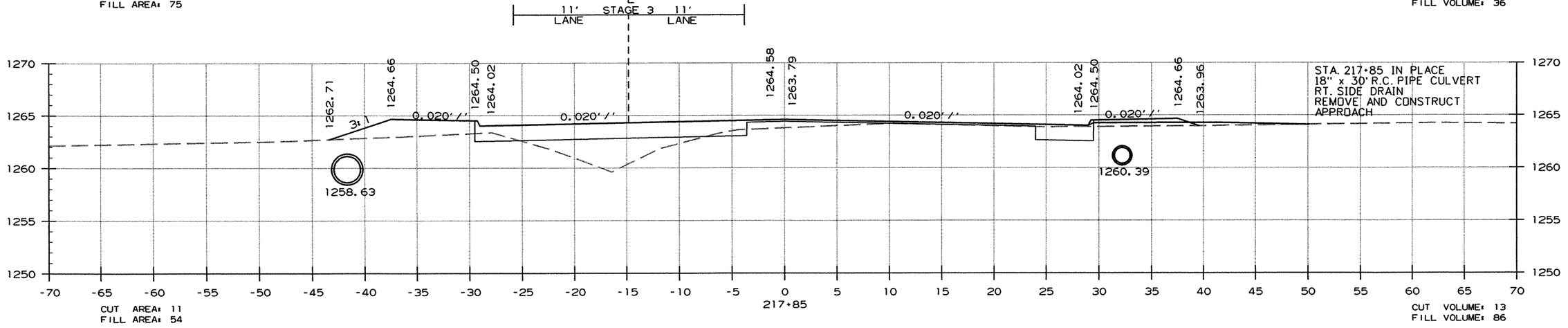
CROSS SECTION STA. 216+50 TO STA. 217+00

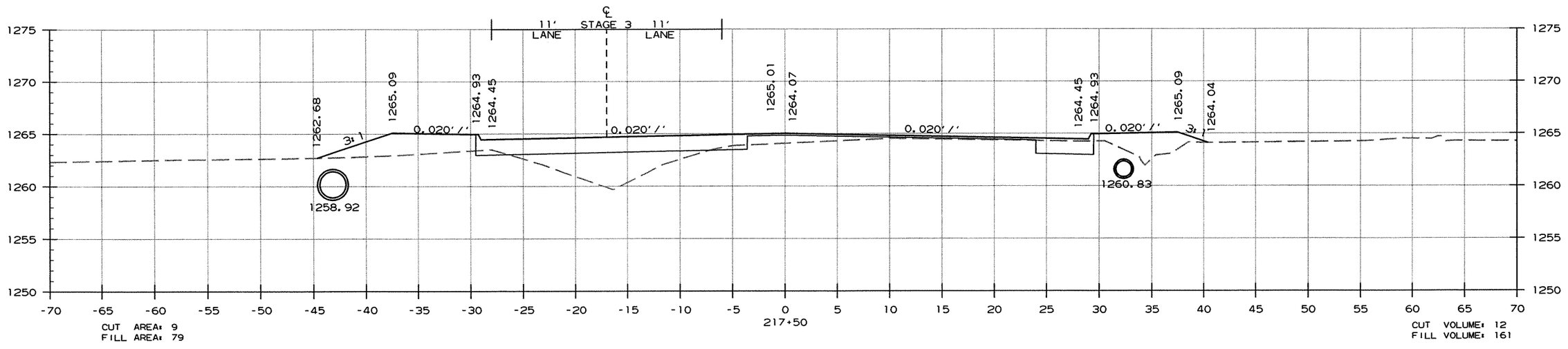
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	225	241

(2) CROSS SECTIONS





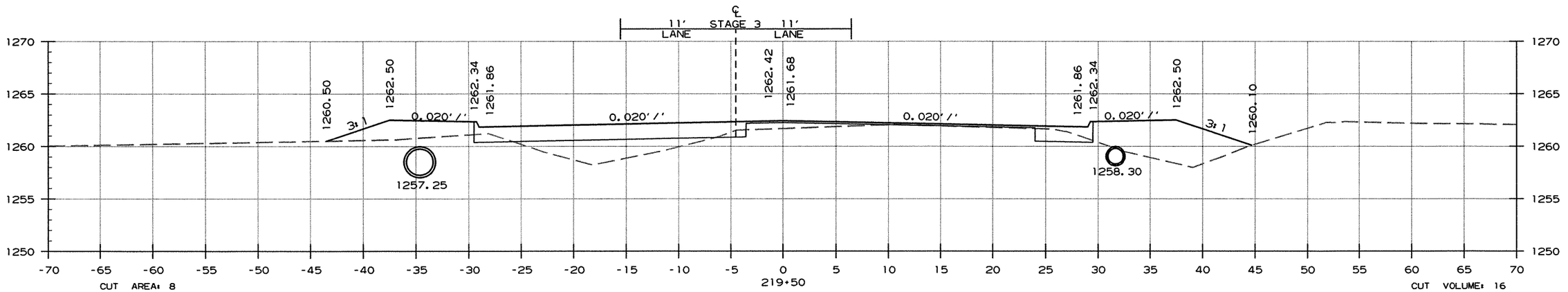


CROSS SECTION STA. 217+50 TO STA. 218+00

r090174.dgn 3/3/2010

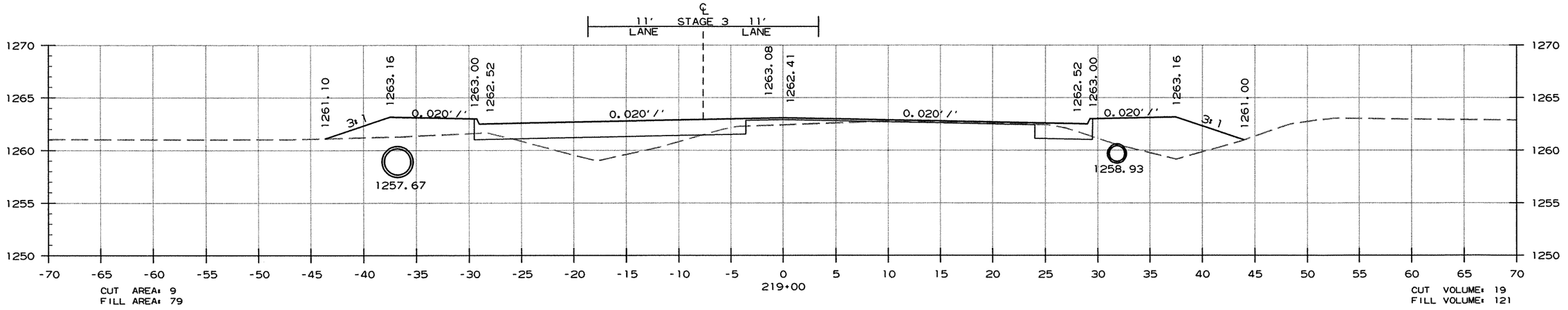
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	226	241

