| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 1 | 182 |
| | | | | (2) | I-40/HWY. 89 INTCHG. (LONOKE) (S) | | | |

"THIS PROJECT IS A FULLY CONTROLLED ACCESS FACILITY"
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS

# I-40/HWY. 89 INTCHG. (LONOKE) (S)

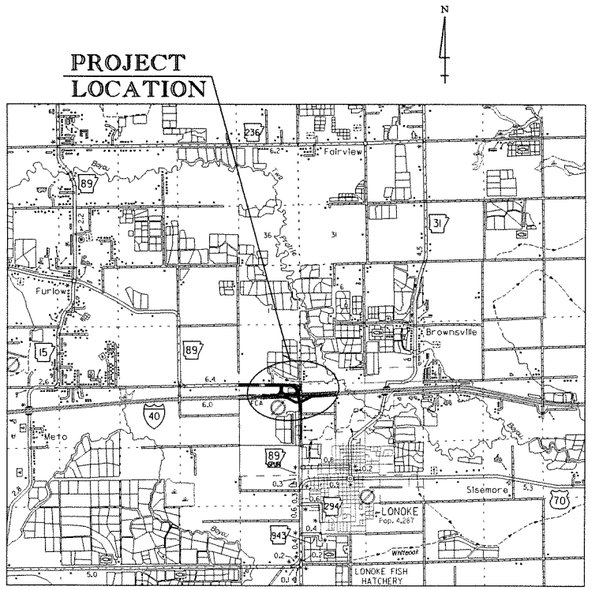
## LONOKE COUNTY

## ROUTE 40 SECTION 41

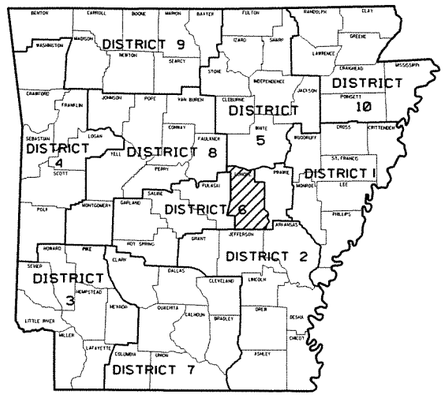
## FEDERAL AID PROJECT HPP2-NH-STPU-3241(1)

## JOB 060897

NOT TO SCALE




VICINITY MAP




ARKANSAS HIGHWAY DISTRICT 6

**BRIDGE CONSTRUCTION DATA**

(1) STA. 48+98.91 BRIDGE END
BRIDGE NO. 07205 OVER INTERSTATE 40
210'-0" CONT. COMP. PLATE GIRDER UNIT
40'-0" CLEAR ROADWAY
10°00'00" LT. FORWARD SKEW
212'-2 1/4" BRIDGE LENGTH
STA. 51+11.09 BRIDGE END

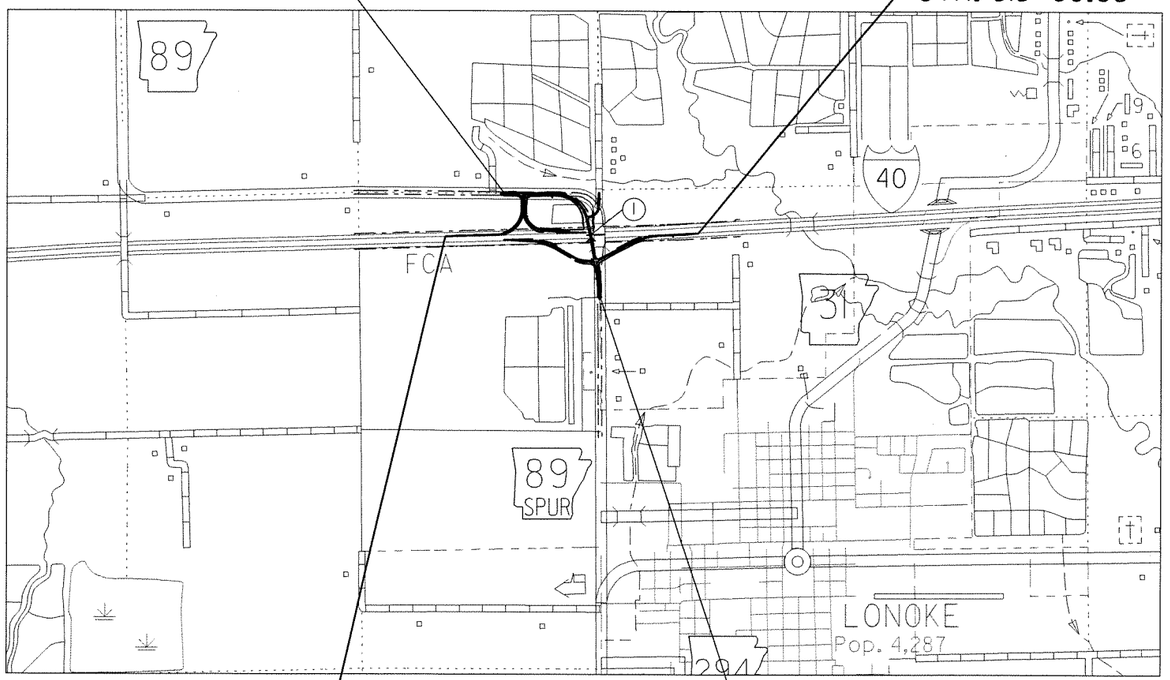
T
2
N

BEGIN HWY. 89 CONST.
STA. 25+20

R-9-W

R-8-W

END JOB 060897
STA. 515+69.85




BEGIN JOB 060897
STA. 458+67.56
L.M. 172.53

END HWY. 89 CONST.
STA. 63+60

| DESIGN TRAFFIC DATA | I-40 | HWY. 89 |
|---|---|---|
| DESIGN YEAR | 2031 | 2031 |
| 2011 ADT | 42,320 | 4,860 |
| 2031 ADT | 59,050 | 7,810 |
| 2031 DHV | 6,500 | 860 |
| DIRECTIONAL DISTRIBUTION | 51% | 51% |
| TRUCKS | 44% | 12% |
| DESIGN SPEED | 70 MPH | 45 MPH |

N

PROJECT COORDINATES

| | BEGIN | MID-POINT | END |
|---|---|---|---|
| LATITUDE | N 34°48'13" | N 34°48'13" | N 34°48'13" |
| LONGITUDE | W 91°55'33" | W 91°54'59" | W 91°54'25" |
| STATION | 458+67.56 | 487+18.71 | 515+69.85 |

LENGTH COMPUTED ALONG C.L. MEDIAN

| | | |
|---|---|---|
| GROSS LENGTH OF PROJECT | 5702.29 FEET OR | 1.080 MILES |
| NET LENGTH OF ROADWAY | 5702.29 FEET OR | 1.080 MILES |
| NET LENGTH OF BRIDGES | 0.00 FEET OR | 0.000 MILES |
| NET LENGTH OF PROJECT | 5702.29 FEET OR | 1.080 MILES |

CERTIFICATE OF AUTHORIZATION
GARVER LLC
No. 766
ARKANSAS—ENGINEER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
14,644
DAVID C. WILBOURN
10/15/2012

P.E. JOB 060897
F.A.P. HY10-3241-001

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REVISED DATE:

| SHEET NO. | TITLE | DRAWING NO. | DATE |
|---|---|---|---|
| 1 | TITLE SHEET | | |
| 2 | INDEX OF SHEETS, GOVERNING SPECIFICATIONS AND GENERAL NOTES | | |
| 3-11 | TYPICAL SECTIONS OF IMPROVEMENT | | |
| 12-17 | SPECIAL DETAILS | | |
| 18-21 | TEMPORARY EROSION CONTROL PLANS | | |
| 22-24 | MAINTENANCE OF TRAFFIC | | |
| 25-26 | PERMANENT PAVEMENT MARKINGS | | |
| 27 | PERMANENT SIGNING - HWY. 89 | | |
| 28-38 | SPECIAL SIGNS | | |
| 39 | SOIL BORING LOG | | |
| 40-45 | QUANTITY SHEETS | | |
| 46 | SCHEDULE OF BRIDGE QUANTITIES | 51767 | |
| 47 | SUMMARY OF QUANTITIES AND REVISIONS | | |
| 48-49 | SURVEY CONTROL DETAILS | | |
| 50 | INTERCHANGE LAYOUT - HWY. 89 | | |
| 51 | INTERCHANGE ROW - HWY. 89 | | |
| 52 | PLAN AND PROFILE - I-40 | | |
| 53 | PLAN AND PROFILE - I-40 | | |
| 54 | PLAN AND PROFILE - I-40 | | |
| 55 | PLAN AND PROFILE - I-40 | | |
| 56 | PLAN AND PROFILE - RAMP 1 | | |
| 57 | PLAN AND PROFILE - RAMP 1 | | |
| 58 | PLAN AND PROFILE - RAMP 2 | | |
| 59 | PLAN AND PROFILE - RAMP 3 | | |
| 60 | PLAN AND PROFILE - RAMP 4 AND MERGED RAMPS 3 AND 4 | | |
| 61 | PLAN AND PROFILE - HWY. 89 | | |
| 62 | PLAN AND PROFILE - HWY. 89 | | |
| 63 | PLAN AND PROFILE - HWY. 89 | | |
| 64 | PLAN AND PROFILE - SAYLOR ROAD | | |
| 65 | CULVERT DIAGRAM | | |
| 66 | LAYOUT OF BRIDGE, HWY. 89 OVER INTERSTATE 40 (SHEET 1 OF 5) | 51768 | |
| 67 | LAYOUT OF BRIDGE, HWY. 89 OVER INTERSTATE 40 (SHEET 2 OF 5) | 51769 | |
| 68 | LAYOUT OF BRIDGE, HWY. 89 OVER INTERSTATE 40 (SHEET 3 OF 5) | 51770 | |
| 69 | LAYOUT OF BRIDGE, HWY. 89 OVER INTERSTATE 40 (SHEET 4 OF 5) | 51771 | |
| 70 | LAYOUT OF BRIDGE, HWY. 89 OVER INTERSTATE 40 (SHEET 5 OF 5) | 51772 | |
| 71 | DETAILS OF END BENTS (SHEET 1 OF 4) | 51773 | |
| 72 | DETAILS OF END BENTS (SHEET 2 OF 4) | 51774 | |
| 73 | DETAILS OF END BENTS (SHEET 3 OF 4) | 51775 | |
| 74 | DETAILS OF END BENTS (SHEET 4 OF 4) | 51776 | |
| 75 | DETAILS OF INTERMEDIATE BENT NO. 2 (SHEET 1 OF 2) | 51777 | |
| 76 | DETAILS OF INTERMEDIATE BENT NO. 2 (SHEET 2 OF 2) | 51778 | |
| 77 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 1 OF 8) | 51779 | |
| 78 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 2 OF 8) | 51780 | |
| 79 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 3 OF 8) | 51781 | |
| 80 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 4 OF 8) | 51782 | |
| 81 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 5 OF 8) | 51783 | |
| 82 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 6 OF 8) | 51784 | |
| 83 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 7 OF 8) | 51785 | |
| 84 | DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT (SHEET 8 OF 8) | 51786 | |
| 85 | DETAILS OF ELASTOMERIC BEARINGS | 51787 | |
| 86 | DETAILS OF BRIDGE MOUNTED SIGN STRUCTURE (SHEET 1 OF 3) | 51788 | |
| 87 | DETAILS OF BRIDGE MOUNTED SIGN STRUCTURE (SHEET 2 OF 3) | 51789 | |
| 88 | DETAILS OF BRIDGE MOUNTED SIGN STRUCTURE (SHEET 3 OF 3) | 51790 | |
| 89 | EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS | 1888A | 4-10-03 |
| 90 | DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES | 1891F | 4-10-03 |
| 91 | DETAILS OF STANDARD TYPE C APPROACH GUTTERS | 2016C | 7-14-10 |
| 92 | DETAILS OF STANDARD TYPE D BRIDGE NAME PLATES | 2387 | 9-8-11 |
| 93 | STD. DETAILS OF CONCRETE PILES IN SEISMIC PERFORMANCE ZONES 1 & 2 | 14964 | 12-10-09 |
| 94 | DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BR. DECK FORMS FOR STEEL AND CONC. GIRDER SPANS | 14991 | 4-10-03 |
| 95 | DETAILS OF CONCRETE RIPRAP & MISC. DETAILS FOR STEEL PILING | 14995A | 4-10-03 |
| 96 | CONCRETE DITCH PAVING | CDP-1 | 11-17-10 |
| 97 | DETAILS OF DRIVEWAYS & ISLANDS | DR-1 | 11-29-07 |
| 98 | FLARED END SECTION | FES-1 | 10-18-96 |
| 99 | FLARED END SECTION | FES-2 | 10-18-96 |
| 100 | DETAILS OF DROP INLETS & SPILLWAY OUTLET | FPC-9N | 7-02-98 |
| 101 | DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST) | FPC-9S | 7-26-12 |
| 102 | GUARD RAIL DETAILS | GR-8 | 7-14-10 |
| 103 | GUARD RAIL DETAILS | GR-8A | 7-14-10 |
| 104 | GUARD RAIL DETAILS | GR-9 | 4-17-08 |
| 105 | GUARD RAIL DETAILS | GR-9A | 4-17-08 |
| 106 | GUARD RAIL DETAILS | GR-10 | 7-14-10 |
| 107 | GUARD RAIL DETAILS | GR-10A | 7-14-10 |
| 108 | IMPACT ATTENUATION BARRIER | IB-1 | 10-15-09 |

| SHEET NO. | TITLE | DRAWING NO. | DATE |
|---|---|---|---|
| 109 | PRECAST CONCRETE BOX CULVERTS | PBC-1 | 12-15-11 |
| 110 | CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING | PCC-1 | 12-15-11 |
| 111 | PAVEMENT MARKING DETAILS | PM-1 | 11-17-10 |
| 112 | PERMANENT PAVEMENT MARKING ON ACCESS CONTROLLED ROADWAYS | PM-2 | 7-26-12 |
| 113 | DETAILS OF PIPE UNDERDRAIN | PU-1 | 4-10-03 |
| 114 | REINFORCED CONCRETE BOX CULVERT DETAILS | RCB-1 | 7-26-12 |
| 115 | EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS | RCB-2 | 11-20-03 |
| 116 | TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC | SE-1 | 1-09-87 |
| 117 | TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC | SE-2 | 10-18-96 |
| 118 | SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES | SES-1 | 10-18-96 |
| 119 | STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES | SHS-1 | 4-17-08 |
| 120 | DETAILS OF SPECIAL ITEMS | SI-1 | 7-26-12 |
| 121 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | TC-1 | 12-15-11 |
| 122 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | TC-2 | 3-11-10 |
| 123 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | TC-3 | 10-15-09 |
| 124 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER | TC-4 | 10-15-09 |
| 125 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER | TC-5 | 10-15-09 |
| 126 | TEMPORARY EROSION CONTROL DEVICES | TEC-1 | 12-15-11 |
| 127 | TEMPORARY EROSION CONTROL DEVICES | TEC-2 | 6-2-94 |
| 128 | TEMPORARY EROSION CONTROL DEVICES | TEC-3 | 11-03-94 |
| 129 | DETAILS OF STANDARD TURNOUT FOR ENTRANCE & EXIT RAMPS (NON-REINFORCED) | TR-1A | 8-22-02 |
| 130 | WIRE FENCE TYPE A AND B | WF-1 | 8-22-02 |
| 131 | WIRE FENCE WATER GAPS | WF-2 | 4-20-79 |
| 132 | WIRE FENCE TYPE C AND D | WF-4 | 8-22-02 |
| 133 | DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS (30 DEGREE SKEW) | W-X30 | 7-15-63 |
| 134 | DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS (30 DEGREE SKEW) | W-X303-1 | 5-10-66 |
| 135 | DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS | R-100X-X3 | 12-11-64 |
| 136 | DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS (30 DEGREE SKEW) | R-130X-1 | 1-24-64 |
| 137-182 | CROSS SECTIONS | | |

NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD ON 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 ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.

5 ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.

6 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.

7 THE 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.

8 ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENT REMOVED SHALL BE PAID FOR UNDER PAY ITEM 210 - EXCAVATION AND EMBANKMENT, UNLESS OTHERWISE NOTED.

9 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.

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 11-15-12 | | | | 6 | ARK. | | | |
| 12-5-12 | | | | JOB NO. | | 060897 | 2 | 182 |
| | | | | (2) INDEX OF SHEETS, GOV. SPECS. & GEN. NOTES | | | | |

GOVERNING SPECIFICATIONS

ARKANSAS 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 | REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS |
| FHWA-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS |
| FHWA-1273 | SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140) |
| FHWA-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES |
| FHWA-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS |
| FHWA-1273 | SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS |
| FHWA-1273 | SUPPLEMENT - WAGE RATE DETERMINATION |
| 100-2 | 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 |
| 404-2 | DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES |
| 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 |
| 718-2 | REFLECTORIZED PAINT PAVEMENT MARKINGS |
| 719-2 | THERMOPLASTIC PAVEMENT MARKING MATERIAL |
| 723-1 | GENERAL REQUIREMENTS FOR SIGNS |
| 804-1 | INSTALLATION OF DOWELL BARS AND TIE BARS |
| JOB 060897 | ASPHALT CONCRETE HOT MIX SURFACE COURSE SURFACE TOLERANCE AND INCENTIVE PAYMENTS |
| JOB 060897 | BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT |
| JOB 060897 | BROADBAND INTERNET SERVICE FOR FIELD OFFICE |
| JOB 060897 | CHANNEL POST SIGN SUPPORT |
| JOB 060897 | EXCAVATION AND EMBANKMENT |
| JOB 060897 | GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION |
| JOB 060897 | HIGH PERFORMANCE PAVEMENT MARKING |
| JOB 060897 | INTERNET BIDDING |
| JOB 060897 | MAINTENANCE OF TRAFFIC |
| JOB 060897 | NESTING SITES OF MIGRATORY BIRDS |
| JOB 060897 | PARTNERING REQUIREMENTS |
| JOB 060897 | PLASTIC PIPE |
| JOB 060897 | REMOVAL AND DISPOSAL OF GUARDRAIL |
| JOB 060897 | RETAINING WALLS |
| JOB 060897 | SOIL STABILIZATION |
| JOB 060897 | SPECIAL SAFETY REQUIREMENTS FOR BRIDGES OVER ROADWAYS |
| JOB 060897 | STEEL OVERHEAD, CANTILEVER, AND BRIDGE MOUNTED SIGN STRUCTURES |
| JOB 060897 | STORM WATER POLLUTION PREVENTION PLAN |
| JOB 060897 | SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS |
| JOB 060897 | TEMPORARY IMPACT ATTENUATION BARRIER |
| JOB 060897 | TEXTURED COATING FINISH |
| JOB 060897 | UTILITY ADJUSTMENTS |
| JOB 060897 | VALUE ENGINEERING |
| JOB 060897 | WARM MIX ASPHALT |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON

INDEX OF SHEETS, GOVERNING SPECIFICATIONS & GENERAL NOTES

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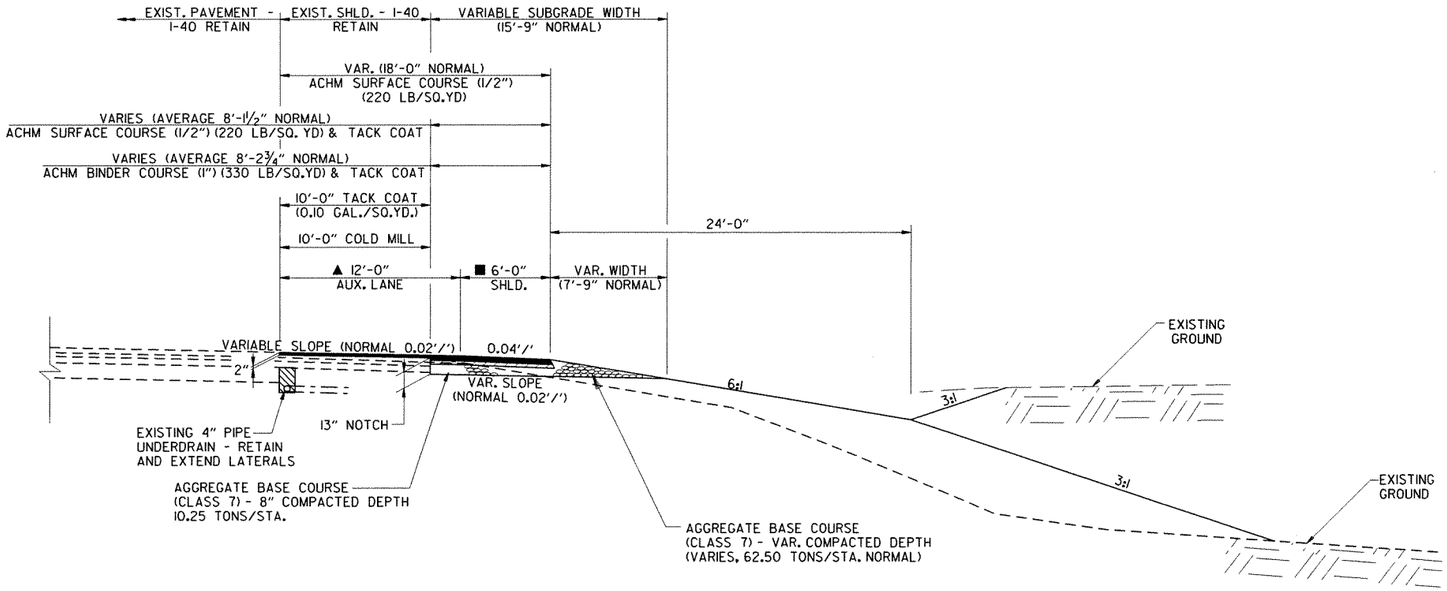
(2) TYPICAL SECTIONS OF IMPROVEMENT




## I-40 TYPICAL NOTCH & WIDEN SECTION
## I-40 W/ AUXILIARY LANE

(SHOWN IN DIRECTION OF TRAFFIC)
STA. 458+67.56 TO 471+67.56 LT. LANES
STA. 505+69.85 TO 515+69.85 RT. LANES
STA. 471+87.79 TO 478+53.81 RT. LANES
STA. 483+77.81 TO 490+48.30 LT. LANES

▲ TRANSITION FROM 0' AT STA. 458+67.56 TO 12' AT STA. 461+67.56 LEFT LANES. TRANSITION FROM 12' AT STA. 512+69.85 TO 0' AT STA. 515+69.85 RIGHT LANES.

AUXILIARY LANE VARIES FROM:
STA. 470+80.02 TO 471+67.56 LT. LANES
STA. 471+87.79 TO 478+53.81 RT. LANES
STA. 483+77.81 TO 490+48.30 LT. LANES
STA. 505+69.85 TO 507+11.95 RT. LANES

■ SEE PLANS FOR VARIATION IN SHLD. WIDTH.

NOTES:

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

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

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

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON



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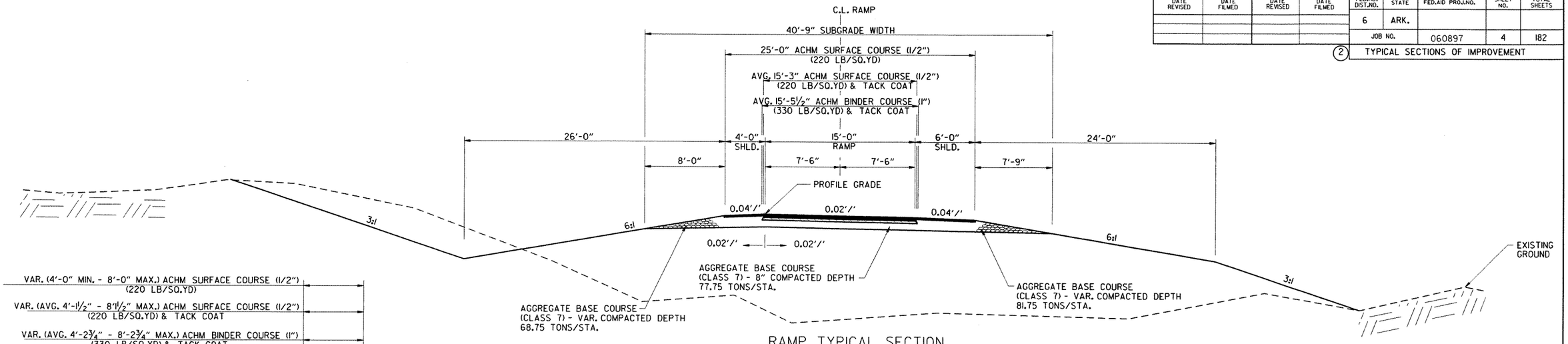
| | | | | JOB NO. | | 060897 | 4 | 182 |

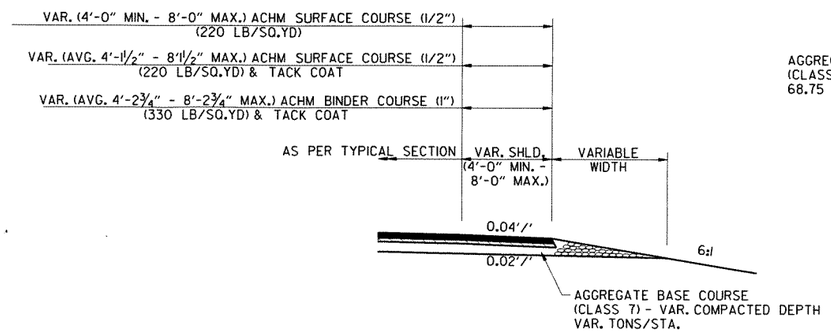
(2) TYPICAL SECTIONS OF IMPROVEMENT




## RAMP TYPICAL SECTION

(SHOWN IN THE DIRECTION OF TRAFFIC)

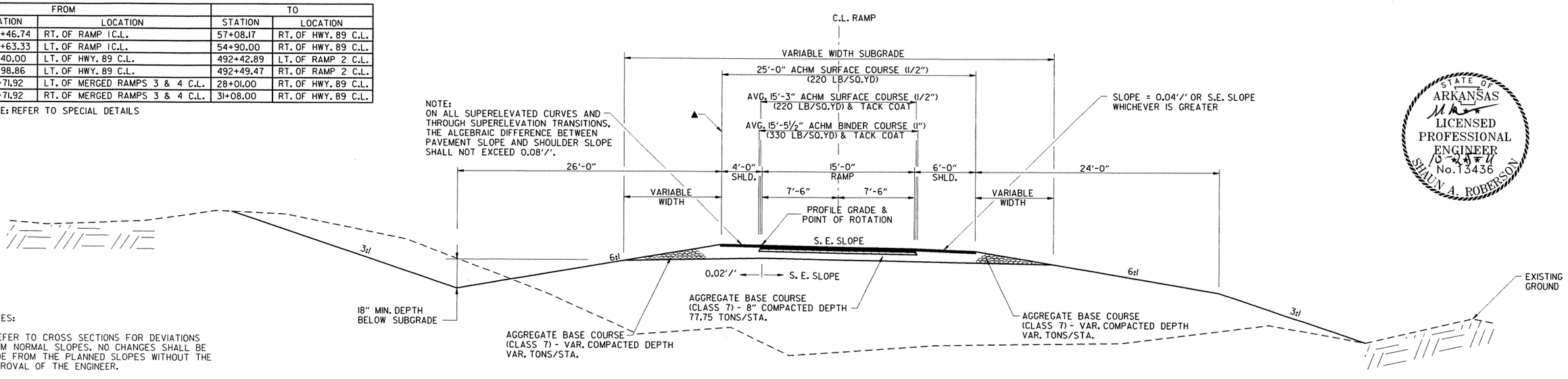
RAMP 1 STA. 476+42.01 TO STA. 476+91.48 AND STA. 486+41.83 TO STA. 486+93.21
RAMP 2 STA. 491+57.57 TO STA. 498+47.60
RAMP 3 STA. 483+36.33 TO STA. 485+84.48




## RAMP FULL DEPTH SHOULDER SECTION

| FROM | | TO | |
|---|---|---|---|
| STATION | LOCATION | STATION | LOCATION |
| 492+46.74 | RT. OF RAMP 1 C.L. | 57+08.17 | RT. OF HWY. 89 C.L. |
| 492+63.33 | LT. OF RAMP 1 C.L. | 54+90.00 | RT. OF HWY. 89 C.L. |
| 54+40.00 | LT. OF HWY. 89 C.L. | 492+42.89 | LT. OF RAMP 2 C.L. |
| 56+98.86 | LT. OF HWY. 89 C.L. | 492+49.47 | RT. OF RAMP 2 C.L. |
| 481+71.92 | LT. OF MERGED RAMPS 3 & 4 C.L. | 28+01.00 | RT. OF HWY. 89 C.L. |
| 481+71.92 | RT. OF MERGED RAMPS 3 & 4 C.L. | 31+08.00 | RT. OF HWY. 89 C.L. |

NOTE: REFER TO SPECIAL DETAILS




## RAMP TYPICAL SUPERELEVATED SECTION

(SHOWN IN THE DIRECTION OF TRAFFIC)

RAMP 1 STA. 476+91.48 TO STA. 486+41.83 AND STA. 486+93.21 TO STA. 488+80.71
RAMP 2 STA. 498+47.60 TO STA. 505+69.98
RAMP 3 STA. 473+91.58 TO STA. 483+36.33
RAMP 4 STA. 471+66.76 TO STA. 478+55

▲ SEE RAMP 4 WITH BARRIER WALL SUPERELEVATED SECTION FOR RAMP 3 EDGE OF SHOULDER TIE TO RAMP 4.

NOTES:

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

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

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-24-11
No. 13436
SHAUN A. ROBERSON

# TYPICAL SECTIONS OF IMPROVEMENT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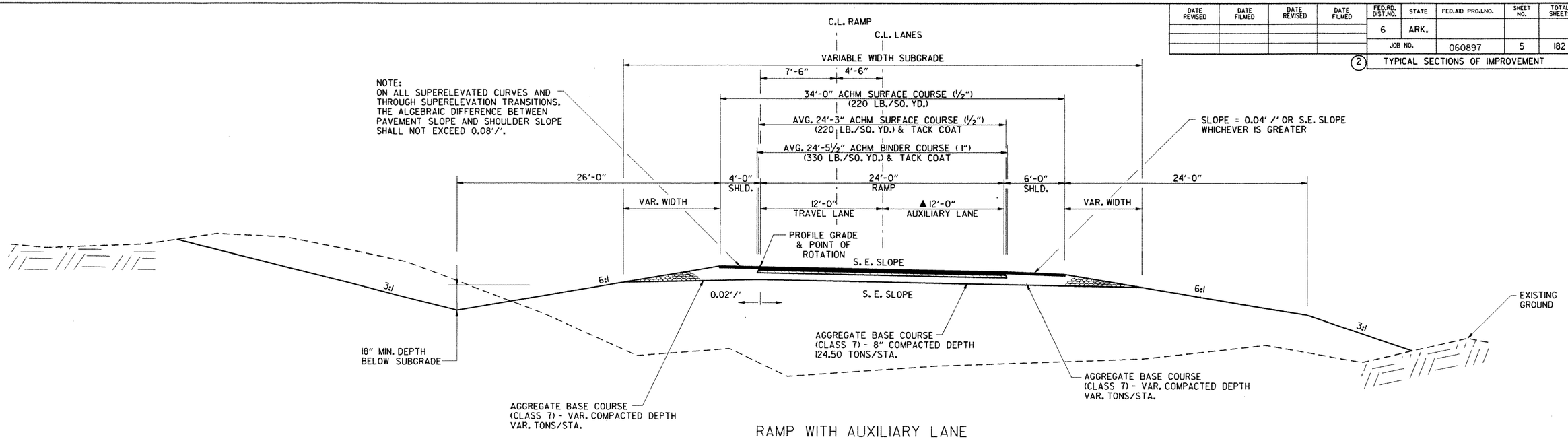
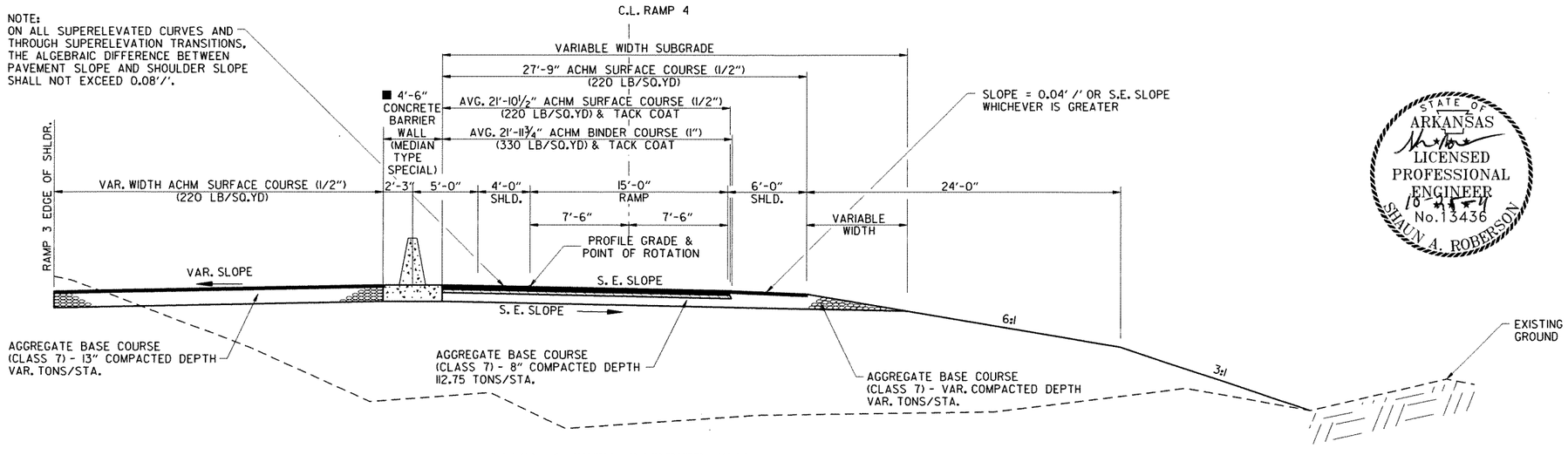



## RAMP WITH AUXILIARY LANE TYPICAL SUPERELEVATED SECTION

(SHOWN IN THE DIRECTION OF TRAFFIC)

RAMP 1 STA. 488+80.71 TO STA. 493+36.23

▲ TRANSITION TURN LANE FROM 3' AT RAMP 1 STA. 488+80.71 TO 12' AT RAMP 1 STA. 490+95.21




## RAMP 4 WITH BARRIER WALL SUPERELEVATED SECTION

(SHOWN IN THE DIRECTION OF TRAFFIC)

RAMP 4 STA. 478+55 TO STA. 479+70.17

■ SEE SPECIAL DETAILS FOR CONCRETE BARRIER WALL VERTICAL TRANSITION FROM STA. 478+55 TO STA. 478+80.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-25-11
No. 13436
SHAUN A. ROBERSON

NOTES:

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

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

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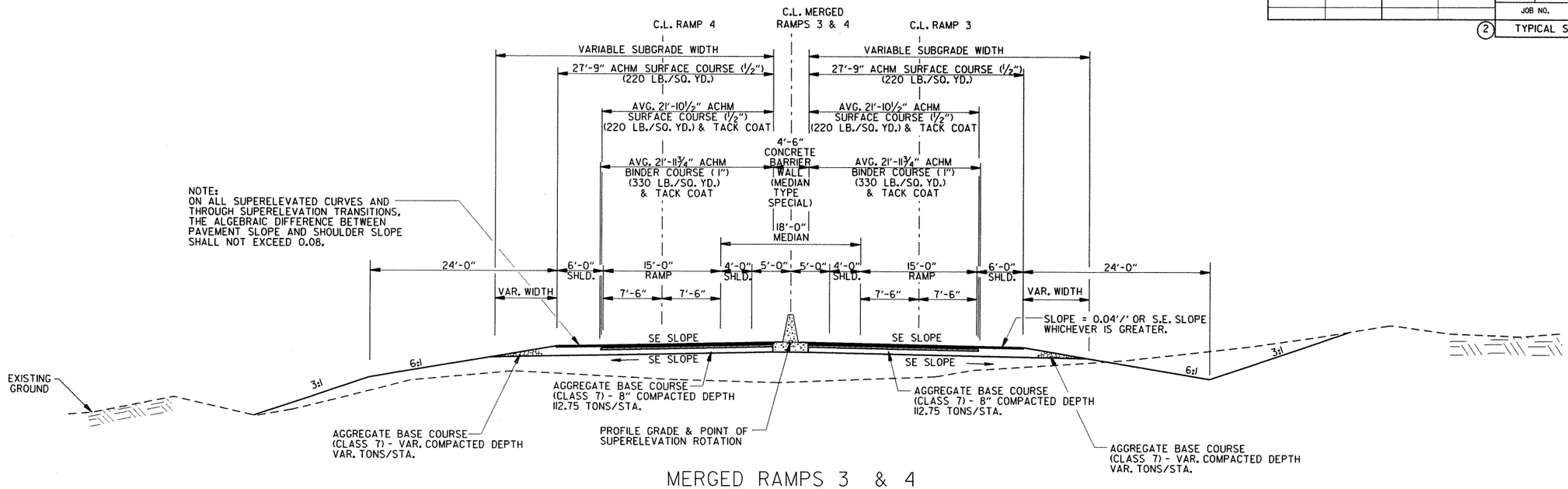
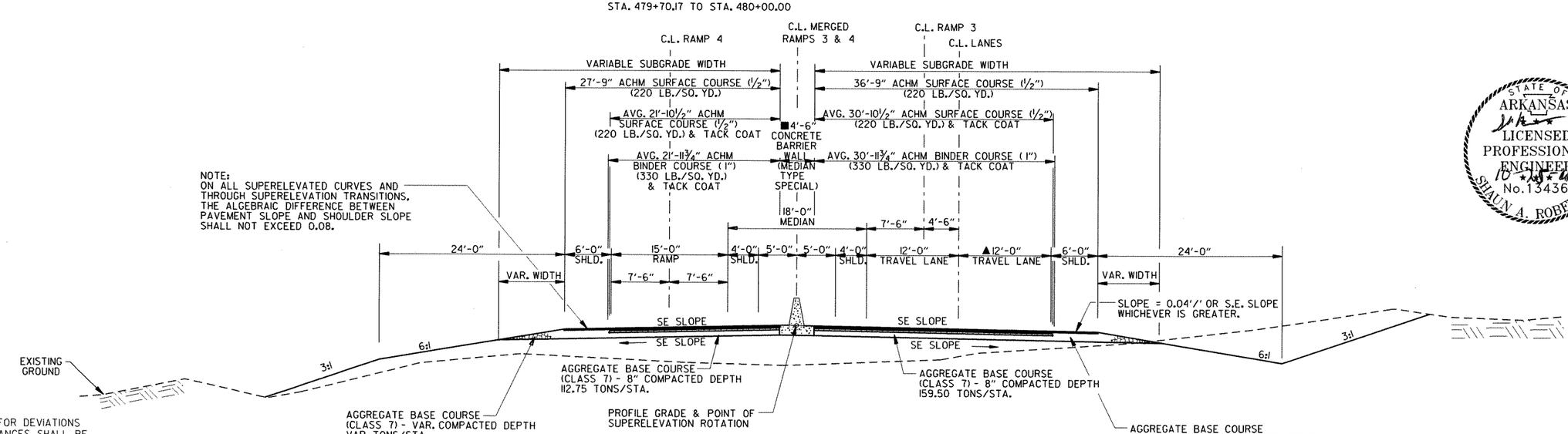



## MERGED RAMPS 3 & 4 SUPERELEVATED SECTION

STA. 479+70.17 TO STA. 480+00.00




## MERGED RAMPS 3 & 4 WITH AUXILIARY LANE SUPERELEVATED SECTION

STA. 480+00.00 TO STA. 482+96.92

NOTES:

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

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

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

▲ TRANSITION TURN LANE FROM 3' AT MERGED RAMPS 3 & 4 STA. 480+00.00 TO 12' AT MERGED RAMPS 3 & 4 STA. 481+00.00.

■ SEE SPECIAL DETAILS FOR CONCRETE BARRIER WALL VERTICAL TRANSITION FROM STA. 482+05 TO STA. 482+30.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-25-11
No. 13436
SHAUN A. ROBERSON

TYPICAL SECTIONS OF IMPROVEMENT

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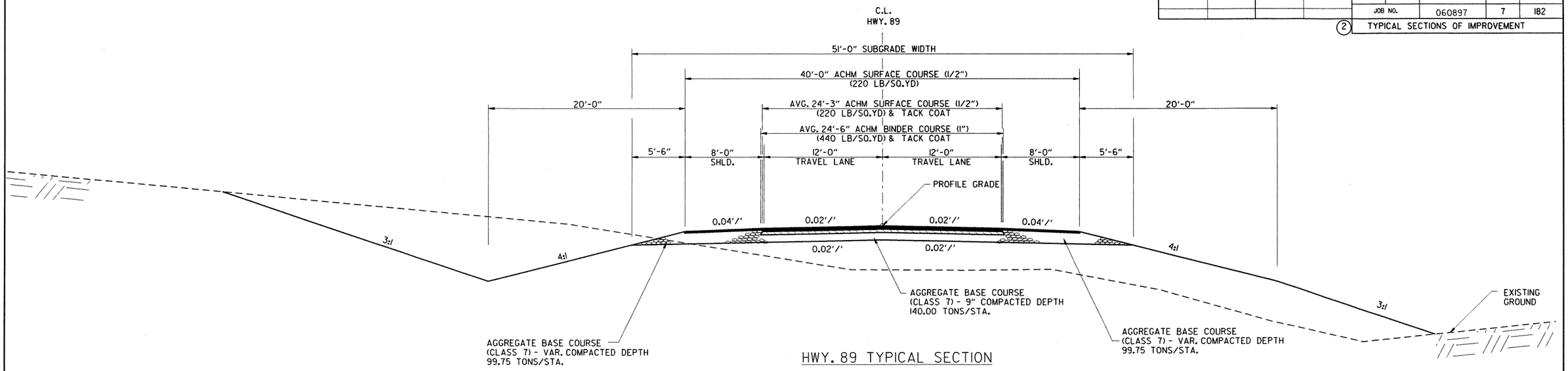
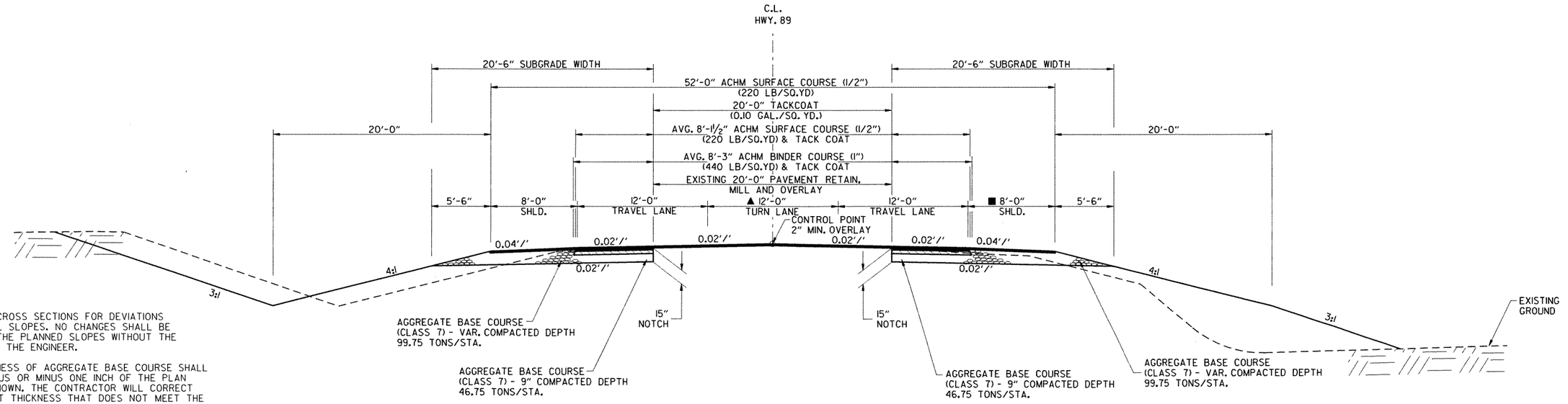



## HWY. 89 TYPICAL SECTION

STA. 48+69.97 TO 51+20.00




## HWY. 89 NOTCH AND WIDEN TYPICAL SECTION

STA. 25+20.00 TO 34+45.48

▲ TRANSITION FROM 0' AT STA. 25+20.00 TO 12' AT STA. 27+90.00. TRANSITION FROM 12' AT STA. 31+20.00 TO 0' AT STA. 33+90.00.

■ SEE TYPICAL HWY. 89 FULL DEPTH SHOULDER SECTION.

NOTES:

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

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

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

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

5. PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. ANY DAMAGE TO THE PAVEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-20-11
No. 13436
SHAUN A. ROBERSON

TYPICAL SECTIONS OF IMPROVEMENT

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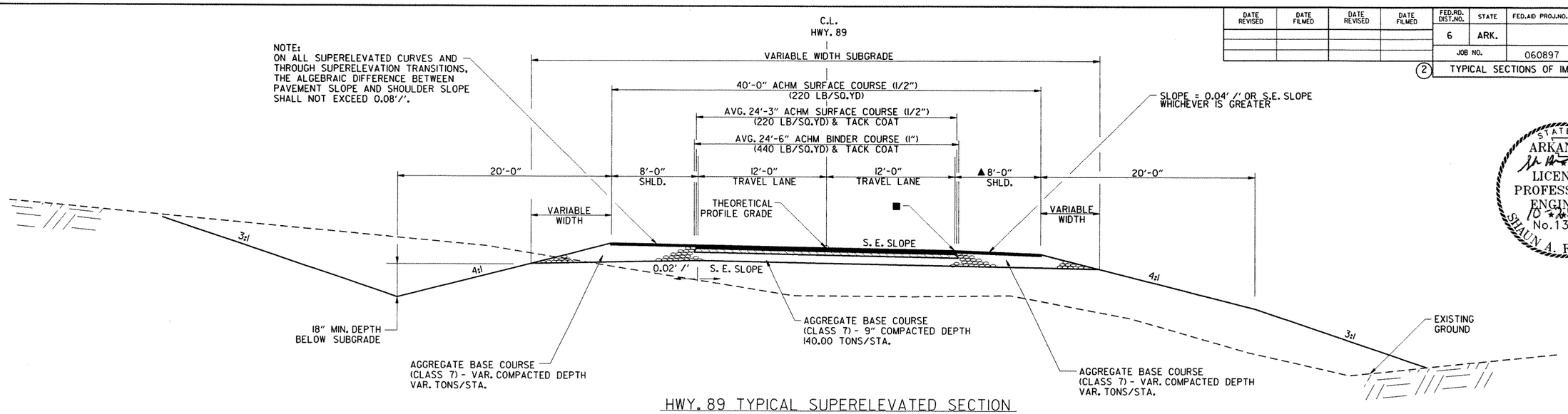
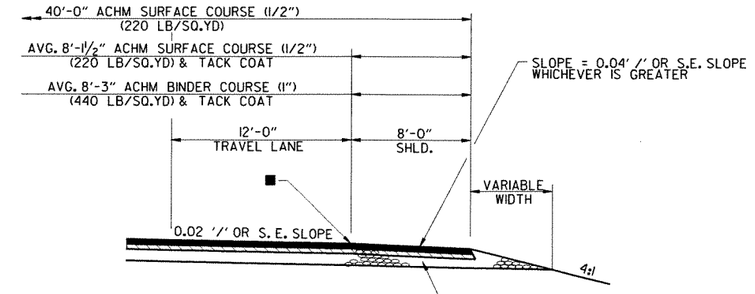



## HWY. 89 TYPICAL SUPERELEVATED SECTION

STA. 36+50.00 TO 48+69.97
STA. 59+80.00 TO 61+25.00

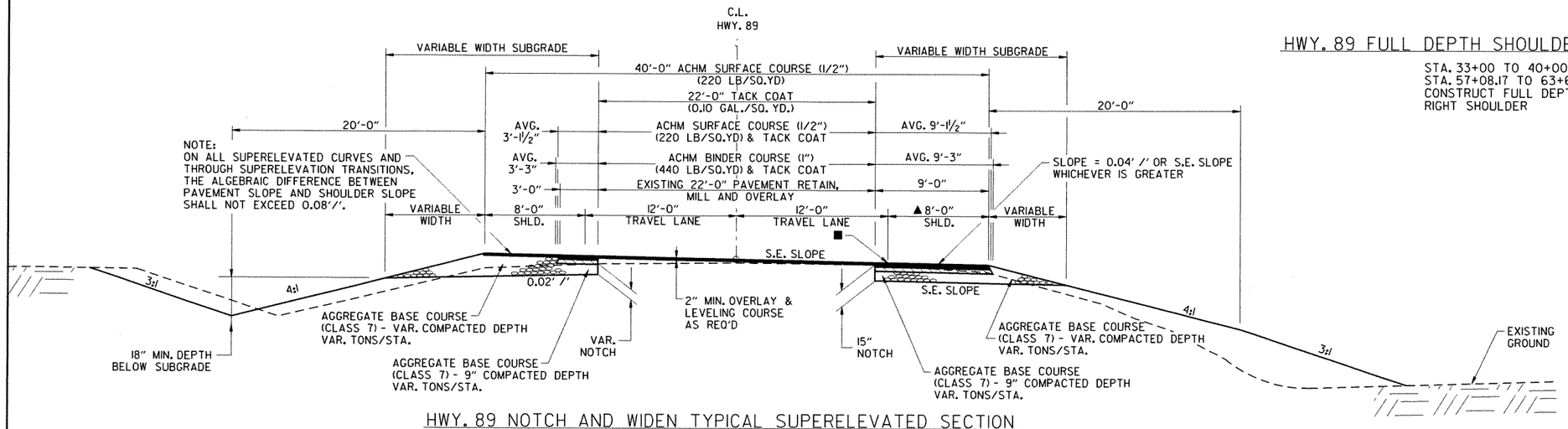
▲ SEE TYPICAL HWY. 89 FULL DEPTH SHOULDER SECTION.

■ POINT OF SUPERELEVATION ROTATION (0.24' BELOW PROFILE GRADE).




## HWY. 89 FULL DEPTH SHOULDER SECTION

STA. 33+00 TO 40+00
STA. 57+08.17 TO 63+60
CONSTRUCT FULL DEPTH PAVEMENT
RIGHT SHOULDER




## HWY. 89 NOTCH AND WIDEN TYPICAL SUPERELEVATED SECTION

STA. 34+45.48 TO 36+50.00
STA. 61+25.00 TO 63+60.00

■ POINT OF SUPERELEVATION ROTATION

NOTES:

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

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

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

4. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING.

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

6. PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. ANY DAMAGE TO THE PAVEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-20-11
No. 13436
SHAUN A. ROBERSON

# TYPICAL SECTIONS OF IMPROVEMENT

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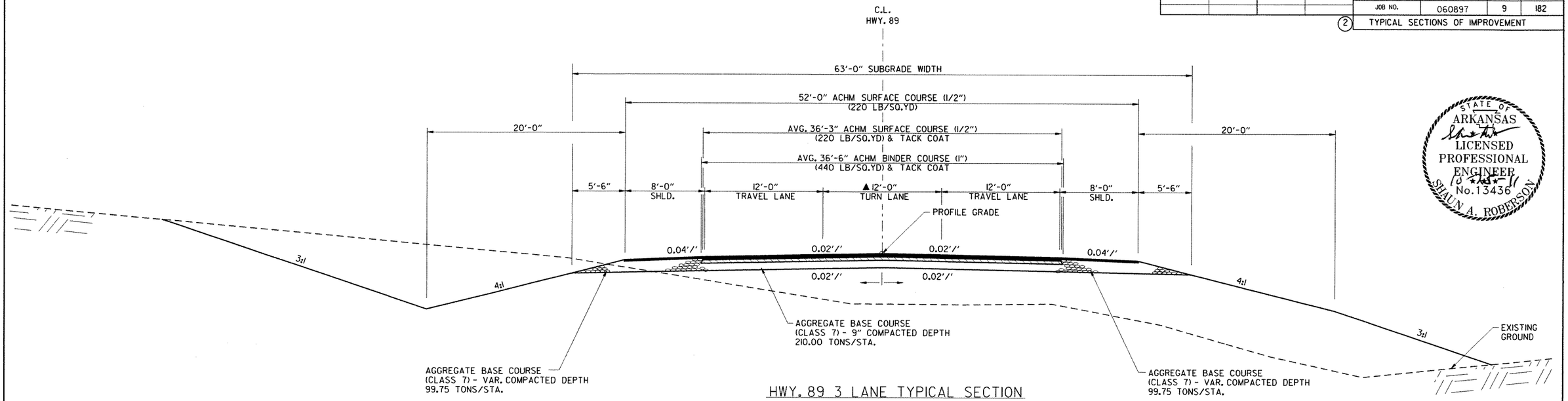
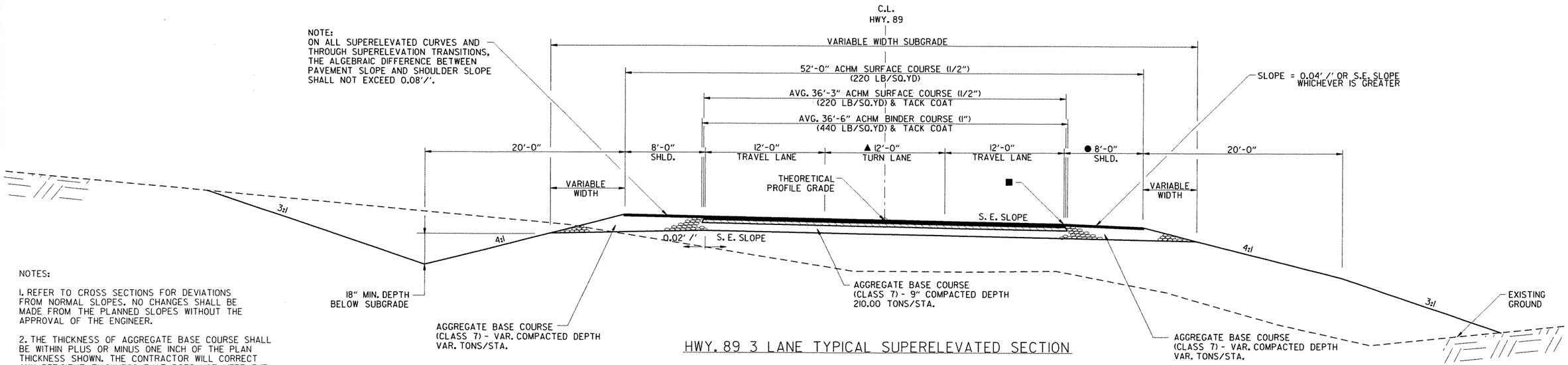



## HWY. 89 3 LANE TYPICAL SECTION

STA. 51+20.00 TO 56+84.82

▲ TRANSITIONS FROM 0' AT STA. 51+20.00 TO 12' AT STA. 53+90.00.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON




NOTE:
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.

## HWY. 89 3 LANE TYPICAL SUPERELEVATED SECTION

STA. 56+84.82 TO 59+80.00

▲ TRANSITIONS FROM 12' AT STA. 57+10.00 TO 0' AT STA. 59+80.00.

■ POINT OF SUPERELEVATION ROTATION (0.36' BELOW PROFILE GRADE).

● SEE TYPICAL HWY. 89 FULL DEPTH SHOULDER SECTION.

NOTES:

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

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

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## TYPICAL SECTIONS OF IMPROVEMENT

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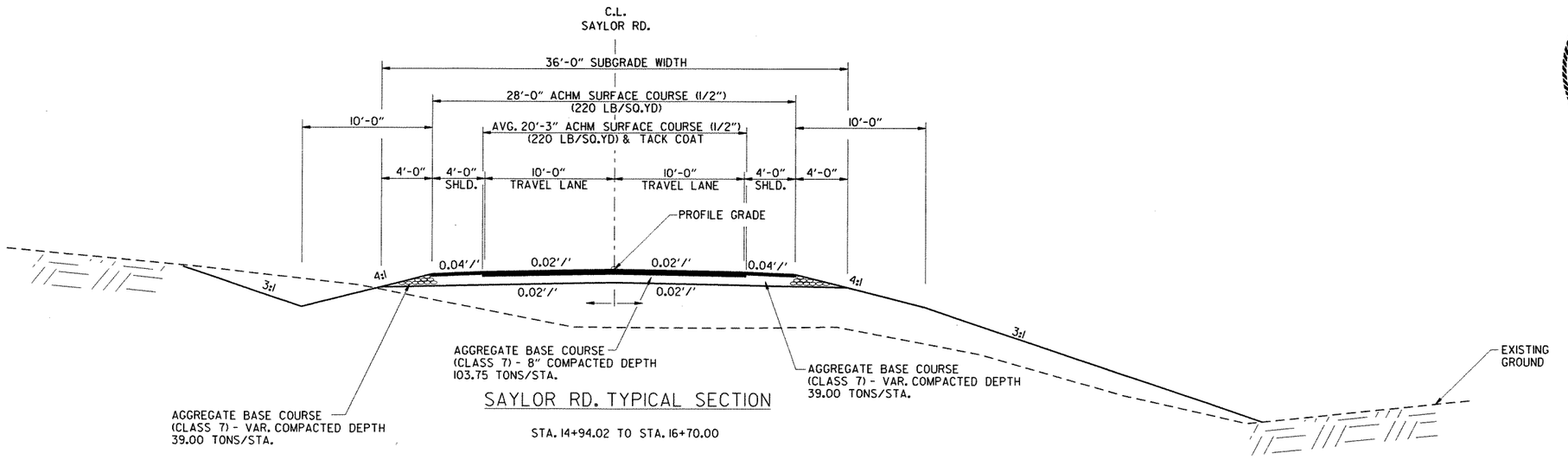
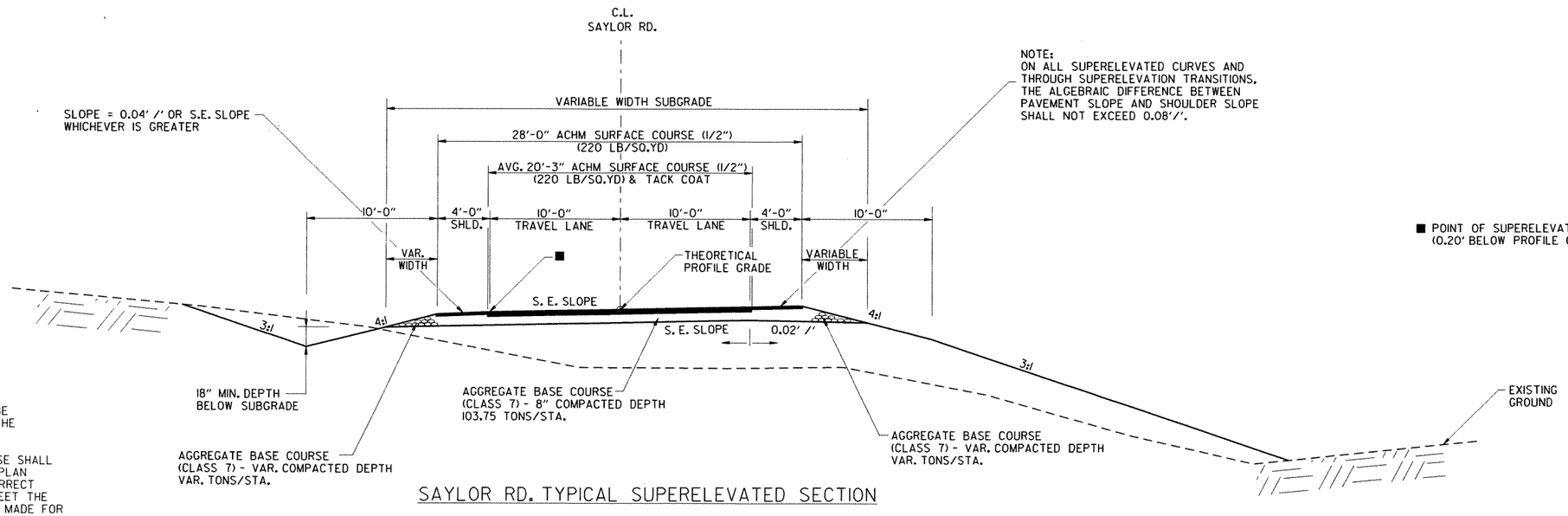
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON




## SAYLOR RD. TYPICAL SECTION

STA. 14+94.02 TO STA. 16+70.00




## SAYLOR RD. TYPICAL SUPERELEVATED SECTION

STA. 10+12.00 TO STA. 14+94.02

NOTES:

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

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# TYPICAL SECTIONS OF IMPROVEMENT

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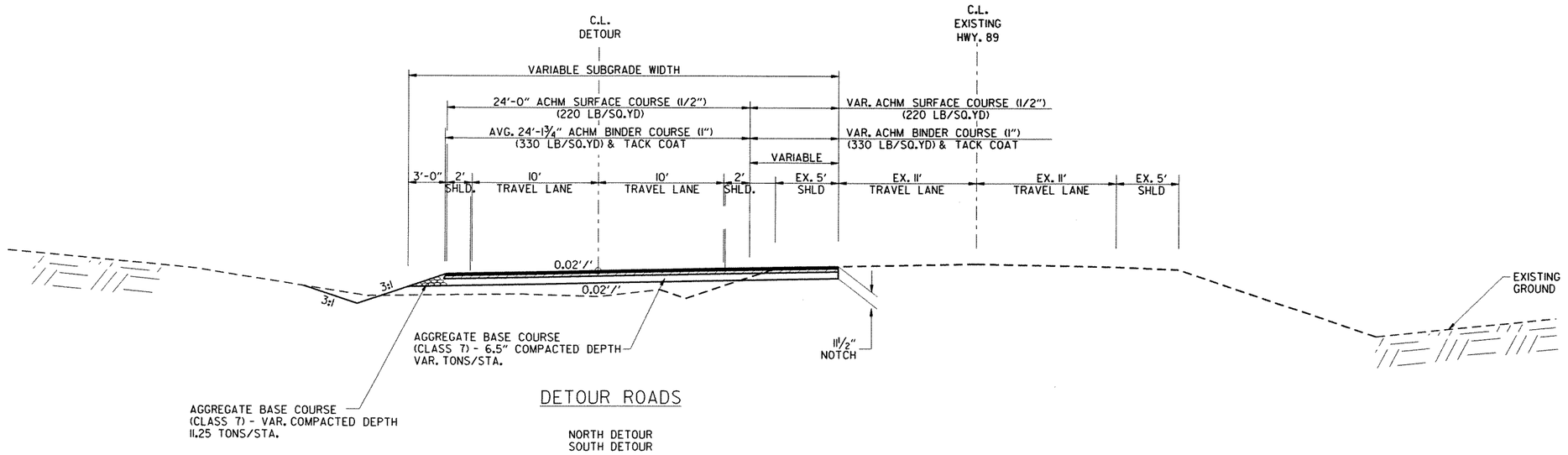


## DETOUR ROADS

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SOUTH DETOUR

NOTES:

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

2. PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. ANY DAMAGE TO THE PAVEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.13436
SHAUN A. ROBERSON

TYPICAL SECTIONS OF IMPROVEMENT

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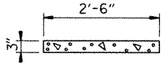
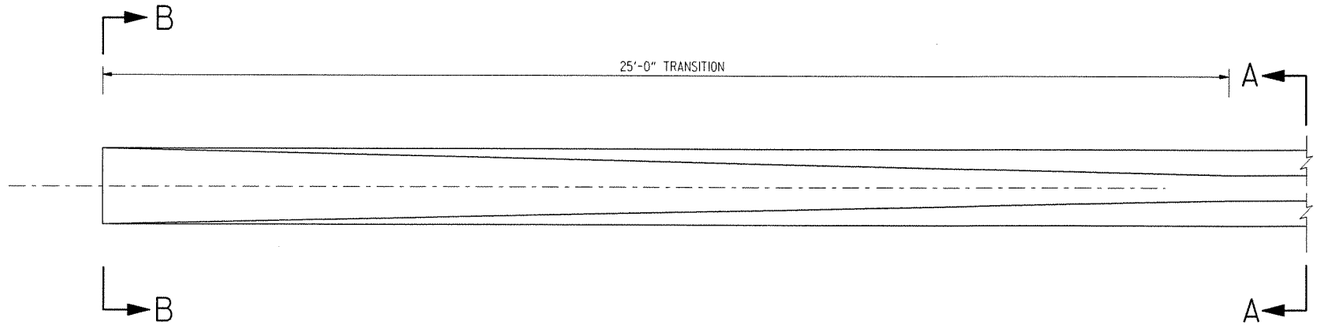
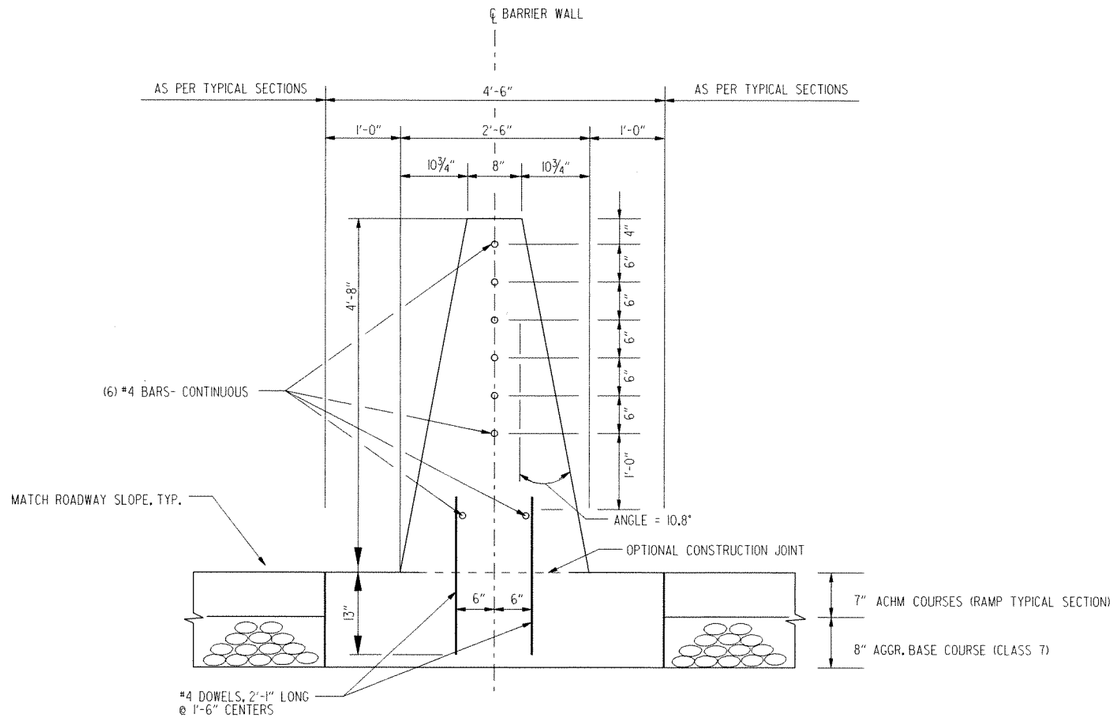



CONCRETE BARRIER WALL
(MEDIAN TYPE SPECIAL)
(SECTION B-B)

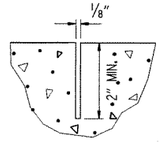



PLAN VIEW
CONCRETE BARRIER WALL (MEDIAN TYPE SPECIAL) TRANSITION
MERGED RAMPS 3 & 4

NOTE: TO BE CONSTRUCTED AT BEGINNING AND END OF BARRIER WALL



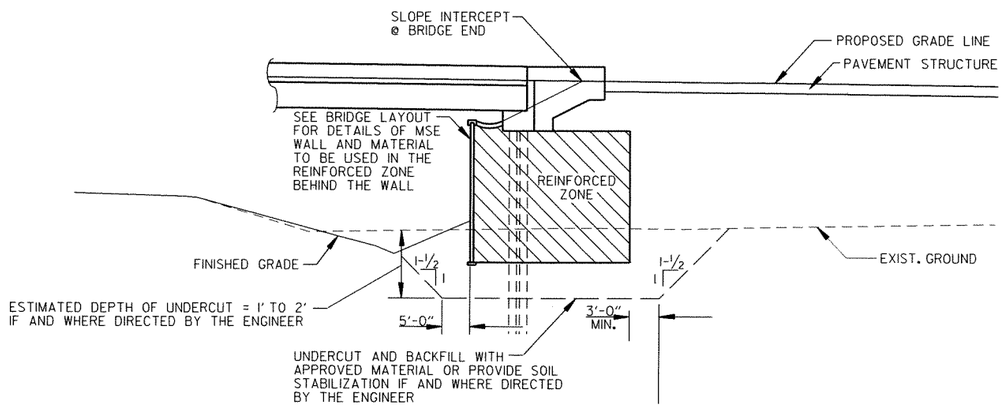

SECTION OF CONCRETE BARRIER WALL
(MEDIAN TYPE SPECIAL)
MERGED RAMPS 3 & 4
(SECTION A-A)




CONTRACTION JOINT DETAIL

GENERAL NOTES FOR CONCRETE BARRIER WALLS

1. ALL EXPOSED EDGES SHALL HAVE ¾" CHAMFERS.
2. CONTRACTION JOINTS SHALL BE CONSTRUCTED AT 15'-0" MAXIMUM SPACING IN TOP AND SIDES OF MEDIAN BARRIER AND SHALL BE FORMED IN FRESH CONCRETE.
3. CONTRACTION JOINTS ARE NOT PERMITTED AT THE DOWEL BAR LOCATIONS.
4. BARRIER TRANSITIONS WILL BE MEASURED AND PAID FOR AS "CONCRETE BARRIER WALL (MEDIAN TYPE SPECIAL)."
5. ALL REINFORCING BARS SHALL HAVE 2" MINIMUM COVER.
6. DOWEL BARS WILL NOT BE REQUIRED IF BARRIER AND BASE ARE CAST AS A COMPLETE UNIT.




LONGITUDINAL SECTION OF BRIDGE END EMBANKMENT
(SEE SPECIAL PROVISION - EXCAVATION AND EMBANKMENT)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.13436
SHAUN A. ROBERSON

SPECIAL DETAILS

sproberson 10/20/2011 9:42:10 AM
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REVISED DATE:
03-30-06

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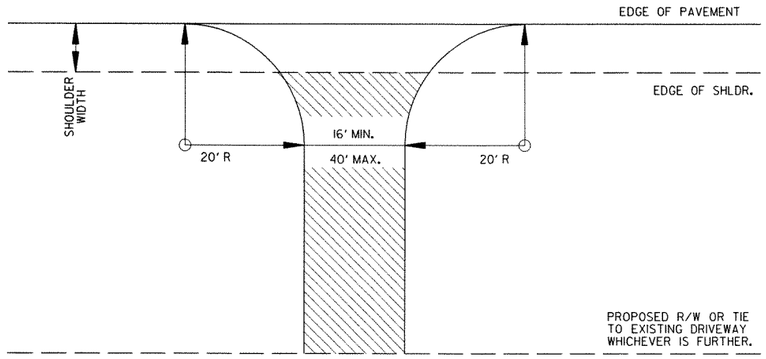
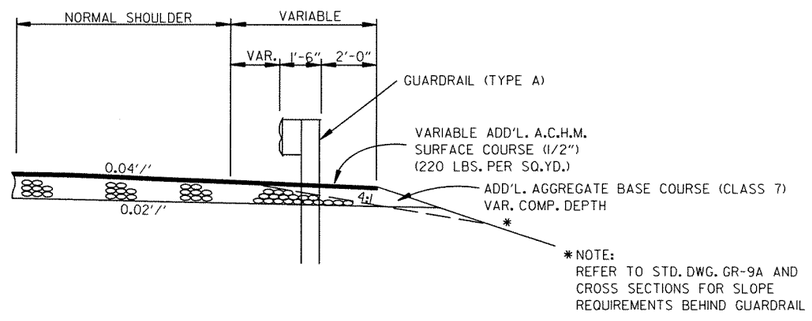
| | | | | JOB NO. | | 060897 | 13 | 182 |
| | | | | (2) | | SPECIAL DETAILS | | |

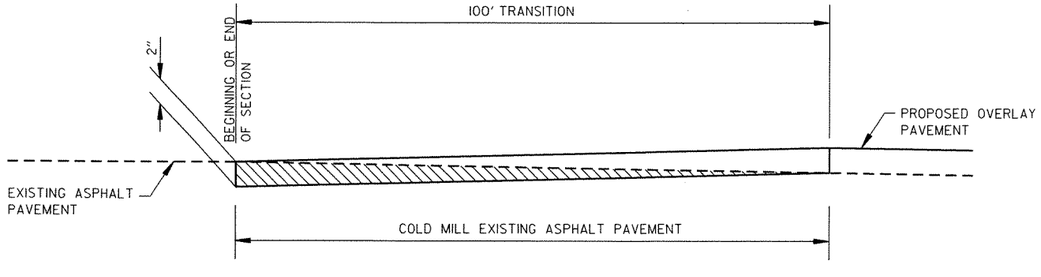



ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT DRIVE EXISTING; OR 6" CONCRETE IF CONCRETE DRIVE EXISTING.

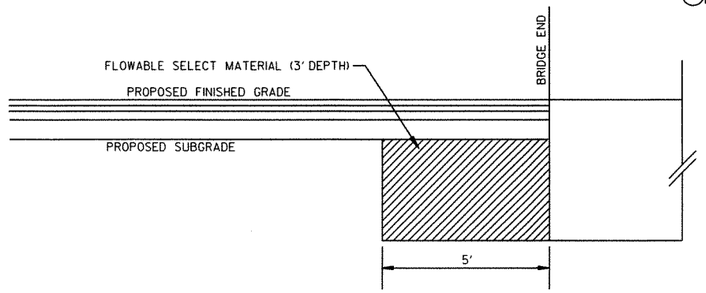
## DETAIL FOR DRIVEWAY TURNOUTS (ARTERIALS)




## WIDENING FOR GUARDRAIL

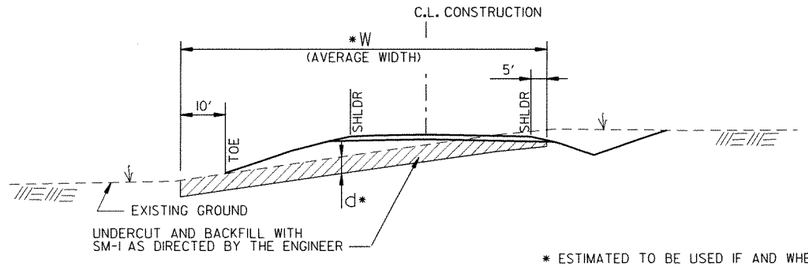



## DETAIL FOR TRANSITIONS




## FLOWABLE SELECT MATERIAL AT PROPOSED BRIDGE ENDS

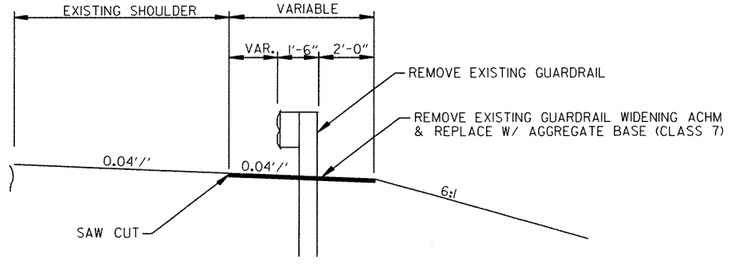
NOTE: EXCAVATION FOR PLACING FLOWABLE SELECT MATERIAL WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT SHALL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS BID ITEMS.




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

## DETAIL OF UNDERCUT

| | | |
|---|---|---|
| HWY. 89 STA. 38+25 TO STA. 41+50 | d = 2' | W = 69' |
| HWY. 89 STA. 41+50 TO STA. 49+00 | d = 3' | W = 161' |
| HWY. 89 STA. 51+00 TO STA. 58+34.82 | d = 1' | W = 138' |
| RAMP 1STA. 490+00 TO STA. 492+85 | d = 1' | W = 134' |
| RAMP 2 STA. 492+00 TO STA. 496+00 | d = 1' | W = 81' |
| RAMP 2 STA. 501+50 TO STA. 505+40 | d = 3' | W = 60' |




## REPAIR OF GUARDRAIL WIDENING REMOVAL (I-40)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON



saroberson 10/20/2011 9:43:25 AM
WORKSPACE: AHTD
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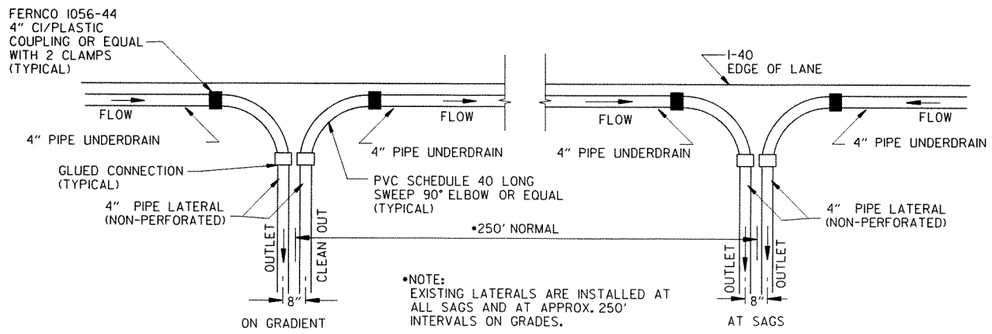
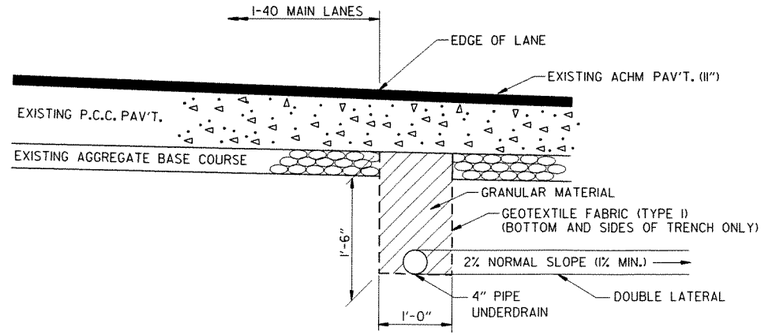
| | | | | (2) | SPECIAL DETAILS | | | |




NOTE:
PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

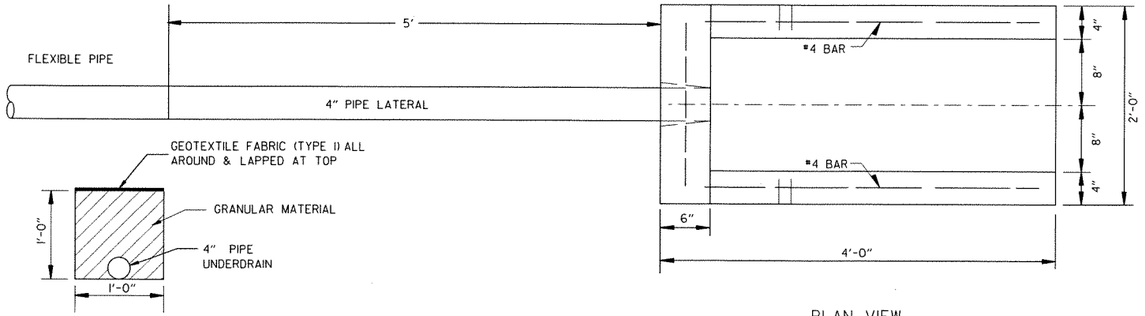
## PLAN DETAIL OF EXISTING PIPE UNDERDRAIN LATERAL: TO BE RETAINED AND EXTENDED




## TYPICAL SECTION OF EXISTING PIPE UNDERDRAINS TO BE RETAINED AND EXTENDED

NOTES:

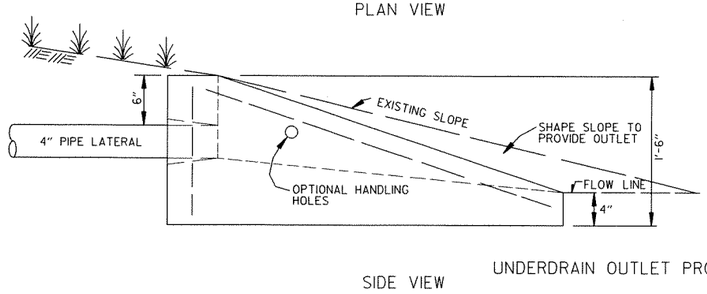
1. EXISTING 4" PIPE UNDERDRAIN LATERALS SHALL BE EXTENDED WHERE SHOWN ON THE PLANS OR WHERE DIRECTED BY THE ENGINEER. EXISTING OUTLET PROTECTORS SHOULD BE REMOVED AND RECONSTRUCTED. PAYMENT SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR 4" PIPE UNDERDRAINS.
2. ANY PIPE UNDERDRAIN OR LATERAL TO REMAIN IN PLACE THAT IS DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.




PLAN VIEW

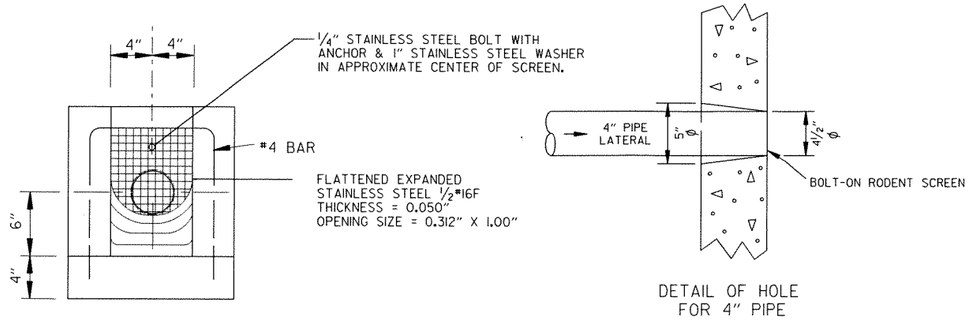
DETAIL OF PIPE UNDERDRAINS

NOTE: NO ADDITIONAL PAYMENT WILL BE MADE FOR THE 5' SCHEDULE 40 PORTIONS OF THE 4" PIPE LATERAL AND SHALL BE INCLUDED IN THE LINEAR FOOT BID PRICE.




SIDE VIEW

UNDERDRAIN OUTLET PROTECTORS




FRONT VIEW

DETAIL OF HOLE FOR 4" PIPE

## DETAILS OF INTERNAL DRAINAGE FOR EMBANKMENT CONSTRUCTION AND UNDERDRAIN OUTLETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-20-11
No. 13436
SHAUN A. ROBERSON

SPECIAL DETAILS

saroberson 10/20/2011 9:44:17 AM
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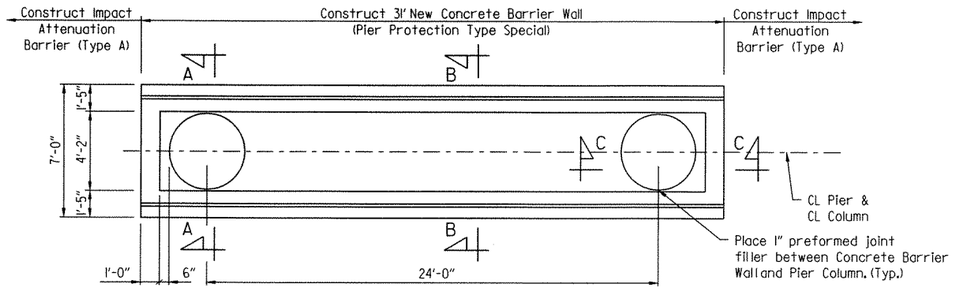
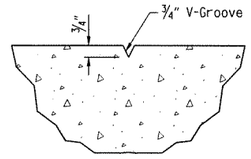
| | | | | (2) | | SPECIAL DETAILS | | |




PLAN




CONTRACTION JOINT DETAIL

## GENERAL NOTES FOR CONCRETE BARRIER WALLS

1. All barrier walls shall be constructed in accordance with Section 631 of the Standard Specifications, 2003 Edition.
2. Contraction joints required @ 15'-0" maximum spacing.
3. All contraction joints to be formed in fresh concrete on top and in sides of barrier wall.
4. All exposed edges of concrete barrier wall shall have a 3/4" chamfer.
5. Maintain 3" clearance on all footing reinforcement and 2" clearance on all other reinforcement.
6. All labor, excavation, equipment and materials required for the construction of the Concrete Barrier Wall shall be included in the item "Concrete Barrier Wall (Pier Protection Type Special)".

STATE OF ARKANSAS
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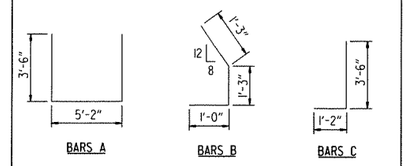
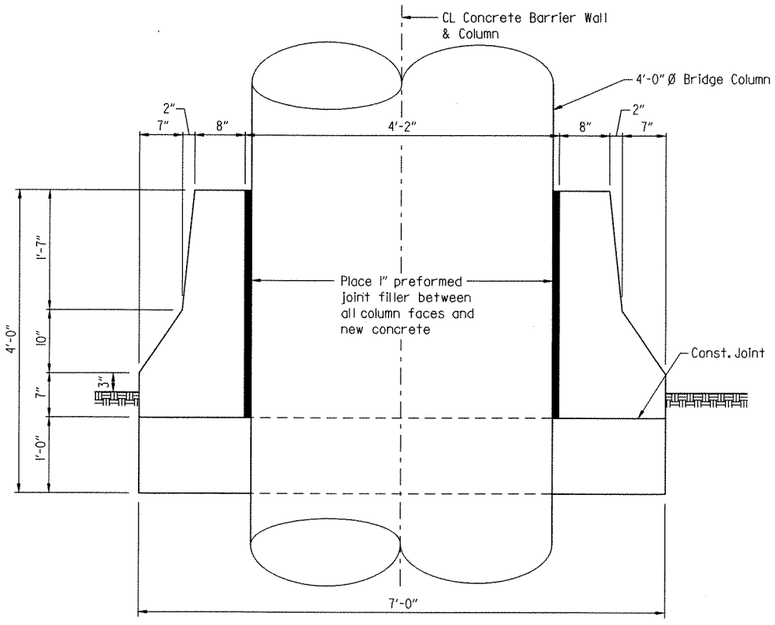
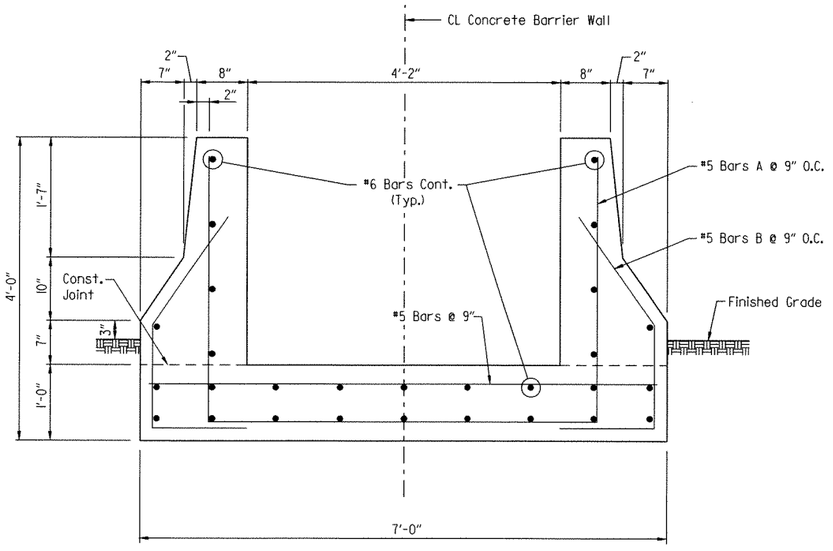
## BAR BENDING DIAGRAMS

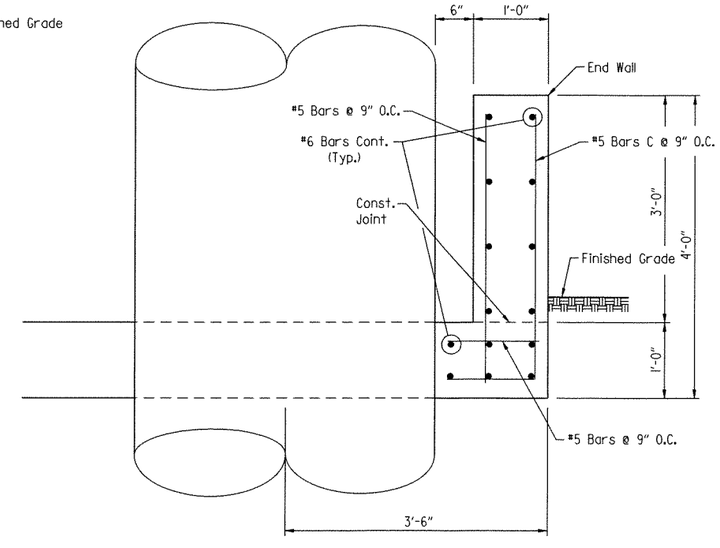



SECTION A-A
For Reinforcement, See Section B-B




SECTION B-B




SECTION B-B

CONCRETE BARRIER WALL DETAILS

saroberson 10/20/2011 9:45:19 AM
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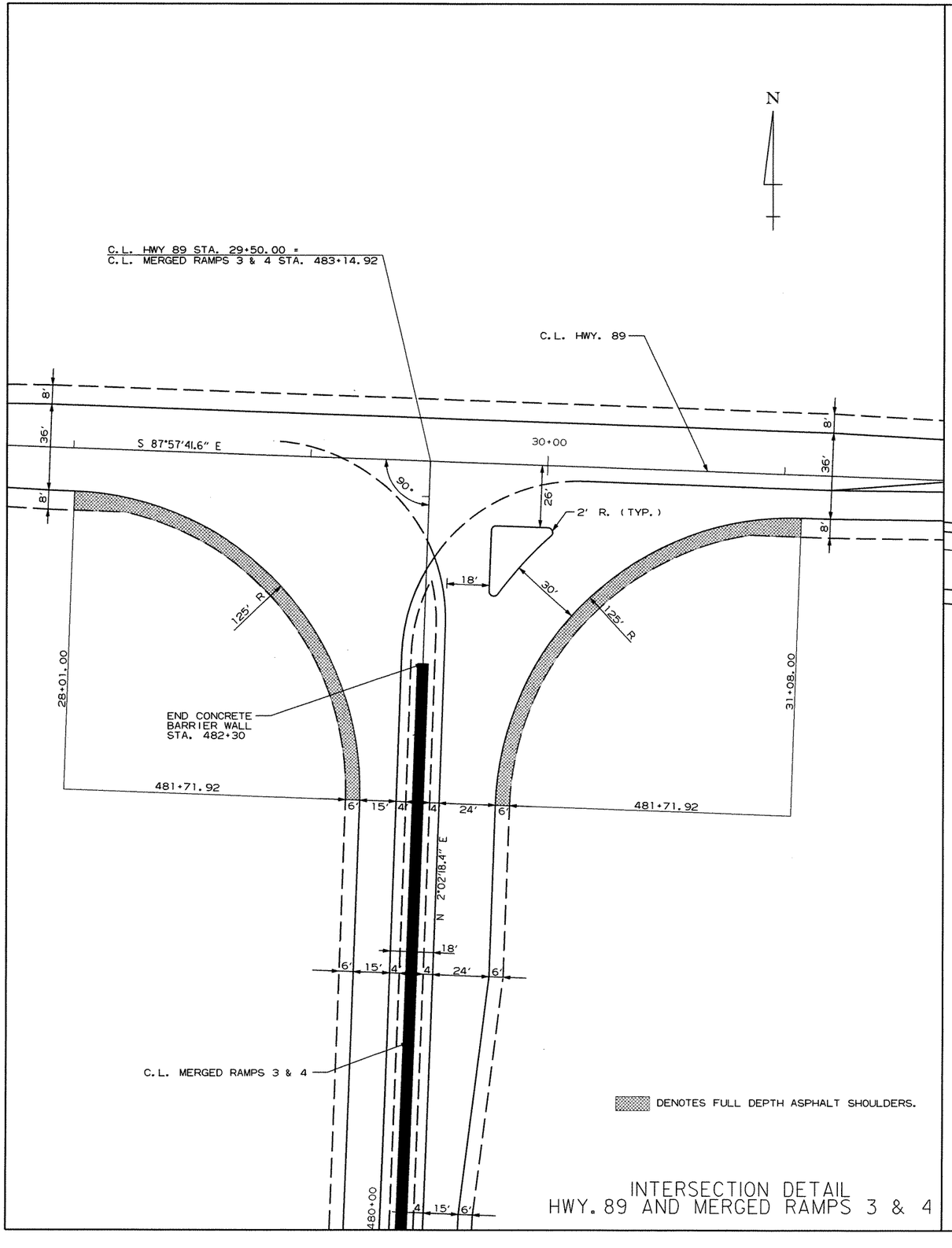
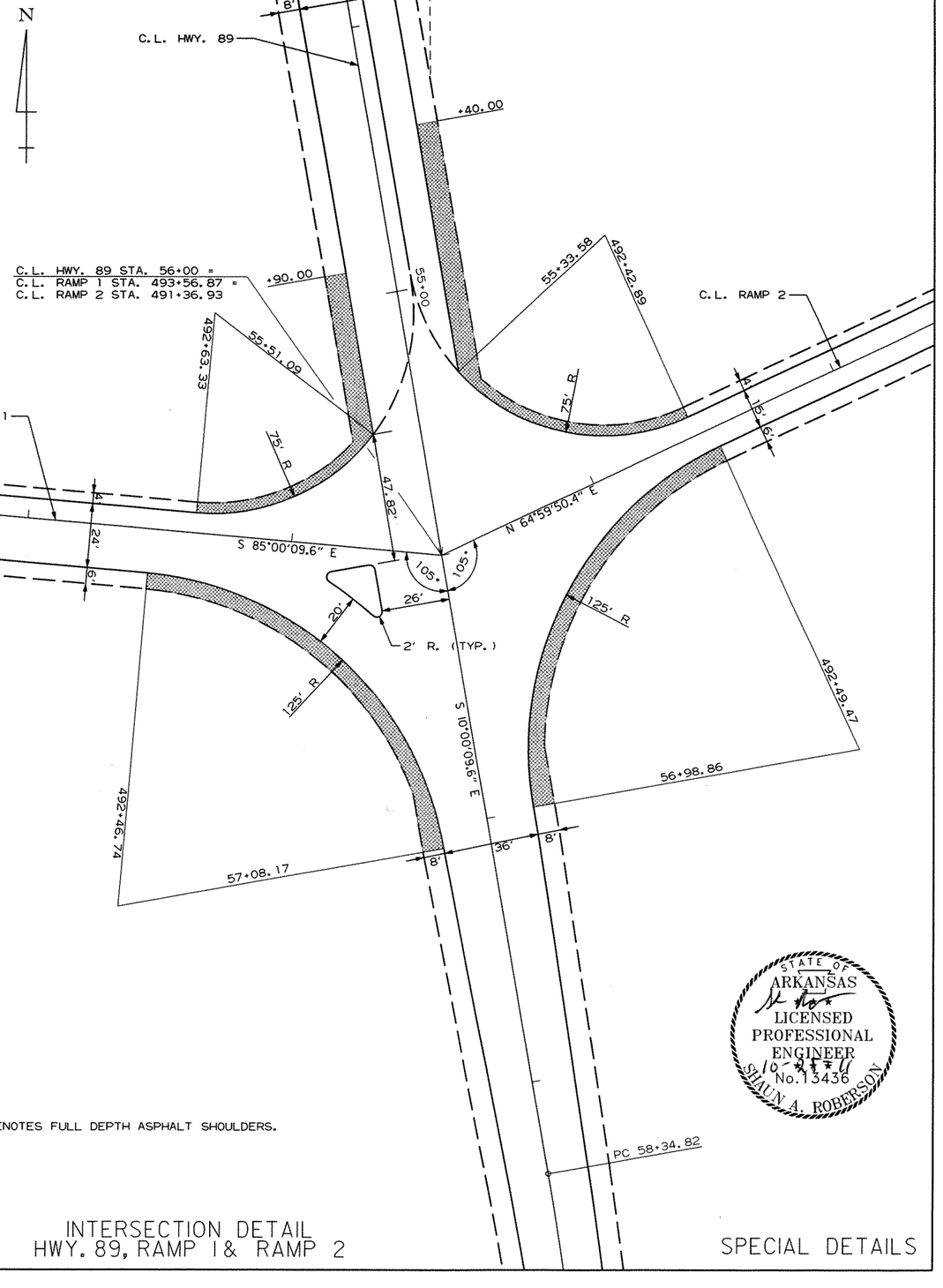
(2) SPECIAL DETAILS




INTERSECTION DETAIL
HWY. 89 AND MERGED RAMPS 3 & 4




INTERSECTION DETAIL
HWY. 89, RAMP 1 & RAMP 2

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON
10-27-11

SPECIAL DETAILS

saroberson 10/20/2011 10:10:51 AM
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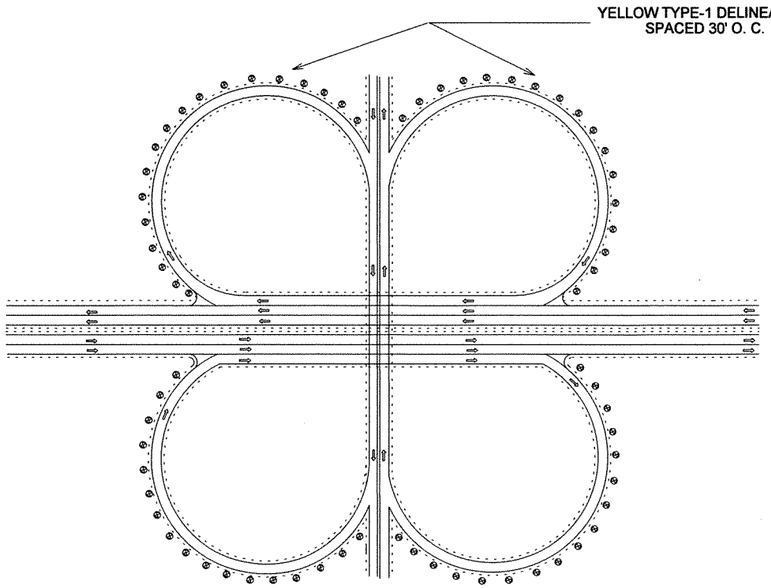
| | | | | (2) | SPECIAL DETAILS | | | |

**LEGEND**

DIRECTION OF TRAVEL

DELINEATOR

# TYPICAL DELINEATOR PLACEMENT ALONG THE INTERSTATE AND FREEWAY SYSTEM




## TYPICAL CLOVERLEAF INTERCHANGE

Ramp 3 & Ramp 4

Approximate Spacing for Delineators on Horizontal Curves

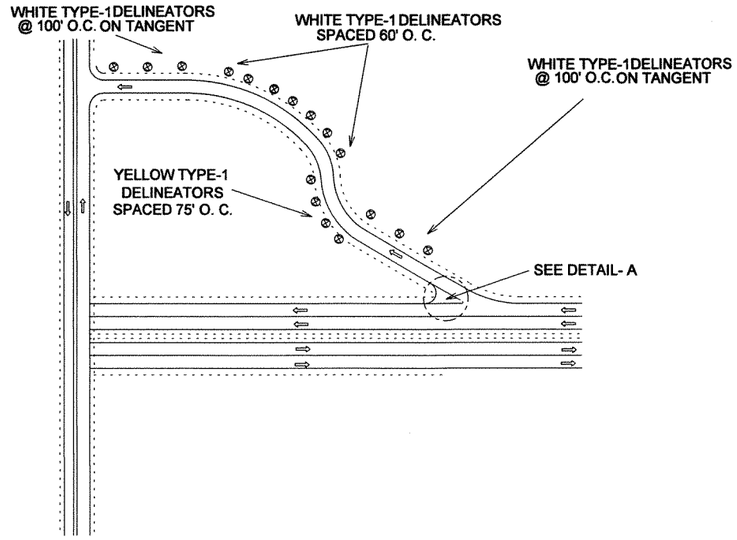
| Radius (R) of Curve (feet) | Approximate Spacing (S) on Curve (feet) |
|---|---|
| 50 | 20 |
| 115 | 25 |
| 180 | 35 |
| 250 | 40 |
| 300 | 50 |
| 400 | 55 |
| 500 | 65 |
| 600 | 70 |
| 700 | 75 |
| 800 | 80 |
| 900 | 85 |
| 1,000 | 90 |

Spacing for specific radii may be interpolated from table. The minimum spacing should be 20 ft. The spacing on curves should not exceed 300 ft. In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S but not to exceed 300 ft. S refers to the delineator spacing for specific radii computed from the formula $S=3\sqrt{R-50}$.

Guidance:

Delineators should be mounted on suitable supports so that the top of the highest retroreflector is 4 ft. above the near roadway edge. They should be placed 2 to 8 ft. outside the outer edge of the shoulder, or if appropriate, in line with the roadside barrier that is 8 ft. or less outside the outer edge of the shoulder.

Delineators are not required on tangent sections of the main lanes if raised pavement markers are used continuously on lane lines throughout all curves and tangent sections.

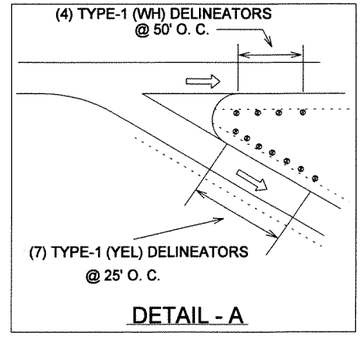



## TYPICAL MODIFIED DIAMOND INTERCHANGE

Ramp 1 & Ramp 2

Note:

Delineators shall only be installed as shown in Detail-A if raised pavement markers are not present in the gore of the off ramps.




DETAIL - A

Ramp 1 & Ramp 3

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON

SPECIAL DETAILS

saroberson 10/20/2011 9:48:12 AM
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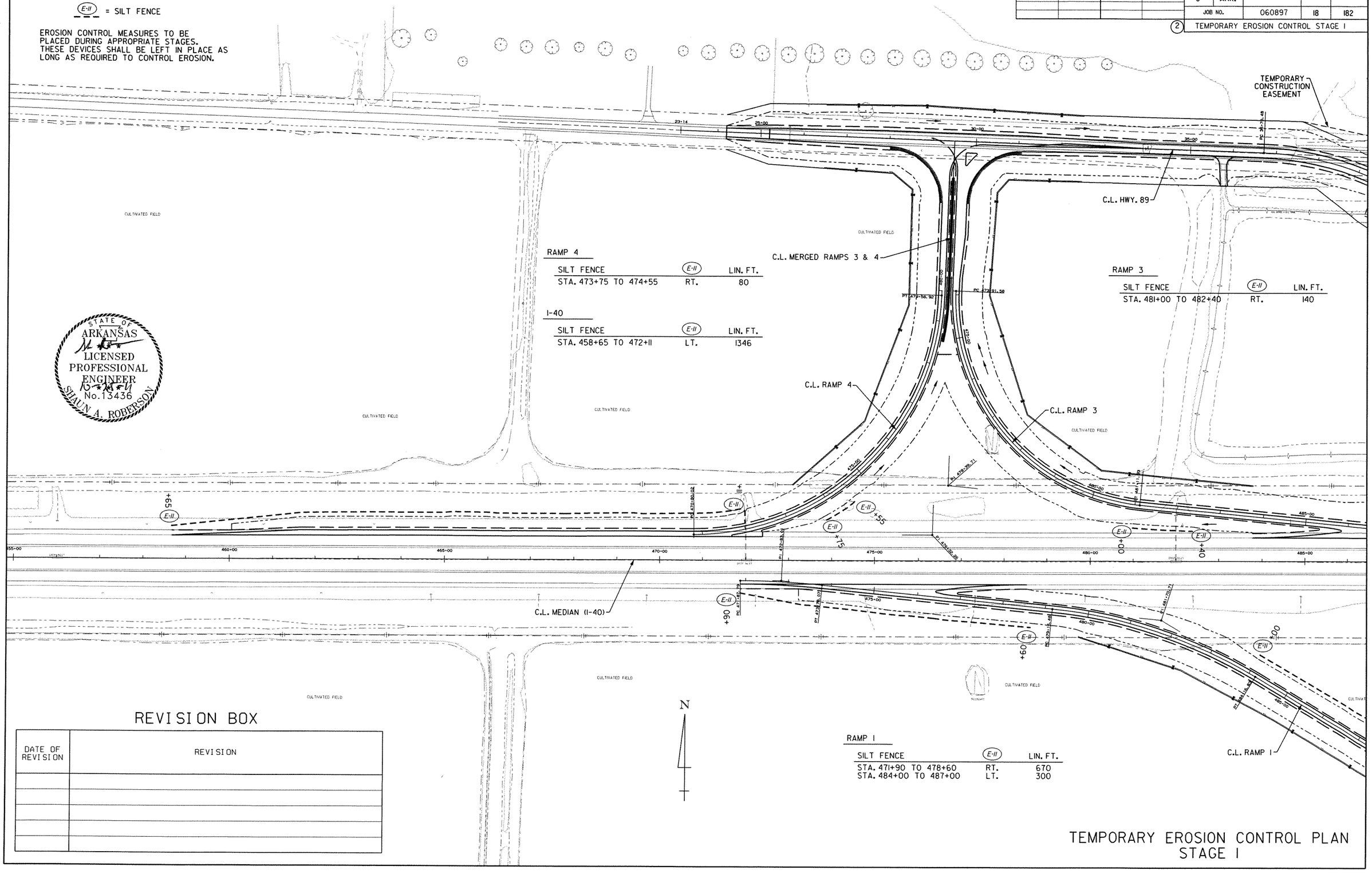
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 18 | 182 |

(2) TEMPORARY EROSION CONTROL STAGE I

## LEGEND

(E-II) = SILT FENCE

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.




RAMP 4

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 473+75 TO 474+55 | RT. | 80 |

I-40

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 458+65 TO 472+11 | LT. | 1346 |

RAMP 3

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 481+00 TO 482+40 | RT. | 140 |

RAMP 1

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 471+90 TO 478+60 | RT. | 670 |
| STA. 484+00 TO 487+00 | LT. | 300 |

STATE OF ARKANSAS
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SHAUN A. ROBERSON

## REVISION BOX

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# TEMPORARY EROSION CONTROL PLAN STAGE I

saroberson 10/20/2011 10:07:29 AM
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| | | | | JOB NO. | | 060897 | 19 | 182 |
| | | | | (2) | TEMPORARY EROSION CONTROL STAGE I | | | |

TEMPORARY CONSTRUCTION EASEMENT

C.L. HWY. 89

C.L. SAYLOR RD.

C.L. RAMP 3

C.L. RAMP 1

C.L. RAMP 2

C.L. MEDIAN (I-40)

MATCH LINE

MATCH LINE

C.L. HWY. 89

HWY. 89

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 39+60 TO 40+95 | LT. | 135 |
| STA. 51+55 TO 55+30 | RT. | 375 |
| STA. 51+80 TO 55+15 | LT. | 335 |

SAYLOR RD.

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 10+50 TO 11+90 | LT. | 140 |
| STA. 11+20 TO 12+50 | RT. | 130 |
| STA. 12+15 TO 13+25 | LT. | 110 |
| STA. 12+90 TO 16+70 | RT. | 380 |

I-40

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 487+10 TO 489+10 | LT. | 200 |
| STA. 503+50 TO 515+70 | RT. | 1220 |

RAMP 1

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 487+00 TO 492+65 | LT. | 565 |
| STA. 488+00 TO 489+00 | RT. | 100 |

RAMP 2

| SILT FENCE | (E-II) | LIN. FT. |
|---|---|---|
| STA. 492+95 TO 495+00 | LT. | 205 |

## LEGEND

(E-II) = SILT FENCE

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-28-11
No. 13436
SHAUN A. ROBERSON

## REVISION BOX

| DATE OF REVISION | REVISION |
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## TEMPORARY EROSION CONTROL PLAN STAGE I

saroberson 10/20/2011 10:07:58 AM
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 20 | 182 |

(2) TEMPORARY EROSION CONTROL STAGE 2

## LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-6) = ROCK DITCH CHECK

(E-11) = SILT FENCE

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.