(2) CROSS SECTIONS



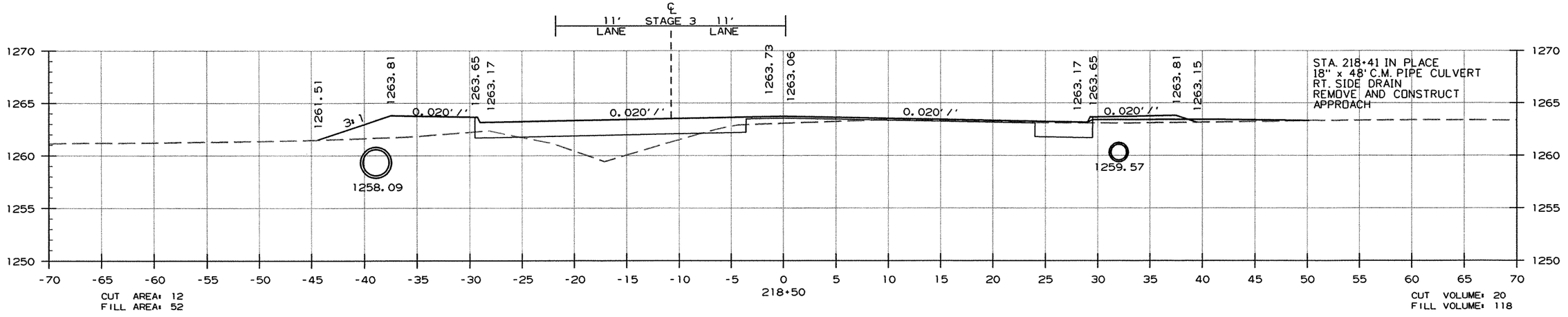
CUT AREA: 8
FILL AREA: 91

CUT VOLUME: 16
FILL VOLUME: 157



CUT AREA: 9
FILL AREA: 79

CUT VOLUME: 19
FILL VOLUME: 121



CUT AREA: 12
FILL AREA: 52

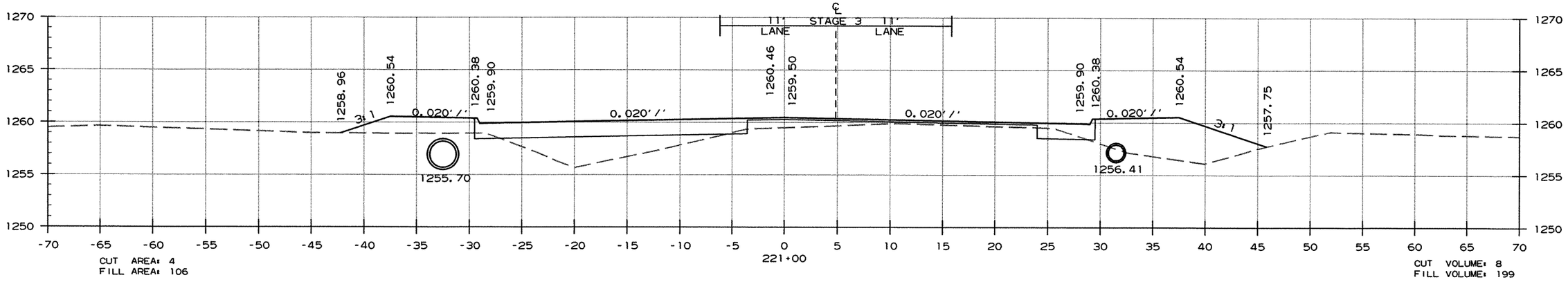
CUT VOLUME: 20
FILL VOLUME: 118

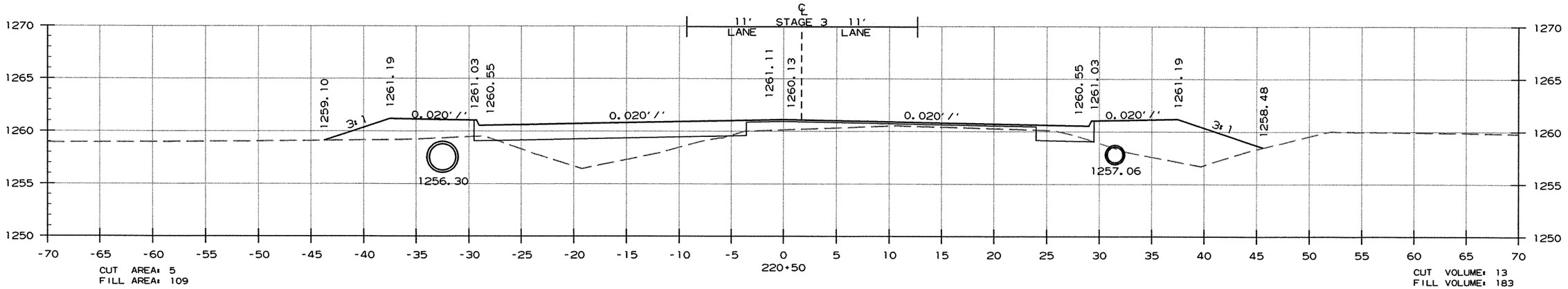
CROSS SECTION STA. 218+50 TO STA. 219+50

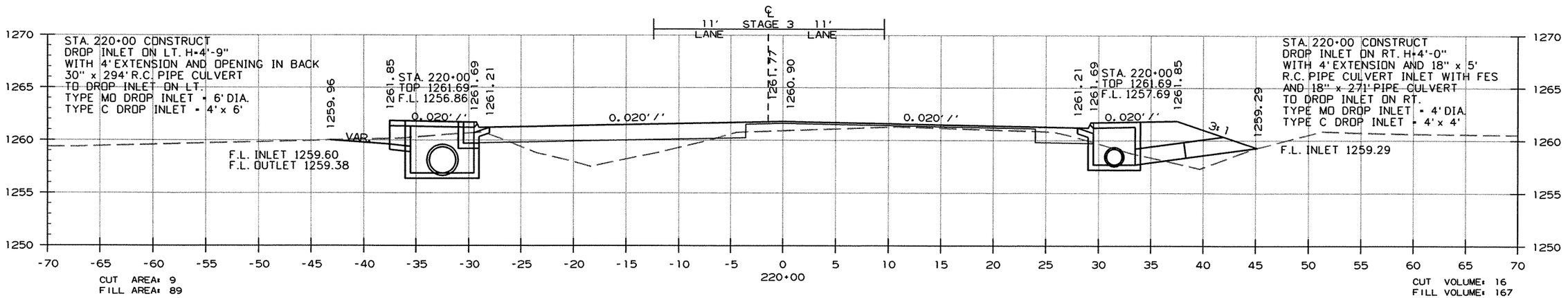
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	227	241

(2) CROSS SECTIONS





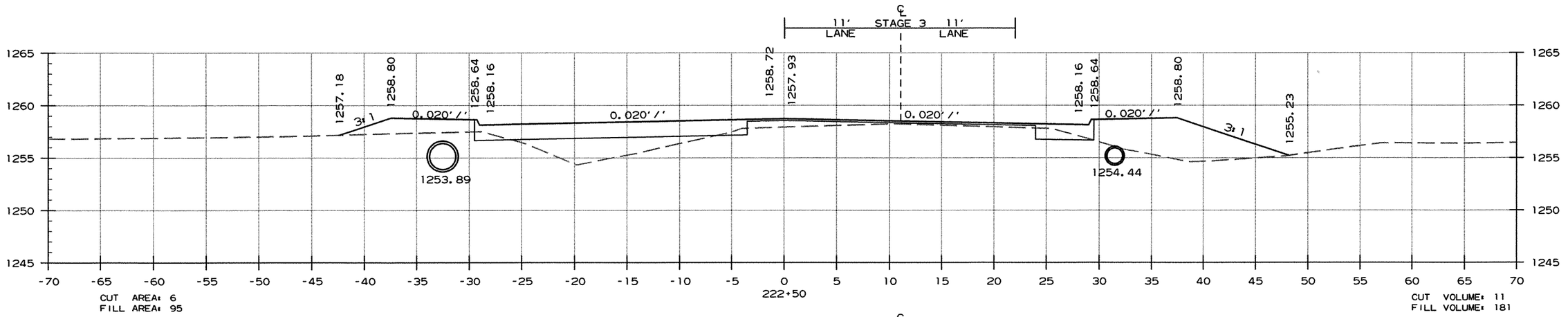


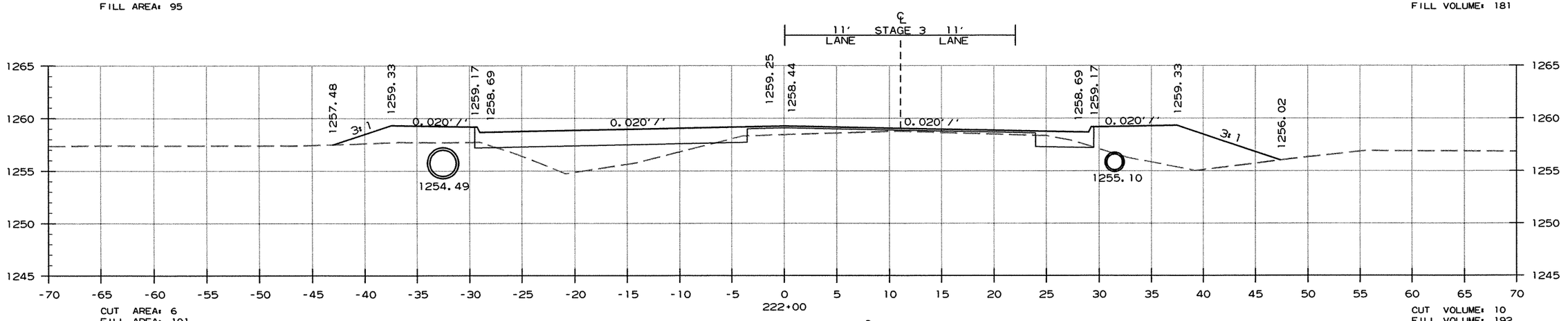
CROSS SECTION STA. 220+00 TO STA. 221+00

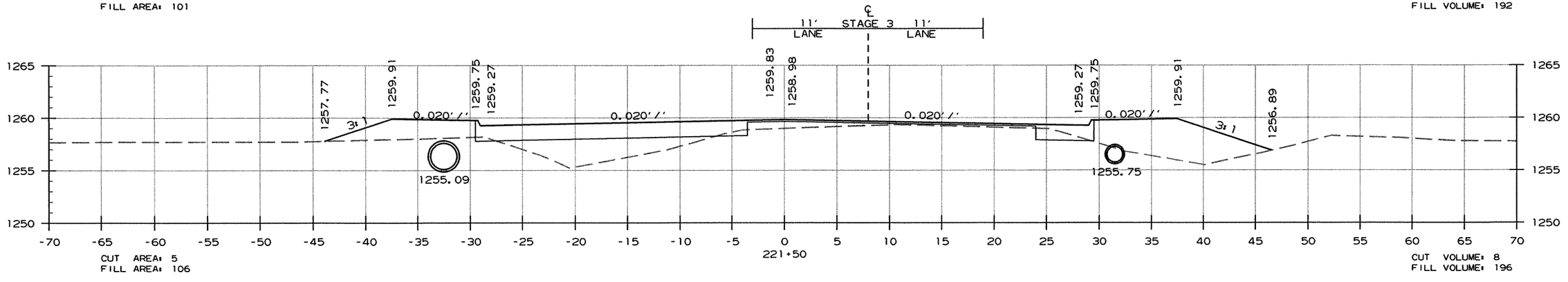
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	228	241

(2) CROSS SECTIONS





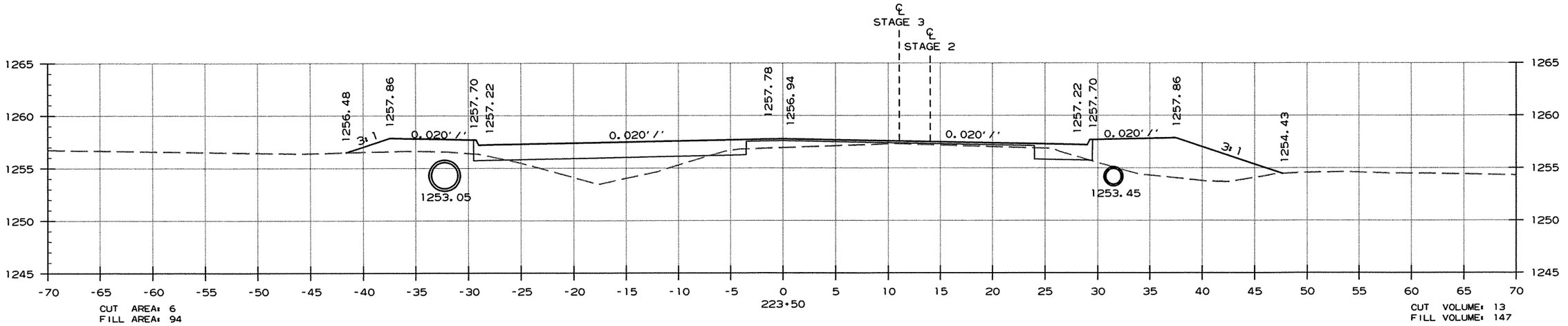


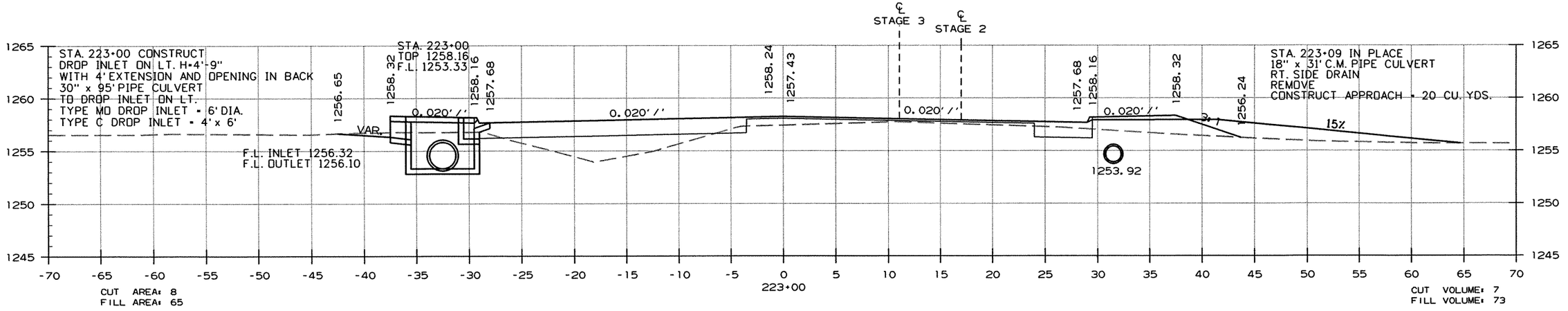
CROSS SECTION STA. 221+50 TO STA. 222+50

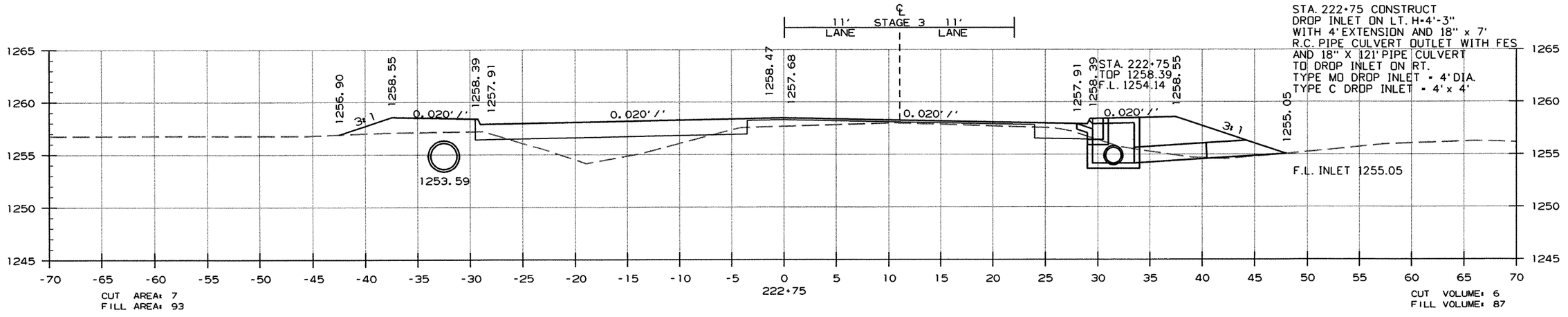
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	229	241

(2) CROSS SECTIONS





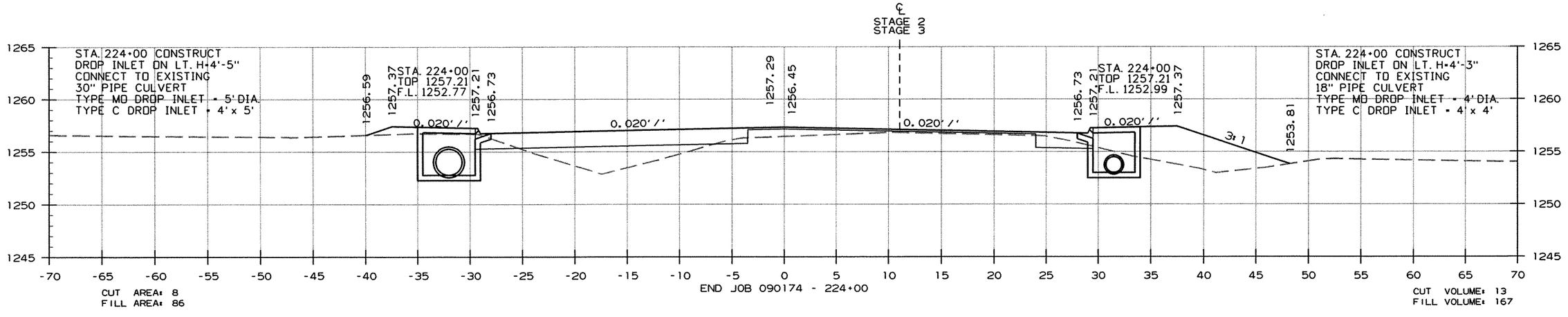


CROSS SECTION STA. 222+75 TO STA. 223+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	230	241