RAMP 1

| SAND BAG DITCH CHECK (E-5) | | INSTALLATION |
|---|---|---|
| STA. 479+00 TO 482+60 | LT. | 1 |
| STA. 482+00 TO 488+00 | RT. | 2 |

| ROCK DITCH CHECK (E-6) | | INSTALLATION |
|---|---|---|
| STA. 479+00 TO 482+60 | LT. | 1 |
| STA. 482+60 TO 484+00 | LT. | 1 |
| STA. 482+60 TO 488+00 | RT. | 1 |

| SILT FENCE (E-11) | | LIN. FT. |
|---|---|---|
| STA. 471+90 TO 478+60 | RT. | RETAIN |
| STA. 484+00 TO 487+00 | LT. | RETAIN |

RAMP 3

| SAND BAG DITCH CHECK (E-5) | | INSTALLATION |
|---|---|---|
| STA. 473+90 TO 480+00 | LT. | 3 |
| STA. 480+00 TO 485+00 | LT. | 2 |
| STA. 475+60 TO 481+00 | RT. | 2 |

| ROCK DITCH CHECK (E-6) | | INSTALLATION |
|---|---|---|
| STA. 473+90 TO 480+00 | LT. | 3 |
| STA. 475+60 TO 481+00 | RT. | 2 |
| STA. 480+00 TO 485+00 | LT. | 2 |

| SILT FENCE (E-11) | | LIN. FT. |
|---|---|---|
| STA. 481+00 TO 482+40 | RT. | RETAIN |

RAMP 4

| SAND BAG DITCH CHECK (E-5) | | INSTALLATION |
|---|---|---|
| STA. 472+00 TO 480+00 | LT. | 2 |

| ROCK DITCH CHECK (E-6) | | INSTALLATION |
|---|---|---|
| STA. 472+00 TO 480+00 | LT. | 3 |
| STA. 475+00 TO 478+00 | RT. | 1 |

| SILT FENCE (E-11) | | LIN. FT. |
|---|---|---|
| STA. 473+75 TO 474+55 | RT. | RETAIN |

MERGED RAMPS 3 & 4

| SAND BAG DITCH CHECK (E-5) | | INSTALLATION |
|---|---|---|
| STA. 480+00 TO 484+00 | LT. | 2 |

| ROCK DITCH CHECK (E-6) | | INSTALLATION |
|---|---|---|
| STA. 480+00 TO 484+00 | RT. | 1 |

HWY. 89

| SAND BAG DITCH CHECK (E-5) | | INSTALLATION |
|---|---|---|
| STA. 25+00 TO 27+00 | LT. | 1 |
| STA. 27+00 TO 39+00 | LT. | 3 |
| STA. 25+00 TO 28+50 | RT. | 1 |
| STA. 31+00 TO 40+00 | RT. | 2 |

| ROCK DITCH CHECK (E-6) | | INSTALLATION |
|---|---|---|
| STA. 25+00 TO 27+00 | LT. | 1 |
| STA. 27+00 TO 39+00 | LT. | 3 |
| STA. 25+00 TO 28+50 | RT. | 1 |
| STA. 31+00 TO 40+00 | RT. | 2 |

I-40

| SILT FENCE (E-11) | | LIN. FT. |
|---|---|---|
| STA. 458+65 TO 472+11 | LT. | RETAIN |

TEMPORARY CONSTRUCTION EASEMENT

C.L. HWY. 89

C.L. MERGED RAMPS 3 & 4

C.L. RAMP 4

C.L. RAMP 3

C.L. RAMP 1

C.L. MEDIAN (I-40)

CULTIVATED FIELD

## REVISION BOX

| DATE OF REVISION | REVISION |
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STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-25-11
No. 13436
SHAUN A. ROBERSON

# TEMPORARY EROSION CONTROL PLAN STAGE 2

sroberson 10/20/2011 10:14:56 AM
WORKSPACE: AHTD
L:\2006\060501060-I40-H89 INT\Drawings\RWY\H89_STG2EC_01.dgn
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 21 | 182 |

(2) TEMPORARY EROSION CONTROL PLAN STAGE 2

TEMPORARY CONSTRUCTION EASEMENT

C.L. SAYLOR RD.

C.L. HWY. 89

C.L. RAMP 3

C.L. RAMP 1

C.L. RAMP 2

C.L. MEDIAN (I-40)

MATCH LINE

MATCH LINE

C.L. HWY. 89

HWY. 89

| SILT FENCE | (E-11) | LIN. FT. |
|---|---|---|
| STA. 39+60 TO 40+95 | LT. | RETAIN |
| STA. 51+55 TO 55+30 | RT. | RETAIN |
| STA. 51+80 TO 55+15 | LT. | RETAIN |

| SAND BAG DITCH CHECK | (E-5) | INSTALLATION |
|---|---|---|
| STA. 41+00 TO 45+00 | LT. | 3 |
| STA. 41+00 TO 47+00 | RT. | 2 |
| STA. 47+00 TO 49+00 | LT. | 2 |
| STA. 57+00 TO 64+00 | LT. | 1 |
| STA. 57+00 TO 64+00 | RT. | 2 |

| ROCK DITCH CHECK | (E-6) | INSTALLATION |
|---|---|---|
| STA. 41+00 TO 45+00 | LT. | 3 |
| STA. 40+00 TO 41+00 | RT. | 1 |
| STA. 41+00 TO 47+00 | RT. | 1 |
| STA. 47+00 TO 49+00 | LT. | 1 |
| STA. 57+00 TO 64+00 | LT. | 1 |
| STA. 57+00 TO 64+00 | RT. | 1 |

| DIVERSION DITCH | (E-8) | LIN. FT. |
|---|---|---|
| STA. 47+00 TO 48+80 LT. | | 180 |
| STA. 47+00 TO 48+80 RT. | | 180 |
| STA. 51+25 TO 53+00 LT. | | 175 |
| STA. 51+25 TO 53+00 RT. | | 175 |

| DUMPED RIPRAP | (E-9) | CU. YD. |
|---|---|---|
| STA. 47+00 LT. | | 2 |
| STA. 47+00 RT. | | 2 |
| STA. 53+00 LT. | | 2 |
| STA. 53+00 RT. | | 2 |

| SLOPE DRAIN | (E-12) | LIN. FT. |
|---|---|---|
| STA. 47+00 LT. | | 94 |
| STA. 47+00 RT. | | 82 |
| STA. 53+00 LT. | | 56 |
| STA. 53+00 RT. | | 66 |

RAMP 1

| SILT FENCE | (E-11) | LIN. FT. |
|---|---|---|
| STA. 487+00 TO 492+65 | LT. | RETAIN |
| STA. 488+00 TO 489+00 | RT. | RETAIN |

| SAND BAG DITCH CHECK | (E-5) | INSTALLATION |
|---|---|---|
| STA. 489+00 TO 493+00 | RT. | 1 |

| ROCK DITCH CHECK | (E-6) | INSTALLATION |
|---|---|---|
| STA. 489+00 TO 493+00 | RT. | 1 |

RAMP 2

| SILT FENCE | (E-11) | LIN. FT. |
|---|---|---|
| STA. 492+95 TO 495+00 | LT. | RETAIN |

| SAND BAG DITCH CHECK | (E-5) | INSTALLATION |
|---|---|---|
| STA. 495+00 TO 503+00 | LT. | 3 |
| STA. 492+00 TO 503+00 | RT. | 1 |

| ROCK DITCH CHECK | (E-6) | INSTALLATION |
|---|---|---|
| STA. 495+00 TO 503+00 | LT. | 3 |
| STA. 492+00 TO 503+00 | RT. | 2 |

SAYLOR RD.

| SILT FENCE | (E-11) | LIN. FT. |
|---|---|---|
| STA. 10+50 TO 11+90 | LT. | RETAIN |
| STA. 11+20 TO 12+50 | RT. | RETAIN |
| STA. 12+15 TO 13+25 | LT. | RETAIN |
| STA. 12+90 TO 16+70 | RT. | RETAIN |

| SAND BAG DITCH CHECK | (E-5) | INSTALLATION |
|---|---|---|
| STA. 14+00 TO 15+00 | LT. | 4 |

| ROCK DITCH CHECK | (E-6) | INSTALLATION |
|---|---|---|
| STA. 15+00 TO 16+70 | LT. | 1 |

I-40

| SILT FENCE | (E-11) | LIN. FT. |
|---|---|---|
| STA. 487+10 TO 489+10 | LT. | RETAIN |
| STA. 503+50 TO 515+70 | RT. | RETAIN |

| SAND BAG DITCH CHECK | (E-5) | INSTALLATION |
|---|---|---|
| STA. 486+50 TO 490+00 | LT. | 2 |

| ROCK DITCH CHECK | (E-6) | INSTALLATION |
|---|---|---|
| STA. 486+50 TO 490+00 | LT. | 1 |

STATE OF ARKANSAS
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10-25-11
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SHAUN A. ROBERSON

## LEGEND

(E-5) = SAND BAG DITCH CHECK

(E-6) = ROCK DITCH CHECK

(E-8) = DIVERSION DITCH (TYPE E-8)

(E-9) = DUMPED RIPRAP

(E-11) = SILT FENCE

(E-12) = SLOPE PIPE DRAIN (12") (TYPE E-12)

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.

N

## REVISION BOX

| DATE OF REVISION | REVISION |
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# TEMPORARY EROSION CONTROL PLAN STAGE 2

saroberson 10/20/2011 10:15:30 AM
WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 22 | 182 |

(2) M. O. T. HWY. 89 INT. - STAGE 1

STAGE 1

CONSTRUCTION SEQUENCE NOTES

1. MAINTAIN TRAFFIC ON EXISTING HWY. 89.
2. CONSTRUCT NORTH AND SOUTH DETOURS.

C.L. NORTH DETOUR
P.I. 10+51.50
Δ = 12°49' 13.4" LT.
D = 12°30' 00"
T = 51.50'
L = 102.56'
P.C. = 10+00.00
P.R.C. = 11+02.56
e = NO SUPER

C.L. NORTH DETOUR
P.I. 11+51.91
Δ = 12°17' 19.3" RT.
D = 12°30' 00"
T = 49.34'
L = 98.31'
P.R.C. = 11+02.56
P.T. = 12+00.87
e = NO SUPER

C.L. NORTH DETOUR
P.I. 15+50.10
Δ = 5°18' 20.5" RT.
D = 12°30' 00"
T = 21.24'
L = 42.45'
P.C. = 15+28.86
P.T. = 15+71.30
e = NO SUPER

N

1" = 400'

20 TRAFFIC DRUMS @ 50' O.C.
HWY. 89 STA. 31+75 TO STA. 40+75

STA. 37+39 IN PLACE
30" X 53' R.C. PIPE CULVERT
RETAIN AND EXTEND
TEMPORARY PIPE CULVERT 30' LT.

HWY. 89 STA. 32+00.02, C.L. = NORTH DETOUR PC 10+00.00, C.L.

HWY. 89 STA. 40+97.05, C.L. = NORTH DETOUR POE 19+53.82, C.L.

139.88' LT.

PI 11+51.91

PRC 11+02.56

PT 12+00.87

PC 15+28.86

PT 15+50.10

PT 15+71.30

NORTH DETOUR

10+00

15+00

25+00

30+00

35+00

40+00

45+00

50+00

55+00

60+00

65+00

PI 10+51.50

500'

500'

500'

500'

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

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")

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

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

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

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

HWY. 89 STA. 58+47.57, 33.86' LT. = SOUTH DETOUR PC 10+00.00, C.L.

PI 10+43.60

PRC 10+86.94

PT 11+46.78

PI 11+16.90

SOUTH DETOUR

14 TRAFFIC DRUMS @ 50' O.C.
HWY. 89 STA. 58+70 TO STA. 64+70

STA. 61+28 IN PLACE
30" X 45' R.C. PIPE CULVERT
WITH HDWLS. LT. AND RT.
REMOVE HDWL. LT. AND
EXTEND TEMPORARY PIPE
CULVERT 30' LT.

PC 14+15.97

PI 14+91.70

PRC 15+66.06

PI 16+27.95

HWY. 89 STA. 65+27.99, C.L. = SOUTH DETOUR PT 16+89.08, C.L.

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

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

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

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

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

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

C.L. SOUTH DETOUR
P.I. 10+43.60
Δ = 10°52' 01.7" LT.
D = 12°30' 00"
T = 43.60'
L = 86.94'
P.C. = 10+00.00
P.R.C. = 10+86.94
e = NO SUPER

C.L. SOUTH DETOUR
P.I. 11+16.90
Δ = 7°28' 51.4" RT.
D = 12°30' 00"
T = 29.97'
L = 59.85'
P.R.C. = 10+86.94
P.T. = 11+46.78
e = NO SUPER

C.L. SOUTH DETOUR
P.I. 14+91.70
Δ = 18°45' 42.3" RT.
D = 12°30' 00"
T = 75.72'
L = 150.09'
P.C. = 14+15.97
P.R.C. = 15+66.06
e = NO SUPER

C.L. SOUTH DETOUR
P.I. 16+27.95
Δ = 15°22' 38.3" LT.
D = 12°30' 00"
T = 61.88'
L = 123.02'
P.R.C. = 15+66.06
P.T. = 16+89.08
e = NO SUPER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-14-11
No. 13436
SHAUN A. ROBERSON

STAGE 1 GRADING AND PAVING
TRAFFIC

# MAINTENANCE OF TRAFFIC
# HWY. 89 INTERCHANGE - STAGE 1

saroberson 10/20/2011 10:19:55 AM
WORKSPACE: AHTD
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REVISED DATE:

STAGE 2

CONSTRUCTION SEQUENCE NOTES

1. MAINTAIN TRAFFIC ON EXISTING HWY. 89 AND SAYLOR RD. AND NORTH AND SOUTH DETOURS.

2. CONSTRUCT HWY. 89 AND RAMPS. CONSTRUCT RT. FULL DEPTH SHOULDER AND TO 8' LEFT OF HWY. 89 C.L. FROM STA. 33+00 TO STA. 40+00 AND STA. 57+08 TO 63+60. CONSTRUCT SAYLOR RD. UNDER TRAFFIC FROM STA. 10+12 TO STA. 12+50 AND STA. 13+50 TO STA. 16+70.

3. REMOVE BARRIER WALL AT RAMP TIES DURING MILL AND OVERLAY CONSTRUCTION. OUTSIDE LANES ALONG I-40 TO BE CLOSED PER AHTD STANDARD DRAWING TC-3 WHILE MILLING AND OVERLAY OPERATIONS ARE CONDUCTED ON I-40 OUTER EXISTING SHOULDERS.

4. A PORTABLE CHANGEABLE MESSAGE SIGN IS TO BE PLACED AT EACH INTERCHANGE ON EITHER SIDE OF THE PROJECT LOCATION ALONG I-40 DURING INTERMITTENT LANE CLOSURES AS DIRECTED BY THE ENGINEER.

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 23 | 182 |

(2) M.O.T. HWY. 89 INT. - STAGE 2

N

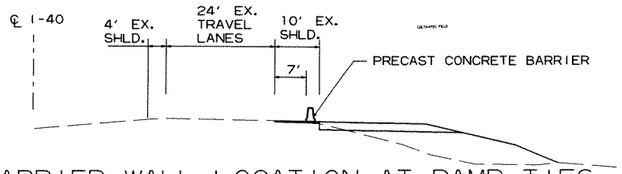
1" =400'

(I) W1-4aR (48" X 48")
XX M.P.H.
(I) W13-1 (18" X 18")
ROAD WORK AHEAD
(I) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE
END ROAD WORK
(I) G20-2 (48" X 24") RETAIN FROM PREVIOUS STAGE
(I) W1-4aL (48" X 48")
17 TRAFFIC DRUMS @ 50' O.C. HWY. 89. STA. 24+00 TO STA. 32+35
NORTH DETOUR
ROAD CLOSED (I) R11-2 (48" X 30") 16' BARR. TYP. III RT.
ROAD CLOSED (I) R11-2 (48" X 30") 16' BARR. TYP. III LT.
5 TRAFFIC DRUMS @ 25' O.C. SAYLOR RD. STA. 14+00 TO STA. 15+00
ROAD CLOSED (I) WI-6 (48" X 24")
16' BARR. TYP. III RT.
NORTH DETOUR
18 TRAFFIC DRUMS @ 50' O.C. HWY. 89 STA. 32+35 TO STA. 40+50
4" CONTINUOUS WHITE
4" DOUBLE YELLOW
NORTH DETOUR DETAIL
C.L. MERGED RAMPS 3 & 4
C.L. HWY. 89
C.L. RAMP 3
C.L. RAMP 4
C.L. SAYLOR RD.
C.L. MEDIAN ( I-40)
ROAD WORK 1500 FT. (I) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE
ROAD WORK 1000 FT. (I) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE
ROAD WORK 500 FT. (I) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE
PRECAST CONCRETE BARRIER I-40 STA. 458+10 TO STA. 473+90
PRECAST CONCRETE BARRIER I-40 STA. 483+30 TO STA. 500+00
PRECAST CONCRETE BARRIER I-40 STA. 490+50 TO STA. 500+00
ROAD WORK 1500 FT. (2) W20-1 (48" X 48")
ROAD WORK ½ MILE (2) W20-1 (48" X 48")
ROAD WORK 1 MILE (2) W20-1 (48" X 48")
5 TRAFFIC DRUMS @ 5' O.C.
FINES DOUBLE IN WORK ZONES WHEN WORKERS ARE PRESENT (2) R55-1 (36" X 60")
PRECAST CONCRETE BARRIER I-40 STA. 470+40 TO STA. 479+00
PRECAST CONCRETE BARRIER I-40 STA. 485+00 TO STA. 494+50
PRECAST CONCRETE BARRIER I-40 STA. 485+00 TO STA. 494+00
PRECAST CONCRETE BARRIER I-40 STA. 503+10 TO STA. 516+20
REMOVE EXISTING BRIDGE AND OBLITERATE EXISTING ROADWAY FOLLOWING THE CONSTRUCTION OF HWY. 89 AND SAYLOR RD. GRADE ABANDONED ROADWAY TO NATURAL CONDITION IF AND WHERE DIRECTED BY THE ENGINEER. TO BE PAID FOR UNDER ITEM 210 - UNCLASSIFIED EXCAVATION.
SOUTH DETOUR
4" CONTINUOUS WHITE
4" DOUBLE YELLOW
13 TRAFFIC DRUMS @ 50' O.C. HWY. 89 STA. 58+50 TO STA. 63+50
(I) R11-2 (48" X 30") ROAD CLOSED
(I) WI-6 (48" X 24")
16' BARR. TYP. III LT.
(I) WI-4aR (48" X 48")
XX M.P.H. (I) WI3-1 (18" X 18")
ROAD WORK 1000 FT. (I) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE
ROAD WORK 1500 FT. (I) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE
END ROAD WORK (I) G20-2 (48" X 24") RETAIN FROM PREVIOUS STAGE

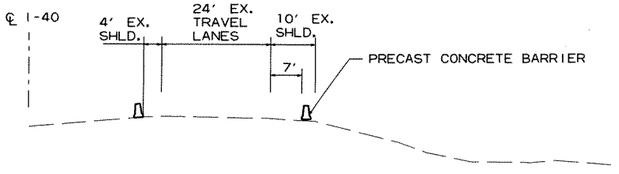
SOUTH DETOUR DETAIL

STAGE 2 GRADING AND PAVING
STAGE 2 GRADING AND PAVING UNDER TRAFFIC
TRAFFIC
TEMPORARY IMPACT ATTENUATION BARRIER
** PORTABLE CHANGEABLE MESSAGE SIGN

BARRIER WALL LOCATION AT RAMP TIES




BARRIER WALL LOCATION AT BRIDGE




STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON

MAINTENANCE OF TRAFFIC
HWY. 89 INTERCHANGE - STAGE 2

saroberson 10/20/2011 10:21:17 AM
WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 24 | 182 |
| | | | | (2) M. O. T. HWY. 89 INT. - STAGE 3 | | | | |

STAGE 3

CONSTRUCTION SEQUENCE NOTES

1. MOVE TRAFFIC TO PROPOSED HWY. 89.

2. CONSTRUCT THE REMAINDER OF HWY. 89 FROM STA. 25+20 TO STA. 40+00 AND STA. 57+00 TO 63+60. CONSTRUCT THE REMAINDER OF RAMP 2. CONSTRUCT THE REMAINDER OF SAYLOR RD. UNDER TRAFFIC.

3. REMOVE NORTH AND SOUTH DETOURS.

4. A PORTABLE CHANGEABLE MESSAGE SIGN IS TO BE PLACED AT EACH INTERCHANGE ON EITHER SIDE OF THE PROJECT LOCATION ALONG I-40 DURING INTERMITTENT LANE CLOSURES AS DIRECTED BY THE ENGINEER.

N

1" = 400'

ROAD CLOSED (1) R11-2 (48" X 30") (1) W1-6 (48" X 24") 16' BARR. TYP. III LT.

ROAD WORK AHEAD (1) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE

END ROAD WORK (1) G20-2 (48" X 24") RETAIN FROM PREVIOUS STAGE

40 TRAFFIC DRUMS @ 50' O.C. HWY. 89 STA. 24+00 TO STA. 33+50

14 TRAFFIC DRUMS @ 50' O.C. HWY. 89 STA. 33+75 TO STA. 40+25

7 TRAFFIC DRUMS @ 25' O.C. SAYLOR RD. STA. 14+00 TO STA. 15+50

C.L. MERGED RAMPS 3 & 4

C.L. HWY. 89

C.L. SAYLOR RD.

C.L. RAMP 3

C.L. RAMP 4

C.L. RAMP 1

C.L. RAMP 2

C.L. MEDIAN (I-40)

ROAD WORK 1500 FT. (1) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE

ROAD WORK 1000 FT. (1) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE

ROAD WORK 500 FT. (1) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE

ROAD WORK 1500 FT. (2) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE

ROAD WORK 1/2 MILE (2) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE

ROAD WORK 1 MILE (2) W20-1 (48" X 48") RETAIN FROM PREVIOUS STAGE

FINES DOUBLE IN WORK ZONES WHEN WORKERS ARE PRESENT (2) R55-1 (36" X 60") RETAIN FROM PREVIOUS STAGE

RETAIN FROM PREVIOUS STAGE

END BARRIER HERE BEFORE RAMP IN STAGE 3

RETAIN BARRIER WALL FROM PREVIOUS STAGE

REMOVE EXISTING GUARDRAIL AND GUARDRAIL WIDENING. 1500'

REMOVE EXISTING GUARDRAIL AND GUARDRAIL WIDENING.

REMOVE EXISTING BRIDGE AND OBLITERATE EXISTING ROADWAY FOLLOWING THE CONSTRUCTION OF HWY. 89 AND SAYLOR RD. GRADE ABANDONED ROADWAY TO NATURAL CONDITION IF AND WHERE DIRECTED BY THE ENGINEER. TO BE PAID FOR UNDER ITEM 210 - UNCLASSIFIED EXCAVATION.

21 TRAFFIC DRUMS @ 50' O.C. HWY. 89 STA. 55+00 TO STA. 65+00

1100' 2600' 1500' 500'

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.13436 SHAUN A. ROBERSON 10-18-11

STAGE 3 NOTCH, WIDEN AND OVERLAY UNDER TRAFFIC

STAGE 3 GRADING AND PAVING

TRAFFIC

** PORTABLE CHANGEABLE MESSAGE SIGN

◄ TEMPORARY IMPACT ATTENUATION BARRIER

# MAINTENANCE OF TRAFFIC HWY. 89 INTERCHANGE - STAGE 3

sarobertson 10/20/2011 10:24:24 AM
WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 25 | 182 |

(2) PERMANENT PAVEMENT MARKINGS

# EXIT 173

N

4" SKIP YELLOW THERMOPLASTIC PAVEMENT MARKING

900' NO PASSING ZONE

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

12" YELLOW - 45° DIAGONAL THERMOPLASTIC PAVEMENT MARKING @ 25' O.C.

380'

270' TAPER

100' LT. TURN LANE

50' 40' 90' 180'

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

WORD "ONLY" THERMOPLASTIC

TURN LANE-USE ARROW THERMOPLASTIC

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING & 10" WHITE REFL. PAINT ON ISLAND CURBS

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

24" WHITE STOP BAR THERMOPLASTIC PAVEMENT MARKING

50' 40' 30+00

12" YELLOW - 45° DIAGONAL THERMOPLASTIC PAVEMENT MARKING @ 25' O.C.

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ RAISED PAVEMENT MARKERS

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ RAISED PAVEMENT MARKERS

WORD "ONLY" THERMOPLASTIC

TURN LANE-USE ARROW THERMOPLASTIC

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING W/ RAISED PAVEMENT MARKERS

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

10" WHITE REFLECTIVE PAINT ON ISLAND CURBS

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

MERGED RAMPS 3 & 4

PC 473+91.58

PT 479+58.92

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING

RAMP 4

RAMP 3

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS SPACED @ 10' O.C.

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS SPACED @ 10' O.C.

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS SPACED @ 10' O.C.

DIRECTIONAL ARROW W/ (19) TYPE II RED/WHITE RAISED PAVEMENT MARKERS

590' - 8" DOTTED WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE I WHITE RAISED PAVEMENT MARKERS

60'

4" CONTINUOUS WHITE HIGH PERFORMANCE PAVEMENT MARKING

280'

375'

4" SKIP WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

C.L. MEDIAN (I-40)

4" CONTINUOUS WHITE HIGH PERFORMANCE PAVEMENT MARKING

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS SPACED @ 10' O.C.

DIRECTIONAL ARROW W/ (19) TYPE II RED/WHITE RAISED PAVEMENT MARKERS

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS SPACED @ 10' O.C.

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

HWY. 89

RAMP 1

CULTIVATED FIELD

40' O.C. TYP.

30' TYP.

10' TYP.

RAISED PAVEMENT MARKERS TYPE II TYPICAL

4" SKIP WHITE PAVEMENT MARKING

## TYPICAL SKIP WHITE STRIPING

NOTE: SEE PM-2 FOR STANDARD ENTRANCE AND EXIT RAMP PAVEMENT MARKINGS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-28-11
No. 13436
SHAUN A. ROBERSON

## PERMANENT PAVEMENT MARKINGS

saroberson 10/20/2011 10:25:00 AM
WORKSPACE: AHTD
L:\2006\060510160-140-H89 INT\Drawings\RWY\H89_PAVE_01.dgn

REVISED DATE: _____

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 26 | 182 |

(2) PERMANENT PAVEMENT MARKINGS

SAYLOR RD.

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

12" WHITE STOP BAR THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

HWY. 89

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS WHITE HIGH PERFORMANCE PAVEMENT MARKING

4" SKIP WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS SPACED @ 10' O.C.

4" CONTINUOUS WHITE HIGH PERFORMANCE PAVEMENT MARKING

C.L. MEDIAN (I-40)

4" SKIP WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

440' - 8" DOTTED WHITE THERMOPLASTIC MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING

RAMP 2

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

4" DOUBLE YELLOW HIGH PERFORMANCE PAVEMENT MARKING ON BRIDGE DECK W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" SKIP WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

180'

90'

100' LT. TURN LANE

40'

50'

WORD "ONLY" THERMOPLASTIC

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RAISED PAVEMENT MARKERS

TURN LANE-USE ARROW THERMOPLASTIC

12" YELLOW - 45° DIAGONAL THERMOPLASTIC PAVEMENT MARKING @ 25' O.C.

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING & 10" WHITE REFL. PAINT ON ISLAND CURBS

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

RAMP 1

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

900' NO PASSING ZONE

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

4" SKIP YELLOW THERMOPLASTIC PAVEMENT MARKING

40' O.C. TYP.

30' TYP.

10' TYP.

RAISED PAVEMENT MARKERS TYPE II TYPICAL

4" SKIP WHITE PAVEMENT MARKING

## TYPICAL SKIP WHITE STRIPING

NOTE: SEE PM-2 FOR STANDARD ENTRANCE AND EXIT RAMP PAVEMENT MARKINGS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-14-11
No. 13436
SHAUN A. ROBERSON

4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

90'

100' LT. TURN LANE

40'

50'

55'-00

WORD "ONLY" THERMOPLASTIC

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

TURN LANE-USE ARROW THERMOPLASTIC

24" WHITE STOP BAR THERMOPLASTIC PAVEMENT MARKING

8" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING

10" WHITE REFLECTIVE PAINT ON ISLAND CURBS

12" YELLOW - 45° DIAGONAL THERMOPLASTIC PAVEMENT MARKING @ 25' O.C.

4" CONTINUOUS WHITE THERMOPLASTIC PAVEMENT MARKING W/ TYPE II RED/WHITE RAISED PAVEMENT MARKERS

4" CONTINUOUS YELLOW THERMOPLASTIC PAVEMENT MARKING W/ TYPE II YELLOW RAISED PAVEMENT MARKERS

# PERMANENT PAVEMENT MARKINGS

saroberson 10/20/2011 10:33:06 AM
WORKSPACE: AHTD
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REVISED DATE: _____

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 27 | 182 |

(2) PERMANENT SIGNING - HWY. 89

N

200 100 0 200

A STA. 450+18 — R2-1 48"x60" SPEED LIMIT 70; R2-2 48"x48" TRUCKS 65

B STA. 457+68 — M3-4 36"x18" WEST; M1-1 36"x36" INTERSTATE 40

C STA. 19+21 — SPECIAL SIGN 4 78"x42"; Lonoke / West Memphis / Little Rock; M1-1 24"x24" INTERSTATE 40; M2-1 21"x15" JCT

D STA. 22+26 — R2-1 24"x30" SPEED LIMIT 55

E STA. 27+26 — M3-1 24"x12" NORTH; M1-5 24"x24" 89

F STA. 28+00 — M3-4 24"x12" WEST; M1-1 24"x24" INTERSTATE 40; M6-1L 21"x15"; M3-2 24"x12" EAST; M1-1 24"x24" INTERSTATE 40; M6-3 21"x15"; M5-2R 21"x15"

G STA. 29+26 — M3-4 24"x12" WEST; M1-1 24"x24" INTERSTATE 40; M6-1L 21"x15"

H STA. 29+68 — M1-5 24"x24" 89; W1-7 60"x30"

I STA. 471+07 — R4-7A 24"x30" KEEP RIGHT; R1-1 48"x48" STOP

J STA. 470+80 — R5-1 36"x36"; R6-1L 54"x18" ONE WAY; R1-1 48"x48" STOP; R6-1R 54"x18" ONE WAY

K STA. 471+02 — R5-1 30"x30" KEEP RIGHT; R1-2 48"x48"x48"

L STA. 478+39 — W4-1R 48"x48"

M STA. 475+00 — R5-1A 42"x30" WRONG WAY

N STA. 475+00 — W1-8R 24"x30" 120' O.C. N-R

P STA. 475+71 — M3-1 24"x12" NORTH; M1-5 24"x24" 89; M5-1L 21"x15"; Furlow / Lonoke

Q STA. 475+71 — M3-3 24"x12" SOUTH; M1-5 24"x24" 89; M5-1R 21"x15"

R STA. 477+71 — W3-1 48"x48"

S STA. 477+71 — W3-1 48"x48"

T STA. 485+84 — RAMP XX MPH; W13-3 48"x60"

U STA. 36+91 — M3-4 24"x12" WEST; M1-1 24"x24" INTERSTATE 40; M5-1L 21"x15"; Furlow / Little Rock; SPECIAL SIGN 6 66"x30"

V STA. 47+50 — SPECIAL SIGN 8 78"x30"; Lonoke / West Memphis; M3-2 24"x12" EAST; M1-1 24"x24" INTERSTATE 40; M5-1L 21"x15"

W STA. 15+50 — W3-1 36"x36"

X STA. 14+71 — W8-3 36"x36" PAVEMENT ENDS

Y STA. 15+00 — R1-1 36"x36" STOP

Z STA. 45+84 — W8-13 36"x36" BRIDGE NOT BEYOND ROAD

AA STA. 48+84 — OM-3R 12"x36"

BB STA. 48+90 — OM-3L 12"x36"

CC STA. 51+21 — OM-3L 12"x36"

DD STA. 51+26 — OM-3R 12"x36"

EE STA. 473+75 — EXIT XX MPH; W13-2 48"x60"

FF STA. 486+33 — M3-1 48"x48"

GG STA. 66+60 — R2-1 24"x30" SPEED LIMIT 55

HH STA. 488+33 — R5-1A 42"x30" WRONG WAY

II STA. 493+27 — R6-1L 36"x12"; R1-1 36"x36" STOP; R5-1 30"x30"; R6-1R 36"x12"

JJ STA. 493+14 — R5-1 30"x30"; R1-2 48"x48"x48"

KK STA. 52+48 — M3-2 24"x12" EAST; M1-1 24"x24" INTERSTATE 40; M5-1L 21"x15"

LL STA. 66+00 — JCT M2-1 21"x15"; M1-1 24"x24" INTERSTATE 40; Furlow / Little Rock / West Memphis; SPECIAL SIGN 10 78"x42"

MM STA. 57+00 — M6-1L 21"x15"; M1-1 24"x24" INTERSTATE 40; M3-2 24"x12" EAST; M3-4 24"x12" WEST; M1-1 24"x24" INTERSTATE 40; M3-2 24"x12" EAST; M1-1 24"x24" INTERSTATE 40; M6-3 21"x15"; M5-1R 21"x15"

NN STA. 54+27 — W8-13 36"x36" BRIDGE NOT BEYOND ROAD

OO STA. 549+63 — W4-1R 48"x48"

PP STA. 516+70 — EAST M3-2 36"x48"; M1-1 36"x36" INTERSTATE 40

QQ STA. 524+20 — SPEED LIMIT 70 TRUCKS 65; R2-1 48"x60"; R2-2 48"x48"

RR STA. 32+00 — W13-1 24"x24"; W1-2R 48"x48"

SS STA. 60+00 — W1-2L 48"x48"; W13-1 24"x24"

TT-GGG — W1-8L&R 24"x30" 120' O.C. BOTH WAYS

(1) STA. 419+08 — EXIT 173; 89; Lonoke 1 MILE

(2) STA. 471+88 — 89; Lonoke; EXIT 173

(3) STA. 477+58 — EXIT 173

(4) STA. 491+57 (BR. MOUNT) — EXIT 173; 89; Lonoke

(5) STA. 484+67 — EXIT 173; XX MPH

(6) STA. 488+33 — Furlow; 89 NORTH; M3-1 24"x12"; M1-5 24"x24"; M5-1L 21"x15"; 89 SOUTH; M3-3 24"x12"; M1-5 24"x24"; M5-1R 21"x15"; WRONG WAY R5-1A 42"x30"

(7) STA. 484+67 — EXIT 173; XX MPH

(12) STA. 538+65 — EXIT 173; 89; Lonoke 1 MILE

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8141
NICCI D. TINER
10-24-11

PERMANENT SIGNING - HWY. 89

saroberson 10/21/2011 12:29:31PM
WORKSPACE AUTO
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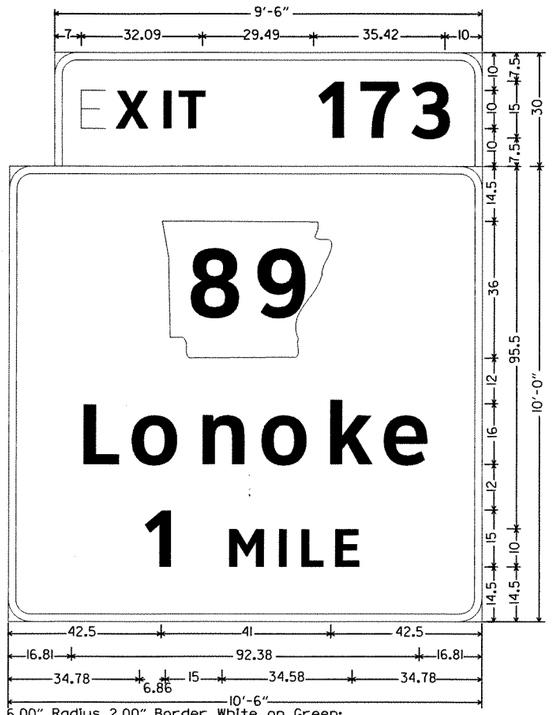
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 28 | 182 |

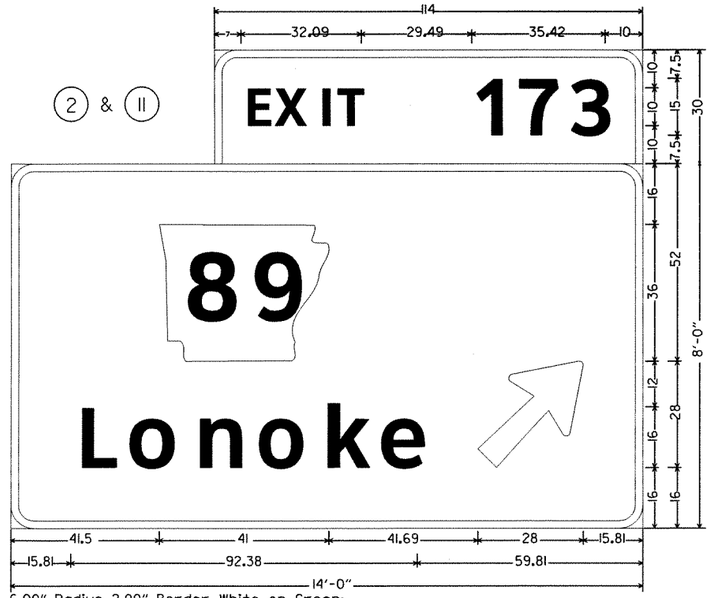
(2) SPECIAL SIGNS

(1) & (12)



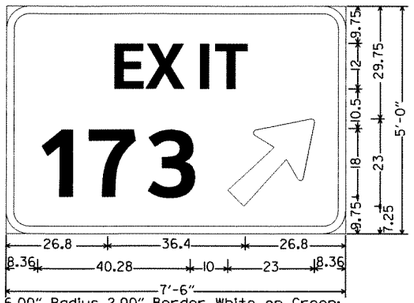

6.00" Radius, 2.00" Border, White on Green;
[EXIT] ClearviewHwy-5-W; [173] ClearviewHwy-5-W;
6.00" Radius, 2.00" Border, White on Green;
MI-6; [Lonoke] ClearviewHwy-5-W; [1] ClearviewHwy-5-W;
[MILE] ClearviewHwy-5-W;

(2) & (11)




6.00" Radius, 2.00" Border, White on Green;
[EXIT] ClearviewHwy-5-W; [173] ClearviewHwy-5-W;
6.00" Radius, 2.00" Border, White on Green;
MI-6; [Lonoke] ClearviewHwy-5-W; Arrow Custom - 35.68" 45[;

(3)




6.00" Radius, 2.00" Border, White on Green;
[EXIT] ClearviewHwy-5-W-R; [173]
ClearviewHwy-5-W-R; Arrow Custom - 29.24" 45[;

(4)

3.00" Radius, 1.00" Border, White on Green;
Standard Arrow Custom 9.38" X 5.38" 90[; [Lonoke ] ClearviewHwy-2-W;
Standard Arrow Custom 9.38" X 5.38" 90[; [West Memphis ] ClearviewHwy-2-W;
[Little Rock ] ClearviewHwy-2-W; 90 Deg Advanced Turn Arrow 8.00" X 6.50";

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8141
NICCI D. TINER
10-24-11

SPECIAL SIGNS

saroberson 10/20/201 1h00:47 AM
WORKSPACE: AHTD
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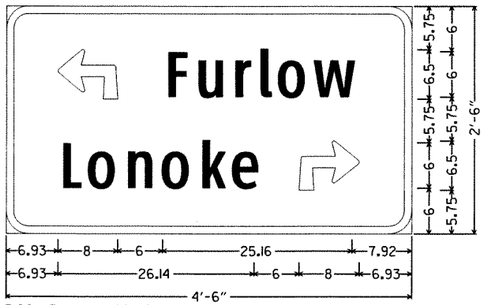
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 29 | 182 |

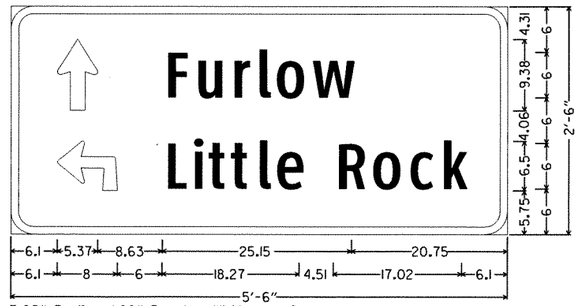
2 SPECIAL SIGNS

(5) & (9)



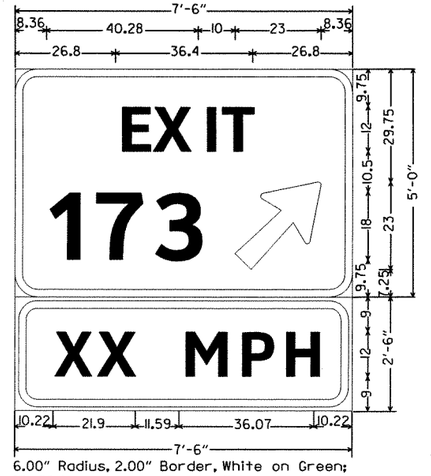

3.00" Radius, 1.00" Border, White on Green;
90 Deg Advanced Turn Arrow 8.00" X 6.50";
[Furlow] ClearviewHwy-2-W specified length;
[Lonoke] ClearviewHwy-2-W specified length;
90 Deg Advanced Turn Arrow 8.00" X 6.50";

(6)



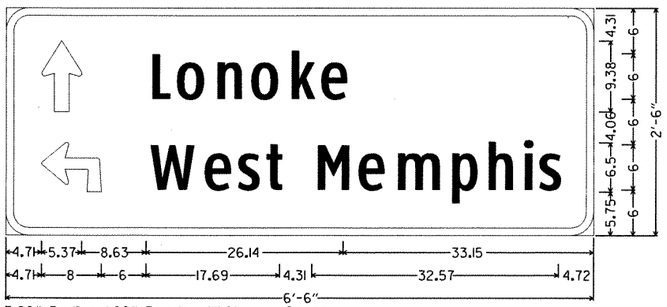

3.00" Radius, 1.00" Border, White on Green;
Standard Arrow Custom 9.38" X 5.38" 90!; [Furlow ] ClearviewHwy-2-W;
90 Deg Advanced Turn Arrow 8.00" X 6.50"; [Little Rock ] ClearviewHwy-2-W;

(7)




6.00" Radius, 2.00" Border, White on Green;
[EXIT] ClearviewHwy-5-W-R; [173]
ClearviewHwy-5-W-R; Arrow Custom - 29.24" 45!;
6.00" Radius, 2.00" Border, 1.00" Indent, Black on Yellow;
[XX MPH] ClearviewHwy-5-W-R;

(8)




3.00" Radius, 1.00" Border, White on Green;
Standard Arrow Custom 9.38" X 5.38" 90!; [Lonoke ] ClearviewHwy-2-W;
90 Deg Advanced Turn Arrow 8.00" X 6.50"; [West Memphis ] ClearviewHwy-2-W;

(10)

3.00" Radius, 1.00" Border, White on Green;
Standard Arrow Custom 9.38" X 5.38" 90!; [Furlow ] ClearviewHwy-2-W;
Standard Arrow Custom 9.38" X 5.38" 90!; [Little Rock ] ClearviewHwy-2-W;
[West Memphis ] ClearviewHwy-2-W; 90 Deg Advanced Turn Arrow 8.00" X 6.50";

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8141
NICCI D. TINER

10-24-11

SPECIAL SIGNS

sgroberson 10/20/2011 11:04:13 AM
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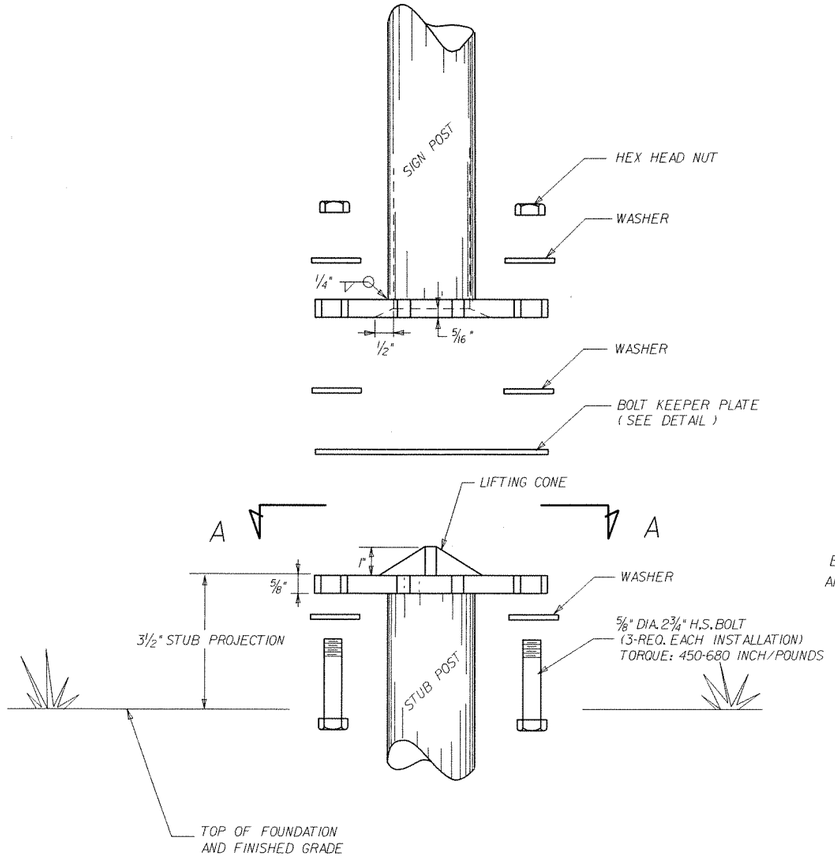
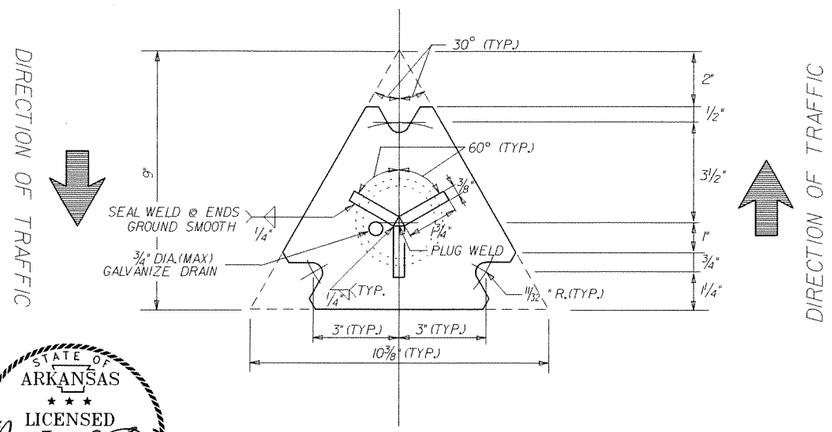
REVISED DATE: _____

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.ROAD NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 30 | 182 |

② SPEC. DET. SHOWING BREAKAWAY SIGN SUP. (PIPE)



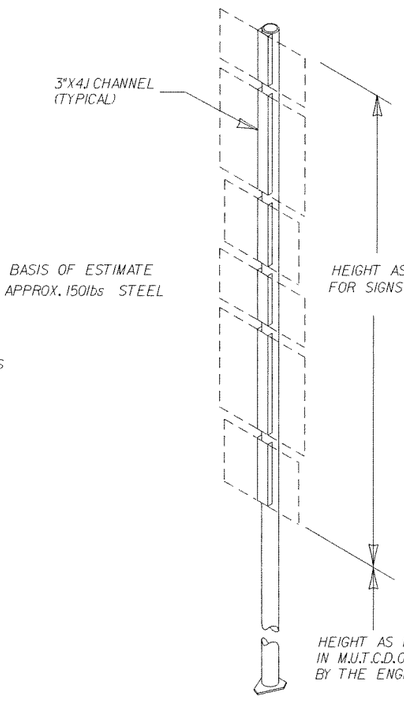

ELEVATION TYPE-I BASE

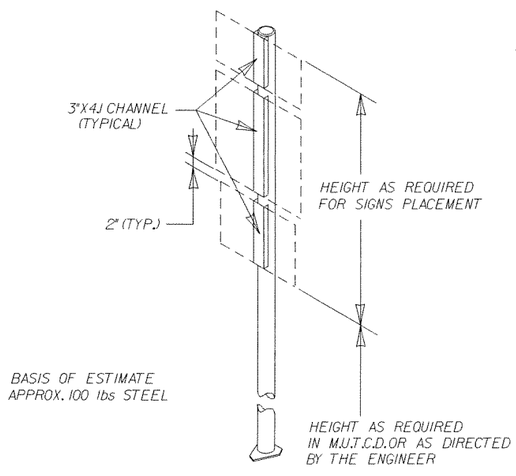



SECTION A-A

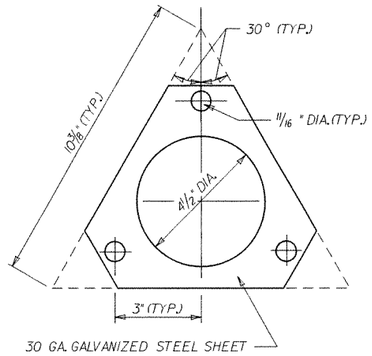
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8141
NICCI D. TINER
10-24-11

BASIS OF ESTIMATE
APPROX. 150lbs STEEL

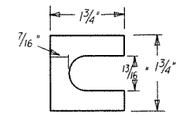



BASIS OF ESTIMATE
APPROX. 100 lbs STEEL



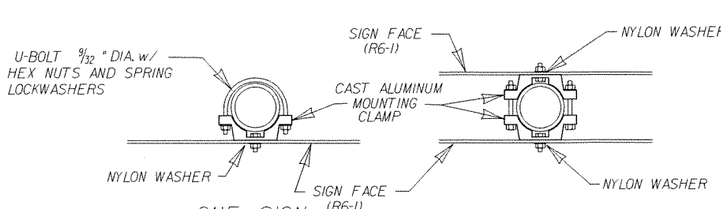

BOLT KEEPER PLATE



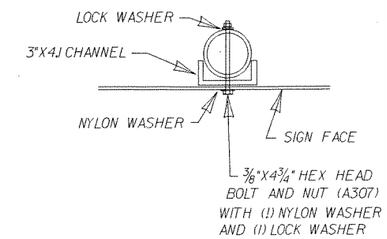

FURNISH (2) .012" THICK AND
(2) .032" THICK SHIMS PER POST

SHIM DETAIL

GENERAL NOTES:
THE TOP PLATE OF TRIANGULAR SLIP BASES SHALL HAVE THE SAME EXTERIOR DIMENSIONS AS THE BOTTOM PLATE. THE LIFTING CONE SHALL BE WELDED TO THE BOTTOM PLATE OF TRIANGULAR SLIP BASES AND A HOLE EQUAL TO THE INSIDE DIAMETER OF THE SIGN POST SHALL BE CUT THROUGH THE CENTER OF THE TOP PLATE WITH THE HOLE EDGE BEVELED AS SHOWN.
THE BEVEL END SHALL BE TANGENT TO THE BOLT HOLE. ANY MISALIGNMENT SHALL BE REMOVED BY GRINDING.
FACE OF BEVEL SHALL BE FINISHED TO A MINIMUM SMOOTHNESS OF f-500.

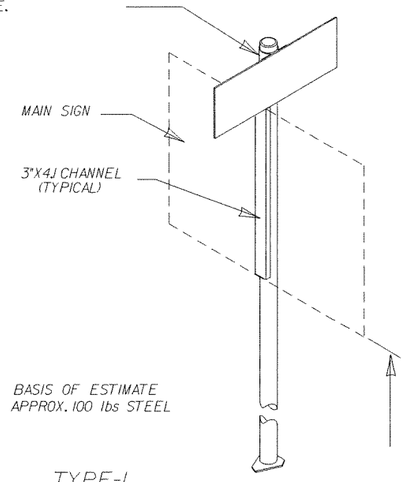


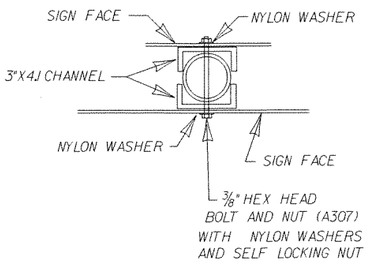

ONE SIGN TWO SIGNS




ONE SIGN

SINGLE OR DOUBLE-CAST ALUMINUM MOUNTING CLAMP OF AN APPROVED COMMERCIAL DESIGN. TO ALLOW POSITIONING OF THE R6-1 SIGNS IN THE FIELD TO OBTAIN THE OPTIMUM VIEWING ANGLE.




TWO SIGNS

TYPE-I

3"x7.5 Pipe (TYPICAL)

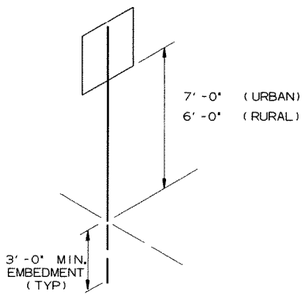
FOOTING
DIA. 1'-6"
DEPTH 3'-4"
EMBED. 3'-0" MIN.

CHANNEL SHALL BE FULL LENGTH OF RECTANGULAR AND SQUARE SIGNS AND SHALL EXTEND 1 1/2" BEYOND BOLT HOLES ON DIAMOND OR IRREGULAR SHAPED SIGNS.

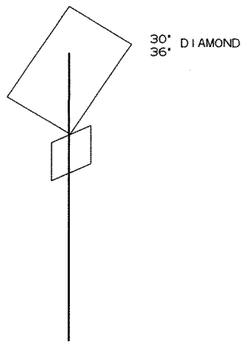
# SPECIAL DETAILS SHOWING BREAKAWAY SIGN SUPPORTS (PIPE)

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.ROAD NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 31 | 182 |

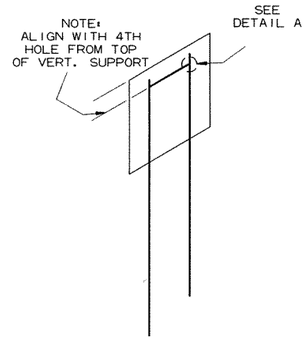
(2) U-CHANNEL POST ASSEMBLIES



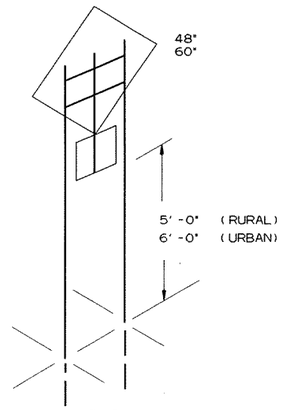

U1-1




U1-2




U2-1

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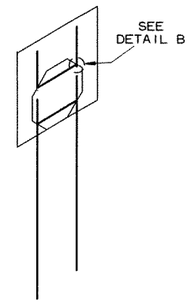


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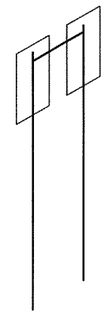

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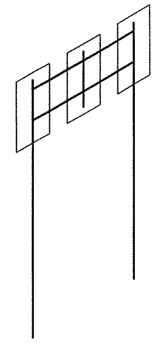

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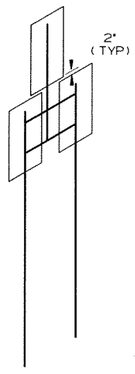


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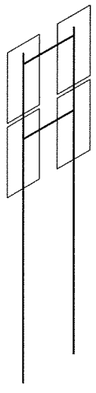

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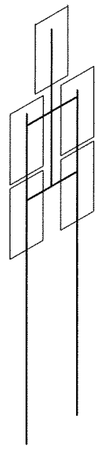

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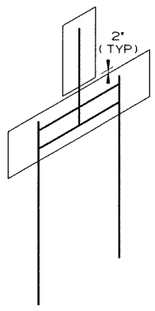


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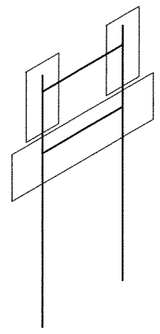
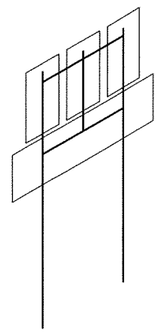


U2-10



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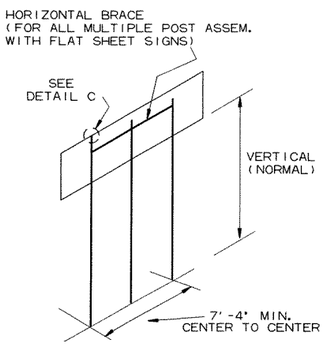
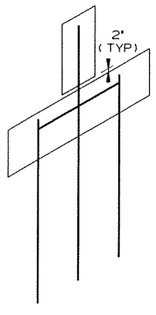
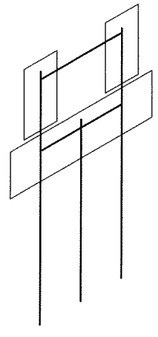


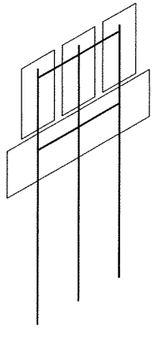

U3-1



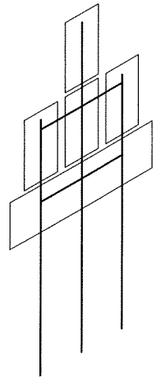

U3-2



U3-3



U3-4



U3-5

NOTES:

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

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN THE U-CHANNEL POST ASSEMBLY DETAILS.

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. CARRIAGE BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

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

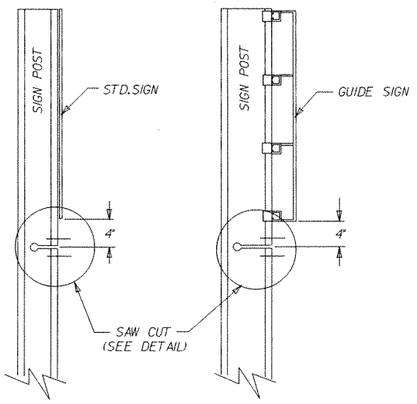
THE POSTS SHALL BE A FLANGED CHANNEL SECTION WEIGHING NOT LESS THAN 3.00 POUNDS PER FOOT (4.46 KG/M).

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8141
NICCI D. TINER
10-24-11

U-CHANNEL POST ASSEMBLIES

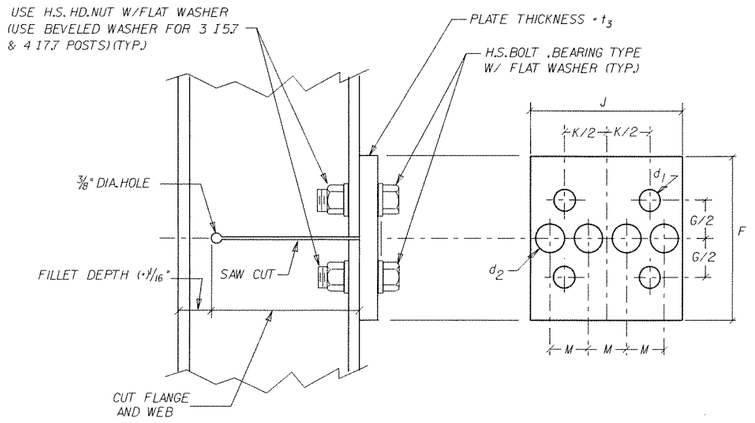
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.ROAD NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 32 | 182 |
| | | | | (2) | DETAILS OF I-BEAM SIGN SUPPORTS | | | |

NOTE: BOLT HOLES USED IN THE MOUNTING OF STANDARD SIGNS SHALL BE LOCATED IN THE FLANGE ADJACENT TO THE NEAR EDGE OF PAVEMENT FOR SINGLE POST ASSEMBLIES AND IN THE OUTSIDE FLANGES FOR MULTIPLE POST ASSEMBLIES.




Standard Signs — Guide Signs

NOTE: POST SHALL BE SAW CUT AFTER GALVANIZING AND THE CUT SURFACE TREATED. AFTER PLATE IS INSTALLED AND ALL BOLTS FULLY TIGHTENED, WITH AN APPROVED ZINC SOLDER MEETING THE FEDERAL SPEC. O-G-93 (STICK ONLY).

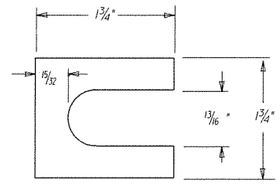



NOTE: USE H.S. HEX HEAD BOLTS, HEX HEAD NUTS AND BEVEL OR FLAT WASHERS (WHERE REQ.) UNDER NUTS. ALL HOLES SHALL BE DRILLED. ALL PLATE CUTS SHALL PREFERABLY BE SAW CUTS. HOWEVER FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE PERMITTED. STEEL FUSE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM-A36, AST.M-A441, ASTM-572 GRADE 50, OR ASTM-A588 MAY BE SUBSTITUTED FOR A36 AT THE OPTION OF THE FABRICATOR. STEEL USED SHALL HAVE AN ULTIMATE TENSILE STRENGTH NOT TO EXCEED 80 KSI.

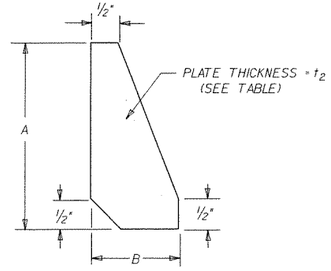
| POST SIZE | BASE CONNECTION DATA | | | | | | | | | | | FUSE PLATE DATA | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BOLT SIZE | BOLT TORQUE (INCH/LBS) | A | B | C | D | E | $t_1$ | $t_2$ | W | R | F | G | | J | K | M | $d_1$ | $d_2$ | $t_3$ | BOLT SIZE | WT. OF EACH FUSE PLATE LBS. |
| W 6X9 | 5/8" x 2 3/4" | 450"-680" | 5" | 2" | 1 1/4" | 2 3/4" | 1 1/8" | 3/4" | 1/2" | 1/4" | 11/32" | 4 1/4" | 2" | | 4" | 2 1/4" | 1" | 9/16" | 3/4" | 1/4" | 1/2" x 1 1/2" | 1.01 |
| W 6X12 | | | | | | | | | | | | | | | | | | | | | | |
| W 6X15 | | | | | | | | | | | | 5" | 2 1/2" | | 6" | 3 1/2" | 1 1/2" | 11/16" | 1 1/4" | 3/8" | 5/8" x 2 1/4" | 2.51 |
| W 8X18 | 3/4" x 3 1/2" | 750"-1050" | 6" | 2 1/4" | 1 3/8" | 3 1/2" | 1 1/4" | 1" | 3/4" | 5/16" | 31/32" | 5" | 2 1/2" | | 5 1/4" | 2 3/4" | 1 1/4" | 13/16" | 1 1/16" | 3/8" | 3/4" x 2 1/4" | 2.26 |
| W 8X21 | | | | | | | | | | | | 5 1/2" | 2 1/2" | | 5 1/4" | 2 3/4" | 1 1/4" | 13/16" | 1" | 1/2" | 3/4" x 2 1/4" | 3.35 |
| W 10X22 | | | | | | | | | | | | 6" | 3" | | 5 3/4" | 2 3/4" | 1 3/8" | 13/16" | 1 1/8" | 1/2" | 3/4" x 2 1/4" | 4.03 |
| W 10X26 | | | | | | | | | | | | | | | | | | | | | | |
| W 12X26 | | | | | | | | | | | | 6" | 3" | | 6 1/2" | 3 1/2" | 1 5/8" | 13/16" | 1 5/16" | 1/2" | 3/4" x 2 1/4" | 4.47 |

# FUSE PLATE DETAILS

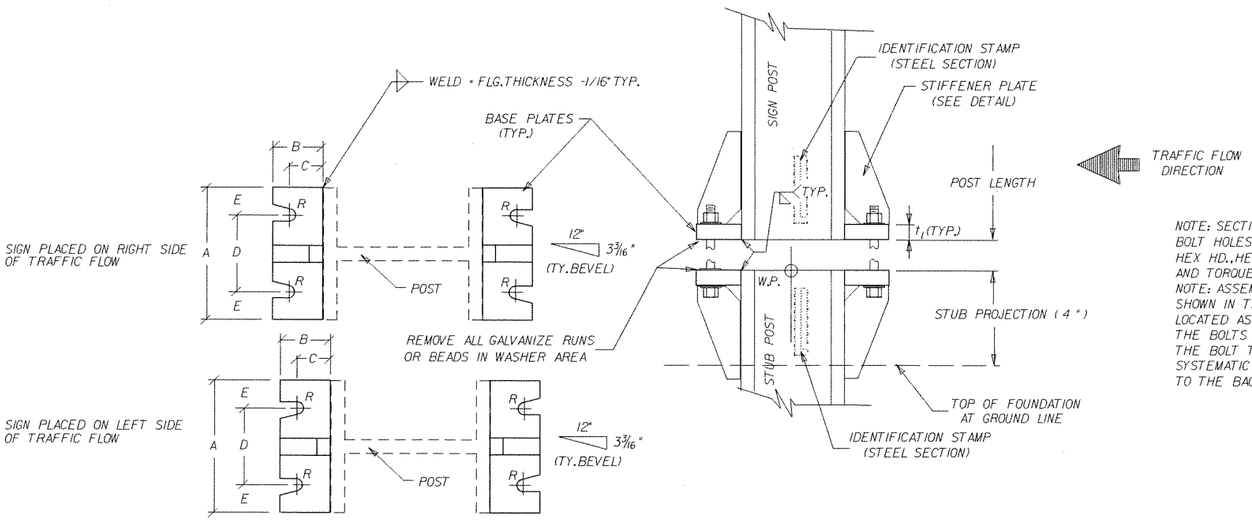
FURNISH 2 ~ .012"+/- THICK AND 2 ~ .032"+/- THICK SHIMS PER POST




## SHIM DETAIL




## STIFFENER PLATE DETAIL




## SIGN POST AND STUB POST

NOTE: SECTIONS SHOWN ARE FOR INSTALLATION ON THE RIGHT SHOULDER AND IN THE GORE. BOLT HOLES IN BASE PLATE ARE SLOTTED AND BEVELED AS SHOWN. USE H.S. BOLTS WITH HEX HD., HEX NUT AND THREE FLAT WASHERS FOR EACH BOLT. SEE TABLE FOR BOLT DIA. AND TORQUE.
NOTE: ASSEMBLE SIGN POST TO STUB POST USING THE BOLTS SPECIFICATIONS IN THE TABLE AND AS SHOWN IN THE ELEVATION DETAILS. THERE SHALL BE THREE FLAT WASHERS ON EACH BOLT LOCATED AS SHOWN IN THE ELEVATIONS. USE A SHIM TO PLUMB THE SIGN POST. THEN TIGHTEN THE BOLTS USING A 12" TO 15" WRENCH UNTIL THE WASHERS AND SHIMS ARE SEATED AND THE BOLT THREADS ARE CLEAR. THEN LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE (SEE TABLE). THE BURR THREADS ADJACENT TO THE BACK SIDE OF THE NUT TO PREVENT LOOSENING.

GENERAL NOTES

TIGHTEN THE HIGH STRENGTH BOLTS IN THE BASE CONNECTION ONLY TO THE TORQUE SHOWN. DO NOT OVERTIGHTEN.

BASE PLATES AND STIFFENER PLATES SHALL BE OF THE SAME MATERIAL AS THE PRIMARY SUPPORT POSTS TO WHICH THEY ARE WELDED.

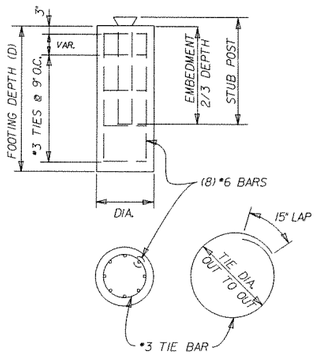
FOR FOOTING DETAILS REFER TO PLANS.

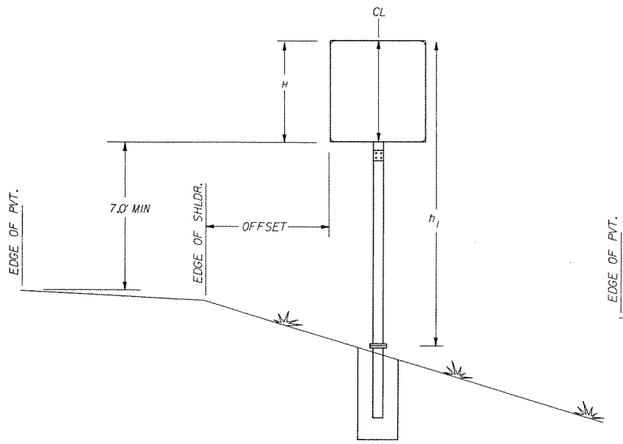
EACH STUB POST AND SIGN POST SHALL HAVE A PERMANENT IDENTIFYING STAMP WHICH SPECIFIES THE STEEL SECTION USED. IF THE CONTRACTOR ELECTS TO SHIP THE STUB POST SEPARATE FROM THE SIGN POST. A MATCH MARK SYSTEM WILL BE REQUIRED.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8141
NICCI D. TINER
10-24-11

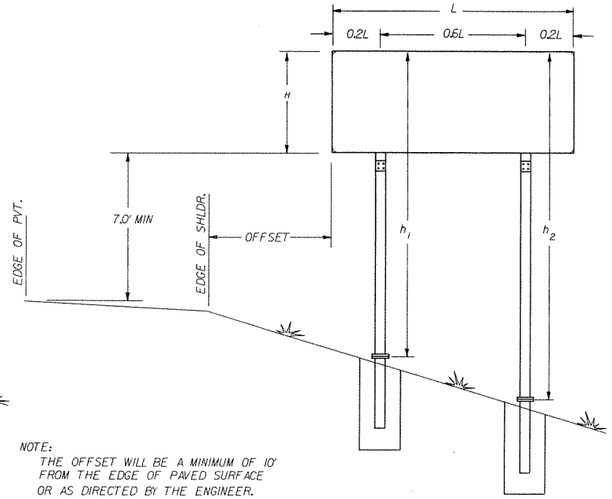
DETAILS OF I-BEAM SIGN SUPPORTS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.ROAD NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 33 | 182 |
| | | | | ② | | I-BEAM SIGN SUPPORTS | | |



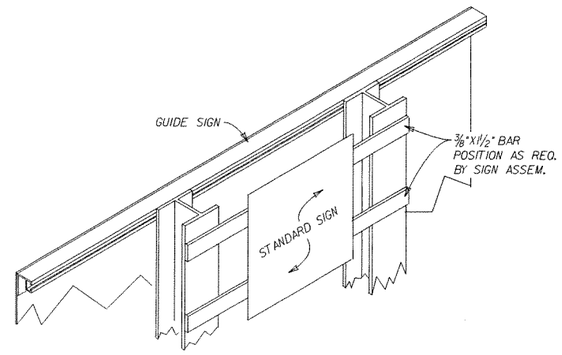




G-1

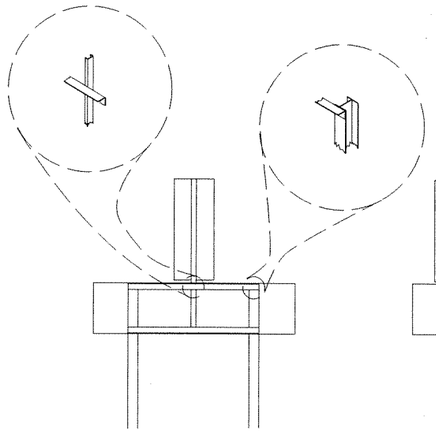



NOTE:
THE OFFSET WILL BE A MINIMUM OF 10' FROM THE EDGE OF PAVED SURFACE OR AS DIRECTED BY THE ENGINEER.

G-2




SECONDARY SIGN INSTALLATION
ON BACKSIDE OF GUIDE SIGN



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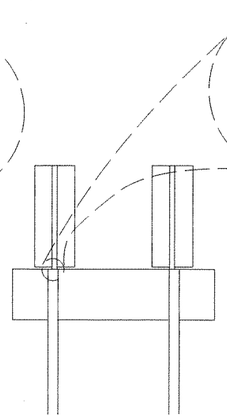

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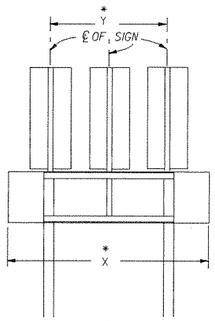
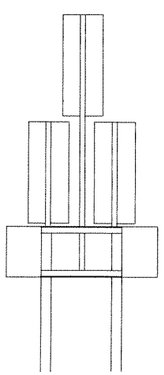



C

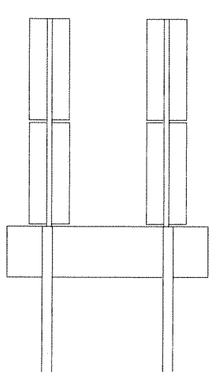
TRIPLE ASSEM.(C or D)

| * Y | * X | TYPE ASSEM. |
|---|---|---|
| 4'-4" | ≥ 7'-6" | G-1C |
| 4'-4" | < 7'-6" | G-1D |
| 4'-10" | ≥ 8'-0" | G-1C |
| 4'-10" | < 8'-0" | G-1D |
| 5'-1" | ≥ 8'-6" | G-1C |
| 5'-1" | < 8'-6" | G-1D |
| 5'-4" | ≥ 9'-0" | G-1C |
| 5'-4" | < 9'-0" | G-1D |

LEGEND
≥ GREATER THAN OR EQUAL TO
< LESS THAN



D



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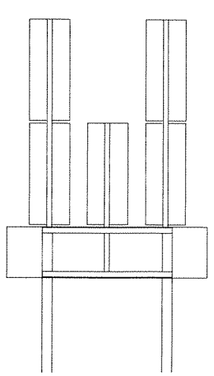
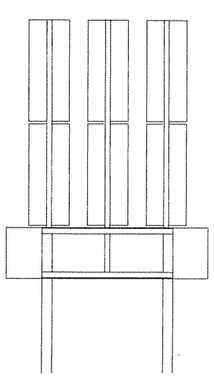


F



G

FOOTING QUANTITIES

| FTG. DEPTH | NO. OF TIES | STUB PROJ. | 18" DIA. CU.YD. | 18" DIA. # STEEL | 24" DIA. CU.YD. | 24" DIA. # STEEL | 30" DIA. CU.YD. | 30" DIA. # STEEL | 36" DIA. CU.YD. | 36" DIA. # STEEL | "A" EMBED. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2'-6" | 4 | 4" | 0.16 | 30.5 | | | | | | | 1'-8" |
| 3'-0" | 4 | 4" | 0.20 | 36.6 | | | | | | | 2'-0" |
| 3'-6" | 5 | 4" | 0.23 | 44.2 | | | | | | | 2'-4" |
| 4'-0" | 6 | 4" | 0.26 | 51.8 | 0.46 | 55.4 | | | | | 2'-8" |
| 4'-6" | 7 | 4" | 0.29 | 59.5 | 0.52 | 63.6 | | | | | 3'-0" |
| 5'-0" | 7 | 4" | 0.33 | 65.5 | 0.58 | 69.6 | 0.91 | 73.8 | | | 3'-4" |
| 5'-6" | 8 | 4" | | | 0.64 | 77.9 | 1.00 | 82.6 | | | 3'-8" |
| 6'-0" | 9 | 4" | | | 0.70 | 86.7 | 1.09 | 91.5 | 1.57 | 96.5 | 4'-0" |
| 6'-6" | 9 | 4" | | | | | 1.18 | 97.5 | 1.70 | 102.6 | 4'-4" |
| 7'-0" | 10 | 4" | | | | | 1.27 | 106.3 | 1.83 | 111.9 | 4'-8" |
| 7'-6" | 11 | 4" | | | | | | | 1.96 | 121.3 | 5'-0" |
| 8'-0" | 11 | 4" | | | | | | | 2.09 | 127.3 | 5'-4" |

REINFORCING STEEL SCHEDULE

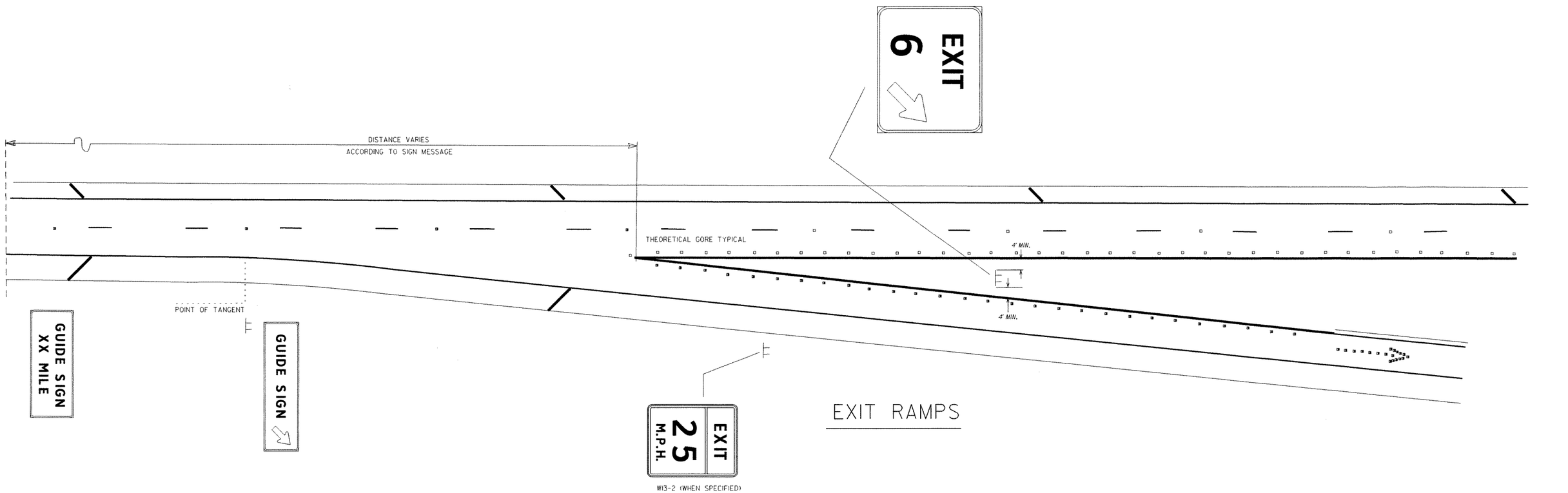
| FTG. DIA. IN. | #3 TIE BARS DIA. IN. | #3 TIE BARS LGTH.-EA. FT./IN. | #3 TIE BARS WEIGHT LBS. | FTG. DEPTH FT./IN. | (8) #6 BARS LGTH.-EA. FT./IN. | (8) #6 BARS WEIGHT LBS. | NO. TIES EA. |
|---|---|---|---|---|---|---|---|
| 18" | 12" | 4'-4" | 1.629 | 2'-6" | 2'-0" | 240.3 | 4 |
| | | | | 3'-0" | 2'-6" | 300.4 | 4 |
| 24" | 18" | 5'-11" | 2.225 | 3'-6" | 3'-0" | 360.5 | 5 |
| | | | | 4'-0" | 3'-6" | 420.6 | 6 |
| 30" | 24" | 7'-6" | 2.820 | 4'-6" | 4'-0" | 480.6 | 7 |
| | | | | 5'-0" | 4'-6" | 540.7 | 7 |
| 36" | 30" | 9'-0" | 3.384 | 5'-6" | 5'-0" | 600.8 | 8 |
| | | | | 6'-0" | 5'-6" | 660.9 | 9 |
| | | | | 6'-6" | 6'-0" | 721.0 | 9 |
| | | | | 7'-0" | 6'-6" | 781.0 | 10 |
| | | | | 7'-6" | 7'-0" | 841.1 | 11 |
| | | | | 8'-0" | 7'-6" | 901.2 | 11 |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8141
NICCI D. TINER
11-24-11

I-BEAM SIGN SUPPORTS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.ROAD NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 34 | 182 |

(2) DETAIL OF SIGN PLACEMENT



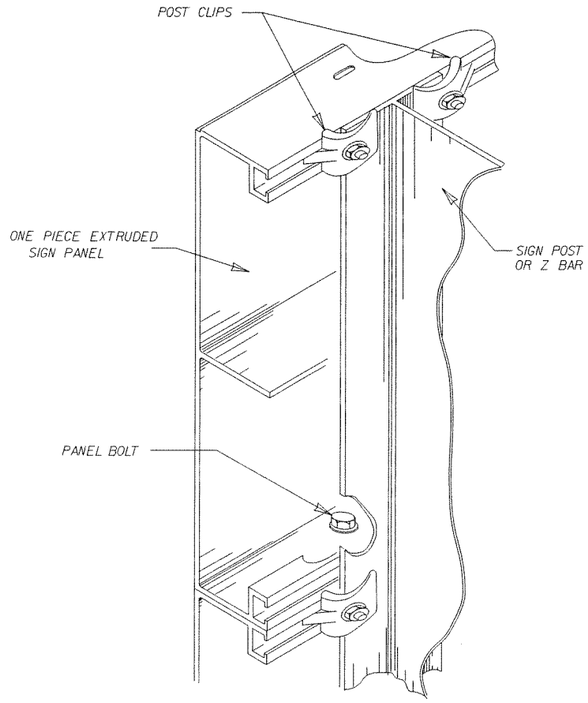

EXIT RAMPS

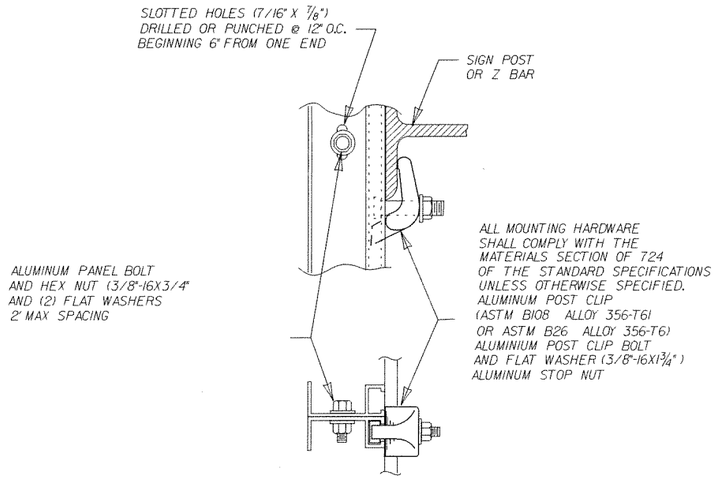
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8141
NICCI D. TINER
10-24-11

DETAIL OF SIGN PLACEMENT

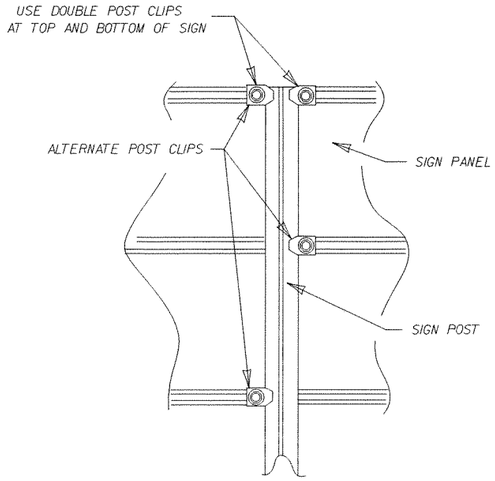
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | DIST.NO. | STATE | FED.AID PROJ.NO. | NO. | SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 35 | 182 |

(2) DETAILS OF GUIDE SIGN PANELS

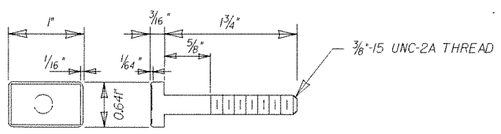


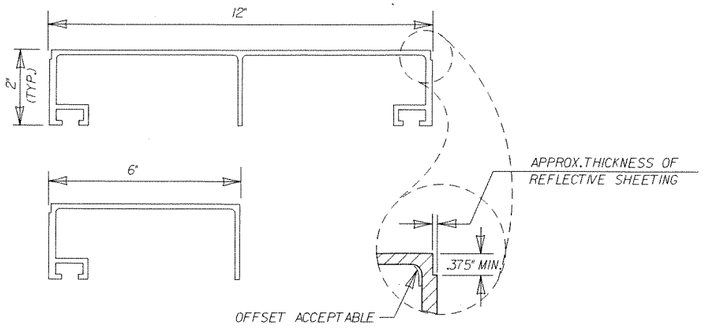

MOUNTING HARDWARE



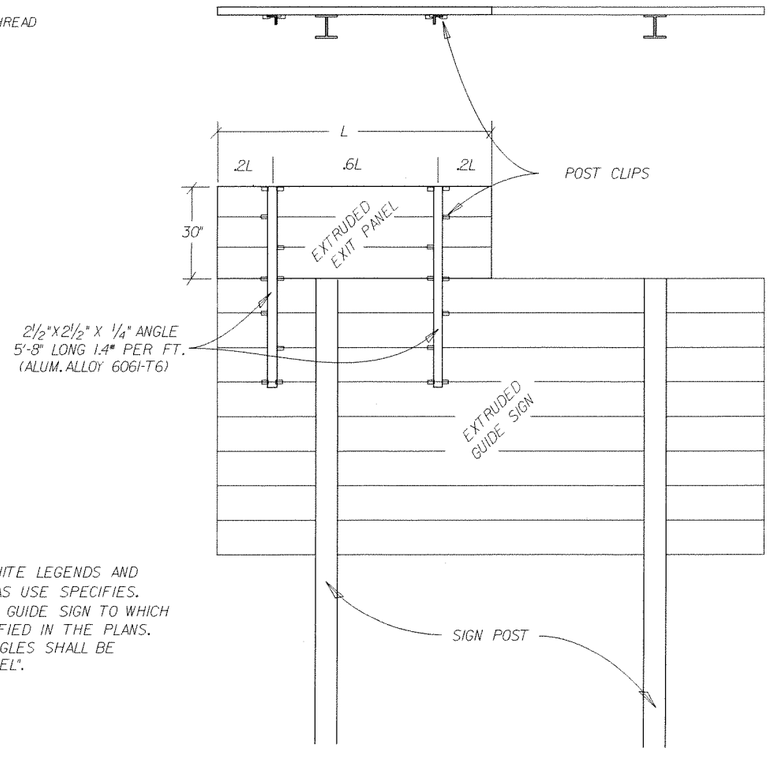

POST CLIP PLACEMENT




POST CLIP BOLT




ONE PIECE EXTRUDED SIGN PANELS




NOTE: EXIT NUMBER PANELS SHALL HAVE WHITE LEGENDS AND BORDERS. THE BACKGROUND COLOR WILL BE AS USE SPECIFIES. SHEETING TYPE WILL BE THE SAME AS THE GUIDE SIGN TO WHICH THE EXIT PANEL IS ATTACHED OR AS SPECIFIED IN THE PLANS. PAYMENT FOR ALL POST CLIPS, BOLTS, AND ANGLES SHALL BE SUBSIDIARY TO THE ITEM "EXIT NUMBER PANEL".

STATE OF ARKANSAS
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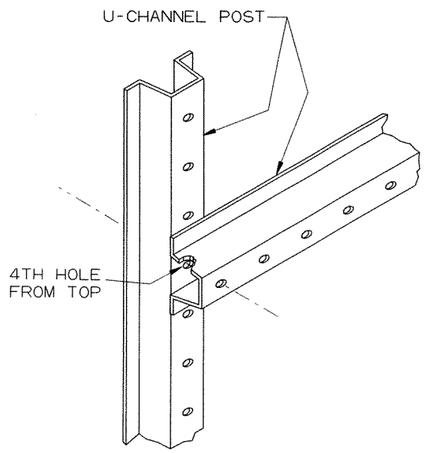
DETAILS OF GUIDE SIGN PANELS

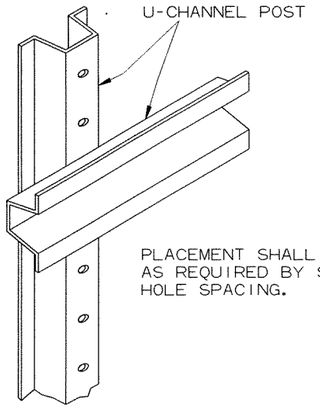
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 36 | 182 |

② U-CHANNEL POST ASSEMBLY DETAILS



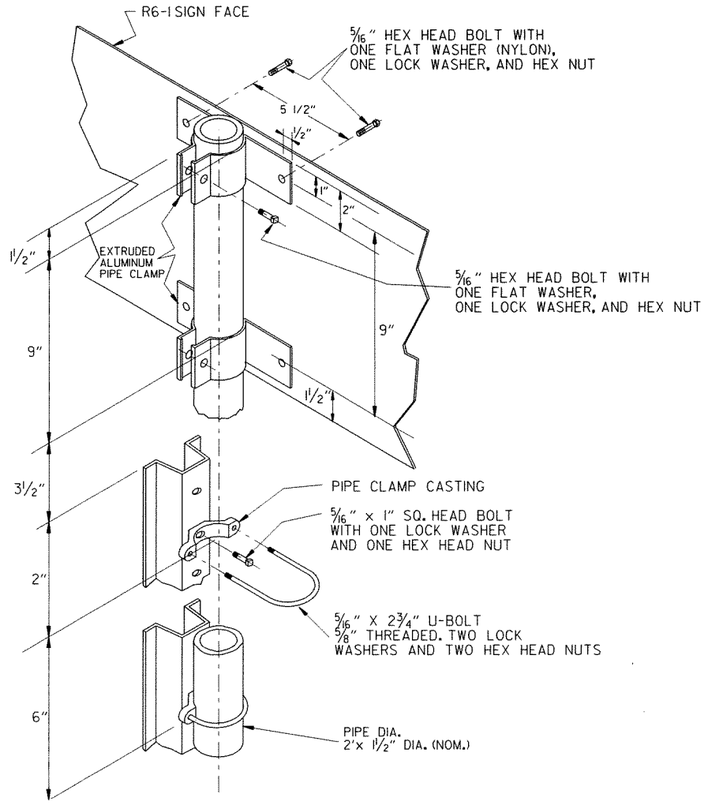

**DETAIL A**

SHOWING HORIZONTAL BRACE

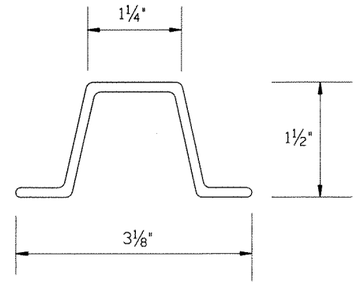



**DETAIL B**

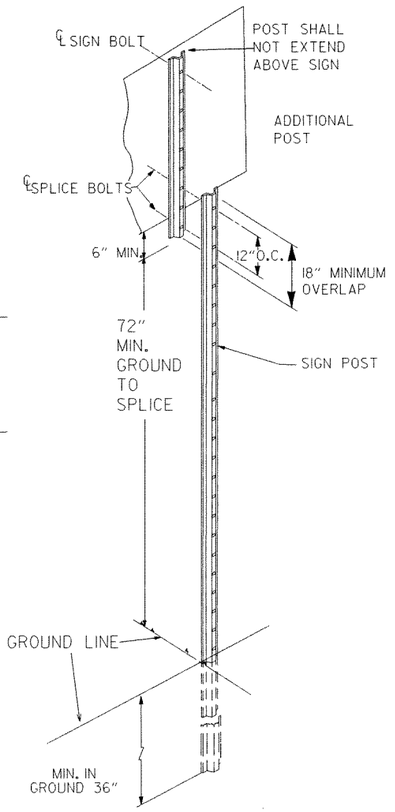
SHOWING BACK-TO-BACK INSTALLATION



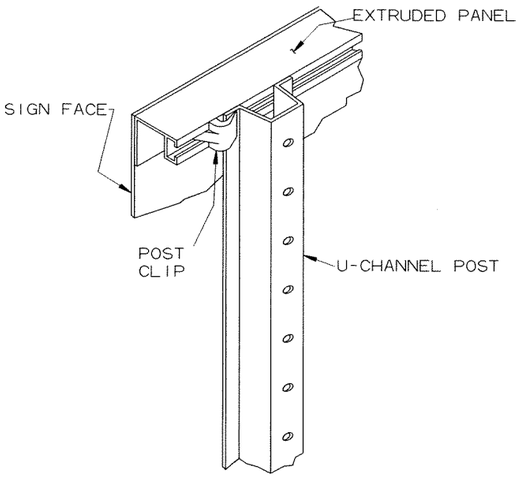

**R6-1 EXTENSION FOR U-CHANNEL POST**




**( 3 LB. U-CHANNEL POST)**

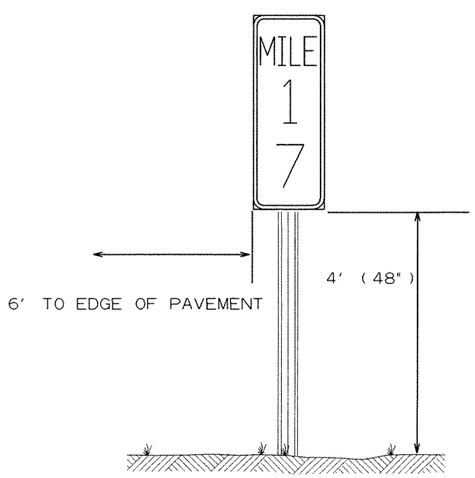



**DETAIL OF SPLICES**

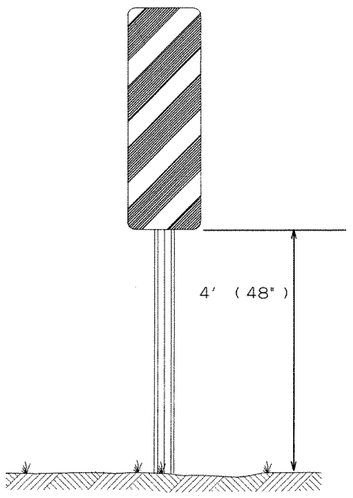



**DETAIL C**

SHOWING GUIDE SIGN MOUNTING WITH EXTRUDED PANELS




TYPICAL MILE MARKER INSTALLATION




TYPICAL OM-3 INSTALLATION AT EDGE OF OBSTRUCTION

NOTES:

USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES.

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.

THREE TWO-POUND POSTS WITHIN SEVEN FEET SHALL REQUIRE A GROUND SPLICE.

ALL SIGN POSTS SHALL BE PLUMB.

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

STATE OF ARKANSAS
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No. 8141
NICCI D. TINER
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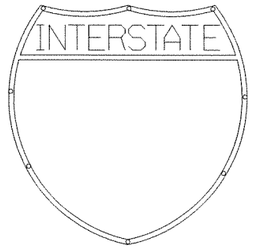
U-CHANNEL POST ASSEMBLY DETAILS

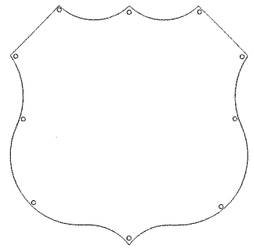
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 37 | 182 |

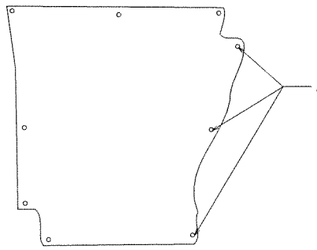
(2) MOUNTING DETAILS FOR DEMOUNTABLE LEGEND ON GUIDE SIGNS

THE CONTRACTOR SHALL DRILL AND POP-RIVET LEGEND, SHIELDS, ARROWS, OR OTHER COPY AS SHOWN.

DIRECT APPLIED BORDER





AD-68 RIVETS

DIRECT APPLIED BORDER

AD-68 RIVETS

# ABCDEFGHIJKLMNOPQRSTUVWXYZ

AD-68 RIVETS

# abcdefghijklmnopqrstuvwxyz

AD-68 RIVETS

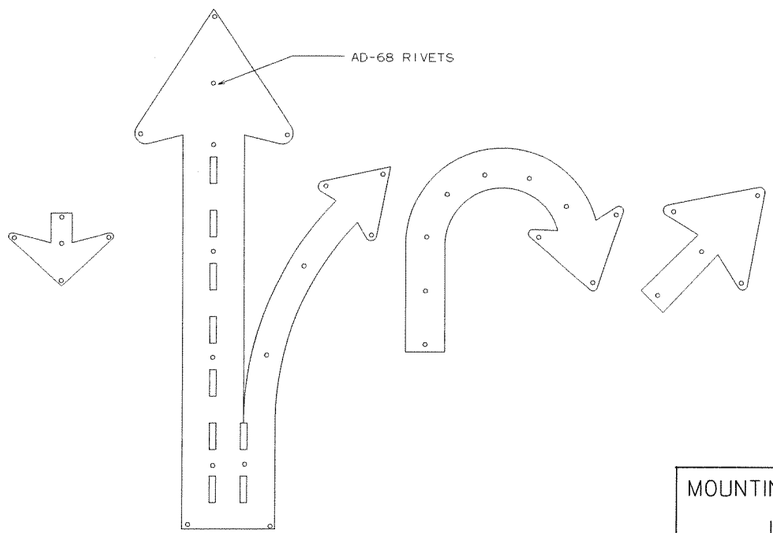
# 0123456789 ¼ ½ ¾

NOTE:

LEGEND ON GUIDE SIGNS ON THE MAIN LANES SHALL BE DEMOUNTABLE LEGEND.
LEGEND ON GUIDE SIGNS ON CROSS ROADS AND RAMPS SHALL BE DIRECT APPLIED.
THE DEMOUNTABLE AND DIRECT APPLIED LEGENDS SHALL BE TYPE IX SHEETING.

THE BACKGROUND ON ALL GUIDE SIGNS AND STANDARD SIGNS SHALL BE CONSTRUCTED USING TYPE III SHEETING.
TYPE IX SHEETING FOR BORDER, LEGEND, SHIELDS, ARROWS, OR OTHER COPY SHALL BE ORIENTED VERTICALLY AS PER MANUFACTURERS' DATUM MARKS, ORIENTATION MARKS, OR OTHER RECOMMENDATIONS.

SIGN LEGEND, SHIELDS, ARROWS OR OTHER COPY SHALL BE APPLIED WITH RIVETS ONLY.
NO OTHER METHOD OF APPLYING CHARACTERS IS ALLOWED.



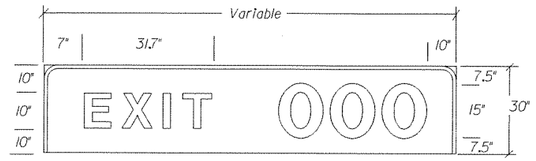

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8141
NICCI D. TINER
10-24-11

MOUNTING DETAILS FOR DEMOUNTABLE LEGEND ON GUIDE SIGNS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 38 | 182 |
| | | | | ② | EXIT PANEL DETAILS | | | |

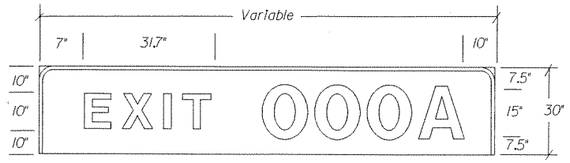
TYPICAL DETAIL

TYPE A



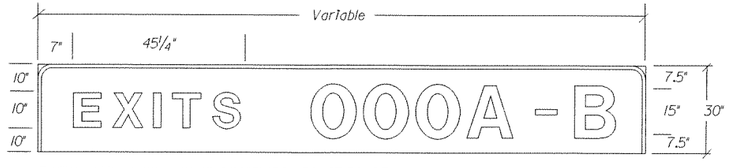

EXIT WITH 1 DIGIT 84"X30"=17.50 SF
EXIT WITH 2 DIGITS 96"X30"=20.0 SF
EXIT WITH 3 DIGITS 114"X30"=23.57 SF

TYPE B




EXIT WITH 1 DIGIT PLUS "A"OR"B" 96"X30"=20.0 SF
EXIT WITH 2 DIGITS PLUS "A"OR"B" 114"X30"=23.57 SF
EXIT WITH 3 DIGITS PLUS "A"OR"B" 126"X30"=26.25 SF

TYPE C



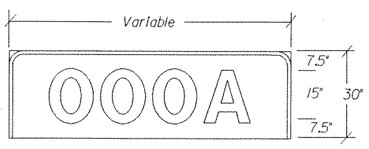

EXITS WITH 1 DIGIT PLUS "A"&"B" 132"X30"=27.50 SF
EXITS WITH 2 DIGITS PLUS "A"&"B" 150"X30"=31.25 SF
EXITS WITH 3 DIGITS PLUS "A"&"B" 168"X30"=35.00 SF

TYPE D




1 DIGIT 24"X30" =5.0 SF
2 DIGITS 42"X30" =8.75 SF
3 DIGITS 60"X30" =12.50 SF

TYPE E




1 DIGIT PLUS "A"OR"B" 42"X30"=8.75 SF
2 DIGITS PLUS "A"OR"B" 60"X30"=12.50 SF
3 DIGIT PLUS "A"OR"B" 78"X30"=16.25 SF

STATE OF ARKANSAS
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No.8141
NICCI D. TINER

10-24-11

EXIT PANEL 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. | | 060897 | 39 | 182 |
| | | | | (2) | SOIL BORING LOG | | | |

## SOIL BORING LOG

| BORING NO. | APPROX. HWY. 89 STATION | SAMPLE DEPTH (ft) | WATER CONTENT (%) | ATTERBERG LIMITS | | | PERCENT PASSING #200 | UNIFIED CLASS. | AASHTO CLASS. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | | | |
| 1A | 49+00, CL | 2.5-3.5 | 27 | 59 | 19 | 40 | 91 | CH | A-7-6 |
| 1A | 49+00, CL | 14-15 | 22 | 26 | 19 | 7 | 93 | CL-ML | A-4 |
| 1A | 49+00, CL | 29-30 | 9 | - | - | - | 59 | ML | A-4 |
| 1A | 49+00, CL | 44-45 | 10 | - | - | - | 56 | ML | A-4 |
| 1A | 49+00, CL | 59-60 | 7 | - | - | - | 10 | SP-SM | A-2-4 |
| | | | | | | | | | |
| 3A | 51+14, CL | 2.5-3.5 | 27 | 55 | 20 | 35 | 90 | CH | A-7-6 |
| 3A | 51+14, CL | 9.0-10 | 14 | 41 | 16 | 25 | 99 | CL | A-7-6 |
| 3A | 51+14, CL | 24-25 | 15 | - | - | - | 93 | ML | A-4 |
| 3A | 51+14, CL | 39-40 | 5 | - | - | - | 26 | SM | A-2-4 |
| | | | | | | | | | |
| 4 | 56+18, 72.5' L | 2.5-3.5 | 13 | - | - | - | 24 | SM | A-2-4 |
| 4 | 56+18, 72.5' L | 6.5-7.5 | 27 | 57 | 18 | 39 | 88 | CH | A-7-6 |
| | | | | | | | | | |
| 5 | 44+20, 138' L | 0-4 | 18 | 33 | 19 | 14 | 88 | CL | A-6 |
| 5 | 44+20, 138' L | 2.5-3.5 | 22 | 28 | 18 | 10 | 91 | CL | A-4 |
| | | | | | | | | | |
| 6 | 43+58, 475' L | 0.5-1.5 | 13 | 27 | 17 | 10 | 91 | CL | A-4 |
| 6 | 43+58, 475' L | 4-5 | 18 | 40 | 18 | 22 | 93 | CL | A-6 |
| | | | | | | | | | |
| 7 | 31+91, 38' R | 2.5-3.5 | 30 | 54 | 21 | 33 | 95 | CH | A-7-6 |
| | | | | | | | | | |
| 8 | 27+96, 882' R | 4-5 | 31 | 62 | 23 | 39 | 99 | CH | A-7-6 |
| | | | | | | | | | |
| 9 | 30+11, 1045' R | 2.5-3.5 | 22 | 27 | 17 | 10 | 97 | CL | A-4 |
| | | | | | | | | | |
| 10 | 51+80, 608' R | 0.5-1.5 | 19 | 29 | 19 | 10 | 95 | CL | A-4 |
| | | | | | | | | | |
| 11 | 54+43, 873.5' L | 0.5-1.5 | 20 | 25 | 20 | 5 | 94 | CL-ML | A-4 |
| 11 | 54+43, 873.5' L | 4-5 | 27 | 47 | 19 | 28 | 91 | CL | A-7-6 |
| | | | | | | | | | |
| 12 | 53+43, 1546' L | 2-2.5 | 19 | 43 | 17 | 26 | 85 | CL | A-7-6 |
| | | | | | | | | | |
| 13 | 35+25, 784' R | 2.5-3.5 | 29 | 56 | 20 | 36 | 95 | CH | A-7-6 |
| | | | | | | | | | |
| 14A | 48+92, 40' R | 6.5-7.5 | 26 | 32 | 20 | 12 | 97 | CL | A-6 |
| | | | | | | | | | |
| 15A | 49+06, 37' L | 2.5-3.5 | 24 | 53 | 16 | 37 | 95 | CH | A-7-6 |
| | | | | | | | | | |
| 16A | 51+04, 41' R | 2.5-3.5 | 27 | 70 | 20 | 50 | 97 | CH | A-7-6 |
| | | | | | | | | | |
| 17 | 51+17, 42' L | 6.5-7.5 | 20 | 40 | 18 | 22 | 99 | CL | A-6 |
| | | | | | | | | | |

SOIL CHARACTERISTICS TABULATED ABOVE ARE REPRESENTATIVE AT THE LOCATION OF THE SAMPLE, AND FROM SURFACE INDICATIONS ARE TYPICAL FOR THE LIMIT 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.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.13436
SHAUN A. ROBERSON



saroberson 10/21/2011 2:21:43 PM
WORKSPACE: AHTD
L:\2006\0605060-140-H89 INT\Drawings\RWY\H89_SB_01.dgn
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 40 | 182 |

(2) QUANTITIES

## PERMANENT PAVEMENT MARKINGS

| DESCRIPTION | UNIT | I-40 | RAMP 1 | RAMP 2 | RAMP 3 | RAMP 4 | MERGED RAMPS 3 & 4 | HWY. 89 | SAYLOR RD. | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| THERMOPLASTIC PAVEMENT MARKING WHITE (4") | L.F. | 4,354 | 2,382 | 1,627 | 1,657 | 890 | 911 | 7,545 | 1,460 | 20,826 |
| THERMOPLASTIC PAVEMENT MARKING WHITE (8") | L.F. | 1,808 | 164 | | | | 262 | | | 2,234 |
| THERMOPLASTIC PAVEMENT MARKING WHITE (12") | L.F. | | | | | | | | 22 | 22 |
| THERMOPLASTIC PAVEMENT MARKING WHITE (24") | L.F. | | 38 | | | | 15 | | | 53 |
| THERMOPLASTIC PAVEMENT MARKING YELLOW (4") | L.F. | | 1,627 | 1,420 | 1,127 | 802 | 609 | 10,210 | 1,396 | 17,191 |
| THERMOPLASTIC PAVEMENT MARKING YELLOW (12") | L.F. | | | | | | | 316 | | 316 |
| THERMOPLASTIC PAVEMENT MARKING (WORDS) | EACH | | | | | | | 2 | | 2 |
| THERMOPLASTIC PAVEMENT MARKING (ARROWS) | EACH | | | | | | | 2 | | 2 |
| REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") | L.F. | | 64 | | | | 94 | | | 158 |
| HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") | L.F. | | | | | | | 424 | | 424 |
| HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4") | L.F. | 5,539 | | | | | | | | 5,539 |
| RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) | EACH | | | | | | | 174 | 18 | 192 |
| RAISED PAVEMENT MARKERS (TYPE II)(RED/WHITE) | EACH | 420 | 52 | | 48 | | 3 | 6 | | 529 |
| WHITE TYPE 1- DELINEATORS | EACH | | 12 | 9 | 8 | 3 | | | | 32 |
| YELLOW TYPE 1- DELINEATORS | EACH | | 6 | 5 | 14 | 12 | | | | 37 |

NOTE: (1) THIS IS A HIGH VOLUME ROAD AS DEFINED IN SECTION 604.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003

## FENCING

| STATION | STATION | LOCATION | TYPE A L.F. | 16' GATE EACH |
|---|---|---|---|---|
| 26+50 | 32+50 | HWY. 89 - LT. | 600 | |
| 26+50 | 28+10 | HWY. 89 - RT. | 160 | |
| 30+80 | 32+50 | HWY. 89 - RT. | 170 | |
| 47+94.89 | 48+46.04 | HWY. 89 - RT. | 87 | 1 |
| 57+60 | 59+00 | HWY. 89 - RT. | 138 | |
| 57+65 | 59+00 | HWY. 89 - LT. | 139 | |
| 492+10.79 | 494+81.85 | HWY. 89 - LT. | 282 | |
| 479+85 | 493+36 | RAMP 1 - RT. | 1398 | |
| 491+89 | 503+20 | RAMP 2- RT. | 1167 | |
| 474+00 | 483+70 | RAMP 3 - LT. | 858 | |
| 473+45 | 479+30 | RAMP 4 - LT. | 509 | |
| 479+30 | 482+35 | MERGED RAMPS 3 & 4 LT. | 323 | |
| 479+30 | 482+30 | MERGED RAMPS 3 & 4 RT. | 276 | |
| | | | | |
| TOTALS | | | 6,107 | 1 |

## CLEARING AND GRUBBING

| STATION | STATION | LOCATION | CLEARING STA. | GRUBBING STA. |
|---|---|---|---|---|
| 458+67 | 478+53 | I-40 | 21 | 21 |
| 483+77 | 490+48 | I-40 | 8 | 8 |
| 504+62 | 515+70 | I-40 | 12 | 12 |
| 478+53 | 493+36 | RAMP 1 | 16 | 16 |
| 491+58 | 504+62 | RAMP 2 | 14 | 14 |
| 473+91 | 483+77 | RAMP 3 | 11 | 11 |
| 474+50 | 479+70 | RAMP 4 | 6 | 6 |
| 479+70 | 482+35 | MERGED RAMPS 3 & 4 | 4 | 4 |
| 24+20 | 64+60 | HWY. 89 | 41 | 41 |
| 11+00 | 17+20 | SAYLOR RD. | 7 | 7 |
| | | | | |
| TOTALS | | | 140 | 140 |

## EROSION CONTROL

| LOCATION | LIME TON | SEEDING ACRE | MULCH COVER ACRE | SECOND SEEDING ACRE | WATER M.G. |
|---|---|---|---|---|---|
| NORTH OF I-40 | 26 | 13.20 | 13.20 | 13.20 | 1,346.4 |
| SOUTH OF I-40 | 20 | 9.98 | 9.98 | 9.98 | 1,018.0 |
| | | | | | |
| TOTALS | 46 | 23.18 | 23.18 | 23.18 | 2,364.4 |

BASIS OF ESTIMATE:
LIME = 2 TONS PER ACRE SEEDING
WATER = 102.0 M.G.PER ACRE SEEDING

## REMOVAL AND DISPOSAL OF STRUCTURES

| STATION | STATION | LOCATION | GUARDRAIL * L.F. | PIPE CULVERT EACH | APPROACH SLAB AND GUTTER EACH | FENCE L.F. | PARAPET WALL EACH | IMPACT ATTENUATION BARRIER EACH | BILLBOARD EACH | SIGN POLE EACH | SIGN FOUNDATION EACH | FOUNDATIONS SQ.YD. | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25+26 | 38+22 | HWY. 89 - LT. | | | | 1,330 | | | | | | | |
| 473+08 | 483+79 | I-40 - LT. | | | | 1,072 | | | | | | | |
| 479+72 | 494+85 | I-40 - LT. | | | | 1,576 | | | | | | | |
| 489+52 | 494+82 | I-40 - RT. | | | | 562 | | | | | | | |
| 494+85 | 503+40 | I-40 - RT. | | | | 856 | | | | | | | |
| 25+67 | | HWY. 89 | | 1 | | | | | | | | | 18" C.M. PIPE CULVERT |
| 28+60 | | HWY. 89 - RT. | | 1 | | | | | | | | | 18" C.M. SIDE DRAIN |
| 35+80 | | HWY. 89 - RT. | | 1 | | | | | | | | | 18" C.M. SIDE DRAIN |
| 37+39 | | HWY. 89 | | 1 | | | | | | | | | 30" R.C. PIPE CULVERT |
| 47+94 | | HWY. 89 - LT. | | 1 | | | | | | | | | 6" PVC CULVERT |
| 48+95 | | HWY. 89 - LT. | | | | | | | | | | | DROP INLET ON APPROACH GUTTER |
| 49+05 | | HWY. 89 - LT. | | | | | | | | | | | DROP INLET ON APPROACH GUTTER |
| 48+83 | | HWY. 89 - LT. | | 1 | | | | | | | | | DROP INLET DRAIN PIPE |
| 49+10 | | HWY. 89 - LT. | | 1 | | | | | | | | | DROP INLET DRAIN PIPE |
| 48+99 | | HWY. 89 - LT. | | | 1 | | | | | | | | |
| 49+09 | | HWY. 89 - LT. | | | 1 | | | | | | | | |
| 51+66 | | HWY. 89 - LT. | | | | | | | | | | | DROP INLET ON APPROACH GUTTER |
| 51+71 | | HWY. 89 - LT. | | | | | | | | | | | DROP INLET ON APPROACH GUTTER |
| 51+62 | | HWY. 89 - LT. | | 1 | | | | | | | | | DROP INLET DRAIN PIPE |
| 51+69 | | HWY. 89 - LT. | | 1 | | | | | | | | | DROP INLET DRAIN PIPE |
| 51+65 | | HWY. 89 - LT. | | | 1 | | | | | | | | |
| 51+72 | | HWY. 89 - LT. | | | 1 | | | | | | | | |
| 60+00 | | HWY. 89 - RT. | | 1 | | | | | | | | | 18" C.M. SIDE DRAIN |
| 61+28 | | HWY. 89 | | 1 | | | | | | | | | 30" R.C. PIPE CULVERT W/ HDWLS. LT. & RT. |
| 64+13 | | HWY. 89 - RT. | | 1 | | | | | | | | | 18" C.M. SIDE DRAIN |
| 477+40 | | RAMP 3 - RT. | | | | | | | 1 | | | | |
| 477+36 | | RAMP 3 - RT. | | | | | | | | 11 | 11 | | SIGN POLES AND SIGN FOUNDATION |
| 488+40 | | RAMP 1 - LT. | | | | | | | 1 | | | | |
| 489+30 | | RAMP 1 - RT. | | | | | | | | | | 456 | BUILDING FOUNDATION |
| 15+71 | | SAYLOR RD. - RT. | | 1 | | | | | | | | | 18" C.M. SIDE DRAIN |
| 492+85 | | I-40 | | | | | | 1 | | | | | |
| 493+85 | | I-40 | | | | | | 1 | | | | | |
| 45+33 | 49+32 | HWY. - 89 LT. | 450 | | | | | | | | | | |
| 45+33 | 49+25 | HWY. - 89 LT. | 438 | | | | | | | | | | |
| 51+34 | 54+70 | HWY. - 89 LT. | 350 | | | | | | | | | | |
| 51+41 | 54+77 | HWY. - 89 LT. | 350 | | | | | | | | | | |
| 490+34 | 493+25 | I-40 - RT. | 291 | | | | | | | | | | |
| 493+46 | 496+36 | I-40 - LT. | 290 | | | | | | | | | | |
| 493+20 | 493+46 | I-40 - LT. | | | | | 1 | | | | | | |
| 493+25 | 493+51 | I-40 - RT. | | | | | 1 | | | | | | |
| | | | | | | | | | | | | | |
| TOTALS | | | 2,169 | 13 | 4 | 5,396 | 2 | 2 | 2 | 11 | 11 | 456 | |

*THE PRICE BID FOR REMOVAL AND DISPOSAL OF GUARDRAIL SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ANY TERMINAL ANCHOR POSTS.

## TEMPORARY EROSION CONTROL

| STATION | STATION | SAND BAG DITCH CHECK (E-5) BAG | ROCK DITCH CHECK (E-6) CU. YD. | DIVERSION DITCH (E-8) L.F. | SEDIMENT BASIN (E-14) CU. YD. | SILT FENCE (E-11) L.F. | DUMPED RIPRAP (E-9) CU. YD. | FILTER BLANKET SQ. YD. | PIPE FOR SLOPE DRAIN (E-12) L.F. | OBLITERATION OF SEDIMENT BASIN CU. YD. | SEDIMENT REMOVAL AND DISPOSAL CU. YD. | TEMPORARY SEEDING ACRE | MULCH COVER ACRE | WATER M.G. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-40 | | | | | | | | | | | | | | |
| 458+65 | 472+11 | | | | | 1,346 | | | | | | | | |
| 486+50 | 515+70 | 40 | 15 | | | 1,420 | | | | | | | | |
| RAMP 1 | | | | | | | | | | | | | | |
| 471+90 | 487+00 | 60 | 45 | | | 970 | | | | | | | | |
| 487+00 | 493+00 | 20 | 15 | | | 665 | | | | | | | | |
| RAMP 2 | | | | | | | | | | | | | | |
| 492+00 | 503+00 | 80 | 75 | | | 205 | | | | | | | | |
| RAMP 3 | | | | | | | | | | | | | | |
| 473+90 | 485+00 | 140 | 105 | | | 140 | | | | | | | | |
| RAMP 4 | | | | | | | | | | | | | | |
| 472+00 | 480+00 | 40 | 60 | | | 80 | | | | | | | | |
| MERGED RAMPS 3 & 4 | | | | | | | | | | | | | | |
| 480+00 | 484+00 | 40 | 15 | | | | | | | | | | | |
| HWY 89 | | | | | | | | | | | | | | |
| 25+00 | 39+00 | 140 | 105 | | | | | | | | | | | |
| 39+00 | 64+00 | 200 | 120 | 710 | | 845 | 8 | 16 | 298 | | | | | |
| SAYLOR RD. | | | | | | | | | | | | | | |
| 10+50 | 16+70 | 80 | 15 | | | 760 | | | | | | | | |
| * ENTIRE PROJECT AS DIRECTED BY THE ENGINEER | | | | | 100 | | | | | 100 | 2,500 | 55.82 | 55.82 | 1,138.7 |
| TOTALS | | 840 | 570 | 710 | 100 | 6,431 | 8 | 16 | 298 | 100 | 2,500 | 55.82 | 55.82 | 1,138.7 |

* QUANTITIES ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.
BASIS OF ESTIMATE:
SAND BAG DITCH CHECKS = 20 BAGS / LOCATION
ROCK DITCH CHECKS = 15 CU. YD. / LOCATION
WATER = 20.4 M.G. PER ACRE TEMPORARY SEEDING

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

## ADVANCE WARNING SIGNS AND DEVICES

| SIGN NUMBER | DESCRIPTION | SIGN SIZE IN. | STAGE 1 EACH | STAGE 2 EACH | STAGE 3 EACH | MAX. NUMBER REQ'D. | TOTAL REQUIRED SQ. FT. | PORTABLE CHANGEABLE MESSAGE SIGN DAY | TRAFFIC DRUMS EACH | BARRICADES (TYPE III) RIGHT L.F. | BARRICADES (TYPE III) LEFT L.F. | TEMP. IMP. ATT. BAR. EACH | TEMP. IMP. ATT. REPAIR EACH | FURNISH AND INSTALL PRECAST CONC. BAR. L.F. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G20-2 | END ROAD WORK | 48" X 24" | 3 | 5 | 5 | 5 | 40.00 | | | | | | | |
| R11-2 | ROAD CLOSED | 48" X 30" | 4 | 7 | 11 | 11 | 110.00 | | | | | | | |
| R55-1 | FINES DOUBLE IN WORK ZONES | 36" X 60" | | 4 | 4 | 4 | 60.00 | | | | | | | |
| W1-4aL | LANE SHIFT LEFT | 48" X 48" | | 1 | | 1 | 16.00 | | | | | | | |
| W1-4aR | LANE SHIFT RIGHT | 48" X 48" | | 2 | | 2 | 32.00 | | | | | | | |
| W1-6 | ONE DIRECTIONAL LARGE ARROW | 48" X 24" | | 2 | 3 | 3 | 24.00 | | | | | | | |
| W4-2R | RIGHT LANE ENDS | 48" X 48" | | 2 | | 2 | 32.00 | | | | | | | |
| W13-1 | XX M.P.H. ADVISORY SPEED | 18" X 18" | | 3 | | 3 | 6.75 | | | | | | | |
| W20-1 | ROAD WORK 500 FT | 48" X 48" | 2 | 1 | 2 | 2 | 32.00 | | | | | | | |
| W20-1 | ROAD WORK 1000 FT | 48" X 48" | 2 | 2 | 2 | 2 | 32.00 | | | | | | | |
| W20-1 | ROAD WORK 1500 FT | 48" X 48" | 2 | 6 | 6 | 6 | 96.00 | | | | | | | |
| W20-1 | ROAD WORK AHEAD | 48" X 48" | 1 | 1 | 1 | 1 | 16.00 | | | | | | | |
| W20-1 | ROAD WORK 1/2 MILE | 48" X 48" | | 4 | 4 | 4 | 64.00 | | | | | | | |
| W20-1 | ROAD WORK 1 MILE | 48" X 48" | | 4 | 4 | 4 | 64.00 | | | | | | | |
| W20-5R | RIGHT LANE CLOSED 1/2 MILE | 48" X 48" | | 2 | | 2 | 32.00 | | | | | | | |
| | PORTABLE CHANGEABLE MESSAGE SIGN | | | 4 | 4 | 4 | | 60 | | | | | | |
| | | | | | | | | | | | | | | |
| | TYPE III BARRICADE-RT. (16') | | 2 | 4 | 9 | 9 | | | | 144 | | | | |
| | TYPE III BARRICADE-LT. (16') | | 2 | 3 | 2 | 3 | | | | | 48 | | | |
| | | | | | | | | | | | | | | |
| | TRAFFIC DRUMS | | 34 | 159 | 102 | 159 | | | 159 | | | | | |
| | TEMPORARY IMPACT ATTENUATION BARRIER | | | 7 | 4 | 7 | | | | | | 7 | 7 | |
| | FURN. AND INST. PRECAST CONC. BARRIER | | | 8220 | 4470 | 8220 | | | | | | | | 8220 |
| | | | | | | | | | | | | | | |
| * R4-1 | DO NOT PASS | 24" X 30" | | | | 2 | 10.00 | | | | | | | |
| TOTALS | | | | | | | 666.75 | 60 | 159 | 144 | 48 | 7 | 7 | 8220 |

NOTE: THIS IS A HIGH VOLUME ROAD AS DEFINED IN SECTION 604.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003.
* QUANTITY ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

## ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

| LOCATION | ASPHALT CONCRETE TON | TACK COAT GAL. |
|---|---|---|
| ENTIRE PROJECT | 25 | 50 |

QUANTITIES ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

BASIS OF ESTIMATE:
ASPHALT CONCRETE= 25 TONS PER MILE
TACK COAT = 50 GAL. PER MILE

## COLD MILLING ASPHALT PAVEMENT

| STATION | STATION | LOCATION | WIDTH FEET | SQ. YD. |
|---|---|---|---|---|
| 458+67.56 | 472+38.77 | I-40 | 10.00 | 1,523.57 |
| 471+87.79 | 478+53.81 | I-40 | 10.00 | 740.02 |
| 483+77.81 | 490+48.30 | I-40 | 10.00 | 744.99 |
| 504+62.60 | 515+69.85 | I-40 | 10.00 | 1,230.28 |
| | | | | |
| 24+20.00 | 36+50.00 | HWY. 89 | 20.00 | 2,733.33 |
| 61+25.00 | 64+60.00 | HWY. 89 | 22.00 | 818.89 |
| | | | | |
| TOTAL | | | | 7,791.08 |

## TEMPORARY CULVERTS

| STATION | LOCATION | 30" L.F. |
|---|---|---|
| 37+39 | HWY. 89 | 30 |
| 61+28 | HWY. 89 | 30 |
| | | |
| | * ENTIRE PROJECT | 26 |
| | | |
| TOTAL | | 86 |

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

## SOIL STABILIZATION

| LOCATION | TON |
|---|---|
| ENTIRE PROJECT | 750 |

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

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No.13436 SHAUN A. ROBERSON
10-17-12

QUANTITIES

saroberson 10/17/2012 8:28:13 AM
WORKSPACE: AHTD
L:\2006\060S\060-I40-H89 INT\Drawings\RWY\H89_QTY_01.dgn
REVISED DATE:

## STRUCTURES

| STATION | LOCATION | DESCRIPTION | ZINC COATED C.S.P. (16 GAUGE) 12 IN. | SIDE DRAINS 18 IN. | SIDE DRAINS 24 IN. | REINFORCED CONCRETE PIPE CULVERTS CLASS III 18 IN. | 24 IN. | 30 IN. | 36 IN. | 29x18 IN. | FLARED END SECTIONS 18 IN. | 24 IN. | 30 IN. | 36 IN. | 29x18 IN. | SAFETY END SECTION 28x20 IN. | DROP INLET (TYPE N2) | JUNCTION BOX (TYPE ST) | R.C. BOX CULVERTS DIMENSIONS LENGTH | SPAN | HEIGHT | CLASS S CONCRETE - ROADWAY | REINFORCING STEEL - ROADWAY (GR 60) | UNCL. EX. FOR STRUCTURES - ROADWAY | SOLID SODDING | WATER | STANDARD DRAWINGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L.F. | L.F. | L.F. | L.F. | | | | | EACH | | | | | EACH | EACH | EACH | FEET | | | CU. YD. | LB. | CU. YD. | SQ. YD. | M.G. | |
| 472+00 | LT. MAIN LANE | EXTEND R.C. PIPE CULVERT & FES | | | | 22 | | | | | 1 | | | | | | | | | | | | | | 5 | 0.1 | FES-1, FES-2, PCC-1 |
| 482+00 | LT. MAIN LANE | EXTEND R.C. PIPE CULVERT & FES | | | | 60 | | | | | 1 | | | | | | | | | | | | | | 5 | 0.1 | FES-1, FES-2, PCC-1 |
| 490+60 | MAIN LANE | CONSTRUCT CL. II SES W/ R.C. ARCH PIPE CULVERT | | | | | | | | 134 | | | | | | 1 | | | | | | | | | 19 | 0.2 | PCC-1,SES-1 |
| 492+00 | MAIN LANE | CONSTRUCT J.B. W/ R.C. PIPE CULVERT & FES | | | | | | | 20 | | | | | 1 | | | | 1 | | | | | | | 17 | 0.2 | FES-1, FES-2, FPC-9S, PCC-1 |
| 510+00 | RT. MAIN LANE | EXTEND R.C. PIPE CULVERT & FES | | | | 8 | | | | | 1 | | | | | | | | | | | | | | 5 | 0.1 | FES-1, FES-2, PCC-1 |
| 482+60 | RAMP 1 | CONSTRUCT DOUBLE R.C. PIPE CULVERT & FES | | | | | 144 | | | | | 4 | | | | | | | | | | | | | 18 | 0.2 | FES-1, FES-2, PCC-1 |
| 492+65 | RAMP 1 | CONSTRUCT R.C. PIPE CULVERT & FES | | | | | 100 | | | | | 2 | | | | | | | | | | | | | 16 | 0.2 | FES-1, FES-2, PCC-1 |
| 501+00 | RAMP 2 | CONSTRUCT R.C. PIPE CULVERT & FES | | | | | | | 72 | | | | | 2 | | | | | | | | | | | 34 | 0.4 | FES-1, FES-2, PCC-1 |
| 475+60 | RAMP 3 | CONSTRUCT R.C. ARCH PIPE CULVERT & FES | | | | | | | | 68 | | | | | 2 | | | | | | | | | | 16 | 0.2 | FES-1, FES-2, PCC-1 |
| 481+70 | MERGED RAMPS 3&4 | CONSTRUCT R.C. PIPE CULVERT & FES | | | | | 112 | | | | | 2 | | | | | | | | | | | | | 16 | 0.2 | FES-1, FES-2, PCC-1 |
| 25+86 | HWY. 89 | CONSTRUCT TRIPLE R.C. ARCH PIPE CULVERT & FES | | | | | | | | 252 | | | | | 6 | | | | | | | | | | 20 | 0.3 | FES-1, FES-2, PCC-1 |
| 35+80 | HWY. 89 RT. | INSTALL PIPE CULVERT | | | 48 | | | | | | | | | | | | | | | | | | | | | | PCC-1,PCM-1 |
| 37+39.56 | HWY. 89 | CONSTRUCT TRIPLE R.C. ARCH PIPE CULVERT & FES | | | | | | | | 252 | | | | | 6 | | | | | | | | | | 20 | 0.3 | FES-1, FES-2, PCC-1 |
| 41+00 | HWY. 89 | CONSTRUCT DOUBLE R.C. PIPE CULVERT & FES | | | | | | 168 | | | | | 4 | | | | | | | | | | | | 28 | 0.4 | FES-1, FES-2, PCC-1 |
| 48+57.37 | HWY. 89 | CONSTRUCT TYPE N-2 DROP INLET RT. | 43 | | | | | | | | | | | | | | 1 | | | | | | | | | | FPC-9N, PCM-1 |
| 48+64.43 | HWY. 89 | CONSTRUCT TYPE N-2 DROP INLET LT. | 71 | | | | | | | | | | | | | | 1 | | | | | | | | | | FPC-9N, PCM-1 |
| 51+45.66 | HWY. 89 | CONSTRUCT TYPE N-2 DROP INLET RT. | 72 | | | | | | | | | | | | | | 1 | | | | | | | | | | FPC-9N, PCM-1 |
| 51+52.60 | HWY. 89 | CONSTRUCT TYPE N-2 DROP INLET LT. | 43 | | | | | | | | | | | | | | 1 | | | | | | | | | | FPC-9N, PCM-1 |
| 60+00 | HWY. 89 RT. | INSTALL PIPE CULVERT | | | 34 | | | | | | | | | | | | | | | | | | | | | | PCC-1,PCM-1 |
| 61+24 | HWY. 89 | CONSTRUCT TRIPLE R.C. ARCH PIPE CULVERT & FES | | | | | | | | 222 | | | | | 6 | | | | | | | | | | 20 | 0.3 | FES-1, FES-2, PCC-1 |
| 64+13 | HWY. 89 RT. | INSTALL PIPE CULVERT | | | 34 | | | | | | | | | | | | | | | | | | | | | | PCC-1,PCM-1 |
| 64+13 | HWY. 89 LT. | INSTALL PIPE CULVERT | | | 58 | | | | | | | | | | | | | | | | | | | | | | PCC-1,PCM-2 |
| 11+42 | SAYLOR RD. | CONSTRUCT R.C. BOX CULVERT (24° LT. FWD. SKEW) | | | | | | | | | | | | | | | | | 195 | 4 | 2 | 61.00 | 6,869 | 39 | 16 | 0.2 | RCB-1, RCB-2, R-100X-X3, R-130X-1, W-X303-1, W-X30 |
| 15+71 | SAYLOR RD. | INSTALL PIPE CULVERT | | 36 | | | | | | | | | | | | | | | | | | | | | | | PCC-1,PCM-1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | **TOTALS FOR STRUCTURES** | **229** | **36** | **174** | **90** | **356** | **168** | **92** | **928** | **3** | **8** | **4** | **3** | **20** | **1** | **4** | **1** | | | | **61.00** | **6,869** | **39** | **255** | **3.4** | |

BASIS OF ESTIMATE:
WATER = 12.6 GALS. PER SQ. YD. SOLID SODDING

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

## CONSTRUCTION PAVEMENT MARKINGS

| STATION | STATION | LOCATION | REMOVAL OF PERMANENT PAVEMENT MARKINGS | CONSTRUCTION PAVEMENT MARKINGS |
|---|---|---|---|---|
| | | | L.F. | L.F. |
| | | **STAGE 2** | | |
| 10+00 | 19+54 | HWY. 89 NORTH DETOUR - EDGE LINES AND DBL. YELLOW CENTERLINE | | 3,816 |
| 10+29 | 16+89 | HWY. 89 SOUTH DETOUR - EDGE LINES AND DBL. YELLOW CENTERLINE | | 2,640 |
| 32+00 | 33+51 | HWY. 89 - EDGE LINES AND DBL. YELLOW CENTERLINE | 604 | |
| 38+17 | 41+01 | HWY. 89 - EDGE LINES AND DBL. YELLOW CENTERLINE | 1,320 | |
| 58+76 | 60+82 | HWY. 89 - EDGE LINES AND DBL. YELLOW CENTERLINE | 824 | |
| 63+83 | 65+28 | HWY. 89 - EDGE LINES AND DBL. YELLOW CENTERLINE | 580 | |
| | | **STAGE 3** | | |
| 458+68 | 490+48 | I-40 - OUTER EDGE LINE | 3,181 | |
| 458+68 | 515+70 | I-40 - OUTER EDGE LINE | 5,703 | |
| 15+20 | 24+20 | HWY. 89 - SKIP YELLOW CENTERLINE | 225 | |
| 33+00 | 40+00 | HWY. 89 - EDGE LINES AND DBL. YELLOW CENTERLINE | | 2,800 |
| 57+08 | 63+60 | HWY. 89 - EDGE LINES AND DBL. YELLOW CENTERLINE | | 2,608 |
| | | TOTALS | 12,437 | 11,864 |

## RETAINING WALL - MSE WALL

| STATION | LOCATION | RETAINING WALL | SELECT GRANULAR BACKFILL |
|---|---|---|---|
| | | SQ. FT. | CU. YD. |
| 491+26.71 | NORTH MSE WALL | 4630 | 2762 |
| 491+60.18 | SOUTH MSE WALL | 4610 | 3065 |
| | | | |
| TOTALS | | 9240 | 5827 |

## CONCRETE ISLAND

| STATION | LOCATION | SIDE | AREA |
|---|---|---|---|
| | | | SQ. YDS. |
| 493+20 | RAMP 1 | RT. | 25 |
| 482+75 | MERGED RAMPS 3 & 4 | RT. | 49 |
| | | | |
| | | TOTAL | 74 |

## 4" PIPE UNDERDRAINS

| LOCATION | 4" PIPE UNDERDRAINS | UNDERDRAIN OUTLET PROTECTORS |
|---|---|---|
| | LIN. FT. | EACH |
| ENTIRE PROJECT | 278 | 8 |

QUANTITIES ESTIMATED, TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER, SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

## EARTHWORK

| LOCATION | UNCLASSIFIED EXCAVATION UNDERCUT* | UNCLASSIFIED EXCAVATION TYPICAL | UNCLASSIFIED EXCAVATION TOTAL | COMPACTED EMBANKMENT TYPICAL | COMPACTED EMBANKMENT SM-1 ** | COMPACTED EMBANKMENT TOTAL |
|---|---|---|---|---|---|---|
| | CU. YD. | | | | | |
| HWY. 89 | 19,783 | 20,161 | 39,944 | 66,687 | 28,247 | 94,934 |
| NORTH DETOUR | | 284 | 284 | 170 | | 170 |
| SOUTH DETOUR | | 638 | 638 | 127 | | 127 |
| RAMP 4 ACCEL LANE AND TAPER | | 271 | 271 | 888 | | 888 |
| RAMP 1 EXIT | | 113 | 113 | 738 | | 738 |
| RAMP 3 EXIT | | 785 | 785 | 452 | | 452 |
| MAIN LANE SPECIAL DITCHES | | 185 | 185 | 235 | | 235 |
| RAMP 2 ACCEL LANE | | 206 | 206 | 927 | | 927 |
| RAMP 1 | 1,420 | 544 | 1,964 | 18,259 | 1,420 | 19,679 |
| RAMP 2 | 3,808 | 4,498 | 8,306 | 8,240 | 3,808 | 12,048 |
| RAMP 3 | | 4,486 | 4,486 | 6,289 | | 6,289 |
| RAMP 4 | | 4,546 | 4,546 | 1,109 | | 1,109 |
| MERGED RAMPS 3 & 4 | | 6,745 | 6,745 | | | |
| SAYLOR RD. | | 70 | 70 | 16,886 | | 16,886 |
| DRIVEWAYS | | | | 357 | | 357 |
| *** REMOVAL OF BRIDGE EMBANKMENT | | 51,467 | 51,467 | | | |
| | | | | | | |
| TOTALS | 25,011 | 94,999 | 120,010 | 121,364 | 33,475 | 154,839 |

* QUANTITY ESTIMATED FOR REMOVAL OF UNSUITABLE MATERIAL , TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS AND SPECIAL DETAILS. INCLUDES AN ESTIMATED 3,086 CU. YDS. ON HWY. 89 FOR MSE WALL UNDERCUT.

** INCLUDES AN ESTIMATED 25,011 CU. YDS. COMPACTED EMBANKMENT FOR UNDERCUT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS AND SPECIAL DETAILS. INCLUDES AN ESTIMATED 8,464 CU. YDS. ON HWY. 89 BEHIND REINFORCED ZONE OF MSE WALL.

*** QUANTITIES ESTIMATED FOR REMOVAL OF EXISTING BRIDGE EMBANKMENT, TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER, SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

EARTHWORK NOTES:

1. CULVERT CHANNELIZATION MATERIAL TO BE WASTE AND PLACED AS DIRECTED BY THE ENGINEER.
2. ESTIMATES FOR QUANTITIES OF EXCAVATION AND EMBANKMENT ARE TAKEN DIRECTLY FROM THE CROSS SECTIONS, DETAILED IN ACCORDANCE WITH THE PLANS.
3. MATERIAL WITH A PI $\leq$ 20 IS REQUIRED TO BE PLACED IN THE UPPER 2 FT. OF EMBANKMENTS.
4. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENT REMOVED SHALL BE PAID FOR UNDER PAY ITEM 210 - EXCAVATION AND EMBANKMENT, UNLESS OTHERWISE NOTED.

## FLOWABLE SELECT MATERIAL

| STATION | STATION | LOCATION | CU. YD. |
|---|---|---|---|
| | | | |
| 48+93.91 | 48+98.91 | HWY. 89 | 22 |
| 51+11.09 | 51+16.09 | HWY. 89 | 22 |
| TOTAL | | | 44 |

## APPROACH GUTTERS

| STATION | STATION | LOCATION | APPROACH GUTTERS (TYPE C) | REINFORCING STEEL - ROADWAY (GR 60) |
|---|---|---|---|---|
| | | | CU. YD. | LB. |
| 48+65.93 | 49+02.43 | HWY. 89 - LT. | 9.28 | 807 |
| 48+58.88 | 48+95.38 | HWY. 89 - RT. | 9.28 | 807 |
| 51+14.62 | 51+51.12 | HWY. 89 - LT. | 9.28 | 807 |
| 51+07.57 | 51+44.07 | HWY. 89 - RT. | 9.28 | 807 |
| TOTALS | | | 37.12 | 3,228 |

## PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

| LOCATION | ASPHALT |
|---|---|
| | TON |
| HWY. 89 STA. 25+86 | 45 |
| HWY. 89 STA. 61+24 | 45 |
| TOTAL | 90 |

BASIS OF ESTIMATE:
1.5' OUTSIDE TRENCH EXCAVATION
12" ESTIMATED PAVEMENT DEPTH

## CONCRETE BARRIER WALL & IMPACT ATTENUATION BARRIER

| STATION | STATION | LOCATION | MEDIAN (TYPE SPECIAL) | PIER PROTECTION (TYPE SPECIAL) | IMPACT ATTENUATION BARRIER (TYPE A) |
|---|---|---|---|---|---|
| | | | L.F. | L.F. | EACH |
| | | | | | |
| 478+55 | 479+70.17 | RAMP 4 | 115.17 | | |
| 479+70.17 | 482+30.00 | MERGED RAMPS 3 & 4 | 259.83 | | |
| | | | | | |
| 491+27.08 | 491+58.08 | I-40 | | 31.00 | |
| 491+05 | | I-40 | | | 1 |
| 491+79 | | I-40 | | | 1 |
| TOTAL | | | 375.00 | 31.00 | 2 |

## GUARDRAIL

| STATION | STATION | LOCATION | GUARDRAIL TYPE "A" | GUARDRAIL TERMINAL (TYPE 2) | THRIE BEAM GUARDRAIL TERMINAL |
|---|---|---|---|---|---|
| | | | L.F. | EACH | EACH |
| | | | | | |
| 46+41.24 | 48+84.99 | HWY. 89 | 175 | 1 | 1 |
| 47+73.30 | 48+92.05 | HWY. 89 | 50 | 1 | 1 |
| 51+17.95 | 52+36.70 | HWY. 89 | 50 | 1 | 1 |
| 51+25.01 | 53+68.76 | HWY. 89 | 175 | 1 | 1 |
| | | | | | |
| TOTALS | | | 450 | 4 | 4 |

## SELECTED PIPE BEDDING

| LOCATION | SELECTED BEDDING |
|---|---|
| | CU. YD. |
| ENTIRE PROJECT | 100 |

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

## BENCH MARK CAPS

| STATION | LOCATION | EACH |
|---|---|---|
| 11+42 | SAYLOR RD. - HEADWALL OF R.C. BOX CULVERT ON RT. | 1 |
| | | |
| | TOTAL | 1 |

SHOWN FOR INFORMATIONAL PURPOSES ONLY. BENCH MARK CAPS TO BE PLACED AND RECORDED BY STATE FORCES.

## CONCRETE DITCH PAVING

| STATION | STATION | DESCRIPTION | LENGTH | CONCRETE DITCH PAVING (TYPE B) | | SOLID SODDING | WATER |
|---|---|---|---|---|---|---|---|
| | | | FEET | "W" | SQ. YD. | SQ. YD. | M.G. |
| 490+55 | 492+55 | RT. OF I-40 | 248 | 6.00 | 165.3 | 110.2 | 1.4 |
| 14+00 | 15+00 | SAYLOR RD. LT | 100 | 6.00 | 66.7 | 44.4 | 0.6 |
| 48+23 | 49+03 | NORTH MSE WALL | 258 | 4.00 | 114.7 | 114.7 | 1.4 |
| 51+06 | 51+82 | SOUTH MSE WALL | 244 | 4.00 | 108.4 | 108.4 | 1.4 |
| | | | | | | | |
| TOTALS | | | | | 455.1 | 377.7 | 4.8 |

BASIS OF ESTIMATE:
WATER = 12.6 GALS. PER SQ. YD. SOLID SODDING




DWYANDELL 10/16/2012 9:00:09 AM
WORKSPACE: AHTD
L:\2006\0605\060-I40-H89 INT\Drawings\RWY\H89_QTY_02.dgn
REVISED DATE:

## BASE & SURFACING - HWY. 89

| STATION | STATION | LOCATION | LENGTH | ACHM SURFACE COURSE (1/2") | | | | ACHM BINDER COURSE (1") | | | | *LEVELING COURSE | AGGREGATE BASE COURSE (CLASS 7) | | TACK COAT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AVG. WIDTH | SQUARE YARDS | LBS. PER SQ. YD. | TON | AVG. WIDTH | SQUARE YARDS | LBS. PER SQ. YD. | TON | | TONS PER STATION | TON | AVG. WIDTH | SQUARE YARDS | 0.03 G/SY | AVG. WIDTH | SQUARE YARDS | 0.10 G/SY |
| | | | FEET | FEET | | | | FEET | | | | | | | FEET | | GAL. | FEET | | GAL. |
| 24+20.00 | 25+20.00 | TRANSITION | 100.00 | 37.42 | 415.78 | 220 | 46 | 2.25 | 25.00 | 440 | 6 | | 160.58 | 161 | 4.38 | 48.67 | 1 | 20.00 | 222.22 | 22 |
| 25+20.00 | 27+90.00 | HWY. 89 (OVERLAY) | 270.00 | 56.25 | 1,687.50 | 220 | 186 | 10.50 | 315.00 | 440 | 69 | | 257.92 | 696 | 20.75 | 622.50 | 19 | 20.00 | 600.00 | 60 |
| 27+90.00 | 31+20.00 | HWY. 89 (OVERLAY) | 330.00 | 68.25 | 2,502.50 | 220 | 275 | 16.50 | 605.00 | 440 | 133 | | 293.00 | 967 | 32.75 | 1,200.83 | 36 | 20.00 | 733.33 | 73 |
| 31+20.00 | 33+00.00 | HWY. 89 (OVERLAY) | 180.00 | 60.25 | 1,205.00 | 220 | 133 | 12.50 | 250.00 | 440 | 55 | | 269.58 | 485 | 24.75 | 495.00 | 15 | 20.00 | 400.00 | 40 |
| 33+00.00 | 33+90.00 | HWY. 89 (OVERLAY) | 90.00 | 56.25 | 562.50 | 220 | 62 | 14.50 | 145.00 | 440 | 32 | | 218.97 | 197 | 28.25 | 282.50 | 8 | 20.00 | 200.00 | 20 |
| 33+90.00 | 34+45.48 | HWY. 89 (OVERLAY) | 55.48 | 54.25 | 334.42 | 220 | 37 | 14.50 | 89.38 | 440 | 20 | | 188.00 | 104 | 28.75 | 177.23 | 5 | 20.00 | 123.29 | 12 |
| 34+45.48 | 36+50.00 | HWY. 89 (OVERLAY) | 204.52 | 54.25 | 1,232.80 | 220 | 136 | 14.50 | 329.50 | 440 | 72 | 162 | 243.59 | 498 | 48.75 | 1,107.82 | 33 | 20.00 | 454.49 | 45 |
| 36+50.00 | 37+45.48 | HWY. 89 | 95.48 | 72.25 | 766.49 | 220 | 84 | 32.50 | 344.79 | 440 | 76 | | 416.30 | 397 | 64.75 | 686.93 | 21 | | | |
| 37+45.48 | 40+00.00 | HWY. 89 | 254.52 | 72.25 | 2,043.23 | 220 | 225 | 32.50 | 919.10 | 440 | 202 | | 432.75 | 1,101 | 64.75 | 1,831.13 | 55 | | | |
| 40+00.00 | 45+69.97 | HWY. 89 | 569.97 | 64.25 | 4,068.95 | 220 | 448 | 24.50 | 1,551.59 | 440 | 341 | | 463.86 | 2,644 | 48.75 | 3,087.34 | 93 | | | |
| 45+69.97 | 48+69.97 | HWY. 89 | 300.00 | 64.25 | 2,141.67 | 220 | 236 | 24.50 | 816.67 | 440 | 180 | | 401.68 | 1,205 | 48.75 | 1,625.00 | 49 | | | |
| 48+69.97 | 48+98.91 | HWY. 89 | 28.94 | 64.25 | 206.60 | 220 | 23 | 24.50 | 78.78 | 440 | 17 | | 339.50 | 98 | 48.75 | 156.76 | 5 | | | |
| 51+11.09 | 51+20.00 | HWY. 89 | 8.91 | 64.25 | 63.61 | 220 | 7 | 24.50 | 24.26 | 440 | 5 | | 339.50 | 30 | 48.75 | 48.26 | 1 | | | |
| 51+20.00 | 53+90.00 | HWY. 89 | 270.00 | 76.25 | 2,287.50 | 220 | 252 | 30.50 | 915.00 | 440 | 201 | | 374.50 | 1,011 | 60.75 | 1,822.50 | 55 | | | |
| 53+90.00 | 56+84.82 | HWY. 89 | 294.82 | 88.25 | 2,890.87 | 220 | 318 | 36.50 | 1,195.66 | 440 | 263 | | 409.50 | 1,207 | 72.75 | 2,383.13 | 71 | | | |
| 56+84.82 | 57+10.00 | HWY. 89 | 25.18 | 88.25 | 246.90 | 220 | 27 | 36.50 | 102.12 | 440 | 22 | | 424.69 | 107 | 72.75 | 203.54 | 6 | | | |
| 57+10.00 | 58+84.82 | HWY. 89 | 174.82 | 88.25 | 1,714.21 | 220 | 189 | 40.50 | 786.69 | 440 | 173 | | 409.38 | 716 | 80.75 | 1,568.52 | 47 | | | |
| 58+84.82 | 59+80.00 | HWY. 89 | 95.18 | 76.25 | 806.39 | 220 | 89 | 34.50 | 364.86 | 440 | 80 | | 398.30 | 379 | 68.75 | 727.07 | 22 | | | |
| 59+80.00 | 61+25.00 | HWY. 89 | 145.00 | 72.25 | 1,164.03 | 220 | 128 | 32.50 | 523.61 | 440 | 115 | | 386.63 | 561 | 64.75 | 1,043.19 | 31 | | | |
| 61+25.00 | 61+51.95 | HWY. 89 (OVERLAY) | 26.95 | 52.25 | 156.46 | 220 | 17 | 12.50 | 37.43 | 440 | 8 | 31 | 259.04 | 70 | 46.75 | 139.99 | 4 | 22.00 | 65.88 | 7 |
| 61+51.95 | 63+51.95 | HWY. 89 (OVERLAY) | 200.00 | 52.25 | 1,161.11 | 220 | 128 | 12.50 | 277.78 | 440 | 61 | 183 | 217.65 | 435 | 46.75 | 1,038.89 | 31 | 22.00 | 488.89 | 49 |
| 63+51.95 | 63+60.00 | HWY. 89 (OVERLAY) | 8.05 | 52.25 | 46.73 | 220 | 5 | 12.50 | 11.18 | 440 | 2 | | 176.25 | 14 | 24.75 | 22.14 | 1 | 22.00 | 19.68 | 2 |
| 63+60.00 | 64+60.00 | TRANSITION | 100.00 | 38.42 | 426.89 | 220 | 47 | 3.25 | 36.11 | 440 | 8 | | 147.88 | 148 | 6.38 | 70.89 | 2 | 22.00 | 244.44 | 24 |
| | | | | | | | | | | | | | | | | | | | | |
| 45+87.71 | 48+87.08 | GUARDRAIL WIDENING - RT. | 299.37 | VAR | 165.74 | 220 | 18 | | | | | | | VAR | 145 | | | | | |
| 47+34.19 | 48+94.13 | GUARDRAIL WIDENING - LT. | 159.94 | VAR | 66.86 | 220 | 7 | | | | | | | VAR | 59 | | | | | |
| 51+15.87 | 52+75.86 | GUARDRAIL WIDENING - RT. | 159.99 | VAR | 66.91 | 220 | 7 | | | | | | | VAR | 59 | | | | | |
| 51+22.93 | 54+22.76 | GUARDRAIL WIDENING - LT. | 299.83 | VAR | 167.23 | 220 | 18 | | | | | | | VAR | 146 | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | TOTALS | | | | | 3,148 | | | | 2,141 | 376 | | 13,640 | | | 611 | | | 354 |

BASIS OF ESTIMATE:
ACHM BINDER COURSE (1"): 4.3% ASPHALT BINDER, 95.7% MINERAL AGGREGATE (PG 76-22), $N_{MAX}$ = 205
ACHM SURFACE COURSE (1/2"): 4.8% ASPHALT BINDER, 95.2% MINERAL AGGREGATE (PG 76-22), $N_{MAX}$ = 205 * LEVELING COURSE PAID FOR AS ACHM SURFACE COURSE (1/2")

## BASE & SURFACING - RAMPS

| STATION | STATION | LOCATION | LENGTH | ACHM SURFACE COURSE (1/2") | | | | ACHM BINDER COURSE (1") | | | | AGGREGATE BASE COURSE (CLASS 7) | | TACK COAT | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AVG. WIDTH | SQUARE YARDS | LBS. PER SQ. YD. | TON | AVG. WIDTH | SQUARE YARDS | LBS. PER SQ. YD. | TON | TONS PER STATION | TON | AVG. WIDTH | SQUARE YARDS | 0.03 G/SY | AVG. WIDTH | SQUARE YARDS | 0.10 G/SY |
| | | | FEET | FEET | | | | FEET | | | | | | FEET | | GAL. | FEET | | GAL. |
| 471+87.79 | 478+53.81 | RAMP 1 (EXIT) | 666.02 | VAR | 1,954.62 | 220 | 215 | VAR | 560.87 | 330 | 93 | VAR | 409 | VAR | 1,108.50 | 33 | VAR | 755.50 | 76 |
| 476+42.01 | 476+91.48 | RAMP 1 | 49.47 | 40.25 | 221.24 | 220 | 24 | 15.46 | 84.98 | 330 | 14 | 228.25 | 113 | 30.71 | 168.80 | 5 | | | |
| 476+91.48 | 479+91.48 | RAMP 1 | 300.00 | 40.25 | 1,341.67 | 220 | 148 | 15.46 | 515.33 | 330 | 85 | 270.99 | 813 | 30.71 | 1,023.67 | 31 | | | |
| 479+91.48 | 483+41.83 | RAMP 1 | 350.35 | 40.25 | 1,566.84 | 220 | 172 | 15.46 | 601.82 | 330 | 99 | 313.72 | 1,099 | 30.71 | 1,195.47 | 36 | | | |
| 483+41.83 | 486+41.83 | RAMP 1 | 300.00 | 40.25 | 1,341.67 | 220 | 148 | 15.46 | 515.33 | 330 | 85 | 270.99 | 813 | 30.71 | 1,023.67 | 31 | | | |
| 486+41.83 | 486+93.21 | RAMP 1 | 51.38 | 40.25 | 229.78 | 220 | 25 | 15.46 | 88.26 | 330 | 15 | 228.25 | 117 | 30.71 | 175.32 | 5 | | | |
| 486+93.21 | 488+80.71 | RAMP 1 | 187.50 | 40.25 | 838.54 | 220 | 92 | 15.46 | 322.08 | 330 | 53 | 255.20 | 479 | 30.71 | 639.79 | 19 | | | |
| 488+80.71 | 489+43.21 | RAMP 1 | 62.50 | 42.88 | 297.78 | 220 | 33 | 16.78 | 116.49 | 330 | 19 | 300.45 | 188 | 33.34 | 231.53 | 7 | | | |
| 489+43.21 | 490+32.71 | RAMP 1 | 89.50 | 49.36 | 490.86 | 220 | 54 | 20.02 | 199.04 | 330 | 33 | 328.74 | 294 | 39.82 | 395.99 | 12 | | | |
| 490+32.71 | 490+95.21 | RAMP 1 | 62.50 | 55.73 | 387.01 | 220 | 43 | 23.20 | 161.11 | 330 | 27 | 333.81 | 209 | 46.19 | 320.76 | 10 | | | |
| 490+95.21 | 492+46.74 | RAMP 1 | 151.53 | 58.25 | 980.74 | 220 | 108 | 24.46 | 411.82 | 330 | 68 | 301.95 | 458 | 48.71 | 820.11 | 25 | | | |
| 492+46.74 | 493+36.23 | RAMP 1 (INT) | 89.49 | VAR | 1,328.49 | 220 | 146 | VAR | 664.25 | 330 | 110 | VAR | 312 | VAR | 1,328.49 | 40 | | | |
| | | | | | | | | | | | | | | | | | | | |
| 491+57.57 | 492+49.47 | RAMP 2 (INT) | 91.90 | VAR | 1,271.25 | 220 | 140 | VAR | 635.63 | 330 | 105 | VAR | 298 | VAR | 1,271.25 | 38 | | | |
| 492+49.47 | 498+47.60 | RAMP 2 | 598.13 | 40.25 | 2,674.97 | 220 | 294 | 15.46 | 1,027.45 | 330 | 170 | 228.25 | 1,365 | 30.71 | 2,040.95 | 61 | | | |
| 498+47.60 | 501+47.60 | RAMP 2 | 300.00 | 40.25 | 1,341.67 | 220 | 148 | 15.46 | 515.33 | 330 | 85 | 263.29 | 790 | 30.71 | 1,023.67 | 31 | | | |
| 501+47.60 | 505+69.98 | RAMP 2 | 422.38 | 40.25 | 1,888.98 | 220 | 208 | 15.46 | 725.55 | 330 | 120 | 298.33 | 1,260 | 30.71 | 1,441.25 | 43 | | | |
| 505+69.85 | 512+69.85 | RAMP 2 (ACCEL LANE) | 700.00 | 26.13 | 2,031.94 | 220 | 224 | 8.23 | 640.11 | 330 | 106 | 72.75 | 509 | 16.36 | 1,272.06 | 38 | 10.00 | 777.78 | 78 |
| 512+69.85 | 515+69.85 | RAMP 2 (TAPER) | 300.00 | VAR | 498.58 | 220 | 55 | VAR | 85.00 | 330 | 14 | VAR | 68 | VAR | 168.91 | 5 | 10.00 | 333.33 | 33 |
| | | | | | | | | | | | | | | | | | | | |
| 473+91.58 | 474+66.58 | RAMP 3 | 75.00 | 40.25 | 335.42 | 220 | 37 | 15.46 | 128.83 | 330 | 21 | 247.50 | 186 | 30.71 | 255.92 | 8 | | | |
| 474+66.58 | 475+35.87 | RAMP 3 | 69.29 | 40.25 | 309.88 | 220 | 34 | 15.46 | 119.02 | 330 | 20 | 257.73 | 179 | 30.71 | 236.43 | 7 | | | |
| 475+35.87 | 480+36.33 | RAMP 3 | 500.46 | 40.25 | 2,238.17 | 220 | 246 | 15.46 | 859.68 | 330 | 142 | 338.39 | 1,694 | 30.71 | 1,707.68 | 51 | | | |
| 480+36.33 | 483+36.33 | RAMP 3 | 300.00 | 40.25 | 1,341.67 | 220 | 148 | 15.46 | 515.33 | 330 | 85 | 283.32 | 850 | 30.71 | 1,023.67 | 31 | | | |
| 483+36.33 | 485+84.48 | RAMP 3 | 248.15 | 40.25 | 1,109.78 | 220 | 122 | 15.46 | 426.27 | 330 | 70 | 228.25 | 566 | 30.71 | 846.74 | 25 | | | |
| 483+77.81 | 490+48.30 | RAMP 3 (EXIT) | 670.49 | VAR | 1,985.16 | 220 | 218 | VAR | 571.91 | 330 | 94 | VAR | 416 | VAR | 1,130.30 | 34 | VAR | 764.67 | 76 |
| | | | | | | | | | | | | | | | | | | | |
| 458+67.56 | 461+67.56 | RAMP 4 (TAPER) | 300.00 | VAR | 477.76 | 220 | 53 | VAR | 74.29 | 330 | 12 | VAR | 59 | VAR | 147.63 | 4 | 10.00 | 333.33 | 33 |
| 461+67.56 | 471+67.56 | RAMP 4 (ACCEL LANE) | 1,000.00 | 26.13 | 2,902.78 | 220 | 319 | 8.23 | 914.44 | 330 | 151 | 72.75 | 728 | 16.36 | 1,817.22 | 55 | 10.00 | 1,111.11 | 111 |
| 471+66.76 | 472+80.27 | RAMP 4 | 113.51 | 40.25 | 507.64 | 220 | 56 | 15.46 | 194.98 | 330 | 32 | 312.25 | 354 | 30.71 | 387.32 | 12 | | | |
| 472+80.27 | 478+24.45 | RAMP 4 | 544.18 | 40.25 | 2,433.69 | 220 | 268 | 15.46 | 934.78 | 330 | 154 | 330.06 | 1,796 | 30.71 | 1,856.86 | 56 | | | |
| 478+24.45 | 478+83.92 | RAMP 4 | 59.47 | 40.25 | 265.96 | 220 | 29 | 15.46 | 102.16 | 330 | 17 | 245.36 | 146 | 30.71 | 202.92 | 6 | | | |
| 478+83.92 | 479+70.17 | RAMP 4 | 86.25 | 44.13 | 422.86 | 220 | 47 | 21.98 | 210.64 | 330 | 35 | 223.23 | 193 | 43.86 | 420.28 | 13 | | | |
| 478+24.45 | 479+70.17 | RAMP 4 (GORE AREA) | 145.72 | VAR | 314.67 | 220 | 35 | VAR | 20.95 | 330 | 3 | VAR | 218 | 13.15 | 42.24 | 1 | | | |
| | | | | | | | | | | | | | | | | | | | |
| 479+70.17 | 480+00.00 | MERGED RAMPS 3 & 4 | 29.83 | 99.25 | 328.96 | 220 | 36 | 43.96 | 145.70 | 330 | 24 | 455.06 | 136 | 87.71 | 290.71 | 9 | | | |
| 480+00.00 | 481+00.00 | MERGED RAMPS 3 & 4 | 100.00 | 108.25 | 1,202.78 | 220 | 132 | 48.46 | 538.44 | 330 | 89 | 460.51 | 461 | 96.71 | 1,074.55 | 32 | | | |
| 481+00.00 | 481+71.92 | MERGED RAMPS 3 & 4 | 71.92 | 117.25 | 936.96 | 220 | 103 | 52.96 | 423.20 | 330 | 70 | 453.56 | 326 | 105.71 | 844.73 | 25 | | | |
| 481+71.92 | 482+96.92 | MERGED RAMPS 3 & 4 (INT.) | 125.00 | VAR | 3,468.33 | 220 | 382 | VAR | 1,734.17 | 330 | 286 | VAR | 813 | VAR | 3,468.33 | 104 | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | TOTALS | | | | | 4,542 | | | | 2,606 | | 18,715 | | | 943 | | | 407 |

BASIS OF ESTIMATE:
ACHM BINDER COURSE (1"): 4.3% ASPHALT BINDER, 95.7% MINERAL AGGREGATE (PG 76-22), $N_{MAX}$ = 205
ACHM SURFACE COURSE (1/2"): 4.8% ASPHALT BINDER, 95.2% MINERAL AGGREGATE (PG 76-22), $N_{MAX}$ = 205

## TEMPORARY BASE & SURFACING & SIDE ROAD

| STATION | STATION | LOCATION | LENGTH | ACHM SURFACE COURSE (1/2") | | | | ACHM BINDER COURSE (1") | | | | AGGREGATE BASE COURSE (CLASS 7) | | TACK COAT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AVG. WIDTH | SQUARE YARDS | LBS. PER SQ. YD. | TON | AVG. WIDTH | SQUARE YARDS | LBS. PER SQ. YD. | TON | TONS PER STATION | TON | AVG. WIDTH | SQUARE YARDS | 0.03 G/SY |
| | | | FEET | FEET | | | | FEET | | | | | | FEET | | GAL. |
| 10+12.00 | 10+50.37 | SAYLOR RD. (INT.) | 38.37 | VAR | 342.98 | 220 | 38 | | | | | VAR | 88 | VAR | 153.45 | 5 |
| 10+50.37 | 12+53.01 | SAYLOR RD. | 202.64 | 48.25 | 1,086.38 | 220 | 120 | | | | | 198.60 | 402 | 20.25 | 455.94 | 14 |
| 12+53.01 | 14+94.02 | SAYLOR RD. | 241.01 | 48.25 | 1,292.08 | 220 | 142 | | | | | 198.60 | 479 | 20.25 | 542.27 | 16 |
| 14+94.02 | 16+70.00 | SAYLOR RD. | 175.98 | 48.25 | 943.45 | 220 | 104 | | | | | 181.75 | 320 | 20.25 | 395.96 | 12 |
| 16+70.00 | 17+70.00 | SAYLOR RD. (TRANSITION) | 100.00 | 42.25 | 469.44 | 220 | 52 | | | | | 137.54 | 138 | 19.25 | 213.89 | 6 |
| | | | | | | | | | | | | | | | | |
| 10+00.00 | 19+53.82 | NORTH DETOUR | 953.82 | VAR | 1,702.17 | 220 | 187 | VAR | 1,702.17 | 330 | 281 | VAR | 745 | VAR | 1,702.17 | 51 |
| 10+00.00 | 16+89.08 | SOUTH DETOUR | 689.08 | VAR | 1,265.47 | 220 | 139 | VAR | 1,265.47 | 330 | 209 | VAR | 549 | VAR | 1,265.47 | 38 |
| | | | | | | | | | | | | | | | | |
| | | TOTALS | | | | | 782 | | | | 490 | | 2,721 | | | 142 |

BASIS OF ESTIMATE:
ACHM BINDER COURSE (1"): 4.2% ASPHALT BINDER, 95.8% MINERAL AGGREGATE (PG 64-22), $N_{MAX}$ = 115
ACHM SURFACE COURSE (1/2"): 4.9% ASPHALT BINDER, 95.1% MINERAL AGGREGATE (PG 64-22), $N_{MAX}$ = 115

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 42 | 182 |

(2) QUANTITIES

## BASE & SURFACING - DRIVEWAYS

| | LOCATION | AGGREGATE BASE COURSE (CLASS 7)(7" DEPTH) | | | ACHM SURFACE COURSE (1/2") (220 LBS. PER S.Y.) | |
|---|---|---|---|---|---|---|
| | | SQUARE YARDS | TON PER S.Y. | TON | SQUARE YARDS | TON |
| | HWY. 89 STA. 35+80 RT. | 109.80 | 0.408 | 45 | 109.80 | 12 |
| | HWY. 89 STA. 60+00 RT. | 93.09 | 0.408 | 38 | 93.09 | 10 |
| | HWY. 89 STA. 64+13 RT. | 59.38 | 0.408 | 24 | 59.38 | 7 |
| | HWY. 89 STA. 64+13 LT. | 114.18 | 0.408 | 47 | 114.18 | 13 |
| | SAYLOR RD. STA. 15+71 RT. | 72.43 | 0.408 | 30 | 72.43 | 8 |
| * | TEMPORARY DRIVES | | | 10 | 0.00 | 0 |
| | TOTALS | | | 194 | | 50 |

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

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2"): 4.9% ASPHALT BINDER, 95.1% MINERAL AGGREGATE (PG 64-22), $N_{MAX}$ = 115

## BASE - I-40

| STATION | STATION | LOCATION | AGGREGATE BASE COURSE (CLASS 7)(4" DEPTH) | | |
|---|---|---|---|---|---|
| | | | SQUARE YARDS | TON PER S.Y. | TON |
| 489+76.59 | 493+25.09 | GUARDRAIL WIDENING REMOVAL - RT. | 242.10 | 0.408 | 99 |
| 493+46.18 | 496+97.15 | GUARDRAIL WIDENING REMOVAL - LT. | 142.20 | 0.408 | 58 |
| | | TOTALS | | | 157 |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON

QUANTITIES

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WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 43 | 182 |
| | | | | (2) | QUANTITIES | | | |

# GUIDE SIGN ASSEMBLIES REQUIRED (GROUND MOUNTED ONLY)

| SIGN NO. | STATION | SIGN SIZE | | | | POST SIZE (STEEL BEAMS) | | | | | | | | DEPTH OF FOOTING | STANDARD ROADSIDE SIGNS TO BE MOUNTED ON POST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PRIMARY | SECONDARY | SUPPLEMENTAL | TOTAL | W6x9 | W6x12 | W6x15 | W8x18 | W8x21 | W10x22 | W10x26 | W12x26 | | |
| 1 | 419+08 ℄ I-40 | 105.00 | 23.75 | | 128.75 | | | | 24'-9" 26'-0" | | | | | 2 @ 8'-0" | |
| 2 | 417+88 ℄ I-40 | 112.00 | 23.75 | | 135.75 | | | | 23'-0" 24'-6" | | | | | 2 @ 8'-0" | |
| 3 | 477+58 ℄ I-40 | 37.50 | | | 37.50 | 15'-0" 15'-0" | | | | | | | | 2 @ 4'-6" | |
| 5 | 475+71 ℄ RAMP | 11.25 | | | 11.25 | 14'-3" 14'-9" | | | | | | | | 2 @ 4'-0" | M3-1, M1-5, M5-1L, M3-3, M1-5, M5-1R, R5-1A |
| 7 | 484+67 ℄ I-40 | 37.50 | 18.75 | | 56.25 | 15'-6" 15'-6" | | | | | | | | 2 @ 5'-0" | |
| 9 | 488+33 ℄ RAMP | 11.25 | | | 11.25 | 14'-3" 14'-9" | | | | | | | | 2 @ 4'-0" | M3-1, M1-5, M5-1L, M3-3, M1-5, M5-1R, R5-1A |
| 12 | 538+65 ℄ I-40 | 105.00 | 23.75 | | 128.75 | | | | 24'-9" 26'-0" | | | | | 2 @ 8'-0" | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | SQ. FT. | LIN. FT. | LIN. FT. | LIN. FT. | LIN. FT. | LIN. FT. | LIN. FT. | LIN. FT. | LIN. FT. | | |
| | | | | SHEET TOTALS | 509.50 | 119.00 | | | 149.00 | | | | | | |
| | | | | | | POUND | POUND | POUND | POUND | POUND | POUND | POUND | POUND | | |
| | | | | | | 1071 | | | 2682.00 | | | | | | |

## GUIDE SIGNS (EXTRUDED PANELS)

| SIGN NO. | SIZE | UNIT AREA SQ. FT. | QUANTITY REQUIRED | TOTAL SIGN AREA SQ. FT. |
|---|---|---|---|---|
| 1 & 12 | 10'-6"x10'-0" | 105.00 | 2 | 210.00 |
| | 9'-6"x2'-6" | 23.75 | 2 | 47.50 |
| * 2 & 11 | 14'-0"x8'-0" | 112.00 | 2 | 224.00 |
| | 9'-6"x2'-6" | 23.75 | 2 | 47.50 |
| 3 | 7'-6"x5'-0" | 37.50 | 1 | 37.50 |
| 5 | 4'-6"x2'-6" | 11.25 | 1 | 11.25 |
| 7 | 7'-6"x5'-0" | 37.50 | 1 | 37.50 |
| | 7'-6"x2'-6" | 18.75 | 1 | 18.75 |
| 9 | 4'-6"x2'-6" | 11.25 | 1 | 11.25 |
| | | | | |
| TOTAL GUIDE SIGNS (EXTRUDED PANELS) | | | | 645.25 |

* FOR BRIDGE MOUNT SIGN ASSEMBLY DETAILS, SEE SHEET 86.

## GUIDE SIGNS (0.125 SHEET ALUMINUM)

| SIGN NO. | SIZE | UNIT AREA SQ. FT. | QUANTITY REQUIRED | TOTAL SIGN AREA SQ. FT. |
|---|---|---|---|---|
| 4 | 6'-6"x3'-6" | 22.75 | 1 | 22.75 |
| 6 | 5'-6"x2'-6" | 13.75 | 1 | 13.75 |
| 8 | 6'-6"x2'-6" | 16.25 | 1 | 16.25 |
| 10 | 6'-6"x3'-6" | 22.75 | 1 | 22.75 |
| TOTAL GUIDE SIGNS (0.125" SHEET ALUMINUM) | | | | 75.50 |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8141
NICCI D. TINER

10-22-12

QUANTITIES

sarobarson 10/22/2012 7:58:16 AM
WORKSPACE: AHTD
L:\2006\060500\60-140-H89 INT\Drawings\RWY\H89_SP_89_02.DGN
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 44 | 182 |
| | | | | (2) | QUANTITIES | | | |

# STANDARD ROADSIDE SIGN ASSEMBLIES REQUIRED

| CODE LETTER THIS SHEET | STANDARD ROADSIDE SIGNS TO BE MOUNTED | U-CHANNEL POST ASSEMBLIES (EACH) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | U1-1 | U1-2 | U2-1 | U2-2 | U2-3 | U2-4 | U2-5 | U2-6 | U2-7 | U2-8 | U2-9 | U2-10 | U2-11 | U3-1 | U3-2 | U3-3 | U3-4 |
| A | R2-1, R2-2 | | | 1 | | | | | | | | | | | | | | |
| B | M3-4, M1-1 | 1 | | | | | | | | | | | | | | | | |
| C | M2-1, M1-1, SPECIAL SIGN 4 | | | | | | | | | | | 1 | | | | | | |
| D | R2-1 | 1 | | | | | | | | | | | | | | | | |
| E | M3-1, M1-5 | 1 | | | | | | | | | | | | | | | | |
| F | M3-2, M1-1, M6-3, M3-4, M1-1, M5-2R, M3-4, M1-1, M6-1L | | | | | | 1 | | | | | | | | | | | |
| G | M3-4, M1-1, M1-6L | 1 | | | | | | | | | | | | | | | | |
| H | M1-5, W1-7 | | | | | | | | | | | 1 | | | | | | |
| I | R1-1, R4-7A | | | | | 1 | | | | | | | | | | | | |
| J | R1-1, R6-1L, R6-1R, R5-1 | | | | | 1 | | | | | | | | | | | | |
| K | R1-2, R5-1 | | | | | 1 | | | | | | | | | | | | |
| L | W4-1R | | | 1 | | | | | | | | | | | | | | |
| M | R5-1A | | | 1 | | | | | | | | | | | | | | |
| N | W1-8R | 1 | | | | | | | | | | | | | | | | |
| O | W1-8R | 1 | | | | | | | | | | | | | | | | |
| P | W1-8R | 1 | | | | | | | | | | | | | | | | |
| Q | W1-8R | 1 | | | | | | | | | | | | | | | | |
| R | W1-8R | 1 | | | | | | | | | | | | | | | | |
| S | W3-1 | | | 1 | | | | | | | | | | | | | | |
| T | W13-3 | | | 1 | | | | | | | | | | | | | | |
| U | M3-4, M1-1, M5-1L, SPECIAL SIGN 6 | | | | | | | | | | | 1 | | | | | | |
| V | M3-2, M1-1, M5-1L, SPECIAL SIGN 8 | | | | | | | | | | | 1 | | | | | | |
| W | W3-1 | 1 | | | | | | | | | | | | | | | | |
| X | W8-3 | 1 | | | | | | | | | | | | | | | | |
| Y | R1-1 | 1 | | | | | | | | | | | | | | | | |
| Z | W8-13 | 1 | | | | | | | | | | | | | | | | |
| AA | OM-3R | 1 | | | | | | | | | | | | | | | | |
| BB | OM-3L | 1 | | | | | | | | | | | | | | | | |
| CC | OM-3L | 1 | | | | | | | | | | | | | | | | |
| DD | OM-3R | 1 | | | | | | | | | | | | | | | | |
| EE | W13-2 | | | 1 | | | | | | | | | | | | | | |
| FF | W3-1 | | | 1 | | | | | | | | | | | | | | |
| GG | R2-1 | 1 | | | | | | | | | | | | | | | | |
| HH | R5-1A | | | 1 | | | | | | | | | | | | | | |
| II | R1-1, R6-1L, R6-1R, R5-1 | | | | | 1 | | | | | | | | | | | | |
| JJ | R1-2, R5-1 | | | | | 1 | | | | | | | | | | | | |
| KK | M3-2, M1-1, M5-1L | 1 | | | | | | | | | | | | | | | | |
| LL | M2-1, M1-1, SPECIAL SIGN 10 | | | | | | | | | | | 1 | | | | | | |
| MM | M3-4, M1-1, M6-3, M3-2, M1-1, M5-1R, M3-2, M1-1, M6-1L | | | | | | 1 | | | | | | | | | | | |
| NN | W8-13 | 1 | | | | | | | | | | | | | | | | |
| OO | W4-1R | | | 1 | | | | | | | | | | | | | | |
| PP | M3-2, M1-1 | 1 | | | | | | | | | | | | | | | | |
| QQ | R2-1, R2-2 | | | 1 | | | | | | | | | | | | | | |
| RR | W1-2R, W13-1 | | 1 | | | | | | | | | | | | | | | |
| SS | W1-2L, W13-1 | | 1 | | | | | | | | | | | | | | | |
| TT | W1-8L | 1 | | | | | | | | | | | | | | | | |
| UU | W1-8L | 1 | | | | | | | | | | | | | | | | |
| VV | W1-8L | 1 | | | | | | | | | | | | | | | | |
| WW | W1-8L | 1 | | | | | | | | | | | | | | | | |
| XX | W1-8L | 1 | | | | | | | | | | | | | | | | |
| YY | W1-8L | 1 | | | | | | | | | | | | | | | | |
| ZZ | W1-8L | 1 | | | | | | | | | | | | | | | | |
| AAA | W1-8R | 1 | | | | | | | | | | | | | | | | |
| BBB | W1-8R | 1 | | | | | | | | | | | | | | | | |
| CCC | W1-8R | 1 | | | | | | | | | | | | | | | | |
| DDD | W1-8R | 1 | | | | | | | | | | | | | | | | |
| EEE | W1-8R | 1 | | | | | | | | | | | | | | | | |
| FFF | W1-8R | 1 | | | | | | | | | | | | | | | | |
| GGG | W1-8R | 1 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | 35 | 2 | 10 | | 5 | 2 | | | | | 5 | | | | | | |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8141
NICCI D. TINER
10-24-11

QUANTITIES

sgroberson 10/20/2011 11:9:08 PM
WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 45 | 182 |
| | | | | (2) | QUANTITIES | | | |

## STANDARD ROADSIDE SIGNS
### SHEET ALUMINUM 0.100" THICKNESS (5 SF OR LESS)

| SIGN NUMBER | SIZE | UNIT AREA ( SQ. FT. ) | QUANTITY REQUIRED | TOTAL SIGN AREA (SQ. FT.) | LEGEND/BACKGROUND |
|---|---|---|---|---|---|
| MI-1 | 24"x24" | 4.00 | 12 | 48.00 | WHITE/BLUE |
| MI-5 | 24"x24" | 4.00 | 6 | 24.00 | BLACK/WHITE |
| M2-1 | 21"x15" | 2.19 | 2 | 4.38 | WHITE/BLUE |
| M3-1 | 24"x12" | 2.00 | 3 | 6.00 | BLACK/WHITE |
| M3-2 | 24"x12" | 2.00 | 5 | 10.00 | WHITE/BLUE |
| M3-2 | 36"x18" | 4.50 | 1 | 4.50 | WHITE/BLUE |
| M3-3 | 24"x12" | 2.00 | 2 | 4.00 | BLACK/WHITE |
| M3-4 | 24"x12" | 2.00 | 5 | 10.00 | WHITE/BLUE |
| M3-4 | 36"x18" | 4.50 | 1 | 4.50 | WHITE/BLUE |
| M5-1L | 21"x15" | 2.19 | 2 | 4.38 | BLACK/WHITE |
| M5-1L | 21"x15" | 2.19 | 3 | 6.56 | WHITE/BLUE |
| M5-1R | 21"x15" | 2.19 | 2 | 4.38 | BLACK/WHITE |
| M5-1R | 21"x15" | 2.19 | 1 | 2.19 | WHITE/BLUE |
| M5-2R | 21"x15" | 2.19 | 1 | 2.19 | WHITE/BLUE |
| M6-1L | 21"x15" | 2.19 | 3 | 6.56 | WHITE/BLUE |
| M6-3 | 21"x15" | 2.19 | 2 | 4.38 | WHITE/BLUE |
| OM-3L | 12"x36" | 3.00 | 2 | 6.00 | BLACK/YELLOW |
| OM-3R | 12"x36" | 3.00 | 2 | 6.00 | BLACK/YELLOW |
| R2-1 | 24"x30" | 5.00 | 2 | 10.00 | BLACK/WHITE |
| R4-7A | 24"x30" | 5.00 | 1 | 5.00 | BLACK/WHITE |
| R6-1L | 36"x12" | 3.00 | 1 | 3.00 | BLACK/WHITE |
| R6-1R | 36"x12" | 3.00 | 1 | 3.00 | BLACK/WHITE |
| W1-8L | 24"x30" | 5.00 | 7 | 35.00 | BLACK/YELLOW |
| W1-8R | 24"x30" | 5.00 | 12 | 60.00 | BLACK/YELLOW |
| W13-1 | 24"x24" | 4.00 | 2 | 8.00 | BLACK/YELLOW |
| TOTAL 0.100" THICKNESS | | | | 282.02 | |

## STANDARD ROADSIDE SIGNS
### SHEET ALUMINUM 0.125" THICKNESS (GREATER THAN 5 SF)

| SIGN NUMBER | SIZE | UNIT AREA ( SQ. FT. ) | QUANTITY REQUIRED | TOTAL SIGN AREA (SQ. FT.) | LEGEND/BACKGROUND |
|---|---|---|---|---|---|
| MI-1 | 36"x36" | 9.00 | 2 | 18.00 | WHITE/BLUE |
| RI-1 | 36" OCTAGON | 9.00 | 2 | 18.00 | WHITE/RED |
| RI-1 | 48" OCTAGON | 16.00 | 2 | 32.00 | WHITE/RED |
| RI-2 | 48"x48"x48" | 6.93 | 2 | 13.86 | RED/WHITE |
| R2-1 | 48"x60" | 20.00 | 2 | 40.00 | BLACK/WHITE |
| R2-2 | 48"x48" | 16.00 | 2 | 32.00 | BLACK/WHITE |
| R5-1 | 30"x30" | 6.25 | 3 | 18.75 | WHITE/RED |
| R5-1 | 36"x36" | 9.00 | 1 | 9.00 | WHITE/RED |
| R5-1a | 42"x30" | 8.75 | 4 | 35.00 | WHITE/RED |
| R6-1L | 54"x18" | 6.75 | 1 | 6.75 | BLACK/WHITE |
| R6-1R | 54"x18" | 6.75 | 1 | 6.75 | BLACK/WHITE |
| W1-2L | 48"x48" | 16.00 | 1 | 16.00 | BLACK/YELLOW |
| W1-2R | 48"x48" | 16.00 | 1 | 16.00 | BLACK/YELLOW |
| W1-7 | 60"x30" | 12.50 | 1 | 12.50 | BLACK/YELLOW |
| W3-1 | 36"x36" | 9.00 | 1 | 9.00 | BLACK/YELLOW |
| W3-1 | 48"x48" | 16.00 | 2 | 32.00 | BLACK/YELLOW |
| W4-1R | 48"x48" | 16.00 | 2 | 32.00 | BLACK/YELLOW |
| W8-3 | 36"x36" | 9.00 | 1 | 9.00 | BLACK/YELLOW |
| W8-13 | 36"x36" | 9.00 | 2 | 18.00 | BLACK/YELLOW |
| W13-2 | 48"x60" | 20.00 | 1 | 20.00 | BLACK/YELLOW |
| W13-3 | 48"x60" | 20.00 | 1 | 20.00 | BLACK/YELLOW |
| TOTAL 0.125" THICKNESS | | | | 414.61 | |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8141
NICCI D. TINER
10-24-11

QUANTITIES

sarobertson 10/20/2011 12:03:03 PM
WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| ⚠ 11-5-2012 | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 46 | |
| | | | | (1) 07205 | | QUANTITIES | | 51767 |

## SCHEDULE OF BRIDGE QUANTITIES FOR JOB 060897

| BRIDGE NO. / CODE NO. / NAME PLATE TITLE | UNIT OF STRUCTURE | ITEM NO. | 205 | 801 | 802 | 802 | 803 | SS & 804 | SS & 804 | 805 | 805 | 807 | 807 | 808 | 809 | 812 | 816 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ITEM | REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1) | UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE | CLASS S CONCRETE - BRIDGE | CLASS S(AE) CONCRETE - BRIDGE | CLASS 1 PROTECTIVE SURFACE TREATMENT | REINFORCING STEEL-BRIDGE (GRADE 60) | EPOXY COATED REINFORCING STEEL (GRADE 60) | CONCRETE PILING (18" SQ.) | TEST PILE (18" SQ.) | STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR. 50) | ✱ PAINTING STRUCTURAL STEEL | ELASTOMERIC BEARINGS | PREFORMED JOINT SEAL | BRIDGE NAME PLATE (TYPE D) | CONCRETE RIPRAP |
| | | UNIT | LUMP SUM | CUBIC YARD | CUBIC YARD | CUBIC YARD | GALLON | POUND | POUND | LINEAR FOOT | LINEAR FOOT | POUND | TON | CUBIC INCH | LINEAR FOOT | EACH | CUBIC YARD |
| 07205 X771 HIGHWAY 89 | BENT NO. 1 | | | | 47.68 | | 0.3 | 5,658 | | 360 | 55 | 771 | 0.4 | 2,936.2 | 44 | | 8 |
| | BENT NO. 2 | | | 128 | ⚠ ~~161.36~~ 116.56 | | | 21,384 | | 775 | 35 | | | 5,312.6 | | | |
| | BENT NO. 3 | | | | 47.56 | | 0.3 | 5,658 | | 360 | 55 | 771 | 0.4 | 2,936.2 | 44 | | 8 |
| | 210'-0" CONT. COMP. PLATE GIRDER UNIT | | | | | 270.10 | 22.0 | | 71,260 | | | 268,068 | 134.0 | | | 1 | |
| | EXIST. BR. NO. 03226 | | 1 | | | | | | | | | | | | | | |
| | TOTALS FOR JOB 060897 | | | 128 | ⚠ ~~256.6~~ 211.8 | 270.1 | 22.6 | 32,700 | 71,260 | 1,495 | 145 | 269,610 | 134.8 | 11,185 | 88 | 1 | 16 |

⚠ Quantity Revised 11-5-2012, SRY

✱ Paint shall conform to Federal Standard 595B, Color Chip No. 34097, Green.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14058
SETH R. YANCEY
11-5-2012

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
HIGHWAY 89
OVER INTERSTATE 40
I-40/HWY. 89 INTCHG. (LONOKE) (S)
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: DEC. 2010 FILENAME: B060897_01.DGN
CHECKED BY: JHR DATE: DEC. 2010 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: DEC. 2010

BRIDGE NO. 07205 DRAWING NO. 51767

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 11-5-12 | | | | 6 | ARK. | | | |
| 11-15-12 | | | | JOB NO. | | 060897 | 47 | 182 |
| 12-5-12 | | | | (2) | SUMMARY OF QUANTITIES & REVISIONS | | | |

## SUMMARY OF QUANTITIES (BOX 1 OF 2)

| ITEM NUMBER | ITEM | QUANTITY | UNIT |
|---|---|---|---|
| 201 | CLEARING | 140 | STA. |
| 201 | GRUBBING | 140 | STA. |
| 202 | REMOVAL AND DISPOSAL OF PIPE CULVERTS | 13 | EACH |
| SP & 202 | REMOVAL AND DISPOSAL OF GUARDRAIL | 2,169 | L.F. |
| 202 | REMOVAL AND DISPOSAL OF FENCE | 5,396 | L.F. |
| 202 | REMOVAL AND DISPOSAL OF APPROACH SLAB AND GUTTER | 4 | EACH |
| 202 | REMOVAL AND DISPOSAL OF PARAPET WALL | 2 | EACH |
| 202 | REMOVAL AND DISPOSAL OF IMPACT ATTENUATION BARRIER | 2 | EACH |
| 202 | REMOVAL AND DISPOSAL OF BILLBOARD | 2 | EACH |
| 202 | REMOVAL AND DISPOSAL OF SIGN POLE | 11 | EACH |
| 202 | REMOVAL AND DISPOSAL OF SIGN FOUNDATION | 11 | EACH |
| 202 | REMOVAL AND DISPOSAL OF FOUNDATION | 456 | SQ.YD. |
| 206 | FLOWABLE SELECT MATERIAL | 44 | CU.YD. |
| 210 | UNCLASSIFIED EXCAVATION | 120,010 | CU.YD. |
| SP & 210 | COMPACTED EMBANKMENT | 154,839 | CU.YD. |
| SP & 210 | SOIL STABILIZATION | 750 | TON |
| SS & 303 | AGGREGATE BASE COURSE (CLASS 7) | 35,427 | TON |
| 401 | TACK COAT | 2,507 | GAL. |
| SP, SS & 406 | MINERAL AGGREGATE IN ACHM BINDER COURSE (1") | 5,012 | TON |
| SP, SS & 406 | ASPHALT BINDER (PG 76-22) IN ACHM BINDER COURSE (1") | 204 | TON |
| SP, SS & 406 | ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1") | 21 | TON |
| SP, SS & 407 | MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2") | 8,470 | TON |
| SP, SS & 407 | ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2") | 387 | TON |
| SP, SS & 407 | ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") | 41 | TON |
| 412 | COLD MILLING ASPHALT PAVEMENT | 7,791 | SQ.YD. |
| SP, SS & 414 | ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC | 25 | TON |
| 504 | APPROACH GUTTERS (TYPE C) | 37.12 | CU.YD. |
| 601 | MOBILIZATION | 1.00 | L.S. |
| SP & 602 | FURNISHING FIELD OFFICE | 1 | EACH |
| SP, SS & 603 | MAINTENANCE OF TRAFFIC | 1.00 | L.S. |
| 603 | 30" TEMPORARY CULVERT | 86 | L.F. |
| SS & 604 | SIGNS | 667 | SQ.FT. |
| SS & 604 | TRAFFIC DRUMS | 159 | EACH |
| SS & 604 | BARRICADES | 192 | L.F. |
| SS & 604 | FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER | 8,220 | L.F. |
| SS & 604 | CONSTRUCTION PAVEMENT MARKINGS | 11,864 | L.F. |
| 604 | REMOVAL OF PERMANENT PAVEMENT MARKINGS | 12,437 | L.F. |
| SS & 604 | PORTABLE CHANGEABLE MESSAGE SIGN | 60 | DAYS |
| SP | TEMPORARY IMPACT ATTENUATION BARRIER | 7 | EACH |
| SP | TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) | 7 | EACH |
| 605 | CONCRETE DITCH PAVING (TYPE B) | 455 | SQ.YD. |
| SS & 606 | 18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 90 | L.F. |
| SS & 606 | 24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 356 | L.F. |
| SS & 606 | 30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 168 | L.F. |
| SS & 606 | 36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 92 | L.F. |
| 606 | 12" ZINC COATED (GALVANIZED) CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) | 229 | L.F. |
| SS & 606 | 29" X 18" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III) | 928 | L.F. |
| 606 | 18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 3 | EACH |
| 606 | 24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 8 | EACH |
| 606 | 30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 4 | EACH |
| 606 | 36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 3 | EACH |
| 606 | 29" X 18" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS | 20 | EACH |
| SP, SS & 606 | 18" SIDE DRAIN | 36 | L.F. |
| SP, SS & 606 | 24" SIDE DRAIN | 174 | L.F. |
| 606 | SELECTED PIPE BEDDING | 100 | CU.YD. |
| 606 | 28" X 20" SAFETY END SECTIONS FOR CROSS DRAIN ARCH PIPE CULVERTS (CLASS 2) | 1 | EACH |
| 609 | DROP INLETS (TYPE N2) | 4 | EACH |
| 609 | JUNCTION BOXES (TYPE ST) | 1 | EACH |
| 611 | 4" PIPE UNDERDRAINS | 278 | L.F. |
| 611 | UNDERDRAIN OUTLET PROTECTORS | 8 | EACH |
| 615 | PAVEMENT REPAIR OVER CULVERTS (ASPHALT) | 90 | TON |
| SS & 617 | GUARDRAIL (TYPE A) | 450 | L.F. |
| SS & 617 | THRIE BEAM GUARDRAIL TERMINAL | 4 | EACH |
| SS & 617 | GUARDRAIL TERMINAL (TYPE 2) | 4 | EACH |
| 619 | WIRE FENCE (TYPE A) | 6,107 | L.F. |
| * 619 | 16' STEEL GATES (ALTERNATE NO. 1) | 1 | EACH |
| * 619 | 16' ALUMINUM GATES (ALTERNATE NO. 2) | 1 | EACH |
| 620 | LIME | 46 | TON |
| 620 | SEEDING | 23.18 | ACRE |
| 620 | MULCH COVER | 79.00 | ACRE |
| SS & 620 | WATER | 3,511.3 | M.G. |
| 621 | TEMPORARY SEEDING | 55.82 | ACRE |
| 621 | SILT FENCE | 6,431 | L.F. |
| 621 | SAND BAG DITCH CHECKS | 840 | BAG |
| 621 | DIVERSION DITCH | 710 | L.F. |
| 621 | ROCK DITCH CHECKS | 570 | CU.YD. |
| 621 | SEDIMENT BASIN | 100 | CU.YD. |
| 621 | OBLITERATION OF SEDIMENT BASIN | 100 | CU.YD. |
| 621 | SEDIMENT REMOVAL AND DISPOSAL | 2,500 | CU.YD. |
| 621 | PIPE FOR SLOPE DRAINS | 298 | L.F. |
| 623 | SECOND SEEDING APPLICATION | 23.18 | ACRE |
| 624 | SOLID SODDING | 633 | SQ.YD. |
| 631 | CONCRETE BARRIER WALL (MEDIAN TYPE SPECIAL) | 375 | L.F. |
| 631 | CONCRETE BARRIER WALL (PIER PROTECTION TYPE SPECIAL) * | 31 | L.F. |
| 632 | CONCRETE ISLAND | 74 | SQ.YD. |
| 635 | ROADWAY CONSTRUCTION CONTROL | 1.00 | L.S. |

* DENOTES ALTERNATE BID ITEMS.

## SUMMARY OF QUANTITIES (BOX 2 OF 2)

| ITEM NUMBER | ITEM | QUANTITY | UNIT |
|---|---|---|---|
| SS & 718 | REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") | 158 | L.F. |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (4") | 20,826 | L.F. |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (8") | 2,234 | L.F. |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (12") | 22 | L.F. |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (24") | 53 | L.F. |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING YELLOW (4") | 17,191 | L.F. |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING YELLOW (12") | 316 | L.F. |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING (WORDS) | 2 | EACH |
| SS & 719 | THERMOPLASTIC PAVEMENT MARKING (ARROWS) | 2 | EACH |
| * SP & 719 | INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4") (ALT. NO. 1) | 5,539 | L.F. |
| * SP | HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4") (ALT. NO. 2) | 5,539 | L.F. |
| * SP & 719 | INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4") (ALT. NO. 1) | 424 | L.F. |
| * SP | HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4") (ALT. NO. 2) | 424 | L.F. |
| 721 | RAISED PAVEMENT MARKERS (TYPE II) | 721 | EACH |
| SP | STEEL BRIDGE MOUNTED SIGN STRUCTURE (BM-040-43-02) | 1 | EACH |
| SS & 725 | GUIDE SIGN - ROADSIDE MOUNTED (DEMOUNTABLE LEGEND) | 720.75 | SQ.FT. |
| SS & 726 | STANDARD SIGN | 696.63 | SQ.FT. |
| SS & 728 | DELINEATOR (TYPE 1) | 69 | EACH |
| SP & 729 | CHANNEL POST SIGN SUPPORT (TYPE U1-1) | 35 | EACH |
| SP & 729 | CHANNEL POST SIGN SUPPORT (TYPE U1-2) | 2 | EACH |
| SP & 729 | CHANNEL POST SIGN SUPPORT (TYPE U2-1) | 10 | EACH |
| SP & 729 | CHANNEL POST SIGN SUPPORT (TYPE U2-3) | 5 | EACH |
| SP & 729 | CHANNEL POST SIGN SUPPORT (TYPE U2-4) | 2 | EACH |
| SP & 729 | CHANNEL POST SIGN SUPPORT (TYPE U2-9) | 5 | EACH |
| 730 | BREAKAWAY SIGN SUPPORT (TYPE G-2) | 3,753 | POUND |
| SS & 731 | IMPACT ATTENUATION BARRIER (TYPE A) | 2 | EACH |
| 801 | UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY | 39 | CU.YD. |
| 802 | CLASS S CONCRETE - ROADWAY | 61.00 | CU.YD. |
| SS & 804 | REINFORCING STEEL - ROADWAY (GRADE 60) | 10,097 | LB. |
| 816 | DUMPED RIPRAP | 8 | CU.YD. |
| 816 | FILTER BLANKET | 16 | SQ. YD. |
| SP | RETAINING WALL | 9,240 | SQ.FT. |
| SP | SELECT GRANULAR BACKFILL | 5,827 | CU.YD. |

* DENOTES ALTERNATE BID ITEMS.

## STRUCTURES OVER 20' SPAN

| ITEM NUMBER | ITEM | QUANTITY | UNIT |
|---|---|---|---|
| 205 | REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1) | 1.00 | L.S. |
| 636 | BRIDGE CONSTRUCTION CONTROL | 1.00 | L.S. |
| 801 | UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE | 128 | CU.YD. |
| 802 | CLASS S CONCRETE - BRIDGE | 211.8 | CU.YD. |
| 802 | CLASS S(AE) CONCRETE - BRIDGE | 270.1 | CU.YD. |
| 803 | CLASS 1 PROTECTIVE SURFACE TREATMENT | 22.6 | GAL. |
| SS & 804 | REINFORCING STEEL - BRIDGE (GRADE 60) | 32,700 | LB. |
| SS & 804 | EPOXY COATED REINFORCING STEEL (GRADE 60) | 71,260 | LB. |
| 805 | CONCRETE PILING (18" SQUARE) | 1,495 | L.F. |
| 805 | TEST PILE (18" SQUARE) | 145 | L.F. |
| 807 | STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR 50) | 269,610 | LB. |
| 807 | PAINTING STRUCTURAL STEEL | 134.8 | TON |
| 808 | ELASTOMERIC BEARINGS | 11,185 | CU.IN. |
| 809 | PREFORMED JOINT SEAL | 88 | L.F. |
| 812 | BRIDGE NAME PLATE (TYPE D) | 1 | EACH |
| 816 | CONCRETE RIPRAP | 16 | CU.YD. |
| | | | |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON
12-5-12

## REVISION BOX

| DATE | REVISION | SHEET NUMBER |
|---|---|---|
| 11-5-12 | REVISED QUANTITY OF CLASS S CONCRETE - BRIDGE | 46 & 47 |
| 11-15-12 | ADDED NESTING SITES OF MIGRATORY BIRDS SP | 2 & 47 |
| 12-5-12 | REMOVED SITE USE (A+C METHOD) SP | 2 & 47 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SUMMARY OF QUANTITIES & REVISIONS

scroberson 12/5/2012 9:21:00 AM
WORKSPACE: AHTD
L:\2006\060506O-140-H89 INT\Drawings\RWY\H89_QTY_04_SUM.dgn
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 48 | 182 |

(2) SURVEY CONTROL DETAILS

## COORDINATES

**ARKANSAS STATE PLANE, BASED ON GPS CONTROL, PROJECTED TO GROUND**

| NAME | NORTHING | EASTING | ELEVATION | PREFERENC | DESCRIPTION |
|---|---|---|---|---|---|
| 1 | 169783.6033 | 1337977.1024 | 238.24 | CTL | REBAR/CAP * |
| 2 | 168950.078 | 1337983.5434 | 238.50 | CTL | REBAR/CAP * |
| 3 | 171045.3176 | 1338062.4336 | 259.30 | CTL | REBAR/CAP * |
| 6 | 172055.3556 | 1337770.1878 | 230.05 | CTL | REBAR/CAP * |
| 7 | 172145.2457 | 1337004.5512 | 232.29 | CTL | REBAR/CAP * |
| 8 | 172182.9033 | 1336053.6701 | 235.34 | CTL | REBAR/CAP * |
| 9 | 172039.9632 | 1335400.9149 | 240.63 | CTL | REBAR/CAP * |
| 13 | 171657.5377 | 1337878.0080 | 242.09 | CTL | REBAR/CAP * |
| 15 | 171278.9206 | 1338029.4955 | 259.20 | CTL | REBAR/CAP * |
| 25 | 171097.1311 | 1338171.2108 | 238.64 | CTL | REBAR/CAP * |
| 26 | 171089.0362 | 1337747.8534 | 240.11 | CTL | REBAR/CAP * |
| 27 | 171080.2424 | 1336730.8410 | 239.97 | CTL | REBAR/CAP * |
| 28 | 171084.7947 | 1335816.8689 | 240.74 | CTL | REBAR/CAP * |
| 102 | 170713.5128 | 1338053.7152 | 249.04 | GPS | AHTD GPS # 430018 |
| 103 | 170998.5565 | 1336456.3210 | 238.40 | GPS | AHTD GPS # 430018A |
| 900 | 164058.1865 | 1338564.8667 | 233.970 | BM | NGS BRASS DSK J107 PID EH2098 |
| 904 | 161978.023 | 1337896.9332 | 235.668 | BM | GOV BM D165 CAP IN HWALL |

* NOTE - 2" AHTD ALM MON - 5/8" REBAR W/2" ALUMINUM CAP

USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
TO CONVERT TO GRID USE CAF = 1.0000174162
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME 060897GI.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88
BASED ON NGS BM J107 = PN 900
BASIS OF BEARINGS
GRID NORTH, BASED ON GPS CONTROL AT POINT NUMBER 102, (GPS 430018)
ARKANSAS STATE PLANE NORTH ZONE,
NORTHING 170713.5128, EASTING 1338053.7152.
CONVERGENCE ANGLE 0^02'59.6" LEFT.
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.
ALL BEARINGS AND DISTANCES DISPLAYED ARE GRID PROJECTED TO GROUND FOR DESIGN.

**ALIGNMENT NAME: RAMP 1**

| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8000 | 471+87.79 | PC | 171118.709 | 1335894.3734 |
| 8001 | 472+83.01 | PI | 171118.692 | 1335989.5910 |
| 8002 | 473+78.07 | PT | 171109.205 | 1336084.3349 |
| 8003 | 479+16.48 | PC | 171055.558 | 1336620.0646 |
| 8004 | 481+70.71 | PI | 171030.226 | 1336873.0305 |
| 8005 | 484+16.83 | PT | 170900.291 | 1337091.5494 |
| 8006 | 488+80.71 | PC | 170663.207 | 1337490.2677 |
| 8007 | 489+89.80 | PI | 170607.454 | 1337584.0308 |
| 8008 | 490+95.21 | PT | 170597.952 | 1337692.7028 |
| 8009 | 493+56.87 | POE | 170575.158 | 1337953.3728 |

**ALIGNMENT NAME: RAMP 2**

| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8009 | 491+36.93 | POB | 170575.158 | 1337953.3730 |
| 8020 | 500+72.60 | PC | 170970.631 | 1338801.3630 |
| 8021 | 503+97.02 | PI | 171107.751 | 1339095.3830 |
| 8022 | 507+11.95 | PT | 171113.566 | 1339419.7540 |

**ALIGNMENT NAME: RAMP 3**

| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8030 | 473+91.58 | PC | 171787.5281 | 1336391.8543 |
| 8031 | 478+39.71 | PI | 171339.6742 | 1336375.9140 |
| 8032 | 481+11.33 | PT | 171295.4142 | 1336821.8606 |
| 8033 | 488+58.02 | PC | 171221.6677 | 1337564.9027 |
| 8034 | 489+53.24 | PI | 171212.2636 | 1337659.6548 |
| 8035 | 490+48.30 | PT | 171212.3306 | 1337754.8725 |

**ALIGNMENT NAME: RAMP 4**

| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8040 | 470+80.02 | PC | 171224.8839 | 1335786.5928 |
| 8041 | 476+32.26 | PI | 171225.5710 | 1336338.8319 |
| 8042 | 479+58.92 | PT | 171777.4611 | 1336358.4751 |
| 8043 | 479+70.17 | POE | 171788.7019 | 1336358.8752 |

**ALIGNMENT NAME: MERGED RAMPS 3 & 4**

| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8050 | 479+70.17 | POB | 171788.1150 | 1336375.3648 |
| 8051 | 483+14.92 | POE | 172132.6456 | 1336387.6275 |

**ALIGNMENT NAME: HWY. 89**

| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8060 | 23+13.81 | POB | 172155.2749 | 1335751.8416 |
| 8061 | 36+70.48 | PC | 172107.0180 | 1337107.6539 |
| 8062 | 42+50.02 | PI | 172086.4037 | 1337686.8269 |
| 8063 | 46+44.97 | PT | 171515.6732 | 1337787.4895 |
| 8064 | 58+34.82 | PC | 170343.9068 | 1337994.1598 |
| 8065 | 60+18.95 | PI | 170162.5754 | 1338026.1421 |
| 8066 | 62+01.95 | PT | 169978.4739 | 1338022.8929 |
| 8067 | 66+03.70 | POE | 169576.7881 | 1338015.8036 |

**ALIGNMENT NAME: SAYLOR RD.**

| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8070 | 10+00.00 | POB | 171559.684 | 1337778.294 |
| 8071 | 11+00.28 | PC | 171583.264 | 1337875.762 |
| 8072 | 12+77.94 | PI | 171625.039 | 1338048.438 |
| 8073 | 14+05.74 | PT | 171802.439 | 1338058.011 |
| 8074 | 17+62.37 | POE | 172158.552 | 1338077.228 |

**ALIGNMENT NAME: I-40**

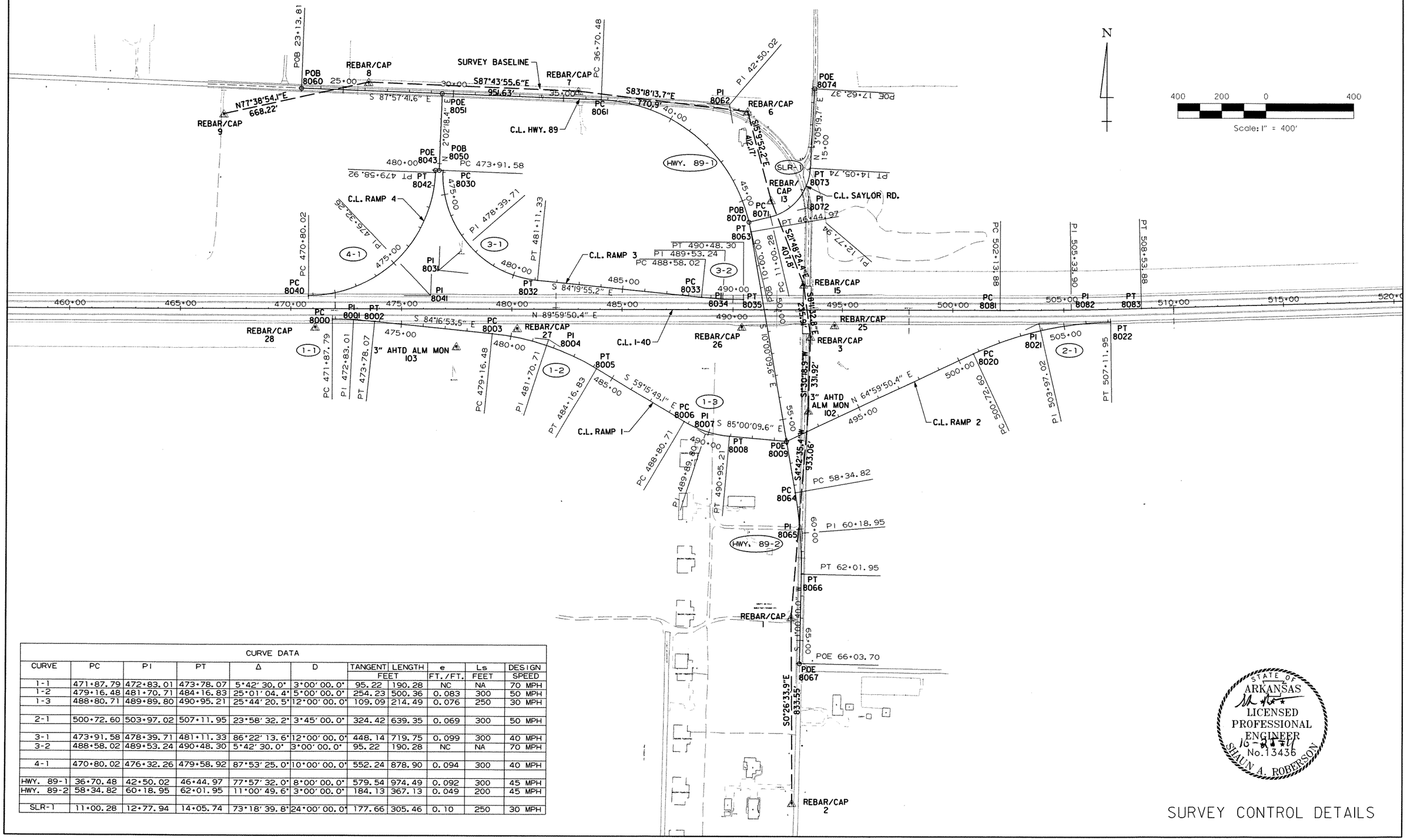
| POINT | STATION | TYPE | NORTHING | EASTING |
|---|---|---|---|---|
| 8080 | 450+16.11 | POB | 171165.8461 | 1333722.6835 |
| 8081 | 502+13.88 | PC | 171166.0881 | 1338920.4563 |
| 8082 | 505+33.90 | PI | 171166.1030 | 1339240.4771 |
| 8083 | 508+53.88 | PT | 171175.0534 | 1339560.3727 |
| 8084 | 523+75.99 | POE | 171217.6242 | 1341081.8929 |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-31-11
No. 13436
SHAUN A. ROBERSON

SURVEY CONTROL DETAILS

sorobers on 10/24/2011 11:04:48 AM
WORKSPACE: AHTD
L:\2006\060506O-I40-H89 INT\Drawings\RWY\H89_SC_01.dgn
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 49 | 182 |
| | | | | (2) | SURVEY CONTROL DETAILS | | | |




| CURVE DATA | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CURVE | PC | PI | PT | Δ | D | TANGENT | LENGTH | e | Ls | DESIGN |
| | | | | | | FEET | | FT./FT. | FEET | SPEED |
| 1-1 | 471+87.79 | 472+83.01 | 473+78.07 | 5°42'30.0" | 3°00'00.0" | 95.22 | 190.28 | NC | NA | 70 MPH |
| 1-2 | 479+16.48 | 481+70.71 | 484+16.83 | 25°01'04.4" | 5°00'00.0" | 254.23 | 500.36 | 0.083 | 300 | 50 MPH |
| 1-3 | 488+80.71 | 489+89.80 | 490+95.21 | 25°44'20.5" | 12°00'00.0" | 109.09 | 214.49 | 0.076 | 250 | 30 MPH |
| 2-1 | 500+72.60 | 503+97.02 | 507+11.95 | 23°58'32.2" | 3°45'00.0" | 324.42 | 639.35 | 0.069 | 300 | 50 MPH |
| 3-1 | 473+91.58 | 478+39.71 | 481+11.33 | 86°22'13.6" | 12°00'00.0" | 448.14 | 719.75 | 0.099 | 300 | 40 MPH |
| 3-2 | 488+58.02 | 489+53.24 | 490+48.30 | 5°42'30.0" | 3°00'00.0" | 95.22 | 190.28 | NC | NA | 70 MPH |
| 4-1 | 470+80.02 | 476+32.26 | 479+58.92 | 87°53'25.0" | 10°00'00.0" | 552.24 | 878.90 | 0.094 | 300 | 40 MPH |
| HWY. 89-1 | 36+70.48 | 42+50.02 | 46+44.97 | 77°57'32.0" | 8°00'00.0" | 579.54 | 974.49 | 0.092 | 300 | 45 MPH |
| HWY. 89-2 | 58+34.82 | 60+18.95 | 62+01.95 | 11°00'49.6" | 3°00'00.0" | 184.13 | 367.13 | 0.049 | 200 | 45 MPH |
| SLR-1 | 11+00.28 | 12+77.94 | 14+05.74 | 73°18'39.8" | 24°00'00.0" | 177.66 | 305.46 | 0.10 | 250 | 30 MPH |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-24-11
No.13436
SHAUN A. ROBERSON

SURVEY CONTROL DETAILS

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WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 50 | 182 |

(2) INTERCHANGE LAYOUT - HWY. 89

HWY. 89 STA. 25+67.00 IN PLACE
18" X 40' C.M. PIPE CULVERT
REMOVE

RAMP 3 STA. 475+60.00 CONSTRUCT
29" X 18" X 68' R.C. ARCH PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 14 CFS DA = 4.7 ACRES

HWY. 89 STA. 37+39.56 CONSTRUCT
TRIPLE 29" X 18" X 84' R.C. ARCH PIPE CULVERT
23° LT. FWD. SKEW
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 49 CFS DA = 21.8 ACRES

MERGED RAMPS 3 & 4 STA. 481+70.00 CONSTRUCT
24" X 112' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 9 CFS DA = 3.3 ACRES

HWY. 89 STA. 28+60.00 RT. IN PLACE
18" X 27' C.M. PIPE CULVERT
REMOVE

HWY. 89 STA. 37+39.00 IN PLACE
30" X 53' R.C. PIPE CULVERT
REMOVE

HWY. 89 STA. 25+86 CONSTRUCT
TRIPLE 29" X 18" X 84' R.C. ARCH PIPE CULVERT
25° LT. FWD. SKEW
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 31 CFS DA = 14.5 ACRES

C.L. HWY. 89 STA. 29+50.00 =
C.L. MERGED RAMPS 3 &4 STA. 483+14.92

HWY. 89 STA. 41+00.00 CONSTRUCT
DOUBLE 30" X 84' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 28 CFS DA = 12.7 ACRES

SAYLOR RD. STA. 11+42.00 CONSTRUCT
4' X 2' X 195' R.C. BOX CULVERT
24° LT. FWD. SKEW
WITH 31 WINGS LT. & RT.
Q10 = 36 CFS DA = 38.2 ACRES

CONCRETE BARRIER WALL

C.L. MERGED RAMPS 3 & 4 STA. 479+70.17 =
C.L. RAMP 4 STA. 479+70.17, 16.50' RT.
C.L. RAMP 3 STA. 473+91.58, 16.50' RT.

C.L. I-40 STA. 485+83.38, 70.38' LT. =
C.L. RAMP 3 STA. 485+82.96, 12.50' RT.

C.L. I-40 STA. 471+69.56, 56.47' LT. =
C.L. RAMP 4 STA. 471+68.45, 9.50' RT.

C.L. I-40 STA. 471+67.56

300' TAPER
1000' ACCELERATION LANE

PT 479+58.92
C.L. RAMP 4
PI 476+32.26
PC 470+80.02

PC 473+91.58
PI 478+39.71
PT 481+11.33
C.L. RAMP 3
PC 488+58.02
PI 489+53.24
PT 490+48.30

STA. 482+00 IN PLACE
18" X 104' R.C. PIPE CULVERT
WITH D.I. AND HDWL. LT.
REMOVE HDWL. LT. AND EXTEND
R.C. PIPE CULVERT 56' LT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT.

C.L. HWY. 89
HWY. 89-1
PI 42+50.02
PT 14+05.74
C.L. SAYLOR RD.
SLR-1
PC 12+77.94

REMOVE EXISTING BRIDGE AND OBLITERATE
EXISTING ROADWAY FOLLOWING THE CONSTRUCTION
OF HWY. 89 AND SAYLOR RD. GRADE ABANDONED
ROADWAY TO NATURAL CONDITION IF AND WHERE
DIRECTED BY THE ENGINEER. TO BE PAID FOR
UNDER ITEM 210 - UNCLASSIFIED EXCAVATION.

STA. 510+00 IN PLACE
18" X 92' R.C. PIPE CULVERT
WITH D.I. AND HDWL. RT.
REMOVE HDWL. RT. AND EXTEND
R.C. PIPE CULVERT 4' RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES RT.

END JOB 060897
STA. 515+69.85

C.L. HWY. 89 STA. 46+00.00 =
C.L. SAYLOR RD. STA. 10+00.00

PC 502+13.88
PI 505+33.90
PT 508+53.88
C.L. MEDIAN (I-40)

N 89°59'50.4" E
N 88°23'50.4" E

C.L. MEDIAN (I-40)

BEGIN JOB 060897
STA. 458+67.56

STA. 472+00 IN PLACE
18" X 88' R.C. PIPE CULVERT
WITH D.I. AND HDWL. LT.
REMOVE HDWL. LT. AND EXTEND
R.C. PIPE CULVERT 18' LT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT.

PC 471+87.79
PI 472+83.01
PT 473+78.07

C.L. I-40 STA. 491+42.58 =
C.L. HWY. 89 STA. 50+00.00

PC 479+16.48
PI 481+70.71
PT 484+16.83
C.L. RAMP 1

C.L. RAMP 2

PC 503+97.02
PI 507+11.95
PT 511+26.88

700' ACCELERATION LANE
300' TAPER

C.L. I-40 STA. 505+69.85

C.L. I-40 STA. 505+67.85, 55.17' RT. =
C.L. RAMP 2 STA. 505+68.17, 9.50' LT.

C.L. I-40 STA. 476+43.12, 70.77' RT. =
C.L. RAMP 1 STA. 476+43.51, 12.50' LT.

RAMP 1 STA. 482+60.00 - CONSTRUCT
DBL. 24" X 72' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 31 CFS DA = 24.7 ACRES

RAMP 1 STA. 492+65.00 CONSTRUCT
24" X 100' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 5 CFS DA = 1.8 ACRES

C.L. HWY. 89 STA. 56+00.00 =
C.L. RAMP 1 STA. 493+56.87 =
C.L. RAMP 2 STA. 491+36.93

PC 58+34.82
PI 60+18.95
PT 62+01.95

STA. 490+60 - CONSTRUCT
CLASS II SAFETY END SECTION
IN MEDIAN WITH
29" X 18" X 134' R.C. ARCH PIPE OUTLET
(CLASS III) (TYPE 3 BEDDING)
TO JUNCTION BOX ON LT.

STA. 492+00 IN PLACE
36" X 169' R.C. PIPE CULVERT
WITH D.I. AND HDWLS. LT. AND RT.
REMOVE HDWL. RT. AND EXTEND
R.C. PIPE CULVERT 2' RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES RT.
REMOVE DROP INLET
AND 15' OF PIPE CULVERT LT.
CONSTRUCT JUNCTION BOX (TYPE ST) 14' LT. OF C.L. MEDIAN
(4'0" X 4'0" X H = 5'9")
WITH 14' OF 36" R.C. PIPE RT. OF JUNCTION BOX
(CLASS III) (TYPE 3 BEDDING)
Q50 = 41 CFS DA = 34.5 ACRES

RAMP 2 STA. 501+00.00 CONSTRUCT
36" X 72' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 21 CFS DA = 7.4 ACRES

HWY. 89 STA. 61+24.00 CONSTRUCT
TRIPLE 29" X 18" X 74' R.C. ARCH PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 33 CFS DA = 14.3 ACRES

JOHN PACK RD.