(2) CROSS SECTIONS

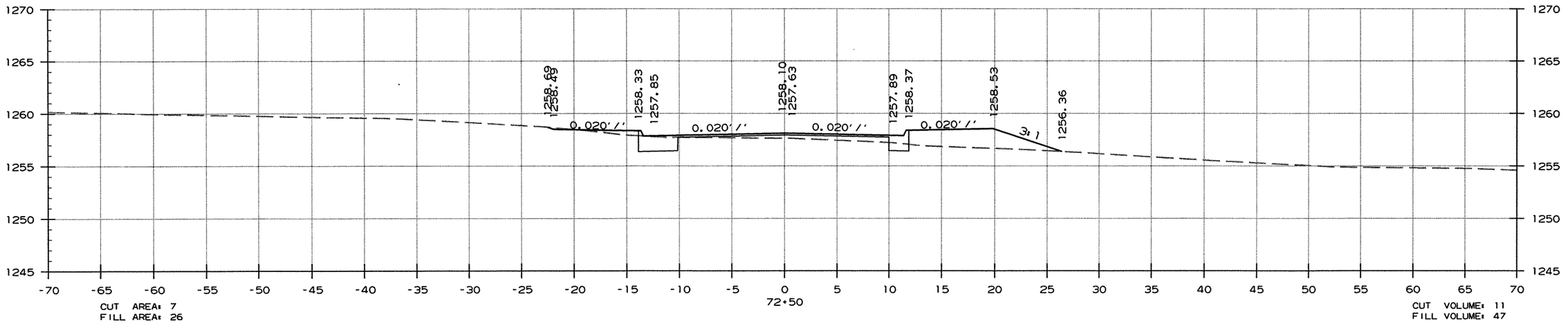


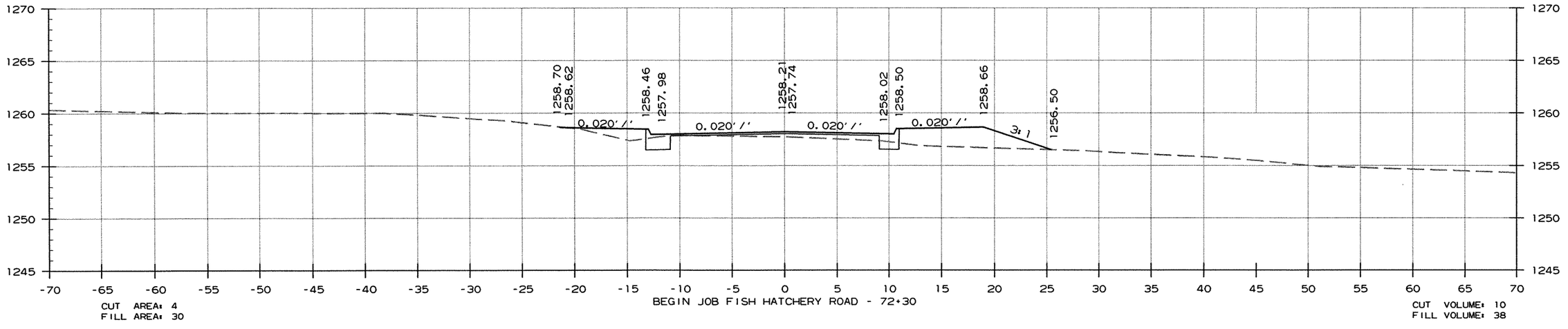
CROSS SECTION STA. 224+00 TO STA. 224+00

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	231	241

(2) CROSS SECTIONS



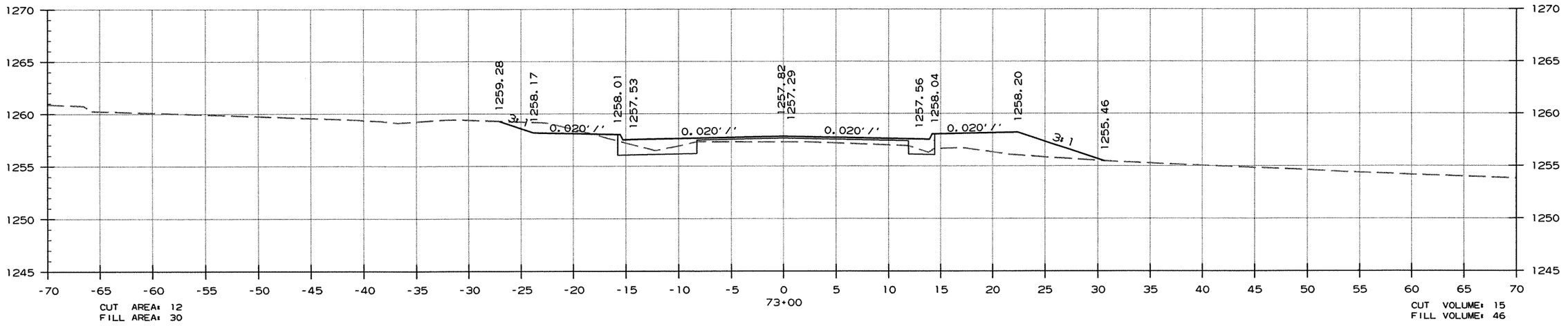


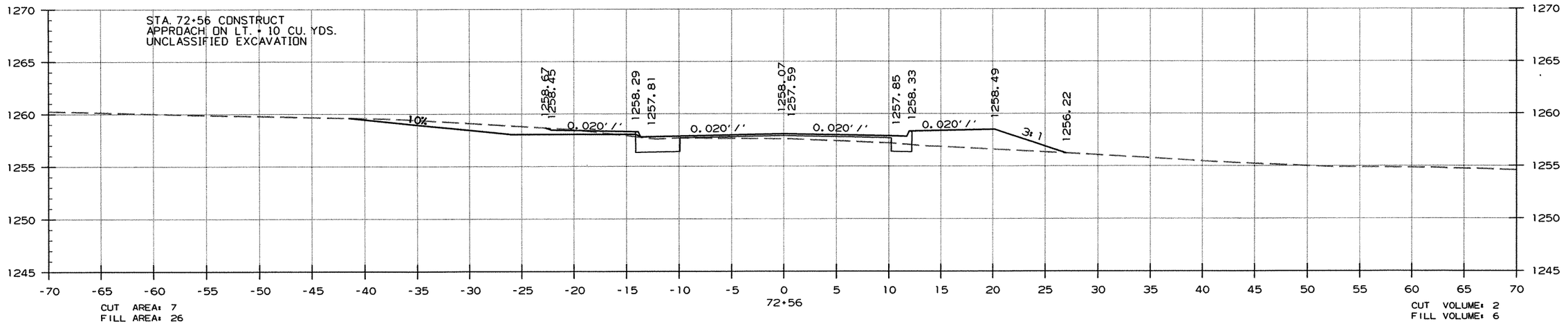
r090174.dgn 3/3/2010

CROSS SECTION STA. 72+30 TO STA. 72+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	232	241