STA. 498+00 IN PLACE
18" X 104' R.C. PIPE CULVERT
WITH D.I. AND HDWL. RT.
RETAIN

HWY. 89 STA. 61+28.00 IN PLACE
30" X 45' R.C. PIPE CULVERT
W/ HDWLS. LT. & RT.
REMOVE

| CURVE DATA | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CURVE | PC | PI | PT | Δ | D | TANGENT FEET | LENGTH FEET | e FT./FT. | Ls FEET | DESIGN SPEED |
| C.L. MED. | 502+13.88 | 505+33.90 | 508+53.88 | 1°36' 00.0" | 0°15' 00.0" | 320.02 | 640.00 | NC | NA | 70 MPH |
| 1-1 | 471+87.79 | 472+83.01 | 473+78.07 | 5°42' 30.0" | 3°00' 00.0" | 95.22 | 190.28 | NC | NA | 70 MPH |
| 1-2 | 479+16.48 | 481+70.71 | 484+16.83 | 25°01' 04.4" | 5°00' 00.0" | 254.23 | 500.36 | 0.083 | 300 | 50 MPH |
| 1-3 | 488+80.71 | 489+89.80 | 490+95.21 | 25°44' 20.5" | 12°00' 00.0" | 109.09 | 214.49 | 0.076 | 250 | 30 MPH |
| 2-1 | 500+72.60 | 503+97.02 | 507+11.95 | 23°58' 32.2" | 3°45' 00.0" | 324.42 | 639.35 | 0.069 | 300 | 50 MPH |
| 3-1 | 473+91.58 | 478+39.71 | 481+11.33 | 86°22' 13.6" | 12°00' 00.0" | 448.14 | 719.75 | 0.099 | 300 | 40 MPH |
| 3-2 | 488+58.02 | 489+53.24 | 490+48.30 | 5°42' 30.0" | 3°00' 00.0" | 95.22 | 190.28 | NC | NA | 70 MPH |
| 4-1 | 470+80.02 | 476+32.26 | 479+58.92 | 87°53' 25.0" | 10°00' 00.0" | 552.24 | 878.90 | 0.094 | 300 | 40 MPH |
| HWY. 89-1 | 36+70.48 | 42+50.02 | 46+44.97 | 77°57' 32.0" | 8°00' 00.0" | 579.54 | 974.49 | 0.092 | 300 | 45 MPH |
| HWY. 89-2 | 58+34.82 | 60+18.95 | 62+01.95 | 11°00' 49.6" | 3°00' 00.0" | 184.13 | 367.13 | 0.049 | 200 | 45 MPH |
| SLR-1 | 11+00.28 | 12+77.94 | 14+05.74 | 73°18' 39.8" | 24°00' 00.0" | 177.66 | 305.46 | 0.10 | 250 | 30 MPH |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-20-11
No. 13436
SHAUN A. ROBERSON

N

INTERCHANGE LAYOUT - HWY. 89

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WORKSPACE: AHTD
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 51 | 182 |

(2) INTERCHANGE ROW - HWY. 89

N

PROP R/W
+50
BEGIN PROP
C/A AND FENCE
EXIST. R/W
C.L. HWY. 89 STA. 29+50.00 =
C.L. MERGED RAMPS 3 &4 STA. 483+14.92
END PROP
C/A AND FENCE
PROP R/W
TEMPORARY
CONSTRUCTION
EASEMENT
EXIST. R/W
PERMANENT
CONSTRUCTION
EASEMENT
PROP R/W
+50
END PROP
C/A AND FENCE
+50
BEGIN PROP
C/A AND FENCE
BEGIN RAMP 4 STA. 470+80.02 =
C.L. I-40 STA. 470+80.02, 58.94' LT.
END RAMP 3 STA. 490+48.30 =
C.L. I-40 STA. 490+48.30, 46.30' LT.
PROP R/W
PROP R/W,
C/A AND FENCE
EXIST. R/W
54.75'
171.60°
EXIST. R/W & C/A
BEGIN PROP R/W,
C/A AND FENCE
END PROP R/W,
C/A AND FENCE
EXIST. R/W & C/A
C.L. HWY. 89 STA. 46+00.00 =
C.L. SAYLOR RD. STA. 10+00.00=
EXIST. R/W & C/A
END PROP
C/A AND FENCE
BEGIN PROP
C/A AND FENCE
END PROP
C/A AND FENCE
EXIST. R/W & C/A
BEGIN PROP R/W,
C/A AND FENCE
END PROP R/W,
C/A AND FENCE
EXIST. R/W & C/A
BEGIN RAMP 1 STA. 471+87.79 =
C.L. MEDIAN STA. 471+87.79, 47.24' RT.
PROP R/W,
C/A AND FENCE
PROP R/W,
C/A AND FENCE
END RAMP 2 STA. 507+11.95 RT. =
C.L. I-40 STA. 507+11.95, 57.97' RT.
C.L. HWY. 89 STA. 56+00.00 =
C.L. RAMP 1 STA. 493+56.87 =
C.L. RAMP 2 STA. 491+36.93
+00
END PROP
C/A AND FENCE
+00
BEGIN PROP
C/A AND FENCE
PROP R/W
PROP R/W

STATE OF
ARKANSAS
LICENSED
PROFESSIONAL
ENGINEER
10-24-11
No. 13436
SHAUN A. ROBERSON

INTERCHANGE ROW - HWY. 89

saroberson 10/24/2011 8:33:38 AM
WORKSPACE: AHTD
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REVISED DATE: _____

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 52 | 182 |

(2) PLAN AND PROFILE - I-40

N

STA. 472+00 IN PLACE
18" X 88' R.C. PIPE CULVERT
WITH D.I. AND HDWL. LT.
REMOVE HDWL. LT. AND EXTEND
R.C. PIPE CULVERT 18' LT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT.
18" R.C. PIPE = 22 LIN. FT.
18" FES = 1EA.

300' TAPER

STA. 458+67.56

STA. 461+67.56

1000' ACCELERATION LANE

EXIST. R/W & C/A

FIBER OPTIC CABLE

CONSTRUCTION LIMITS

C.L. RAMP 4
P.I. = 470+32.36
Δ = 87°53' 25.0" LT.
D = 10°00' 00"
T = 552.24
L = 878.90
P.C. = 470+80.02
P.T. = 479+58.92
e = 0.094'/'
Ls = 300'

PC 470+80.02

STA. 471+67.56

C.L. I-40 STA. 471+69.56, 56.47' LT. =
C.L. RAMP 4 STA. 471+68.45, 9.50' RT.

C.L. RAMP 4

EX. SHLD. 6'
24' EX. LANES 12'
EX. SHLDR. 30'

460+00 465+00 470+00

N 89°59'50.4" E

PI 472+83.01

DROP INLET

EX. SHLDR. 30'
24' EX. LANES
EX. SHLDR.

C.L. MEDIAN (I-40)

S 84°16'53.5" E

PC 471+87.79

C.L. RAMP 1

BEGIN JOB 060897
STA. 458+67.56

FIBER OPTIC CABLE

EXIST. R/W & C/A

C.L. RAMP 1
P.I. = 472+83.01
Δ = 5°42' 30.0" RT.
D = 3°00' 00"
T = 95.22'
L = 190.28'
P.C. = 471+87.79
P.T. = 473+78.07
NO SUPER

I-40

290 280 270 260 250 240 230 220 210 200

NOTCH, WIDEN AND OVERLAY LT. LANES

EXISTING OUTSIDE EDGE OF LANE

NOTCH, WIDEN AND OVERLAY RT. LANES

STA. 471+87.79

STA. 472+38.77

F.L. = 236.80 LT.

BEGIN JOB 060897
STA. 458+67.56

458+00 459+00 460+00 461+00 462+00 463+00 464+00 465+00 466+00 467+00 468+00 469+00 470+00 471+00 472+00 473+00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON

PN: 9
PD: 2" AHTD ALM MON
ST: 466+94.38
OF: 874.04' LT
ZC: 240.63

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WORKSPACE: AHTD
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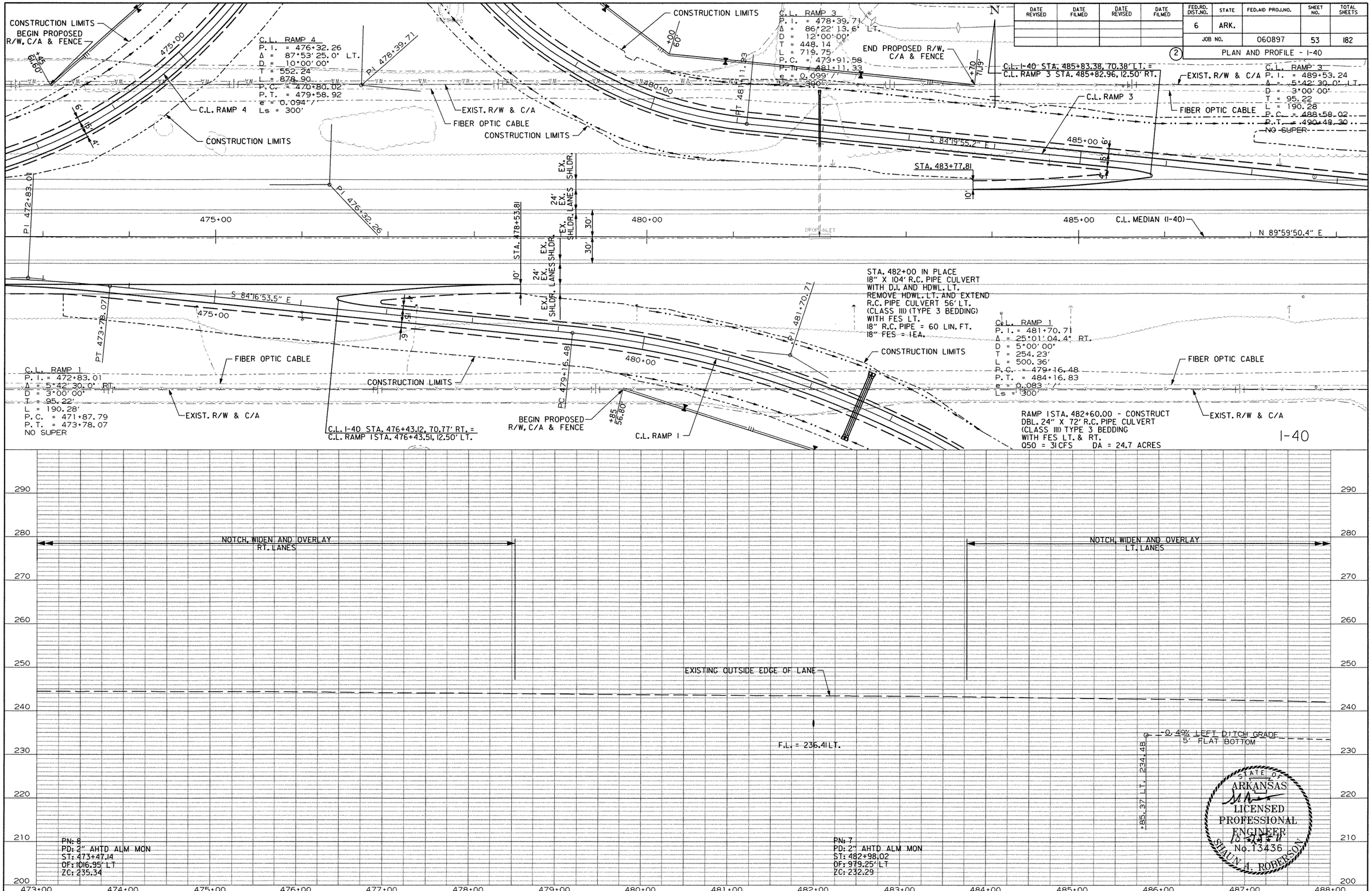
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 53 | 182 |

(2) PLAN AND PROFILE - I-40

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WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 54 | 182 |

(2) PLAN AND PROFILE - I-40

C.L. RAMP 3
P.I. = 489+53.24
Δ = 5°42'30.0" LT.
D = 3°00'00"
T = 95.22
L = 190.28
P.C. = 488+58.02
P.T. = 490+48.30
NO SUPER

BEGIN PROPOSED C/A & FENCE
16' GATE
EXIST. R/W & C/A
EXIST. R/W
EXIST. R/W & C/A
END PROPOSED C/A & FENCE
CONSTRUCTION LIMITS
BEGIN PROPOSED C/A & FENCE
S 10°00'16" E
PC 488+58.02
PT 490+48.30
490+00
C.L. RAMP 3
80°00'00"
REMOVE AND DISPOSE OF IMPACT ATTENUATOR BARRIERS
N 89°59'50.4" E
PI 489+53.24
SAW CUT AT EXISTING EDGE OF SHLDR.
C.L. I-40 STA. 491+42.58
C.L. HWY. 89 STA. 50+00.00 =
OBLITERATE EXISTING GUARDRAIL WIDENING
EXIST. R/W & C/A
EXIST. R/W
OBLITERATE EXISTING ROADWAY
+91.47 174.87
+81.85 174.38
END PROPOSED C/A & FENCE
FIBER OPTIC CABLE
BRIDGE NO. 3226 IN PLACE
212'-2½" X 26'-0"
BRIDGE CONSISTING OF
A STEEL SUPERSTRUCTURE SUPPORTED BY 14 CONCRETE SUBSTRUCTURE.
REMOVE AS EXISTING BRIDGE STRUCTURE = 1.00 LUMP SUM.
OBLITERATE EXISTING GUARDRAIL WIDENING
SAW CUT AT EXISTING EDGE OF SHLDR.
C.L. MEDIAN (I-40)
495+00
DROP INLET
PAVED SHOULDER
CONC. APRON
GA
WA

N

OBLITERATE EXISTING ROADWAY

EXIST. R/W & C/A

REMOVAL AND DISPOSAL OF GUARDRAIL HWY. 89

| STA. | STA. | SIDE | UNIT |
|---|---|---|---|
| 45+33 | 49+25 | LT. | 437.50 LIN. FT. |
| 45+33 | 49+32 | LT. | 450 LIN. FT. |
| 51+34 | 54+70 | LT. | 350 LIN. FT. |
| 51+41 | 54+77 | LT. | 350 LIN. FT. |

C.L. MEDIAN
P.I. = 505+33.90
Δ = 1°36'00.0" LT.
D = 0°15'00"
T = 320.02
L = 640.00
P.C. = 502+13.88
P.T. = 508+53.88
NO SUPER

EX. SHLDR. 30' 24' EX. LANES 30' EX. SHLDR.
500+00
PC 502+13.88

REMOVAL AND DISPOSAL OF GUARDRAIL

| STA. | STA. | SIDE | UNIT |
|---|---|---|---|
| 490+34 | 493+25 | RT. | 291 LIN. FT. |
| 493+46 | 496+36 | LT. | 290 LIN. FT. |

EXIST. R/W & C/A

STA. 48+98.91 TO STA. 51+11.09
CONSTRUCT 2 12'-2¼" X 40' BRIDGE
210'-0" CONTINUOUS COMPOSITE
PLATE GIRDER UNIT (100'-110')

STA. 490+60 - CONSTRUCT
CLASS II SAFETY END SECTION
IN MEDIAN WITH
29" X 18" X 134' R.C. ARCH PIPE OUTLET
(CLASS III) (TYPE 3 BEDDING)
F.L. = 237.10

STA. 492+00 IN PLACE
36" X 169' R.C. PIPE CULVERT
WITH D.I. AND HDWLS. LT. AND RT.
REMOVE HDWL. RT. AND EXTEND
R.C. PIPE CULVERT 2' RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES RT.
REMOVE DROP INLET
AND 15' OF PIPE CULVERT LT.
CONSTRUCT JUNCTION BOX (TYPE ST) 14' LT. OF C.L. MEDIAN
(4'0" X 4'0" X H = 5'9")
WITH 14' OF 36" R.C. PIPE RT. OF JUNCTION BOX
(CLASS III) (TYPE 3 BEDDING)
Q50 = 41 CFS DA = 34.5 ACRES
36" R.C. PIPE = 20 LIN. FT.
36" FES = 1 EA.

RAMP 2 STA. 501+00.00 - CONSTRUCT
36" X 72' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 21 CFS DA = 7.4 ACRES

CONSTRUCTION LIMITS
FIBER OPTIC CABLE
C.L. RAMP 2
EXIST. R/W
EXIST. R/W & C/A

CONCRETE DITCH PAVING (TYPE B)

| STA. | STA. | SIDE | "W" | SQ. YDS. |
|---|---|---|---|---|
| 490+55 | 492+55 | RT. = 200 LIN. FT. | 6'-0" | 133.3 |

I-40

STA. 491+05 CONSTRUCT IMPACT ATTENUATION BARRIER (TYPE A) IN MEDIAN

STA. 491+79 CONSTRUCT IMPACT ATTENUATION BARRIER (TYPE A) IN MEDIAN

STA. 498+00 IN PLACE
18" X 104' R.C. PIPE CULVERT
WITH D.I. AND HDWL. RT.
RETAIN

NOTCH, WIDEN AND OVERLAY LT. LANES

+60.00 MEDIAN 237.10
+74.66 MEDIAN 239.54
+02.00 LT. 232.44
+55.00 RT. 235.40
+00.00 RT. 234.23
+26.22 MEDIAN 236.94
+05.00 MEDIAN 239.05
+75.00 MEDIAN 236.13
+55.00 RT. 237.19

EXISTING OUTSIDE EDGE OF LANE
16.67% MEDIAN DITCH GRADE
-0.49% LEFT DITCH GRADE
5' FLAT BOTTOM
-0.38% MEDIAN DITCH GRADE
TOP 239.07
F.L. IN 236.57
29" x 18" x 134' R.C. ARCH PIPE CULVERT
-0.81% RIGHT DITCH GRADE
10.00% MEDIAN DITCH GRADE
5.88% RIGHT DITCH GRADE
-0.33% MEDIAN DITCH GRADE
F.L. = 234.23 RT.
F.L. J.B. 233.32

PN: 15
PD: 2" AHTD ALM MON
ST: 493+22.92
OF: 112.87' LT
ZC: 259.20

PN: 3
PD: 2" AHTD ALM MON
ST: 493+55.85
OF: 120.73' RT
ZC: 259.30

290 280 270 260 250 240 230 220 210 200

488+00 489+00 490+00 491+00 492+00 493+00 494+00 495+00 496+00 497+00 498+00 499+00 500+00 501+00 502+00 503+00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON

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WORKSPACE: AHTD
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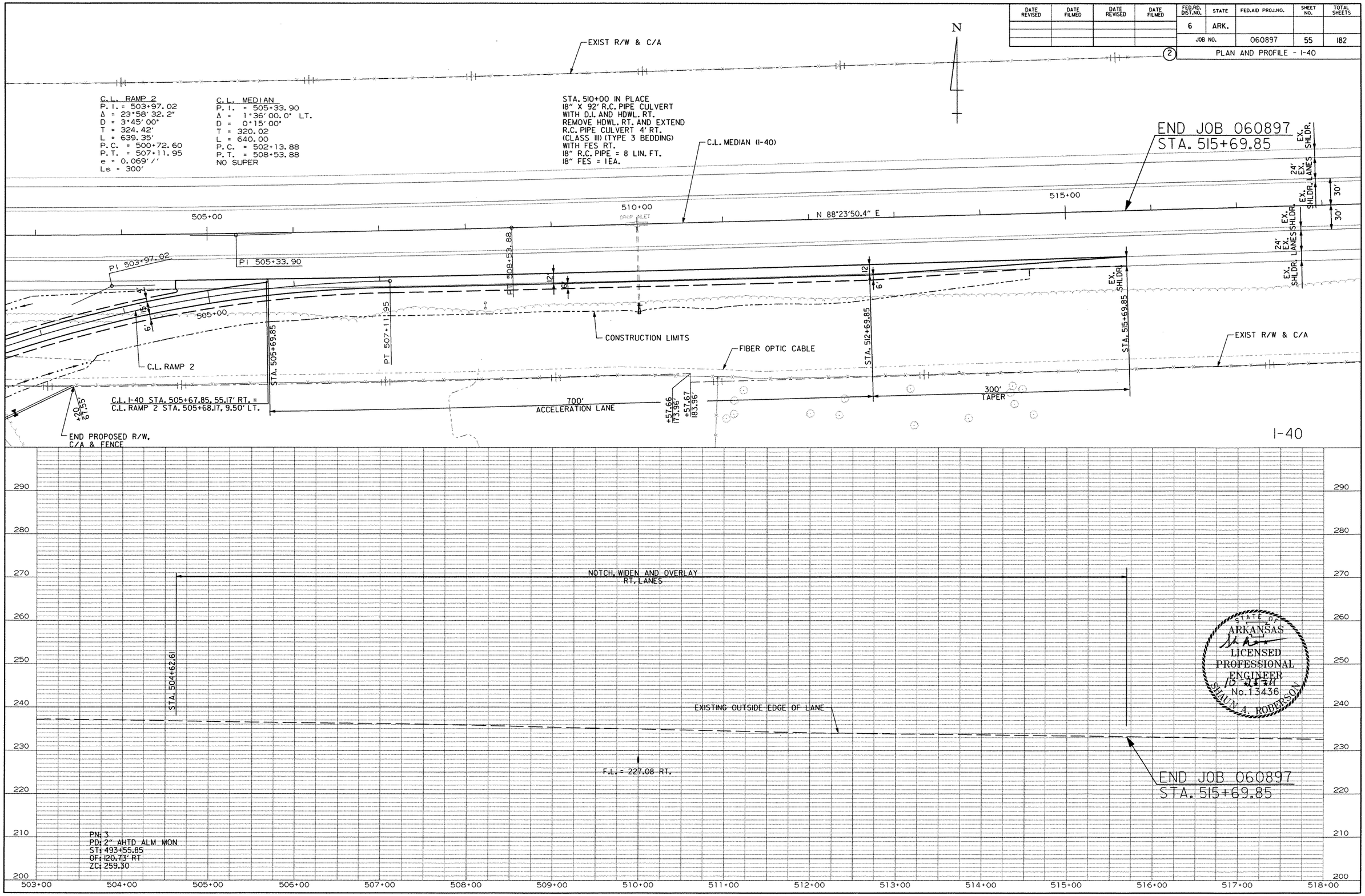
| | | | | JOB NO. | | 060897 | 55 | 182 |

(2) PLAN AND PROFILE - I-40

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| | | | | JOB NO. | | 060897 | 56 | 182 |

(2) PLAN AND PROFILE - RAMP 1

CONSTRUCTION LIMITS
C.L. I-40 STA. 471+69.56, 56.47' LT. =
C.L. RAMP 4 STA. 471+68.45, 9.50' RT.
BEGIN PROPOSED R/W, C/A & FENCE
1000' ACCELERATION LANE
EXIST. R/W & C/A
CONSTRUCTION LIMITS
PC 470+80.02
C.L. I-40 STA. 471+67.56
C.L. RAMP 4
EXIST. R/W & C/A
CONSTRUCTION LIMITS
P.I. 476+32.26
N
EX. SHLDR.
24' EX. LANES
EX. SHLDR.
30'
480+00
STA. 478+53.81
10'
475+00
470+00
N 89°59'50.4" E
DROP INLET
P.I. 472+83.01
S 84°16'53.5" E
475+00
P.I. 481+70.71
CONSTRUCTION LIMITS
480+00
PC 471+87.79
PT 473+78.07
C.L. MEDIAN (I-40)
CONSTRUCTION LIMITS
PC 479+16.48
+85
56.80'
BEGIN PROPOSED R/W, C/A & FENCE
C.L. RAMP 1
P.I. = 481+70.71
Δ = 25°01'04.4" RT.
D = 5°00'00"
T = 254.23'
L = 500.36'
P.C. = 479+16.48
P.T. = 484+16.83
e = 0.083 '/'
Ls = 300'
C.L. RAMP I
+50
65'
PROPOSED R/W, C/A & FENCE
C.L. I-40 STA. 476+43.12, 70.77' RT. =
C.L. RAMP 1 STA. 476+43.51, 12.50' LT.
EXIST. R/W & C/A
C.L. RAMP 1
P.I. = 472+83.01
Δ = 5°42'30.0" RT.
D = 3°00'00"
T = 95.22'
L = 190.28'
P.C. = 471+87.79
P.T. = 473+78.07
NO SUPER
BILLBOARD
CULTIVATED FIELD

STA. 482+60.00 - CONSTRUCT
DBL. 24" X 72' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 31CFS DA = 24.7 ACRES

RAMP 1

STA. 476+91.48 BEGIN SUPERELEVATION
STA. 479+91.48 MAX SUPERELEVATION (0.083 FT./FT.)
STA. 483+41.83 MAX SUPERELEVATION (0.083 FT./FT.)
STA. 486+41.83 END SUPERELEVATION

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-20-11
No. 15436
SHAUN A. ROBERSON

C.L. I-40 STA. 475+41.12, 75.60' RT.
C.L. RAMP 1 STA. 476+42.01, 7.50' LT.
ELEV. 243.84

PROFILE GRADE
EXISTING GROUND
-0.30%
PVC 480+50.00
ELEV. 242.62
VC=200.00'
K 266.67
PVT 482+50.00
ELEV. 242.77
0.45%
2.01% LEFT DITCH GRADE
-0.99% LEFT DITCH GRADE
-0.07% RIGHT DITCH GRADE
0.43% RIGHT DITCH GRADE
+75.00 RT. 236.60
+00.00 LT. 238.71
PVI 481+50.00
ELEV. 242.32
P.G. ELEV. 242.51
+60.00 LT. 236.20
+60.00 RT. 236.40

F.L. = 236.20 LT.
F.L. = 236.40 RT.

PN: 7
PD: 2" AHTD ALM MON
ST: 480+54.22
OF: 1139.06' LT
ZC: 232.29

280 270 260 250 240 230 220 210 200 190
468+00 469+00 470+00 471+00 472+00 473+00 474+00 475+00 476+00 477+00 478+00 479+00 480+00 481+00 482+00 483+00

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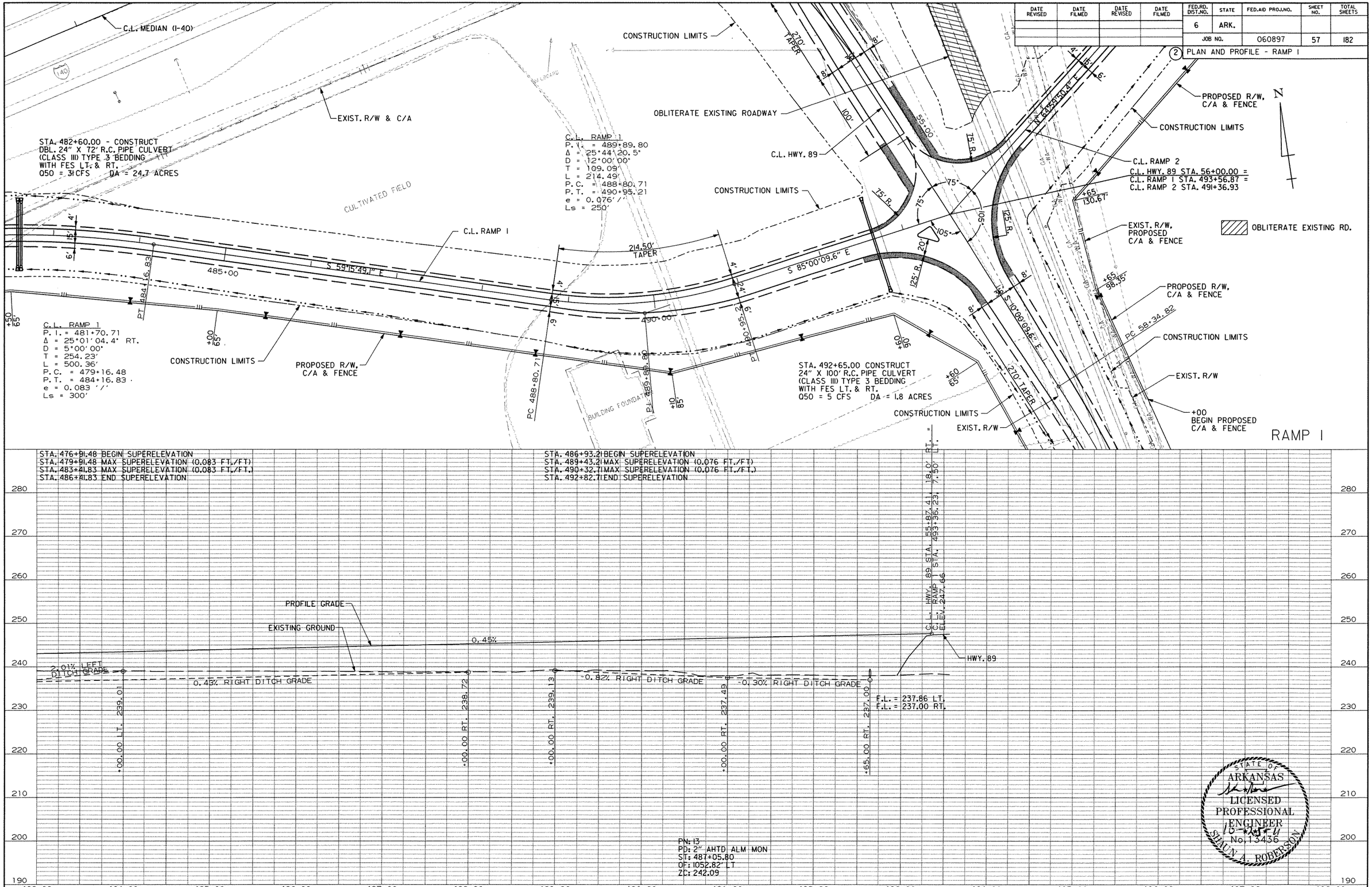
| | | | | JOB NO. | | 060897 | 57 | 182 |

2 PLAN AND PROFILE - RAMP I

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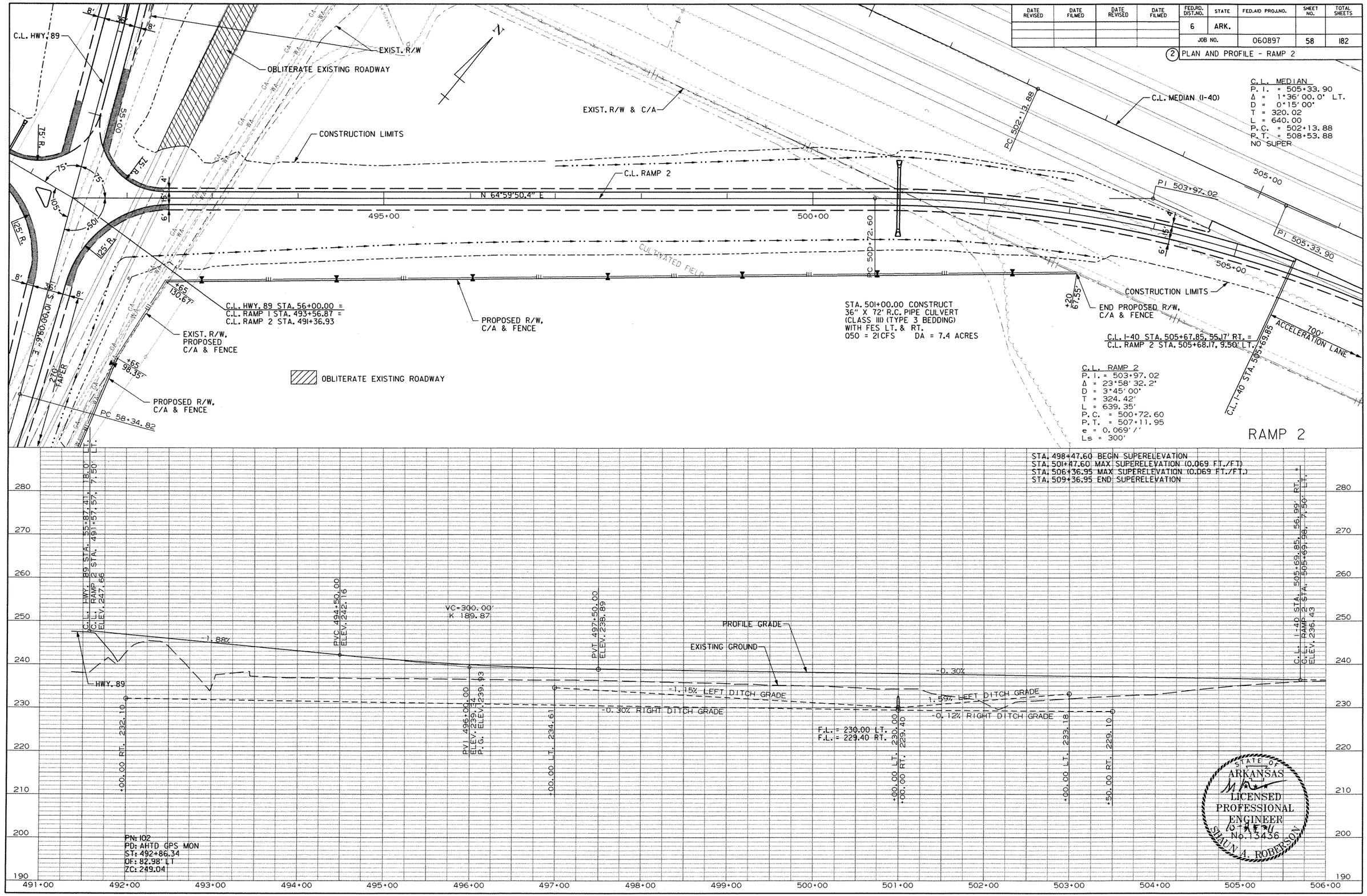
| | | | | JOB NO. | | 060897 | 58 | 182 |

(2) PLAN AND PROFILE - RAMP 2

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 59 | 182 |

(2) PLAN AND PROFILE - RAMP 3

# RAMP 3

C.L. MERGED RAMPS 3 & 4

PT 475+58.92

BEGIN CONCRETE BARRIER WALL STA. 478+55

PROPOSED R/W, C/A & FENCE

C.L. RAMP 4

CONSTRUCTION LIMITS

PC 473+91.58

C.L. MERGED RAMPS 3 & 4 STA. 479+70.17 =
C.L. RAMP 4 STA. 479+70.17, 16.50' RT.
C.L. RAMP 3 STA. 473+91.58, 16.50' RT.

PROPOSED R/W, C/A & FENCE

STA. 475+60.00 CONSTRUCT
29" X 18" X 68' R.C. ARCH PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 14 CFS DA = 4.7 ACRES

CONSTRUCTION LIMITS

C.L. RAMP 3

CONSTRUCTION LIMITS

C.L. RAMP 3
P.I. = 478+39.71
Δ = 86°22'13.6" LT.
D = 12°00'00"
T = 448.14
L = 719.75
P.C. = 473+91.58
P.T. = 481+11.33
e = 0.099'/'
Ls = 300'

P.I. 478+39.71

CULTIVATED FIELD

I-40 STA. 482+00 IN PLACE
18" X 104' R.C. PIPE CULVERT
WITH D.I. AND HDWL. LT.
REMOVE HDWL. LT. AND EXTEND
R.C. PIPE CULVERT 56' LT.
(CLASS III) TYPE 3 BEDDING
WITH FES LT.
18" R.C. PIPE = 60 LIN. FT.
18" FES = 1EA.

C/L LEVEE

C/L TRAIL

EXIST. R/W & C/A

C.L. I-40 STA. 485+83.38, 70.38' LT. =
C.L. RAMP 3 STA. 485+82.96, 12.50' RT.

END PROPOSED R/W, C/A & FENCE

C.L. RAMP 3
P.I. = 489+53.24
Δ = 5°42'30.0" LT.
D = 3°00'00"
T = 95.22
L = 190.28
P.C. = 488+58.02
P.T. = 490+48.30
NO SUPER

P.C. 488+58.02

C.L. MEDIAN (I-40)

S 84°19'55.2" E

STA. 483+77.81

N 89°59'50.4" E

STA. 473+91.58 (S.E. = 0.079 FT./FT.)
STA. 474+66.58 MAX SUPERELEVATION (0.099 FT./FT.)
STA. 480+36.33 MAX SUPERELEVATION (0.099 FT./FT.)
STA. 483+36.33 END SUPERELEVATION

C.L. RAMP 3 STA. 473+91.58, 7.50' RT. = C.L. MERGED RAMPS 3 & 4 STA. 479+70.17, 9.0' RT.
ELEV. 237.66

PVC 474+50.00
ELEV. 238.20

VC=200.00'
K 322.58

0.93%

1.55%

PVT 476+50.00
ELEV. 240.68

PROFILE GRADE

PVI 481+00.00
ELEV. 247.66
P.G. ELEV. 246.10

-1.57%

PVRC 483+00.00
ELEV. 244.52

VC=200.00'
K 157.48

PVT 485+00.00
ELEV. 242.65

-0.30%

C.L. I-40 STA. 485+85.37, 75.21' LT. =
C.L. RAMP 3 STA. 485+84.48, 7.50' RT.
ELEV. 242.99

EXISTING GROUND

-1.39% LEFT DITCH GRADE

0.89% RIGHT DITCH GRADE

2.45% RIGHT DITCH GRADE

-0.49% LEFT DITCH GRADE

0.50% LEFT DITCH GRADE

+91.58 LT. 231.51

+00.00 LT. 232.05

PVI 475+50.00
ELEV. 239.13
P.G. ELEV. 239.29

+50.00 RT. 233.58

F.I. = 232.76 LT.
F.I. = 233.58 RT.

PVC 478+00.00
ELEV. 240.56

+00.00 LT. 239.06

+00.00 RT. 237.50

+00.00 RT. 239.98

+91.00 LT. 236.41

PVI 484+00.00
ELEV. 242.96
P.G. ELEV. 243.27

+84.48 LT. 234.48

PN: 7
PD: 2" AHTD ALM MON
ST: 482+09.19
OF: 863.72' LT
ZC: 232.29

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 13436
SHAUN A. ROBERSON

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WORKSPACE: AHTD
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| | | | | JOB NO. | | 060897 | 60 | 182 |

(2) PLAN AND PROFILE RAMP 4 AND 3 & 4

I-40 STA. 472+00 IN PLACE
18" X 88' R.C. PIPE CULVERT
WITH D.I. AND HDWL. LT.
REMOVE HDWL. LT. AND EXTEND
R.C. PIPE CULVERT 18' LT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT.
18" R.C. PIPE = 22 LIN. FT.
18" FES = 1EA.

DENOTES FULL DEPTH SHOULDERS

C.L. RAMP 4
P.I. = 476+32.26
Δ = 87°53' 25.0" LT.
D = 10°00' 00"
T = 552.24
L = 878.90
P.C. = 470+80.02
P.T. = 479+58.92
e = 0.094'/'
Ls = 300'

EXIST. R/W & C/A
PC 470+80.02
C.L. I-40 STA. 471+69.56, 56.47' LT. = C.L. RAMP 4 STA 471+68.45, 9.50' RT.
BEGIN PROPOSED R/W, C/A & FENCE
+45 616.60
CONSTRUCTION LIMITS
+00
PROPOSED R/W, C/A & FENCE
+30 75
PT 479+58.92
BEGIN CONCRETE BARRIER WALL STA. 478+55
C.L. MERGED RAMPS 3 & 4 STA. 479+70.17 = C.L. RAMP 4 STA. 479+70.17, 16.50' RT. C.L. RAMP 3 STA. 473+91.58, 16.50' RT.
END CONCRETE BARRIER WALL STA. 482+30
+10 80
+00 95
1251R.
C.L. MERGED RAMPS 3 & 4
90°00'00"
C.L. HWY. 89 STA. 29+50.00 = C.L. MERGED RAMPS 3 & 4 STA. 483+14.92
30.00
S 87°57'41.6" E
36.18
PROPOSED R/W, C/A & FENCE
END PROPOSED C/A & FENCE
+50 70
EXIST. R/W
CONSTRUCTION LIMITS
PROPOSED R/W
87.79
PI 472+83.01
475+00
6' 15' 4'
C.L. MEDIAN (I-40)
PT 473+78.07
C.L. RAMP 4
CONSTRUCTION LIMITS
30'
4' 12' 6'
475+00
PC 473+91.58
+00 80
C.L. RAMP 3
6' 15' 4' 4' 24' 6'
480+00
15' 12' 15' 6'
STA. 481+00
100' TAPER
+00 105
+80 85
125R.
CONSTRUCTION LIMITS
PROPOSED R/W, C/A & FENCE
MERGED RAMPS 3 & 4 STA. 481+70.00 CONSTRUCT
24" X 112' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 9 CFS DA = 3.3 ACRES
RAMP 3 STA. 475+60.00 CONSTRUCT
29" X 18" X 68' R.C. ARCH PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 14 CFS DA = 4.7 ACRES
+50 BEGIN PROPOSED C/A & FENCE
EXIST. R/W
C.L. HWY. 89
PROPOSED R/W
18' 24' 18'

STA. 469+80.27 BEGIN SUPERELEVATION
STA. 472+80.27 MAX SUPERELEVATION (0.094 FT./FT.)
STA. 478+83.92 MAX SUPERELEVATION (0.094 FT./FT.)
STA. 479+70.17 (S.E. = 0.073 FT./FT.)

STA. 479+70.17 LT. RAMP (S.E. = 0.073 FT./FT.)
STA. 479+70.17 RT. RAMP (S.E. = 0.079 FT./FT.)
STA. 481+83.92 LT. RAMP END SUPERELEVATION
STA. 481+95.17 RT. RAMP END SUPERELEVATION

RAMP 4 AND MERGED RAMPS 3 & 4

C.L. I-40 STA. 471+67.56, 58.19' LT. = C.L. RAMP 4 STA. 471+66.75, 7.50' RT.
ELEV. 244.35
PVC 472+00.00
ELEV. 244.25
+11.00 LT. 236.80
VC=200.00'
K 317.47
PVI 473+00.00
ELEV. 243.95
P.G. ELEV. 243.80
PVT 474+00.00
ELEV. 243.02
PROFILE GRADE
EXISTING GROUND
-0.30%
-0.93%
-0.66% LEFT DITCH GRADE
-0.30% LEFT DITCH GRADE
+00.00 LT. 232.26
C.L. RAMP 4 STA. 479+70.17 7.50' RT. = 9.0' LT.
ELEV. 237.72
+70.17 LT. 232.05
+70.17 RT. 231.51
C.L. MERGED RAMPS 3 & 4 STA. 479+70.17 = C.L. RAMP 4 STA. 479+70.17, 16.50' RT. C.L. RAMP 3 STA. 473+91.58, 16.50' RT.
ELEV. 238.37
PVC 480+55.00
ELEV. 237.49
EXISTING GROUND
PROFILE GRADE
VC=200.00'
K 139.86
-0.93%
-0.30% LEFT DITCH GRADE
-0.50% RIGHT DITCH GRADE
3.63% LEFT DITCH GRADE
PVI 481+65.00
ELEV. 236.56
P.G. ELEV. 236.92
+70.00 LT. 231.45
+40.00 RT. 230.16
+50.00 LT. 234.35
PVT 482+65.00
ELEV. 237.06
C.L. HWY. 89 STA. 29+50 18.0' RT. = C.L. MERGED RAMPS 3 & 4 STA. 482+96.92
ELEV. 237.22
-0.50%
F.L. = 231.45 LT.
F.L. = 230.5 RT.

RAMP 4
MERGED RAMPS 3 & 4

471+00 472+00 473+00 474+00 475+00 476+00 477+00 478+00 479+00 480+00 481+00 482+00 483+00 484+00
290 280 270 260 250 240 230 220 210 200

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-24-11
No. 13436
SHAUN A. ROBERSON

PN: 9
PD: 2' AHTD ALM MON
ST: 481+87.20
OF: 982.79' LT
ZC: 240.63

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WORKGROUP: AHTD
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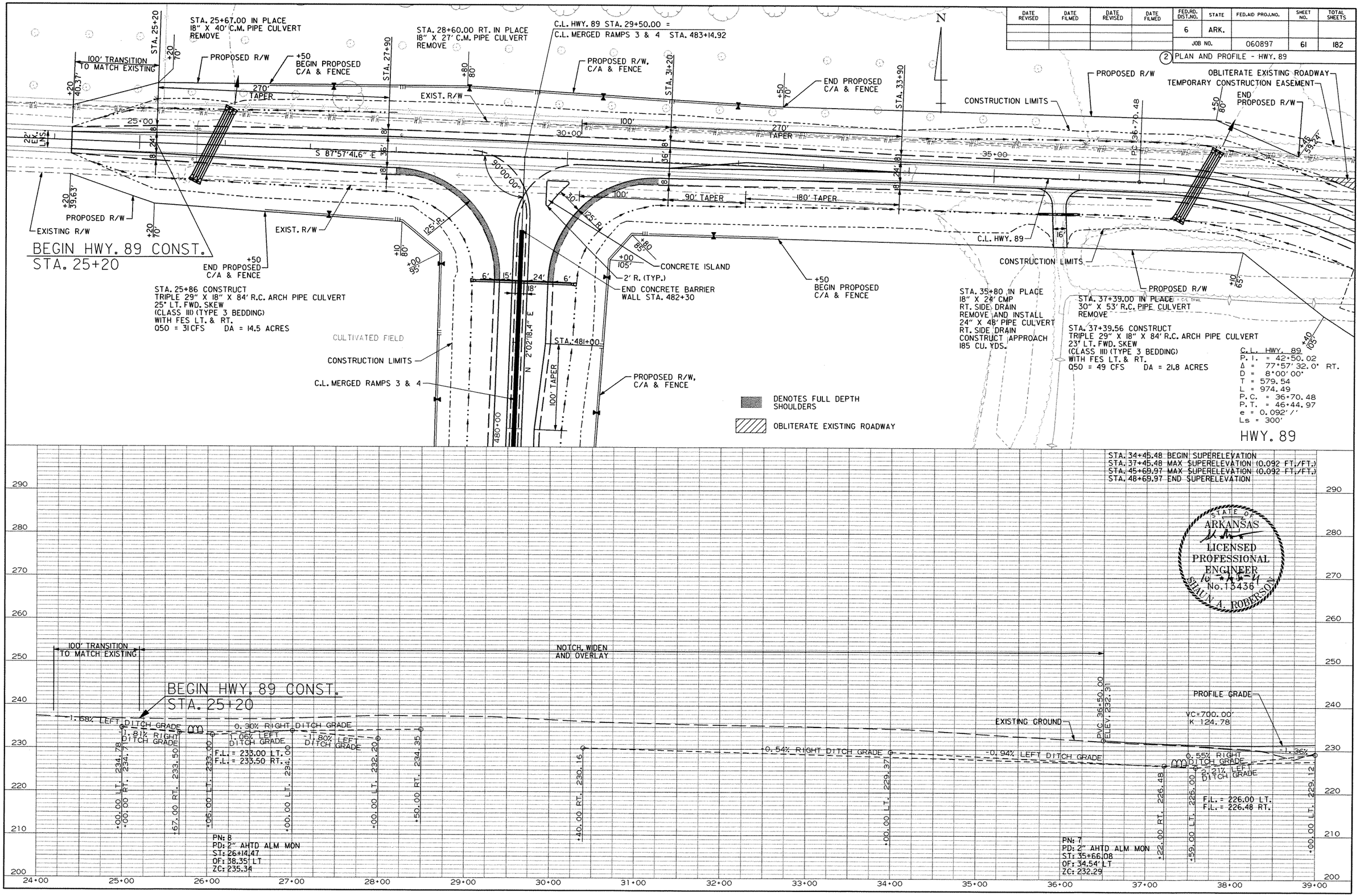
| | | | | JOB NO. | | 060897 | 61 | 182 |

(2) PLAN AND PROFILE - HWY. 89

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 62 | 182 |

(2) PLAN AND PROFILE - HWY. 89

STA. 42+38.00 LT. IN PLACE
36" X 55' R.C. PIPE CULVERT
RETAIN

PROPOSED R/W

CONSTRUCTION LIMITS

HISTORICAL STRUCTURE

OBLITERATE EXISTING ROADWAY

STA. 41+18.00 LT. IN PLACE
24" X 54' R.C. PIPE CULVERT
RETAIN

EXIST. R/W

BEGIN PROPOSED R/W

TEMPORARY CONSTRUCTION EASEMENT

C.L. HWY. 89

CONSTRUCTION LIMITS

STA. 41+00.00 CONSTRUCT
DOUBLE 30" X 84' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 28 CFS DA = 12.7 ACRES

PROPOSED R/W

C.L. HWY. 89
P. I. = 42+50.02
Δ = 77°57' 32.0" RT.
D = 8°00' 00"
T = 579.54
L = 974.49
P. C. = 36+70.48
P. T. = 46+44.97
e = 0.092' /'
Ls = 300'

POND

C.L. HWY. 89 STA. 46+00.00 =
C.L. SAYLOR RD. STA. 10+00.00

STA. 48+57.37 CONSTRUCT
TYPE N-2 DI. RT.
12" X 43' Z.C.C.S.P.
OUTLET ON RT.

EXIST. R/W & C/A

C.L. RAMP 3

16' GATE

C.L. SAYLOR RD.

STA. 48+64.43 CONSTRUCT
TYPE N-2 DI. LT.
12" X 71' Z.C.C.S.P.
OUTLET ON LT.

EXIST. R/W

CONSTRUCTION LIMITS

PROPOSED C/A AND FENCE

BEGIN PROPOSED C/A & FENCE

END PROPOSED C/A & FENCE

BEGIN PROPOSED C/A & FENCE

BRIDGE NO. 3226 IN PLACE
212'-2½" X 26'-0"
BRIDGE CONSISTING OF
A STEEL SUPERSTRUCTURE SUPPORTED
BY A CONCRETE SUBSTRUCTURE.
REMOVE AS EXISTING BRIDGE STRUCTURE = 1.00
LUMP SUM.

EXISTING GUARDRAIL REMOVE

CONSTRUCTION LIMITS

STA. 51+52.60 CONSTRUCT
TYPE N-2 DI. LT.
12" X 43' Z.C.C.S.P.
OUTLET ON LT.

270' TAPER

180' TAPER

90' TAPER

STA. 51+45.66 CONSTRUCT
TYPE N-2 DI. RT.
12" X 72' Z.C.C.S.P.
OUTLET ON RT.

CONSTRUCTION LIMITS

C.L. HWY. 89 STA. 50+00.00 =
C.L. I-40 STA. 491+42.58

STA. 48+98.91 TO STA. 51+11.09
CONSTRUCT 212'-2¼" X 40' BRIDGE
210'-0" CONTINUOUS COMPOSITE
PLATE GIRDER UNIT (100'-110')

C.L. MEDIAN (I-40)

EXIST. R/W & C/A

OBLITERATE EXISTING ROADWAY

HWY. 89

CONCRETE DITCH PAVING (TYPE B)

| STA. | STA. | SIDE | "W" | SQ. YDS. |
|---|---|---|---|---|
| 48+23 | 49+03 | BEHIND MSE WALL = 258 LIN. FT. | 4'-0" | 114.7 |
| 51+06 | 51+82 | BEHIND MSE WALL = 244 LIN. FT. | 4'-0" | 108.4 |

| C.L. HWY. 89 STATIONING | GUARDRAIL (TYPE A) | THRIE BEAM GUARDRAIL TERMINAL | GUARDRAIL TERMINAL (TYPE 2) |
|---|---|---|---|
| STA. 46+43.33 TO STA. 48+87.08 RT. | = 175 LIN. FT. | 1 EACH | 1 EACH |
| STA. 47+75.38 TO STA. 48+94.13 LT. | = 50 LIN. FT. | 1 EACH | 1 EACH |
| STA. 51+15.87 TO STA. 52+34.62 RT. | = 50 LIN. FT. | 1 EACH | 1 EACH |
| STA. 51+22.93 TO STA. 53+66.68 LT. | = 175 LIN. FT. | 1 EACH | 1 EACH |

STA. 54+45.48 BEGIN SUPERELEVATION
STA. 57+45.48 MAX SUPERELEVATION (0.092 FT./FT.)
STA. 45+69.97 MAX SUPERELEVATION (0.092 FT./FT.)
STA. 48+69.97 END SUPERELEVATION

PROFILE GRADE

EXISTING GROUND

PVI 40+00.00
ELEV. 227.55
P.G. ELEV. 232.46

VC=700.00'
K 124.78

PVT 43+50.00
ELEV. 242.92

PVC 46+50.00
ELEV. 255.17

PVI 50+00.00
ELEV. 270.05
P.G. ELEV. 263.05

PVT 53+50.00
ELEV. 256.92

BEGIN BRIDGE
STA. 48+98.91

END BRIDGE
STA. 51+11.09

VC=700.00'
K 87.50

SM-1

SM-1

SELECT GRANULAR BACKFILL

4.25%

-3.75%

-1.36%

0.55% RIGHT DITCH GRADE

0.95% RIGHT DITCH GRADE

2.37% LEFT DITCH GRADE

0.74% RIGHT DITCH GRADE

0.33% LEFT DITCH GRADE

1.47% LEFT DITCH GRADE

+00.00 RT. 228.00

+00.00 LT. 226.81
+00.00 RT. 227.05

F.L. = 226.81 LT.
F.L. = 227.05 RT.

+00.00 LT. 236.28

+85.00 LT. 229.65

+00.00 LT. 229.70

+30.00 RT. 232.44

+25.00 LT. 233.00

PN: 6
PD: 2" AHTD ALM MON
ST: 42+20.17
OF: 240.03' LT
ZC: 230.05

PN: 13
PD: 2" AHTD ALM MON
ST: 45+38.77
OF: 122.99' LT
ZC: 242.09

PN: 15
PD: 2" AHTD ALM MON
ST: 49+20.16
OF: 197.21' LT
ZC: 259.20

PN: 3
PD: 2" AHTD ALM MON
ST: 51+55.93
OF: 189.07' LT
ZC: 259.30

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-28-20
No. 13436
SHAUN A. ROBERSON

saroberson 10/20/2011 2:28:53 PM
WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 63 | 182 |

(2) PLAN AND PROFILE - HWY. 89

REMOVE EXISTING BRIDGE AND OBLITERATE EXISTING ROADWAY FOLLOWING THE CONSTRUCTION OF HWY. 89 AND SAYLOR RD. GRADE ABANDONED ROADWAY TO NATURAL CONDITION IF AND WHERE DIRECTED BY THE ENGINEER. TO BE PAID FOR UNDER ITEM 210 - UNCLASSIFIED EXCAVATION.

C.L. HWY. 89
P.I. = 60+18.95
Δ = 11°00'49.6" RT.
D = 3°00'00"
T = 184.13
L = 367.13
P.C. = 58+34.82
P.T. = 62+01.95
e = 0.049'/'
Ls = 200'

EXIST. R/W, PROPOSED C/A & FENCE
PROPOSED R/W, C/A & FENCE
CONSTRUCTION LIMITS
+00 BEGIN PROPOSED C/A & FENCE
C.L. HWY. 89
PROPOSED R/W
EXIST. R/W
CONSTRUCTION LIMITS
C.L. RAMP 2
C.L. RAMP 1
PROPOSED R/W, C/A & FENCE
+00 END PROPOSED C/A & FENCE
PROPOSED R/W
EXIST. R/W
100' TRANSITON TO MATCH EXISTING
BEGIN PROPOSED R/W
EXIST. R/W
END PROPOSED R/W
END HWY. 89 CONST. STA. 63+60
270' TAPER
244.5' TAPER
S 10°00'09.6" E
S 1°00'40.0" W
S 85°00'08.6" E
C.L. HWY. 89 STA. 56+00.00 =
C.L. RAMP 1 STA. 493+56.87
C.L. RAMP 2 STA. 491+36.93

STA. 64+13 INSTALL
24" X 58' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH
55 CU. YDS.

STA. 60+00 IN PLACE
18" X 30' CMP
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH
55 CU. YDS.

STA. 61+24.00 CONSTRUCT
TRIPLE 29" X 18" X 74' R.C. ARCH PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 33 CFS DA = 14.3 ACRES

STA. 61+28.00 IN PLACE
30" X 45' R.C. PIPE CULVERT
W/ HDWLS. LT. & RT.
REMOVE

STA. 64+13 IN PLACE
18" X 25' CMP
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH
5 CU. YDS.

DENOTES FULL DEPTH SHOULDERS

OBLITERATE EXISTING ROADWAY

HWY. 89

STA. 56+84.82 BEGIN SUPERELEVATION
STA. 58+84.82 MAX SUPERELEVATION (0.049 FT./FT.)
STA. 61+51.95 MAX SUPERELEVATION (0.049 FT./FT.)
STA. 63+51.95 END SUPERELEVATION

PROFILE GRADE
EXISTING GROUND
3.75%
PVC 56+25.00 ELEV. 246.61
VC=500.00' K 123.46
PVI 58+75.00 ELEV. 237.24 P.G. ELEV. 239.77
PVT 61+25.00 ELEV. 237.99
0.30%
0.87% RIGHT DITCH GRADE
0.50% RIGHT DITCH GRADE
0.31% LEFT DITCH GRADE
0.55% RIGHT DITCH GRADE
0.68% LEFT DITCH GRADE
NOTCH, WIDEN AND OVERLAY
100' TRANSITION TO MATCH EXISTING
END HWY. 89 CONST. STA. 63+60
+40.00 RT. 237.00
+50.00 LT. 232.15
+00.00 RT. 235.61
+24.00 LT. 233.61 F.L. = 233.61 LT.
+24.00 RT. 234.00 F.L. = 234.00 RT.
+00.00 LT. 235.49
+00.00 RT. 235.53

PN: 102
PD: AHTD GPS MON
ST: 54+81.18
OF: 122.85' LT
ZC: 249.04

PN: 1
PD: 2 AHTD ALM MON
ST: 63+97.60
OF: 42.35' RT
ZC: 238.24

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-★-11
No. 13436
SHAUN A. ROBERSON

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WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 64 | 182 |

(2) PLAN AND PROFILE - SAYLOR RD.

C.L. SAYLOR RD. STA. 10+00.00 =
C.L. HWY. 89 STA. 46+00.00

PT 490+48.30

C.L. HWY. 89

BEGIN PROPOSED C/A & FENCE

STA. 11+42.00 CONSTRUCT
4' X 2' X 195' R.C. BOX CULVERT
24° LT. FWD. SKEW
WITH 3:1 WINGS LT. & RT.
Q10 = 36 CFS DA = 38.2 ACRES

CONSTRUCTION LIMITS

REMOVE EXISTING BRIDGE AND OBLITERATE EXISTING ROADWAY FOLLOWING THE CONSTRUCTION OF HWY. 89 AND SAYLOR RD. GRADE ABANDONED ROADWAY TO NATURAL CONDITION IF AND WHERE DIRECTED BY THE ENGINEER. TO BE PAID FOR UNDER ITEM 210 - UNCLASSIFIED EXCAVATION.

END PROPOSED C/A & FENCE

EXIST. R/W

C.L. EXISTING HWY 89

C.L. SAYLOR RD.

PROPOSED R/W

CONSTRUCTION LIMITS

HISTORICAL STRUCTURE

C.L. SAYLOR RD.
P.I. = 12+77.94
Δ = 73°18'39.8" LT.
D = 24°00'00"
T = 177.66
L = 305.46
P.C. = 11+00.28
P.T. = 14+05.74
e = 0.10'/'
Ls = 250'

OBLITERATE EXISTING ROADWAY

PERMANENT CONSTRUCTION EASEMENT

50' TRANSITION TO MATCH EXISTING

SAYLOR RD. STA. 16+70

STA. 15+71 IN PLACE
18" X 19' CMP
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH
60 CU. YDS.

HWY. 89 STA. 42+38.00 LT. IN PLACE
36" X 55' R.C. PIPE CULVERT
RETAIN

OBLITERATE EXISTING ROADWAY

SAYLOR RD.

CONCRETE DITCH PAVING (TYPE B)

| STA. | STA. | SIDE | "W" | SQ. YDS. |
|---|---|---|---|---|
| 14+00 | 15+00 | LT. = 100 LIN. FT. | 6'-0" | 66.7 |

STA. 10+12.00 BEGIN SUPERELEVATION
STA. 12+53.01 MAX SUPERELEVATION (0.096 FT./FT.)
STA. 14+94.02 END SUPERELEVATION

PVC 10+15.00
ELEV. 254.91

PVI 10+12.00
ELEV. 254.80

PVI 11+40.00
ELEV. 259.51
P.G. ELEV. 256.17

PVT 12+65.00
ELEV. 250.76

PVC 14+15.00
ELEV. 240.26

PVI 15+40.00
ELEV. 231.51
P.G. ELEV. 233.56

PVT 16+65.00
ELEV. 230.98

PVI 16+70.00
ELEV. 230.96

3.68%

VC=250.00'
K 23.41

PROFILE GRADE

7.00%

VC=250.00'
K 37.99

EXISTING GROUND

-1.05% LEFT DITCH GRADE

0.42%

F.L. = 229.30 LT.
F.L. = 229.65 RT.

+00.00 LT. 238.28

+00.00 LT. 230.00

+00.00 LT. 228.95

PN: 13
PD: 2" AHTD ALM MON
ST: 11+28.23
OF: 70.51' LT
ZC: 242.09

PN: 6
PD: 2" AHTD ALM MON
ST: 16+42.78
OF: 301.03' LT
ZC: 230.05

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-25-11
No. 13436
SHAUN A. ROBERTSON

sarobertson 10/20/2011 2:31:03 PM
WORKSPACE: AHTD
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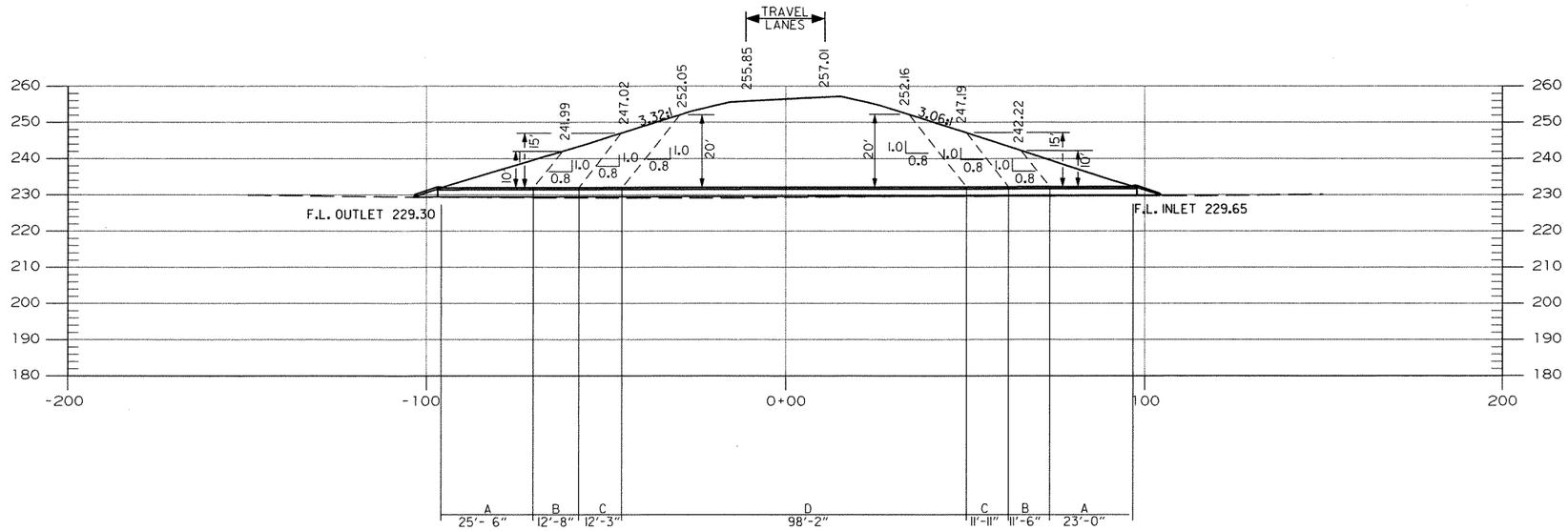
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 65 | 182 |
| | | | | (2) | CULVERT DIAGRAM | | | |




SEE STD. DWG. NO. W-X303-1 AND W-X30 FOR DETAILS AND QUANTITIES OF WINGS. SEE STD. DWG. R-130X-1 AND R-100X-X3 FOR DETAILS AND QUANTITIES OF BARREL.

## SAYLOR RD. STATION 11+42 - CULVERT SECTION

4' X 2' X 195' R.C. BOX CULVERT
24° LT. FWD. SKEW
WITH 3:1 WINGS LT. & RT.

| STATION | LOCATION | DESCRIPTION | DIMENSIONS | | | BOX CULVERTS | | | STANDARD DRAWINGS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | CLASS S CONCRETE ROADWAY | REINFORCING STEEL (GR 60) ROADWAY | UNCL. EXE. FOR STRUCT. - ROADWAY | |
| | | | W | H | L | CU. YDS. | LBS. | CU. YDS. | |
| 11+42 | SAYLOR RD. | 4' X 2' X 195' R.C. BOX CULVERT, 24° LT. FWD. SKEW WITH 3:1 WINGS LT. & RT. | 4 | 2 | 195 | - | - | - | RCB-1, RCB-2, R-130X-1, W-X303-1 |
| | | | | | | | | | |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
10-25-11
No. 13436
SHAUN A. ROBERSON

CULVERT DIAGRAM

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WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 66 | 182 |
| | | | | (1) 07205 | | LAYOUT | | 51768 |

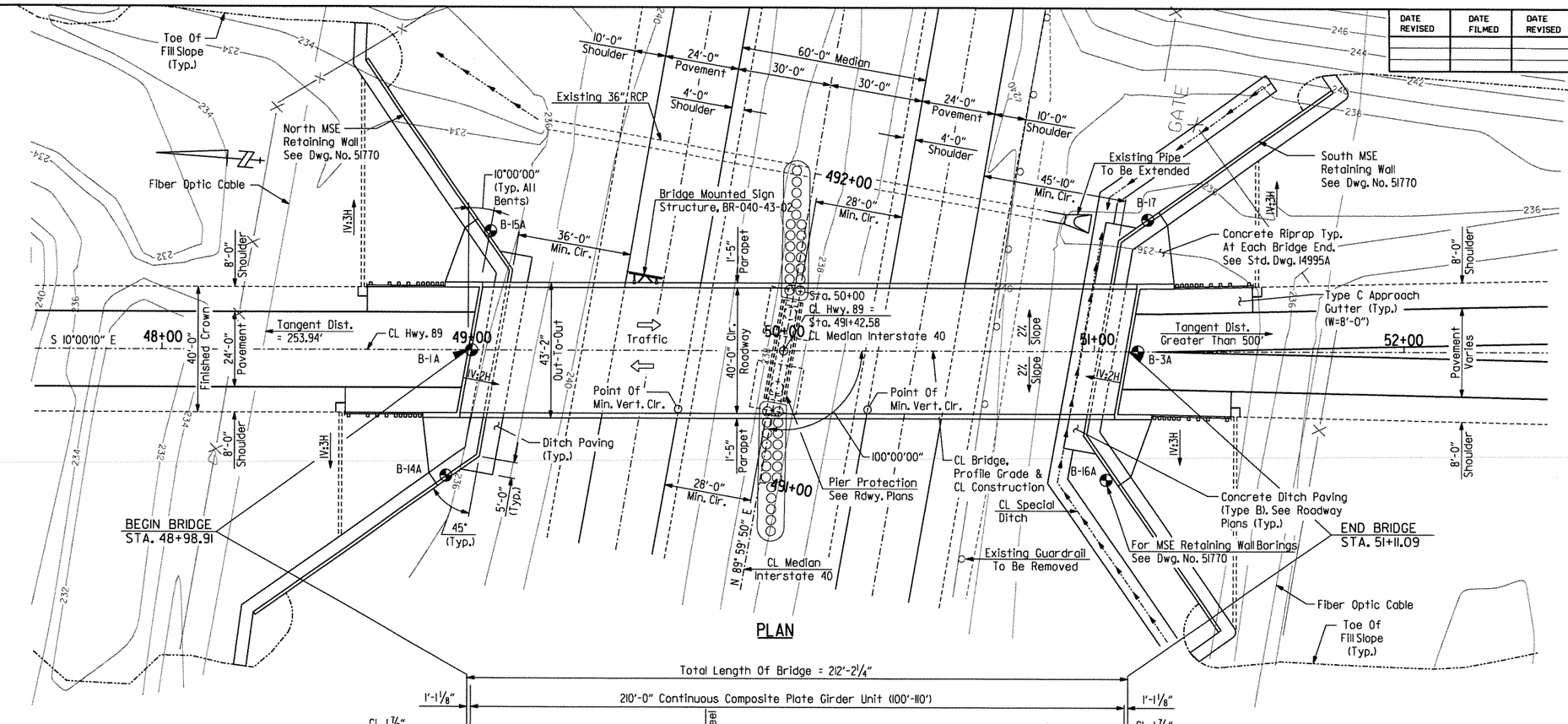
FOR R/W DATA AND GUARDRAIL DETAILS, SEE ROADWAY PLANS

Note:
Use Type C Approach Gutters (W=8'-0") At Each End Of Bridge. See Std. Dwg. No. 2016C.

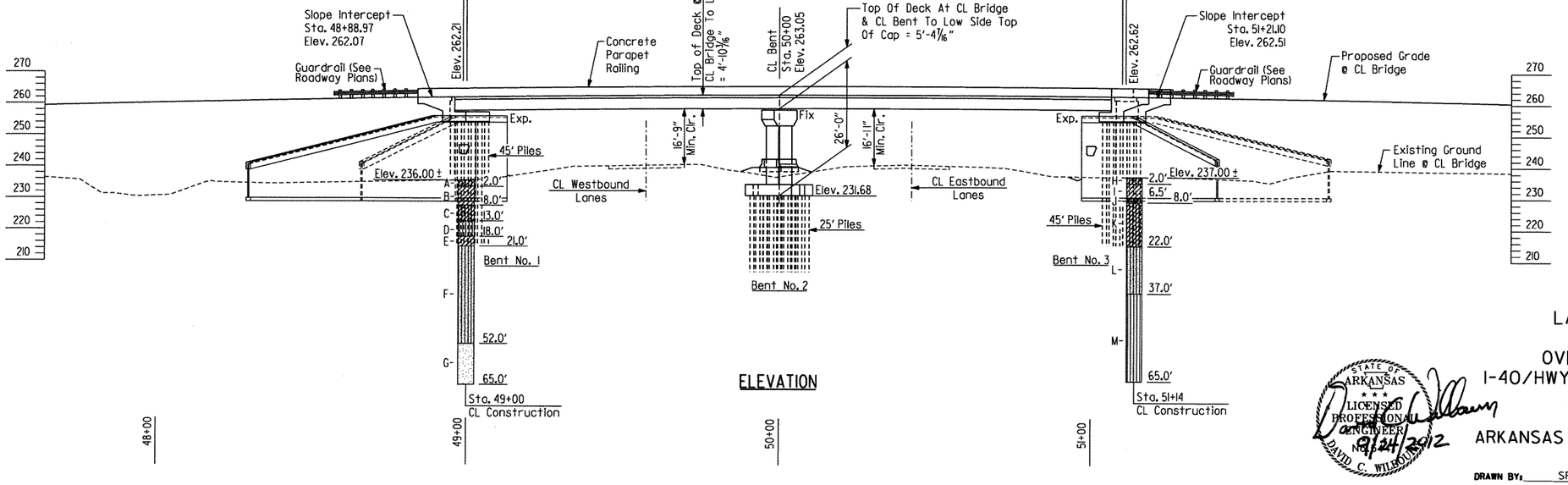
Use Type N-2 Special Drop Inlet At Each End Of Bridge.

For General Notes, Boring Legend & "N" Values, See Dwg. No. 51769.

For Details Of Bridge Mounted Sign Strucutre, BR-040-43-02, See Dwg. No. 51788-51790.




PLAN




ELEVATION

PVI Sta. 50+00
Elev. 270.05
V.C. = 700'

+4.25% -3.75%

VERTICAL CURVE DATA
Highway 89
(Profile Grade Along CL Bridge)

Note:
Stations And Elevations Shown Are Along CL Bridge. Elevations Shown Are At Working Point.

# SHEET 1 OF 5
# LAYOUT OF BRIDGE
# HIGHWAY 89
# OVER INTERSTATE 40
# I-40/HWY. 89 INTCHG. (LONOKE) (S)
# LONOKE COUNTY
ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS ★★★ LICENSED PROFESSIONAL ENGINEER No. 9/24/2012 DAVID C. WILHOIT

BRIDGE ENGINEER

DRAWN BY: SRY DATE: APRIL 2010 FILENAME: B060897_LI.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: 1"=20'
DESIGNED BY: SRY DATE: SEPT 2009

BRIDGE NO. 07205 DRAWING NO. 51768

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 67 | 182 |
| | | | | 07205 | | LAYOUT | | 51769 |

## GENERAL NOTES

BENCH MARK: PN: 15, PD: 2" AHTD ALM MON., ST: 493+22.92
OF: 112.87' LT.
ZC: 259.20

CONSTRUCTION SPECIFICATIONS: 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.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 4th Edition (2007) with 2008 Interim Revisions

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: 2 $S_1$ = 0.104, $F_v$ = 2.38

MATERIALS AND STRENGTHS:

| | |
|---|---|
| Class S(AE) - Bridge Concrete (Superstructure) | f'c = 4000 psi |
| Class S - Bridge Concrete (Substructure) | f'c = 3500 psi |
| Reinforcing Steel (AASHTO M 31 Or M 53, GR. 60) | fy = 60,000 psi |
| Structural Steel (AASHTO M 270, GR. 50) | Fy = 50,000 psi |
| Structural Steel (AASHTO M 270, GR. 36) | Fy = 36,000 psi |

FORM INSERT: State Of Arkansas Form Insert to be used on MSE walls (4 Locations). See Dwg. No. 51770.

PAINT: All Structural Steel except galvanized members, some surfaces in contact with concrete, and as otherwise noted, shall be painted as specified in Subsection 807.75. The color of the paint shall be Green and shall match Federal Standard 595B, Color Chip No. 34097.

CONCRETE PILING: All piling shall be 18" square precast concrete and shall be driven with an approved air, steam or diesel hammer to a Minimum Safe Bearing Capacity (Allowable) of 62 tons per pile for Bents 1 & 3 and 45 tons per pile for Bent 2. Drive all piles in Bents 1 & 3 to a minimum penetration of 10' below MSE wall leveling pad and all piles in Bent 2 to a minimum penetration of 20' below bottom of footing. Lengths of piling shown are for estimating quantities only. Actual lengths are to be determined in the field. Drive one 55' test pile in Bents 1 & 3 and one 35' test pile in Bent 2.

PREBORING: Preboring may be required to obtain the minimum pile penetration requirements. The size and depth of preboring, if required, will be determined by the Engineer. The Contractor shall be responsible for keeping the prebored holes free from debris prior to backfilling which may require the use of temporary casings or other methods. After driving is completed, the prebored hole shall be backfilled with an approved non-shrink grout, or other approved material to completely fill voids. The cost of preboring, if required, temporary casings and backfill will not be paid for directly but will be considered subsidiary to the item "Concrete Piling".

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

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

TEXTURED COATING FINISH: Class 3 Textured Coating Finish shall be applied to all areas as specified in Special Provision Job 060897 "Textured Coating Finish."

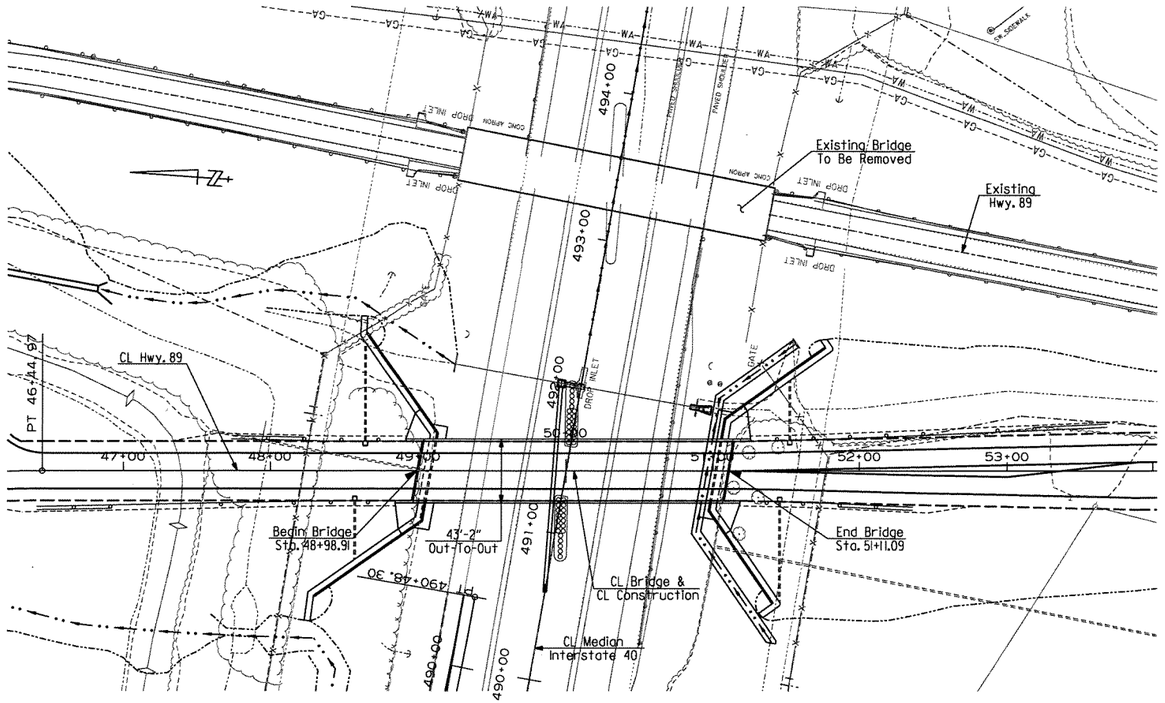
BORING LOGS: Boring Logs may be obtained from Programs And Contracts Division.

PILE FOOTING: The top of footings shall be set a minimum of 2'-0" below finished ground. Foundations for footings shall be prepared in accordance with Section 801.04 and backfilled in accordance with Section 801.08 of the Standard Specifications.

| DETAIL DRAWINGS: | DRAWINGS NO: |
|---|---|
| End Bents | 51773-51776 |
| Interior Bent | 51777-51778 |
| 210' Cont. Comp. Plate Girder Unit | 51779-51786 |
| Elastomeric Bearings | 51787 |
| Bridge Mounted Sign Structure | 51788-51790 |
| Type C Approach Gutters | 2016C |
| Concrete Piling | 14964 |
| Concrete Riprap | 14995A |

EXISTING BRIDGE: Existing Bridge No. 03226 is 29.25' wide and 212.21' long and cosists of simple spans with steel beams and a concrete deck supported by a concrete substructure with concrete piling. The existing bridge is located approximately 150' East of the new bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing bridge No. 03226 shall be removed in accordance with Section 205 of the Standard Specifications. All material from the existing bridge shall become property of the Contractor, with the exception of the approximately 128 concrete guardrail posts from the bridge approaches and the tubular bridge rail with its supports and hardware (bolts, etc.), which shall remain the property of AHTD District 6.




## BORING LEGEND

A - Firm tan and brown silty clay with clayey silt pockets, rootlets and ferrous stains.
B - Stiff gray and reddish brown clay with ferrous stains.
C - Stiff reddish tan clayey silt, slightly sandy with clay pockets.
D - Medium dense tan silt, slightly clayey.
E - Stiff tan, brown and gray fine sandy clay.
F - Dense tan fine sandy silt.
G - Dense to very dense tan fine to medium sand with trace fine gravel.
H - Firm tan and gray silty clay with ferrous stains.
I - Stiff tan, gray and reddish brown clay, sandy with ferrous stains.
J - Very stiff reddish tan silty clay with clayey silt pockets.
K - Very stiff gray and tan silty clay.
L - Dense tan fine sandy silt, slightly clayey.
M - Dense tan silty fine sand.
N - Stiff tan and gray clay with ferrous nodules and surface organics.
O - Stiff reddish tan clayey silt with silty clay pockets and seams.
P - Firm to stiff reddish tan silty clay.
Q - Firm reddish tan, tan and gray clay with surface organics.
R - Stiff gray and tan clay with ferrous nodules.
S - Medium dense to dense reddish tan silt with occasional silty clay seams and pockets.
T - Very stiff tan and gray silty clay.
U - Stiff reddish tan and gray clay with silt pockets and surface organics.
V - Medium dense reddish tan silt, slightly clayey with silty clay seams and pockets.
W - Stiff reddish tan, tan and gray silty clay.
X - Very stiff tan and gray clayey silt with silty clay seams.
Y - Very loose brown silt with organics.
Z - Dense reddish tan silt.

## LOCATION SKETCH

## "N" VALUES

| Sta. 49+00 at CL Construction | Sta. 51+14 at CL Construction | Sta. 48+92, 40' Rt. Of CL Construction | Sta. 49+06, 38' Lt. Of CL Construction | Sta. 51+04, 41' Rt. Of CL Construction | Sta. 51+17, 42' Lt. Of CL Construction |
|---|---|---|---|---|---|
| 0.5-1.5, N=9 | 0.5-1.5, N=9 | 0.5-1.5, N=12 | 0.5-1.5, N=9 | 0.5-1.5, N=12 | 0.5-1.5, N=11 |
| 2.5-3.5, N=12 | 2.5-3.5, N=17 | 2.5-3.5, N=13 | 2.5-3.5, N=14 | 2.5-3.5, N=14 | 2.5-3.5, N=21 |
| 4.5-5.5, N=16 | 4.5-5.5, N=19 | 4.5-5.5, N=19 | 4.5-5.5, N=23 | 4.5-5.5, N=22 | 4.5-5.5, N=24 |
| 6.5-7.5, N=22 | 6.5-7.5, N=36 | 6.5-7.5, N=14 | 6.5-7.5, N=31 | 6.5-7.5, N=15 | 6.5-7.5, N=25 |
| 9.0-10.0, N=12 | 9.0-10.0, N=32 | 9.0-10.0, N=5 | 9.0-10.0, N=19 | 9.0-10.0, N=13 | 9.0-10.0, N=42 |
| 14.0-15.0, N=15 | 14.0-15.0, N=36 | 14.0-15.0, N=25 | 14.0-15.0, N=24 | 14.0-15.0, N=36 | 14.0-15.0, N=43 |
| 19.0-20.0, N=18 | 19.0-20.0, N=41 | 19.0-20.0, N=30 | 19.0-20.0, N=34 | 19.0-20.0, N=35 | 19.0-20.0, N=35 |
| 24.0-25.0, N=41 | 24.0-25.0, N=38 | | | | |
| 29.0-30.0, N=46 | 29.0-30.0, N=40 | | | | |
| 34.0-35.0, N=49 | 34.0-35.0, N=43 | | | | |
| 39.0-40.0, N=32 | 39.0-40.0, N=38 | | | | |
| 44.0-45.0, N=46 | 44.0-45.0, N=39 | | | | |
| 49.0-50.0, N=52 | 49.0-50.0, N=57 | | | | |
| 54.0-55.0, N=54 | 54.0-55.0, N=52 | | | | |
| 59.0-60.0, N=54 | 59.0-60.0, N=53 | | | | |
| 64.0-65.0, N=50/8" | 64.0-65.0, N=57 | | | | |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
DAVID C. WILBOURN
9-27-2012

BRIDGE ENGINEER

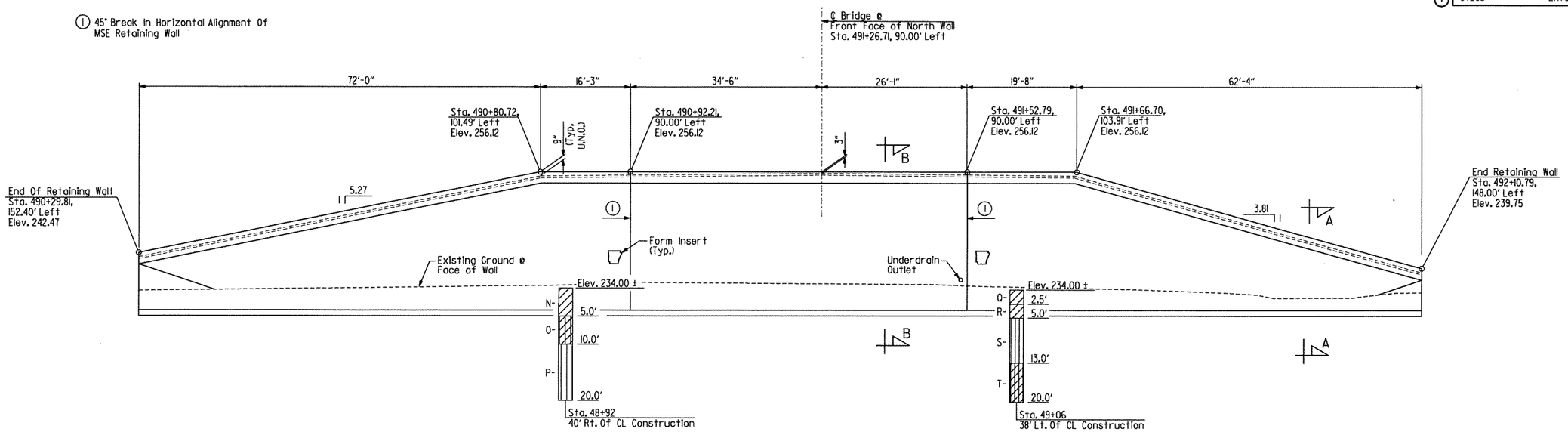
SHEET 2 OF 5
LAYOUT OF BRIDGE
HIGHWAY 89
OVER INTERSTATE 40
I-40/HWY. 89 INTCHG. (LONOKE) (S)
LONOKE COUNTY
ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

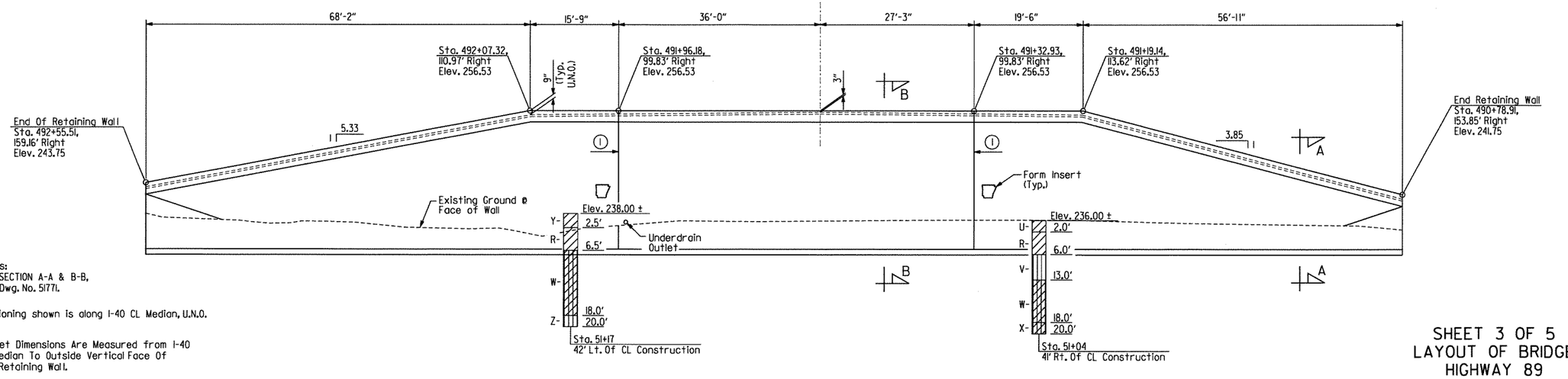
DRAWN BY: SRY DATE: APRIL 2010 FILENAME: B060897.L2.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: APRIL 2010

BRIDGE NO. 07205 DRAWING NO. 51769

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 68 | 182 |
| | | | | ① 07205 | | LAYOUT | | 51770 |




ELEVATION - NORTH MSE RETAINING WALL
(Looking At Front Face of Wall)
Scale: NTS




ELEVATION - SOUTH MSE RETAINING WALL
(Looking At Front Face of Wall)
Scale: NTS

Notes:
For SECTION A-A & B-B, See Dwg. No. 51771.

Stationing shown is along I-40 CL Median, U.N.O.

Offset Dimensions Are Measured from I-40 CL Median To Outside Vertical Face Of MSE Retaining Wall.

For Details Of Form Insert, See Dwg. No. 51772.

Underdrain Outlet To Penetrate Front Face Of MSE Wall.

For General Notes, Boring Legend & "N" Values, See Dwg. No. 51769.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER 9-27-2012 DAVID C. WILBOURN

BRIDGE ENGINEER

SHEET 3 OF 5
LAYOUT OF BRIDGE
HIGHWAY 89
OVER INTERSTATE 40
I-40/HWY. 89 INTCHG. (LONOKE) (S)
LONOKE COUNTY

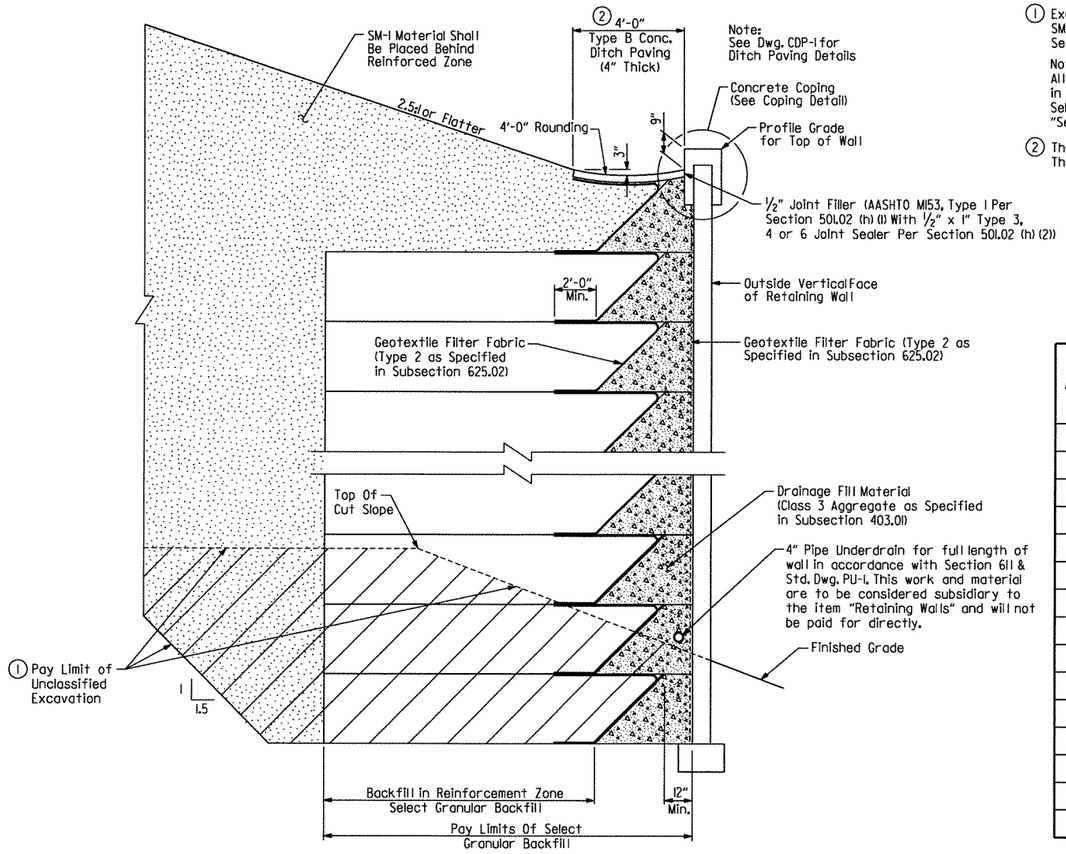
ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

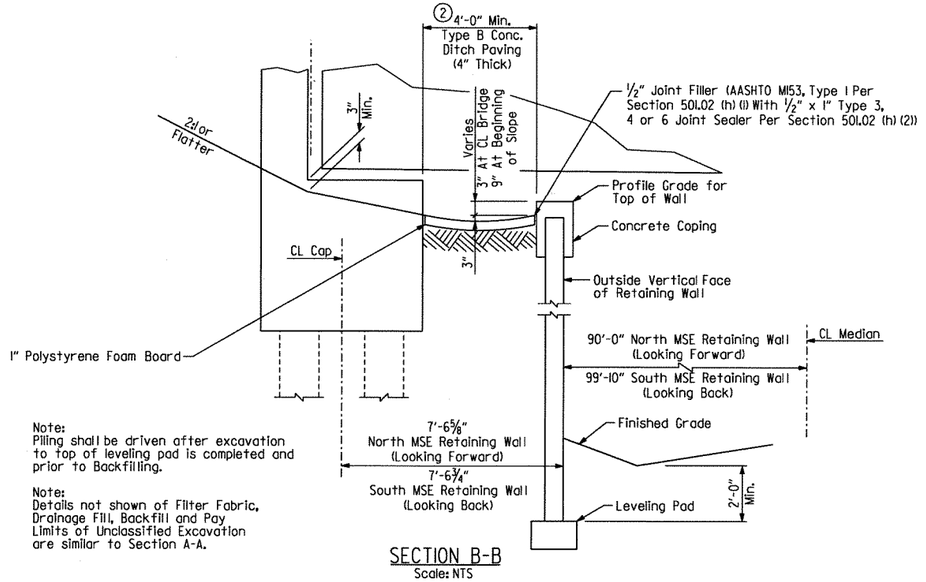
DRAWN BY: SRY DATE: APRIL 2010 FILENAME: B060897_L3.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: APRIL 2010

BRIDGE NO. 07205 DRAWING NO. 51770

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 69 | 192 |
| | | | | (1) 07205 | | LAYOUT | | 51771 |




SECTION A-A
Scale: 3/16" = 1'-0"




Note:
Piling shall be driven after excavation to top of leveling pad is completed and prior to Backfilling.

Note:
Details not shown of Filter Fabric, Drainage Fill, Backfill and Pay Limits of Unclassified Excavation are similar to Section A-A.

SECTION B-B
Scale: NTS

(1) Excavation required for Reinforcing Zone, Leveling Pad and Placement of SM-1 Material will be paid for under the pay item "Unclassified Excavation". See SP Job 060897 "Retaining Walls".

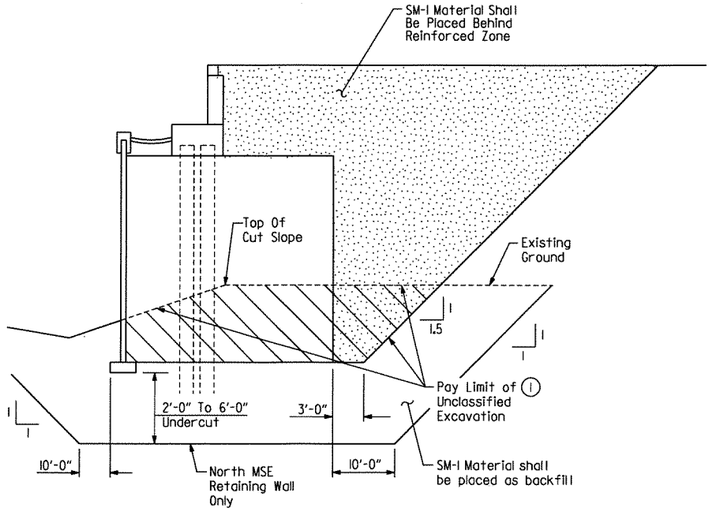
Note:
All backfill and drainage fill material within the Reinforcement Zone shall be included in the price bid for "Select Granular Material". Select material required behind Reinforced Zone shall be included in the price bid for "Selected Material (Class SM-1)". See SP Job 060897 "Retaining Walls".

(2) The 4'-0" Concrete Ditch Paving Shall Be Constructed Without The 3" Weep Holes Shown On Standard Drawing CDP-1.

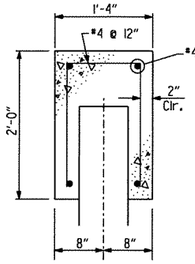
## SPECIAL DESIGN NOTE:

The internal stability calculations for the portion of the MSE wall directly in front of the end bent shall include an additional loading to account for pressure resulting from the lateral loading on the end bent piling. The additional loading shall be as follows:

| Depth Below Abutment Cap (FT) | Strength Limit State Additional Loading (KSF) | Extreme Event Limit State Additional Loading (KSF) |
|---|---|---|
| 0 | 0.00 | 0.00 |
| 1 | -0.24 | -0.26 |
| 2 | -0.48 | -0.53 |
| 3 | -0.66 | -0.72 |
| 4 | -0.77 | -0.84 |
| 5 | -0.82 | -0.91 |
| 6 | -0.78 | -0.90 |
| 7 | -0.83 | -0.98 |
| 8 | -0.86 | -1.02 |
| 9 | -0.86 | -1.03 |
| 10 | -0.80 | -0.98 |
| 11 | -0.61 | -0.86 |
| 12 | -0.31 | -0.49 |
| 13 | -0.05 | -0.15 |
| 14 | 0.00 | 0.00 |



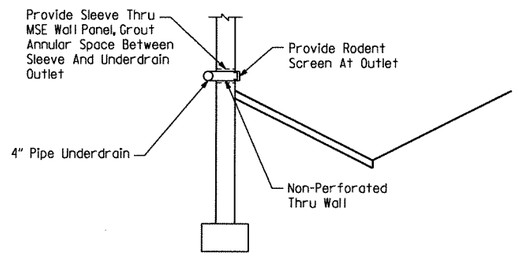

EMBANKMENT DETAIL
Scale: NTS




Note:
Precast Concrete Coping may be Substituted for Cast-in-Place Coping Shown.

Note:
Reinforcing Steel and Concrete for Concrete Coping Shall Not be Paid for Directly but Will be Considered Subsidiary to the Item "Retaining Walls".

COPING DETAIL
Scale: 1" = 1'-0"




OUTLET DETAIL
Scale: NTS

Notes:

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 4th Edition (2007) with 2008 Interim Revisions

SEISMIC PERFORMANCE ZONE: 2 $S_1 = 0.104$, $F_v = 2.38$

4" Pipe underdrain shall maintain a minimum slope of 1/8" per foot toward nearest outlet.

Elevations are approximate. Wall dimensions may vary depending on Wall Design selected.

Placement of reinforcing for retaining walls may be affected by end bent construction. See Dwg. Nos. 51773-51776 for pile locations and wingwall details.

For ditch paving see Standard Dwg. No. CDP-1.

See Special Provision Job 060897 "Retaining Walls" for additional information.

Boring logs, including laboratory results, may be obtained from Programs and Contracts Division.

Joint Filler, Joint Sealer, Polystyrene Foam Board and Rodent Screen will not be paid for directly but will be considered subsidiary to SP Job 060897 "Retaining Walls".

See Dwg. No. 51772 for Form Insert location and details.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER DAVID C. WILBOURN 9/25/2012

BRIDGE ENGINEER

SHEET 4 OF 5
LAYOUT OF BRIDGE
HIGHWAY 89
OVER INTERSTATE 40
I-40/HWY. 89 INTCHG. (LONOKE) (S)
LONOKE COUNTY

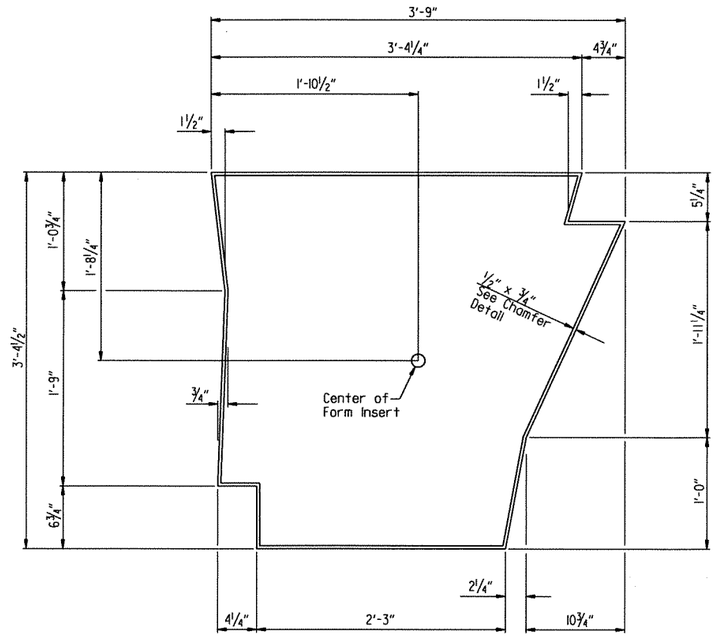
ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010
CHECKED BY: JHR DATE: JAN. 2011
DESIGNED BY: SRY DATE: OCT. 2010
FILENAME: B060897_L4.DGN
SCALE: AS NOTED

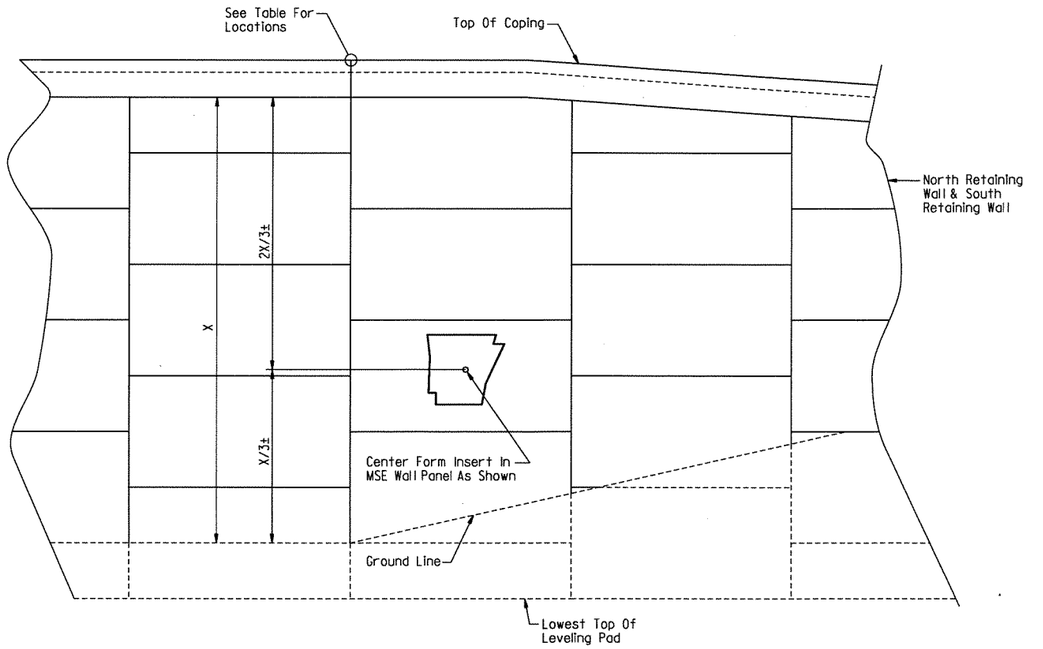
BRIDGE NO. 07205 DRAWING NO. 51771

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 70 | 182 |
| | | | | 07205 | | ARK. FORM INSERT | | 51772 |

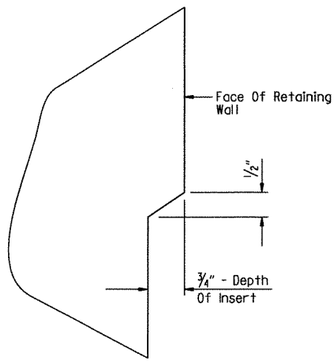



Note:
Use Form Insert On Designated Walls As Noted On Details of MSE Walls, Dwg. No. 51770.

FORM INSERT DETAILS AT MSE WALL
Scale: N.T.S.




DEVELOPED ELEVATION AT MSE WALL
Scale: N.T.S.




CHAMFER DETAIL
Scale: N.T.S.

GENERAL NOTES:

Fabricate form insert as a one piece unit, without the use of splices, joints or glue.

Wash and clean multi-use form inserts before each use.

All work and materials for inserts shall be included in the unit price bid for the item "Retaining Walls".

Damaged or worn form inserts shall be replaced at the Contractor's expense.

The form shall be approved by the Engineer before its use.

Recessed image (including Chamfers) of State Of Arkansas Insert Shall be Given a Class 3 Textured Coating Finish As Specified in Special Provision Job 060897 "Textured Coating Finish."

| LOCATION OF FORM INSERT | |
|---|---|
| Location | Station |
| North Wall | 490+96.96 And 491+52.79 |
| South Wall | 491+32.93 And 491+96.18 |

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 6441
DAVID C. WILBOURN
9/24/2012

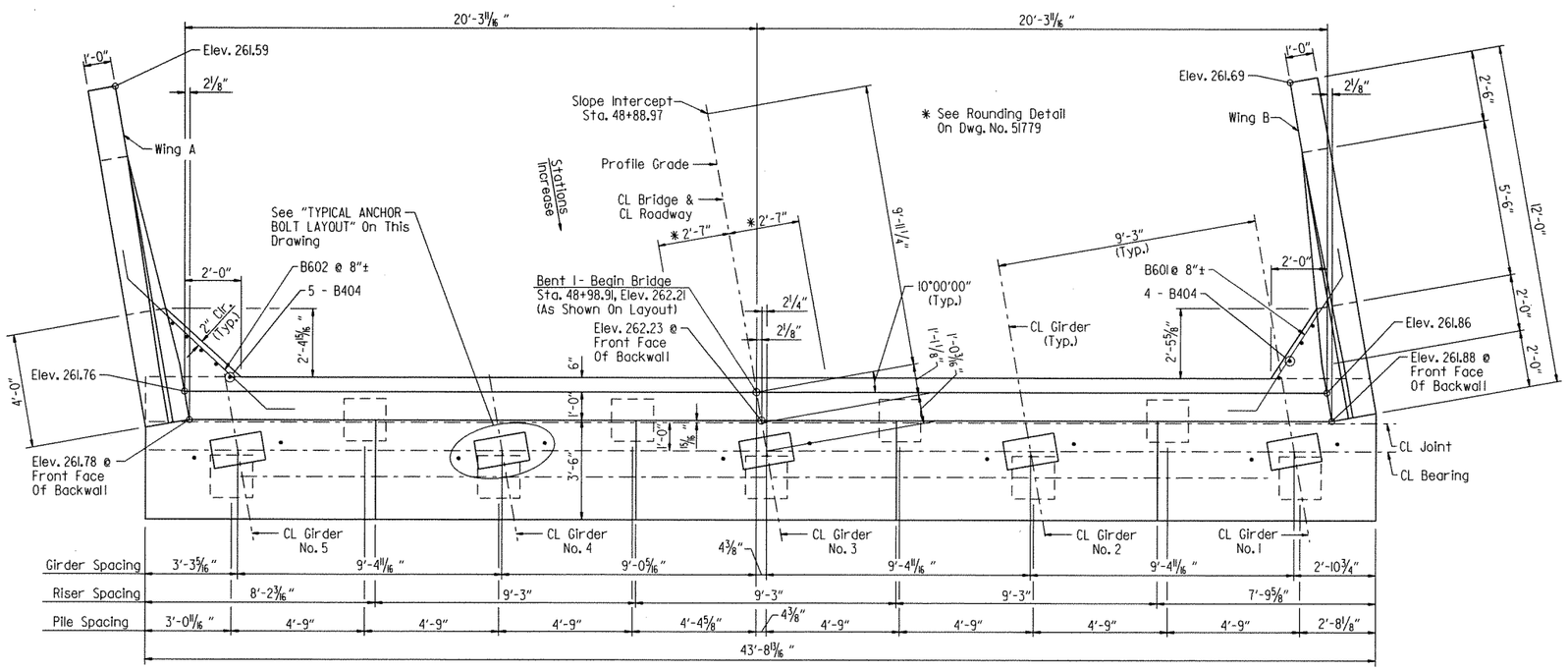
BRIDGE ENGINEER

SHEET 5 OF 5
LAYOUT OF BRIDGE
HIGHWAY 89
OVER INTERSTATE 40
I-40/HWY. 89 INTCHG. (LONOKE) (S)
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010 FILENAME: B060897_L5.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: OCT. 2010

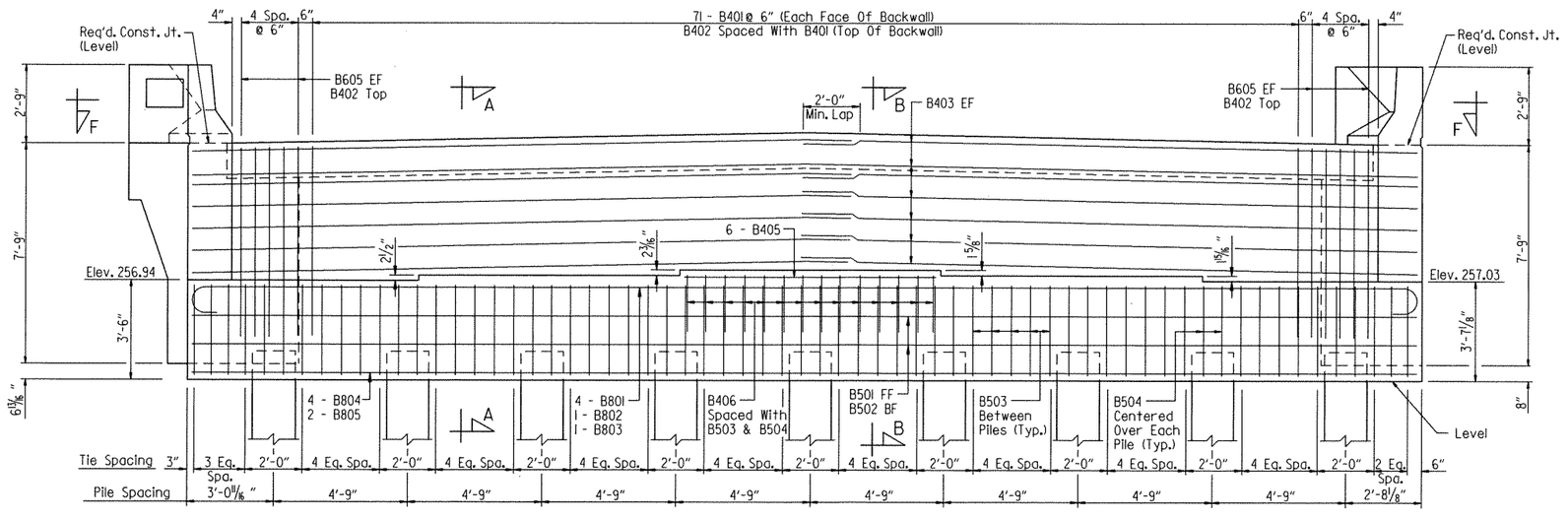
BRIDGE NO. 07205 DRAWING NO. 51772

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 71 | 182 |
| | | | | (1) 07205 | | END BENT DETAILS | | 51773 |



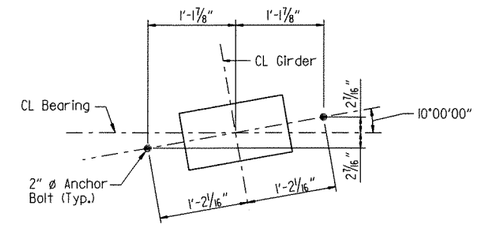

## PLAN - END BENT NO. 1

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




## ELEVATION - END BENT NO. 1

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




## TYPICAL ANCHOR BOLT LAYOUT

Scale: NTS

## GENERAL NOTES

All concrete shall be Class "S" and be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Gr. 60.

Structural steel in end bents shall be AASHTO M270, Gr. 50 and shall be paid for as "Structural Steel In Plate Girder Spans (AASHTO M270, Gr. 50)".

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

For additional information, see LAYOUT.

Class 1 Protective Surface Treatment shall be applied to top of backwall and roadway face and top of parapet.

Note:
The backwall above the required construction joint shall not be poured until the girders are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See "DETAILS FOR BLOCKING EXPANSION JOINT DEVICE" On Dwg. No. 51785 for additional information.

Notes:
For Details Of Wing & Rail, See Dwg. Nos. 51775-51776.

For Preformed Joint Seal Details, See Dwg. No. 51785.

For Details Of Elastomeric Bearing Pads, See Dwg. No. 51787.

For Bar List & Bending Diagram, See Dwg. No. 51775.

For Sections A-A & B-B, See Dwg. No. 51775.

For View F-F, See Dwg. No. 51775.

## LEGEND

EF = Each Face
FF = Front Face
BF = Back Face

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14058
SETH R. YANCEY
10/24/2011

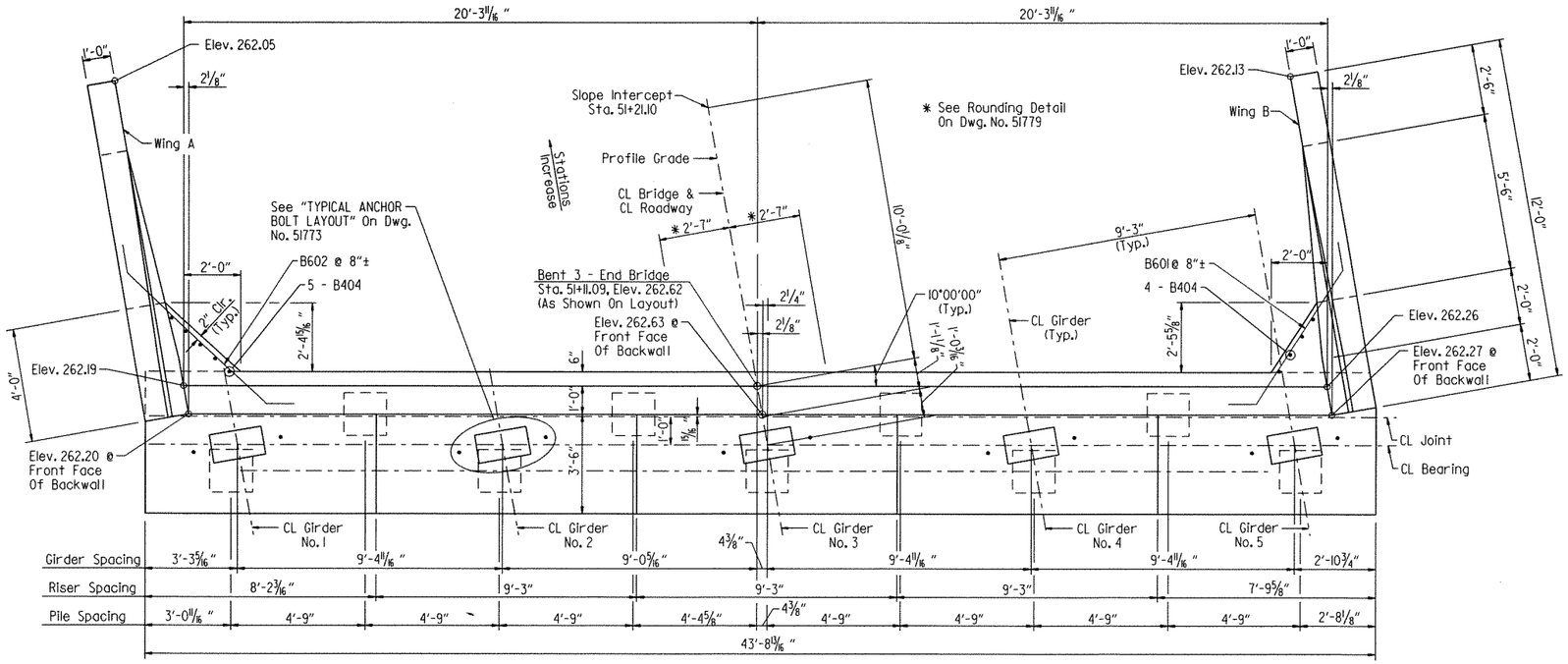
BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF END BENTS
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: 2010
CHECKED BY: SFH DATE: JAN. 2011
DESIGNED BY: SRY DATE: 2010
FILENAME: B060897_BI.DGN
SCALE: AS SHOWN

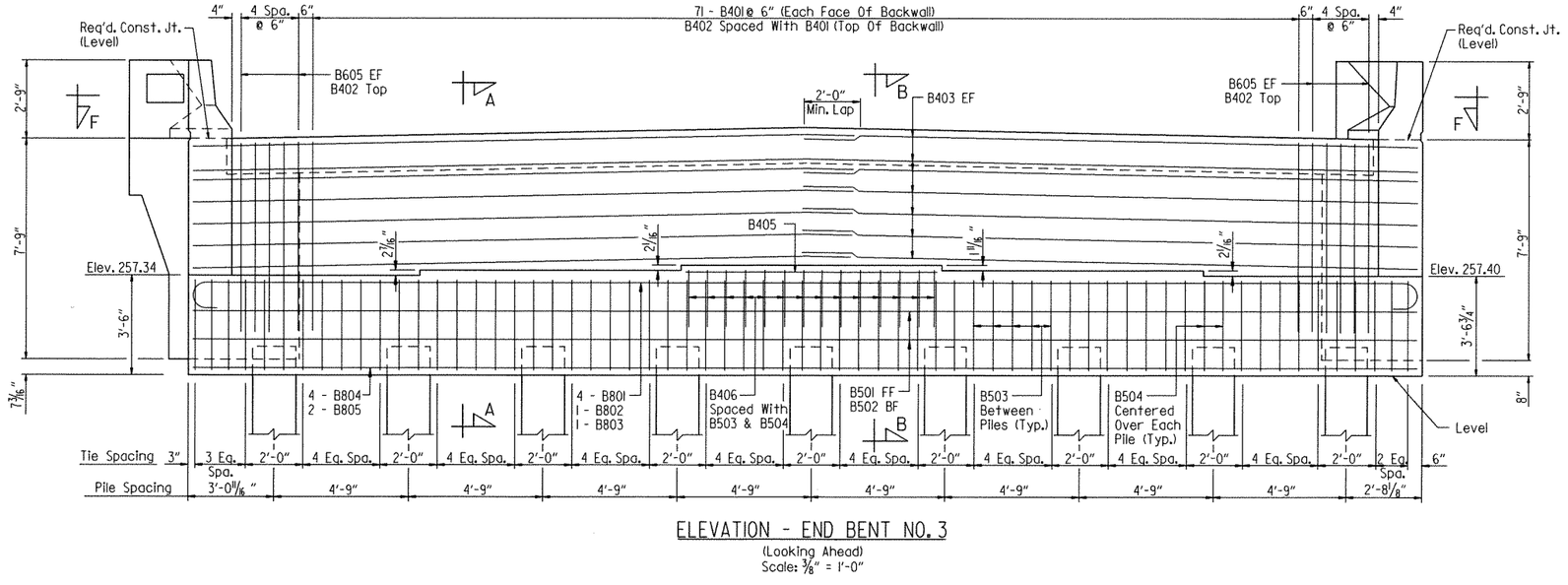
BRIDGE NO. 07205 DRAWING NO. 51773

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 72 | 182 |
| | | | | (1) 07205 | | END BENT DETAILS | | 51774 |




PLAN - END BENT NO. 3

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




ELEVATION - END BENT NO. 3

(Looking Ahead)

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

## GENERAL NOTES

All concrete shall be Class "S" and be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Gr. 60.

Structural steel in end bents shall be AASHTO M270, Gr. 50 and shall be paid for as "Structural Steel In Plate Girder Spans (AASHTO M270, Gr.50)".

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

For additional information, see LAYOUT.

Class I Protective Surface Treatment shall be applied to top of backwall and roadway face and top of parapet.

Note:
The backwall above the required construction joint shall not be poured until the girders are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See "DETAILS FOR BLOCKING EXPANSION JOINT DEVICE" On Dwg. No. 51785 for additional information.

Notes:
For Details Of Wing & Rail, See Dwg. Nos. 51775-51776.

For Preformed Joint Seal Details, See Dwg. No. 51785.

For Details Of Elastomeric Bearing Pads, See Dwg. No. 51787.

For Bar List & Bending Diagram, See Dwg. No. 51775.

For Sections A-A & B-B, See Dwg. No. 51775.

For View F-F, See Dwg. No. 51775.

## LEGEND

EF = Each Face
FF = Front Face
BF = Back Face

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 14058
SETH R. YANCEY
10/24/2011

BRIDGE ENGINEER

# SHEET 2 OF 4
# DETAILS OF END BENTS
# HIGHWAY 89
# OVER INTERSTATE 40
# LONOKE COUNTY

ROUTE 89 SEC. 1

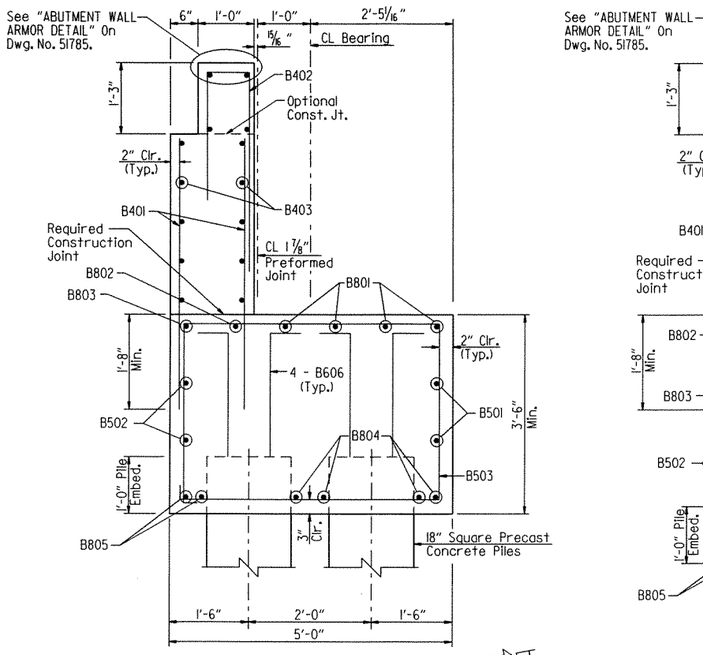
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

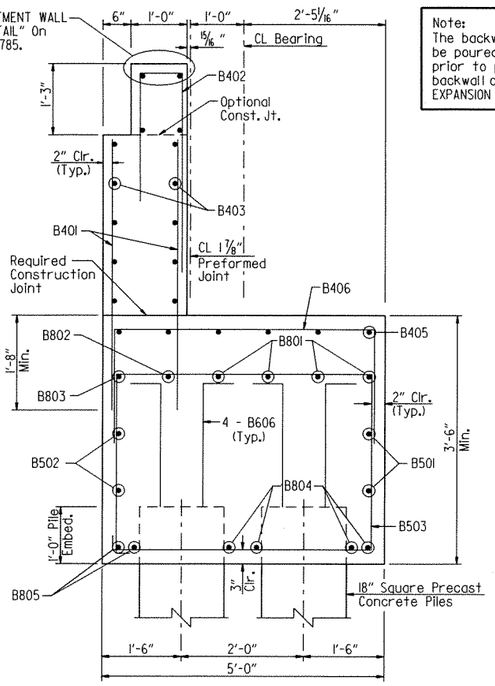
DRAWN BY: RNF DATE: 2010 FILENAME: B060897_B2.DGN
CHECKED BY: SFH DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: 2010

BRIDGE NO. 07205 DRAWING NO. 51774

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 73 | 182 |
| | | | | (1) 07205 | | END BENT DETAILS | | 51775 |

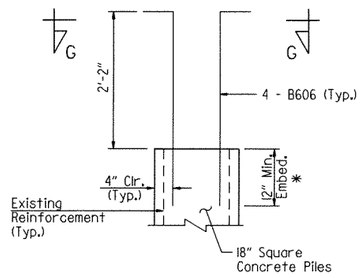



SECTION A-A
Scale: 3/4" = 1'-0"



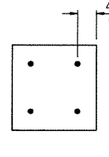

SECTION B-B
Scale: 3/4" = 1'-0"

Note:
The backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See "DETAILS FOR BLOCKING EXPANSION JOINT DEVICE" On Dwg. No. 51785 for additional information.

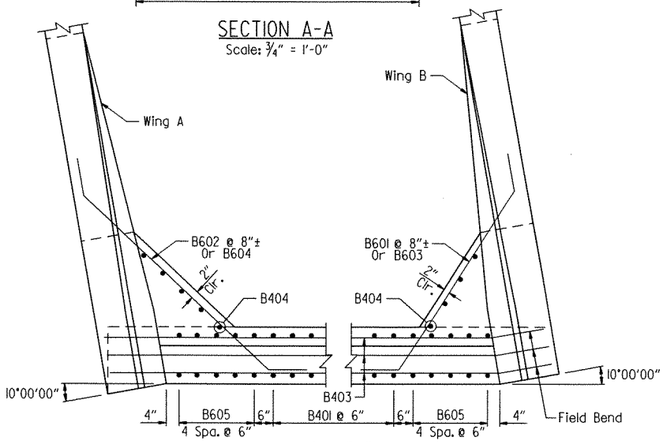



ANCHORAGE DETAIL
Scale: NTS

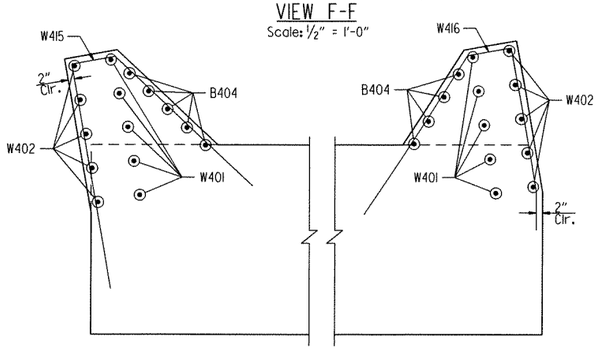
* After Driving, Drill And Grout F602 12" Min. Into Piles Using An Approved Non-Shrink Or An Epoxy Grout Listed On The QPL. Diamter Of Holes And Installation Procedure Shall Be As Recommended By The Grout Manufacturer. Dowel Bars, Drilling, And Grout Shall Not Be Paid For Directly But Shall Be Considered Subsidiary To The Item "Concrete Piling - 18" Square."




VIEW G-G
Scale: NTS

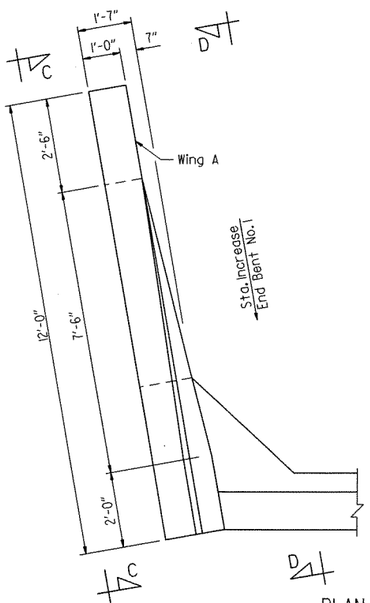



VIEW F-F
Scale: 1/2" = 1'-0"

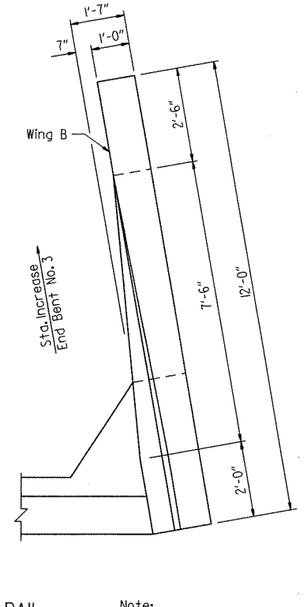



SECTION E-E (WING A)
Scale: 1/2" = 1'-0"

SECTION E-E (WING B)
Scale: 1/2" = 1'-0"




PLAN OF RAIL
Scale: 1/2" = 1'-0"

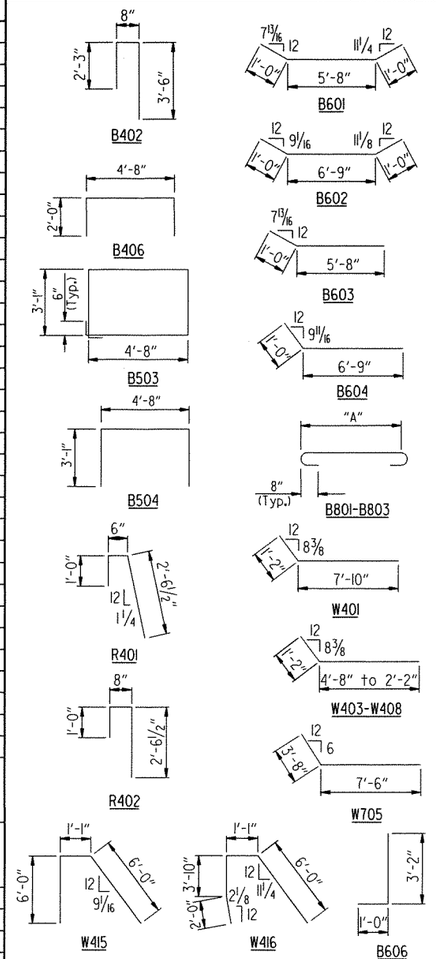



Note:
See Dwg. No. 51776 for VIEW C-C and SECTION D-D.

## BAR LIST - PER BENT

| Mark | No. Req'd. | Length | A | Pin. Dia. |
|---|---|---|---|---|
| B401 | 142 | 5'-2" | | STR. |
| B402 | 81 | 6'-3" | | 2" |
| B403 | 28 | 23'-9" | | STR. |
| B404 | 9 | 6'-2" | | STR. |
| B405 | 6 | 8'-11" | | STR. |
| B406 | 14 | 8'-6" | | 2" |
| | | | | |
| B501 | 2 | 43'-5" | | STR. |
| B502 | 2 | 43'-2" | | STR. |
| B503 | 47 | 16'-0" | | 2 1/2" |
| B504 | 18 | 10'-7" | | 2 1/2" |
| | | | | |
| B601 | 3 | 7'-8" | | 4 1/2" |
| B602 | 3 | 8'-9" | | 4 1/2" |
| B603 | 1 | 6'-8" | | 4 1/2" |
| B604 | 1 | 7'-9" | | 4 1/2" |
| B605 | 20 | 6'-5" | | STR. |
| B606 | 36 | 4'-0" | | 4 1/2" |
| | | | | |
| B801 | 4 | 45'-3" | 43'-5" | 6" |
| B802 | 1 | 45'-2" | 43'-4" | 6" |
| B803 | 1 | 45'-0" | 43'-2" | 6" |
| B804 | 4 | 43'-5" | | STR. |
| B805 | 2 | 43'-2" | | STR. |
| | | | | |
| R401 | 8 | 3'-10" | | 2" |
| R402 | 12 | 4'-1" | | 2" |
| R403 | 12 | 11'-8" | | STR. |
| | | | | |
| R601 | 20 | 4'-5" | | STR. |
| R602 | 6 | 4'-9" | | STR. |
| | | | | |
| W401 | 8 | 9'-0" | | 3" |
| W402 | 8 | 10'-2" | | STR. |
| W403 To W408 | 2 Each | 5'-10" To 3'-4" | | 3" |
| W409 To W414 | 2 Each | 6'-11" To 4'-5" | | STR. |
| W415 | 6 | 12'-11" | | 2" |
| W416 | 6 | 12'-9" | | 2" |
| | | | | |
| W701 | 12 | 11'-8" | | STR. |
| W702 | 4 | 7'-10" | | STR. |
| W703 | 4 | 6'-5" | | STR. |
| W704 | 4 | 5'-0" | | STR. |
| W705 | 4 | 11'-2" | | 5/4" |

## BAR BENDING DIAGRAMS




Note:
Dimensions Of Bars In Bending Diagrams Are Out-To-Out.

Number Of Bars Shown Is For One End Bent Only.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 14058
SETH R. YANCEY
12-23-10

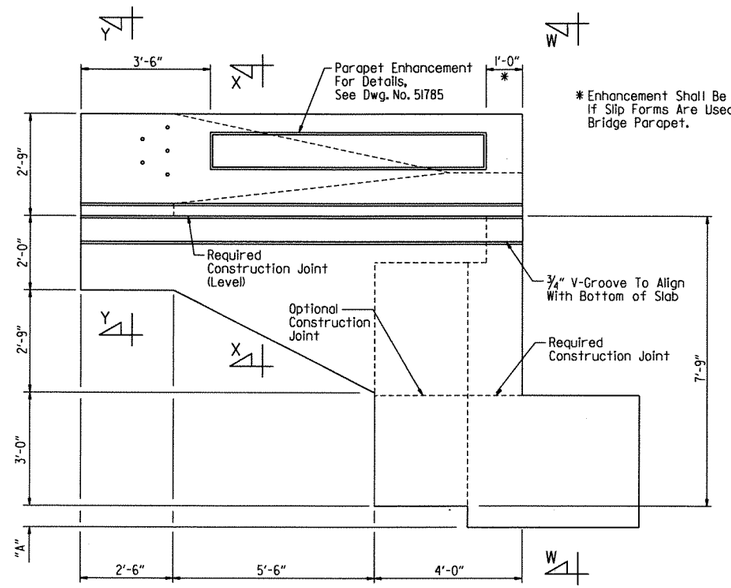
BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF END BENTS
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: 2010
CHECKED BY: SFH DATE: JAN. 2011
DESIGNED BY: SRY DATE: 2010
FILENAME: B060897_B3.DGN
SCALE: AS SHOWN

BRIDGE NO. 07205 DRAWING NO. 51775

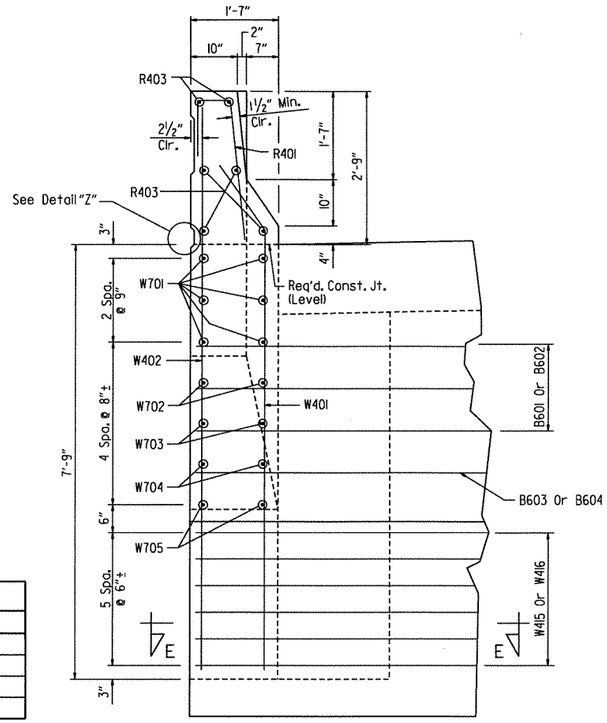
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 74 | 182 |
| | | | | ① 07205 | | END BENT DETAILS | | 51776 |




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

* Enhancement Shall Be Continuous If Slip Forms Are Used On the Bridge Parapet.

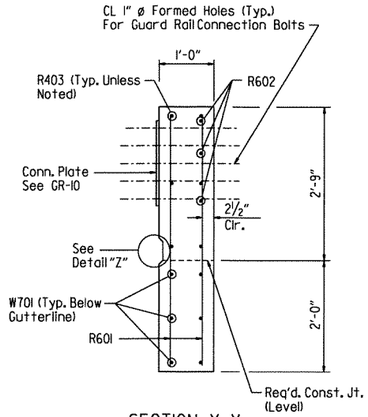
| TABLE OF VARIABLES | | |
|---|---|---|
| Bent No. | Wing | A |
| 1 | A | 6 9/16" |
| 1 | B | 8" |
| 3 | A | 7 3/16" |
| 3 | B | 8" |



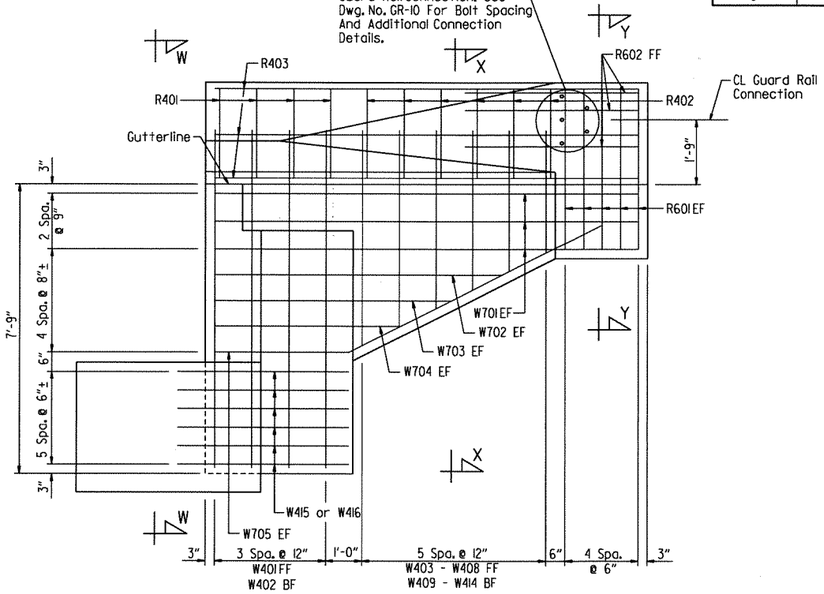

VIEW W-W
Scale: 3/4" = 1'-0"

Note:
See Dwg. No. 51775 for SECTION E-E.

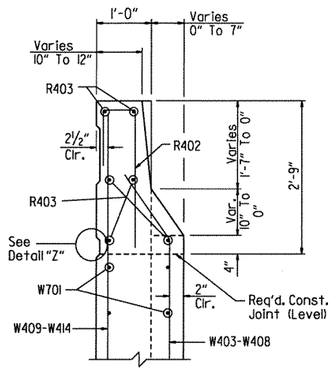
LEGEND
EF = Each Face
BF = Back Face
FF = Front Face



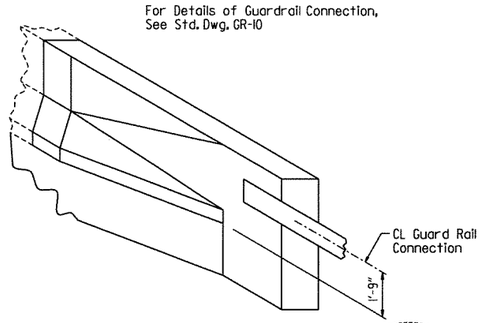

SECTION Y-Y
Scale: 3/4" = 1'-0"



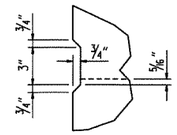

SECTION D-D
Scale: 1/2" = 1'-0"




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




THREE DIMENSIONAL VIEW OF RAIL
Scale: N.T.S.




DETAIL "Z"
Scale: N.T.S.

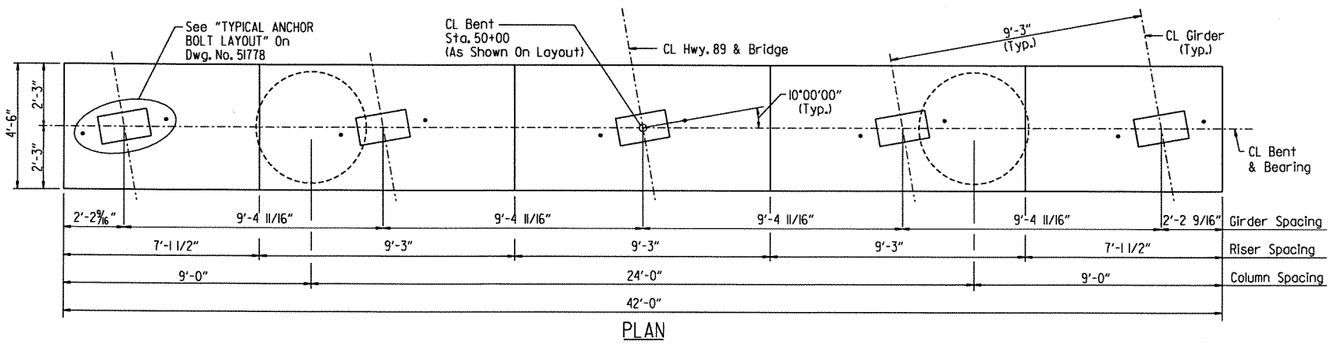
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14058
SETH R. YANCEY
9/24/2012
BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF END BENTS
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: DEC. 2010 FILENAME: B060897_B4.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: DEC. 2010

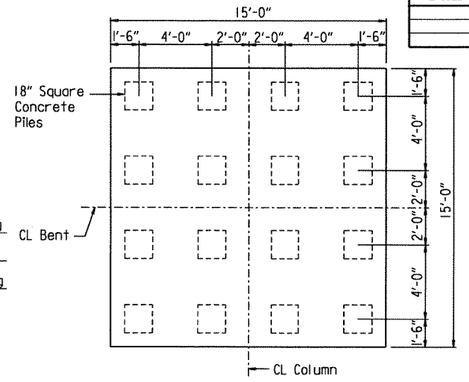
BRIDGE NO. 07205 DRAWING NO. 51776

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 75 | 182 |
| | | | | ① 07205 | | INT. BENT DETAILS | | 51777 |

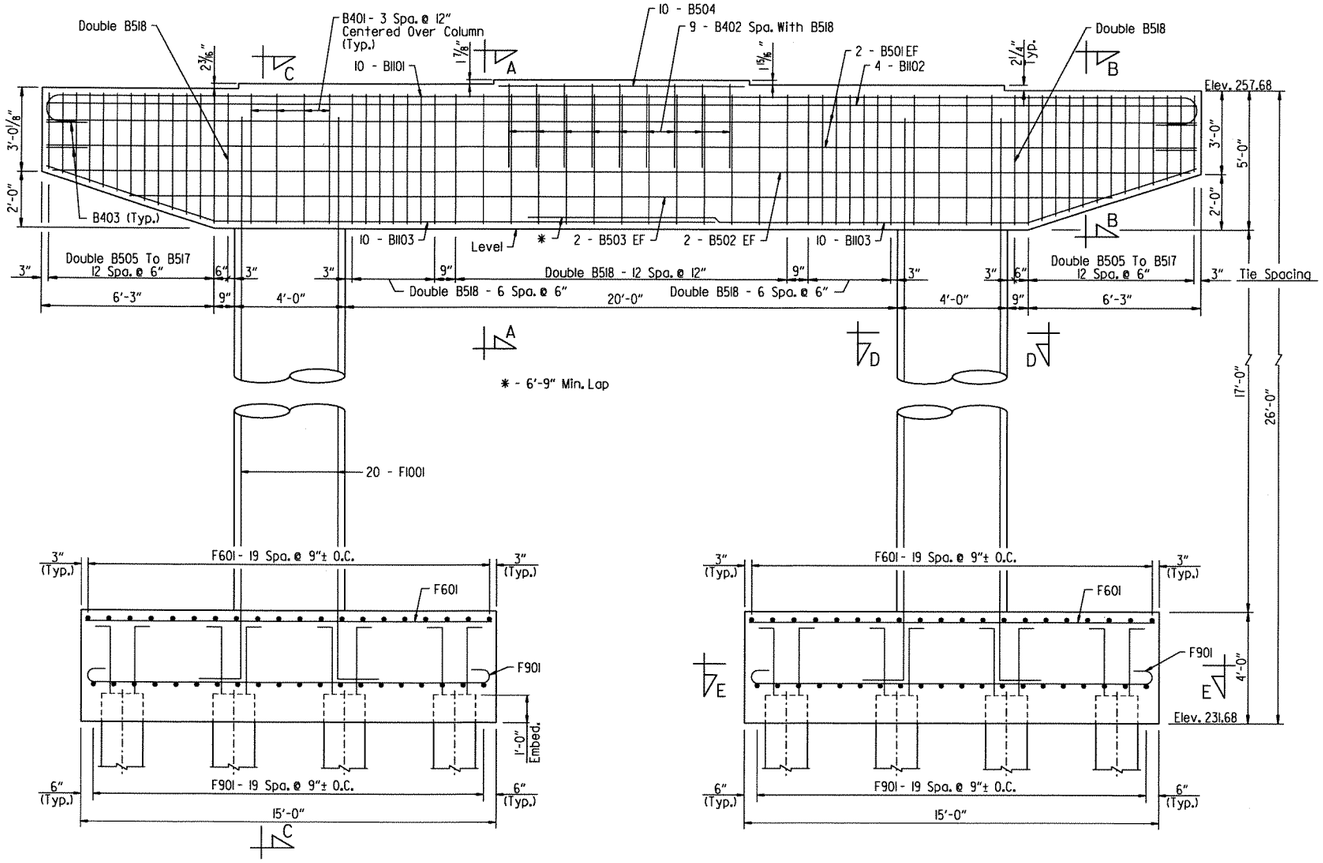



PLAN
Scale: 3/8" = 1'-0"

See Dwg. No. 51778 for Sections A-A, B-B, D-D & Bar List.

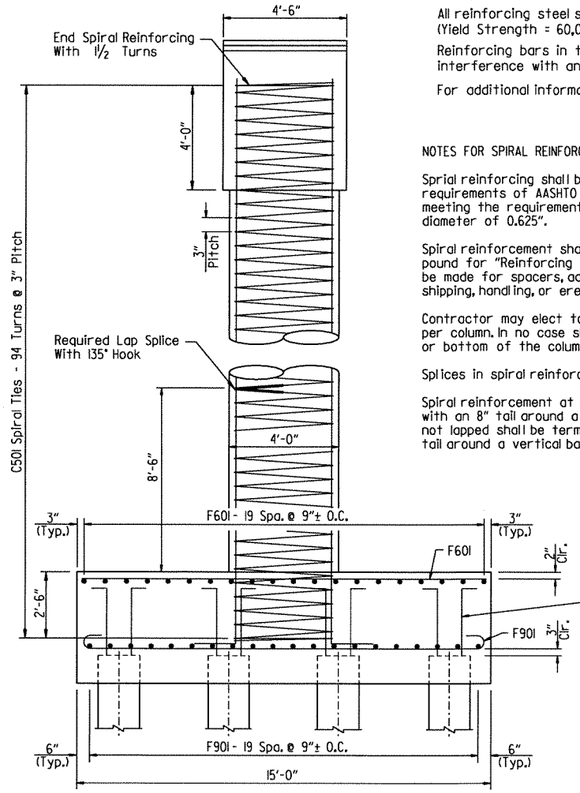



SECTION E-E
N.T.S.




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

LEGEND
U.N.O. = Unless Noted Otherwise
EF = Each Face




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

GENERAL NOTES

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 to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (Yield Strength = 60,000 psi) except as noted otherwise.

Reinforcing bars in top of cap shallbe properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.

NOTES FOR SPIRAL REINFORCING

Sprial reinforcing shall be plain round of deformed steel bars meeting the requirements of AASHTO M31 or M53 (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, additional splices, or bracing needed for assembly, shipping, handling, or erecting.

Contractor may elect to use a different number of spiral lapped splices per column. In no case shall a spiral be lapped within 6'-0" of the top or bottom of the column.

Splices in spiral reinforcement shall be lapped a minimum of 80 bar diameters.

Spiral reinforcement at lapped splices shall be terminated by a 135° hook with an 8" tail around a vertical bar. Hook may be field bent. Ends of spirals not lapped shall be terminated with 1½ turns and a 135° hook with an 8" tail around a vertical bar.

STATE OF ARKANSAS
SETH R. YANCEY
LICENSED PROFESSIONAL ENGINEER
No. 14058
9/24/2012
BRIDGE ENGINEER

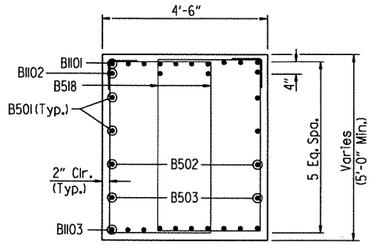
# SHEET 1 OF 2
# DETAILS OF INTERMEDIATE BENT NO. 2
# HIGHWAY 89
# OVER INTERSTATE 40
# LONOKE COUNTY
ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

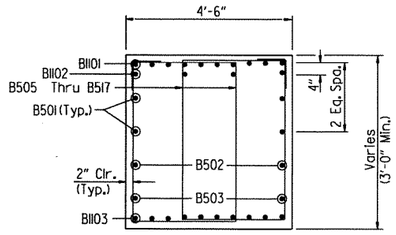
DRAWN BY: SRY DATE: DEC. 2010 FILENAME: B060897_B5.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: DEC. 2010

BRIDGE NO. 07205 DRAWING NO. 51777

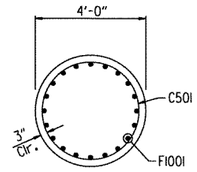
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 76 | 182 |
| | | | | ① 07205 | | INT. BENT DETAILS | | 51778 |



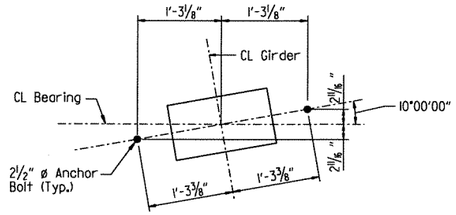

SECTION A-A
Scale: 1/2" = 1'-0"



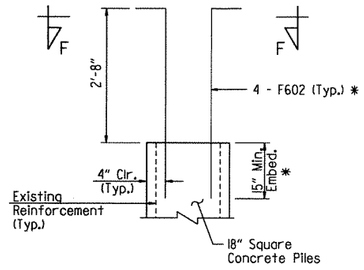

SECTION B-B
Scale: 1/2" = 1'-0"



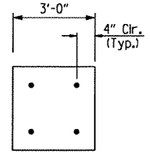

SECTION D-D
Scale: 3/8" = 1'-0"



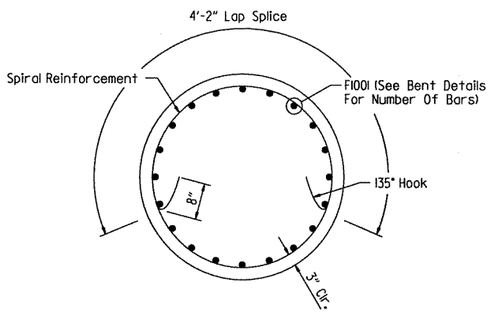

TYPICAL ANCHOR BOLT LAYOUT
Scale: NTS




ANCHORAGE DETAIL
Scale: NTS




VIEW F-F
Scale: NTS



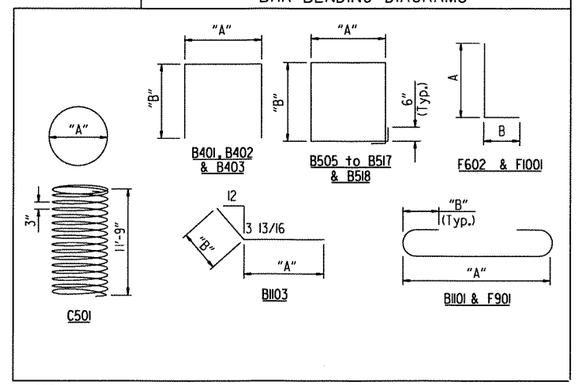

SPIRAL REINFORCEMENT LAP SPLICE DETAIL
Scale: NTS

* After Driving, Drill And Grout F602 15" Min. Into Piles Using An Approved Non-Shrink Or An Epoxy Grout Listed On The QPL. Diamter Of Holes And Installation Procedure Shall Be As Recommended By The Grout Manufacturer. Dowel Bars, Drilling, And Grout Shall Not Be Paid For Directly But Shall Be Considered Subsidiary To The Item "Concrete Piling - 18" Square."

## BAR LIST

| | MARK | NO. REQ'D. | LENGTH | "A" | "B" | P.D. |
|---|---|---|---|---|---|---|
| | B401 | 8 | 13'-4" | 4'-2" | 4'-8" | 2" |
| | B402 | 9 | 8'-0" | 4'-2" | 2'-0" | 2" |
| | B403 | 4 | 6'-10" | 4'-0" | 1'-6" | 2" |
| | | | | | | |
| | B501 | 4 | 41'-8" | | | Str. |
| | B502 | 2 | 41'-2 1/2" | | | Str. |
| | B503 | 2 | 35'-7" | | | Str. |
| | B504 | 10 | 8'-11" | | | Str. |
| | B505 To B517 | 4 Ea. | 11'-8" To 15'-6" | 2'-10" | 2'-9" To 4'-8" | 2 1/2" |
| | B518 | 58 | 15'-6" | 2'-10" | 4'-8" | 2 1/2" |
| | | | | | | |
| | B1101 | 10 | 44'-8" | 41'-8" | 1'-0 1/2" | 11 1/4" |
| | B1102 | 4 | 41'-8" | | | Str. |
| | B1103 | 20 | 27'-11" | 21'-6" | 6'-5" | 11 1/4" |
| | | | | | | |
| ① | C501 | 4 | 536'-9" | 3'-6" | | 3 3/4" |
| | | | | | | |
| | F601 | 80 | 14'-6" | | | Str. |
| ② | F602 | 128 | 4'-9" | 3'-11" | 1'-0" | 4 1/2" |
| | | | | | | |
| | F901 | 80 | 17'-0" | 14'-6" | 10" | 9" |
| | | | | | | |
| | F1001 | 40 | 25'-1" | 23'-7" | 1'-10" | 10" |

## BAR BENDING DIAGRAMS




NOTE:
Dimension Of Bars Are Out-To-Out.

① Length Shown Includes One Lap Splice. See Section C-C On Dwg. No. 51777 For Location of Lap Splice.

② Non-Pay Item, Subsidiary To Concrete Piling (18" Square)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14058
SETH R. YANCEY
9/24/2012

BRIDGE ENGINEER

# SHEET 2 OF 2
# DETAILS OF INTERMEDIATE BENT NO. 2
# HIGHWAY 89
# OVER INTERSTATE 40
# LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: SRY DATE: DEC. 2010
CHECKED BY: JHR DATE: JAN. 2011
DESIGNED BY: SRY DATE: DEC. 2010
FILENAME: B060897_B6.DGN
SCALE: AS SHOWN

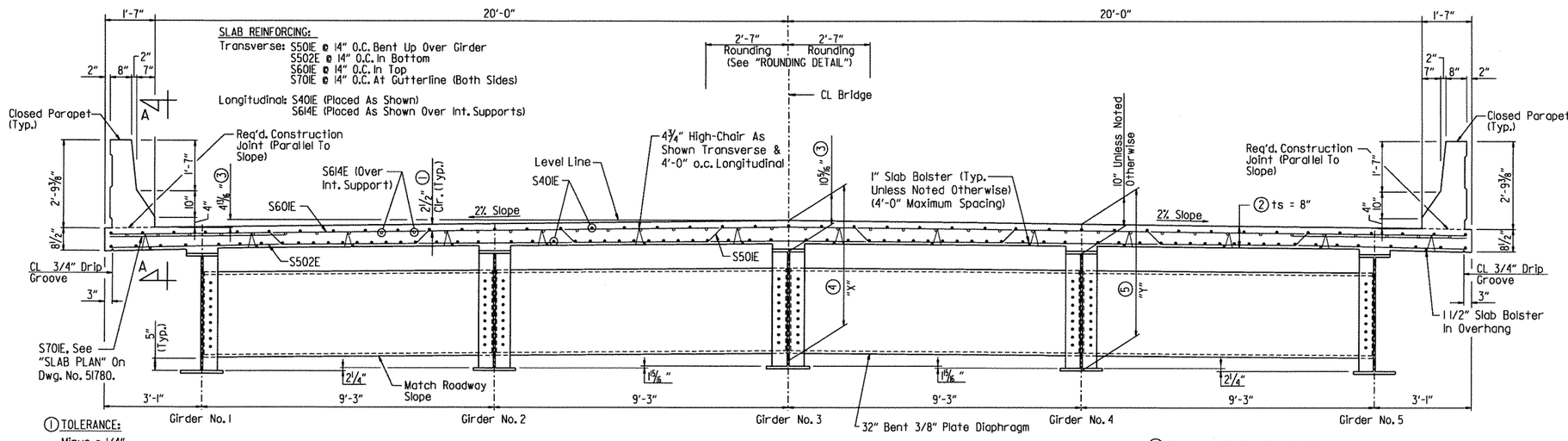
BRIDGE NO. 07205 DRAWING NO. 51778

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 77 | 182 |
| | | | | (1) 07205 | | 210' PL GIRDER UNIT | | 51779 |

Note:
One Epoxy Coated #5 Bar In The Top And One Epoxy Coated #5 Bar In The Bottom May Be Substitued For Each Bar S50IE. Payment Will Be Based On The Weight Of Bar S50IE.

Note:
All Bars Designated With An E Suffix Are To Be Epoxy Coated.

Note:
Class I Protective Surface Treatment Shall Be Applied To The Roadway Surface And The Face And Top Of Concrete Parapet Rail.




(1) TOLERANCE:
Minus = 1/4"
Plus = Equal To Amount Of Slab Thickening Used To Meet Slab Thickness Tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".

(2) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".

Note:
For View A-A, See Dwg. No. 51786.

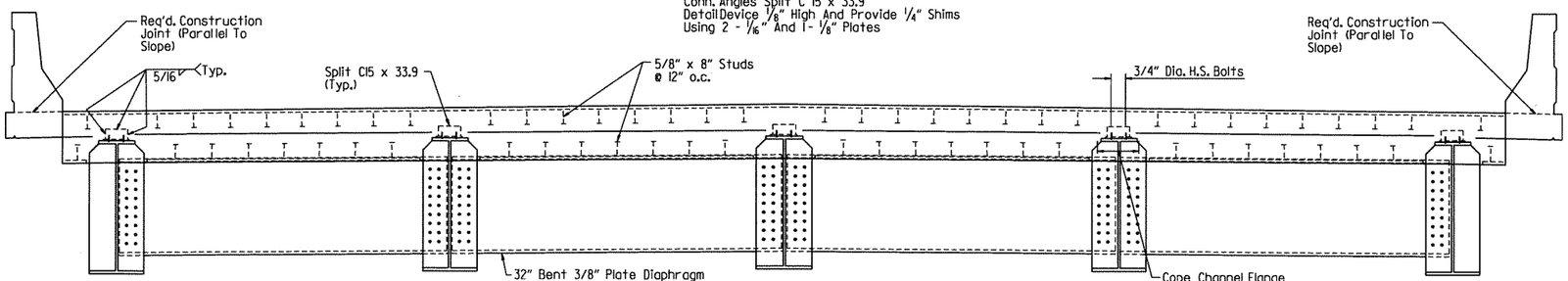
## TYPICAL SECTION
(Looking Ahead)
Scale: 1/2" = 1'-0"

(3) Measured To Working Point - See Rounding Detail

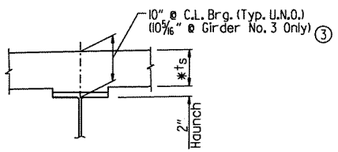
(4) "X" = 4'-4⅝" + Bottom Flange Thickness, Measured At CL Bearing & CL Girder

(5) "Y" = 4'-4" + Bottom Flange Thickness, Measured At CL Bearing & CL Girder

EXPANSION DEVICE:
Rdwy. MCI8 x 42.7
Conn. Angles Split C I5 x 33.9
Detail Device 1/8" High And Provide 1/4" Shims Using 2 - 1/16" And 1- 1/8" Plates




## VIEW AT CL JOINT
Looking Ahead - End Bent No. 1
Looking Back - End Bent No. 3
Scale: N.T.S.



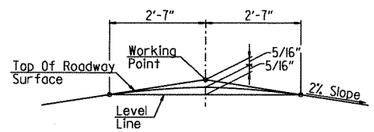

Note: $t_s$ = Slab Thickness As Shown On "TYPICAL SECTION".

* Tolerance When Removable Deck Forming Is Used Is + 1/2", - 1/4". Haunch Forming Is Required And Shall Be Adjusted To Maintain Slab Thickness Tolerance.

## ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED
Scale = NTS

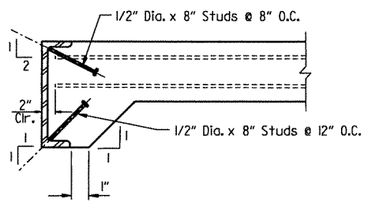
Haunch Dimension May Vary Within The Following Limits To Maintain The Grade And Slab Thickness Tolerance: Minimum - Occurs When The Top Flange Contacts The Bottom Reinforcing Steel; Maximum - Top Flange Thickness Plus 1 3/4". No Increase In Concrete And Structural Steel Quantities Will Be Made To Maintain Tolerances.

Tolerances Shown Are Applicable Only When Removable Deck Forming Is Used. See Std. Dwg. No. 1499I For Tolerances When Permanent Steel Deck Forms Are Used. Payment For Concrete Shall Be Based On Removable Deck Forming.




Note:
Working Point Matches Theoretical Profile Grade.

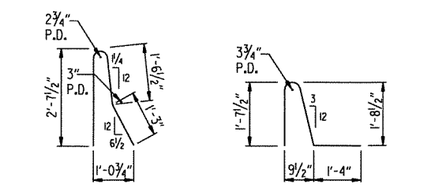
## ROUNDING DETAIL
Scale = NTS




## DETAIL OF ALTERNATE ANCHORS
Scale = NTS

Note:
As An Alternate To 5/8" Dia. Studs, 1/2" Dia. x 8" Studs Spaced As Shown May Be Used. Use Weight Of 5/8" Dia. Stud As Basis Of Measurement Of Structural Steel In Anchors

## BENDING DIAGRAM




## BAR LIST

| Mark | No. Req'd. | Length | Pin. Dia. |
|---|---|---|---|
| S40IE | 690 | 36'-7" | STR. |
| | | | |
| S50IE | 173 | 43'-4" | 3" |
| S502E | 174 | 42'-10" | STR. |
| S503E TO S513E | 2 Each | 6'-7" TO 39'-8" | STR. |
| | | | |
| S60IE | 174 | 42'-10" | STR. |
| S602E TO S612E | 2 Each | 6'-7" TO 39'-8" | STR. |
| S613E | 8 | 4'-11" | 4½" |
| S6I4E | 126 | 26'-0" | STR. |
| | | | |
| S70IE | 356 | 16'-3" | 6" |
| | | | |
| P40IE | 840 | 5'-6" | 3" |
| P402E | 294 | 9'-8" | STR. |
| P403E | 104 | 5'-3" | STR. |
| | | | |
| P50IE | 840 | 4'-9" | 3¾" |

NOTE:
1.) Dimension Of Bars Are Out-To-Out.
2.) Bar Designations Ending With "E" Indicates Epoxy Coated Bars.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER JOHN H. RUDDELL No. 8017

BRIDGE ENGINEER

# SHEET 1 OF 8
# DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT HIGHWAY 89 OVER INTERSTATE 40 LONOKE COUNTY

ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: SRY DATE: JAN. 2011 FILENAME: B060897_SI.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: JAN. 2011

BRIDGE NO. 07205 DRAWING NO. 51779

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 78 | 182 |
| | | | | (I) 07205 | | 210' PL GIRDER UNIT | | 51780 |

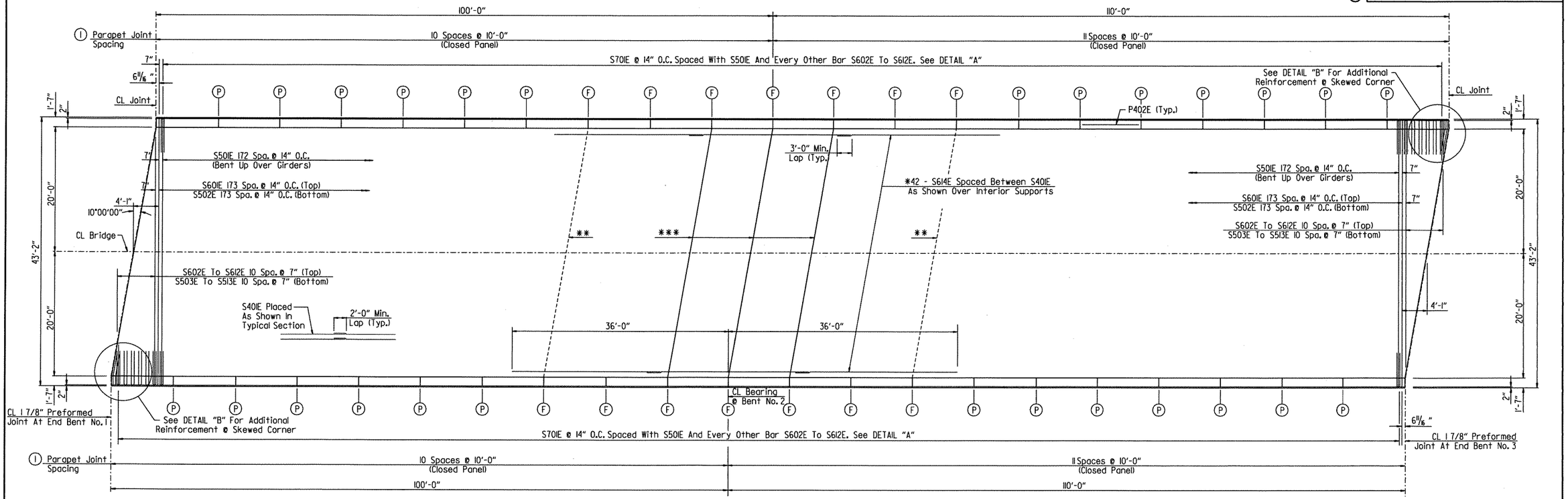
(I) Parapet Joints Designated With Symbol (F) Shall be Stopped 4" From Top of Slab. All Other Parapet Joints With Symbol (P) Shall be Partial Depth Joints Stopped 1'-2" From Top of Slab. See Dwg. No. 51786 For Details.

* Refer To "TYPICAL SECTION" On Dwg. No. 51779 For Placement

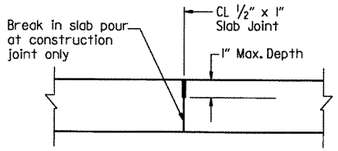
** Pouring Sequence Construction Joint

*** Required Slab Joint

Note:
Required Slab Joints And Pouring Sequence Joints Shall Align With The Parapet Joint At The Gutterline.

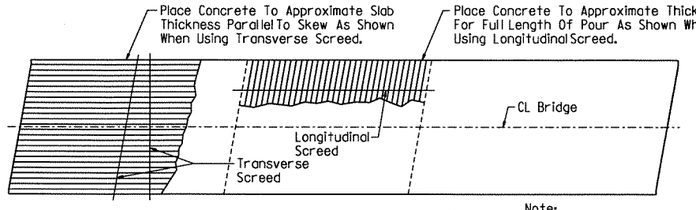



## SLAB PLAN
Scale: 1/8" = 1'-0"



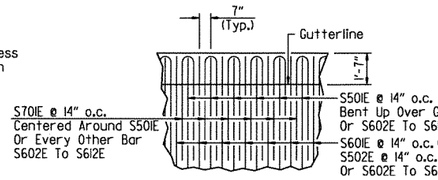

The 1/2" x 1" Poured Joint Sealer (Type 3, 4 or 6) in slab shall conform to Subsection 501.02 (H) And 501.05 (J). The Poured Joint Sealer shall be paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

## SLAB JOINT DETAIL
Scale: NTS

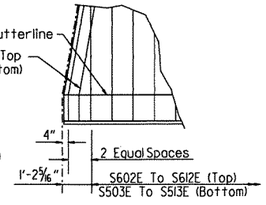



## CONCRETE PLACEMENT PROCEDURE
Scale: NTS

Note:
At The Contractor's Option, The Transverse Screed May Be Placed Parallel To The Skew Or Perpendicular To CL Bridge.

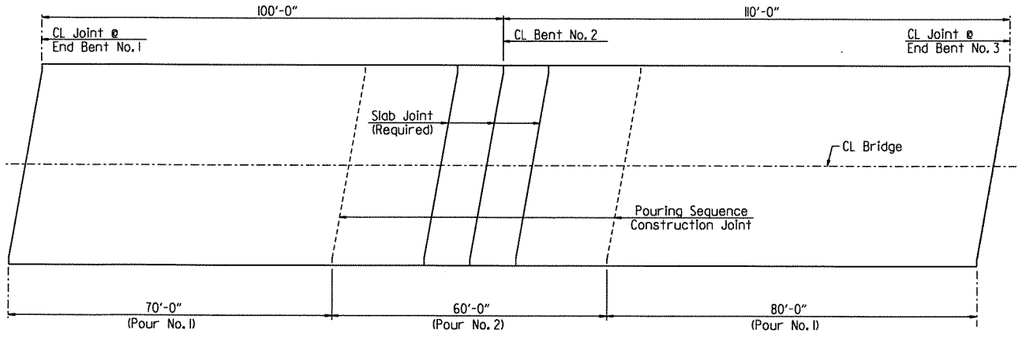



## DETAIL "A"
Scale: NTS




## DETAIL "B"
Scale: NTS

Bars S614E Omitted For Clarity




## POURING SEQUENCE
Scale: NTS

Note:
Pours With The Same Number May Be Placed Simultaneously Or Separately. All Pours (1) Must Be Placed Before Pours (2) Can Be Placed. 48 Hours Shall Elapse Before The End Of A Pour And The Start Of The Next Pour. 72 Hours Shall Elapse Between The End Of A Pour And The Start Of An Adjacent Pour. 72 Hours Shall Elapse Between The Completion Of The Entire deck And The Pouring Of The Parapet. Any Railing Pours Made Before The Entire Slab Unit Has Been Placed Must Be Approved By The Engineer.

The Contractor Must Obtain Approval From The Engineer For Any Deviations From The Pouring Sequence Shown.

Concrete in bridge superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
JOHN H. RUDDELL
No. 8017
9/24/12

BRIDGE ENGINEER

# SHEET 2 OF 8
# DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT
# HIGHWAY 89
# OVER INTERSTATE 40
# LONOKE COUNTY

ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010 FILENAME: B060897_S2.DGN
CHECKED BY: JHR DATE: JAN. 2011 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: OCT. 2010

BRIDGE NO. 07205 DRAWING NO. 51780

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED |
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| | | | |
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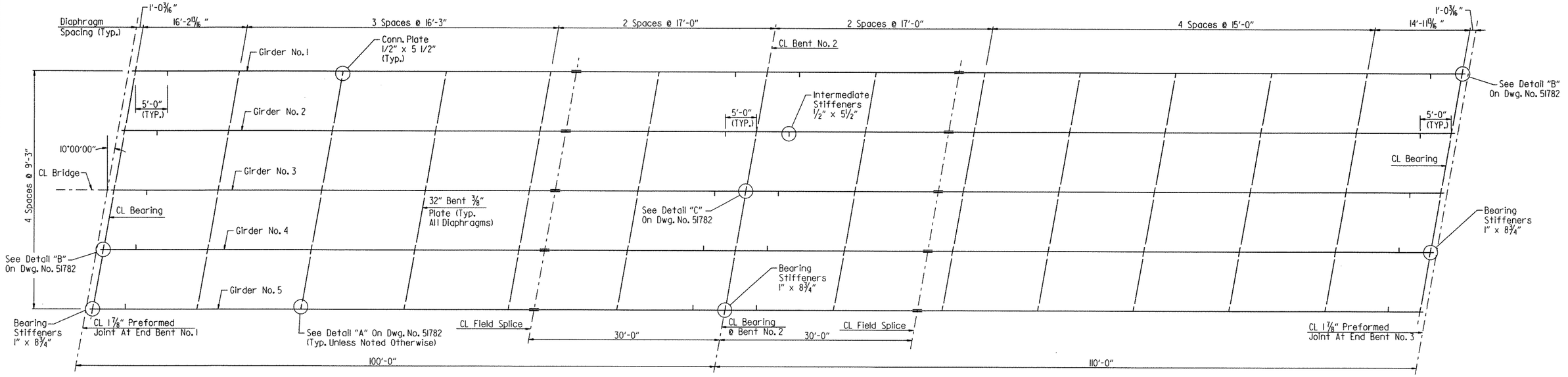
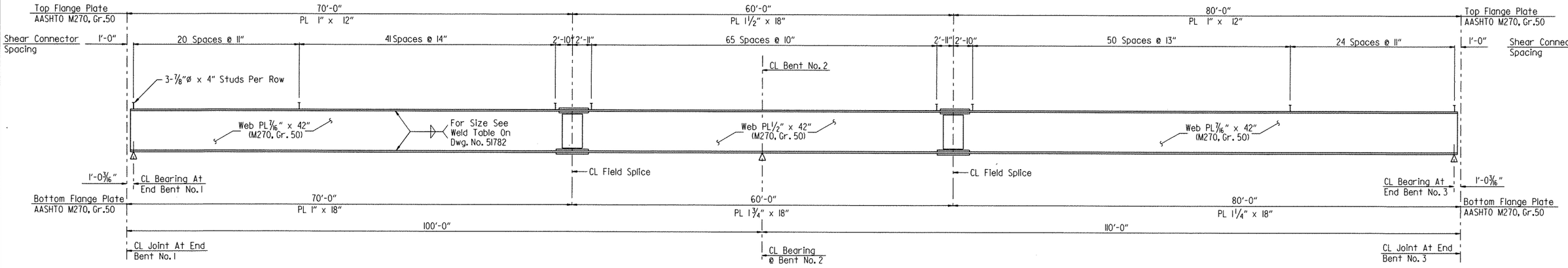
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | | |
| JOB NO. | | 060897 | 79 | 182 |
| (1) 07205 | | 210' PL GIRDER UNIT | | 51781 |




FRAMING PLAN
Scale: 1/8" = 1'-0"




TYP. GIRDER ELEVATION
Scale: NTS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL

BRIDGE ENGINEER

SHEET 3 OF 8
DETAILS OF 210'-0"
COMPOSITE PLATE GIRDER UNIT
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY

ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010
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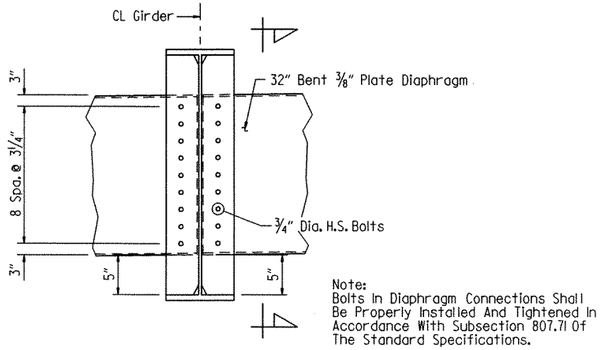
DESIGNED BY: JHR DATE: OCT. 2010
FILENAME: B060897_S3.DGN
SCALE: AS SHOWN

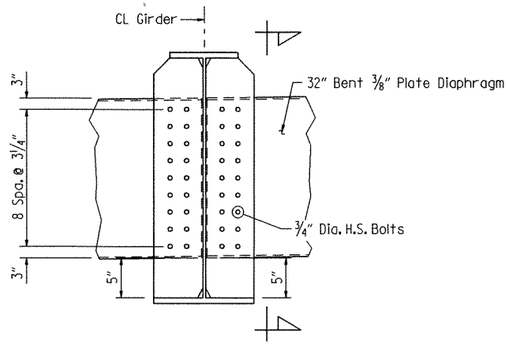
BRIDGE NO. 07205 DRAWING NO. 51781

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 80 | 182 |
| | | | | (1) 07205 | | 210' PL GIRDER UNIT | | 51782 |

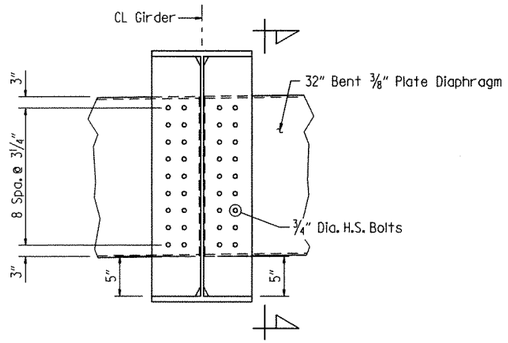



Note:
Bolts In Diaphragm Connections Shall Be Properly Installed And Tightened In Accordance With Subsection 807.71 Of The Standard Specifications.

DETAIL "A"
(Typical Intermediate Diaphragm Connection)
Scale = NTS




DETAIL "B"
(Typical Diaphragm Connection - End Bents)
Scale = NTS



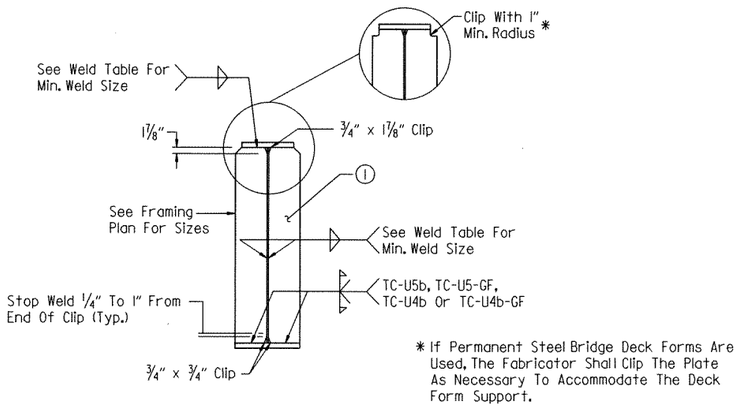

DETAIL "C"
(Typical Diaphragm Connection - Intermediate Bent)
Scale = NTS

NOTES:
1. For General Notes, See Drawing No. 51784.
2. All Structural Steel Including Girders, Diaphragms, Bearing And Intermediate Stiffeners And Conn. Plates Shall Be AASHTO M270 Grade 50.
3. For Elastomeric Bearing Details, See Drawing No. 51787.
4. For Details of Field Splices, See Drawing No. 51783.
5. For Typ. Haunch Details, See Dwg. No. 51779.
6. For Shear Connector Details, See Dwg. No. 51783.
7. For Dead Load Deflection Diagram, See Dwg. No. 51783.

SERVICE LOAD DIST. TABLE

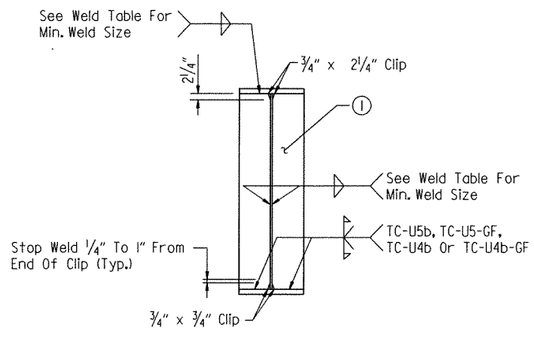
| | Int. Girder | Ext. Girder |
|---|---|---|
| Dead Load Non-Composite | 925 PLF + Girder | 771 PLF + Girder |
| Dead Load Composite ** | 348 PLF | 348 PLF |

** Includes 192 PLF Allowance For Future Overlay.

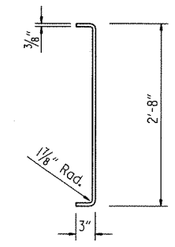



* If Permanent Steel Bridge Deck Forms Are Used, The Fabricator Shall Clip The Plate As Necessary To Accommodate The Deck Form Support.

BEARING STIFFENER @ END BENT
Scale: N.T.S.




BEARING STIFFENER @ INT. BENT
Scale: N.T.S.




SECTION THRU DIAPHRAGM
Scale = NTS

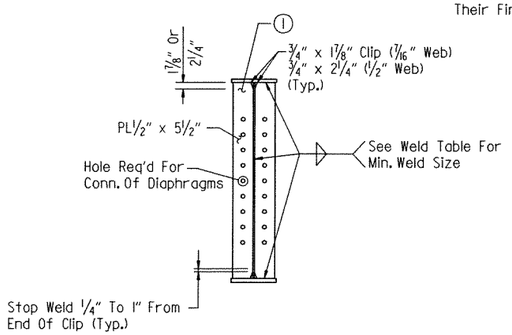
TABLE FOR WELD

| Material Thickness of Thicker Part Joined (Inches) | Minimum Size of Fillet Weld (Inches) | Single Pass Weld Must Be Used |
|---|---|---|
| To 3/4" Inclusive | 1/4" | |
| Over 3/4" | 5/16" | |

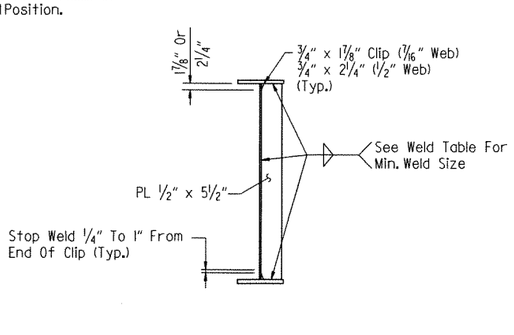
NOTE: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.

(1) Place Connection PL & Bearing Stiffeners Parallel To Skew.

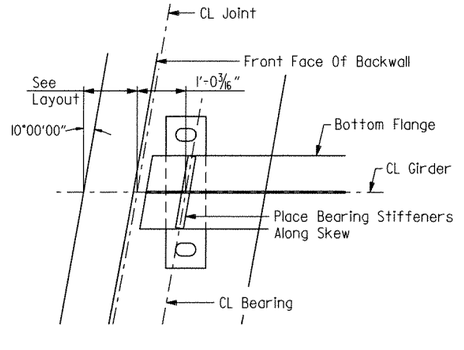
Note:
Bearing Stiffeners Shall Be Fabricated To Be Plumb In Their Final Position.




INTERMEDIATE DIAPHRAGM CONNECTION PLATE DETAIL
Scale: N.T.S.




INTERMEDIATE STIFFENER DETAIL
Scale: N.T.S.




BEARING PLAN AT END BENT
Scale: NTS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8611
10-24-11
JOHN H. RUDDELL

BRIDGE ENGINEER

SHEET 4 OF 8
DETAILS OF 210'-0"
COMPOSITE PLATE GIRDER UNIT
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY

ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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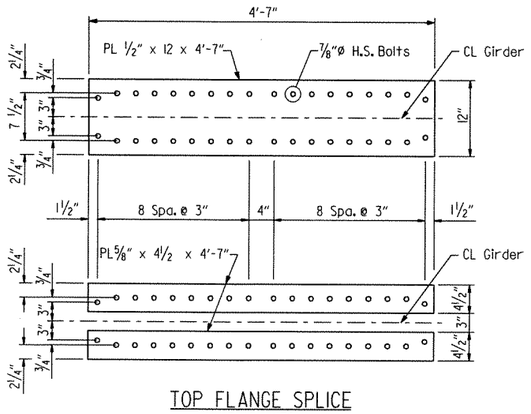
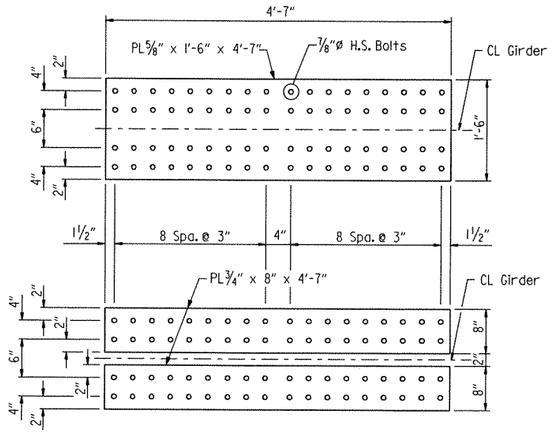
BRIDGE NO. 07205 DRAWING NO. 51782

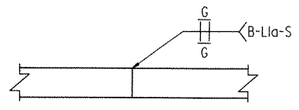
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 81 | 182 |
| | | | | (1) 07205 | | 210' PL GIRDER UNIT | | 51783 |



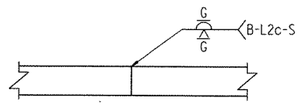

TOP FLANGE SPLICE
Scale: NTS



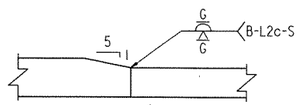

BOTTOM FLANGE SPLICE
Scale: NTS




Equal Thickness (Web)



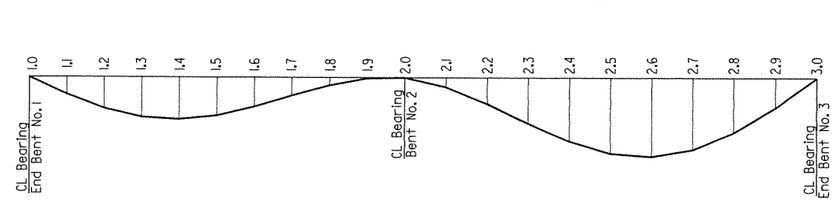

Equal Thickness (Flange)




Unequal Thickness (Flange)

DETAILS OF WELDED SPLICES
Scale: NTS

| TABLE OF DEAD LOAD DEFLECTIONS (Inches) | | | |
|---|---|---|---|
| Point Of Deflection | Wt. Of Girder And Diaphragm | Wt. Of Girder, Diaphragm And Slab | Wt. Of Girder, Diap., Slab And Parapet |
| 1.0 | 0.00 | 0.00 | 0.00 |
| 1.1 | 0.12 | 0.57 | 0.61 |
| 1.2 | 0.21 | 1.03 | 1.11 |
| 1.3 | 0.27 | 1.31 | 1.41 |
| 1.4 | 0.28 | 1.38 | 1.50 |
| 1.5 | 0.26 | 1.26 | 1.36 |
| 1.6 | 0.20 | 0.97 | 1.05 |
| 1.7 | 0.13 | 0.60 | 0.66 |
| 1.8 | 0.06 | 0.26 | 0.28 |
| 1.9 | 0.01 | 0.02 | 0.03 |
| 2.0 | 0.00 | 0.00 | 0.00 |
| 2.1 | 0.07 | 0.31 | 0.34 |
| 2.2 | 0.18 | 0.86 | 0.93 |
| 2.3 | 0.32 | 1.50 | 1.62 |
| 2.4 | 0.44 | 2.09 | 2.25 |
| 2.5 | 0.52 | 2.49 | 2.68 |
| 2.6 | 0.55 | 2.59 | 2.79 |
| 2.7 | 0.50 | 2.37 | 2.54 |
| 2.8 | 0.38 | 1.81 | 1.94 |
| 2.9 | 0.21 | 0.98 | 1.06 |
| 3.0 | 0.00 | 0.00 | 0.00 |




DEAD LOAD DEFLECTION

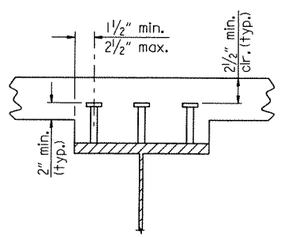
NOTE:
Camber For Dead Load Deflection Plus Vertical Curve ± 1/4" Tolerance. Deflections Shown Are From A Chord From Centerline Bearing To Centerline Bearing. Vertical Curve Corrections Not Included. Negative Sign (-) Indicates Point Above Chord.




DETAILS OF FIELD SPLICE
Scale: NTS

NOTE:
All field splice bolts shall be ⅞"ø H.S. Bolts.
All holes for splice bolts shall be 15/16 "ø.
All field splice plates shall be AASHTO M270 Gr. 50 steel.

NOTE:
Bolted field splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of the plan quantities.




SHEAR CONNECTOR DETAIL
Scale: NTS

Stud shear connectors shown shall be ⅞" dia. x 4" long granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the manufacturer. ¾" dia. studs may be used in place of the ⅞" dia. studs shown, at the ratio of 1.361 - ¾" dia. studs in place of one ⅞" dia. stud. ⅞" dia. studs will be used as basis for measurement of structural steel in shear connectors.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8814
10-24-11
JOHN H. RUDDELL

BRIDGE ENGINEER

SHEET 5 OF 8
DETAILS FOR 210'-0"
COMPOSITE PLATE GIRDER UNIT
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY

ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010
CHECKED BY: DCW DATE: OCT. 2010
DESIGNED BY: JHR DATE: OCT. 2010
FILENAME: B060897_S5.DGN
SCALE: AS SHOWN

BRIDGE NO. 07205 DRAWING NO. 51783

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 82 | 182 |
| | | | | 07205 | | 210' PL GIRD UNIT | | 51784 |

(1)

## GENERAL NOTES:

### CONCRETE:

Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurements of Class S(AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when Permanent Steel Deck Forms are used.

Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

The concrete deck shall be given a tine finish in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the girder. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the paprpet railing. A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing.

### REINFORCING STEEL:

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

### STRUCTURAL STEEL:

All structural steel shall be AASHTO M270, Gr. 50 and shall be paid for at the unit price per pound bid for "Structural Steel in Plate Girder Spans (M270, Gr.50)". All structural steel shall be cleaned in accordance with Section 807.84 unless noted otherwise. See Drawing No. 51787 for cleaning requirements of external load plates on elastomeric bearings.

All Structural Steel except galvanized members, steel which is completely encased in concrete shall be painted in accordance with subsection 807.75. The color of paint shall conform to Federal Standard 595B, Color Chip No. 34097, Green.

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

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

Bolted field splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of plan quantities.

All girder webs & flanges of plate girders and splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Section 807.05. This work and material will not be paid for directly but are considered as subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50)".

Steel plates for main load carrying members (flange and web plates) and flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

Girder webs may be made by shop splicing with a minimum length of 25'-0" for sections. Flange plates longer than 50'-0" may be made by shop splicing with a minimum length of 25'-0" for sections. Material specifications and locations of shop-welded splice, if any, shall be shown on the shop drawings. No additional payment for these welded splices will be made.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of subsection 802.13 will not require approval prior to construction. All welding shall conform to subsection 807.26.

All girders shall be blocked in their true position with webs horizontal in the shop as specified in section 807.54 (b)(2) of the Standard Specifications. The camber, length of sections, distance between bearings and opening of joints shall be measured with the girders in their true position and this information shall become a part of the permanent records of this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All girder dimensions are based on a temperature of 60°F. A tolerance of +/- 1/4" is allowed for camber.

Groove welds in flange and web plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required by the Standard Specifications.

Fillet welds at flange to web plate connections shall be Quality Control (Q.C.) tested by the magnetic particle method.

All Quality Control (Q. C.) testing is at the Contractor's expense.

All Connection Plates and Intermediate Stiffeners shall be fabricated normal to the top flange and on the side of the girder web as indicated on the framing plans. No Connection Plates are to be placed on the outside of the exterior girders. All bearing stiffeners shall be fabricated to be plumb in their final position. Intermediate stiffeners shall be fabricated perpendicular to girder web.

Diaphragms shall be installed as girders are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with subsection 807.71 prior to pouring of the concrete deck.

Field connections shall be bolted with high-strength bolts and shall be ¾"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior girder webs and on the bottom of the girder flanges. Holes for ¾"ø high-strength bolts may be 15/16"ø diameter if a washer is supplied for use under both the nut and head of the bolt.

All contact surfaces between plates at field splices shall be free of paint, oil, rust or scale before assembly.

All stud shear connectors shall be granular flux filled, solid fluxed or equal and shall be automatically end welded in accordance with recommendations of the manufacturer.

Bearings shall be firmly seated in accordance with section 808.08 of the Standard Specifications. This work is to be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270 Gr.50)" and will not be paid for directly.

Anchor bolts shall be AASHTO designation M314 Gr. 55, including supplemental requirement S1, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M298 Class 50. Anchor bolts will be paid for at the contract unit price bid for "Structural Steel in Plate Girder Spans (M 270, Gr. 50)".

STATE OF ARKANSAS
LICENSED
PROFESSIONAL
ENGINEER
No. 8017
10-22-10
JOHN H. RUDDELL

BRIDGE ENGINEER

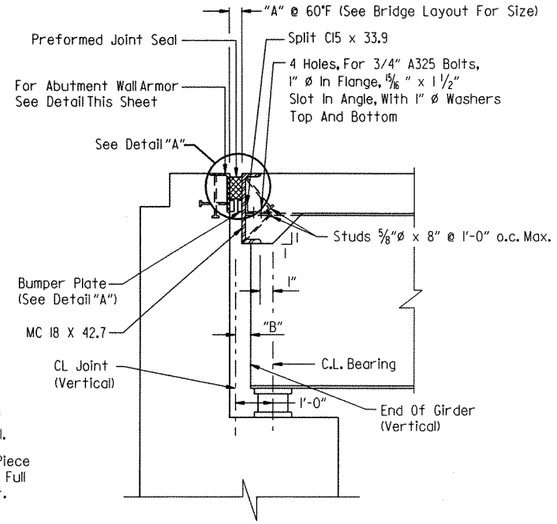
SHEET 6 OF 8
DETAILS OF 210'-0" COMPOSITE
PLATE GIRDER UNIT
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY

ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010
CHECKED BY: DCW DATE: OCT. 2010
DESIGNED BY: JHR DATE: OCT. 2010
FILENAME: B060897_S6.DGN
SCALE: AS SHOWN

BRIDGE NO. 07205 DRAWING NO. 51784

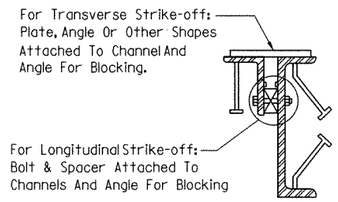
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 83 | 182 |
| | | | | (1) 07205 | | 210' PL GIRDER UNIT | | 51785 |




NOTES:
(1) CL Joint And End Of Girders Are Vertical.
(2) Seal Shall Be In One Piece (Without Splices) For Full Length Of The Joint.

SECTION OF PREFORMED EXPANSION DEVICE AT ABUTMENTS
Scale: NTS

One Of Two Different Blocking Systems Is Required Depending On The Type Of Span Finishing Machine That Is Used.




DETAILS FOR BLOCKING EXPANSION JOINT DEVICE
Scale: NTS

Note:
Each Expansion Joint Device Shall Be Blocked In The Shop By The Fabricator To The Dimension Shown For 60°F And The Blocking Details Shall Be Shown On The Shop Drawings. Blocking Shall Be Placed Within 2' Of Each End Of The Device And With A Maximum Spacing Of 8'.

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor May Elect To Install The Expansion Device Using One Of The Following Two Alternatives.

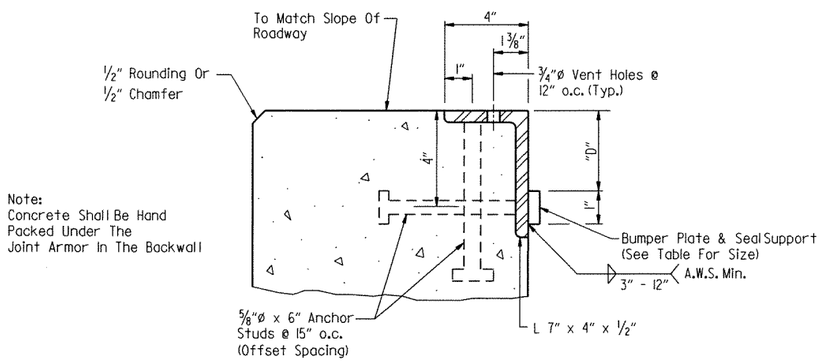
1) The Concrete Span Pour Adjacent To Joint Shall Be Placed Before The End Bent Backwall Is Placed. After The End Bent Backwall Forms Are In Place And The Girders Erected, The Blocked Expansion Device Shall Be Installed And Adjusted For Grade. All Connection Bolts Shall Be Fully Tightened Prior To Placing The Deck Concrete Adjacent To The Bent. Immediately Prior To Pouring The Backwall Concrete, The Blocking Shall Be Removed, The Opening Adjusted For Temperature, And The Backwall Constructed.

2) The Backwall Shall Be Poured To The Optional Construction Joint After Girders Are Erected. The Blocked Expansion Device Shall Be Installed And Adjusted For Grade. All Connection Bolts Shall Be Fully Tightened Prior To Placing The Deck Concrete Adjacent To The Bent. Immediately Prior To Pouring The Remainder Of The Backwall Concrete, The Blocking Shall Be Removed And The Opening Adjusted For Temperature.

| PREFORMED JOINT SEAL DATA | | | | | | |
|---|---|---|---|---|---|---|
| "A" Width Perpendicular To Joint At 24 Hour Average Temperature *** Of: | | | "B" Perpendicular To Joint At 60°F | "C" Uncompressed Joint Seal Width | "W" Width Between Plates At 60°F | Bumper Plate Size |
| 40°F | 60°F | 80°F | | | | |
| 2" | 1 7/8" | 1 3/4" | 2 1/4" ± | 3" | 5/8" | 1" x 5/8" |

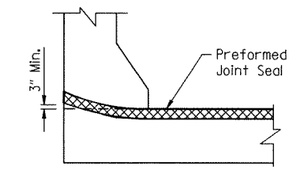
*** The Temperature Used To Set The Joint Opening Shall Be The Approximate Average Air Temperature During The 24 Hour Period Immediately Before The Bolts Are Tightened. The Engineer Shall Establish The Temperature. The Installation Temperature Is Limited To 40°F Min. And 80°F Max.

Note:
The Temperature Limitations Recommended By The Lubricant - Adhesive Manufacturer Shall Be Observed.

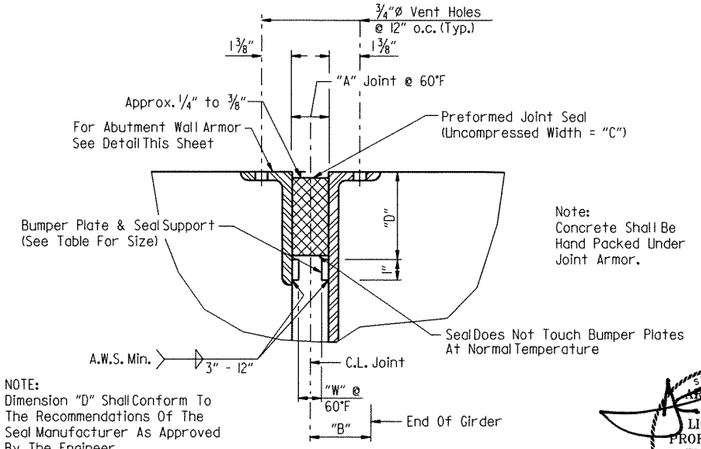



Note:
Concrete Shall Be Hand Packed Under The Joint Armor In The Backwall

ABUTMENT WALL ARMOR DETAIL
Scale: NTS



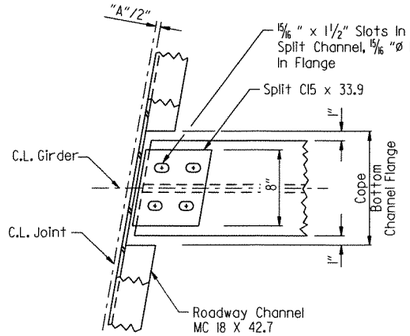

JOINT SEAL PLACEMENT @ CURB
Scale: NTS




Note:
Concrete Shall Be Hand Packed Under Joint Armor.

NOTE:
Dimension "D" Shall Conform To The Recommendations Of The Seal Manufacturer As Approved By The Engineer.

DETAIL "A"
Scale: NTS




CHANNEL CONNECTION DETAIL
Scale: NTS

Notes:

All Structural Steel For The Preformed Expansion Joint Shall Be AASHTO M270 Grade 50.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 20017
JOHN H. RUDDELL
10-24-11

BRIDGE ENGINEER

# SHEET 7 OF 8
# DETAILS OF 210'-0" COMPOSITE PLATE GIRDER UNIT
# HIGHWAY 89
# OVER INTERSTATE 40
# LONOKE COUNTY

ROUTE 89 SEC. 1

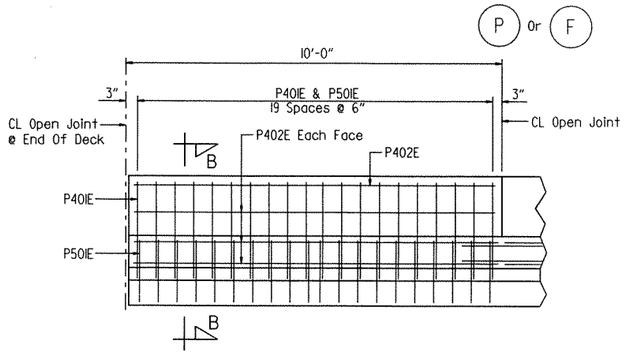
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010
CHECKED BY: DCW DATE: OCT. 2010
DESIGNED BY: JHR DATE: OCT. 2010
FILENAME: B060897_S7.DGN
SCALE: AS SHOWN

BRIDGE NO. 07205 DRAWING NO. 51785

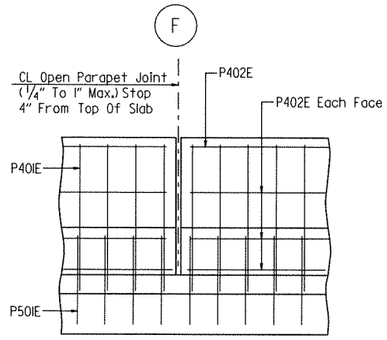
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 84 | 182 |
| | | | | (1) | 07205 | 210' PL GIRDER UNIT | | 51786 |



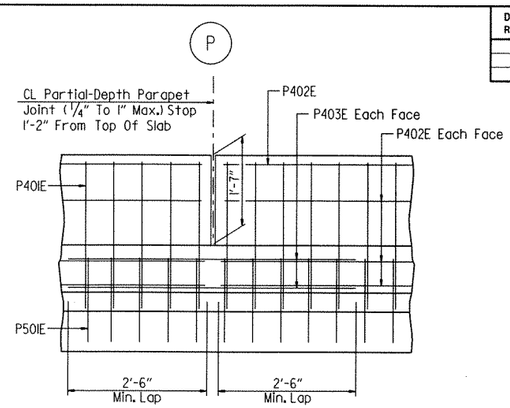

VIEW A-A (TYPICAL CLOSED PARAPET RAIL)
Scale: 1/2" = 1'-0"

P Indicates Partial Depth Joint (Stop 1'-2" From Top Of Slab) See Slab Plan For Joint Locations.

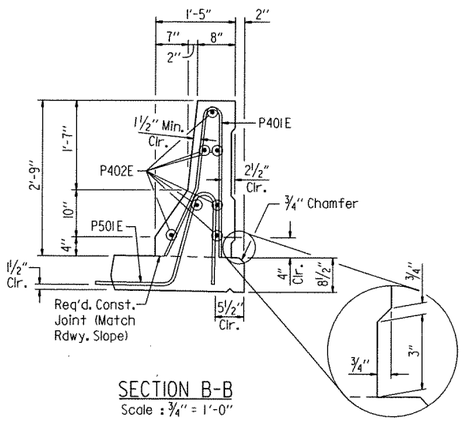
F Indicates Full Depth Joint (Stop 4" From Top Of Slab) See Slab Plan For Joint Locations.



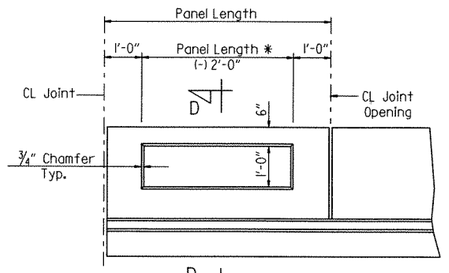

PARAPET REINFORCING AT FULL DEPTH JOINTS
Scale : 3/8" = 1'-0"




PARAPET REINFORCING AT PARTIAL DEPTH JOINTS
Scale : 3/8" = 1'-0"

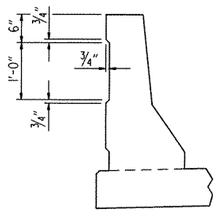



SECTION B-B
Scale : 3/4" = 1'-0"

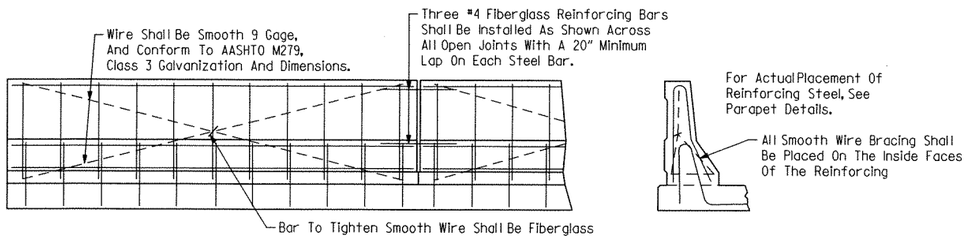



Note:
Panel Inset May Be Made Continuous If Slipforms Are Used.

PARAPET ENHANCEMENT DETAILS
Scale: 1/2" = 1'-0"




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



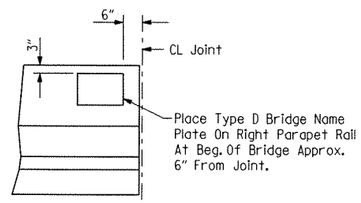




All Panels Shall Be Braced As Shown To Prevent Racking. All Open Joints Shall Be Sawed As Soon As Practical To A Minimum Width Of 1/4". To Control Cracking Before Sawing All Joints Must Be Grooved Before The Concrete Is Set. Sawing Of The Joints Must Be Controlled So It Will Follow The Grooved Joint.

The Extruded Parapet Shall Conform To The Horizontal And Vertical Lines Shown On The Plans Or As Directed By The Engineer And Shall Present A Smooth, Uniform Appearance And Texture.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
Scale: NTS




VIEW SHOWING LOCATION OF NAME PLATE
Scale: 1/2" = 1'-0"

## GENERAL NOTES

CONCRETE: All Concrete Shall Be Class S(AE) With A Minimum 28 Day Compressive Strength f'c = 4000 psi.

REINFORCING STEEL: All Reinforcing Steel Shall Conform To AASHTO M31 Or M53, Grade 60

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL
10-28-10

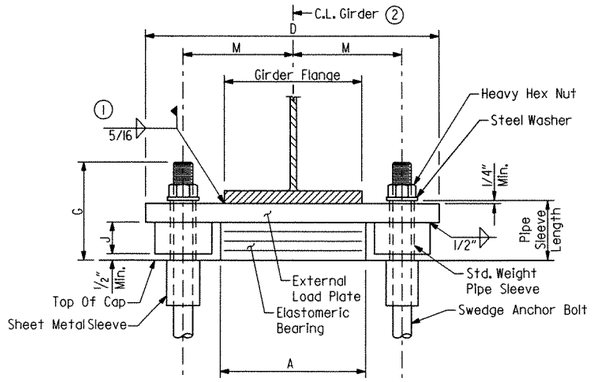
BRIDGE ENGINEER

SHEET 8 OF 8
DETAILS OF 210'-0"
COMPOSITE PLATE GIRDER UNIT
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

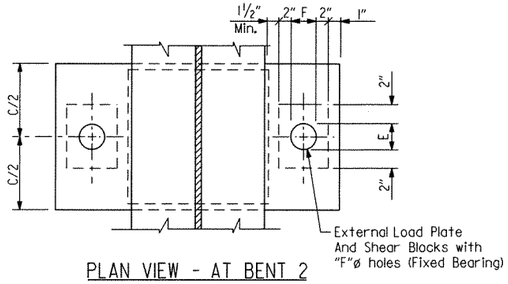
DRAWN BY: RNF DATE: OCT. 2010
CHECKED BY: DCW DATE: OCT. 2010
DESIGNED BY: SRY DATE: OCT. 2010
FILENAME: B060897_S8.DGN
SCALE: AS SHOWN

BRIDGE NO. 07205 DRAWING NO. 51786

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 85 | 182 |
| | | | | ① | 07205 | ELASTO. BRGS. | | 51787 |



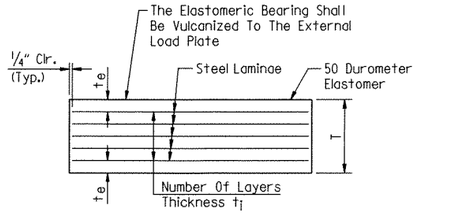

FRONT VIEW - AT BENT 2




PLAN VIEW - AT BENT 2

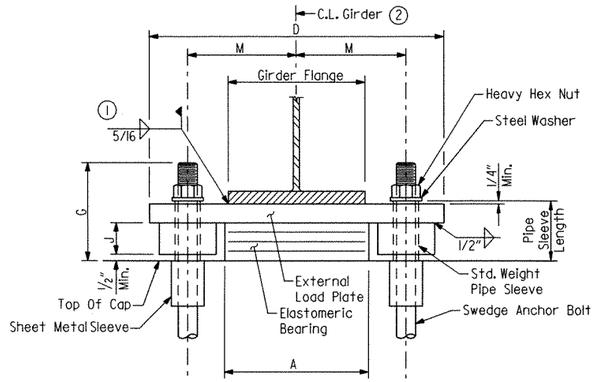
① Care shall be taken to ensure that the external load plate is in full and complete contact with the girder flange before welding begins.

② Centerline elastomeric pad shall be aligned with centerline girder.

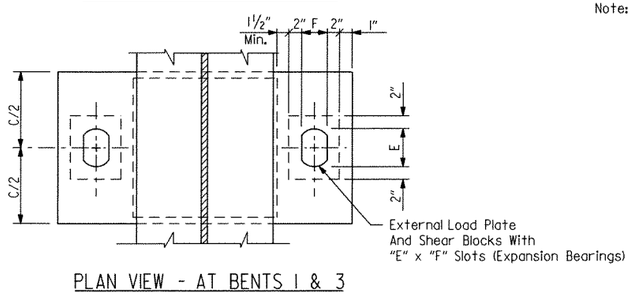



$t_e$ = Thickness Of Elastomer Cover On Top And Bottom Of Pad
$t_i$ = Thickness Of Elastomer Between Steel Laminae
N = Number Of Elastomer Layers Of Thickness $t_i$

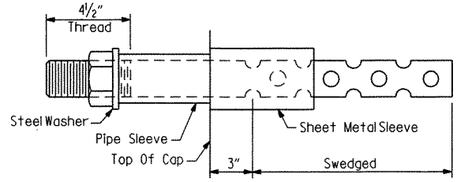
ELASTOMERIC BEARING




FRONT VIEW - AT BENTS 1, 3



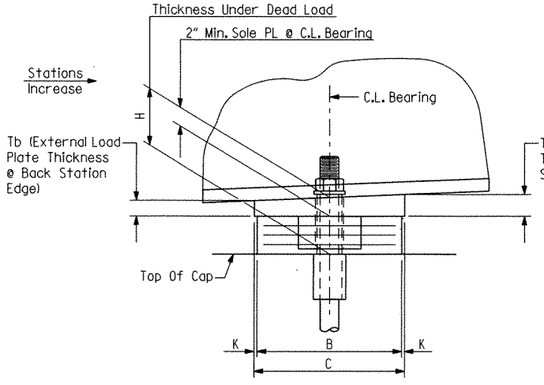

PLAN VIEW - AT BENTS 1 & 3




ANCHOR BOLT DETAIL

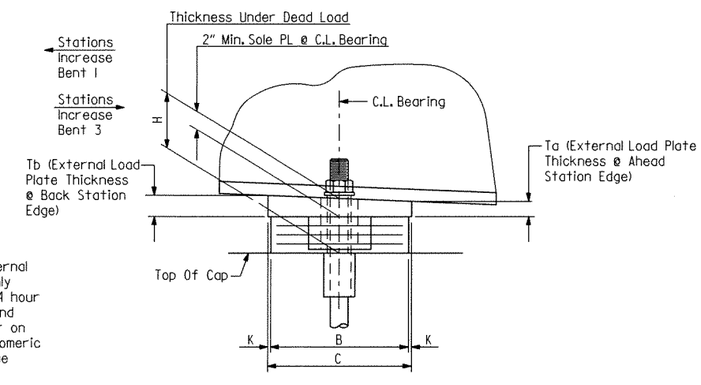
Note: Anchor bolts may be cast in place or drilled and grouted into place. If anchor bolts are to be cast in place, the galvanized sheet metal sleeves will not be required.

If anchor bolts are to be drilled and grouted in place, the galvanized sheet metal sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of structural steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a OPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel In Plate Girder Spans (M270, Gr. 50)."




SIDE VIEW - AT BENT 2

Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the beam will be allowed only when: 1) The approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F: and 2) The slots in the external load plate are positioned to center on the anchor bolts: and 3) No horizontal deformation of the elastomeric pad is evident. If welding at other temperatures is required, the Engineer will provide adjustment data.




SIDE VIEW - AT BENTS 1, 3

TABLE OF FABRICATOR VARIABLES

| Bridge No. | Location | | Bearing Type | No. Of Bearings Each Bent | * Maximum Design Load (Kips) | Elastomeric Pad | | | | | | | | External Load Plate | | | | | | | | | Anchor Bolt | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bent No.(s) | Beam Or Girder No. | | | | G | H | A | B | N | $t_i$ | $t_e$ | No. & Thickness Of Steel Laminate | T | C | D | E | F | J | K | M | $T_a$ | $T_b$ | Anchor Bolt (Dia. x L) | Anchor Bolt Grade | Pipe Sleeve Size (Dia. x L) | Sheet Metal Sleeve Size (Dia. x L) | Steel Washer Size (O.D.) |
| 07205 | 1 | All | Exp. | 5 | 85 | 8 13/16" | 5 9/16" | 18" | 9" | 5 | 1/2" | 1/4" | 6 @ 12 Ga. | 3 5/8" | 10" | 37 1/4" | 5" | 3 1/8" | 3" | 1/2" | 14 11/16" | 2.07 | 1.93 | 2" x 31" | 55 | 2 1/2" x 5 11/16" | 4" x 9" | 3 3/4" |
| | 2 | All | Fixed | 5 | 228 | 9 15/16" | 6 3/16" | 20" | 12 1/2" | 6 | 1/2" | 1/4" | 7 @ 12 Ga. | 4 1/4" | 13 1/2" | 40 1/2" | 3 3/4" | 3 3/4" | 3 1/2" | 1/2" | 15 3/8" | 2.02 | 1.98 | 2 1/2" x 38" | 55 | 3" x 6 7/16" | 4" x 9" | 4 1/2" |
| | 3 | All | Exp. | 5 | 85 | 8 13/16" | 5 9/16" | 18" | 9" | 5 | 1/2" | 1/4" | 6 @ 12 Ga. | 3 5/8" | 10" | 37 1/4" | 5" | 3 1/8" | 3" | 1/2" | 14 11/16" | 1.95 | 2.05 | 2" x 31" | 55 | 2 1/2" x 5 11/16" | 4" x 9" | 3 3/4" |

* Maximum Design Load = Service I Limit State

## GENERAL NOTES

Elastomeric bearings shall conform to Section 808 of the Standard Specifications and shall be paid for at the unit price bid for "Elastomeric Bearings."

External load plates and shear blocks shall conform to AASHTO M270, Grade 50. Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M232, Class C or AASHTO M298, Class 50.

External load plates (with shear blocks as applicable) shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(B) for painted steel and painted in accordance with Section 807.75. Mask areas of field welding. The color of paint shall be Green and shall match Fed. Std. 595B, Color Chip No. 34097. Painting will not be paid for directly but will be considered subsidiary to "Elastomeric Bearings".

Anchor bolts, washers and nuts shall conform to Subsection 807.07 of the Standard Specifications. The anchor bolt grade of steel shall be as specified in the "Table Of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe sleeves, anchor bolts, washers and nuts shall be paid for at the unit price bid for "Structural Steel In Plate Girder Spans (M270, Gr. 50)". External load plates and shear blocks will not be measured or paid for separately but will be considered included in the unit bid price for "Elastomeric Bearings".