(2) CROSS SECTIONS



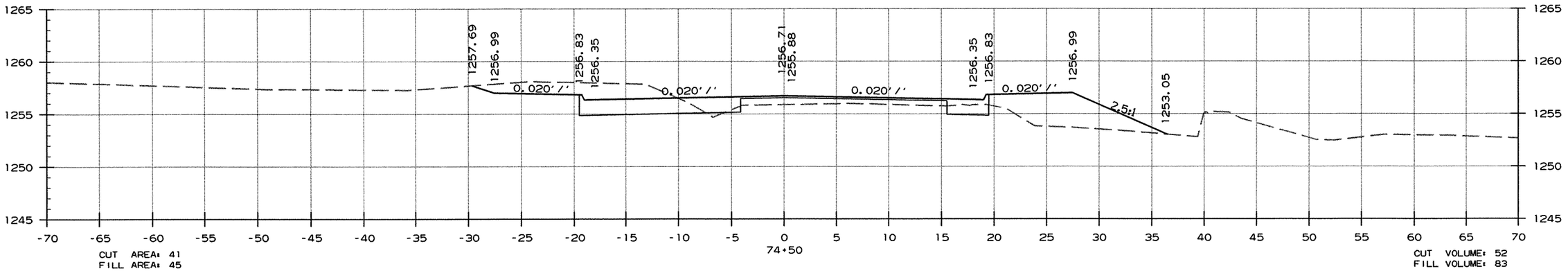


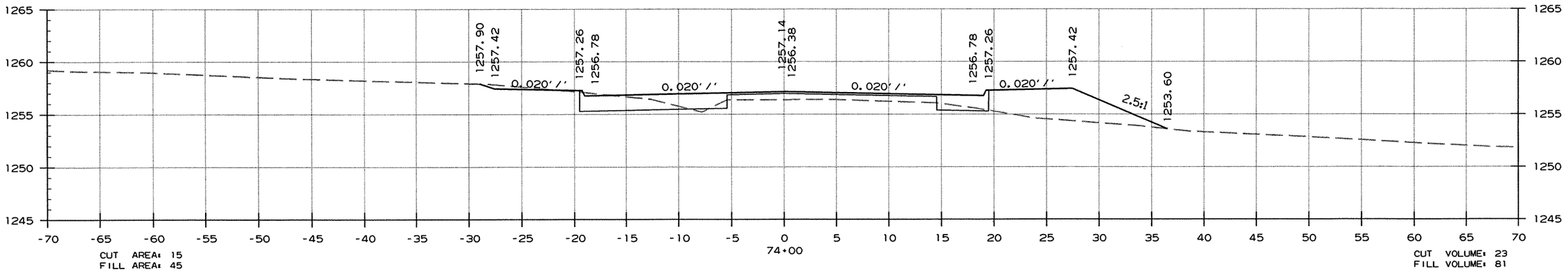
CROSS SECTION STA. 72+56 TO STA. 73+00

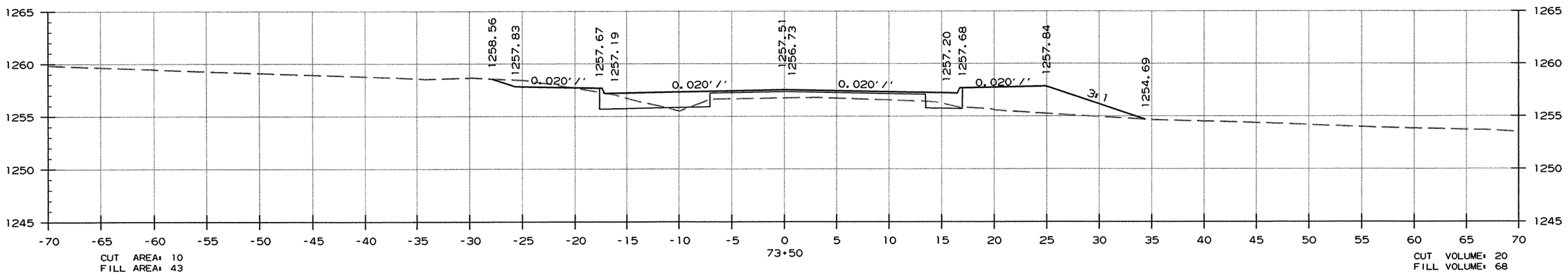
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	233	241

(2) CROSS SECTIONS





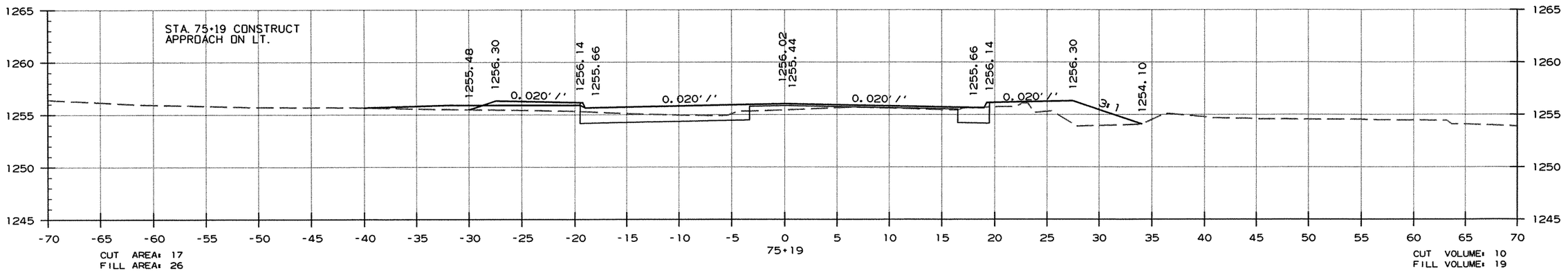


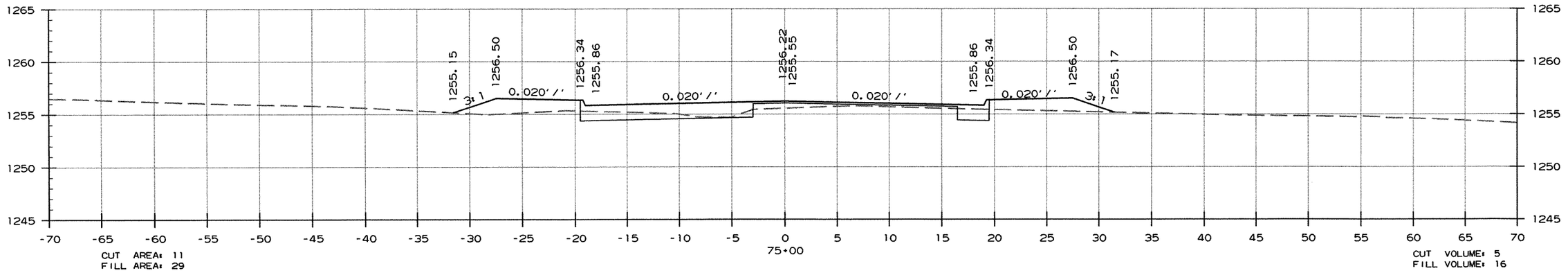
CROSS SECTION STA. 73+50 TO STA. 74+50

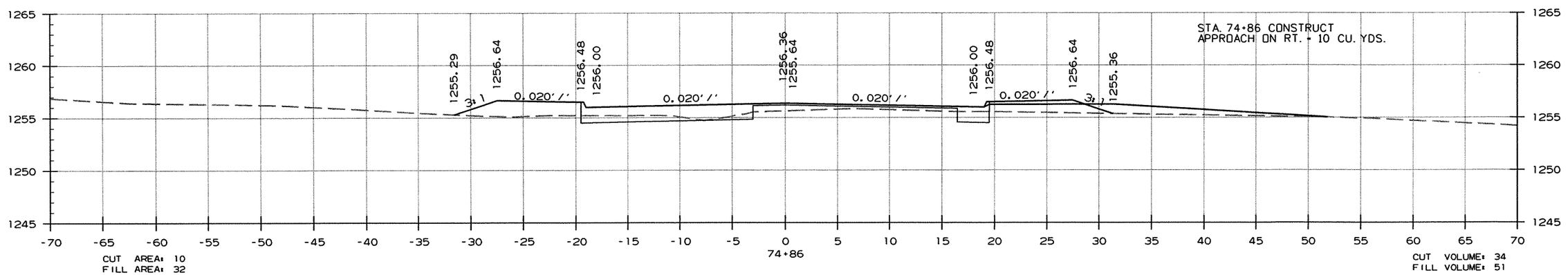
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	234	241

(2) CROSS SECTIONS





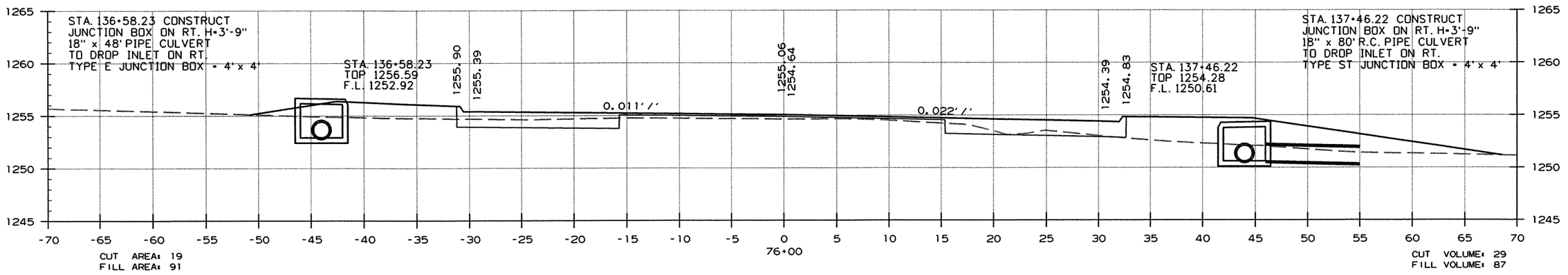


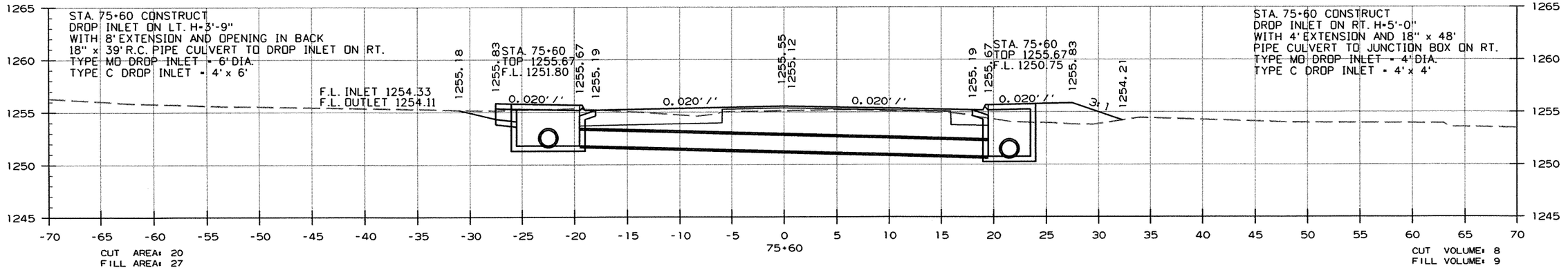
CROSS SECTION STA. 74+86 TO STA. 75+19

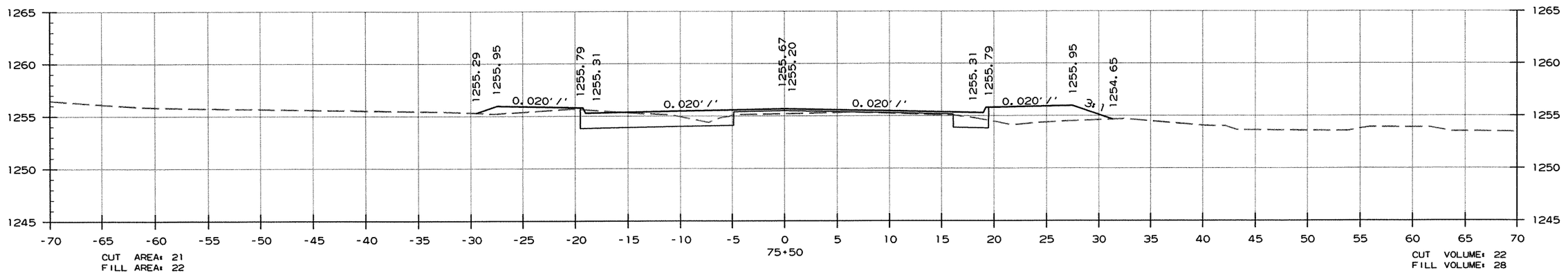
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	235	241

(2) CROSS SECTIONS





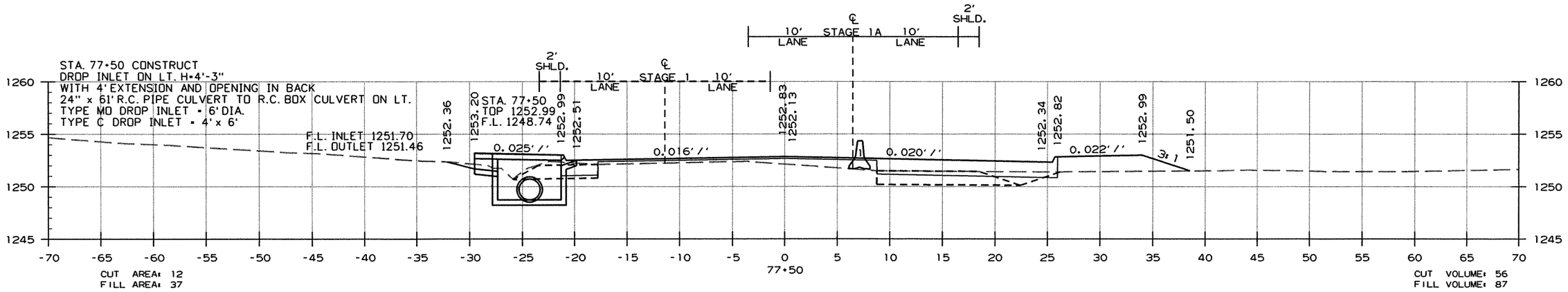


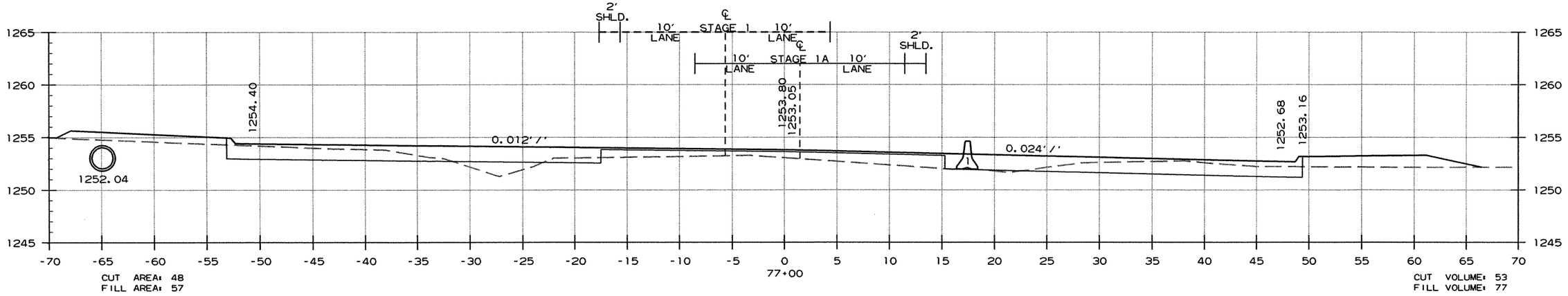
CROSS SECTION STA. 75+50 TO STA. 76+00

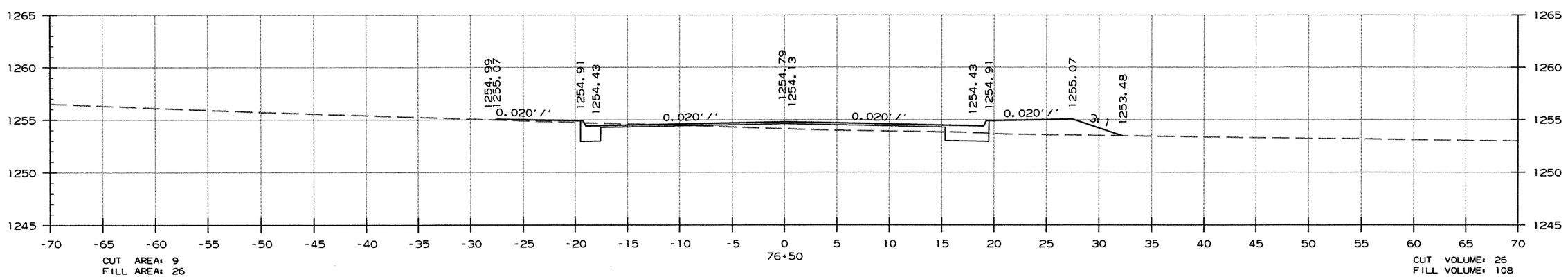
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	236	241

(2) CROSS SECTIONS







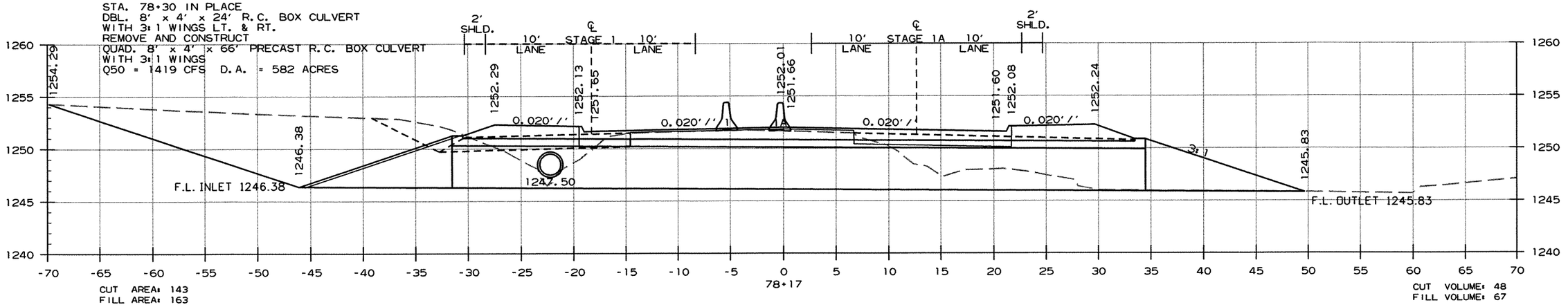
CROSS SECTION STA. 76+50 TO STA. 77+50

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	237	241

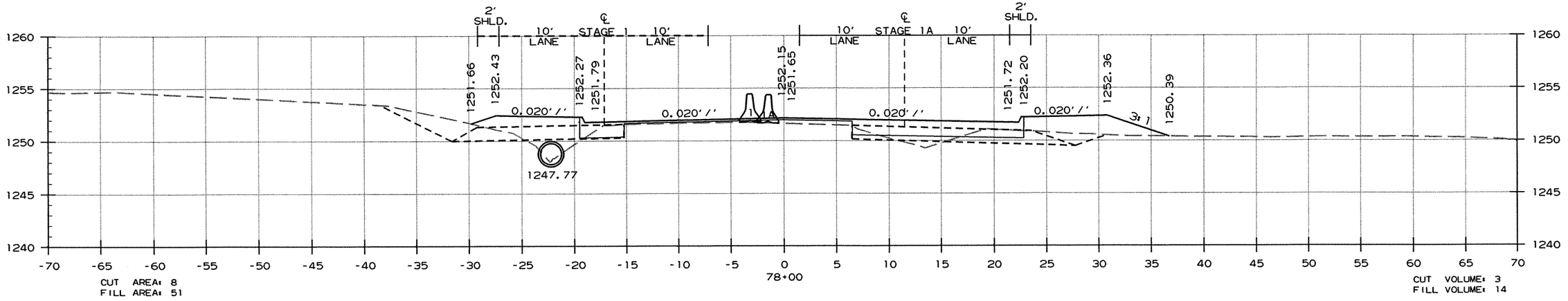
(2) CROSS SECTIONS

STA. 78+30 IN PLACE
DBL. 8' x 4' x 24' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
REMOVE AND CONSTRUCT
QUAD. 8' x 4' x 66' PRECAST R.C. BOX CULVERT
WITH 3:1 WINGS
Q50 = 1419 CFS D.A. = 582 ACRES