Bearings shall be seated in accordance with Subsection 808.08.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14058
SETH R. YANCEY
10/28/2010

BRIDGE ENGINEER

# DETAILS OF ELASTOMERIC BEARINGS
# HIGHWAY 89
# OVER INTERSTATE 40
# LONOKE COUNTY

ROUTE 89 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RNF DATE: OCT. 2010 FILENAME: B060897_EI.DGN
CHECKED BY: JHR DATE: OCT. 2010 SCALE: AS SHOWN
DESIGNED BY: SRY DATE: OCT. 2010

BRIDGE NO. 07205 DRAWING NO. 51787

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED |
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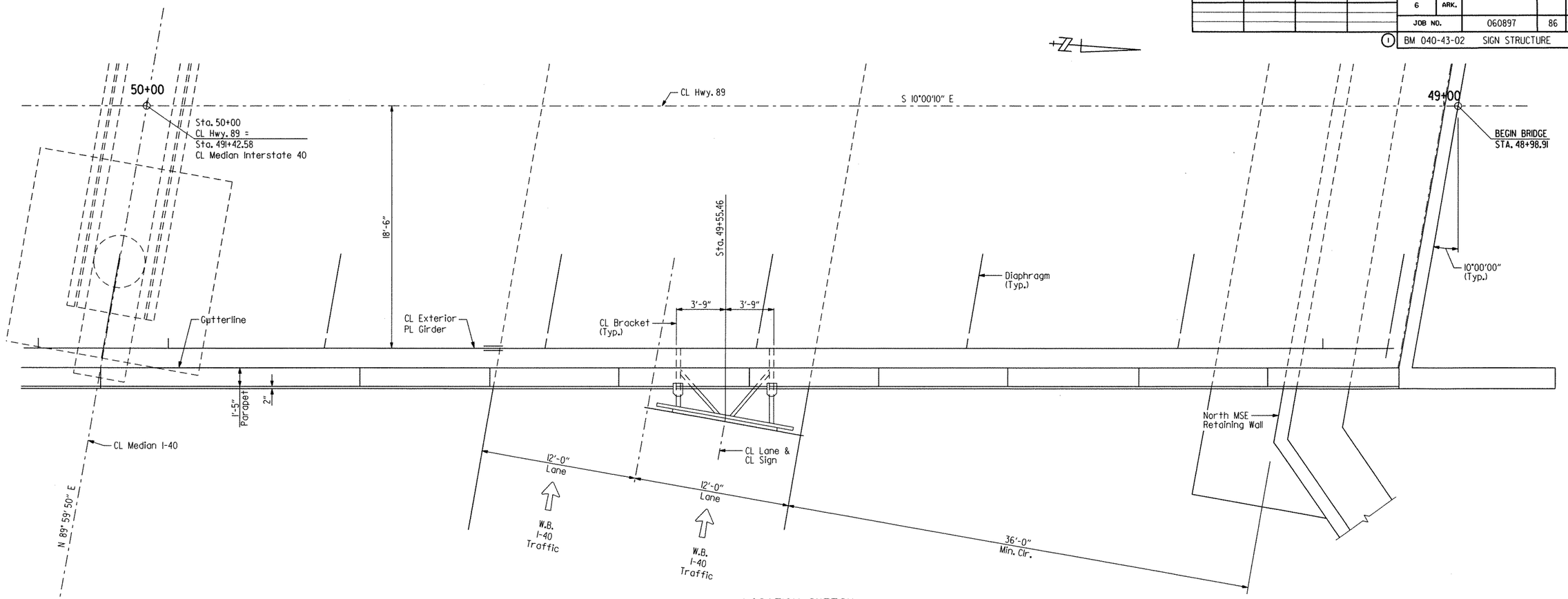
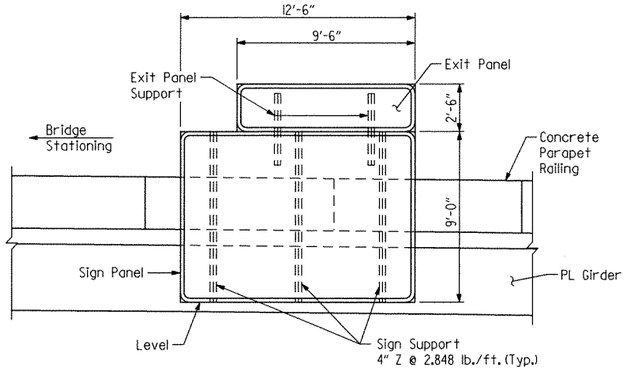
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | | |
| JOB NO. | | 060897 | 86 | 182 |
| (1) BM 040-43-02 | | SIGN STRUCTURE | | 51788 |




LOCATION SKETCH
1/4" = 1'-0"




ELEVATION OF SIGN
(Normal To Sign)
1/4" = 1'-0"

STATE OF ARKANSAS
LICENSED
PROFESSIONAL
ENGINEER
No. 8674
10-27-11
JOHN H. RUDDELL

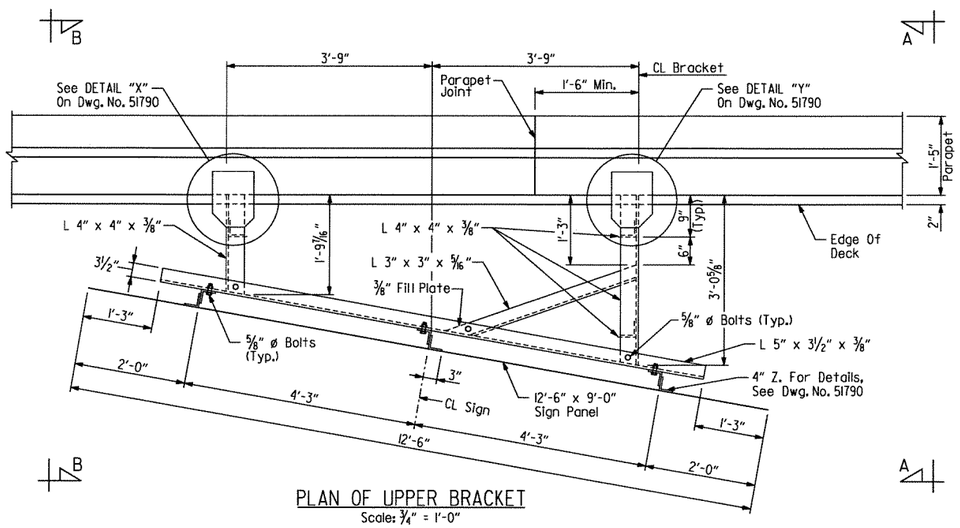
BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF BRIDGE MOUNTED
SIGN STRUCTURE
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

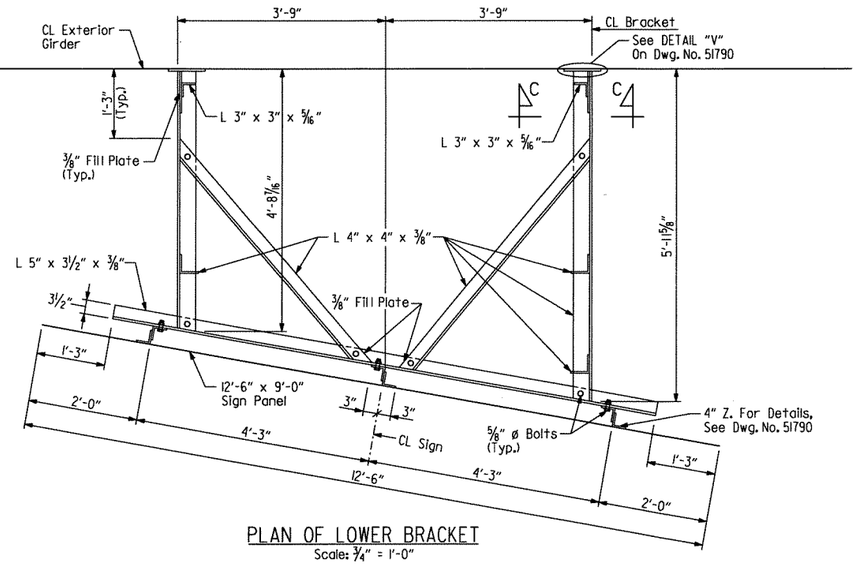
DRAWN BY: SRY DATE: DEC 2010
CHECKED BY: JHR DATE: DEC 2010
DESIGNED BY: SRY DATE: DEC 2010
FILENAME: B060897_T1.DGN
SCALE: AS NOTED

STR. NO. BM-040-43-02 DRAWING NO. 51788

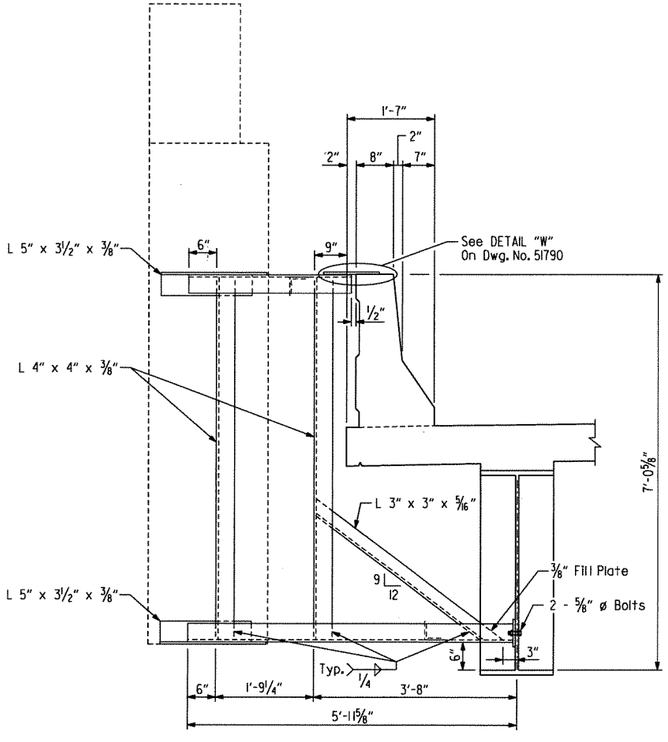
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 87 | 182 |
| | | | | (1) BM 040-43-02 | | SIGN STRUCTURE | | 51789 |



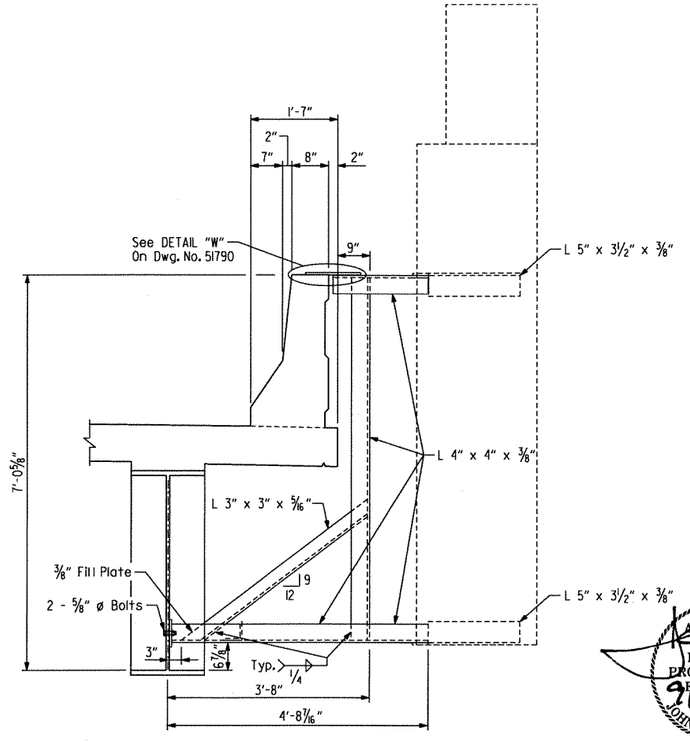

PLAN OF UPPER BRACKET
Scale: 3/4" = 1'-0"




PLAN OF LOWER BRACKET
Scale: 3/4" = 1'-0"




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




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

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications For Highway Construction (2003 Edition) with Applicable Supplemental Specifications And Special Provisions Job No. 060897.

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, Fifth Edition 2009.

BASIC WIND SPEED: 90 m.p.h.

MATERIALS AND STRENGTHS:
Structural Steel (AASHTO M 270, GR. 36, Fy = 36,000 psi)
Bolts (AASHTO M 164, Type 1)
Nuts (AASHTO M 291 or AASHTO M 292, Grade 2H, Grade DH or Grade 10S)
Washers (AASHTO M 293)
Locknuts (Approved Type, meeting or exceeding AASHTO M 292)

Structral members of sign support shall be galvanized in accordance with Subsection 807.19.

Bolts, nuts and washers shall be galvanized in accordance with Subsection 807.06.

Locknuts to be equipped with nylon locking inserts or other approved locking system. Locknuts to be installed according to Manufacturers recommendations.

The Contractor shall make check measurements in the field and make any adjustments necessary to avoid any diaphragms, splice plates and joints in parapet on the bridge. This may include shifting the sign structure with approval from the Engineer.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8677
JOHN H. RUDDELL

BRIDGE ENGINEER

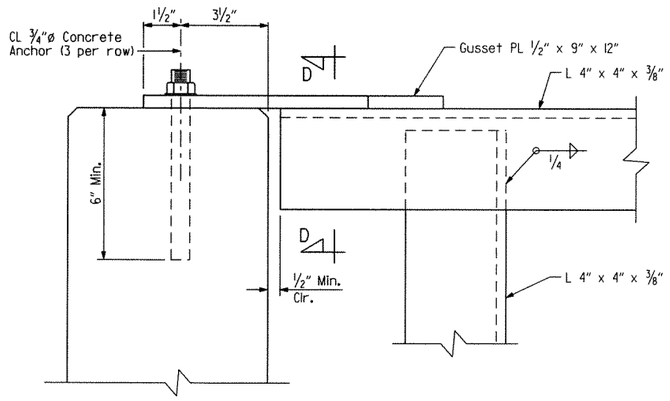
# SHEET 2 OF 3
# DETAILS OF BRIDGE MOUNTED SIGN STRUCTURE
# HIGHWAY 89
# OVER INTERSTATE 40
# LONOKE COUNTY
## ROUTE 89 SEC. 1
## ARKANSAS STATE HIGHWAY COMMISSION
### LITTLE ROCK, ARK.

DRAWN BY: SRY DATE: DEC 2010 FILENAME: B060897_T2.DGN
CHECKED BY: JHR DATE: DEC 2010 SCALE: AS NOTED
DESIGNED BY: SRY DATE: DEC 2010

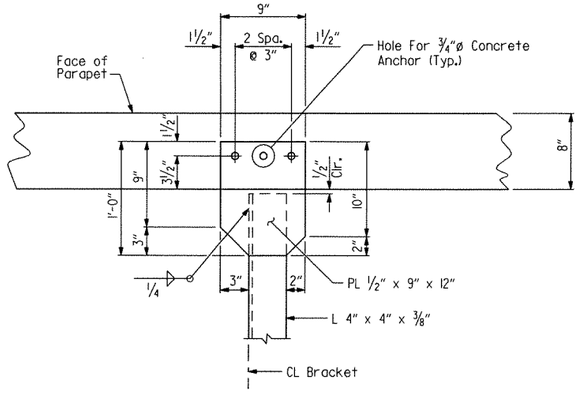
STR. NO. BM-040-43-02 DRAWING NO. 51789

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 88 | 182 |
| | | | | (1) BM 040-43-02 | | SIGN STRUCTURE | | 51790 |

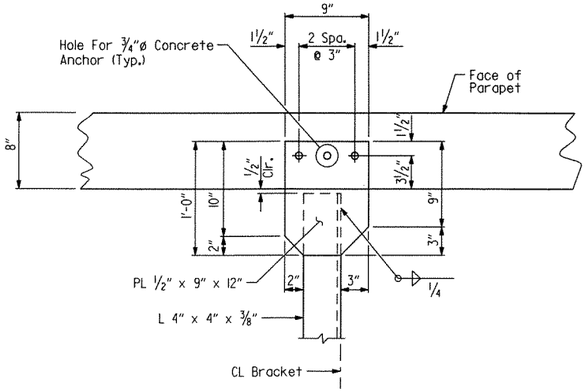
Note:
The Concrete Anchors shall be an approved OPL type and installed according to Manufacturer's recommendations.



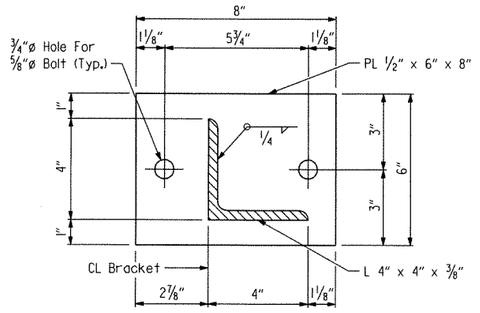

DETAIL W
Scale: NTS



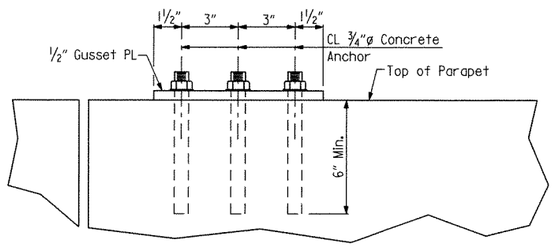

DETAIL X
Scale: 1½"= 1'-0"



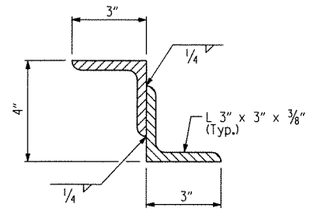

DETAIL Y
Scale: 1½"= 1'-0"




DETAIL V
Scale: NTS




VIEW D-D
Scale: NTS




Note:
Structural Z Sign Support may be fabricated from angles as shown.

DETAILS OF ALTERNATE Z SIGN SUPPORT
Scale: NTS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8611
JOHN H. RUDDELL
10-27-11

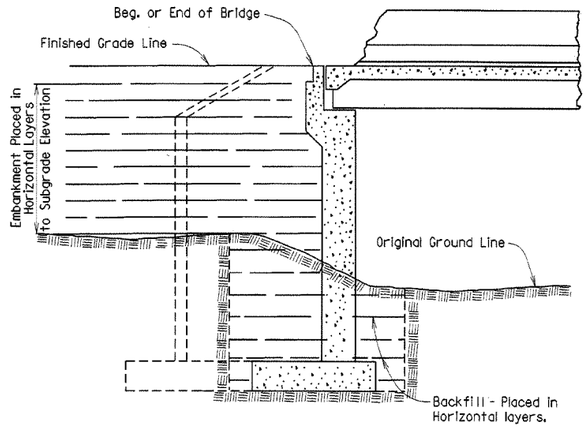
BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF BRIDGE MOUNTED SIGN STRUCTURE
HIGHWAY 89
OVER INTERSTATE 40
LONOKE COUNTY
ROUTE 89 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

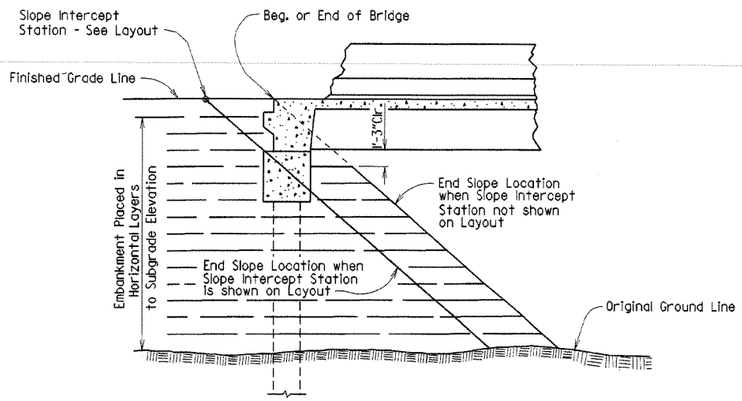
DRAWN BY: SRY DATE: DEC 2010
CHECKED BY: JHR DATE: DEC 2010
DESIGNED BY: SRY DATE: DEC 2010
FILENAME: B060897_T3.DGN
SCALE: AS NOTED

STR. NO. BM-040-43-02 DRAWING NO. 51790

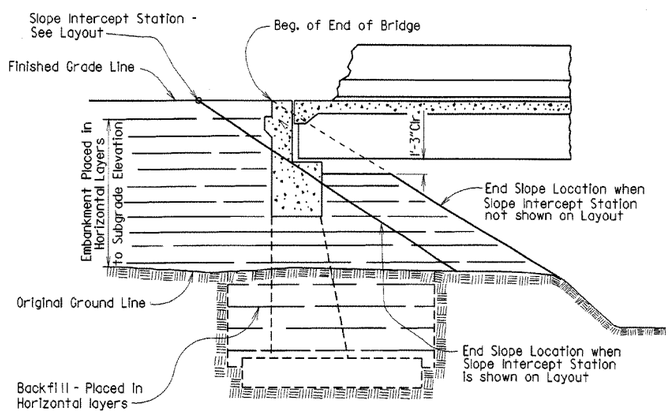
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 04-10-2003 | | | | 6 | ARK. | | 89 | |
| | | | | JOB NO. | | | | |
| | | | | ① | EMBANKMENT & BACKFILL | | I888A | |



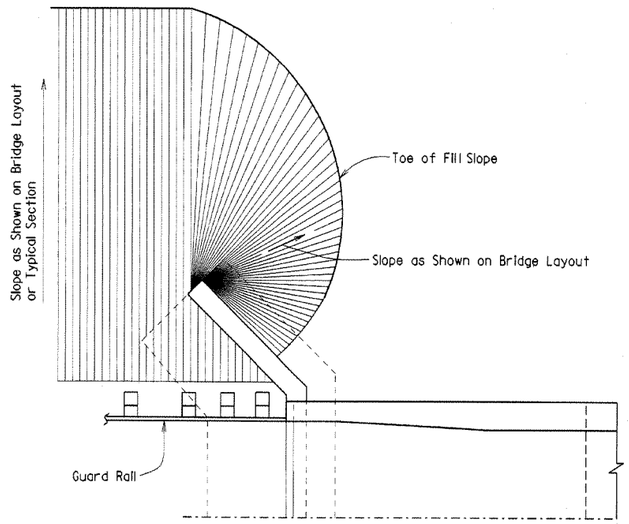

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



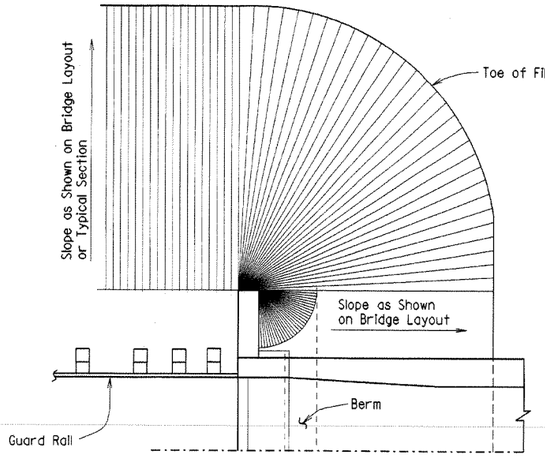

EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



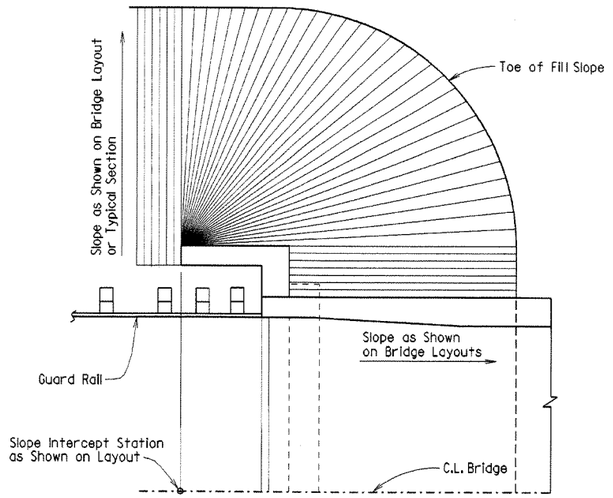

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS




VERTICAL WALL ABUTMENTS




SPILL-THROUGH END BENTS WITH STUB WING




SPILL-THROUGH END BENTS WITH TURNBACK WING




SPILL-THROUGH END BENTS WITH TRANSITION WING

## METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 4 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to subsections 210.09, 210.10 and 801.08 of the Specifications for construction requirements.

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

# EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

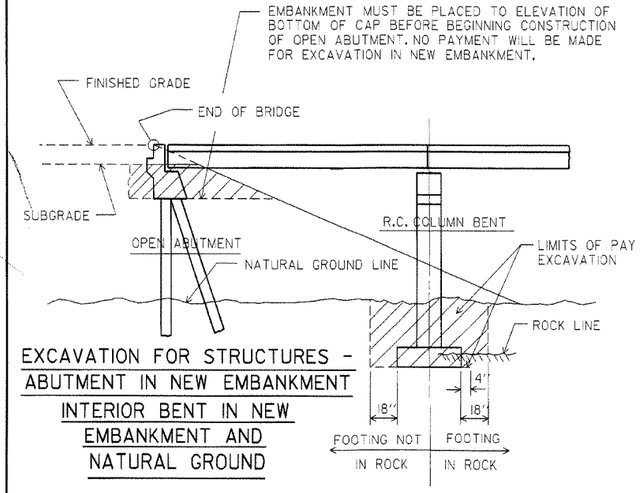
DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI888A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

BRIDGE NO. DRAWING NO. I888A

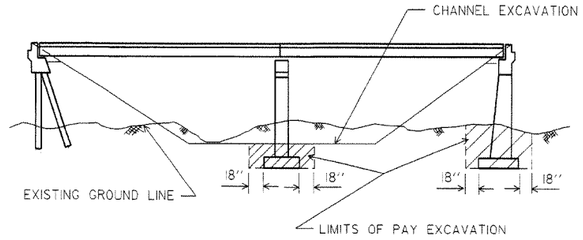
BI888A.STD

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 04-10-2003 | | | | 6 | ARK. | | 90 | |
| | | | | JOB NO. | | | | |

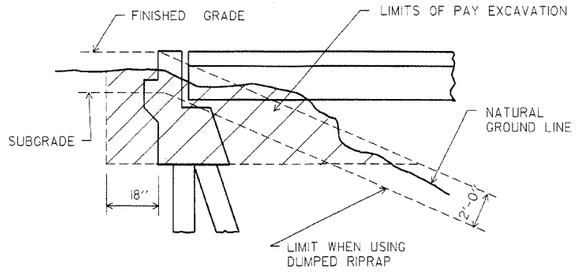
(1) RIP. & EXCAV. 1891F



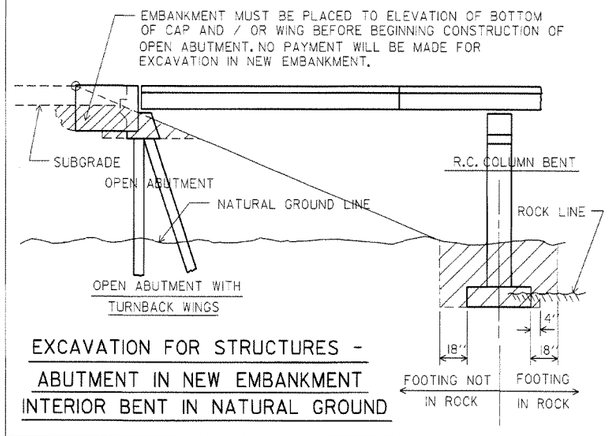

EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



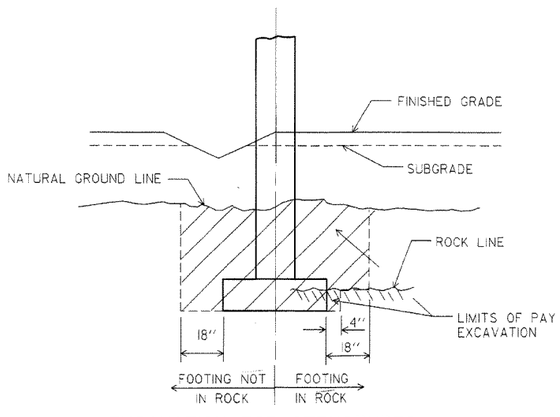

EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



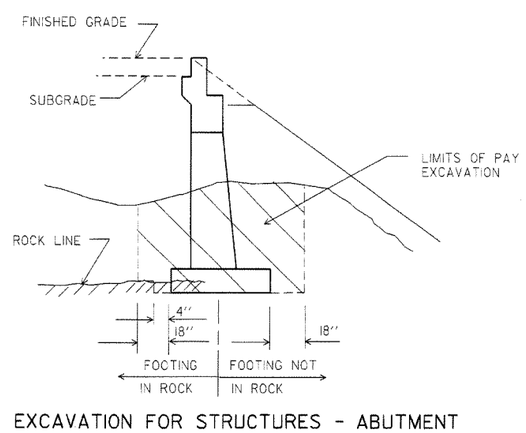

EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



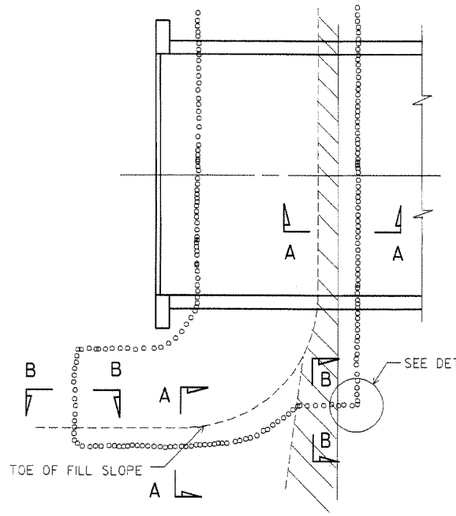

EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



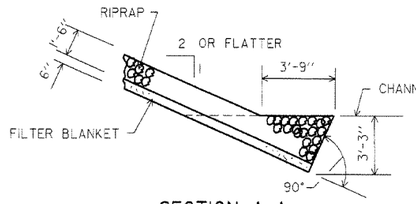

EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND




EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



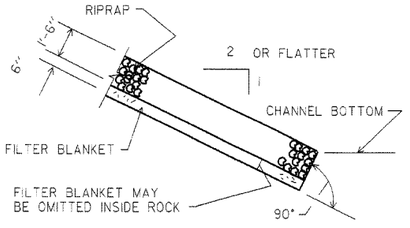

PLAN OF DUMPED RIPRAP




SECTION A-A

( TOE EXCAVATION IN SOIL )

EXCAVATION FOR TOES IS NOT A PAY ITEM



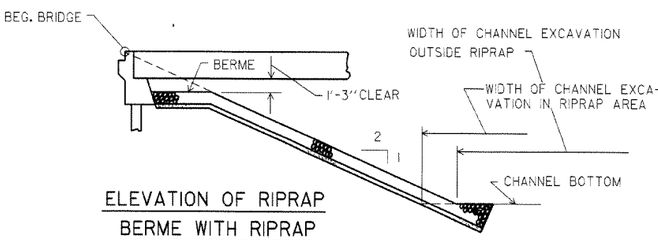

SECTION A-A

( TOE EXCAVATION IN ROCK )

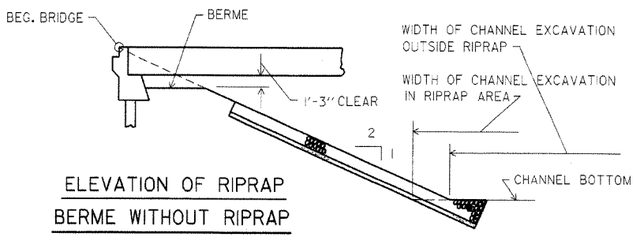
NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

NOTE : IN LIEU OF AN AGGREGATE FILTER BLANKET, A SYNTHETIC FIBER GEOTEXTILE FABRIC COMPLYING WITH THE REQUIREMENTS OF SUBSECTION 816.02(e) MAY BE USED.

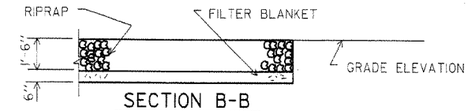
NOTE : DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.



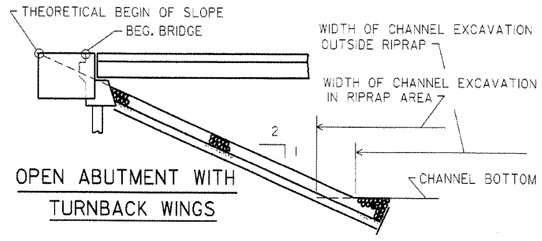

ELEVATION OF RIPRAP BERME WITH RIPRAP



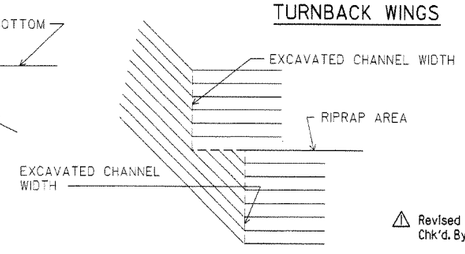

ELEVATION OF RIPRAP BERME WITHOUT RIPRAP




SECTION B-B




OPEN ABUTMENT WITH TURNBACK WINGS




DETAIL C

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

# DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES

ROUTE SEC.

## ARKANSAS STATE HIGHWAY COMMISSION

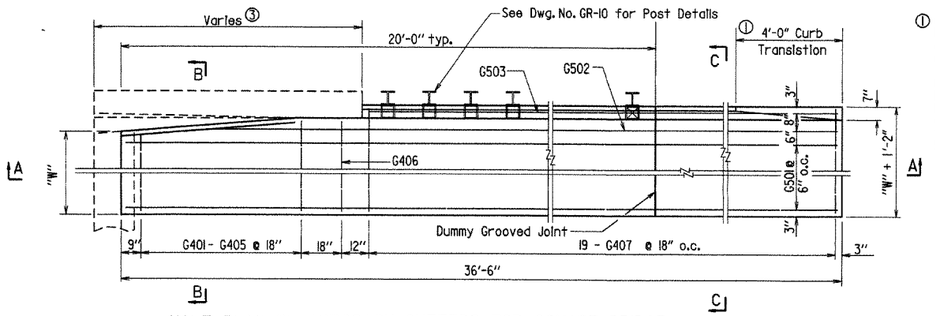
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

BRIDGE NO. DRAWING NO. 1891F

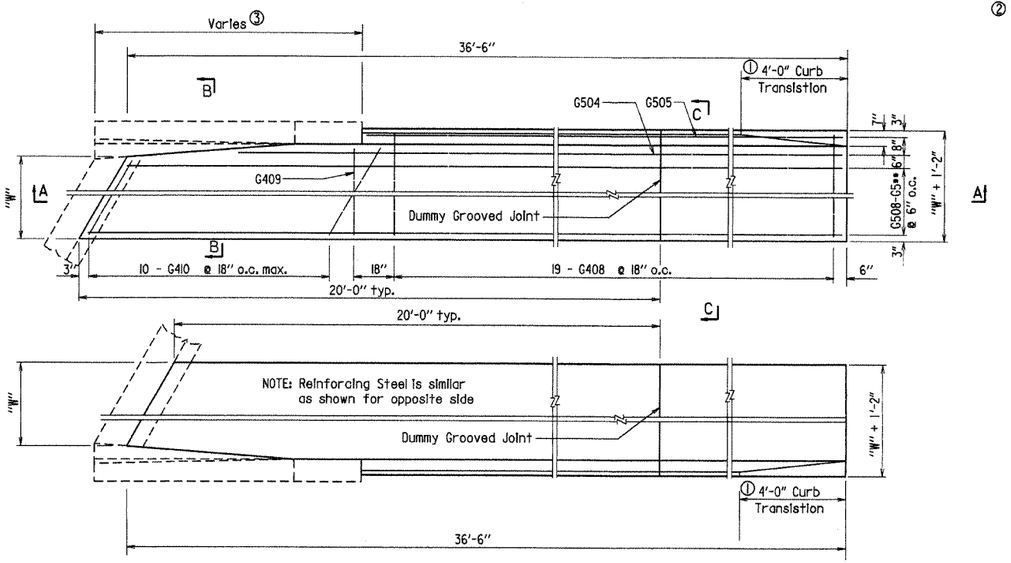
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 4-10-2003 | | | | 6 | ARK. | | 91 | |
| 07-14-2010 | | | | JOB NO. | | | | |

① TYPE C GUTTERS - 2016C




HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

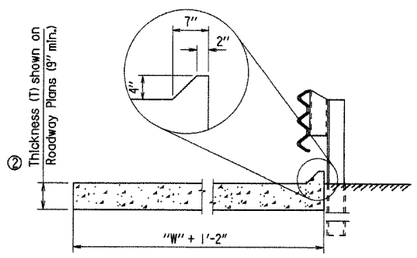
③ Length Varies See End Bt. Details for Actual Length. Quantities Shown are for 10'-0" Transition Rail.



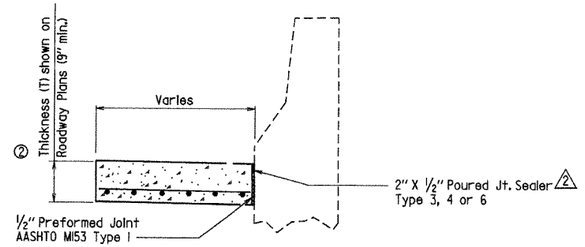

PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

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

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

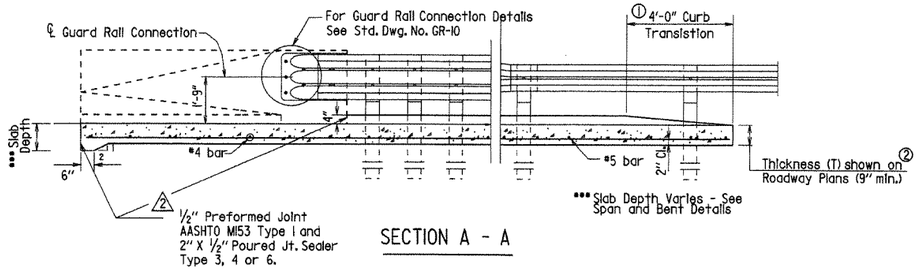



SECTION C - C
N.T.S.




SECTION B - B
N.T.S.

② Thickness shall match Approach Slab Thickness. Thickness shall be 9" If Approach Slab is not used.




SECTION A - A

## ***BAR LIST FOR ONE TYPE C GUTTER

| Mark | No. Req'd. for Width "W" 4'-0" | 6'-0" | 8'-0" | 10'-0" | Length | Square or Skewed |
|---|---|---|---|---|---|---|
| G401 - G405 | 1 each | 1 each | 1 each | 1 each | "W"-3" to "W"+3" | Square |
| G406 | 1 | 1 | 1 | 1 | "W"+3" | Square |
| G407 | 19 | 19 | 19 | 19 | "W"+ 10" | Square |
| G408 | 19 | 19 | 19 | 19 | "W"+ 10" | Skewed |
| G409 | 1 | 1 | 1 | 1 | "W"+3" | Skewed |
| G410 | 10 | 10 | 10 | 10 | * | Skewed |
| | | | | | | |
| G501 | 8 | 12 | 16 | 20 | 36'-2" | Square |
| G502 | 1 | 1 | 1 | 1 | 31'-8" | Square |
| G503 | 1 | 1 | 1 | 1 | 27'-2" | Square |
| G504 | 1 | 1 | 1 | 1 | * | Skewed |
| G505 | 1 | 1 | 1 | 1 | * | Skewed |
| | | | | | | |
| | | | | | | |
| G508 - G5__ ** | 1 each | 1 each | 1 each | 1 each | * | Skewed |
| | | | | | | |

*** Special bar list required when skew angle exceeds 35° for W = 10'; 40° for W = 8'; 50° for W = 6'; or 60° for W = 4'.

* Bar Lengths vary with Skew.

** G515 for W = 4'
G519 for W = 6'
G523 for W = 8'
G527 for W = 10'

## QUANTITIES FOR ONE SQUARE APPROACH GUTTER ③

| "W" Width (ft.) | Reinforcing Steel (lbs.) | Concrete (cubic yards) T=9" | T=10" | T=11" | T=12" | T=14½" |
|---|---|---|---|---|---|---|
| | | | | | | |
| 4 | 439 | 5.19 | 5.75 | 6.31 | 6.88 | 8.25 |
| 6 | 623 | 7.24 | 8.02 | 8.80 | 9.59 | 11.52 |
| 8 | 807 | 9.28 | 10.29 | 11.30 | 12.32 | 14.79 |
| 10 | 991 | 11.33 | 12.56 | 13.79 | 15.03 | 18.06 |
| | | | | | | |

## GENERAL NOTES

Concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement.

Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 ( fy = 60,000 psi ).

Approach Gutters will be measured and paid for in accordance with Section 504 of the Standard Specifications.

1 Revised and redrawn 4-10-2003. By KDH Ck. By: CJF 4-10-2003

2 Added joint sealer type 07-14-2010 by MJT Checked by: CJF 7-14-2010

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

# DETAILS OF STANDARD TYPE C APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B2016C.STD
CHECKED BY: CJF DATE: 4-10-2003 SCALE: 3/8" = 1'-0"
DESIGNED BY: STD. DATE:

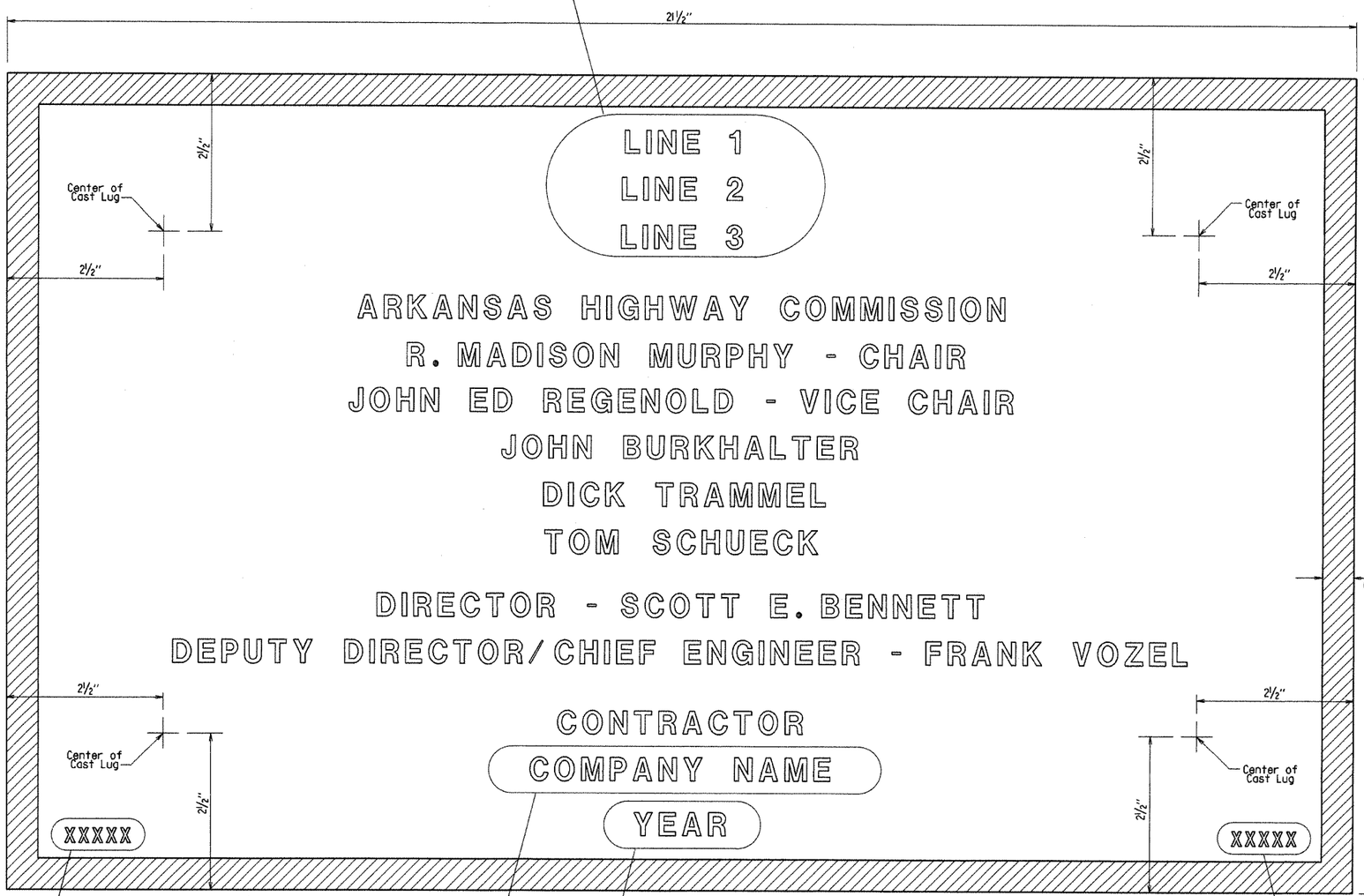
BRIDGE NO. DRAWING NO. 2016C

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 9-8-11 | | | | 6 | ARK. | | 92 | |
| | | | | JOB NO. | | | | |

① NAME PLATE 2387

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

| | Example 1 | Example 2 | Example 3 | Example 4 |
|---|---|---|---|---|
| Line 1 | Red River | Southern | Saline | |
| Line 2 | Relief | Railroad | River | Highway 5 |
| Line 3 | | Overpass | Relief | |



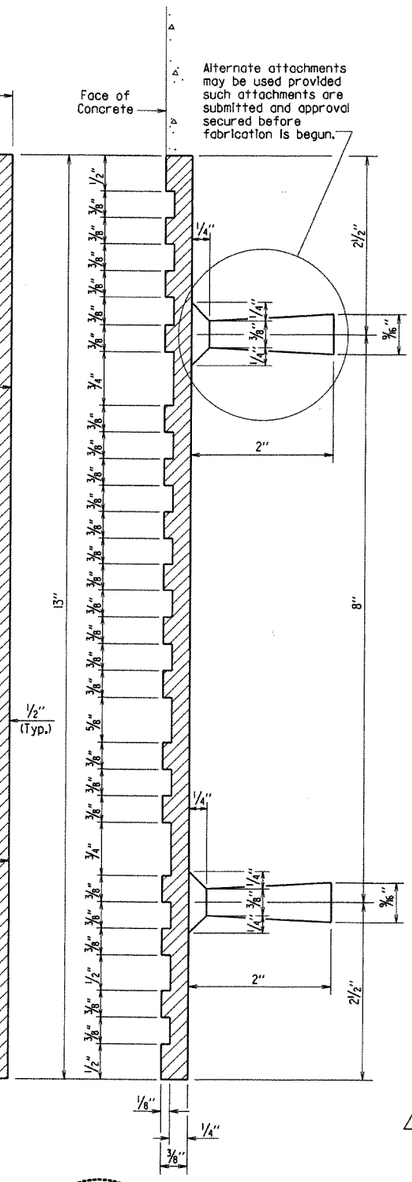

Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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

Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example : 2001

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : A1234
05432

TYPICAL BRIDGE NAME PLATE




GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2003 Edition) with applicable Supplemental Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812 of the Standard Specifications.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 5/8" to 9/16"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

⚠ Revised and Redrawn 9-8-11 KDH Checked By: CRE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELIER
BRIDGE ENGINEER

# DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-8-11 FILENAME: B2387.STD
CHECKED BY: CRE DATE: 9-8-11 SCALE: 1'-0" = 1'-0" OR AS NOTED
DESIGNED BY: STD. DATE: —

BRIDGE NO.

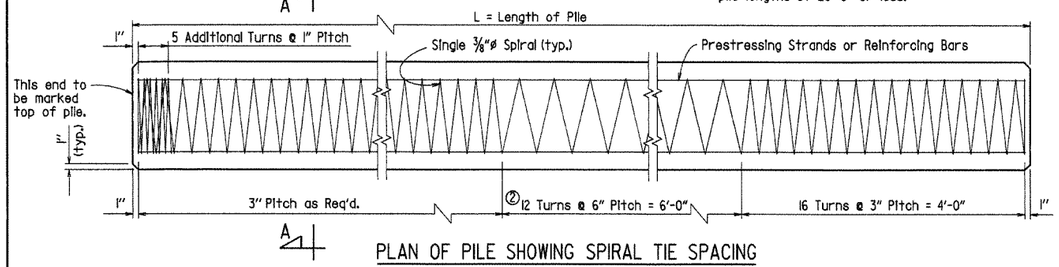
DRAWING NO. 2387

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 12-10-2009 | | | | 6 | ARK. | | 93 | |
| | | | | JOB NO. | | | | |

① CONCRETE PILES 14964

NOTE: Spirals terminate with 1½ turns.

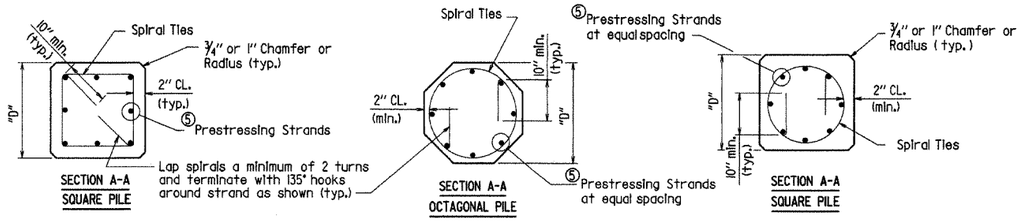
② Omit this section and use 3" pitch throughout for pile lengths of 20'-0" or less.




## PLAN OF PILE SHOWING SPIRAL TIE SPACING

For anchorage of pile to bent, see Bent Details.

NOTE: Strand location shall be symmetrical about the axis of the pile with no more than one strand difference between any two adjacent sides. Circular spiral ties are required for odd number of strands.




## PRESTRESSED CONCRETE PILES

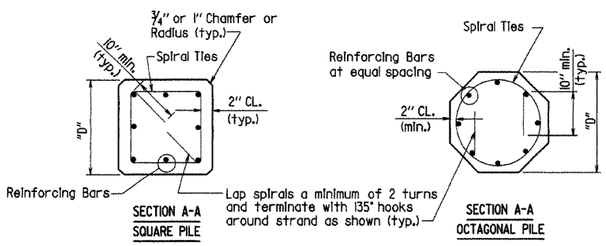
① Number based on initial prestress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

"B" — 0.75 Low Relaxation; 0.70 Stress-Relieved

⑤ See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

## PRESTRESSED CONCRETE PILE PROPERTIES

| | Grade | Strand Diameter | ① Number of Strands per Size "D" 16" Oct. | 18" Oct. | ④ 14" Sq. | 16" Sq. | 18" Sq. | Minimum Ultimate Tensile Strength Per Strand (Lbs.) | Initial Prestressing Force Per Strand (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| Stress-Relieved | 250 | ⅜" | 11 | 13 | 10 | 13 | 16 | 27,000 | 18,900 |
| | | ½" | 8 | 10 | 8 | 10 | 12 | 36,000 | 25,200 |
| | 270 | ⅜" | 9 | 11 | 8 | 12 | 14 | 31,000 | 21,700 |
| | | ½" | 7 | 9 | 6 | 8 | 10 | 41,300 | 28,900 |
| Low Relaxation | 250 | ⅜" | 9 | 11 | 8 | 11 | 14 | 27,000 | 20,200 |
| | | ½" | 7 | 9 | 6 | 8 | 10 | 36,000 | 27,000 |
| | 270 | ⅜" | 8 | 10 | 7 | 9 | 12 | 31,000 | 23,300 |
| | | ½" | 6 | 8 | 6 | 7 | 9 | 41,300 | 31,000 |

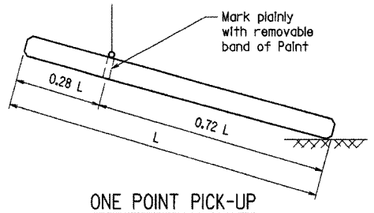



## NON-PRESTRESSED PILE REINFORCING

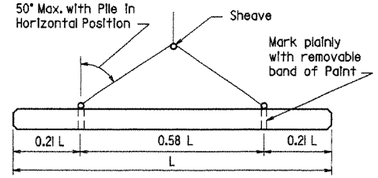
| Pile Size | No. Req'd. | Bar Size |
|---|---|---|
| 16" Oct. | 8 | # 7 |
| 18" Oct. | 8 | # 7 |
| ④ 14" Sq. | 8 | # 7 |
| 16" Sq. | 8 | # 7 |
| 18" Sq. | 8 | # 8 |

④ 14" sq. piles to be used in Seismic Performance Zone 1 only.

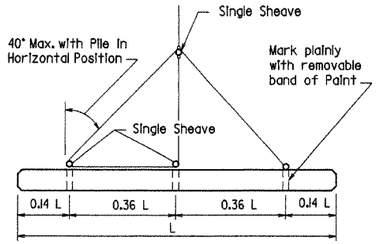
## NON-PRESTRESSED CONCRETE PILES



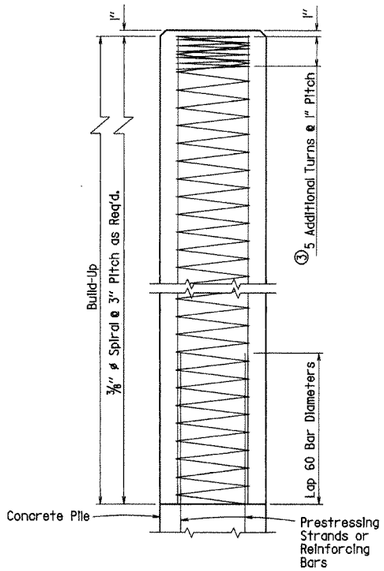

## ONE POINT PICK-UP




## TWO POINT PICK-UP




## THREE POINT PICK-UP




## BUILD-UP

③ The five additional turns of spiral reinforcing may be omitted for build-up without additional driving.

## MAXIMUM PICKUP LENGTHS "L"

| Type of Pick-Up | Prestressed 16" Oct. | 18" Oct. | Non-Prestressed 16" or 18" Oct. | Prestressed ④ 14" Sq. | 16" Sq. | 18" Sq. | Non-Prestressed ④ 14" Sq. | 16" Sq. | 18" Sq. |
|---|---|---|---|---|---|---|---|---|---|
| One Point | 52' | 55' | 46' | 55' | 59' | 63' | 52' | 51' | 55' |
| Two Point | 75' | 80' | 67' | 79' | 84' | 90' | 75' | 74' | 79' |
| Three Point | 105' | 112' | 93' | 110' | 117' | 126' | 104' | 103' | 111' |

### GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable Supplemental Specifications and Special Provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fourth Edition.

SEISMIC PERFORMANCE ZONES: 1 & 2

The Contractor may use prestressed piles or non-prestressed piles. Either type will be measured and paid for at the contract unit price bid for "Concrete Piling".

SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of AASHTO M 31 or M 53, Gr. 60.

MANUFACTURE, TRANSPORTATION AND STORAGE: Shipment of piles from the plant site or pile driving will not be permitted until the required minimum compressive strength is reached, and in no case less than 10 days after pouring the concrete. Prestressed piles may be removed from the casting bed to nearby storage any time after transfer of stress. See Section 802 "Concrete for Structures" of the Standard Specifications for additional information.

⚠ Unless otherwise approved by the Engineer, all protruding or exposed pile lifting or transporting devices above the finished ground shall be removed after pile driving is complete. Removal shall be a minimum of 1" below the surface of the pile and the cavity shall be filled with a non-shrink grout listed on the Department's QPL.

FORMS: For forming exterior of piles, the use of steel forms on concrete-founded casting beds is required unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding ¼" per foot.

TOLERANCES: Pile ends shall be plane surfaces perpendicular to the longitudinal axis of pile with a maximum tolerance of ⅛" per foot transversely.

The maximum sweep (deviation from straightness measured from end to end of the pile, while not subject to bending forces) shall not exceed ⅛" in 10 feet.

BUILD-UPS: To provide for build-ups of piles where authorized by the Engineer, concrete shall be cut back to expose the reinforcing steel for a distance sufficient to provide a lap of 60 diameters of the reinforcing bars required for build-up. Reinforcing for build-ups shall be the reinforcing shown for non-prestressed piles.

INSTALLATION, MEASUREMENT AND PAYMENT: See Section 805 "Piling" of the Standard Specifications.

### ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:

CONCRETE: Concrete in prestressed piles shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 5,000 psi at 28 days. Compressive strength at transfer of the prestressing force shall be not less than 4,000 psi. Concrete in build-ups shall have a minimum compressive strength of 4,000 psi and shall be cured for a minimum of 10 days.

PRESTRESSING REINFORCING: Seven-wire stress-relieved or low relaxation strands shall conform to the general requirements of AASHTO M 203. Broken wires within individual strands will be permitted up to 2% of the total number of wires in each pile, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand, even though the two broken wires are within the 2% limitation.

### ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:

All concrete shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 4,000 psi at 28 days.

All longitudinal reinforcing bars shall be deformed bars and shall conform to the requirements of AASHTO M 31 or M 53, GR. 60.

⚠ Added paragraph to General Notes KDH 12-10-2009
Checked by: CJF Date: 12-10-2009

STATE OF ARKANSAS ★★★ REGISTERED PROFESSIONAL ENGINEER ★★★ No. 4337 CHARLES P. BRAND
BRIDGE ENGINEER

# STANDARD DETAILS OF CONCRETE PILES IN SEISMIC PERFORMANCE ZONES 1 & 2

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

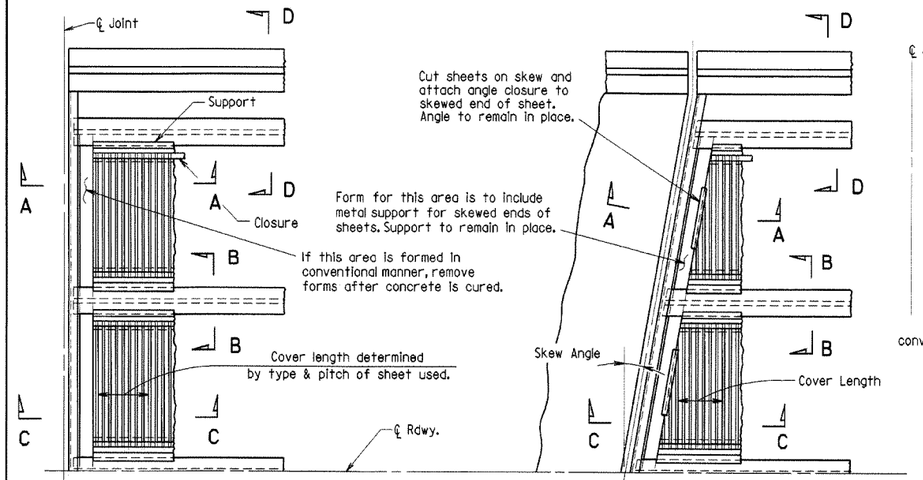
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 1-17-08 FILENAME: bl4964_std.dgn
CHECKED BY: JAC DATE: 1-17-08 SCALE: no scale
DESIGNED BY: Std. DATE: ——

BRIDGE NO. DRAWING NO. 14964

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|---|---|
| 11-27-96 | | | | | | 6 | ARK. | | 94 | |
| 04-10-2003 | | | | | | JOB NO. | | | | |

BR. DECK FORMS 14991



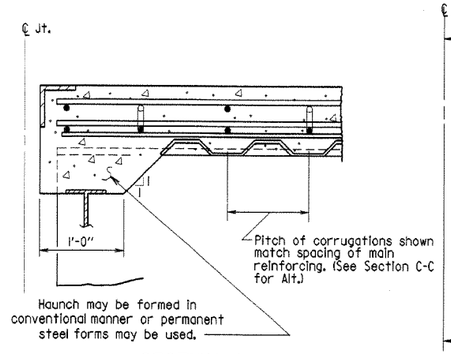

## PART PLAN - SQUARE SPAN

3/8" = 1'-0"



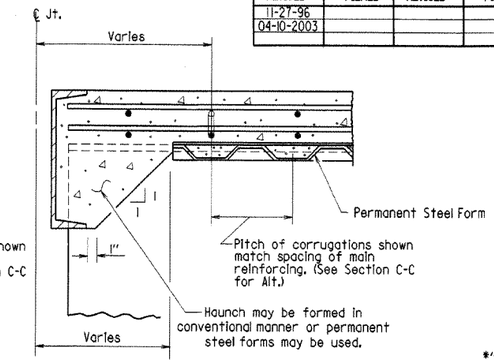

## PART PLAN - SKEWED SPAN

3/8" = 1'-0"



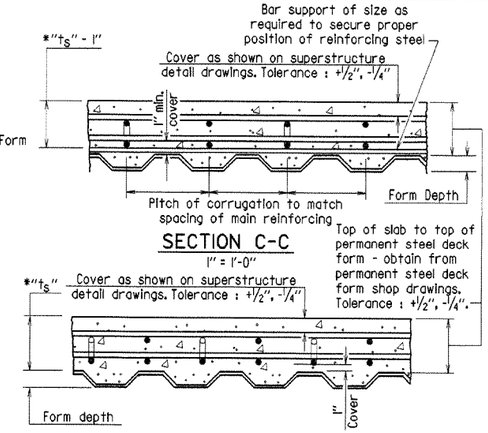

## SECTION A-A

N.T.S.
(Angle at end of span)




## SECTION A-A

N.T.S.
(Channel at end of span)

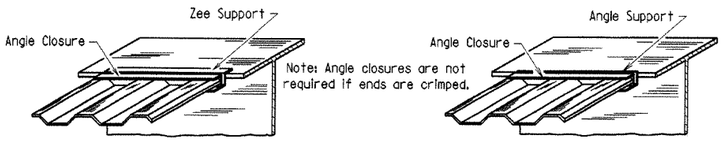



## SECTION C-C

1" = 1'-0"

## SECTION C-C - ALTERNATE

1" = 1'-0"
( Applicable when corrugations do not match spacing of main reinforcement )




## SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

### GENERAL NOTES

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

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

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

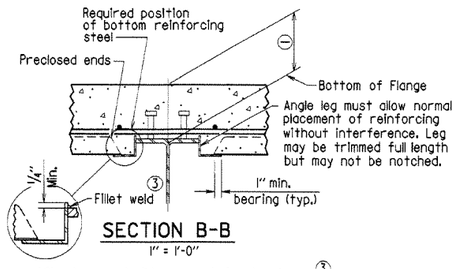
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Bridge Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

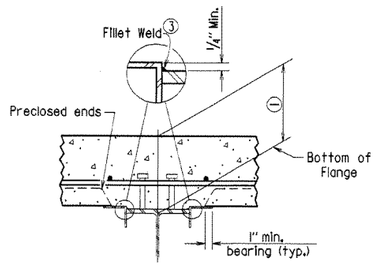
⚠2 Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition), with applicable supplemental specifications and special provisions.




## SECTION B-B

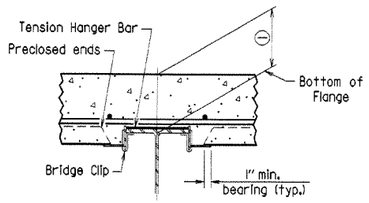
1" = 1'-0"
( Showing permissible support for tension flange where shear connectors are used, and for all compression flanges )

③ Minimum weld: 1/8" x 1" ℄ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



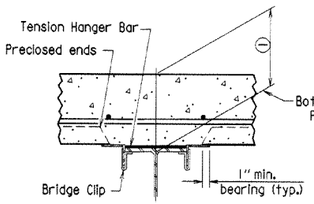

## SECTION B-B

1" = 1'-0"
( Showing permissible support for tension flange where shear connectors are used and for all compression flanges )



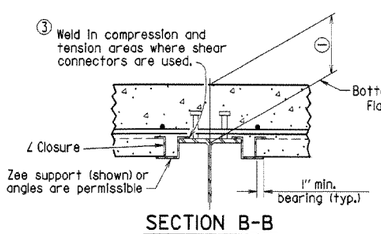

## SECTION B-B

1" = 1'-0"
( Showing permissible support for tension flange where shear connectors are not used )



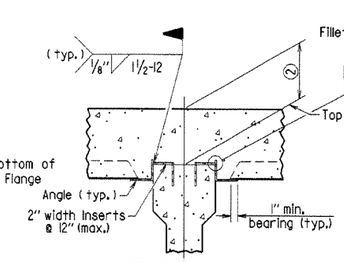

## SECTION B-B

1" = 1'-0"
( Showing permissible support for tension flange where shear connectors are not used )



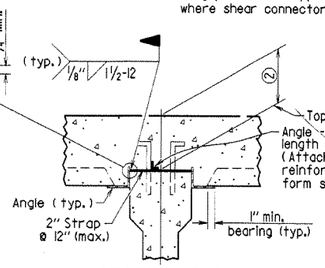

## SECTION B-B

1" = 1'-0"
( Showing ∠ Closure )




## SECTION B-B ( FOR CONCRETE GIRDERS )

1" = 1'-0"
( Showing support by insert cast in girder )

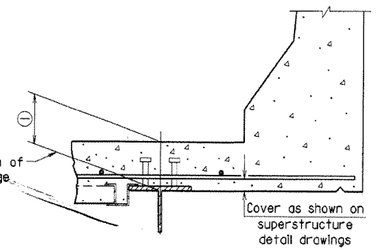



## SECTION B-B ( FOR CONCRETE GIRDERS )

1" = 1'-0"
( Showing support by Strap )

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = $t_s + 1\frac{3}{4}$" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.




## SECTION D-D

1" = 1'-0"
Note: Only Bottom Reinforcing is shown.

⚠1 Redrawn and revised 11/27/96; MJT

⚠2 Revised for 2003 AHTD Construction Specifications and CPB Seal. MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

# DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

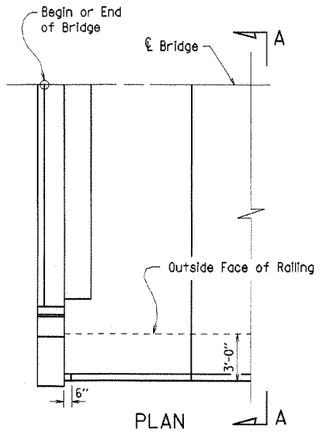
DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96
DESIGNED BY: STD. DATE: —
SCALE: as noted

BRIDGE NO. DRAWING NO. 14991

B14991.STD

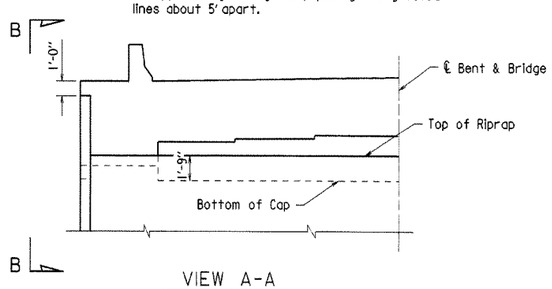
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 04-10-2003 | | | | 6 | ARK. | | 95 | |
| | | | | JOB NO. | | | | |

1 RIPRAP & PILE - 14995A

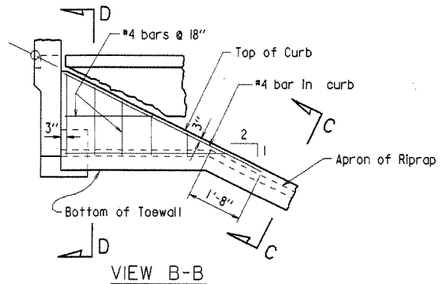



PLAN

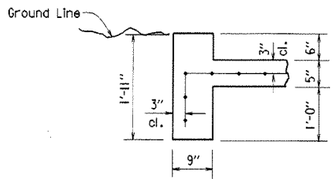
Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



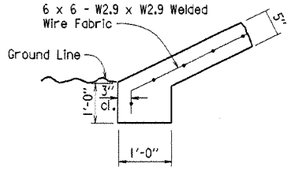

VIEW A-A



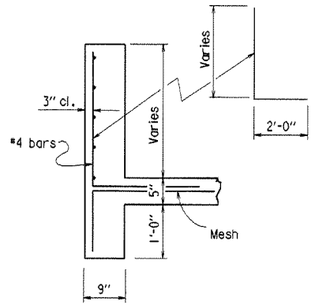

VIEW B-B




SECTION C-C

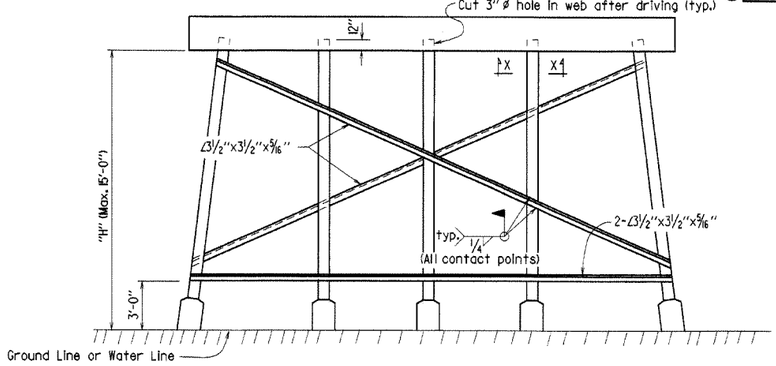



TOE WALL




SECTION D-D

DETAILS OF CONCRETE RIPRAP



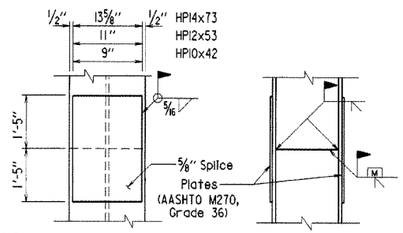

Note:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Omit bottom bracing where "H" is less than 10 ft. Omit all bracing where "H" is less than 5 ft.

Note:
Where required by the bridge layout sheet, pile encasements shall be constructed.

Omit bracing (and V-groove in cap) where pile encasement is extended to bottom of bent cap.

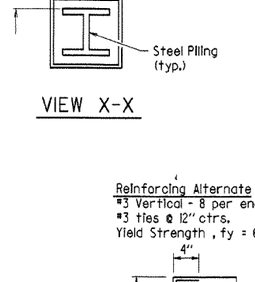
TYPICAL BRACING FOR INT. STEEL PILE BENTS



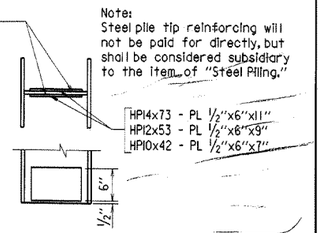

Note:
The contractor may for his own convenience and at this own expense provide as many as three splices per pile for steel bearing piling. Minimum spacing between splices shall be 5 ft.

PILE SPLICE DETAIL

Scale : 1" = 1'-0"




VIEW X-X

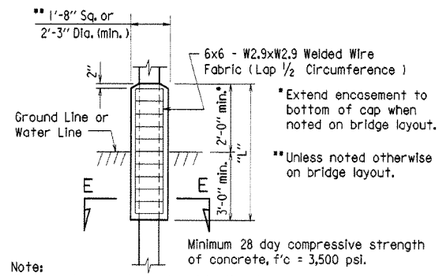



Note:
Steel pile tip reinforcing will not be paid for directly, but shall be considered subsidiary to the item of "Steel Piling."

HP14x73 - PL ½"x6"x11"
HP12x53 - PL ½"x6"x9"
HP10x42 - PL ½"x6"x7"

REINFORCING DETAIL FOR STEEL PILE TIP

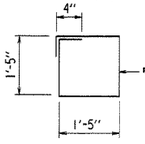
Scale : 1" = 1'-0"

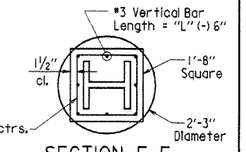



Note:
If concrete cannot be placed in the dry, seal concrete may be deposited under water. Concrete & welded wire fabric or reinforcing in encasements shall be paid for at the contract unit price per linear foot bid for "Pile Encasement."

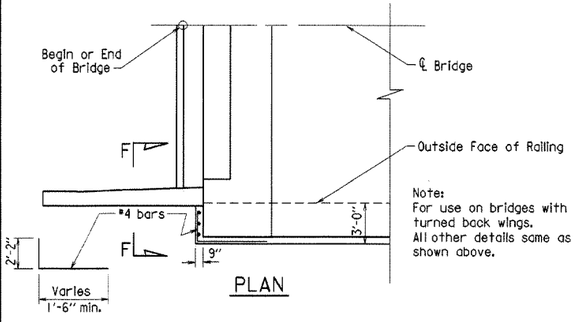
PILE ENCASEMENT DETAIL

Reinforcing Alternate
#3 Vertical - 8 per encasement
#3 ties @ 12" ctrs.
Yield Strength , fy = 60,000 psi.



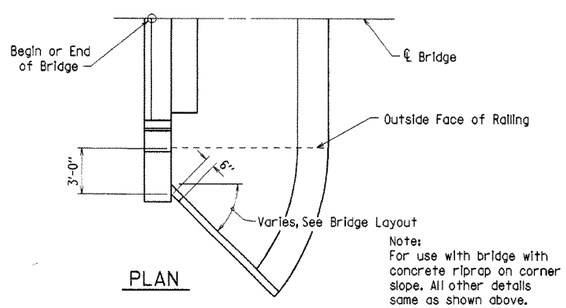




SECTION E-E
REINF. ALTERNATE



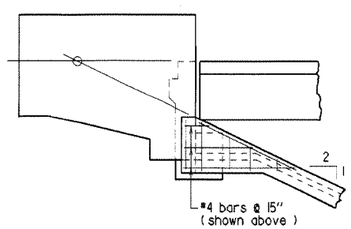

PLAN

Note:
For use on bridges with turned back wings. All other details same as shown above.

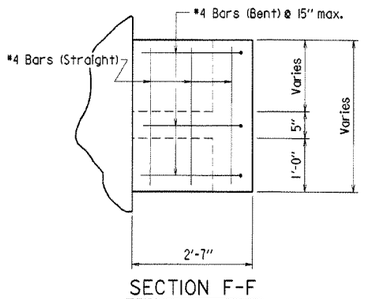



PLAN

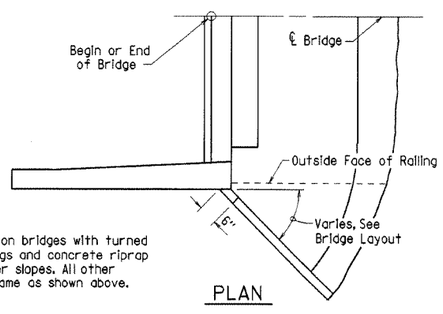
Note:
For use with bridge with concrete riprap on corner slope. All other details same as shown above.




ELEVATION




SECTION F-F




PLAN

Note:
For use on bridges with turned back wings and concrete riprap on corner slopes. All other details same as shown above.

⚠1 Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

DETAILS OF CONCRETE RIPRAP AND MISC. DETAILS OF STEEL PILING

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS ★★★ REGISTERED PROFESSIONAL ENGINEER ★★★ No. 4337 CHARLES P. BRAND

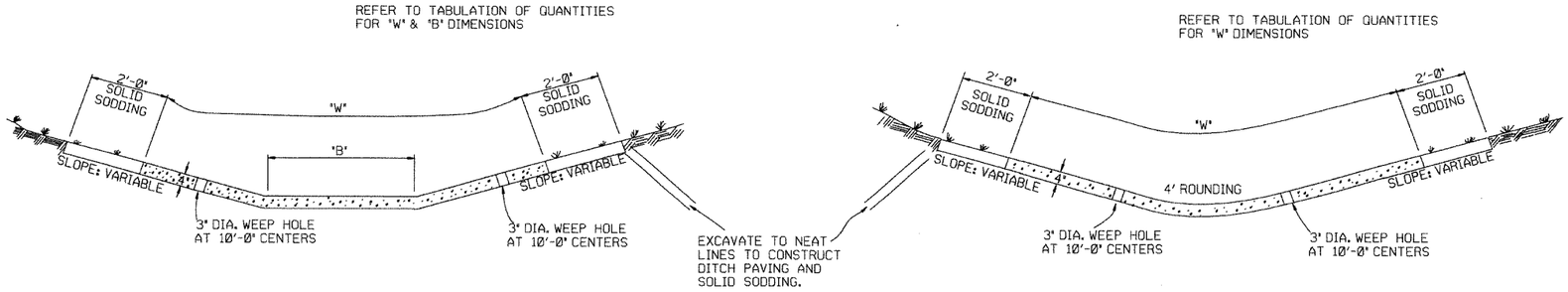
BRIDGE ENGINEER

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI4995A.STD

CHECKED BY: CJF DATE: 04-10-2003 SCALE: No Scale or As Noted

DESIGNED BY: STD. DATE: —

BRIDGE NO. DRAWING NO. 14995A

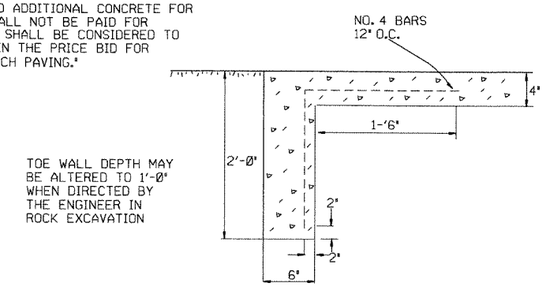



TYPE A



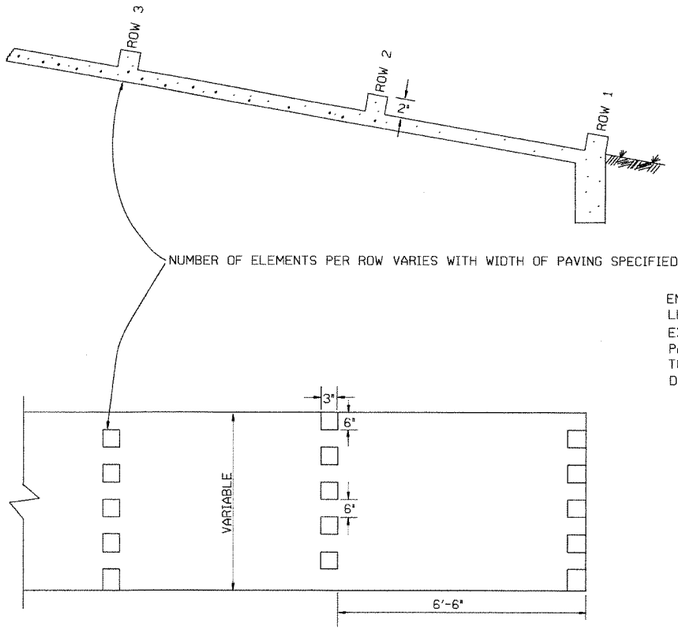

TYPE B

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




TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING




ENERGY DISSIPATORS
(NO SCALE)

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

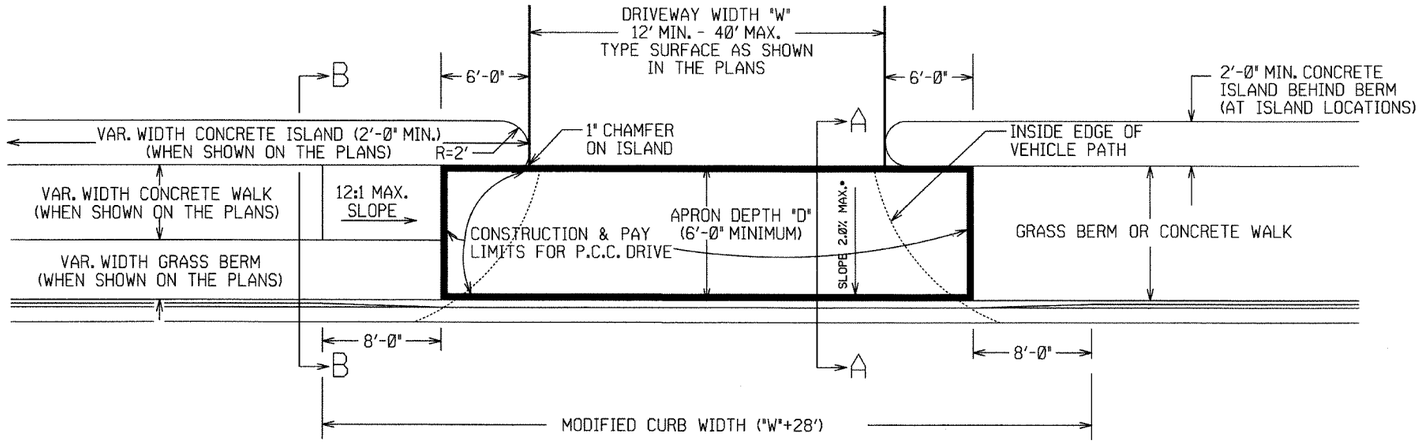
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

| DATE | REVISION | DATE FILM'D |
|---|---|---|
| 11-17-10 | ADDED GENERAL NOTE | |
| 6-2-94 | ADDED GENERAL NOTE ABOUT SOLID SODDING | |
| 11-30-8 | ELIMINATED MIN. ROWS OF ELEMENTS | 111-30-89 |
| 7-15-88 | REVISED DISSIPATOR NOTE | 653-7-15-88 |
| 4-3-87 | REVISED ENERGY DISSIPATOR | 671-4-3-87 |
| 1-9-87 | MODIFIED NOTE ON ENERGY DISS. | 532-1-9-87 |
| 11-3-86 | ADDED NOTE TO ENERGY DISS. | 599-12-1-86 |
| 11-1-84 | ENERGY DISSIPATOR DETAILS ADDED | 508-11-1-84 |
| 11-1-84 | EXCAVATION DETAILS ADDED TYPED A & B | |
| 10-2-72 | REVISED AND REDRAWN | 508-10-2-72 |

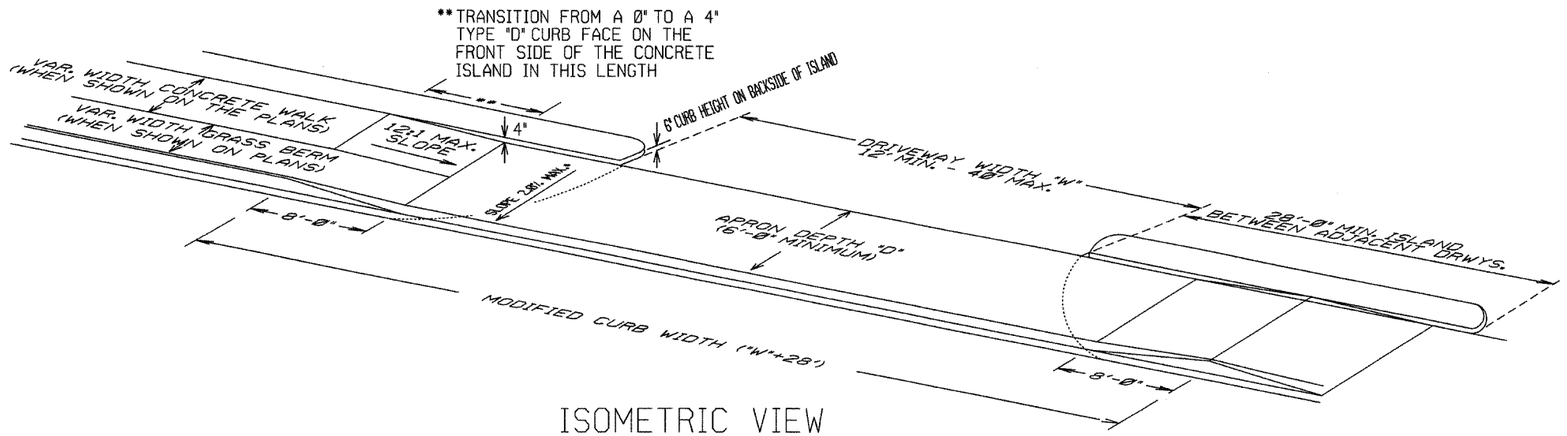
ARKANSAS STATE HIGHWAY COMMISSION

# CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1

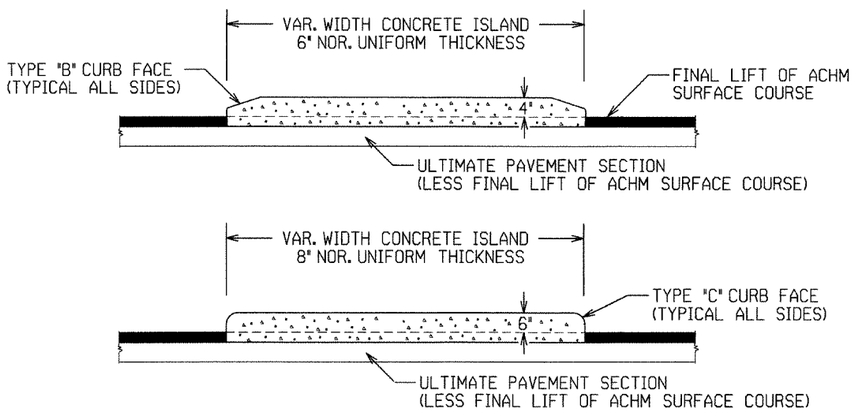



PLAN VIEW

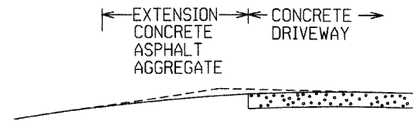



ISOMETRIC VIEW

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".




CURBED ISLANDS FOR CHANNELIZATION




EXTENSION TYPICAL SECTIONS

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

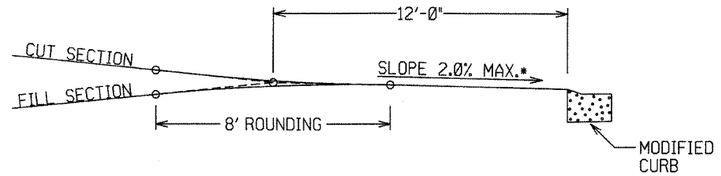
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

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

4: AGGREGATE - 6" AGGREGATE BASE COURSE

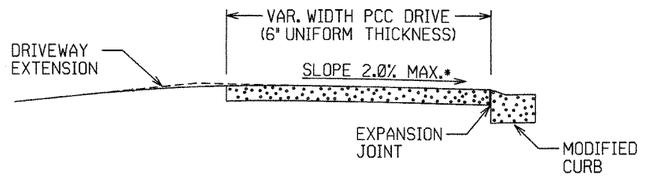
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

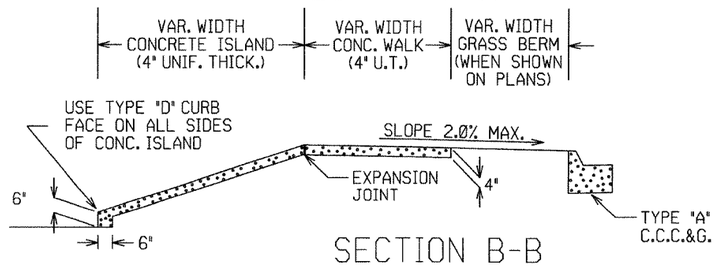



DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



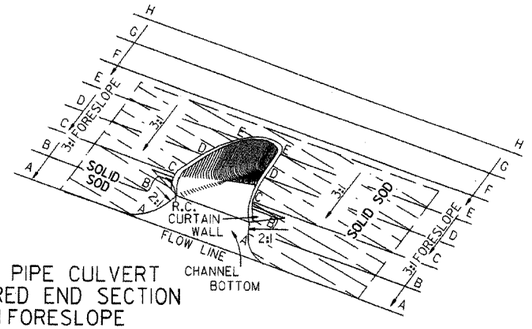

SECTION A-A



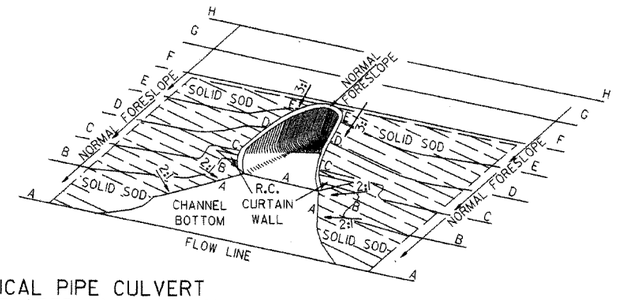

SECTION B-B
CURBED ISLAND BEHIND WALK

| 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 |

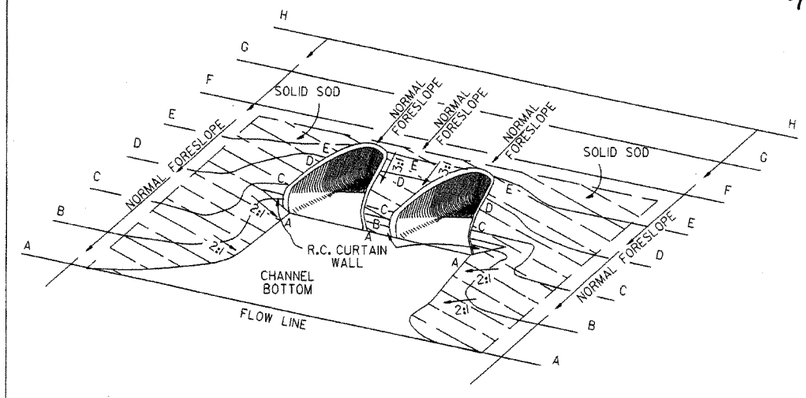
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



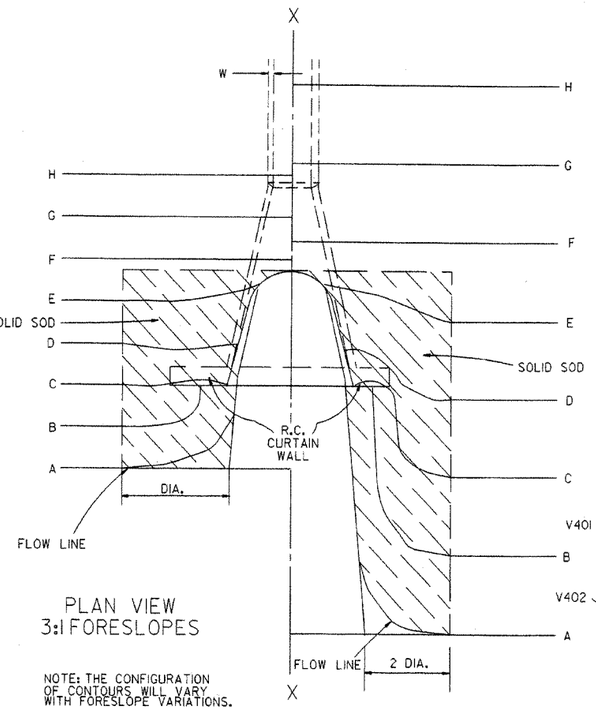

TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE




TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES




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




PLAN VIEW
3:1 FORESLOPES

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

PLAN VIEW
FLATTENED FORESLOPES

## R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

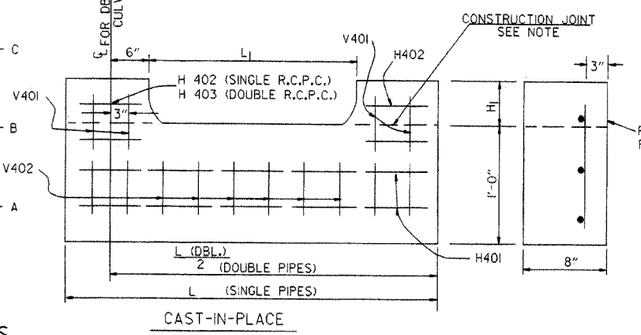
| PIPE DIA. | $H_1$ | $L_1$ | L | L (DBL.)/2 | SINGLE R.C.P.C. CONC. | SINGLE R.C.P.C. REINF. STEEL | DOUBLE R.C.P.C. CONC. | DOUBLE R.C.P.C. REINF. STEEL |
|---|---|---|---|---|---|---|---|---|
| | | | | | CU. YDS. | LBS. | CU. YDS. | LBS. |
| 18" | 1'-11½" | 3'-5" | 8'-0" | 6'-3" | 0.31 | 27.7 | 0.45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

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

## REINFORCING STEEL SCHEDULE

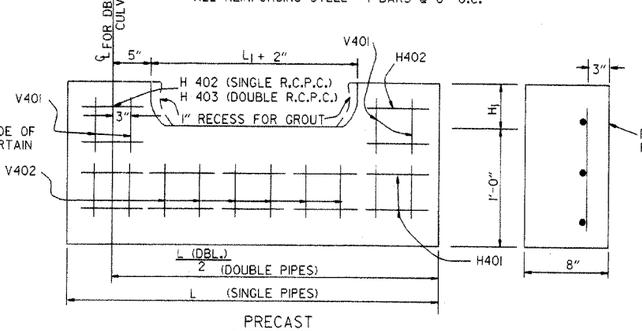
| PIPE DIA. | SINGLE R.C. PIPE CULVERT H401 L | H401 NO. | H402 L | H402 NO. | V401 L | V401 NO. | V402 L | V402 NO. | DOUBLE R.C. PIPE CULVERT H401 L | H401 NO. | H402 L | H402 NO. | H403 L | H403 NO. | V401 L | V401 NO. | V402 L | V402 NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|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

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




CAST-IN-PLACE

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




PRECAST

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

## SOLID SODDING

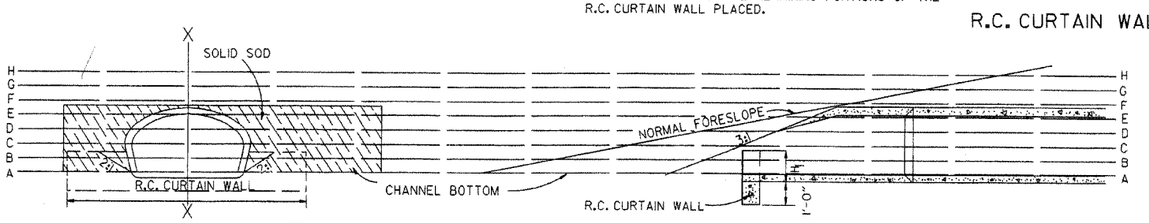
| PIPE DIA. | SINGLE R.C.P.C. 3:1 | 4:1 | 6:1 | DOUBLE R.C.P.C. 3:1 | 4:1 | 6:1 |
|---|---|---|---|---|---|---|
| | SQ. YDS. | | | SQ. YDS. | | |
| 18" | 5 | 7 | 12 | 6 | 8 | 13 |
| 24" | 8 | 12 | 19 | 9 | 13 | 20 |
| 30" | 13 | 18 | 29 | 14 | 19 | 30 |
| 36" | 17 | 26 | 41 | 18 | 28 | 43 |
| 42" | 23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

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

GENERAL NOTES

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

## R.C. CURTAIN WALL DETAILS




END VIEW

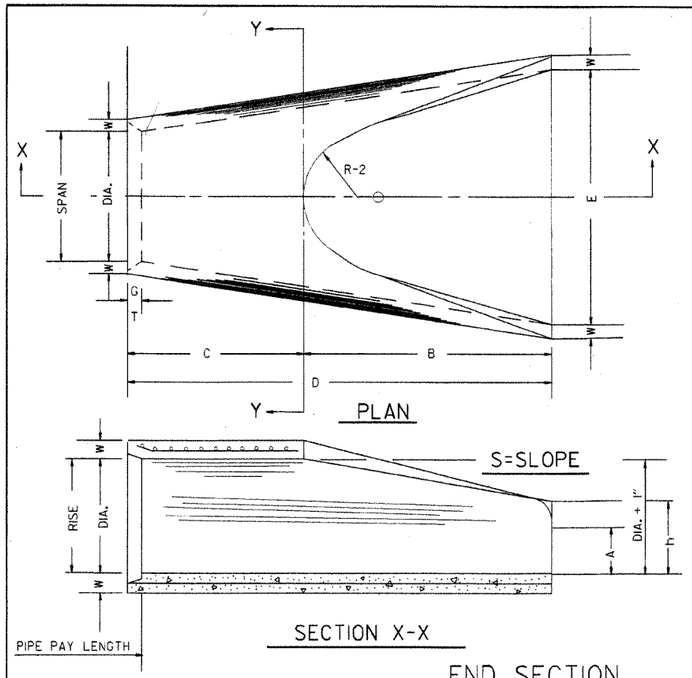
SECTIONAL VIEW "X-X"

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

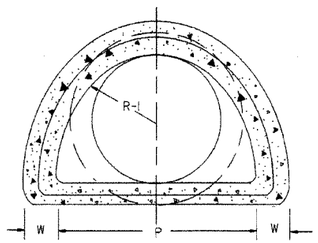
STANDARD DRAWING FES-1



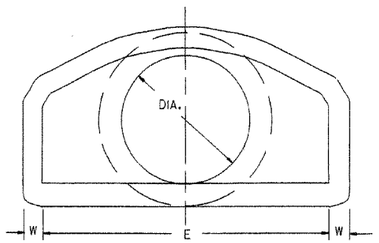

END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

## TABLE OF DIMENSIONS

| DIA. | WALL | A | B | C | D | E | S | DIA. + 1" | P | R-1 | R-2 | G-T | WT. | h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18" | 2½" | 9" | 2'-3" | 3'-10" | 6'-1" | 3'-0" | 3:1 | 19" | 29" | 15½" | 12" | 2" | 1000 | 1'-0½" |
| 24" | 3" | 9½" | 3'-7½" | 2'-6" | 6'-1½" | 4'-0" | 3:1 | 25" | 33 3/16" | 16 13/16" | 14" | 2½" | 1600 | 1'-1½" |
| 30" | 3½" | 1'-0" | 4'-6" | 1'-7 3/4" | 6'-1¾" | 5'-0" | 3:1 | 31" | 37" | 18 1/16" | 15" | 3¼" | 1940 | 1'-4 5/8" |
| 36" | 4" | 1'-3" | 5'-3" | 2'-10 3/4" | 8'-1¾" | 6'-0" | 3:1 | 37" | 47 13/16" | 24 5/16" | 20" | 3½" | 4100 | 1'-8" |
| 42" | 4½" | 1'-9" | 5'-3" | 2'-11" | 8'-2" | 6'-6" | 3:1 | 43" | 53 7/8" | 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 1/16" | 24" | 4" | 9270 | 3'-5" |
| 72" | 7" | 3'-10" | 6'-6" | 1'-10" | 8'-4" | 9'-0" | 3:1 | 73" | 77 13/16" | 38 5/16" | 24" | 5" | 13250 | 4'-6" |




SECTION Y-Y



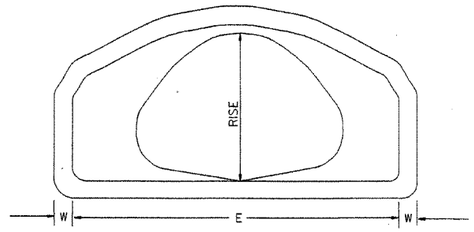

END VIEW

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

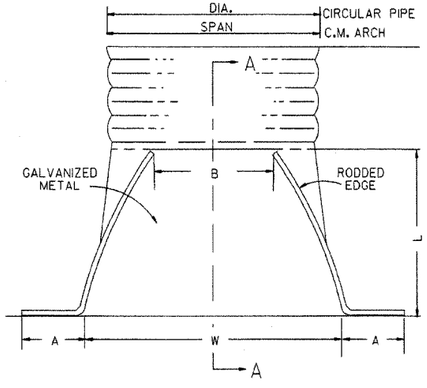
## ARCH PIPE

| 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 5/16" | 15" | 2½" | 2½:1 |
| 30 | 36¼ | 36 | 22½ | 23 | 3½" | 10" | 3'-1" | 3'-0½" | 6'-1½" | 6'-0" | 47 13/16" | 20" | 3" | 2½:1 |
| 36 | 43¾ | 44 | 26 5/8 | 27 | 4" | 10½" | 4'-0" | 2'-11½" | 6'-1½" | 6'-6" | 54⅛" | 22" | 3½" | 2½:1 |
| 42 | 51⅛ | 51 | 31 3/16 | 31 | 4½" | 11½" | 4'-7" | 1-10¼" | 6'-5¼" | 7'-2" | 59½" | 23" | 3¾" | 2½:1 |
| 48 | 58½ | 59 | 36 | 36 | 5" | 1'-3" | 5'-3" | 2'-10¾" | 8'-1¾" | 7'-10" | 70 5/16" | 24" | 4¼" | 2½:1 |
| 54 | 65 | 65 | 40 | 40 | 5½" | 1'-7" | 5'-3" | 2'-11" | 8'-2" | 8'-6" | 72 1/16" | 24" | 4¾" | 2¼:1 |
| 60 | 73 | 73 | 45 | 45 | 6" | 1'-10" | 5'-6" | 2'-8" | 8'-2" | 9'-0" | 77 13/16" | 24" | 5" | 2¼:1 |

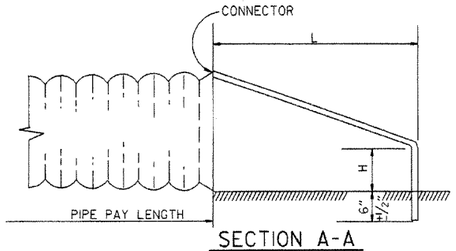
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.




END VIEW
CONCRETE ARCH PIPE

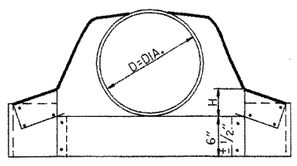



PLAN

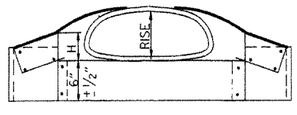



SECTION A-A

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




CIRCULAR PIPE



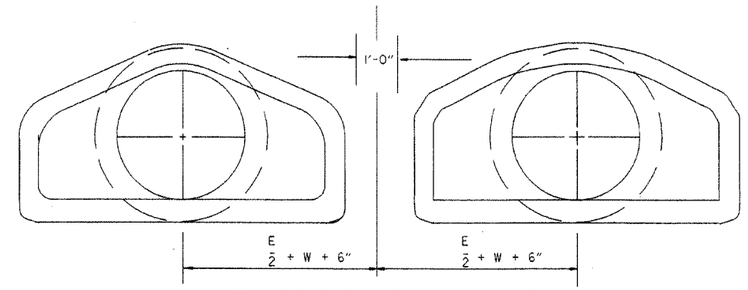

C.M. ARCH PIPE

## CIRCULAR PIPE

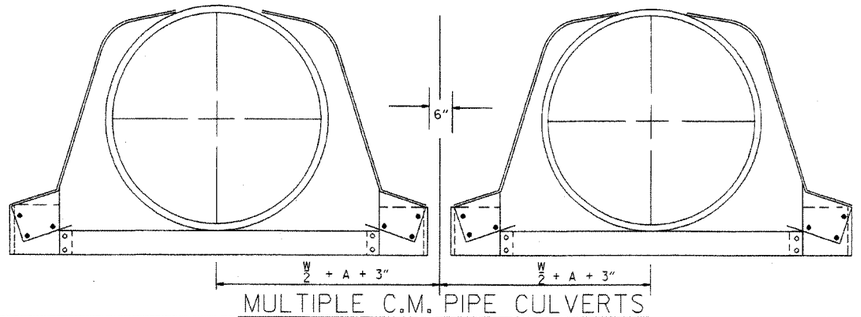
| D. DIA. | GAUGE | A 1" ± | B. MAX. | H 1" ± | L 1½" ± | W 2" ± | S |
|---|---|---|---|---|---|---|---|
| | | INCHES | | | | | |
| 12 | 16 | 6 | 6 | 6 | 21 | 24 | 2½:1 |
| 15 | 16 | 7 | 8 | 6 | 26 | 30 | 2½:1 |
| 18 | 16 | 8 | 10 | 6 | 31 | 36 | 2½:1 |
| 21 | 16 | 9 | 12 | 6 | 36 | 42 | 2½:1 |
| 24 | 16 | 10 | 13 | 6 | 41 | 48 | 2½:1 |
| 30 | 14 | 12 | 16 | 8 | 51 | 60 | 2½:1 |
| 36 | 14 | 14 | 19 | 9 | 60 | 72 | 2½:1 |
| 42 | 12 | 16 | 22 | 11 | 69 | 84 | 2½:1 |
| 48 | 12 | 18 | 27 | 12 | 78 | 90 | 2½:1 |
| 54 | 12 | 18 | 30 | 12 | 84 | 102 | 2:1 |
| 60 | 12 | 18 | 33 | 12 | 87 | 114 | 1¾:1 |
| 66 | 12 | 18 | 36 | 12 | 87 | 120 | 1½:1 |
| 72 | 12 | 18 | 39 | 12 | 87 | 126 | 1 1/3:1 |

## C.M. ARCH PIPE

| EQUIV. DIA. | SPAN | RISE | A 1" ± | B MAX. | H 1" ± | L 1½" ± | W 2" ± | S | GAUGE |
|---|---|---|---|---|---|---|---|---|---|
| | INCHES | | | | | | | | |
| 15" | 17 | 13 | 7 | 9 | 6 | 19 | 30 | 2½:1 | 16 |
| 18" | 21 | 15 | 7 | 10 | 6 | 23 | 36 | 2½:1 | 16 |
| 21" | 24 | 18 | 8 | 12 | 6 | 28 | 42 | 2½:1 | 16 |
| 24" | 28 | 20 | 9 | 14 | 6 | 32 | 48 | 2½:1 | 16 |
| 30" | 35 | 24 | 10 | 16 | 6 | 39 | 60 | 2½:1 | 14 |
| 36" | 42 | 29 | 12 | 18 | 8 | 46 | 75 | 2½:1 | 14 |
| 42" | 49 | 33 | 13 | 21 | 9 | 53 | 85 | 2½:1 | 12 |
| 48" | 57 | 38 | 18 | 26 | 12 | 63 | 90 | 2½:1 | 12 |
| 54" | 64 | 43 | 18 | 30 | 12 | 70 | 102 | 2½:1 | 12 |
| 60" | 71 | 47 | 18 | 33 | 12 | 77 | 114 | 2½:1 | 12 |




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 |

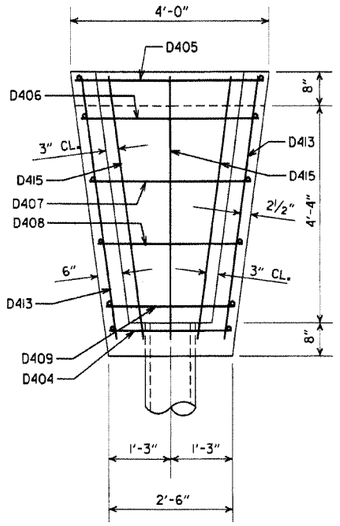
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

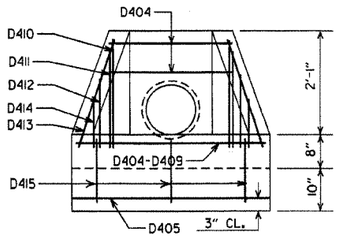
STANDARD DRAWING FES-2

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

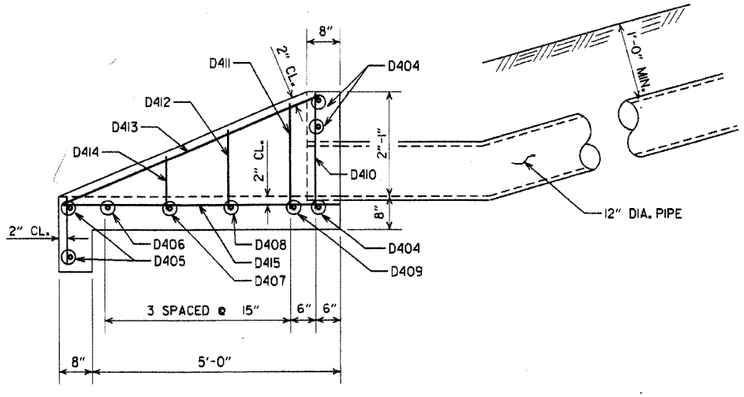
stdfes2.dgn




PLAN




FRONT ELEVATION

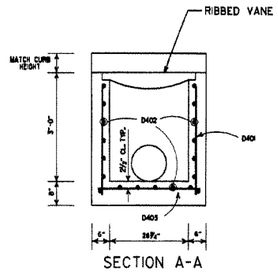



SIDE ELEVATION
CONCRETE SPILLWAY

## BAR LIST (CONCRETE SPILLWAY)

| MARK | NO. REQ'D. | LENGTH | BENDING DIAGRAM |
|---|---|---|---|
| D404 | 3 | 2'-2" | |
| D405 | 2 | 3'-8" | |
| D406 | 1 | 3'-5" | |
| D407 | 1 | 3'-1" | |
| D408 | 1 | 2'-9" | |
| D409 | 1 | 2'-5" | |
| D410 | 2 | 2'-5" | |
| D411 | 2 | 2'-2" | |
| D412 | 2 | 1'-9" | |
| D413 | 2 | 5'-6" | |
| D414 | 2 | 1'-2" | |
| D415 | 3 | 6'-5" | 5'-4", 1'-2", 2" P.D., D415 |

# DETAILS OF CONCRETE SPILLWAY (TYPE A)

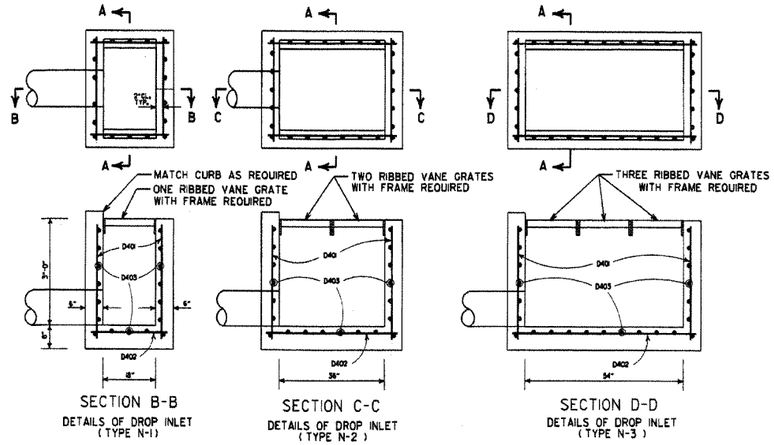



SECTION A-A

## BAR LIST (DROP INLET)

| MARK | TYPE N-1 | | TYPE N-2 | | TYPE N-3 | |
|---|---|---|---|---|---|---|
| | NO. REQ'D. | LENGTH | NO. REQ'D. | LENGTH | NO. REQ'D. | LENGTH |
| D401 | 20 | 3'-0" | 26 | 3'-0" | 32 | 3'-0" |
| D402 | 19 | 2'-2" | 19 | 3'-8" | 19 | 5'-2" |
| D403 | 17 | 2'-11" | 20 | 2'-11" | 23 | 2'-11" |
| | | | | | | |
| | | | | | | |

ALL BARS #4 @ 6" SPACING




SECTION B-B
DETAILS OF DROP INLET
( TYPE N-1 )

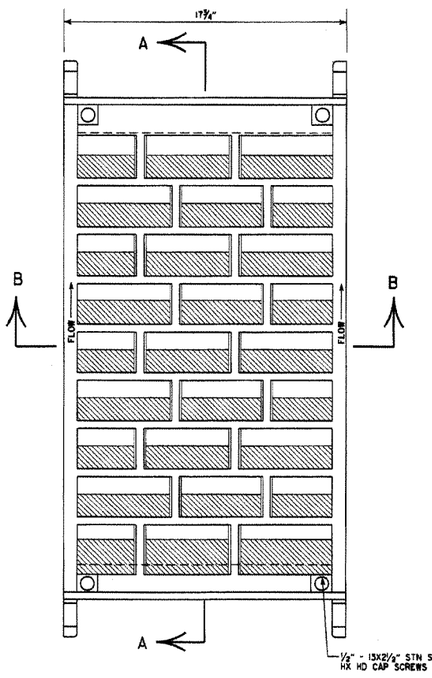
SECTION C-C
DETAILS OF DROP INLET
( TYPE N-2 )

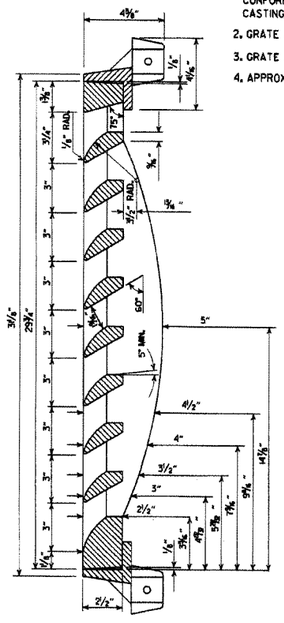
SECTION D-D
DETAILS OF DROP INLET
( TYPE N-3 )

# DETAILS OF DROP INLET

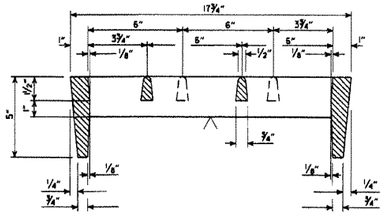
GENERAL NOTES ( GRATE & FRAME )

1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B & AASHTO M 306.
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.

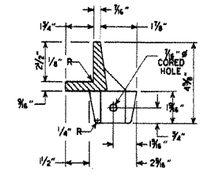



SECTION A-A




SECTION B-B




SECTION THRU FRAME

# DETAILS OF RIBBED VANE GRATE AND FRAME

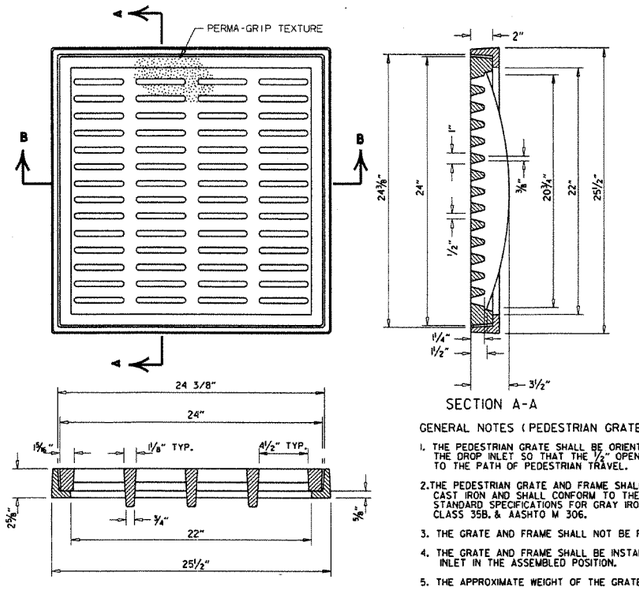
| DATE REVISED | DATE FILMED | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| 7-02-98 | 7-2-98 | REVISED SECT. A-A DETAIL OF DROP INLET & ADDED AASHTO REF. TO NOTE 1, REVISED GRATE |
| 10-18-96 | | REVISED ASTM REF. TO AASHTO |
| 8-15-91 | | ISSUED |

ARKANSAS STATE HIGHWAY COMMISSION

# DETAILS OF DROP INLETS AND SPILLWAY OUTLET

STANDARD DRAWING FPC-9N

STDfpc9N.DGN




SECTION B-B

SECTION A-A

DETAILS OF PEDESTRIAN GRATE AND FRAME

GENERAL NOTES ( PEDESTRIAN GRATE & FRAME )

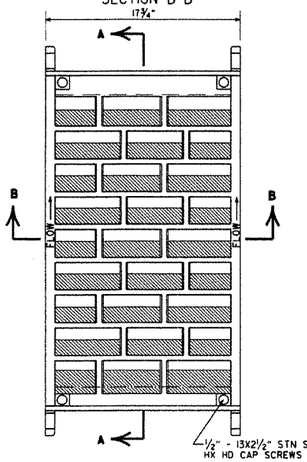
1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE ½" OPENINGS ARE PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL.
2. THE PEDESTRIAN GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B.& AASHTO M 306.
3. THE GRATE AND FRAME SHALL NOT BE PAINTED.
4. THE GRATE AND FRAME SHALL BE INSTALLED IN THE DROP INLET IN THE ASSEMBLED POSITION.
5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ.IN.

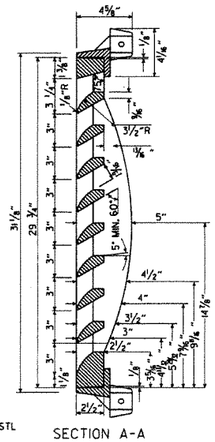



SECTION B-B




SECTION THRU FRAME



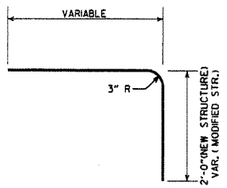




SECTION A-A

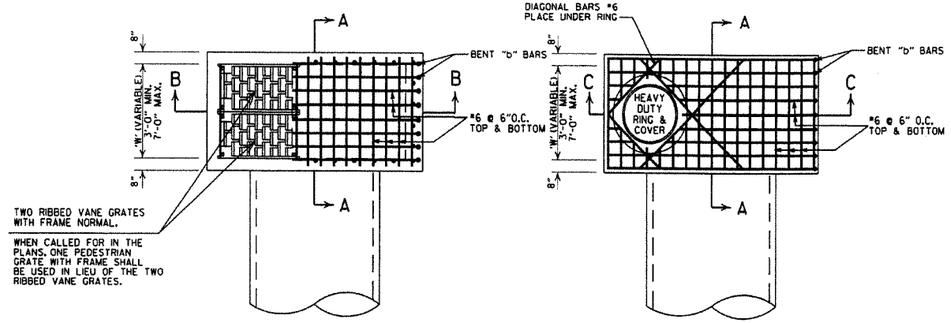
DETAILS OF RIBBED VANE GRATE AND FRAME

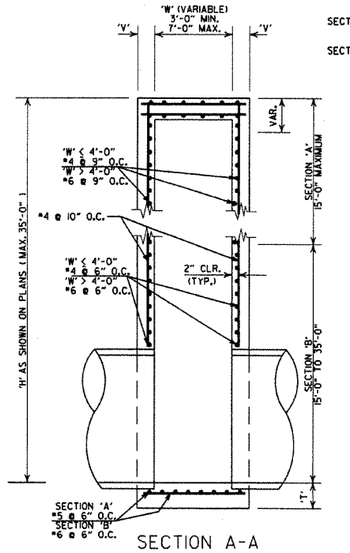
GENERAL NOTES ( RIBBED VANE GRATE & FRAME )

1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.



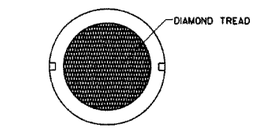

DETAIL OF BENT "b" BAR



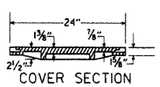




SECTION A-A

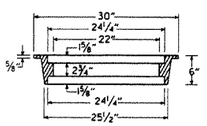
DETAILS OF DROP INLET ( TYPE ST )




COVER FACE




COVER SECTION

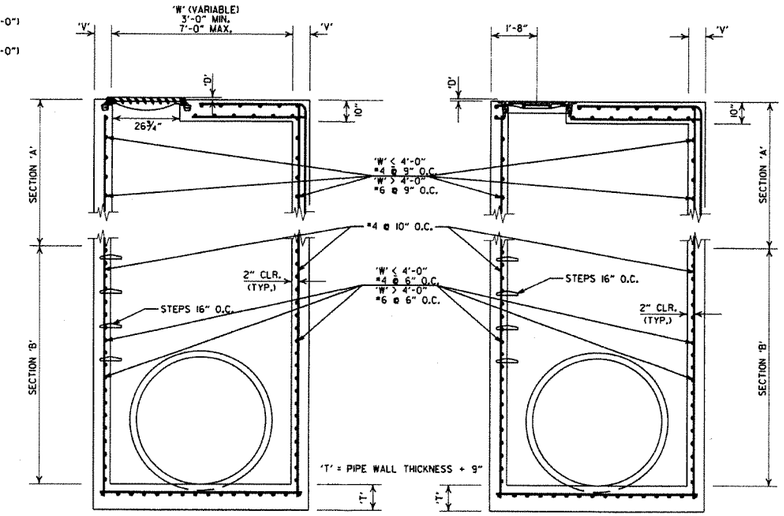



RING SECTION

HEAVY DUTY RING & COVER

APPROXIMATE TOTAL WEIGHT = 333 LBS.

SECTION 'A' 'V' = 8"
SECTION 'B' (W≤4'-0") 'V' = 8"
SECTION 'B' (W>4'-0") 'V' = 10"




SECTION B-B

SECTION C-C

DETAILS OF JUNCTION BOX ( TYPE ST )

GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

1. THE 'D' DIMENSION SHALL MATCH THE FINAL LIFT OF ACHM SURFACE COURSE SHOWN IN THE PLANS WHEN ASPHALT PAVING SURROUNDS THE GRATE OR RING COVER, AND SHALL BE 0" AT OTHER INSTALLATIONS.
2. THE STEPS SHALL BE OMITTED WHERE 'H' IS LESS THAN 4'-0".
3. ALL EXPOSED CORNERS ARE TO HAVE A ¾" CHAMFER.

GENERAL NOTES (HEAVY DUTY RING & COVER):

1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
4. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

| DATE REVISED | DATE FILMED | DESCRIPTION |
|---|---|---|
| 7-26-12 | | REMOVED NOTE 4, REVISED 'T', REVISED BOTTOM SLAB REBAR FOR SECTION 'A', SHOWED REBAR CLEARANCE IN SECTIONS |
| 11-16-01 | | ADDED NOTE 4 |
| 1-12-00 | | REVISED HEAVY DUTY RING & COVER |
| 5-13-99 | | ADDED PEDESTRIAN FRAME & GRATE |
| 7-02-98 | | REMOVED NOTE 5, REV. DIMENSIONS, ADDED HEAVY DUTY RING & COVER ADDED AASHTO REF. REVISED GRATE |
| 10-18-96 | | REVISED ASTM REF. TO AASHTO |
| 10-1-92 | | REVISED & REISSUED |
| 8-15-91 | 8-15-91 | REVISED & REISSUED |

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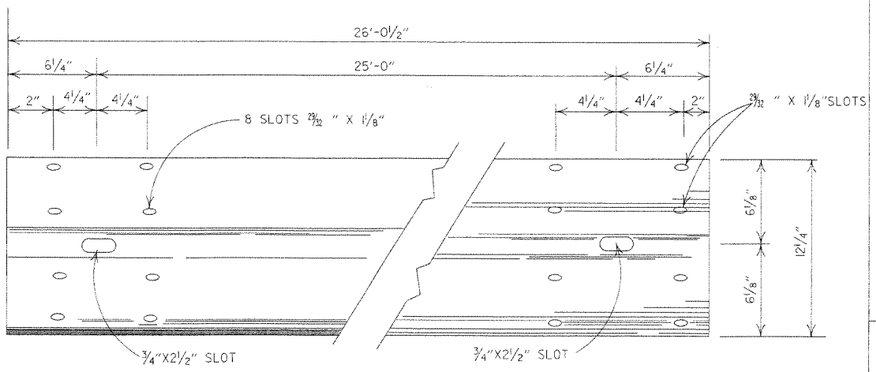
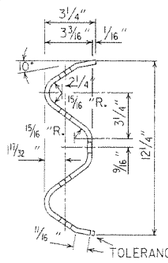
# DETAILS OF DROP INLET & JUNCTION BOX ( TYPE ST )

STANDARD DRAWING FPC-9S



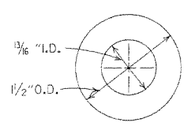




## DETAILS OF W-BEAM GUARD RAIL

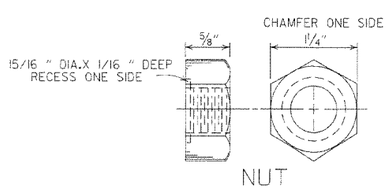
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



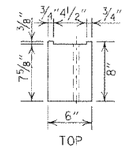

## SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



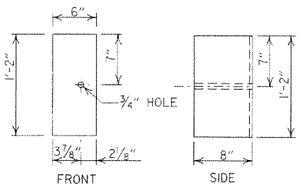

CUT STEEL WASHER




NUT

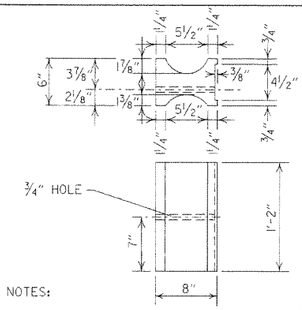



TOP



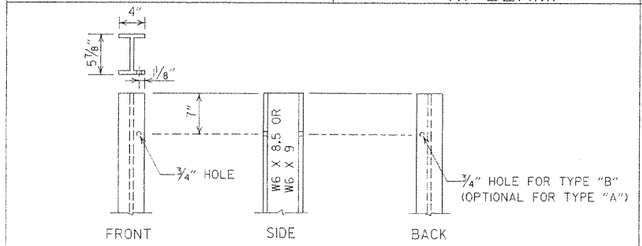

WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

## WOOD BLOCKOUT (W-BEAM)

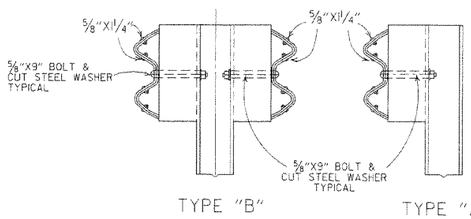



NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

## PLASTIC BLOCKOUT (W-BEAM)




## STEEL POST




TYPE "B" TYPE "A"

## DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

### -GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

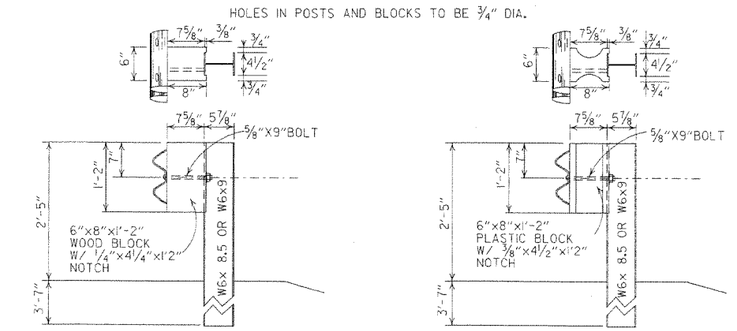
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.




WOOD BLOCKOUT CONNECTIONS PLASTIC BLOCKOUT CONNECTIONS

## DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.

POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS PLASTIC BLOCKOUT CONNECTIONS

## DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

| DATE | REVISION | DATE FILM |
|---|---|---|
| 7-14-10 | RAISED HEIGHT OF GUARD RAIL 1" | |
| 10-15-09 | ADDED REFERENCE TO MASH | |
| 4-10-03 | REVISED GENERAL NOTES | |
| 8-22-02 | REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST | |
| 11-16-01 | REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS | |
| 3-30-00 | REMOVED GUARD RAIL AT BRIDGE ENDS | |
| 1-12-00 | ADDED PLASTIC BLOCKOUT | |
| 8-12-98 | REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES | |
| 4-3-97 | REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS | |
| 10-18-96 | REVISED WOOD POST NOTE | |
| 6-2-94 | ADDED ALT. STEEL POST SIZE | |
| 8-5-93 | REVISED STEEL POST SIZE | 8-5-93 |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| 8-15-91 | REVISED WASHER NOTE | 8-5-91 |
| 8-2-90 | REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK | 8-2-90 |
| 7-15-88 | REVISED SECTION 3 & GENERAL NOTES | |
| 3-4-88 | REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK | 780-3-4-88 |
| 10-30-87 | REVISED WOOD LINE POST DETAIL | 546-10-30-87 |
| 10-9-87 | REDRAWN & REVISED | 802-10-9-87 |

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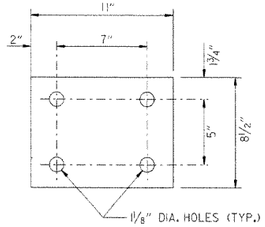
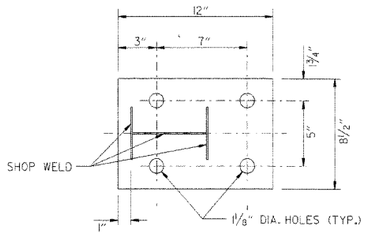
GUARD RAIL DETAILS

STANDARD DRAWING GR-8

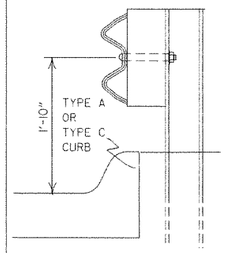



WASHER PLATE



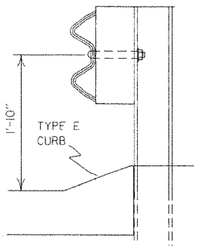

BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.




FOR DESIGN SPEEDS OF 50 MPH OR LESS

ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

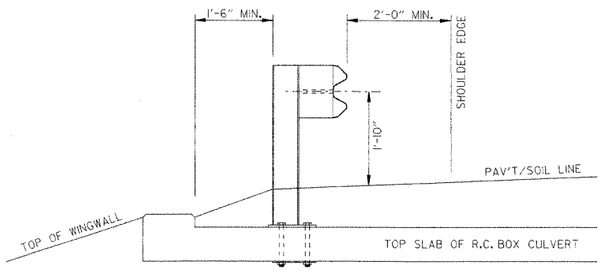



FOR DESIGN SPEEDS OF 55 MPH OR MORE

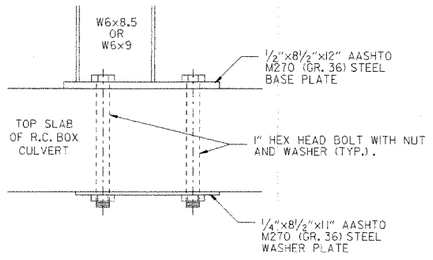
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

## DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

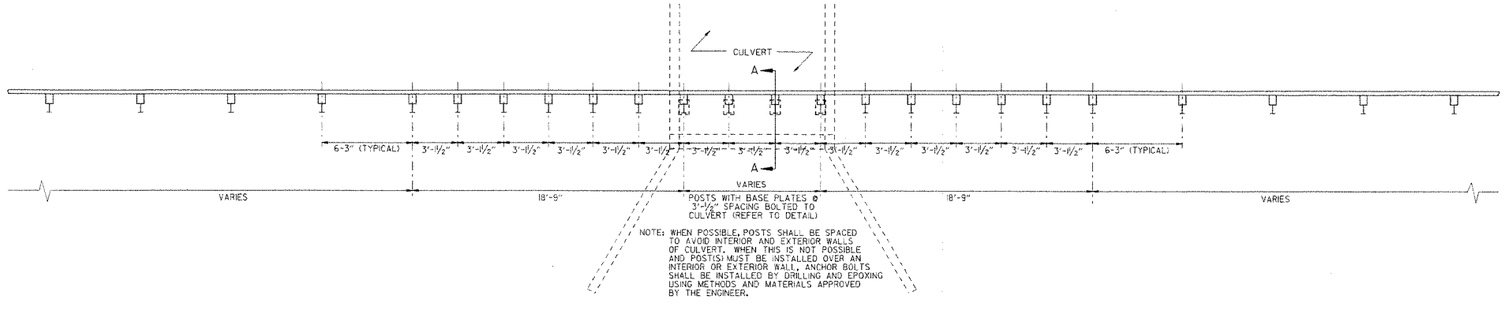
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.




SECTION A-A



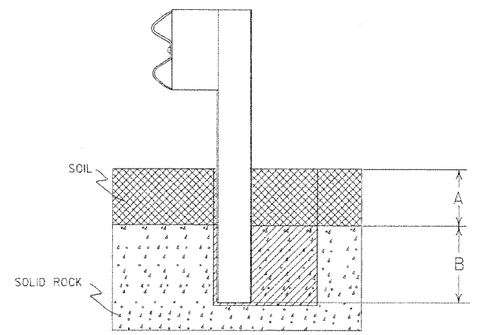

DETAIL OF CONNECTION



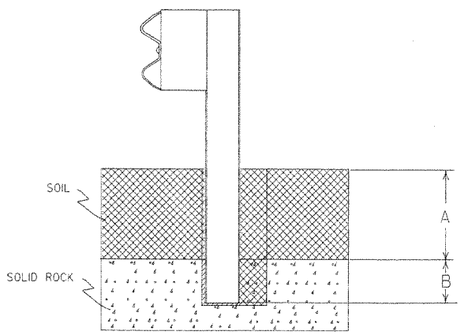

PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POST'S AS SHOWN ON STD. DWG. GR-8.

Case 1

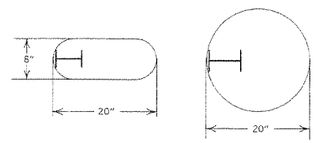


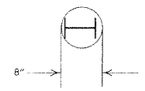

Case 2




Plan View Steel Posts

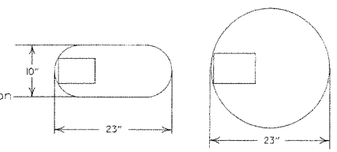
Either hole configuration acceptable

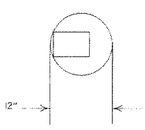



Plan View Wood Posts

Either hole configuration acceptable




Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

Zone A:
Backfill according to Section 617.03(a).

Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B:
Backfill according to Section 617.03(a).

## DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)

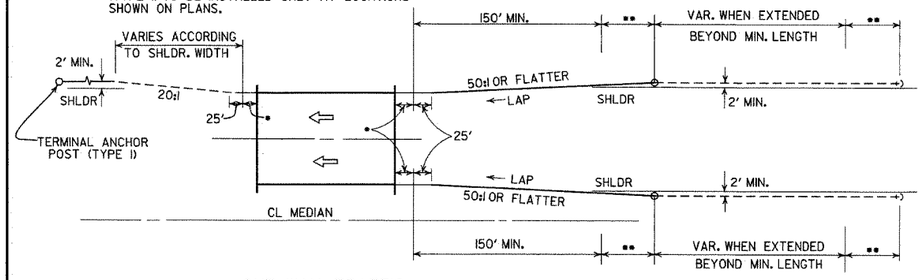
| DATE | REVISION | DATE FILM |
|---|---|---|
| 7-14-10 | RAISED HEIGHT OF GUARD RAIL 1" | |
| 4-12-07 | REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB | |
| 11-10-05 | ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION | |
| 11-18-04 | REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS, ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS | |
| 3-30-00 | REMOVED CONCRETE INSERT ANCHOR | |
| 8-12-98 | CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV'T. DELETED DET. OF STEEL LINE POST CONN.& ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK | |
| 4-3-96 | PLACED ARROWS AT CUT STEEL WASHERS | 4-3-96 |
| 10-18-96 | REV. ASTM REF. TO AASHTO | |
| 11-22-95 | ADDED OPTIONAL HOLES | |
| 6-2-94 | REVISED ALTERNATE POST SIZE | |
| 8-5-93 | REVISED STEEL POST SIZE | |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| 8-2-90 | DEL. WASHER ON ANCHOR ASSEMBLY | 8-2-90 |
| 7-15-88 | CONFORMED TO 1988 SPECS | |
| 3-4-88 | REVISED ANCHOR NOTE | |
| 10-30-87 | REVISED ANCHOR ASSEMBLY | 712-10-30-87 |
| 10-30-87 | REVISED PLACEMENT BEHIND CURB | 547-10-30-87 |
| 10-9-87 | REDRAWN & REVISED | 803-10-9-87 |

ARKANSAS STATE HIGHWAY COMMISSION

# GUARD RAIL DETAILS

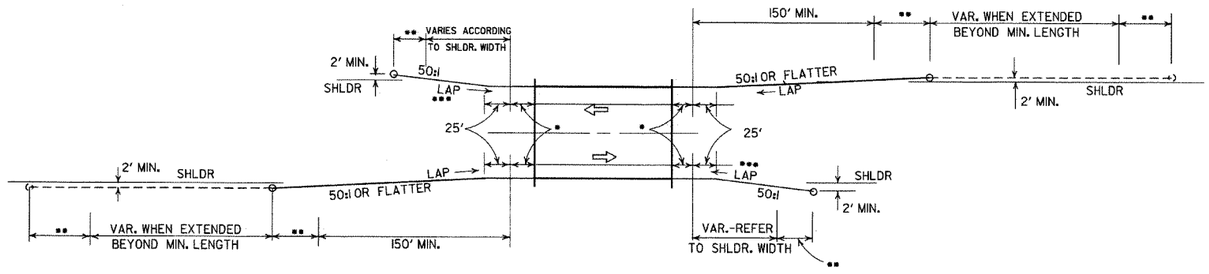
# STANDARD DRAWING GR-8A

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.




ONE-WAY TRAFFIC

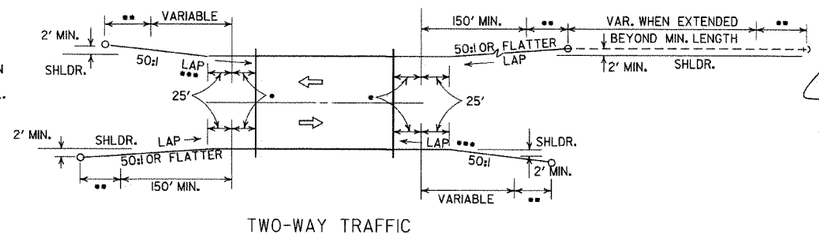
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.




TWO-WAY TRAFFIC

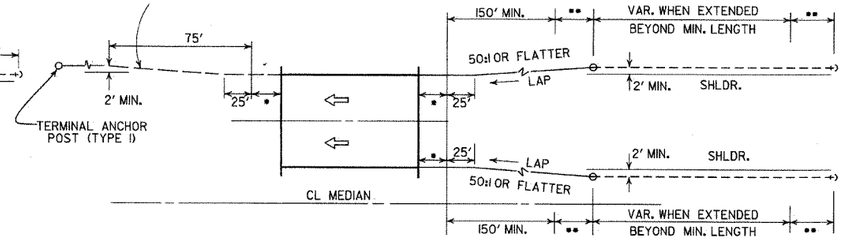
## METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.




TWO-WAY TRAFFIC

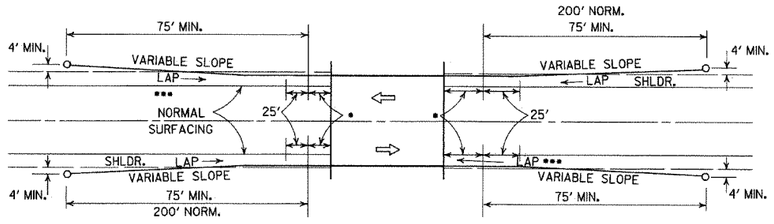
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.




ONE-WAY TRAFFIC

## METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.




## METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

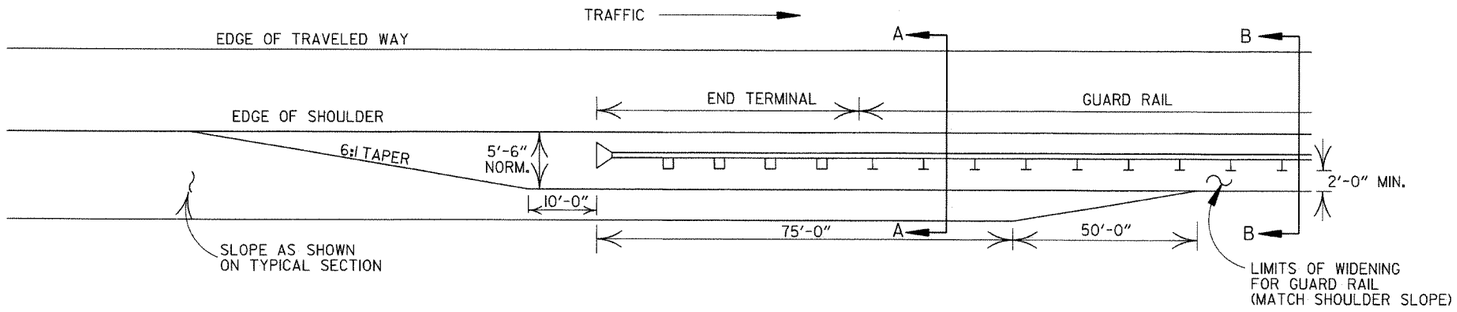
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

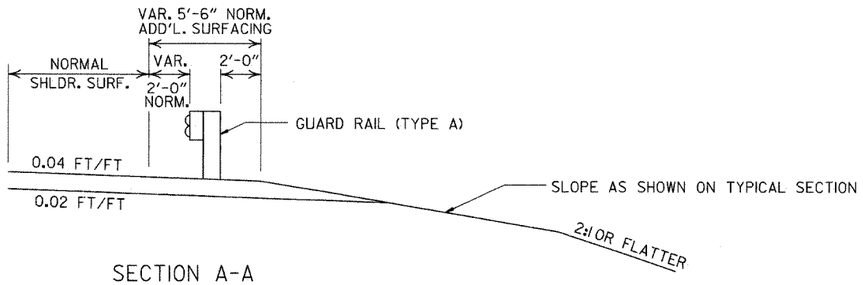
| DATE | REVISION | DATE FILM |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 4-17-08 | REVISED LAYOUTS | |
| 11-10-05 | REMOVED GUARD RAIL NOTES AND DETAILS | |
| 11-16-01 | DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. 1) | |
| 1-12-00 | ADDED CONSTRUCTION NOTE | 1-12-00 |
| 6-26-97 | REVISED LAYOUT | |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| | ADDED NOTE | |
| 10-9-87 | REDRAWN & REVISED | |

ARKANSAS STATE HIGHWAY COMMISSION

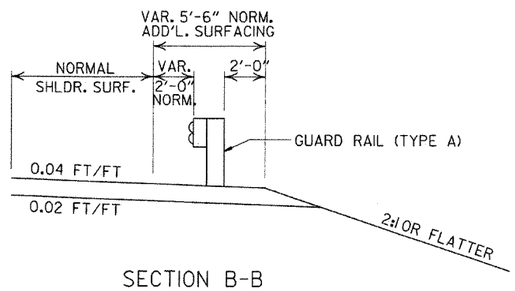
# GUARD RAIL DETAILS

STANDARD DRAWING GR-9



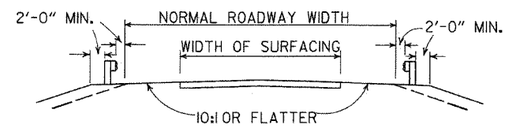

SECTION A-A



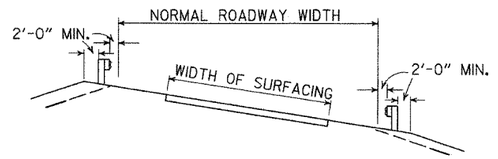

SECTION B-B

## DETAILS OF WIDENING FOR GUARD RAIL

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.

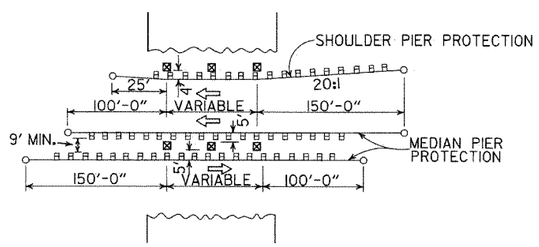



SECTION ON TANGENT




SECTION ON CURVE

## DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



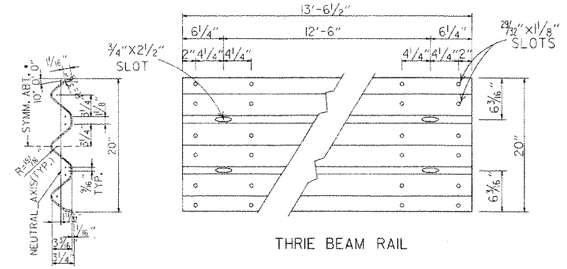

## METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

| DATE | REVISION | DATE FILM |
|---|---|---|
| 4-17-08 | MINOR REVISION | |
| 11-10-05 | DRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

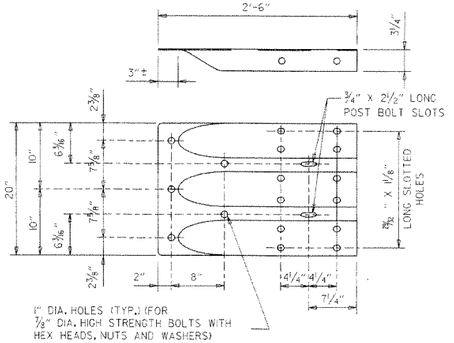
# GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



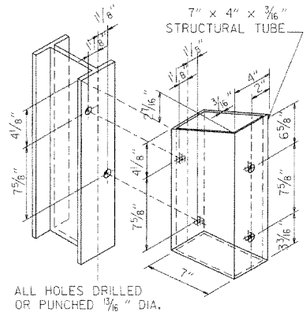

THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL




1" DIA. HOLES (TYP.) (FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

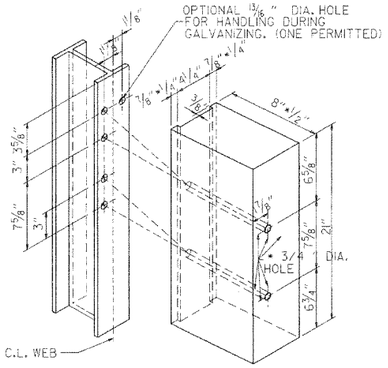
SPECIAL END SHOE




ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.

ALL HOLES DRILLED OR PUNCHED 13/16" DIA.

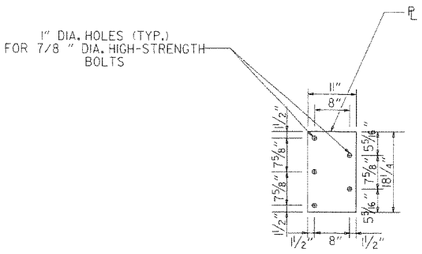
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL




ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

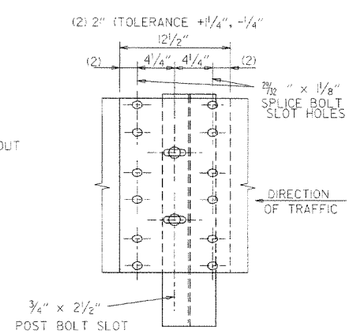
HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.

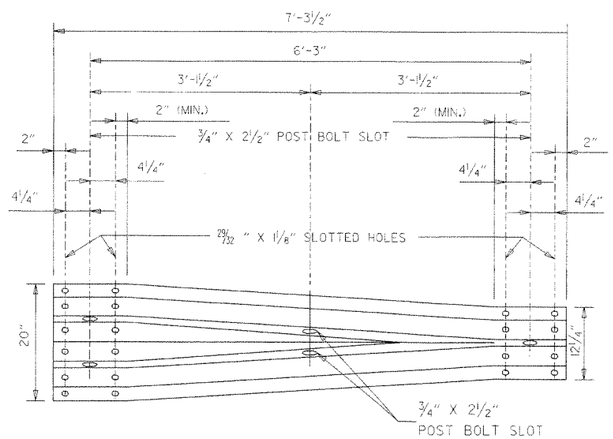



CONNECTOR PLATE

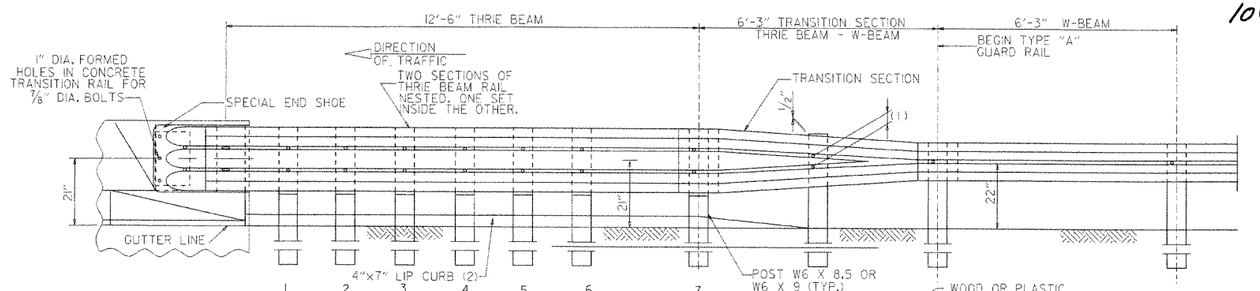
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



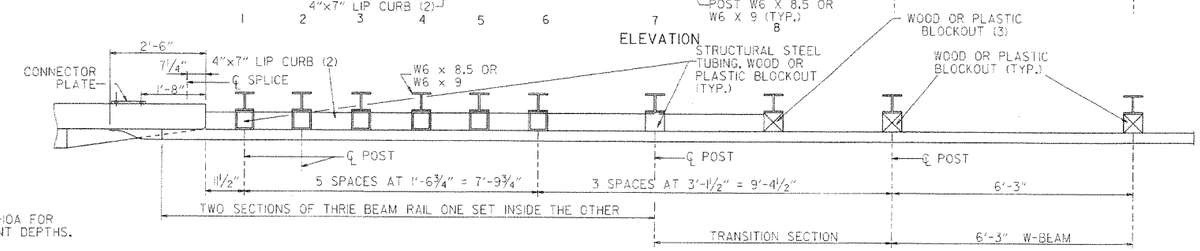

THRIE BEAM RAIL
SPLICE AT POST




TRANSITION SECTION

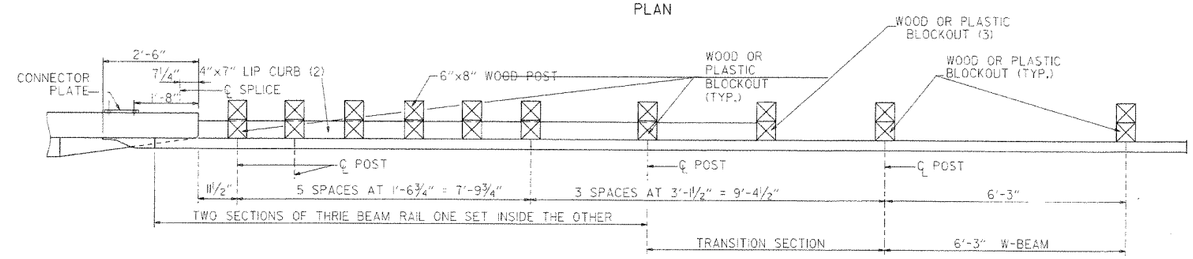



ELEVATION




PLAN

NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.




PLAN

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

## THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE II.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

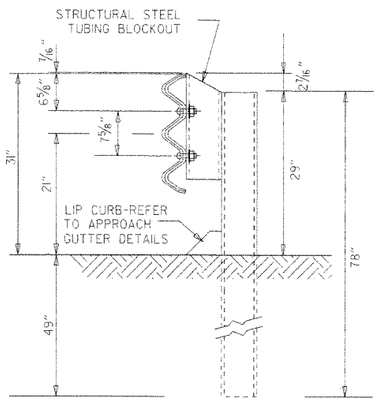
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

| DATE | REVISION | DATE FILM |
|---|---|---|
| 7-14-10 | RAISED HEIGHT OF W-BEAM 1" | |
| 11-29-07 | ADDED PLASTIC BLOCKOUTS | |
| 11-10-05 | ADDED NOTE FOR ATTACHING STEEL BLOCKOUT | |
| 11-18-04 | REVISED GENERAL NOTES | |
| 10-9-03 | REVISED GENERAL NOTES | |
| 4-10-03 | REVISED GENERAL NOTES | |
| 8-22-02 | REVISED NOTE (2) | |
| 6-29-00 | MOVED DIMENSION LINES | |
| 5-18-00 | ADDED NOTE | |
| 3-30-00 | DRAWN & ISSUED | |

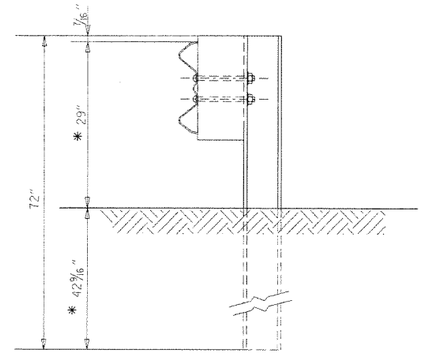
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

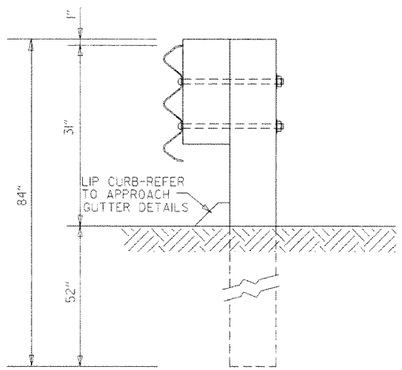



THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

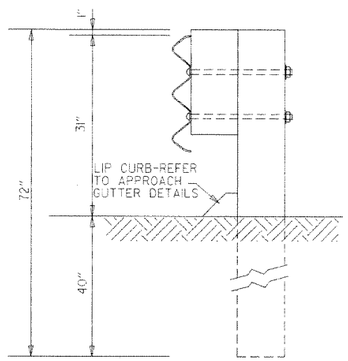



W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

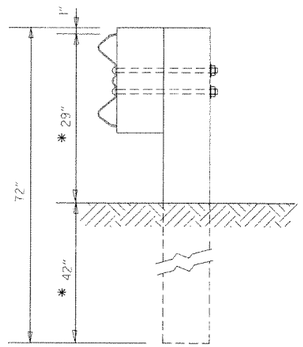
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.




THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6




THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7




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

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

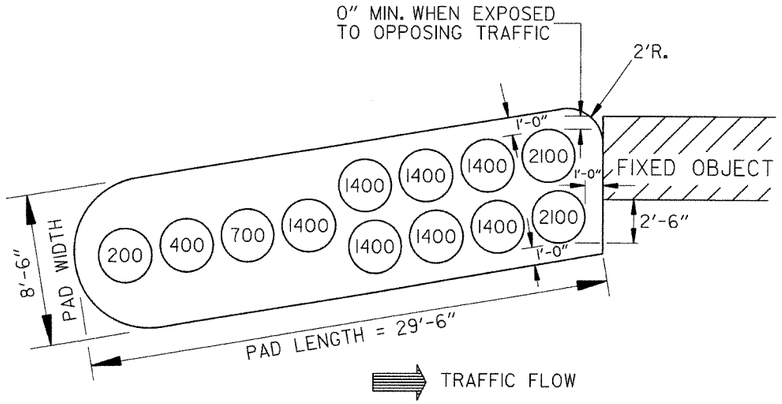
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

| DATE | REVISION | DATE FILM |
|---|---|---|
| | | |
| | | |
| | | |
| 7-14-10 | REVISED POST 8 DIMENSIONS | |
| 11-29-07 | ADDED PLASTIC BLOCKOUTS | |
| 8-22-02 | REVISED LIP CURB NOTE | |
| 3-30-00 | DRAWN & ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

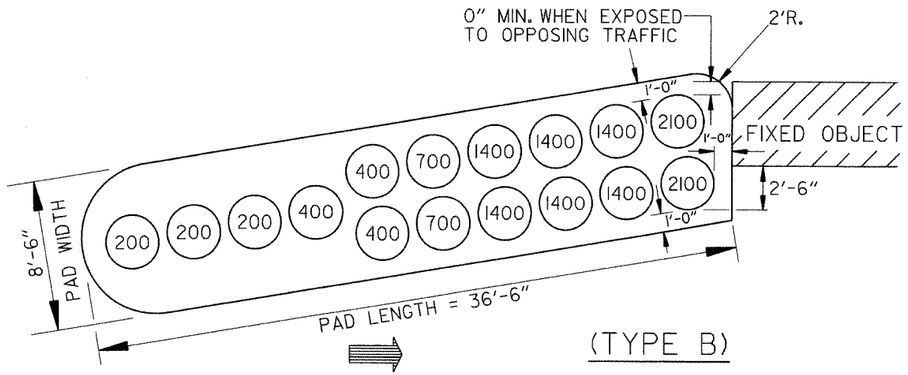
GUARD RAIL DETAILS

STANDARD DRAWING GR-10A



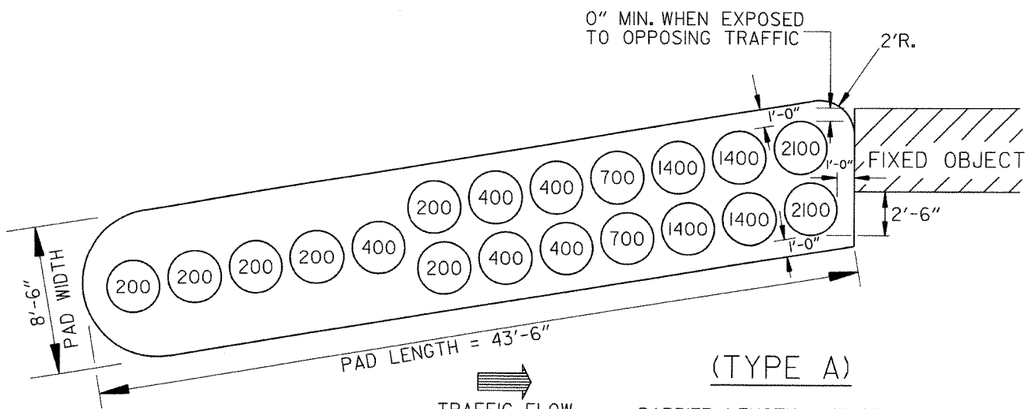

(TYPE C)

BARRIER LENGTH = 27'-6"
DESIGN IMPACT SPEED = 50 M.P.H.= 73.3 fps



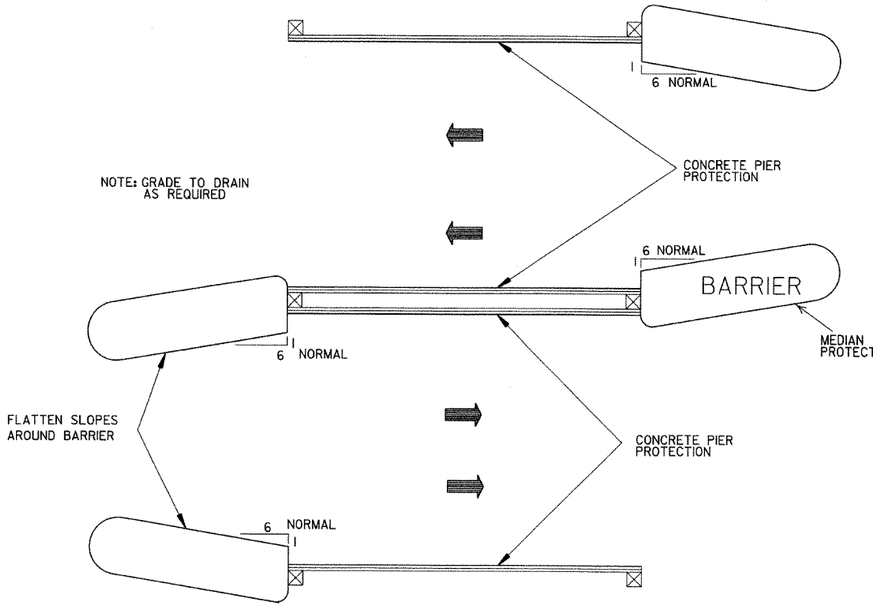

(TYPE B)

BARRIER LENGTH = 34'-6"
DESIGN IMPACT SPEED = 60 M.P.H.= 88 fps

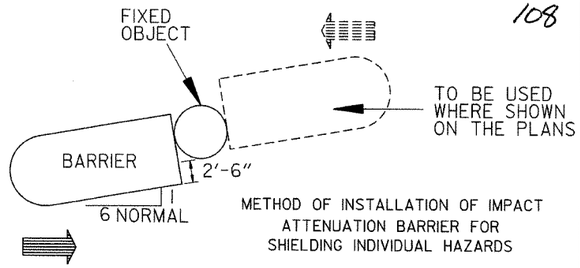



(TYPE A)

BARRIER LENGTH = 41'-6"
DESIGN IMPACT SPEED = 70 M.P.H.= 103 fps




METHOD OF INSTALLATION OF
IMPACT ATTENUATION BARRIER
FOR PIER PROTECTION




METHOD OF INSTALLATION OF IMPACT
ATTENUATION BARRIER FOR
SHIELDING INDIVIDUAL HAZARDS

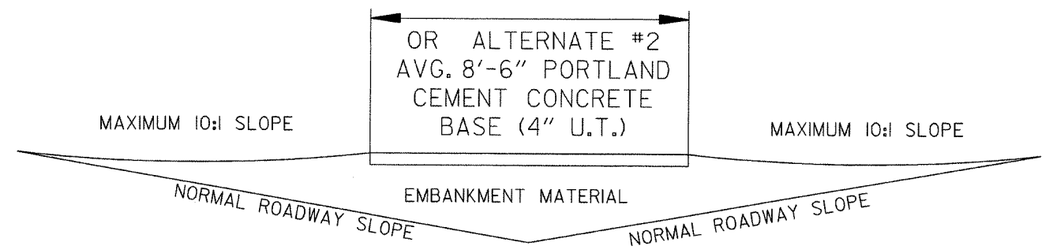
APPROXIMATE QUANTITIES PER PAD

| TYPE | ALTERNATE #1 | | ALTERNATE #2 |
|---|---|---|---|
| | AGGR. BASE COURSE | A.C.H.M. SURFACE COURSE | P.C.CONC. BASE (4"U.T.) |
| | TONS | TONS | SQ.YDS. |
| A | 9.7 | 4.6 | 41.6 |
| B | 8.1 | 3.8 | 34.9 |
| C | 6.6 | 3.1 | 28.3 |

NOTE: APPROXIMATE QUANTITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. PAYMENT TO BE INCLUDED IN UNIT PRICE BID FOR IMPACT ATTENUATION BARRIER.

GENERAL NOTES

1. DIMENSIONS SHOWN ARE TO TOP OF PLASTIC MODULES.
2. SPACING BETWEEN PLASTIC MODULES SHALL NOT EXCEED 6" AT THE TOP.
3. PLASTIC MODULES SHALL MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).




DETAIL OF BARRIER PAD

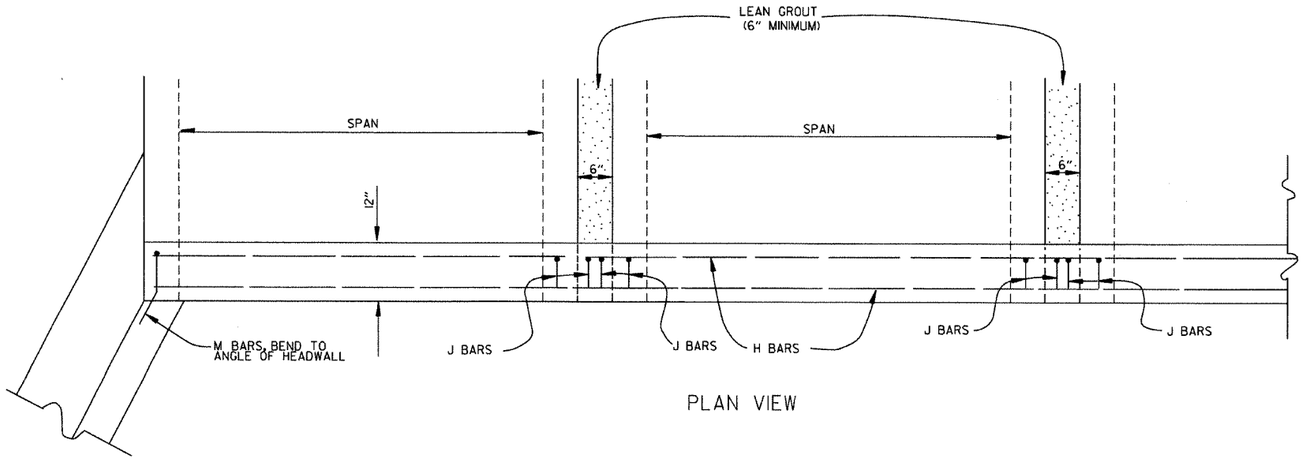
NOTE: BARRIER PAD TO BE SKEWED TOWARD ONCOMING TRAFFIC
A MAXIMUM OF 6:1 WITH 6:1 BEING NORMAL

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 10-15-09 | ADDED REFERENCE TO MASH | |
| 11-29-07 | REVISED TY. A & TY. C ARRAYS | |
| 11-19-98 | REVISED FIXED OBJECT | |
| 11-18-98 | REV. NOTES & TYPE A MOD. WTS. | |
| 10-18-96 | REDRAWN | |
| 7-15-88 | CONFORMED TO 1988 SPECS | |
| 7-29-87 | REDRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

# IMPACT ATTENUATION BARRIER

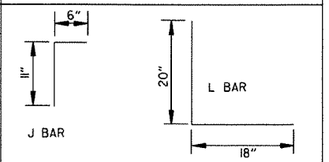
STANDARD DRAWING IB-1




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.

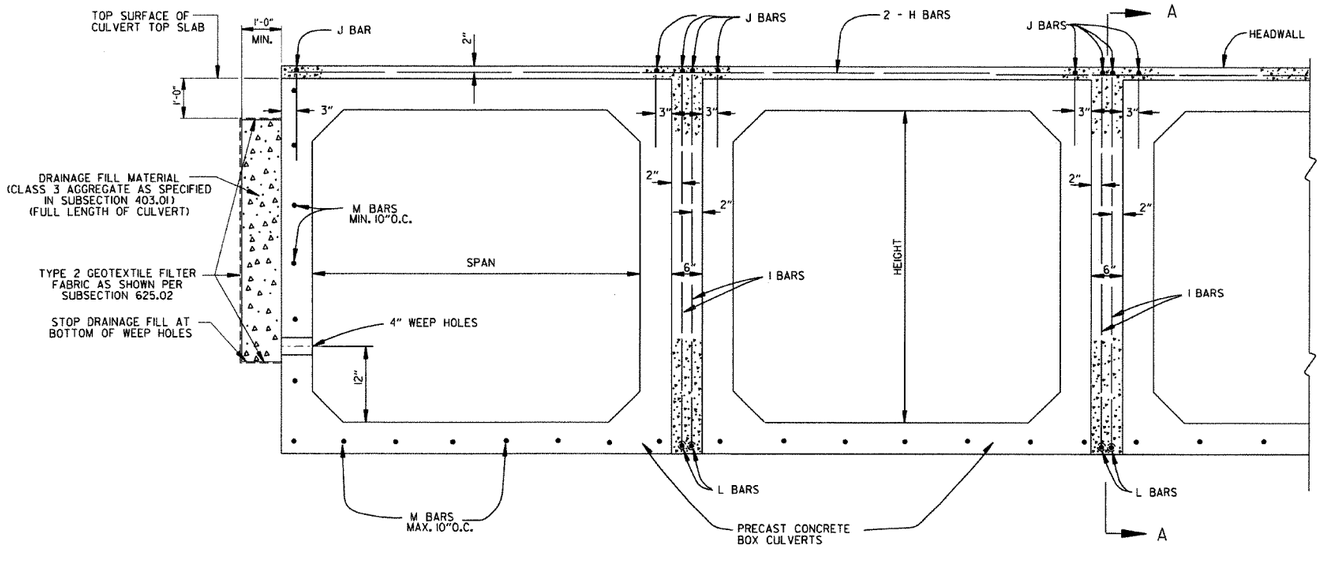
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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.

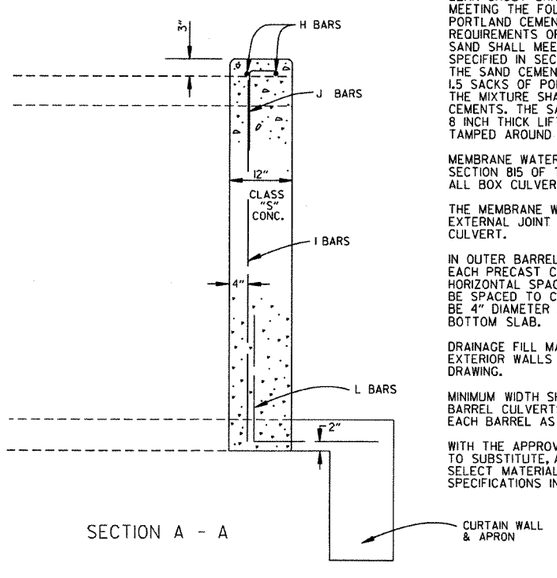
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT. SEE DETAILS ON THIS DRAWING.

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.

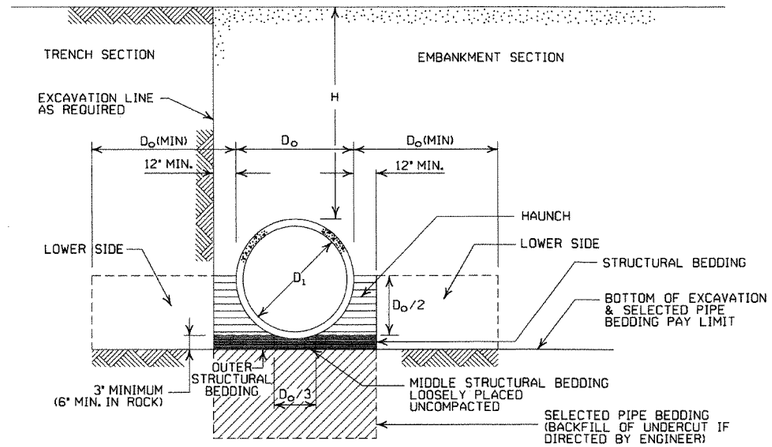
## - LEGEND -

$D_i$ = 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 |

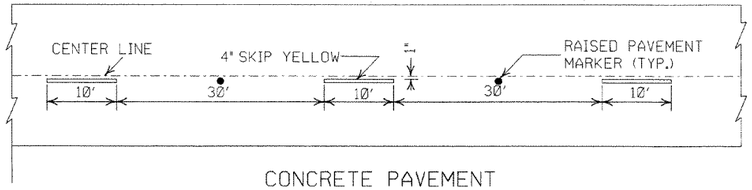
NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

| 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 | |

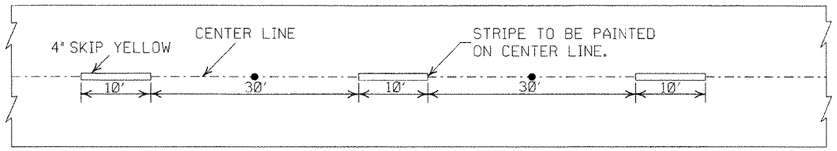
ARKANSAS STATE HIGHWAY COMMISSION

# CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

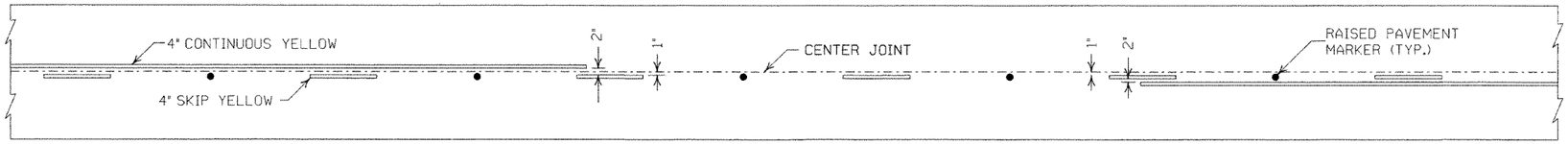



CONCRETE PAVEMENT

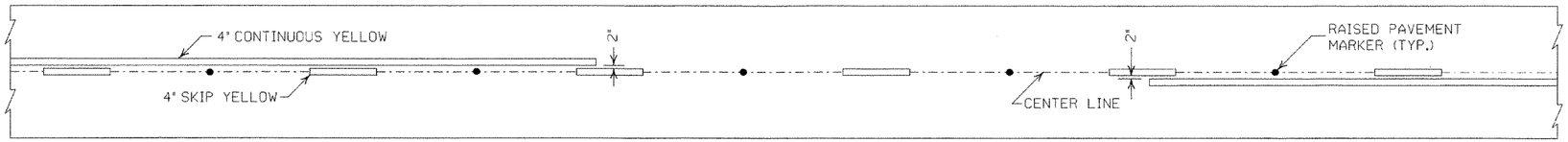



ASPHALT PAVEMENT

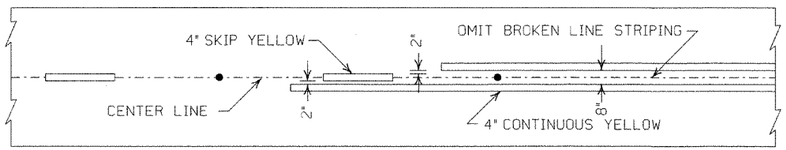
## BROKEN LINE STRIPING



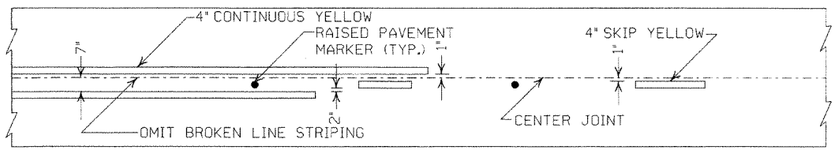

## SOLID LINE STRIPING ON CONCRETE PAVEMENT




## SOLID LINE STRIPING ON ASPHALT PAVEMENT

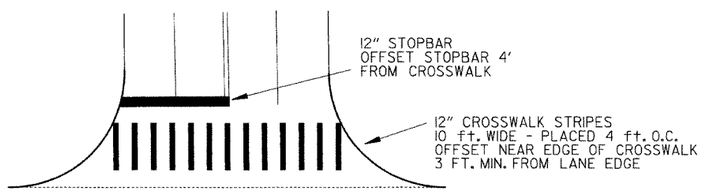



ASPHALT PAVEMENT




CONCRETE PAVEMENT

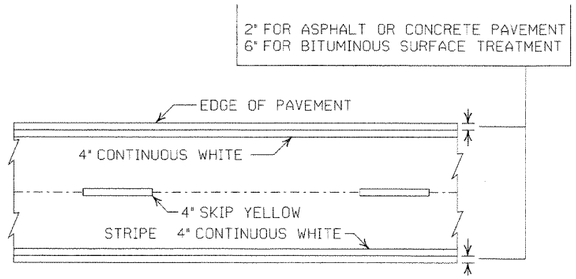
## STRIPING AT ADJACENT NO PASSING LANES



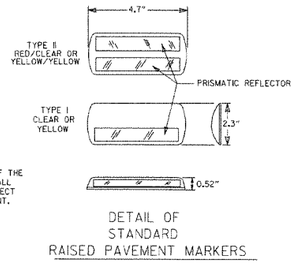

## CROSSWALK AND STOPBAR DETAILS

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 | FILMED |
|---|---|---|
| 11-17-10 | REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS | |
| 11-18-04 | REVISED NOTE 2 & GENERAL NOTES | |
| 8-22-02 | ADDED CROSSWALK & STOPBAR DTLS. | |
| 7-02-98 | ADDED DETAILS OF STD. RAISED PAV'T. MARKERS | |
| 4-26-96 | REV. NOTES 3&4; ADDED R.P.M. | |
| 9-30-80 | DRAWN | 1-9-30-80 |

ARKANSAS STATE HIGHWAY COMMISSION

# PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

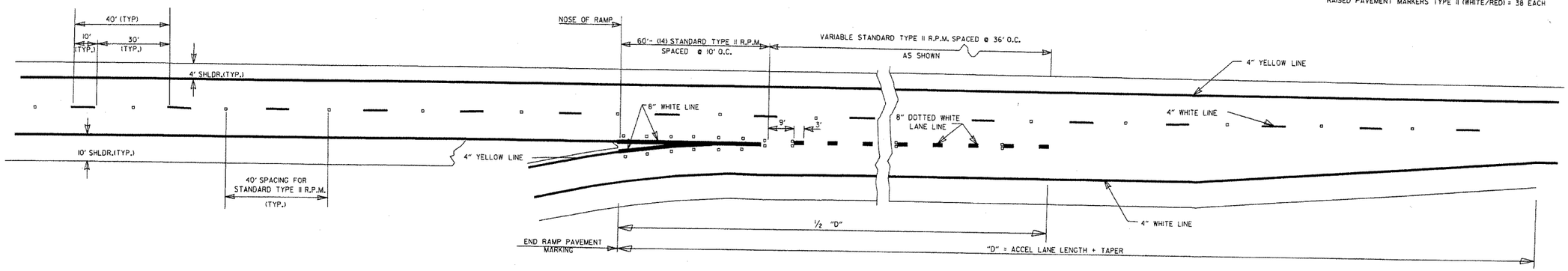
PAVEMENT MARKING QUANTITIES
(BASED ON 700' ACCEL. LANE + 300' TAPER)

ENTRANCE RAMP

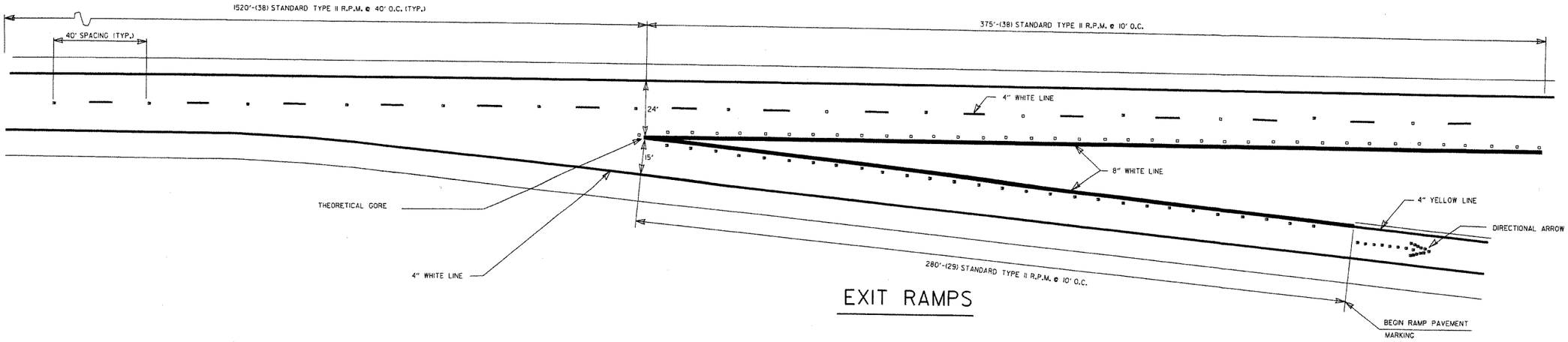
8" WHITE = 228 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH

EXIT RAMP

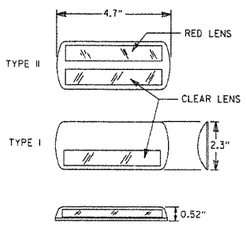
4" WHITE = 280 LIN. FT.
8" WHITE = 655 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 48 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH




## ENTRANCE RAMPS

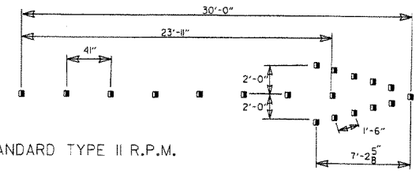



## EXIT RAMPS




DETAIL OF
STANDARD
RAISED PAVEMENT MARKERS

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




(19) STANDARD TYPE II R.P.M.

DIRECTIONAL ARROWS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND 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 | FILMED |
|---|---|---|
| 7/26/12 | REVISED RPM NOTATION | |
| 12-15-11 | REVISED RPMs ACCORDING TO LATEST POLICY | |
| 11-17-10 | REMOVED PLOWABLE PAVEMENT MARKERS | |
| 6-3-10 | REVISED PER 2009 MUTCD | |
| 11-18-04 | REVISED NOTES | |
| 8-22-02 | ADDED & REVISED NOTES; REV. ENTRANCE & EXIT RAMPS | |
| 5-18-00 | REMOVED HASHMARKS | |
| 7-02-98 | CHANGED TYPES TO ROMAN NUMERALS | |
| 4-26-96 | ADDED DIMENSIONS & QUANTITIES; REVISED LANE WIDTH ON EXIT RAMP | |
| 2-2-95 | PLACED IN USE | 2-2-95 |

ARKANSAS STATE HIGHWAY COMMISSION

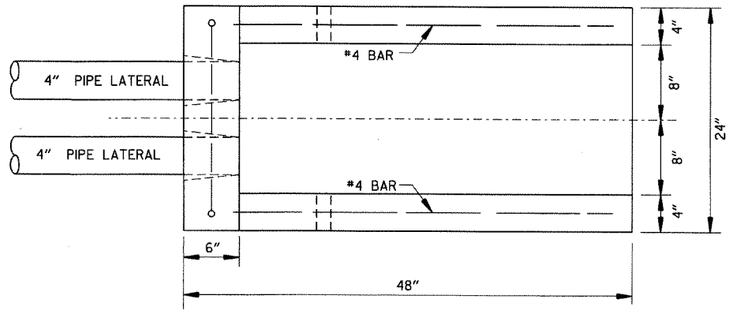
# PERMANENT PAVEMENT MARKING ON ACCESS CONTROLLED ROADWAYS

STANDARD DRAWING PM-2

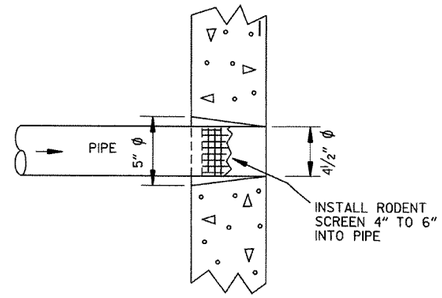
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

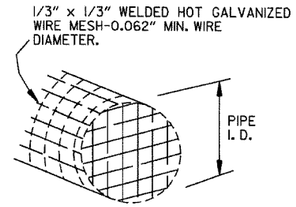
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



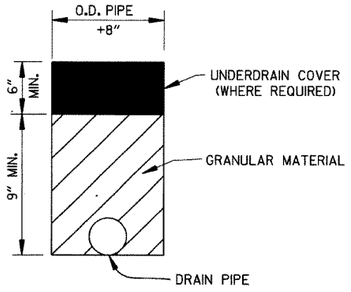

PLAN VIEW

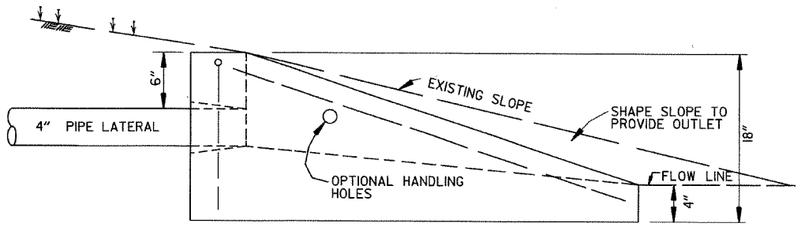



DETAIL OF HOLE FOR 4" PIPE

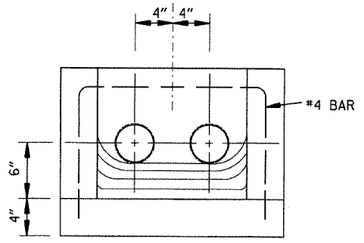



DETAIL OF RODENT SCREEN

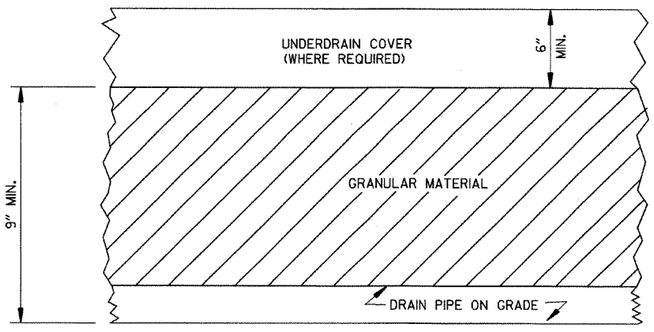



SIDE VIEW

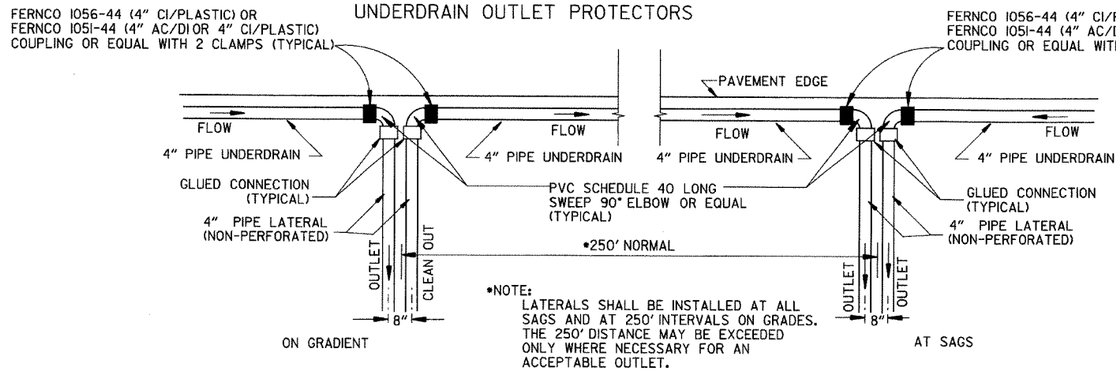



FRONT VIEW




DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS




DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 4-10-03 | REVISED NOTE 3 | |
| 1-12-00 | REVISED DETAIL OF UNDERDRAIN LATERALS | |
| 11-18-98 | REVISED NOTE | |
| 10-18-96 | REVISED MIN. DEPTH & GEOTEXTILE FABRIC | |
| 4-26-96 | ADDED LATERAL NOTE; 5½" TO 5" | |
| 11-22-95 | REVISED LATERALS | |
| 7-20-95 | REVISED LATERALS & ADDED NOTE | |
| 11- 3-94 | REVISED FOR DUAL LATERALS | 11- 3-94 |
| 10- 1-92 | SUBSTITUTED GEOTEXTILE | 10- 1-92 |
| 8-15-91 | ADDED POLYEDTHYLENE PIPE | 8-15-91 |
| 11- 8-90 | DELETED ALTERNATE NOTE | 11- 8-90 |
| 1-25-90 | ADDED 4" SNAP ADAPTER | 1-25-90 |
| 11-30-89 | DEL. (SUBGRADE); ADDED (WHERE REQUIRED) | 11-30-89 |
| 7-15-88 | ISSUED P.L.M. | 647-7-15-88 |

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

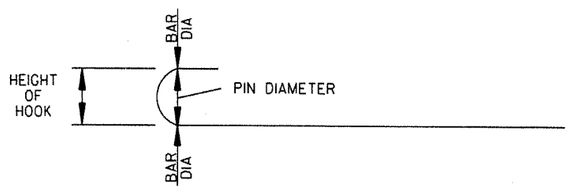
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

| BAR SIZE | PIN DIAMETER | HOOK EXTENSION "K" |
|---|---|---|
| 3 | 2¼" | 4" |
| 4 | 3 " | 4½" |
| 5 | 3¾" | 5" |
| 6 | 4½" | 6" |
| 7 | 5¼" | 7" |
| 8 | 6" | 8" |

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.




NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

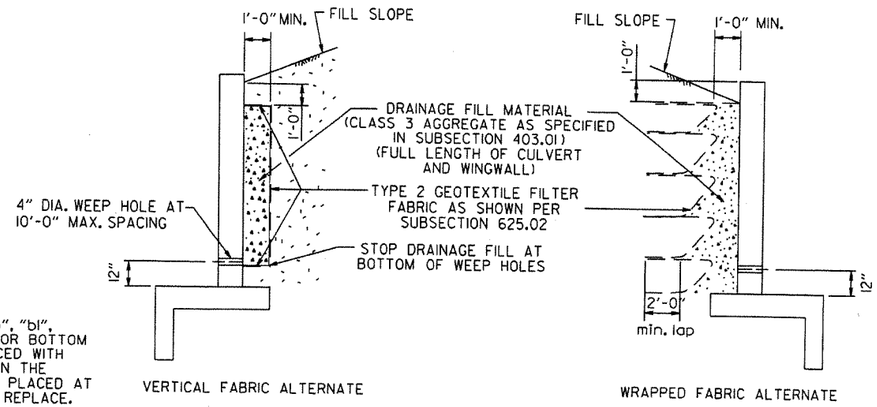
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

| BAR SIZE: "b", "b1", "b2" OR "b3" | LENGTH OF HOOKED BAR | LENGTH OF STRAIGHT BAR |
|---|---|---|
| #4 | L + 1' - 0" | SEE "c" BAR LENGTH |
| #5 | L + 1' - 2" | SEE "c" BAR LENGTH |
| #6 | L + 1' - 4" | SEE "c" BAR LENGTH |
| #7 | L + 1' - 8" | SEE "c" BAR LENGTH |
| #8 | L + 1' - 10" | SEE "c" BAR LENGTH |
| #9 | L + 2' - 6" | SEE "c" BAR LENGTH |

L = "OW" - 3 INCHES




WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

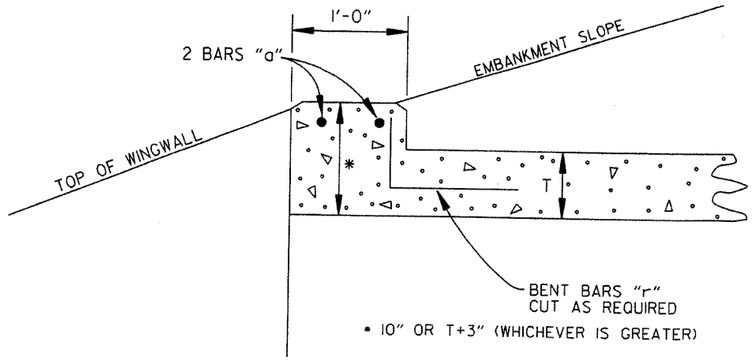
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.




NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

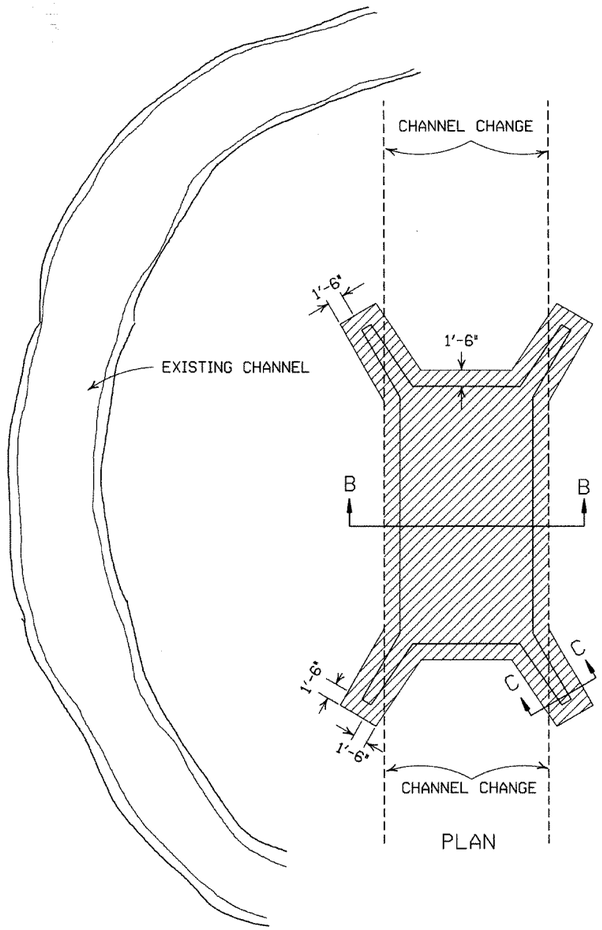
R.C. BOX CULVERT HEADWALL MODIFICATIONS

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 7/26/12 | REV. DRAINAGE FILL MATERIAL & DETAIL | |
| 12/15/11 | REQUIRE WEEP HOLES IN BOX CULVERT WALLS | |
| 5-25-06 | REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM | |
| 11-16-01 | ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES | |
| 10-18-96 | REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM | |
| 10-12-95 | MOVED SOLID SODDING DETAIL TO RCB-2 | |
| 6-2-94 | ADDED SOLID SODDING PLAN DETAIL | |
| 8-5-93 | REVISED PIN DIAMETER TO SPECS. | |
| 8-15-91 | DRAWN AND ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

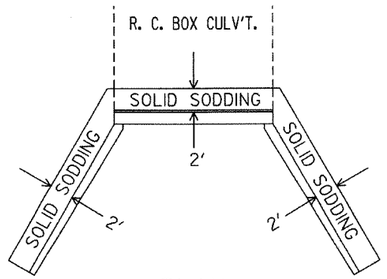
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1




PLAN

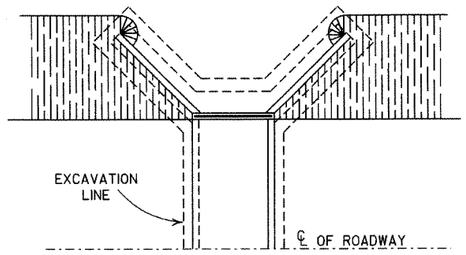
## SOLID SODDING



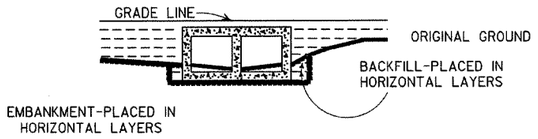

PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

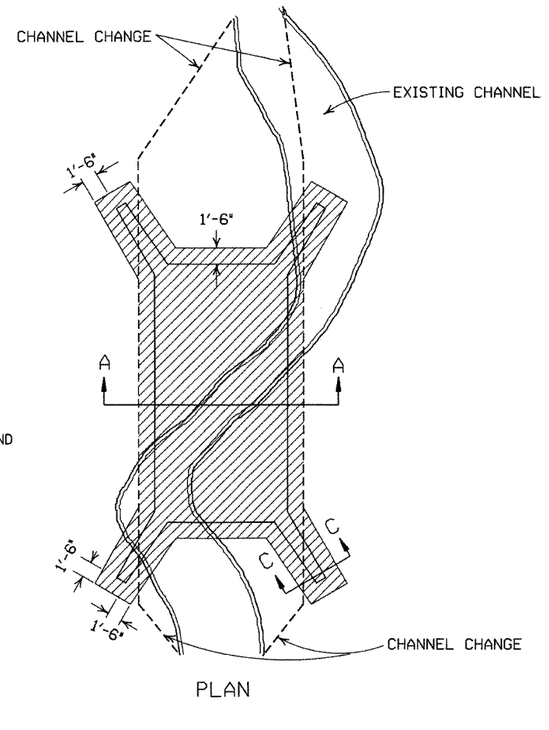



PLAN

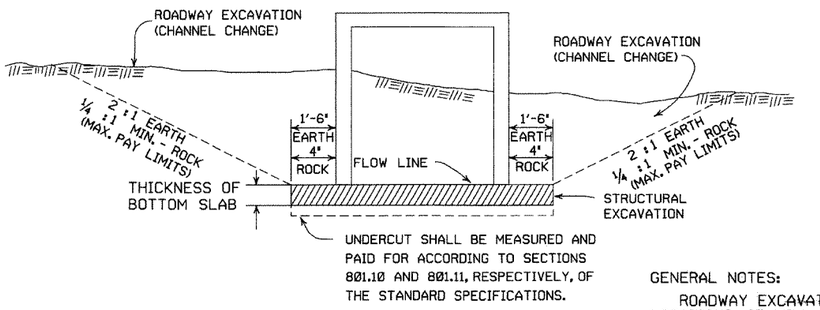



LONGITUDINAL SECTION

## BACKFILL DETAILS FOR BOX CULVERT

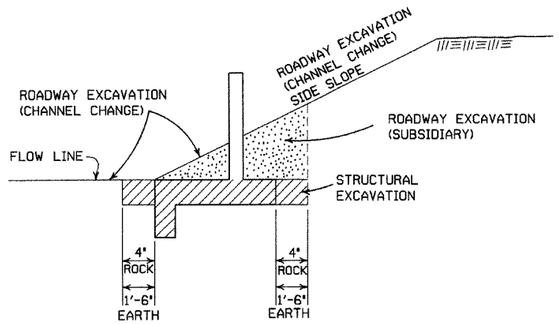



PLAN

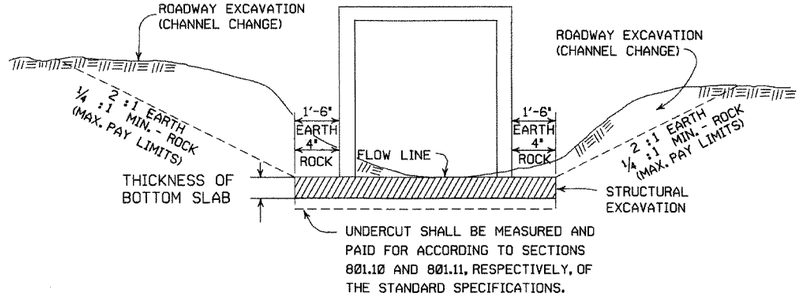



SECTION B-B

## 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

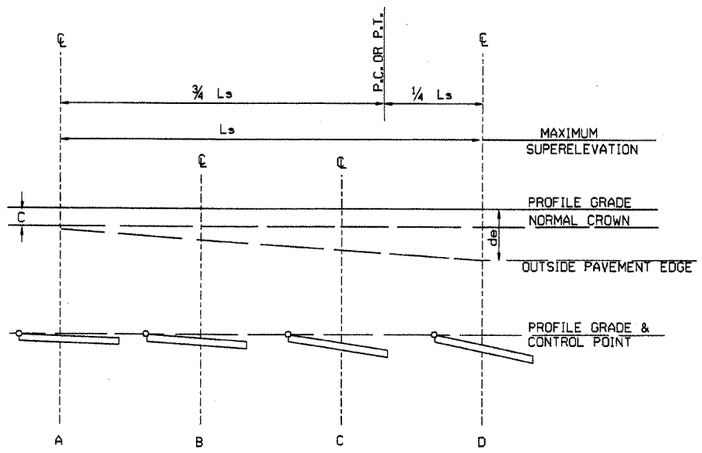
# EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

## SUPERELEVATION TABLE FOR ONE - 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 | 65 MPH e | 65 MPH Ls (FT) MINIMUM | 65 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. | | | N. C. | | |
| 0° 30′ | N. C. | | | N. C. | | | N. C. | | | N. C. | | | N. C. | | | N. C. | | | N. C. | | |
| 0° 45′ | N. C. | | | N. C. | | | R. C. | | | 0.022 | | | 0.023 | | | 0.025 | | | 0.028 | | |
| 1° 00′ | N. C. | | | N. C. | | | 0.021 | | | 0.026 | | | 0.030 | | | 0.033 | 250 | 350 | 0.037 | 275 | 350 |
| 1° 15′ | N. C. | | | R. C. | | | 0.026 | | | 0.032 | | | 0.037 | 250 | 350 | 0.041 | | | 0.046 | | |
| 1° 30′ | N. C. | | | 0.021 | | | 0.031 | 200 | | 0.037 | 225 | 350 | 0.043 | | | 0.048 | | | 0.054 | | |
| 1° 45′ | N. C. | | | 0.025 | 175 | | 0.036 | | | 0.043 | | | 0.049 | | | 0.055 | | | 0.062 | | |
| 2° 00′ | R. C. | | | 0.028 | | | 0.040 | | | 0.048 | | | 0.055 | | | 0.062 | | | 0.070 | | |
| 2° 15′ | R. C. | | | 0.031 | | | 0.045 | | 300 | 0.053 | | | 0.061 | | | 0.069 | 265 | | 0.078 | 300 | |
| 2° 30′ | 0.021 | | | 0.034 | | | 0.049 | | | 0.058 | | | 0.067 | | | 0.075 | 280 | 400 | 0.085 | 315 | 400 |
| 2° 45′ | 0.023 | | | 0.037 | | | 0.053 | | | 0.063 | | | 0.072 | | | 0.081 | 300 | | 0.091 | 335 | |
| 3° 00′ | 0.025 | 150 | | 0.040 | | 250 | 0.057 | | | 0.067 | 260 | | 0.077 | 260 | | 0.087 | 315 | | 0.096 | 350 | |
| 3° 15′ | 0.027 | | | 0.043 | | | 0.061 | | | 0.072 | 275 | | 0.082 | 275 | | 0.093 | 325 | | 0.098 | 360 | 450 |
| 3° 30′ | 0.029 | | | 0.046 | | | 0.065 | 205 | | 0.076 | 285 | | 0.086 | 285 | | 0.095 | 340 | 400 | 0.100 | 360 | |
| 3° 45′ | 0.031 | | 250 | 0.049 | | | 0.069 | 215 | | 0.080 | 295 | 400 | 0.090 | 295 | 400 | 0.097 | 345 | | | | |
| 4° 00′ | 0.033 | | | 0.051 | | | 0.072 | 225 | | 0.083 | 270 | | 0.093 | 305 | | 0.099 | 350 | | | | |
| 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 | 400 | | | | | | | | | |
| 6° 00′ | 0.046 | | | 0.070 | 190 | | 0.092 | 270 | | 0.096 | 305 | | | | | | | | | | |
| 6° 30′ | 0.050 | | | 0.074 | 200 | | 0.095 | 280 | 350 | 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 | 300 | | | | | | | | | | | | | | | |
| 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 | 300 | | | | | | | | | | | | | | | | | | |
| 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 = 4° 15′ | D MAX = 3° 30′




ONE-WAY TRAFFIC
INSIDE LANE

SUPERELEVATION FORMULA = $S = -\frac{L(de+C)}{Ls} - C$

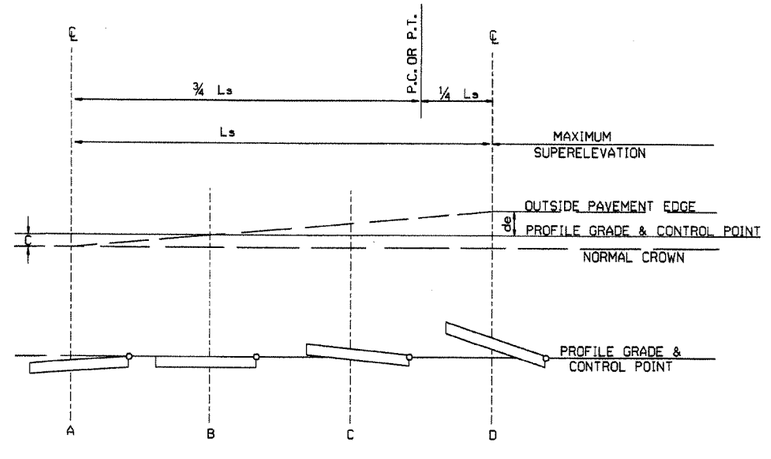
### ABBREVIATIONS

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

### GENERAL NOTES

1. ON PAVEMENT WITH ONE-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE PROFILE GRADE POINT.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR Ls MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. MINIMUM Ls VALUES MAY BE USED FOR RAMPS; DESIRABLE VALUES SHALL APPLY TO MAIN LANES.
5. DIVIDED PAVEMENTS WIDER THAN 4 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLOWS:

6 LANE DIVIDED---------+20%
8 LANE DIVIDED---------+50%




ONE-WAY TRAFFIC
OUTSIDE LANE

SUPERELEVATION FORMULA = $S = +\frac{L(de+C)}{Ls} - C$

| | | | |
|---|---|---|---|
| 01-09-87 | ISSUED | | 578-1-15-87 |
| DATE | REVISION | | DATE FILMED |

ARKANSAS STATE HIGHWAY COMMISSION

# TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

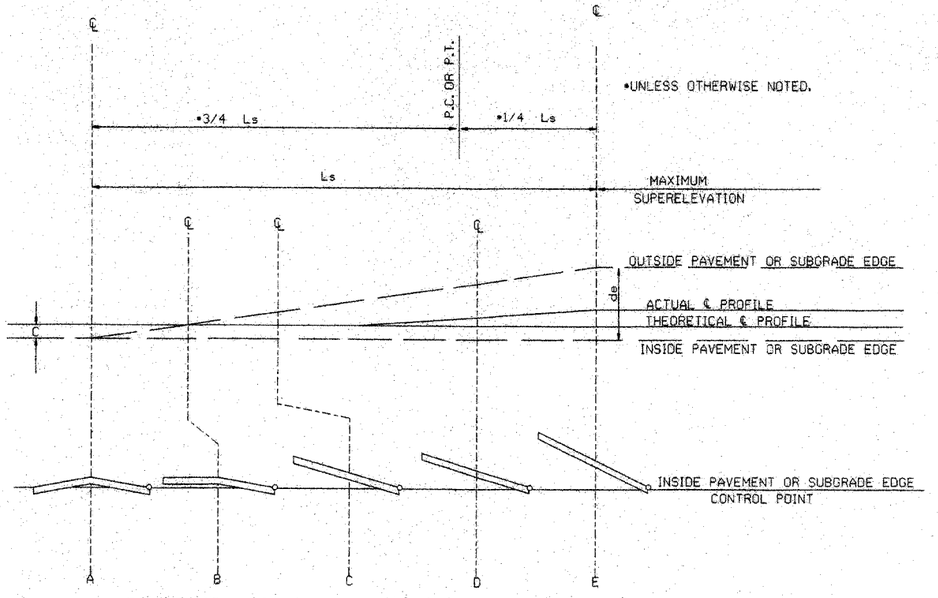
## SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

| 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. | | | N. C. | | | 0.023 | | | 0.028 | | |
| 1° 00′ | N. C. | | | N. C. | | | 0.021 | | | 0.022 | | | 0.030 | | | 0.027 | 275 | 300 |
| 1° 15′ | N. C. | | | R. C. | | | 0.026 | | | 0.026 | | | 0.037 | | | 0.046 | | |
| 1° 30′ | N. C. | | | 0.021 | | | 0.031 | 200 | | 0.032 | | | 0.043 | | | 0.054 | | |
| 1° 45′ | N. C. | | | 0.025 | 175 | | 0.036 | | | 0.037 | 225 | | 0.049 | 250 | | 0.062 | | |
| 2° 00′ | R. C. | | | 0.028 | | | 0.040 | | | 0.043 | | | 0.055 | | | 0.070 | | |
| 2° 15′ | R. C. | | | 0.031 | | | 0.045 | | | 0.048 | | 300 | 0.061 | | | 0.078 | 300 | 350 |
| 2° 30′ | 0.021 | | | 0.034 | | | 0.049 | | | 0.053 | | | 0.067 | | | 0.085 | 315 | |
| 2° 45′ | 0.023 | | | 0.037 | | 200 | 0.053 | | 250 | 0.058 | | | 0.072 | | | 0.091 | 335 | |
| 3° 00′ | 0.025 | 150 | | 0.040 | | | 0.057 | | | 0.063 | | | 0.077 | 260 | | 0.096 | 350 | 400 |
| 3° 15′ | 0.027 | | | 0.043 | | | 0.061 | | | 0.067 | 230 | | 0.082 | 275 | | 0.098 | 360 | |
| 3° 30′ | 0.029 | | | 0.046 | | | 0.065 | 205 | | 0.072 | 245 | | 0.086 | 285 | | 0.100 | 360 | |
| 3° 45′ | 0.031 | | | 0.049 | | | 0.069 | 215 | | 0.076 | 255 | | 0.090 | 295 | | | | |
| 4° 00′ | 0.033 | | | 0.051 | | | 0.072 | 225 | | 0.080 | 265 | | 0.093 | 305 | 350 | | | |
| 4° 30′ | 0.037 | | | 0.056 | | | 0.078 | 240 | | 0.083 | 270 | | 0.096 | 315 | | | | |
| 5° 00′ | 0.040 | | | 0.061 | | | 0.083 | 250 | | 0.087 | 280 | | 0.098 | 320 | | | | |
| 5° 30′ | 0.043 | | | 0.066 | 185 | | 0.088 | 260 | | 0.091 | 295 | | | | | | | |
| 6° 00′ | 0.046 | | | 0.070 | 190 | | 0.092 | 270 | | 0.094 | 300 | 350 | | | | | | |
| 6° 30′ | 0.050 | | | 0.074 | 200 | | 0.095 | 280 | 300 | 0.096 | 305 | | | | | | | |
| 7° 00′ | 0.053 | | | 0.078 | 210 | | 0.098 | 285 | | 0.100 | 315 | | | | | | | |
| 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.

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

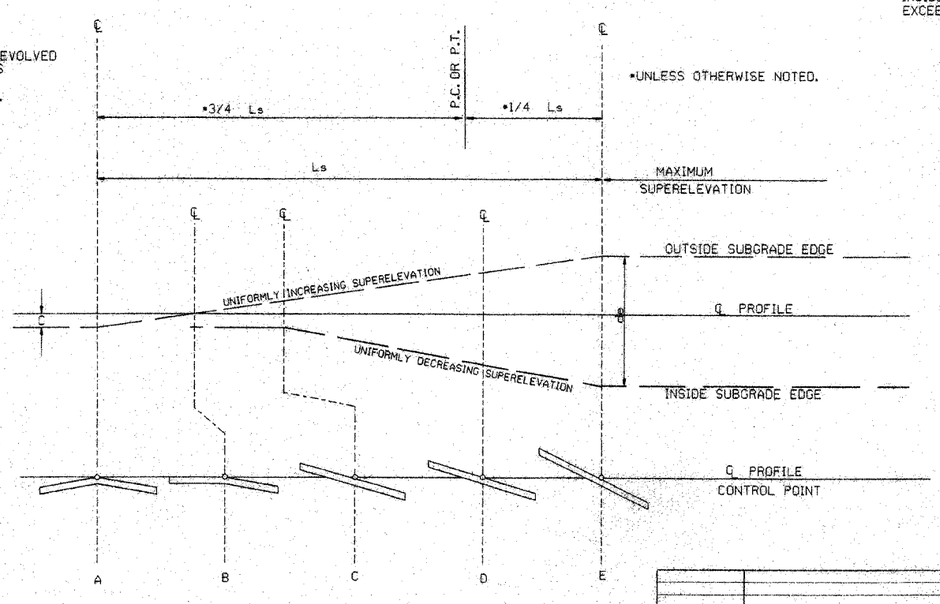
### GENERAL NOTES

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

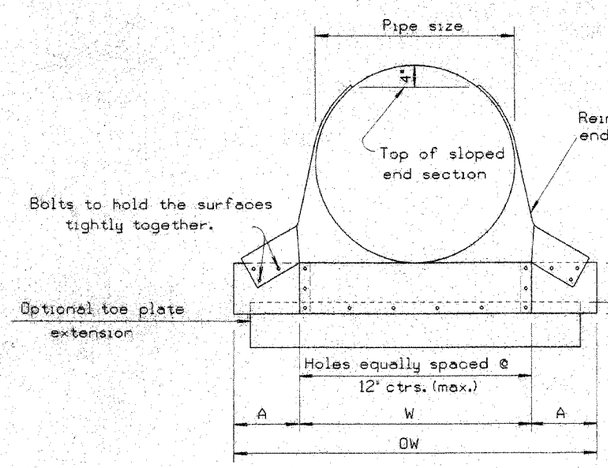
| DATE | REVISION | DATE FILMED |
|---|---|---|
| 10-18-96 | ADDED FORMULA | 10-18-96 |
| 01-09-87 | ISSUED | 534-1-9-87 |

ARKANSAS STATE HIGHWAY COMMISSION

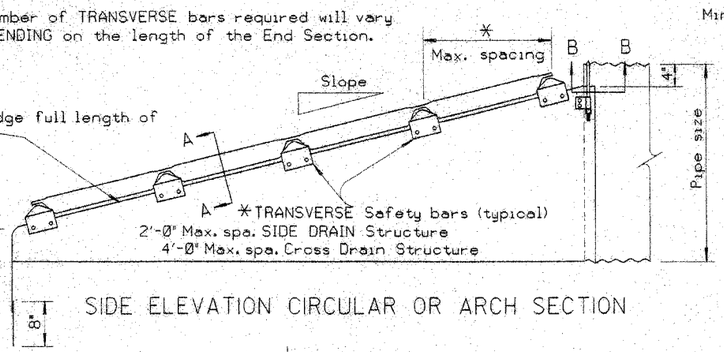
# TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

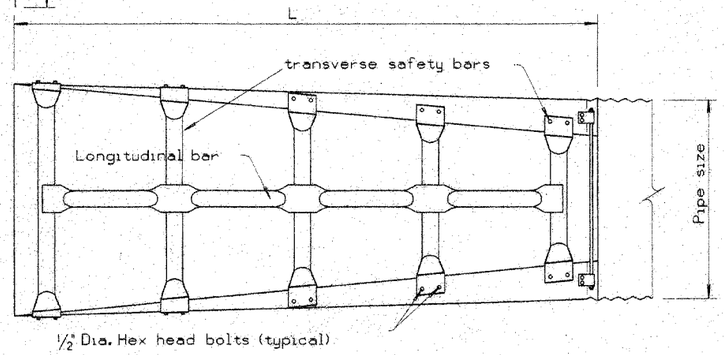
FILE STDSE2.DGN



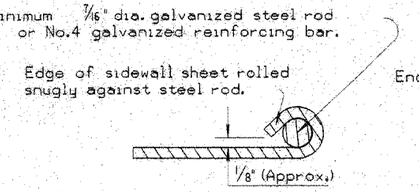

FRONT VIEW CIRCULAR PIPE



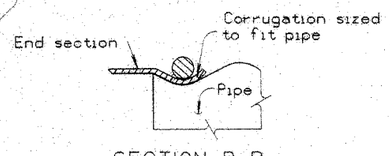

SIDE ELEVATION CIRCULAR OR ARCH SECTION



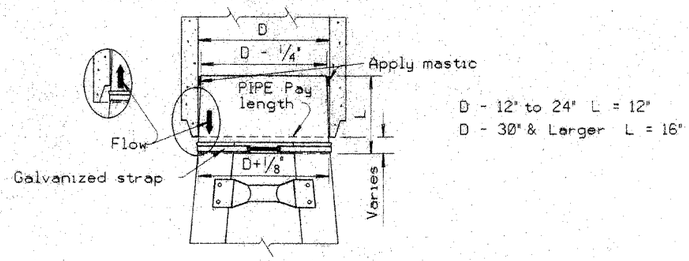

TOP VIEW CIRCULAR OR ARCH SECTION




SECTION A-A




SECTION B-B

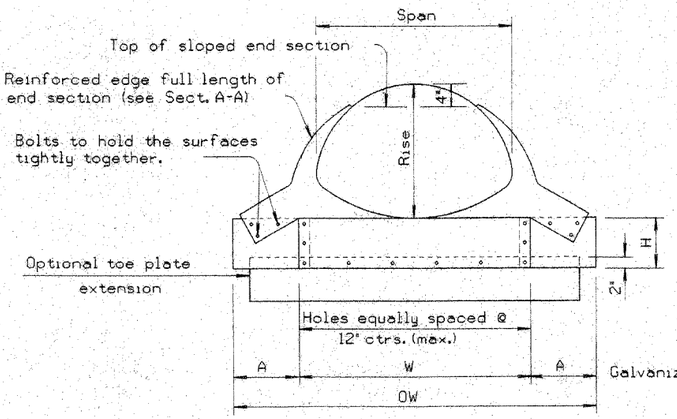



D - 12" to 24" L = 12"
D - 30" & Larger L = 16"

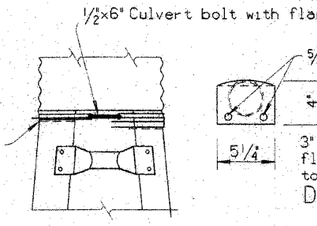
Note: Metal end section to be firmly wedged INTO PIPE END BEFORE BACKFILLING PIPE.

(Tapered sleeve to be 12 Ga. smooth galvanized steel in accordance with AASHTO M 218.)

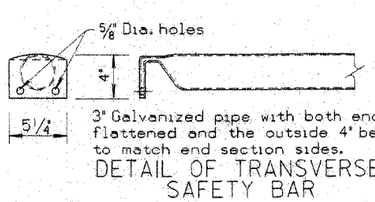
STEEL END SECTION FOR CONCRETE PIPE
(Alternate for Concrete End Section)




FRONT VIEW ARCH PIPE

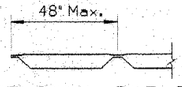



TYPE #1 CONNECTOR DETAIL
For 15" thru 24" pipe



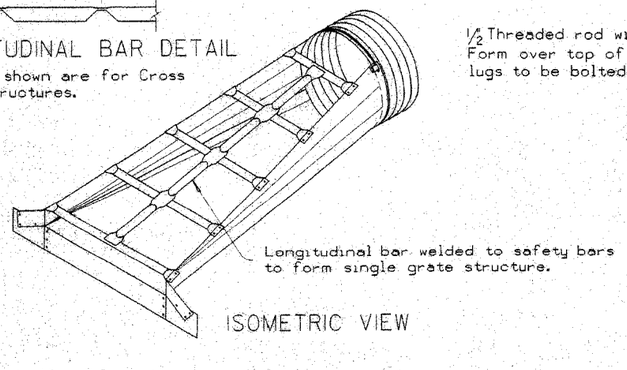

3" Galvanized pipe with both ends flattened and the outside 4" bent to match end section sides.

DETAIL OF TRANSVERSE SAFETY BAR



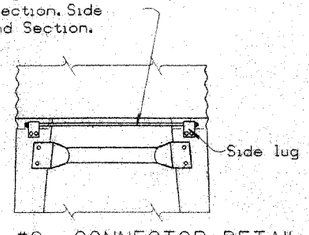

LONGITUDINAL BAR DETAIL

Note: Bars shown are for Cross Drain Structures.




ISOMETRIC VIEW

½" Threaded rod with flanged nuts. Form over top of end section. Side lugs to be bolted to End Section.




TYPE #2 CONNECTOR DETAIL
For 30" and larger round pipes & 21"x15" thru 64"x43" arch pipes

GENERAL NOTES

End sections shall be fabricated from galvanized steel meeting the requirements of SUBSECTION 606.02(c)(1) OF THE STANDARD SPECIFICATIONS.
When specified optional toe plate extension shall be punched and bolted to end section apron lip with ⅜" diameter galvanized bolts.
Steel for toe plate extension shall be same gauge as end section.
Dimensions shall be overall width less 6" by 8" high.
Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.
Safety bars shall be fabricated from steel pipe meeting the requirements of ASTM A-53 Schedule 40 Specifications. Safety bars shall be hot dipped galvanized after fabrication.
All work and materials required for construction and installation of safety end section shall be included in the PRICE BID EACH FOR SAFETY END SECTIONS FOR PIPE CULVERTS.
Longitudinal and transverse bars will be required for cross drain structures when span is greater than 30", no safety bars will be REQUIRED FOR 30" SPAN OR LESS WHEN USED ON CROSS DRAIN STRUCTURES.
Transverse bars will be required for all sizes of side drain structures.
Class 1 safety end sections shall be end sections with a 4:1 slope.
Class 2 safety end sections shall be end sections with a 6:1 slope.