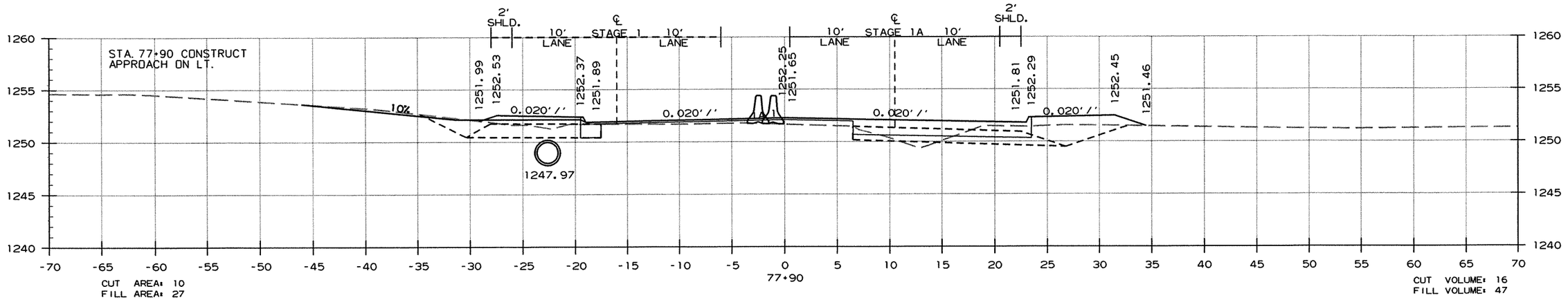
CUT AREA: 143
FILL AREA: 163

CUT VOLUME: 48
FILL VOLUME: 67



CUT AREA: 8
FILL AREA: 51

CUT VOLUME: 3
FILL VOLUME: 14



CUT AREA: 10
FILL AREA: 27

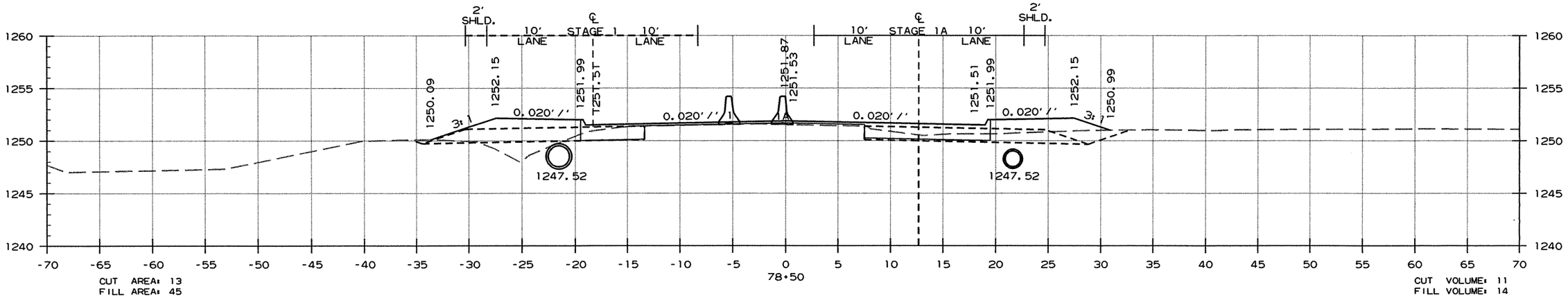
CUT VOLUME: 16
FILL VOLUME: 47

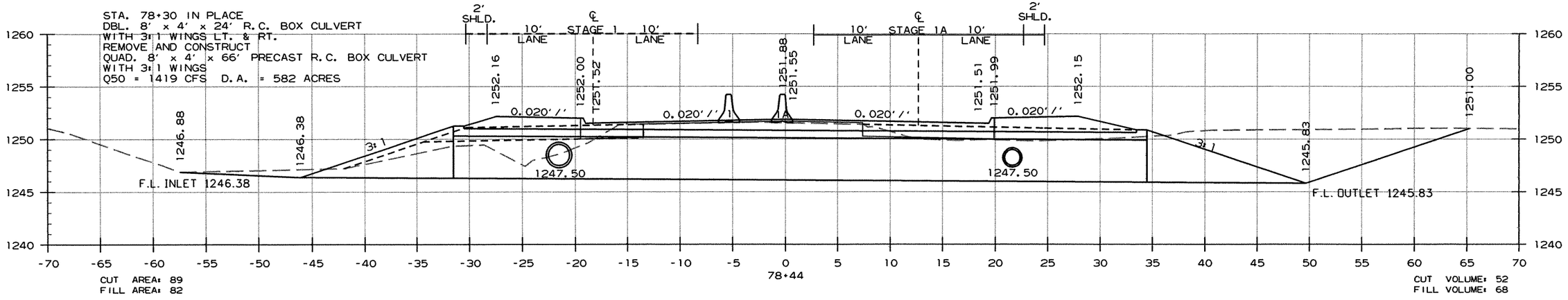
CROSS SECTION STA. 77+90 TO STA. 78+17

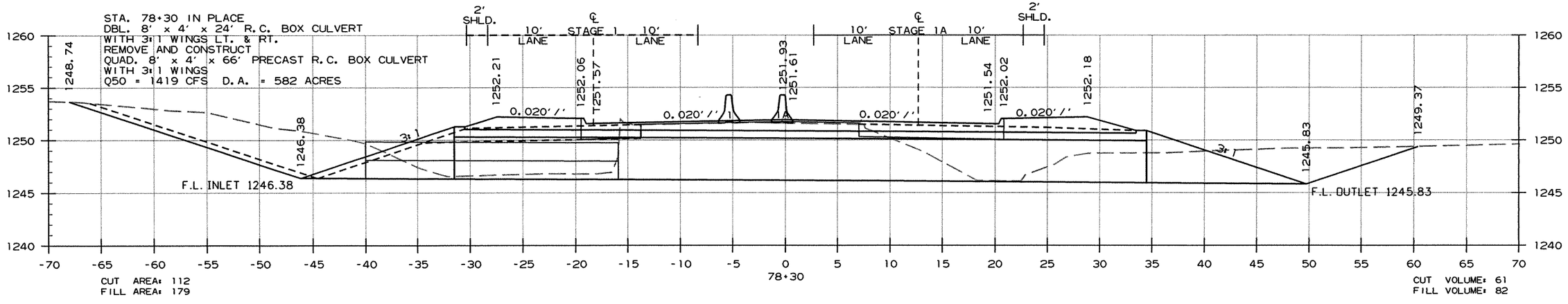
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	238	241

(2) CROSS SECTIONS





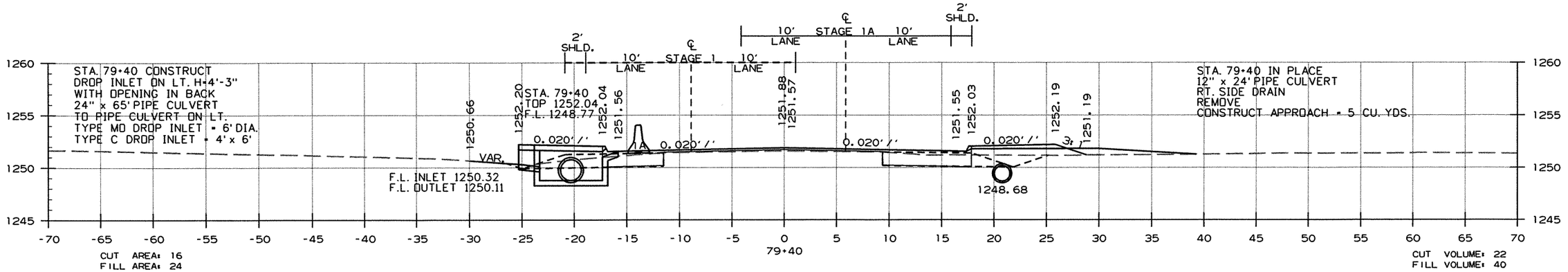


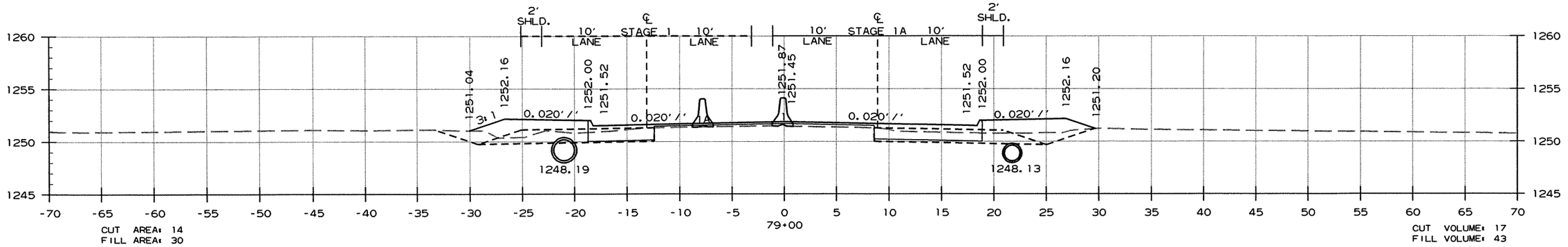
CROSS SECTION STA. 78+30 TO STA. 78+50

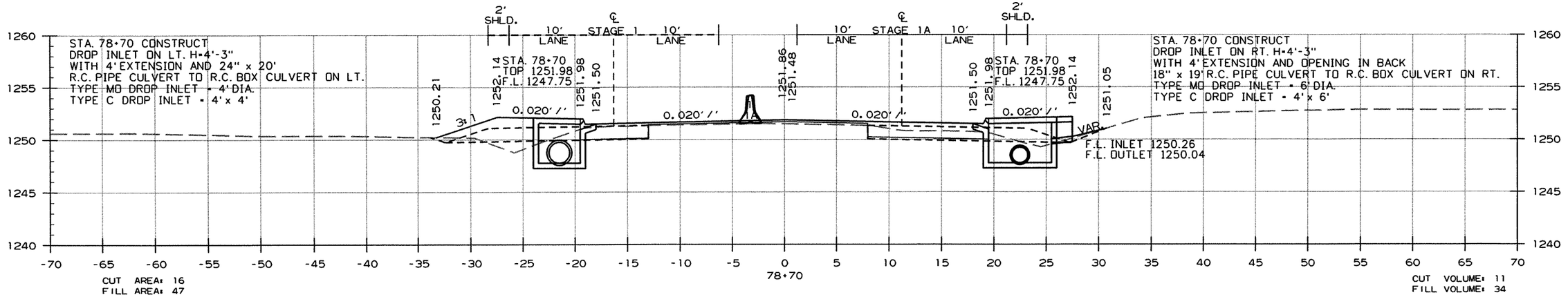
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	239	241

(2) CROSS SECTIONS





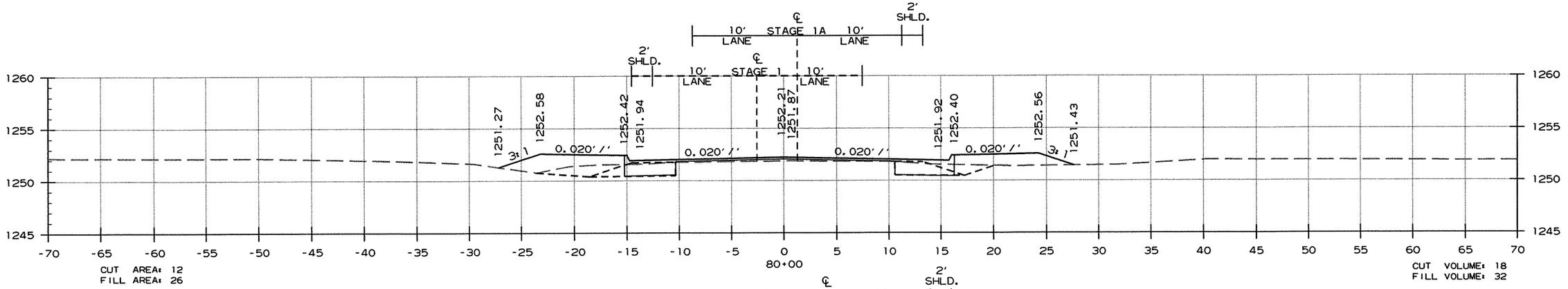


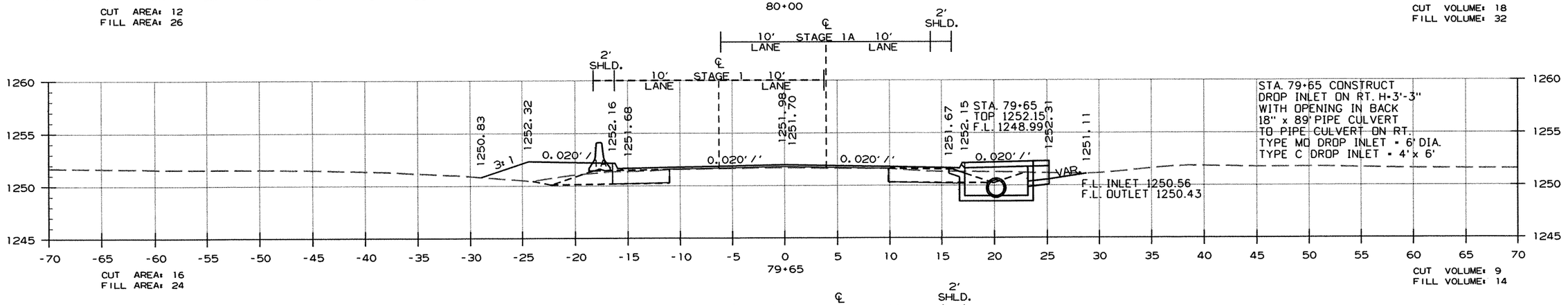
CROSS SECTION STA. 78+70 TO STA. 79+40

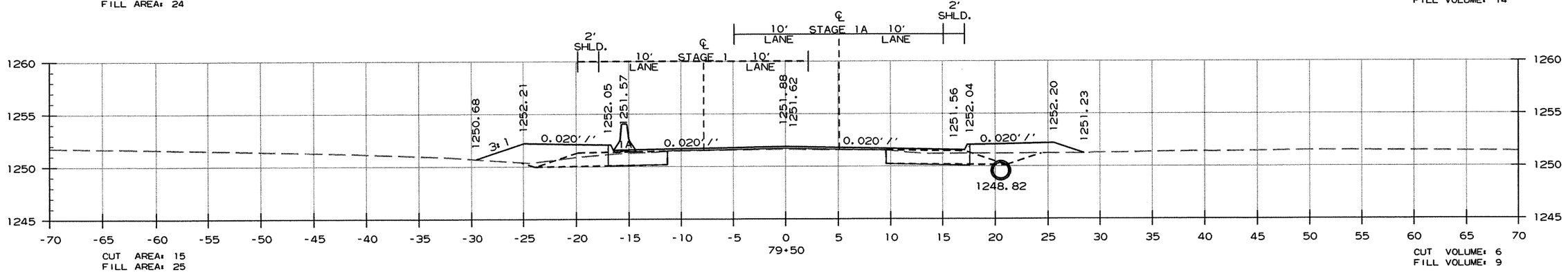
r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	240	241

(2) CROSS SECTIONS





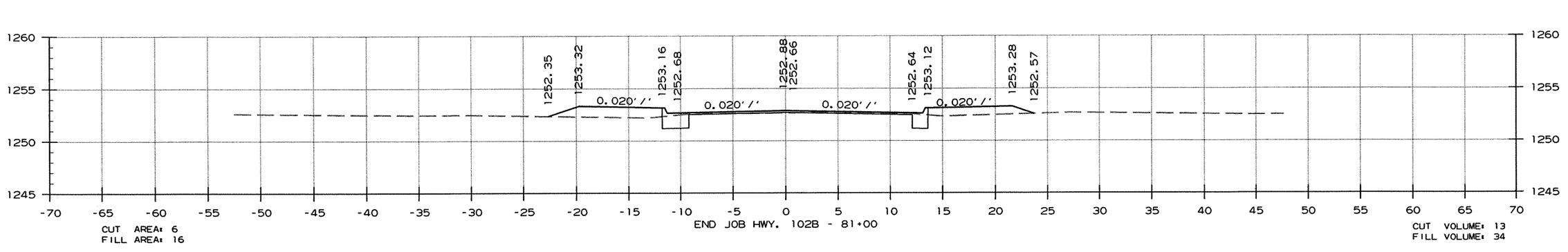


CROSS SECTION STA. 79+50 TO STA. 80+00

r090174.dgn 3/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090174	241	241

(2) CROSS SECTIONS



CROSS SECTION STA. 80+50 TO STA. 81+00

r090174.dgn 3/3/2010