SAFETY END SECTIONS FOR ARCH PIPES

| Equv. Dia. | Nom. W.W. Area Sq Ft | Pipe Arch Span (In.) | Pipe Arch Rise (In.) | Min. Gauge End Sect. | Dimensions in Inches A | H | W | OW | Slope | L (In) | Slope | L (In) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18" | 1.6 | 21 | 15 | 16 | 8 | 6 | 27 | 43 | 4:1 | 20 | 6:1 | 30 |
| 21" | 2.2 | 24 | 18 | 16 | 8 | 6 | 30 | 46 | 4:1 | 32 | 6:1 | 48 |
| 24" | 2.9 | 28 | 20 | 16 | 8 | 6 | 34 | 50 | 4:1 | 40 | 6:1 | 60 |
| 30" | 4.5 | 35 | 24 | 14 | 12 | 9 | 41 | 65 | 4:1 | 56 | 6:1 | 84 |
| 36" | 6.5 | 42 | 29 | 12 | 12 | 9 | 48 | 72 | 4:1 | 76 | 6:1 | 114 |
| 42" | 8.9 | 49 | 33 | 12 | 16 | 12 | 55 | 87 | 4:1 | 92 | 6:1 | 138 |
| 48" | 11.6 | 57 | 38 | 12 | 16 | 12 | 63 | 95 | 4:1 | 112 | 6:1 | 168 |
| 54" | 14.7 | 64 | 43 | 12 | 16 | 12 | 70 | 102 | 4:1 | 132 | 6:1 | 198 |
| 60" | 18.1 | 71 | 47 | 12 | 16 | 12 | 77 | 109 | 4:1 | 148 | 6:1 | 222 |
| 72" | 26.0 | 83 | 57 | 12 | 16 | 12 | 89 | 121 | 4:1 | 188 | 6:1 | 282 |

SAFETY END SECTIONS FOR CIRCULAR PIPES

| Pipe Dia. | Min. Gauge Ends | Dimensions in Inches A 1"Tol | H 1"Tol | W 2"Tol | OW | L Dimensions in Inches Slope | L | Slope | L |
|---|---|---|---|---|---|---|---|---|---|
| 15" | 16 | 8 | 6 | 21 | 37 | 4:1 | 20 | 6:1 | 30 |
| 18" | 16 | 8 | 6 | 24 | 40 | 4:1 | 32 | 6:1 | 48 |
| 21" | 16 | 8 | 6 | 27 | 43 | 4:1 | 44 | 6:1 | 66 |
| 24" | 16 | 8 | 6 | 30 | 46 | 4:1 | 56 | 6:1 | 84 |
| 30" | 12 | 12 | 9 | 36 | 60 | 4:1 | 80 | 6:1 | 120 |
| 36" | 12 | 12 | 9 | 42 | 66 | 4:1 | 104 | 6:1 | 156 |
| 42" | 12 | 16 | 12 | 48 | 80 | 4:1 | 128 | 6:1 | 192 |
| 48" | 12 | 16 | 12 | 54 | 86 | 4:1 | 152 | 6:1 | 228 |
| 54" | 12 | 16 | 12 | 60 | 92 | 4:1 | 176 | 6:1 | 264 |
| 60" | 12 | 16 | 12 | 66 | 98 | 4:1 | 200 | 6:1 | 300 |

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 10-18-96 | REVISED ASTM REF. TO AASHTO | 10-18-96 |
| 8-15-91 | DRAWN & ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES

STANDARD DRAWING SES-1

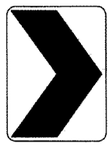
FILE stdsesi.dgn

| FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | 119 | |
| JOB NO. | | | | |

4 STD. HWY. SIGNS & SUP ASSEMB

R1-1
30"X30"

W1-3
30"X30"
(LT. OR RT.)



W1-8
18"X24"

W2-5
30"X30"

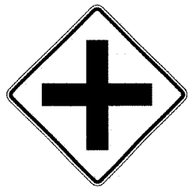
W3-1
36"X36"

W5-1
36"X36"

M6-3
21"X15"

R1-2
36"X36"X36"

W1-4
30"X30"
(LT. or RT.)



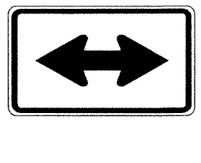
W2-1
30"X30"

S1-1
36"X36"

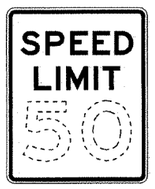
W3-2
36"X36"

County
Route Marker
M1-5
24"X24"

NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.

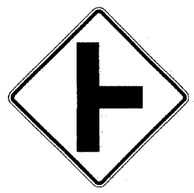


M6-4
21"X15"




R2-1
24"X30"

W1-5
30"X30"
(LT. or RT.)

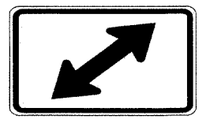


W2-2
30"X30"

W5-2
36"X36"

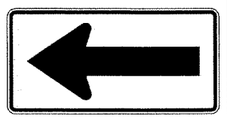
W8-3
36"X36"

R1-3
12"X6"

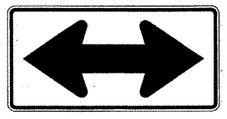


M6-5
21"X15"

W1-1
30"X30"
(LT. or RT.)

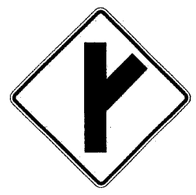


W1-6
48"X24"



W1-7
48"X24"

W1-2
30"X30"
(LT. or RT.)



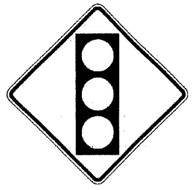
W2-3
30"X30"
(LT. or RT.)

W2-4
30"X30"

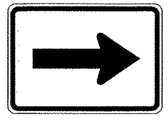
W5-3
36"X36"

W10-1
36" DIAMETER

W13-1
18"X18"



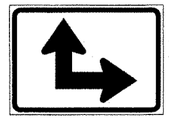
W3-3
36"X36"



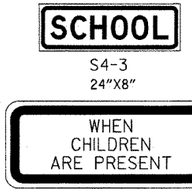
M6-1
21"X15"

NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND.

M6-2
21"X15"

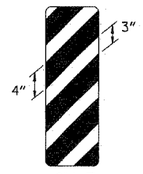


M6-6
21"X15"




S4-3
24"X8"

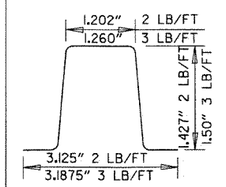
S4-2
24"X10"



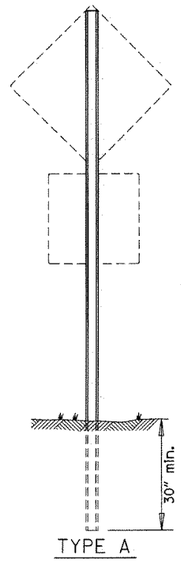

OM-3
12"X36"
(LT. or RT.)

MINIMUM DIMENSIONS SHOWN

SUPPORT SECTION

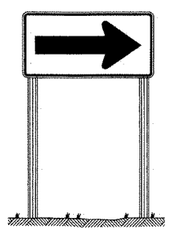



(U-CHANNEL)
STANDARD SUPPORT
ASSEMBLIES

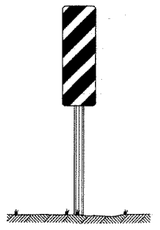



TYPE A

NOTE: LENGTH OF SIGN POSTS SHALL BE DETERMINED SO AS TO PROVIDE FOR MINIMUM VERTICAL CLEARANCES AS CALLED FOR IN THE SPECIFICATIONS PLUS A MINIMUM VERTICAL PENETRATION OF 30" IN THE SOIL.



TYPE B



TYPE C

MINIMUM WEIGHT

TYPE A & B = 3 LBS./FT.
TYPE C = 2 LBS./FT.

# STANDARD HIGHWAY SIGNS

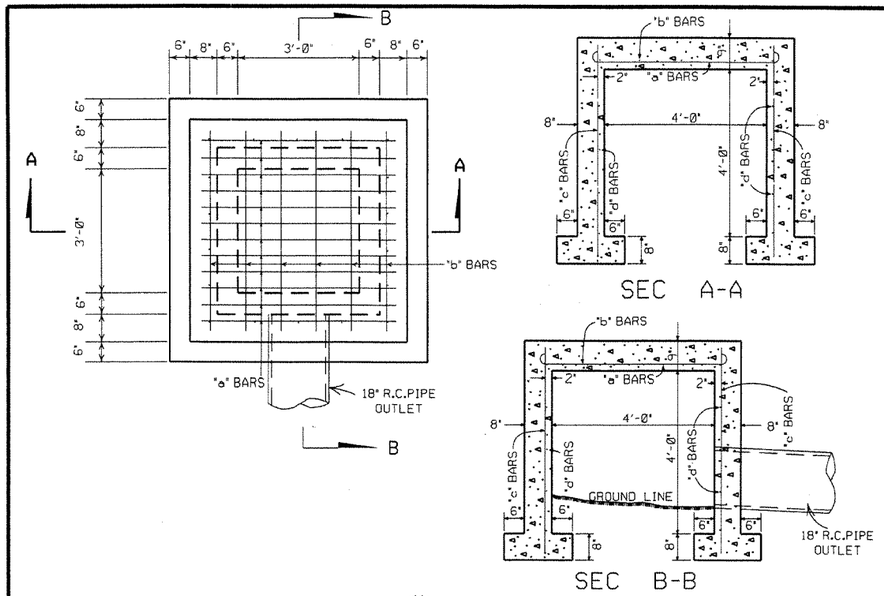
| DATE | REVISION | DATE FILMED |
|---|---|---|
| 4-17-08 | REVISED SIGN DESIGNATION - W3-1& W3-2 | |
| 4-10-03 | REVISED W5-2, W8-3, OM-3; ADDED W1-8 | |
| 1-5-81 | REDRAWN | 960-1-15-81 |
| 9-15-78 | ADDED W14-3 | 877-9-15-78 |
| 9-2-76 | POST WT. | 623-9-3-76 |
| 5-3-76 | STEEL POST WT. FROM 2* - 3* ADDED S4-2 & S4-3 | 504-5-3-76 |
| 8-12-74 | REV. HT. TYPE "C" ASSEMBLY | 500-8-21-74 |
| 12-21-72 | ADDED M6-2,3,4,5,6 | 500-12-21-72 |
| 12-1-72 | ISSUED | 562-12-1-72 |

## SUPPORT ASSEMBLIES

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD HIGHWAY SIGNS
AND SUPPORT ASSEMBLIES

STANDARD DRAWING SHS-1







SEC A-A

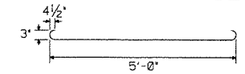



SEC B-B

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

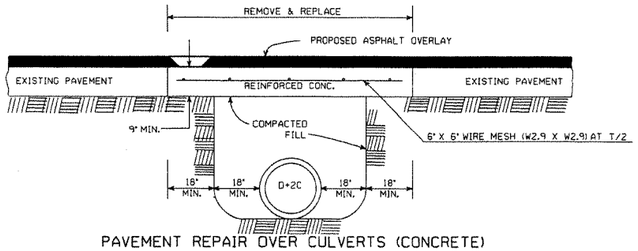
QUANTITIES

CONCRETE 3.40 CU. YDS.
REINFORCING STEEL 176 LB.

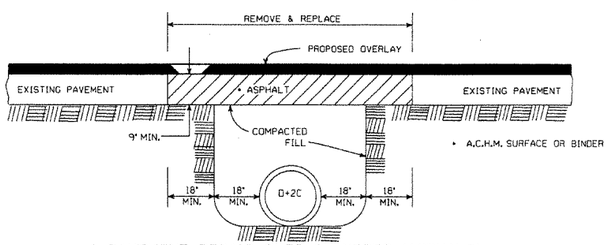
GENERAL NOTE:

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



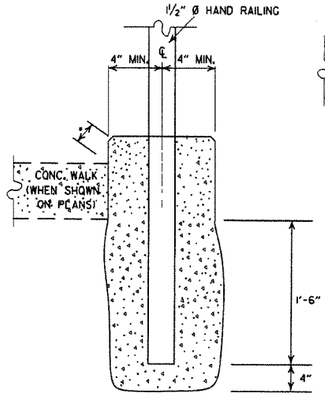

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



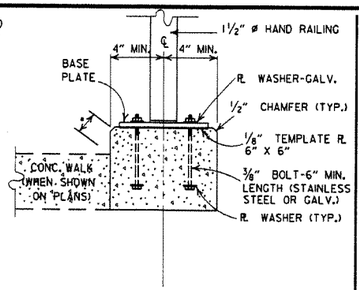

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

## DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

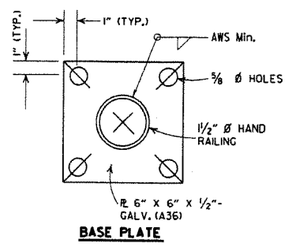
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.




DETAIL OF HAND RAILING SET IN CONCRETE

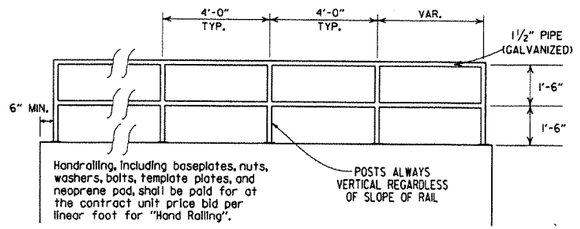



POST CONNECTION TO WALL

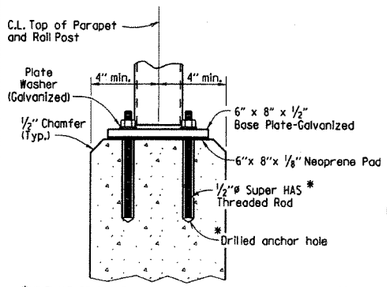



BASE PLATE

## POST CONNECTION DETAILS



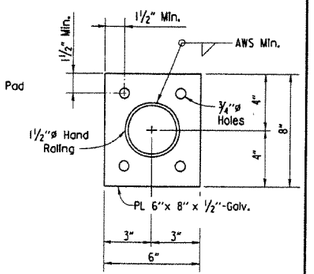

Hand railing shall conform to Section 633.




*HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4½" embedment or approved equal.

The Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendations.

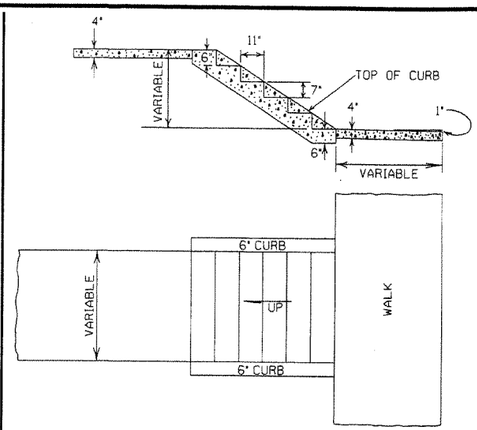
POST CONNECTION TO WALL




BASE PLATE

## DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

## HAND RAILING DETAILS




GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45° INTERVALS.

## DETAILS OF CONCRETE STEPS & WALKS

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 7-26-12 | REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS | |
| 4-17-08 | REV. JOINT & FOOTING STEP DETAILS | |
| 11-29-07 | REVISED RETAINING WALL DRAINAGE | |
| 5-25-06 | REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX | |
| 10-9-03 | REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS | |
| 4-10-03 | REVISED RETAINING WALL DRAWING | |
| 8-22-02 | ADDED HAND RAILING DETAIL | |
| 11-16-01 | REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES | |
| 11-18-98 | ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS | |
| 7-02-98 | ENLARGED PIPE | |
| 4-03-97 | ADDED NOTE TO STEEL BAR SCHED. | |
| 10-18-96 | CORRECTED SPELLING | |
| 4-26-96 | ADD WEEP HOLE; REV. JOINT SPACING IN RET. WALL | |
| 6-2-94 | CHANGED CONST. TO CONTRACTION JOINT | |
| 10-1-92 | CHANGED MESH FABRIC TO WIRE MESH | 10-1-92 |
| 8-15-91 | DELETED HDWL MODIFICATION DETAIL | 8-15-91 |
| 11-8-90 | DELETED COLD MIX FROM CULV'T. REPAIR | 11-8-90 |
| 11-30-89 | REV. RETAINING WALL STEEL SCHEDULE | 11-30-89 |
| 11-17-88 | V, BARS BEHIND ARROW | 665-11-17-88 |
| 7-15-88 | REV. PAVEMENT REPAIR | 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 |

ARKANSAS STATE HIGHWAY COMMISSION

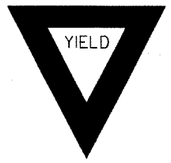
# DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI - 1

RI-1

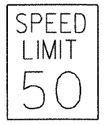
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

RI-2



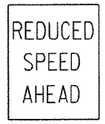

STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

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"

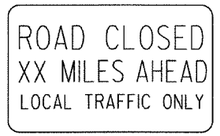
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2

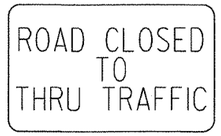
48"X30"

RII-3A




60"X30"

RII-4

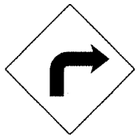



60"X30"

RSP-1

48"X30"

WI-1



STD. 36"X36"
FWY. 48"X48"

WI-2

STD. 36"X36"
FWY. 48"X48"

WI-3

STD. 48"X48"

WI-4

STD. 48"X48"

WI-6

STD. 48"X24"
SPECIAL 60"X30"

WI-8

STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

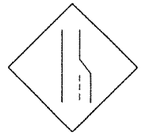
W3-1

STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2

STD. 36"X36"
FWY. 48"X48"

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"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

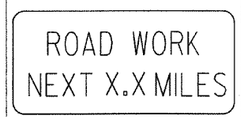
W8-11

STD. 36"X36"
FWY. 48"X48"

W8-9

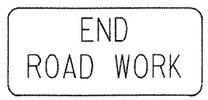
STD. 36"X36"
FWY. 48"X48"

G20-1



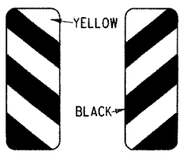

60"X24"

G20-2




48"X24"

OM-3L OM-3R




12"X36"

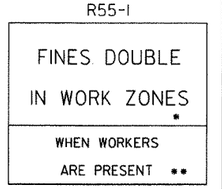
M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1




36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

| | |
|---|---|
| 500 FT | ½ MILE |
| 1000 FT | ¾ MILE |
| 1500 FT | 1 MILE |
| | AHEAD |

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

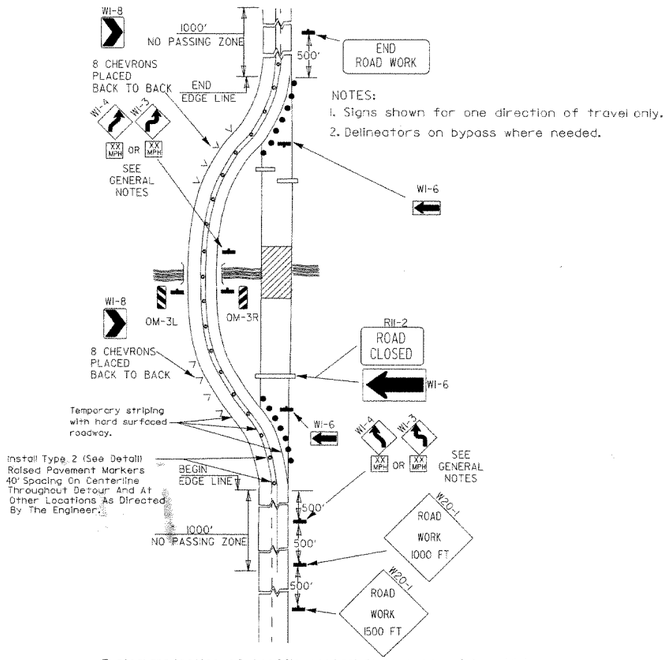
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

| DATE | REVISION | FILMED |
|---|---|---|
| 12-15-11 | REVISED W24-1 | |
| 11-17-10 | DELETED W8-9a & ADDED W8-9 | |
| 10-15-09 | ADDED REFERENCE TO MASH & ADDED SIGN W24-1 | |
| 4-17-08 | REVISED SIGN DESIGNATIONS | |
| 11-18-04 | REVISED NOTES | |
| 10-9-03 | REVISED NOTE 1 | |
| 11-16-01 | REVISED NOTE 7 | |
| 9-28-00 | REVISED NOTE | |
| 11-18-98 | ADDED NOTE | |
| 6-26-97 | REVISED NOTE 5 | |
| 4-03-97 | REVISED NOTE 5 | |
| 10-18-96 | ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7 | |
| 10-12-95 | ADDED R55-1 | |
| 6-8-95 | REVISED TO CORRECT SIGN ILLUSTRATIONS | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD SEPT. 3, 1993 | |
| 8-15-91 | DRAWN AND PLACED IN USE | |

ARKANSAS STATE HIGHWAY COMMISSION

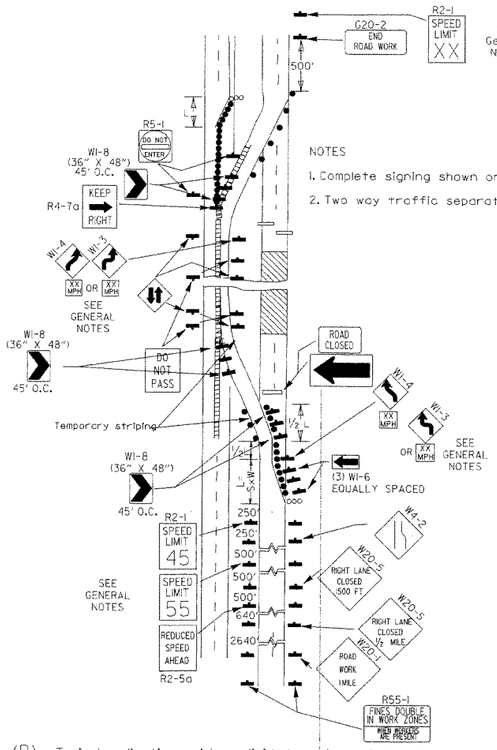
# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



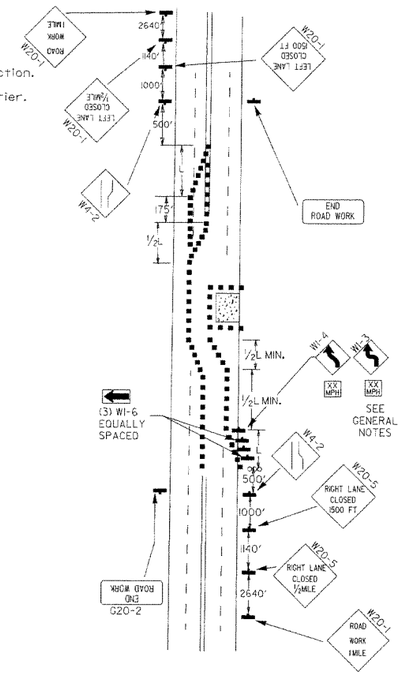

NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.

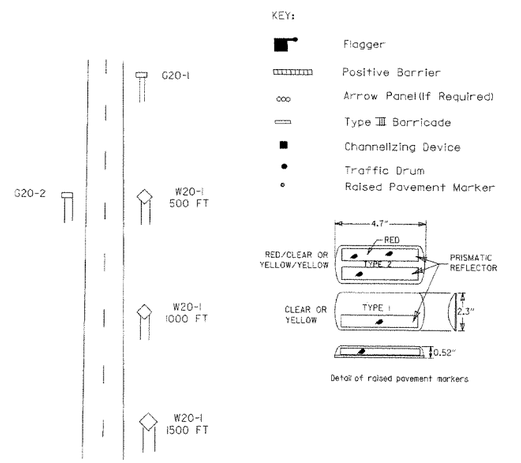



NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

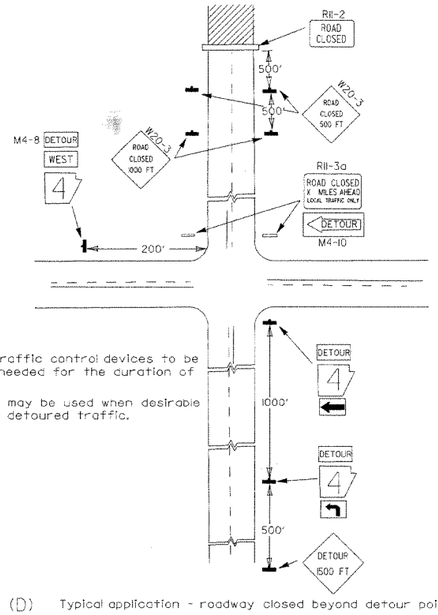
(B) Typical application - 4-lane divided roadway where one roadway is closed.




(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.

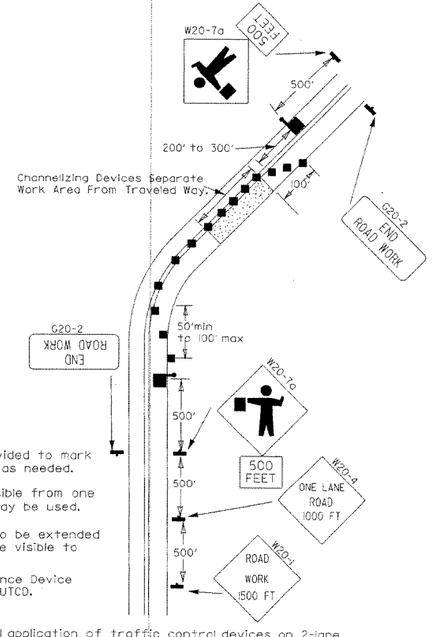



Typical advance warning sign placement



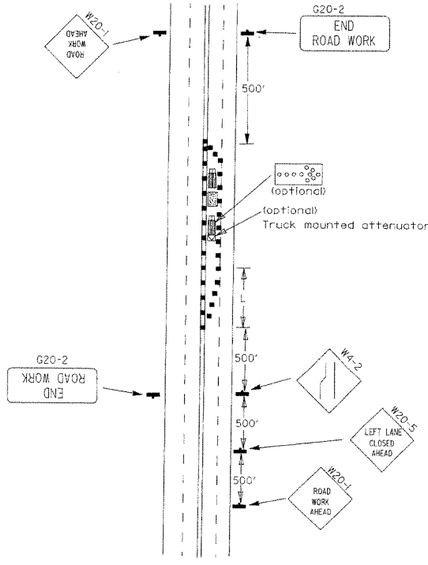

NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

(D) Typical application - roadway closed beyond detour point.




NOTES:
1. Flood lights should be provided to mark flagger stations at night as needed.
2. If entire work area is visible from one station, a single flagger may be used.
3. Channelizing devices are to be extended to a point where they are visible to approaching traffic.
4. Automated Flagger Assistance Device (AFAD) optional. Refer to MUTCD.

(E) Typical application of traffic control devices on 2-lane highway where one lane is closed and flagging is provided.




(F) Typical application - 4-lane undivided roadway with inside lane closed.

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:

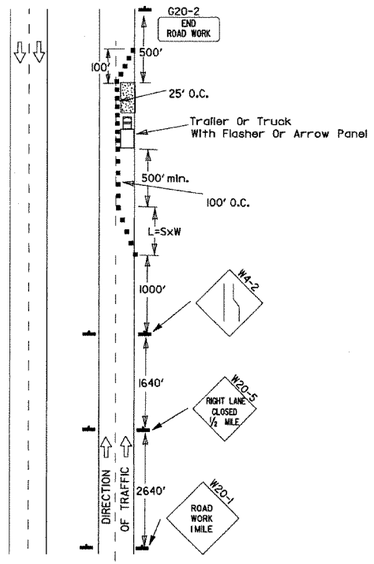
1. Advisory speed posted on WI-3 or WI-4 curve warning signs to be determined at site. Use WI-4 when speed is greater than 30mph and WI-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed 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 |
|---|---|---|
| 3-11-10 | ADDED (AFAD) | |
| 11-20-08 | REVISED SIGN DESIGNATIONS | |
| 11-18-04 | ADDED GENERAL NOTE | |
| 10-18-96 | ADDED R55-1 | |
| 4-26-96 | CORRECTED (a) BEHIND G20-2 | |
| 6-8-95 | CORRECTED SIGN IDENT. ON WI-4A | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD, SEPT. 3, 1993 | |
| 8-15-91 | DRAWN AND PLACED IN USE | |

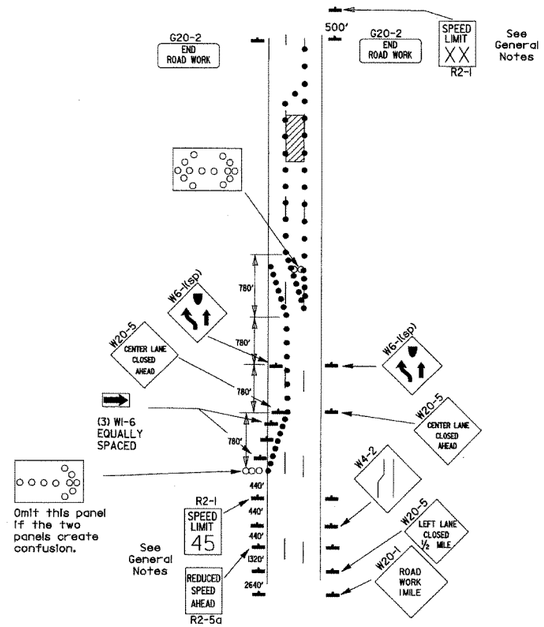
ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

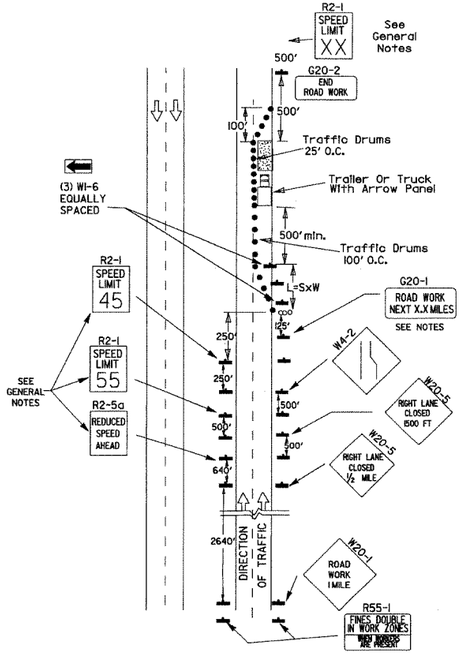
STANDARD DRAWING TC-2




(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:

○○○ Arrow Panel (if Required)

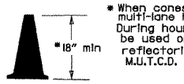
■ Channelizing Device

● Traffic drum

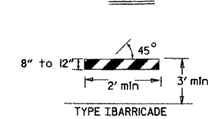
GENERAL NOTES:

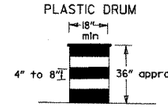
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional 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.

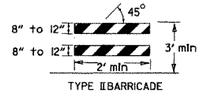
## Channelizing devices

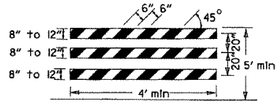



* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

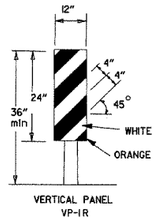


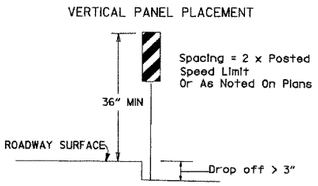



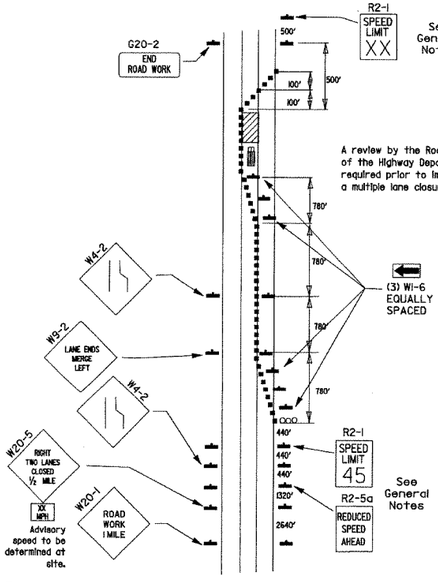




NOTE: For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



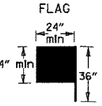

(D) Typical application - closing multiple lanes of a multilane highway.

## TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

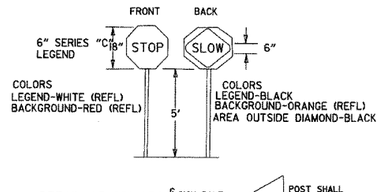
| VERTICAL DIFFERENTIAL | LOCATIONS | TRAFFIC CONTROL |
|---|---|---|
| 1" to 3" | Centerline, lane lines | W8-11 |
| 1" to 3" | Edge of shoulder | W8-9 |
| Greater than 3" | Lane lines | Standard lane closure required |
| Greater than 3" | Edge of traveled lane | *RSP-1 and vertical panels, drums or concrete barrier |
| Greater than 3" | Edge of shoulder | *Vertical panels, drums or concrete barrier |

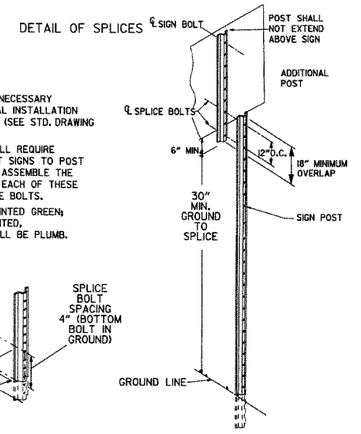
* When shown on the plans concrete barrier will be used.

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 shall be of good grade red material




NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

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 | |

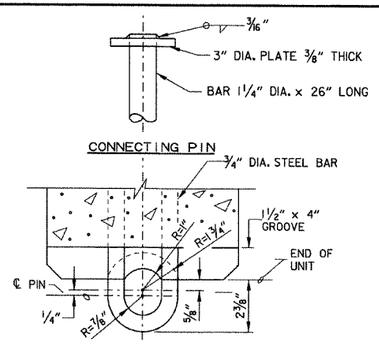
ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

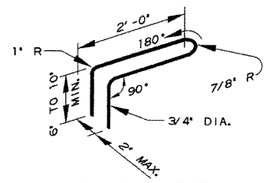
## REINFORCING BAR TABLE PER BARRIER UNIT

| 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", 90°, 3 3/8" R, LIFTING HOLE |
| S-2 | HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS | #4 | (2) | 1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP |
| V-1 | VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS | #5 | (16) | TOTAL LENGTH 4'-9"; 2 3/16" R; 12°; 2'-1 3/8"; 4 3/8"; ±9 1/2" |

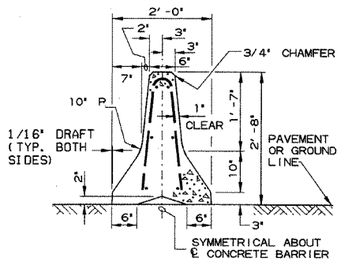



SECTION E-E

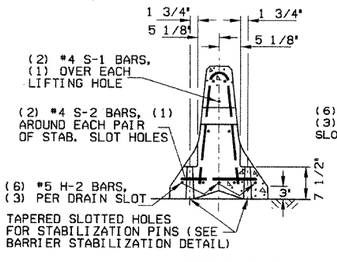
CONNECTION DETAILS



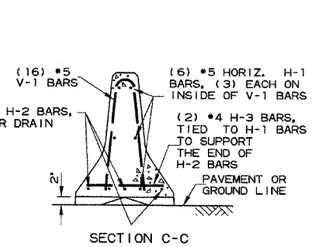

CONNECTION LOOP



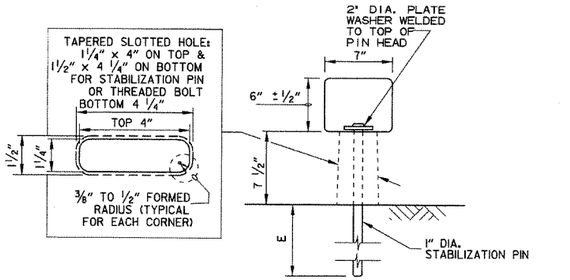

SECTION A-A




SECTION B-B



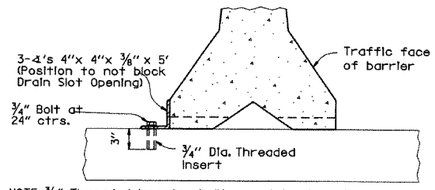

SECTION C-C




BARRIER STABILIZATION DETAIL

ROADWAY SECTION

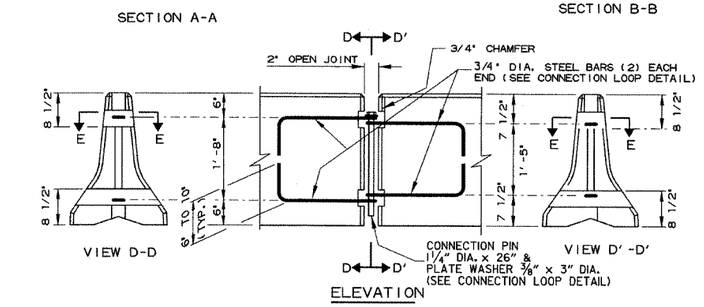
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas




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

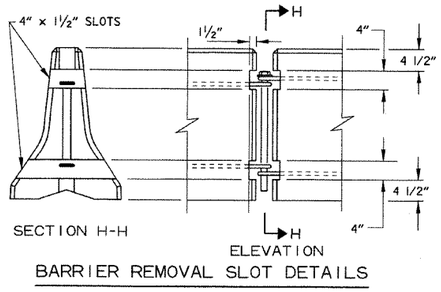
BRIDGE DECKS




VIEW D-D

VIEW D'-D'

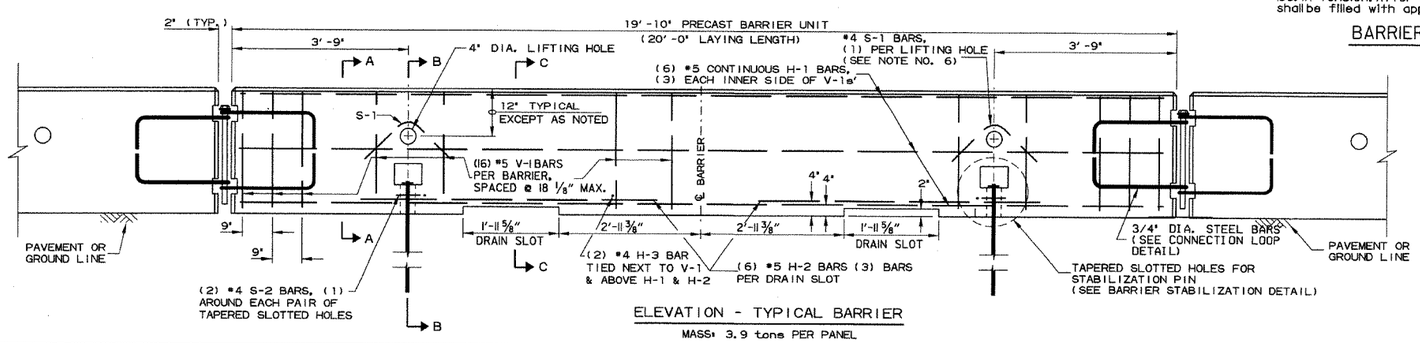
ELEVATION




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 walls within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

(3) Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

(4) Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

(5) Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

(6) A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

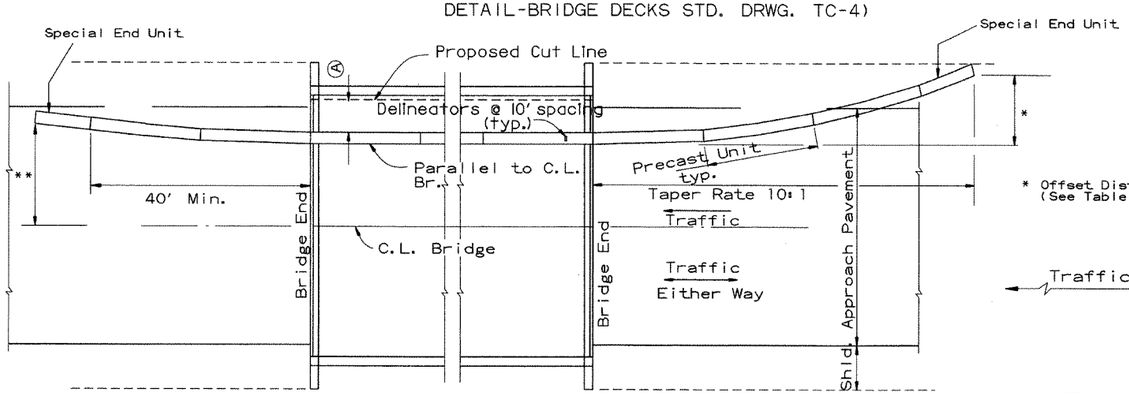
| DATE | REVISION | FILMED |
|---|---|---|
| 10-15-09 | ADDED REFERENCE TO MASH | |
| 8-5-09 | REV. NOTE 3 CONCERNING DRAIN SLOTS | |
| 11-29-07 | REVISED NOTE 3 | |
| 5-25-06 | DELETED GENERAL NOTE 7 | |
| 11-18-04 | REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS | |
| 4-10-03 | REVISED GENERAL NOTE 2 | |
| 8-22-02 | ISSUED NEW DRAWING | |

ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

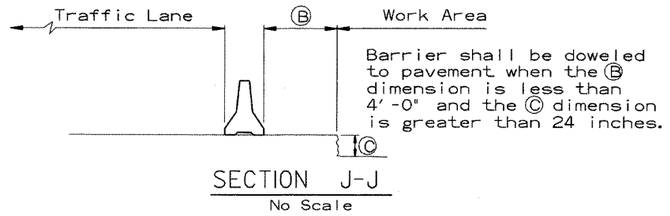
STANDARD DRAWING TC-4

Ⓐ 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

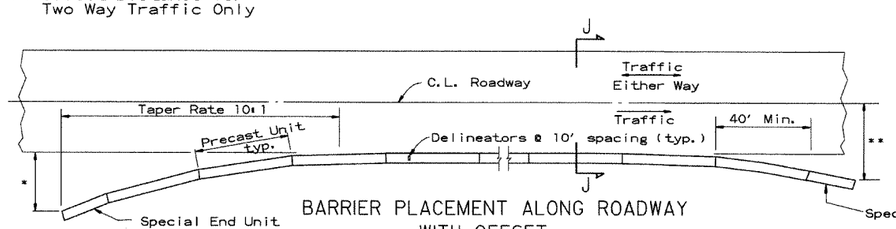



Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only




BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

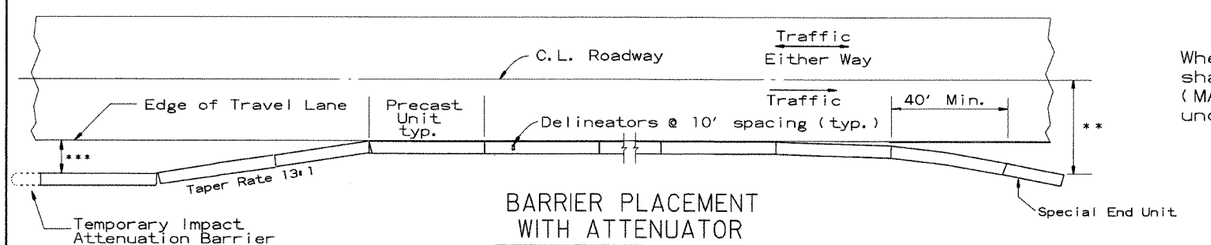
** Offset Distance For Two Way Traffic Only

* 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.

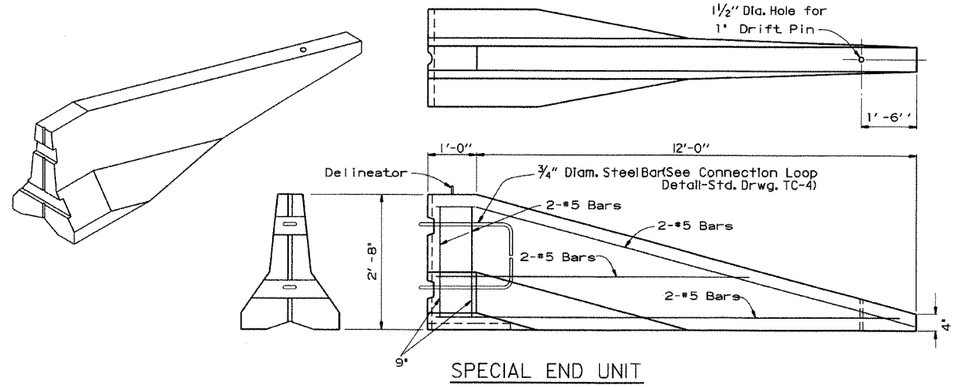



BARRIER PLACEMENT WITH ATTENUATOR

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 | |

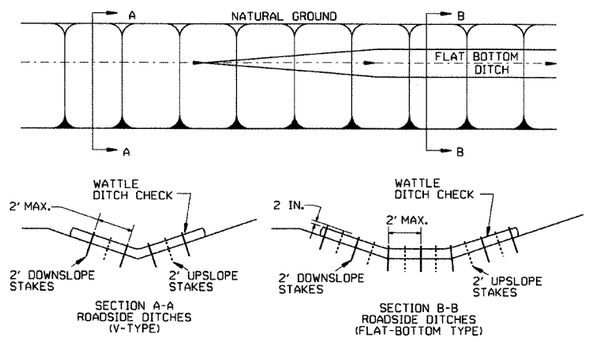
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

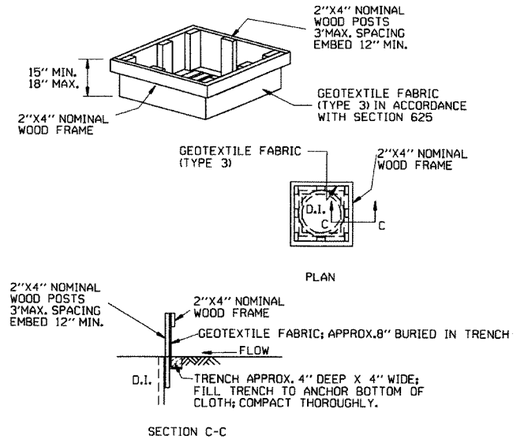
STANDARD DRAWING TC-5

GENERAL NOTES

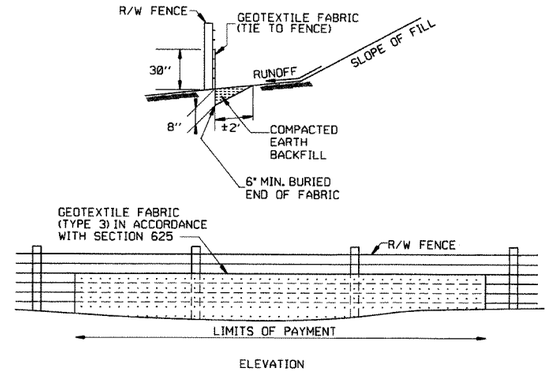
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.




WATTLE DITCH CHECK (E-1)




DROP INLET SILT FENCE (E-7)



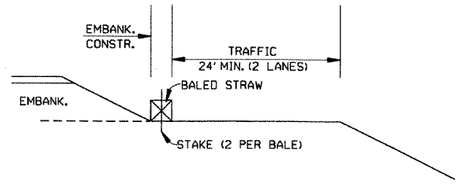

SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

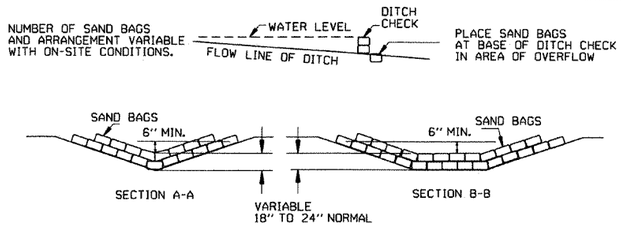
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

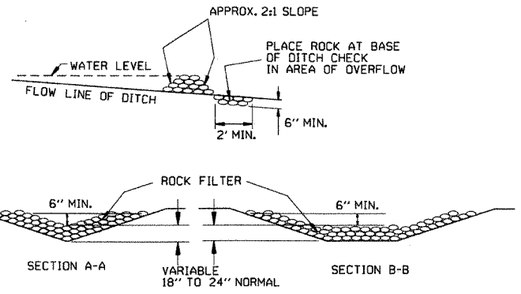
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. NO GAPS SHALL BE LEFT BETWEEN BALES.
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED 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.



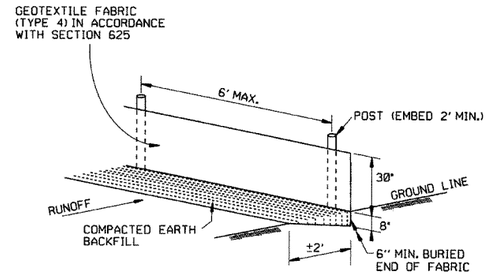

BALED STRAW FILTER BARRIER (E-2)




SAND BAG DITCH CHECK (E-5)




ROCK DITCH CHECK (E-6)




SILT FENCE (E-11)

GENERAL NOTES

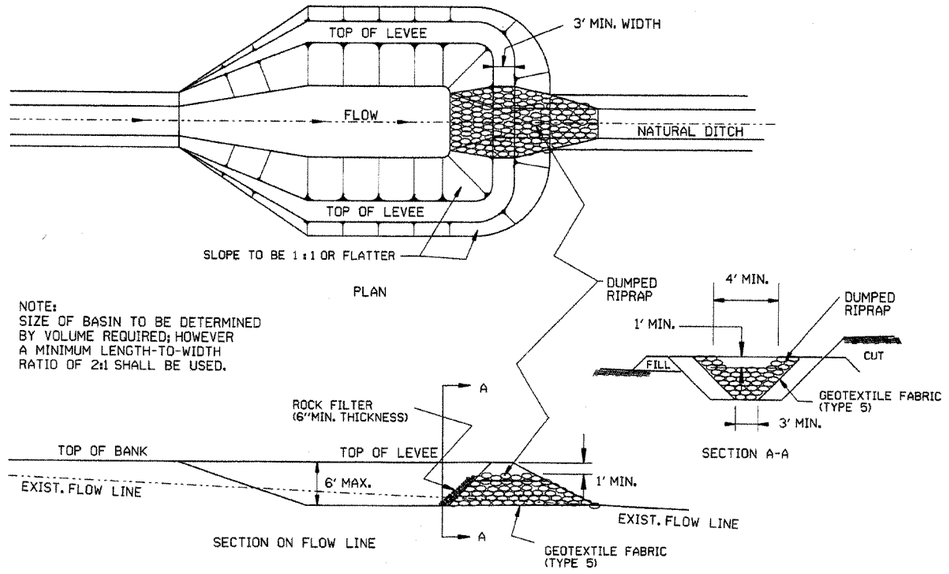
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

| 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 |

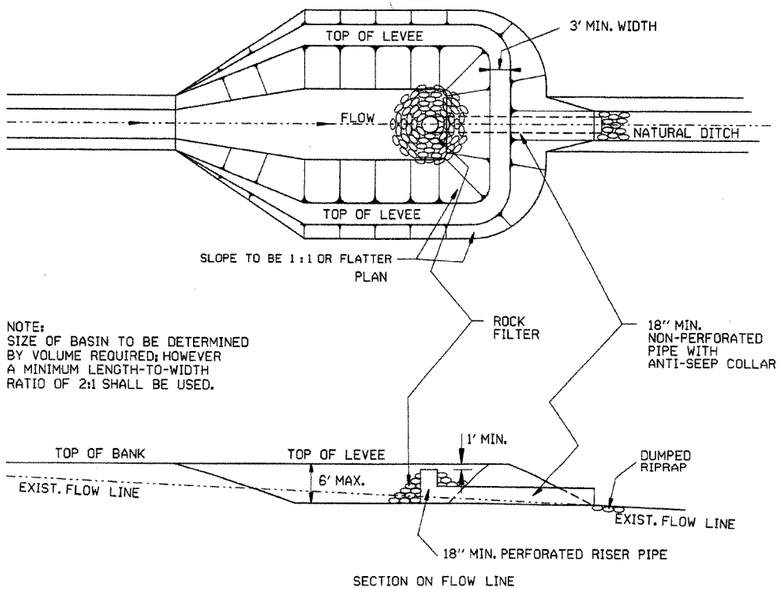
ARKANSAS STATE HIGHWAY COMMISSION

# TEMPORARY EROSION CONTROL DEVICES

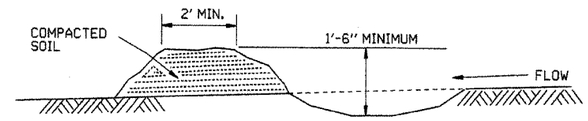
STANDARD DRAWING TEC-1



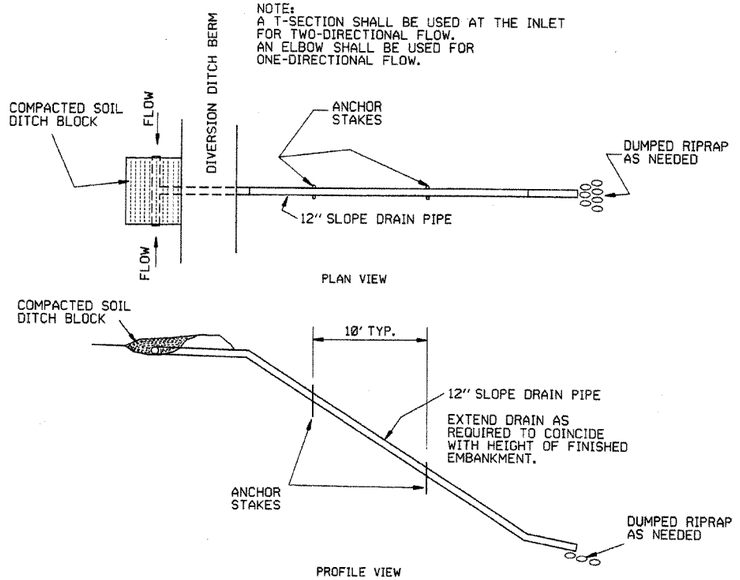

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



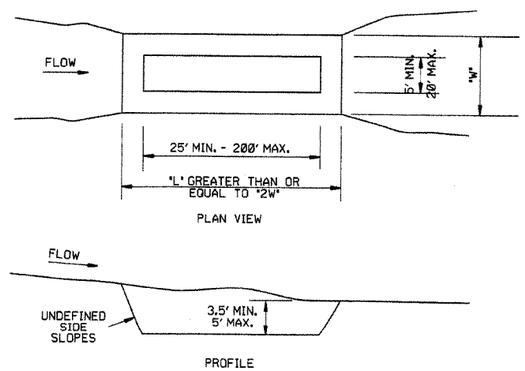

SEDIMENT BASIN WITH PIPE OUTLET (E-10)




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

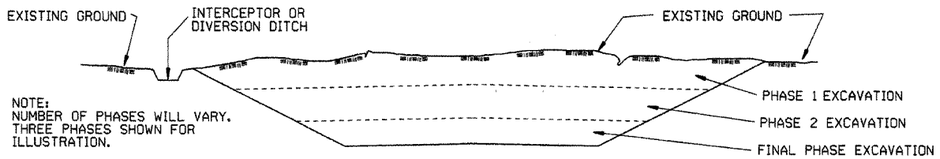
STANDARD DRAWING TEC-2

# 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



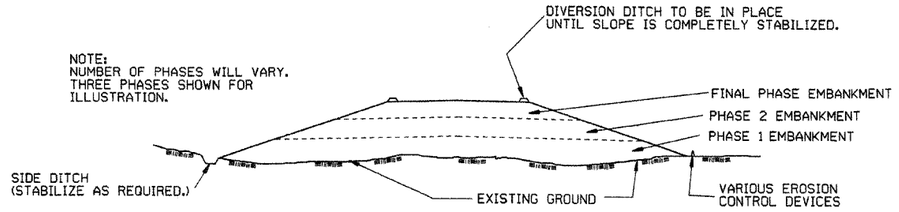

GENERAL NOTE

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

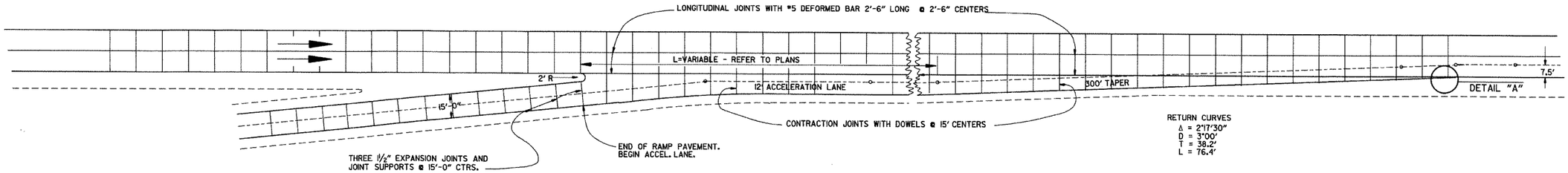
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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

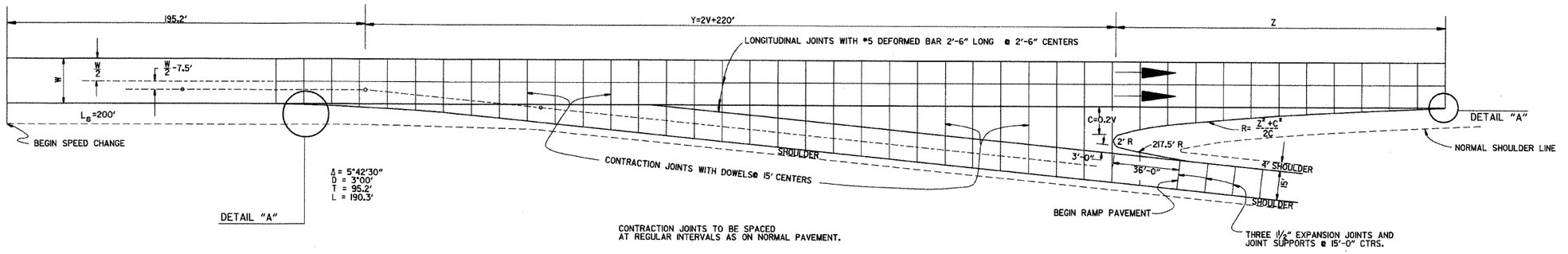
# TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3




## ENTRANCE RAMP

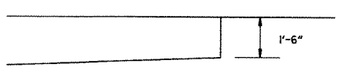
NOTE: JOINT SPACING ON THE MAIN LANES SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO THESE JOINT LAYOUTS. THE MAIN LANE JOINT SPACING MAY BE REDUCED TO A 12' MINIMUM.



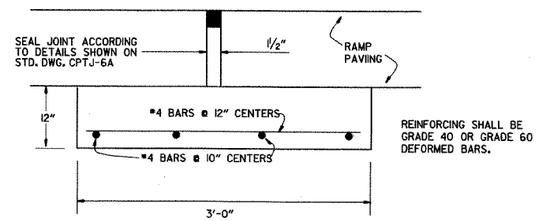

## EXIT RAMP

### EXIT RAMP

| DESIGN SPEED V | Y | NOSE OFFSET C | LENGTH NOSE TAPER Z | RETURN RADIUS R | ADDITIONAL SURFACING SQ. YDS. |
|---|---|---|---|---|---|
| 40 | 300.0 | 8.0 | 96.0 | 580.0 | 602.43 |
| 50 | 320.0 | 10.0 | 120.0 | 725.0 | 687.29 |
| 60 | 340.0 | 12.0 | 168.0 | 1182.0 | 790.55 |
| 70 | 360.0 | 14.0 | 210.0 | 1582.0 | 902.27 |




DETAIL "A"




## DETAIL OF EXPANSION JOINT & JOINT SUPPORT

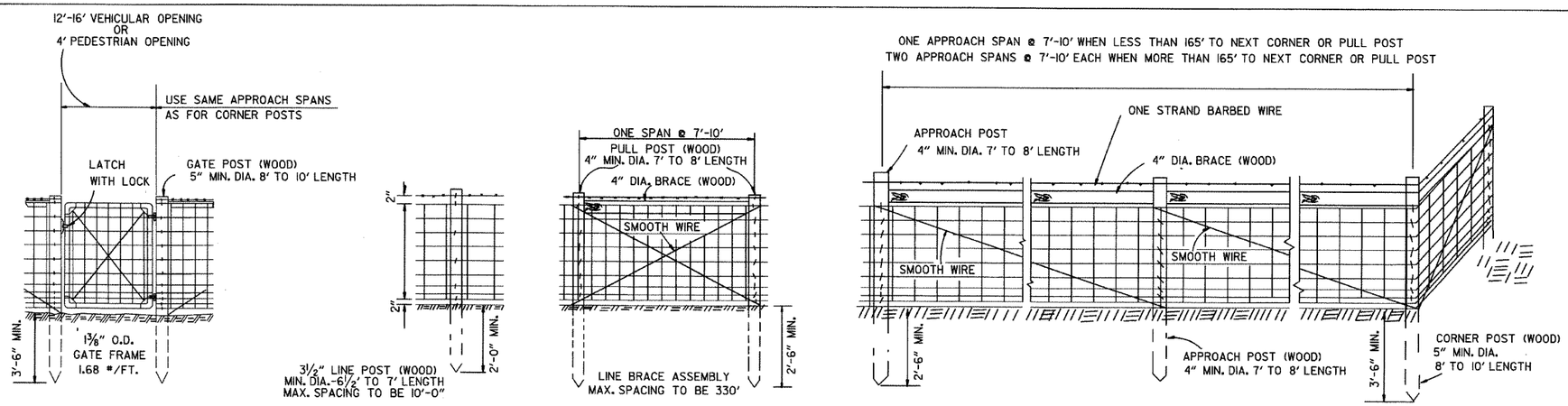
NOTE: THE EXPANSION JOINTS SHALL BE MEASURED AND PAID FOR AS P.C.C. PAVEMENT (RAMP THICKNESS). WHEN RAMP PAVING IS ASPHALT, EXPANSION JOINT IS NOT REQUIRED.
THE JOINT SUPPORT MAY BE CONSTRUCTED WITH CLASS "A", "S", OR PAVING CONCRETE. PAYMENT FOR THE JOINT SUPPORT SHALL BE FOR THE CONTRACT UNIT PRICE BID FOR THE CLASS OF CONCRETE USED. ALL OTHER WORK AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE JOINT SUPPORT SHALL BE INCLUDED IN THE PRICE BID FOR THE ABOVE ITEMS.

| DATE | REVISION | DATE FILM'D |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| 8-22-02 | DELETED NOTE | |
| 11-16-01 | CORRECTED SPELLING ON ENTRANCE RAMP NOTE | |
| 5-13-99 | ADDED, EDITED AND DELETED NOTES | |
| 11-03-94 | ADDED NOTE RE: REINF. BARS | |
| 10-1-92 | ADDED DETAIL A & OTHER MINOR CHANGES | 10-1-92 |
| 1-25-90 | REVISED EXPANSION JOINT | 1-25-90 |
| 7-15-88 | CONFORM'D TO 1988 SPECIFICATIONS | 65C-7-15-88 |
| 3-2-81 | ISSUED | 511-10-2-72 |

ARKANSAS STATE HIGHWAY COMMISSION

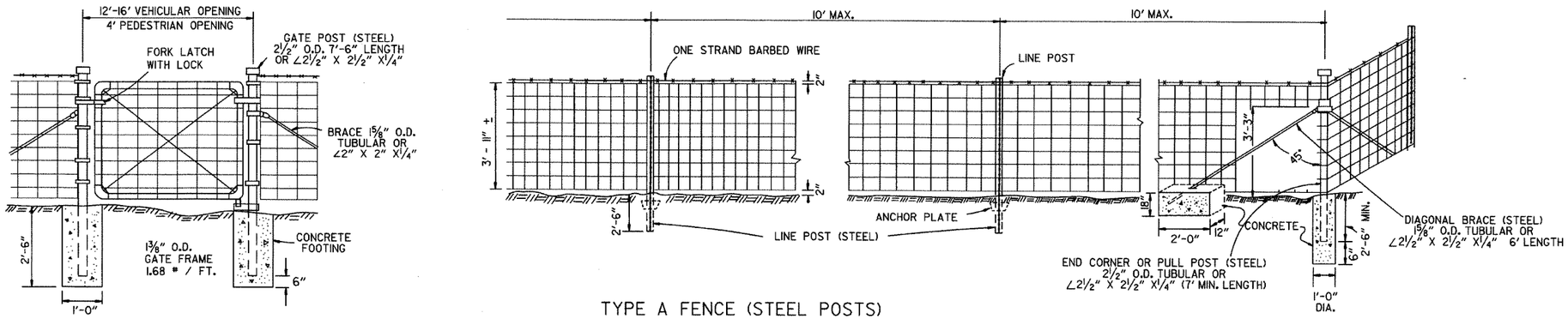
# DETAILS OF STANDARD TURNOUT FOR ENTRANCE & EXIT RAMPS (NON-REINFORCED)

STANDARD DRAWING TR-1A

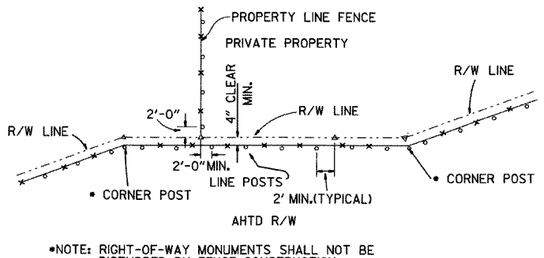



NOTE: STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

## TYPE A FENCE (WOOD POSTS)



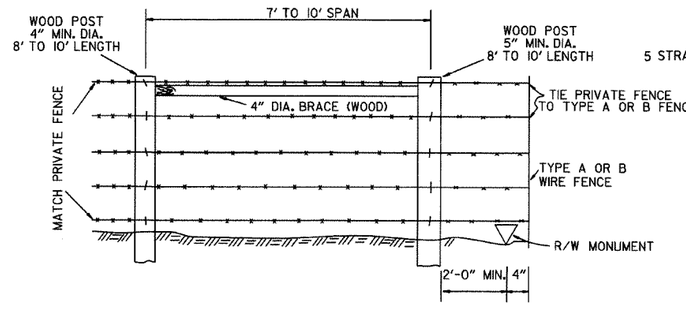

## TYPE A FENCE (STEEL POSTS)




•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.

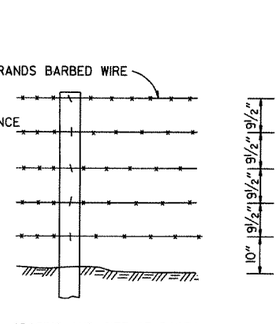
△ - R/W MONUMENTS
○ - FENCE POSTS

## RIGHT-OF-WAY FENCE LOCATION



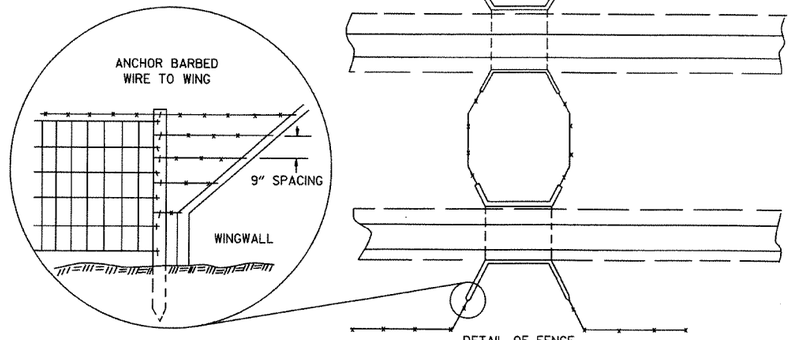

WHERE EXISTING PRIVATE FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN WITH TYPE A FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

## PRIVATE FENCE TERMINAL INSTALLATION




SPACING AND SIZE OF POSTS FOR TYPE B FENCE SHALL BE THE SAME AS TYPE A FENCE.

## TYPE B FENCE




DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

GENERAL NOTES:

STEEL LINE POSTS SHALL BE GALVANIZED, 7 FT. IN LENGTH.

TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK).

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF WOOD LINE POSTS OF 7' LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

GATE HINGES AND LATCHES WITH LOCKS TO BE OF A TYPE APPROVED BY THE ENGINEER. DRIVEWAY GATES, EITHER SINGLE 12' OR 16' OR DOUBLE 6' TO 8' OPENINGS 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 BY MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON THE 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 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 SUFFIEICNT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO THE BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

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.

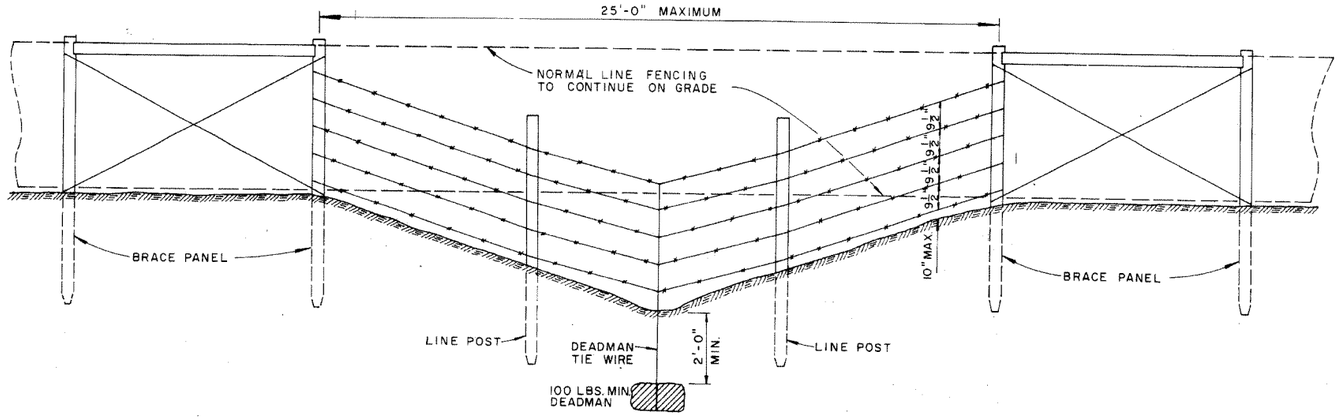
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD": AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRE A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

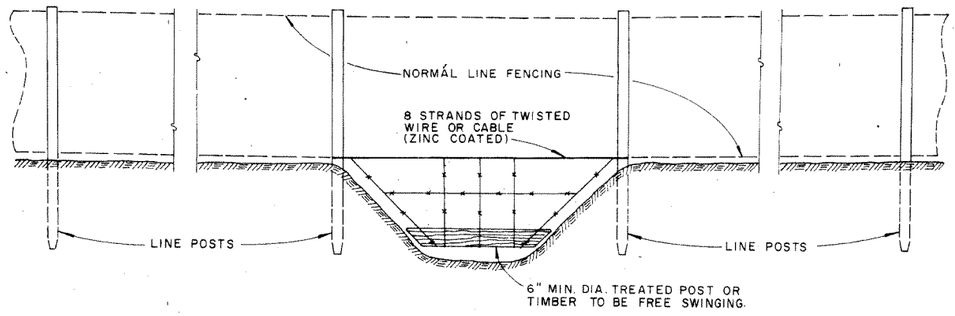
| DATE | REVISION | DATE FILMED |
|---|---|---|
| 8-22-02 | REVISED GENERAL NOTES | |
| 10-18-96 | REVISED ASTM REF. TO AASHTO | |
| 11-22-95 | REVISED R-O-W LOCATION DETAIL | |
| 6-2-94 | ADDED CORNER POST NOTE | 6-2-94 |
| 8-5-93 | REVISED R-O-W LOCATION DETAIL | 8-5-93 |
| 10-1-92 | ADDED STAPLE NOTE | |
| 8-2-90 | REV'D PULL POST LENGTH | |
| 11-30-89 | DELETED CLASS CONC. | |
| 7-15-88 | ADDED SPLICE NOTES | |
| 7-15-88 | ADDED HEIGHT DIMENSION | |
| 4-3-87 | REVISED VARIOUS NOTES | |
| | AND GENERAL NOTES | |
| 11-1-84 | MAX. POST SPACING | |
| 1-4-83 | MIN. DIA. LINE POST | |
| 10-2-72 | REVISED & REDRAWN | |

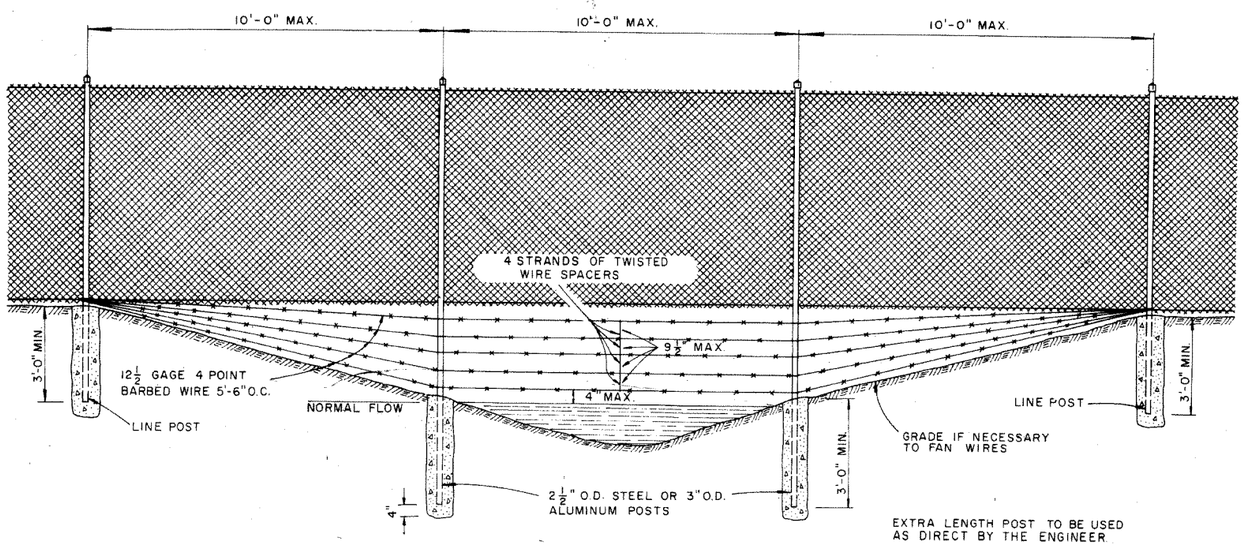
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE A AND B

STANDARD DRAWING WF-1




GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

| DATE | REVISION | DATE FILM'D. |
|---|---|---|
| 4-20-79 | REVISED TOP RAIL & TENSION WIRE | 696 4-20-79 |
| 10-2-72 | REVISED & REDRAWN | 529 10-2-72 |

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

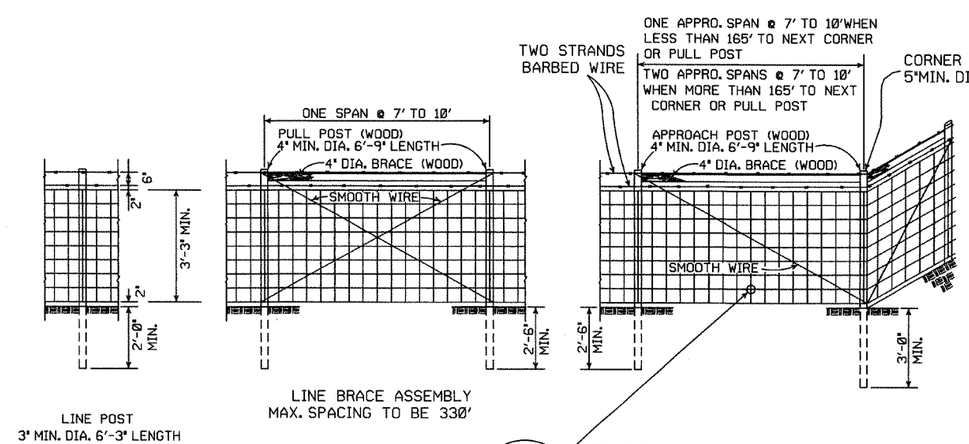
STANDARD DRAWING

WF-2

73

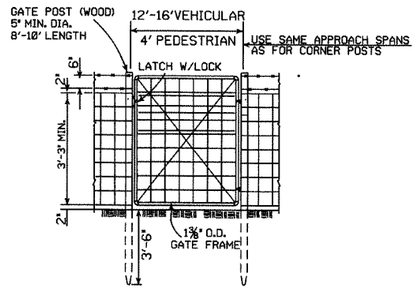
1M—11-71—67001—PPABCo

# TYPE C FENCE (WOOD POSTS)

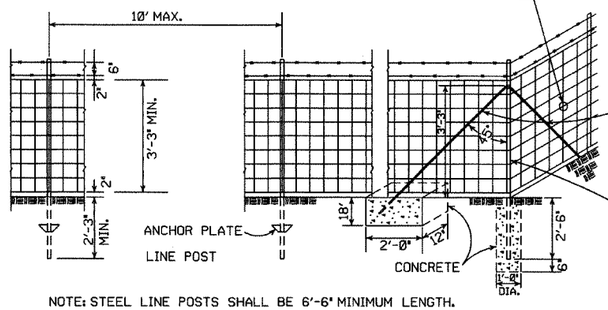


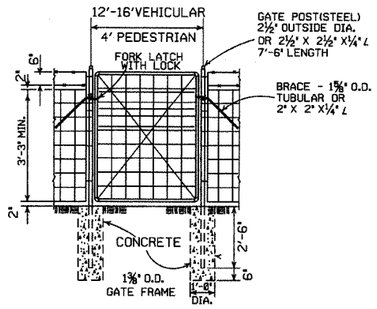

LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

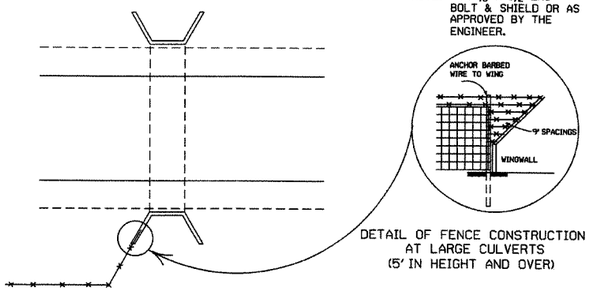



OTHER APPROVED TIES WILL BE PERMITTED




NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.




DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH-LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

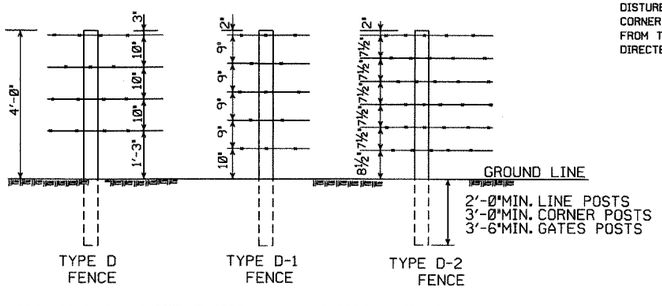
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

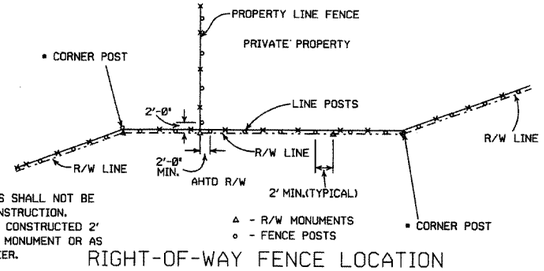
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

# TYPE C FENCE (STEEL POSTS)

4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)

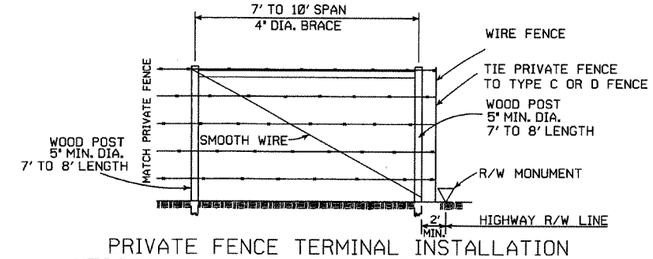



NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

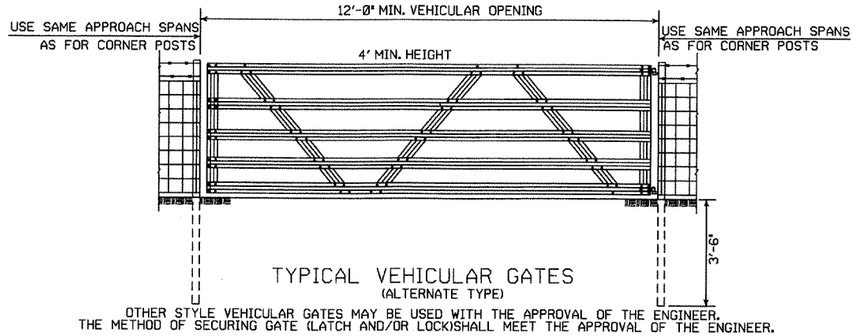



• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION




PRIVATE FENCE TERMINAL INSTALLATION
WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.




TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)
OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

| DATE | REVISION | FILMED |
|---|---|---|
| 8-22-02 | REVISED GENERAL NOTES | |
| 10-18-96 | REVISED AASHTO | |
| 11-22-95 | REVISED R-O-W LOCATION DETAIL | |
| 6-2-94 | REVISED BARB WIRE AND ADDED CORNER POST NOTES | 6-2-94 |
| 8-5-93 | REVISED R/W INSTALLATION FENCE | 8-5-93 |
| 10-1-92 | ADDED STAPLE NOTE | 10-1-92 |
| 8-15-91 | ADDED TYPE D-2 FENCE | 8-15-91 |
| 11-30-89 | DELETED CLASS CONCRETE | 11-30-89 |
| 7-15-88 | ADDED SPLICE NOTE | 700-7-15-88 |
| 10-30-87 | GENERAL REVISIONS | 549-10-30-87 |
| 11-1-84 | MAX. POST SPACING MIN. WIRE GAUGE | 507-11-1-84 |
| 1-4-83 | MIN. DIA. LINE POST | 648-1-4-83 |
| 3-2-81 | TOLERANCE FOR POST LENGTH | 722-3-2-81 |
| 12-1-72 | ADDED D-1 & FENCE INSTALLATION | 564-12-1-72 |
| 10-2-72 | REVISED AND REDRAWN | 540-10-2-72 |

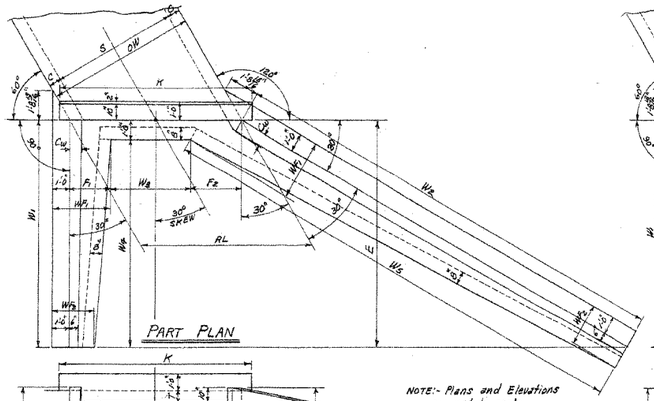
ARKANSAS STATE HIGHWAY COMMISSION

# WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4

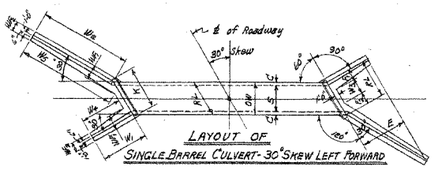
Reshot 3-8-93

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 133 | |
| JOB No. | | | | | |

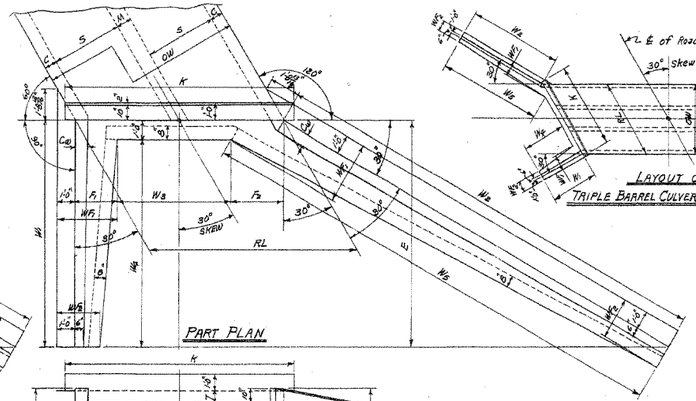



## SINGLE BARREL CULVERT-30° SKEW RIGHT FORWARD

*Details of Culvert with 30° Skew Left Forward is reversed, see Layout below.*



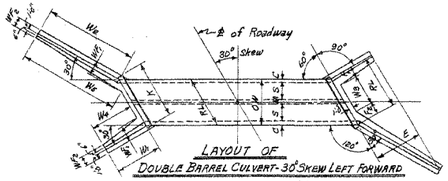
LAYOUT OF
SINGLE BARREL CULVERT-30° SKEW LEFT FORWARD




## DOUBLE BARREL CULVERT-30° SKEW RIGHT FORWARD

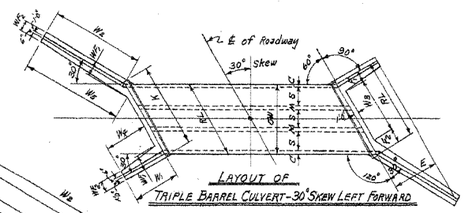
*Details of Culvert with 30° Skew Left Forward is reversed, see Layout below.*

NOTE:- Plans and Elevations are not to scale.

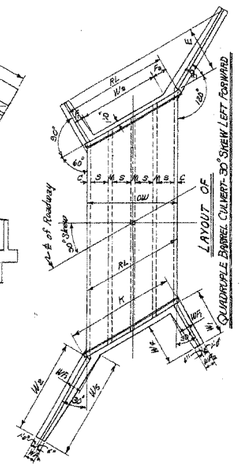


LAYOUT OF
DOUBLE BARREL CULVERT-30° SKEW LEFT FORWARD

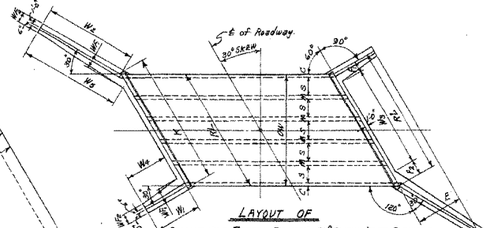
NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



LAYOUT OF
TRIPLE BARREL CULVERT-30° SKEW LEFT FORWARD



LAYOUT OF
QUADRUPLE BARREL CULVERT-30° SKEW LEFT FORWARD



LAYOUT OF
QUINTUPLE BARREL CULVERT-30° SKEW LEFT FORWARD

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION $W_3$

RL = OW x 1.1547 — K = RL + (1'-1⅞") — $W_3$ = RL - ($F_1$ + $F_2$)

| USE WITH DRAWING NO. | CLEAR SPAN S | CLEAR HEIGHT H | SUM OF FOOTING WIDTHS $F_1$&$F_2$ | SINGLE BARREL CULVERT OW | SINGLE BARREL CULVERT RL | SINGLE BARREL CULVERT K | SINGLE BARREL CULVERT $W_3$ | DOUBLE BARREL CULVERT OW | DOUBLE BARREL CULVERT RL | DOUBLE BARREL CULVERT K | DOUBLE BARREL CULVERT $W_3$ | TRIPLE BARREL CULVERT OW | TRIPLE BARREL CULVERT RL | TRIPLE BARREL CULVERT K | TRIPLE BARREL CULVERT $W_3$ | QUADRUPLE BARREL CULVERT OW | QUADRUPLE BARREL CULVERT RL | QUADRUPLE BARREL CULVERT K | QUADRUPLE BARREL CULVERT $W_3$ | QUINTUPLE BARREL CULVERT OW | QUINTUPLE BARREL CULVERT RL | QUINTUPLE BARREL CULVERT K | QUINTUPLE BARREL CULVERT $W_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-X302-1, W-X303-1 OR W-X304-1. (FOR H=8'0" OR LESS) | 4' | 2' | 2'3⅜" | 5'0" | 5'-9⅛" | 6'-11⅝" | 3'6" | 9'8" | 11'2" | 12'3⅜" | 8'10⅝" | 14'-4" | 16'-6⅝" | 17'-10½" | 14'-3⅝" | 19'0" | 21'-11⅝" | 23'1" | 19'8" | 23'8" | 27'4" | 28'-5⅜" | 25'0⅝" |
| | | 3 | 2'3⅜" | 5'0" | " | " | 2'6" | 9'8" | " | " | 7'10⅝" | 14'9" | " | " | 13'3⅜" | 19'0" | " | " | 18'8" | 23'8" | " | " | 29'0⅝" |
| | | 4 | 4'3⅜" | 5'0" | " | " | 1'-6" | 9'8" | " | " | 6'10⅝" | 14'9" | " | " | 12'8⅜" | 19'0" | " | " | 17'8" | 23'8" | " | " | 23'0⅝" |
| | | 5 | 5'3⅜" | 5'0" | 5'-9⅛" | 6'-11⅝" | 0'-6" | 9'8" | 11'2" | 12'3⅜" | 5'10⅝" | 14'-4" | 16'-6⅝" | 17'-10½" | 11'3⅜" | 19'0" | 21'-11⅝" | 23'1" | 16'8" | 23'8" | 27'4" | 28'-5⅜" | 22'0⅝" |
| | | 6 | 6'3⅜" | 5'2" | 5'-11⅝" | 7'-1⅞" | Ⓐ 0" | 9'-11" | 11'-5½" | 12'-7⅞" | 5'-2⅛" | 14'-8" | 16'-11⅝" | 18'-1" | 10'-8" | 19'-5" | 22'-5" | 23'-7" | 14'-7⅜" | 24'-2" | 27'-10⅜" | 29'-0⅝" | 21'-7⅜" |
| | 5' | 3 | 3'3⅜" | 6'-0" | 6'-11⅝" | 8'-1" | 3'-7⅜" | 11'-8" | 13'-5⅜" | 14'-7⅝" | 10'2⅜" | 17'-4" | 20'-0⅝" | 21'-2" | 16'-9" | 22'-1" | 26'-6⅝" | 27'-8⅜" | 23'-3½" | 28'-8" | 33'-1⅝" | 34'-3" | 29'-10" |
| | | 4 | 4'3⅜" | 6'-0" | " | " | 2'-7⅞" | 11'-8" | " | " | 9'-2⅛" | 17'-4" | " | " | 15'-9" | 22'-1" | " | " | 22'-3½" | 28'-8" | " | " | 28'-10" |
| | | 5 | 5'3⅜" | 6'-0" | 6'-11⅝" | 8'-1" | 1'-7⅜" | 11'-8" | 13'-5⅜" | 14'-7⅝" | 8'-2⅛" | 17'-4" | 20'-0⅝" | 21'-2" | 14'-9" | 23'-1" | 26'-6⅝" | 27'-8⅜" | 21'-3½" | 28'-8" | 33'-1⅝" | 34'-3" | 27'-10" |
| | | 6 | 6'3⅜" | 6'-2" | 7'-1⅛" | 8'-3⅝" | 0'-10⅛" | 11'-10" | 13'-9⅛" | 14'-11" | 7'-5⅜" | 17'-8" | 20'-0⅝" | 21'-2⅝" | 14'-1⅝" | 23'-5" | 27'-0⅝" | 28'-2⅝" | 20'-9¾" | 29'-2" | 33'-8⅝" | 34'-10" | 27'-5" |
| | | 7 | 7'3⅜" | 6'-3" | 7'-1⅝" | 8'-4⅝" | Ⓐ 0" | 12'-1" | 13'-11⅝" | 15'-1⅛" | 6'-2⅜" | 17'-11" | 20'-0⅝" | 21'-10" | 18'-1" | 23'-8" | 27'-3⅝" | 28'-7" | 19'-8" | 29'-7" | 34'-2" | 35'-3⅝" | 26'-9⅝" |
| | 6' | 3' | 3'3⅜" | 7'-0" | 8'-1" | 9'-2⅝" | 4'-9⅝" | 13'-8" | 15'-9⅜" | 16'-11⅛" | 12'-6⅝" | 20'-4" | 23'-5⅛" | 24'-7⅛" | 20'-2⅝" | 27'-0" | 31'-2⅝" | 32'-4" | 27'-1" | 33'-8" | 38'-11⅝" | 40'-0⅝" | 35'-2⅝" |
| | | 4' | 4'3⅜" | 7'-0" | " | " | 3'-9⅝" | 13'-8" | " | " | 11'-6⅝" | 20'-4" | " | " | 19'-2⅝" | 27'-0" | " | " | 26'-1" | 33'-8" | " | " | 34'-7⅛" |
| | | 5' | 5'3⅜" | 7'-0" | 8'-1" | 9'-2⅝" | 2'-9⅜" | 13'-8" | 15'-9⅜" | 16'-11⅛" | 10'-6⅜" | 20'-4" | 23'-5⅛" | 24'-7⅛" | 18'-2⅝" | 27'-0" | 31'-2⅝" | 32'-4" | 25'-1" | 33'-8" | 38'-11⅝" | 40'-0⅝" | 33'-7⅝" |
| | | 6 | 6'3⅜" | 7'-2" | 8'-3⅝" | 9'-5⅜" | 2'-0" | 13'-10" | 16'-0⅛" | 17'-2⅜" | 9'-9⅝" | 20'-8" | 23'-10⅛" | 25'-0⅛" | 17'-7⅛" | 27'-5" | 31'-7⅛" | 32'-9⅜" | 23'-5" | 34'-2" | 39'-5⅛" | 40'-7⅛" | 33'-1⅛" |
| | | 7 | 7'3⅜" | 7'-3" | 8'-4⅛" | 9'-6⅝" | 0'-7⅛" | 14'-1" | 16'-3⅜" | 17'-5" | 8'-6" | 20'-11" | 24'-1⅛" | 25'-3⅜" | 16'-4⅝" | 27'-9" | 32'-0⅛" | 33'-1⅜" | 22'-3⅝" | 34'-7" | 39'-10⅛" | 41'-1" | 32'-2" |
| | | 8 | 8'3⅜" | 7'-4" | 8'-5⅜" | 9'-7½" | Ⓐ 0" | 14'-2" | 16'-4⅝" | 17'-6⅝" | 7'-1" | 21'-0" | 24'-2⅝" | 25'-4⅝" | 15'-3⅝" | 27'-10" | 32'-1⅛" | 33'-3⅛" | 22'-1⅜" | 34'-8" | 39'-10⅝" | 41'-2⅛" | 30'-9⅝" |
| | 7' | 4' | 4'3⅜" | 8'-0" | 9'-2⅜" | 10'-6⅛" | 4'-11⅜" | 15'-8" | 18'-1⅛" | 19'-3" | 13'-9" | 23'-4" | 26'-11⅜" | 28'-1⅜" | 21'-3" | 30'-7" | 35'-2⅜" | 36'-4⅜" | 27'-1" | 38'-1" | 43'-4⅜" | 44'-6⅜" | 37'-1⅜" |
| | | 5' | 5'3⅜" | 8'-2" | 10'-7" | 11'-8⅜" | 5'-3⅜" | 17'-11" | 20'-8⅛" | 21'-10" | 15'-5" | 26'-8" | 30'-9⅛" | 31'-11⅛" | 24'-6⅛" | 34'-11" | 40'-1⅛" | 41'-3⅛" | 30'-11" | 43'-5" | 49'-6⅛" | 50'-8⅛" | 42'-3⅛" |
| | | 6' | 6'3⅜" | 8'-2" | 10'-7" | 11'-8⅜" | 4'-3⅜" | 17'-11" | 20'-8⅛" | 21'-10" | 14'-5" | 26'-8" | 30'-9⅛" | 31'-11⅛" | 24'-6⅛" | 34'-11" | 40'-1⅛" | 41'-3⅛" | 30'-6" | 43'-5" | 49'-6⅛" | 50'-8⅛" | 41'-8⅛" |
| | | 7 | 7'3⅜" | 8'-3" | 10'-8⅝" | 11'-10" | 3'-1" | 18'-1" | 20'-10⅞" | 22'-0⅛" | 13'-1⅜" | 26'-11" | 31'-1" | 32'-2⅜" | 23'-9⅜" | 35'-2" | 40'-5⅜" | 41'-7⅜" | 29'-10" | 43'-9" | 49'-10⅜" | 51'-0⅜" | 41'-3⅜" |
| | | 8' | 8'3⅜" | 8'-4" | 10'-9⅜" | 11'-11⅝" | 1'-6⅝" | 18'-2" | 20'-11⅜" | 22'-1⅝" | 11'-8⅝" | 27'-0" | 31'-2⅝" | 32'-4" | 27'-1" | 35'-10" | 41'-0⅝" | 42'-2⅝" | 38'-1⅛" | 44'-0" | 51'-1" | 52'-0⅝" | 42'-0⅝" |
| | 9' | 5' | 5'3⅜" | 10'-5" | 11'-8⅜" | 12'-10⅝" | 6'-5⅜" | 19'-11" | 23'-0" | 24'-1⅜" | 17'-0⅝" | 29'-8" | 34'-3⅜" | 35'-5" | 28'-1⅝" | 39'-5" | 45'-4⅝" | 46'-8" | 40'-3" | 49'-2" | 56'-3⅜" | 57'-7⅛" | 51'-6" |
| | | 6' | 6'3⅜" | 10'-8" | 11'-10⅝" | 13'-0" | 5'-6⅝" | 20'-1" | 23'-2⅛" | 24'-4⅝" | 14'-11" | 29'-11" | 34'-6⅝" | 35'-8⅝" | 28'-3⅜" | 39'-9" | 45'-8⅝" | 47'-0⅛" | 35'-7⅝" | 49'-7" | 57'-0" | 58'-5" | 50'-2⅝" |
| | | 7 | 7'3⅜" | 10'-9" | 11'-10" | 13'-0" | 4'-0⅜" | 20'-1" | 23'-2⅛" | 24'-4⅝" | 15'-5" | 29'-11" | 34'-6⅝" | 35'-8⅝" | 26'-3⅜" | 39'-9" | 45'-8⅝" | 47'-0⅛" | 36'-1⅝" | 49'-7" | 57'-0" | 58'-5" | 49'-5⅝" |
| | | 8' | 8'3⅜" | 10'-9" | 11'-11" | 13'-1" | 2'-6" | 20'-2" | 23'-3⅜" | 24'-5⅝" | 16'-0⅛" | 30'-0" | 34'-7⅜" | 35'-9⅜" | 25'-4⅜" | 39'-10" | 46'-0" | 47'-1⅜" | 36'-8⅝" | 49'-8" | 57'-1⅛" | 58'-6" | 48'-8⅜" |
| | 10' | 5' | 5'3⅜" | 11'-5" | 12'-10⅝" | 14'-0⅛" | 7'-1⅝" | 21'-8" | 25'-3⅜" | 26'-5⅛" | 20'-0⅛" | 32'-8" | 38'-1⅛" | 39'-3" | 32'-5⅛" | 43'-5" | 50'-1⅜" | 51'-3⅝" | 44'-10⅛" | 54'-2" | 62'-6⅛" | 63'-10⅛" | 57'-3⅜" |
| | | 6' | 6'3⅜" | 11'-5" | 12'-10⅝" | 14'-0⅛" | 6'-6⅜" | 22'-1" | 25'-7⅛" | 26'-9⅝" | 19'-2⅜" | 32'-11" | 38'-6⅛" | 39'-8" | 31'-9" | 43'-9" | 50'-6⅛" | 51'-8" | 44'-3" | 54'-7" | 63'-0⅛" | 64'-3⅛" | 56'-8" |
| | | 7 | 7'3⅜" | 11'-5" | 12'-11⅛" | 14'-1⅜" | 5'-5⅜" | 22'-1" | 25'-7⅛" | 26'-9⅝" | 17'-8⅜" | 32'-11" | 38'-6⅛" | 39'-8" | 30'-3" | 43'-9" | 50'-6⅛" | 51'-8" | 42'-9" | 54'-7" | 63'-0⅛" | 64'-3⅛" | 55'-8" |
| | | 8' | 8'3⅜" | 11'-4" | 12'-11" | 14'-2" | 3'-9⅝" | 22'-2" | 25'-7⅛" | 26'-9" | 16'-4" | 33'-0" | 38'-6" | 39'-7" | 28'-10" | 43'-10" | 50'-7⅛" | 51'-9⅛" | 41'-3⅝" | 54'-8" | 63'-1½" | 64'-3⅝" | 53'-10⅝" |
| | 11' | 6' | 6'3⅜" | 12'-4" | 14'-2⅝" | 15'-6⅝" | 7'-11⅝" | 24'-2" | 27'-10⅛" | 29'-0⅜" | 21'-2⅝" | 36'-0" | 41'-6⅛" | 42'-8⅜" | 35'-3⅝" | 47'-10" | 55'-2⅜" | 56'-6⅝" | 48'-11" | —— | —— | —— | —— |
| | | 7' | 7'3⅜" | 12'-5" | " | " | 6'-5⅜" | 24'-2" | " | " | 20'-1⅛" | 36'-0" | " | " | 33'-9⅛" | 47'-10" | " | " | 47'-5⅜" | —— | —— | —— | —— |
| | | 8' | 8'3⅜" | 12'-6" | " | " | 4'-11⅝" | 24'-2" | " | " | 18'-10⅜" | 36'-0" | " | " | 32'-3⅝" | 47'-10" | " | " | 45'-11⅝" | —— | —— | —— | —— |
| | 12' | 6' | 6'3⅜" | 13'-4" | 15'-3⅛" | 16'-6⅛" | 9'-1⅝" | 26'-2" | 30'-0⅝" | 31'-1⅝" | 23'-1⅛" | 39'-0" | 45'-0⅜" | 46'-2⅜" | 38'-9⅝" | 51'-10" | 59'-10⅛" | 61'-0" | 53'-1" | —— | —— | —— | —— |
| | | 7' | 7'3⅜" | 13'-4" | " | " | 7'-7⅛" | 26'-2" | " | " | 22'-5⅛" | 39'-0" | " | " | 37'-3⅛" | 51'-10" | " | " | 52'-1⅛" | —— | —— | —— | —— |
| | | 8' | 8'3⅜" | 13'-5" | " | " | 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'-9⅜" | 8'-6" | 9'-8⅜" | 10'-11⅝" | Ⓐ 0" | 16'-5" | 18'-11⅛" | 20'-1⅛" | 8'-2⅛" | 28'-4" | 28'-1⅛" | 29'-3" | 17'-9" | 32'-3" | 37'-2⅜" | 38'-4⅜" | 26'-5⅜" | 40'-2" | 46'-6⅜" | 47'-6⅜" | 35'-7⅛" |
| | 8' | 9 | 10'-9⅜" | 9'-6" | 10'-11⅝" | 12'-1⅛" | 0'-2⅜" | 18'-5" | 21'-3⅜" | 22'-5" | 10'-6" | 27'-9" | 31'-6⅜" | 32'-8⅜" | 20'-9⅜" | 36'-3" | 41'-10⅜" | 43'-0⅜" | 31'-1" | 45'-2" | 52'-1⅜" | 53'-3⅜" | 41'-1⅜" |
| | | 10' | 12'-3⅜" | 9'-8" | 11'-2" | 12'-3⅜" | Ⓐ 0" | 18'-8" | 21'-6⅜" | 22'-8⅝" | 9'-3⅜" | 27'-8" | 31'-11⅜" | 33'-1⅛" | 19'-8⅜" | 36'-8" | 42'-1⅝" | 43'-3⅜" | 30'-10⅜" | 45'-8" | 52'-8⅝" | 53'-10⅜" | 40'-5⅜" |
| | 9' | 9' | 10'-9⅜" | 10'-6" | 12'-1⅛" | 13'-3⅜" | 1'-0⅜" | 20'-5" | 23'-6⅜" | 24'-8⅝" | 12'-3⅜" | 30'-9" | 35'-0⅛" | 36'-2⅛" | 24'-3" | 40'-3" | 46'-5⅛" | 47'-7⅛" | 35'-5⅛" | 50'-2" | 57'-11⅛" | 59'-1" | 47'-0" |
| | | 10' | 12'-3⅜" | 10'-8" | 12'-3⅛" | 13'-5⅜" | 0'-0⅝" | 20'-8" | 23'-10⅛" | 25'-0⅛" | 11'-7⅛" | 30'-8" | 35'-4⅜" | 36'-6⅜" | 23'-1⅜" | 40'-8" | 46'-11⅛" | 48'-1⅛" | 34'-9⅜" | 50'-8" | 58'-6" | 59'-8" | 46'-6⅜" |
| | | 11' | 13'-3⅜" | 10'-10" | 12'-6⅜" | 13'-8" | Ⓐ 0" | 20'-10" | 24'-0⅝" | 25'-2⅞" | 10'-3⅜" | 30'-10" | 35'-7⅛" | 36'-9" | 21'-10" | 40'-10" | 47'-1⅜" | 48'-3⅜" | 33'-9⅛" | 50'-10" | 58'-9⅜" | 59'-10⅜" | 44'-11⅛" |
| | 10' | 9' | 10'-9⅜" | 11'-6" | 13'-3⅛" | 14'-5⅜" | 2'-2⅜" | 22'-5" | 25'-10⅝" | 27'-0⅛" | 15'-3⅜" | 33'-0" | 38'-5⅜" | 39'-7⅜" | 27'-3⅜" | 44'-3" | 51'-1⅜" | 52'-3" | 40'-0" | 55'-2" | 63'-8⅜" | 64'-10⅜" | 52'-11⅛" |
| | | 10' | 12'-3⅜" | 11'-8" | 13'-5⅜" | 14'-7⅝" | 1'-2⅝" | 22'-8" | 26'-1⅛" | 27'-4" | 13'-10⅜" | 33'-3" | 38'-10⅜" | 40'-0⅛" | 26'-7⅛" | 44'-8" | 51'-7" | 52'-8⅜" | 39'-3⅜" | 55'-8" | 64'-3⅜" | 65'-5⅛" | 52'-6" |
| | | 11' | 13'-3⅜" | 11'-10" | 13'-8" | 14'-9⅜" | Ⓐ 0" | 22'-10" | 26'-3⅛" | 27'-6⅜" | 12'-6⅛" | 33'-10" | 39'-0⅛" | 40'-2⅜" | 25'-3⅜" | 44'-10" | 51'-9⅜" | 52'-11" | 38'-0" | 55'-10" | 64'-5⅜" | 65'-7⅛" | 50'-8½" |
| | | 12' | 15'-3⅜" | 12'-0" | 13'-10⅛" | 15'-0⅛" | Ⓐ 0" | 23'-0" | 26'-4⅝" | 27'-8⅛" | 11'-3⅜" | 34'-0" | 39'-3⅛" | 40'-5" | 24'-0" | 45'-0" | 51'-11⅝" | 53'-1⅛" | 36'-8⅝" | 56'-0" | 64'-8" | 65'-9⅝" | 49'-3⅝" |
| | 11' | 9' | 10'-9⅜" | 12'-6" | 14'-5⅛" | 15'-7⅝" | 3'-3⅛" | 24'-5" | 28'-2⅜" | 29'-4⅜" | 17'-5" | 36'-9" | 41'-11⅜" | 43'-1⅜" | 31'-2⅜" | 49'-5" | 55'-8⅜" | 56'-10⅜" | 44'-1⅛" | —— | —— | —— | —— |
| | | 10' | 12'-3⅜" | 12'-8" | 14'-7⅛" | 15'-9⅝" | 2'-1⅝" | 24'-10" | 28'-8⅛" | 29'-10⅝" | 18'-1⅜" | 36'-10" | 42'-0⅝" | 43'-3⅛" | 28'-9⅜" | 49'-10" | 56'-2⅝" | 57'-4⅝" | 42'-7⅜" | —— | —— | —— | —— |
| | | 11' | 13'-3⅜" | 13'-0" | 15'-0⅜" | 16'-2" | Ⓐ 0" | 25'0" | 28'-10⅜" | 30'-0⅝" | 18'-7⅛" | 37'-0" | 42'-3⅜" | 43'-5⅝" | 27'-5⅜" | 49'-0" | 56'-7" | 57'-9⅜" | 41'-5⅜" | —— | —— | —— | —— |
| | | 12' | 15'-3⅜" | 13'-0" | 15'-0⅜" | 16'-2" | Ⓐ 0" | 25'0" | 28'-10⅜" | 30'-0⅝" | 18'-7⅛" | 37'-0" | 42'-3⅜" | 43'-5⅝" | 27'-5⅜" | 49'-0" | 56'-7" | 57'-9⅜" | 41'-5⅜" | —— | —— | —— | —— |
| | 12' | 9' | 10'-9⅜" | 13'-4" | 15'-3⅛" | 16'-6⅛" | 4'-3⅜" | 26'-5" | 30'-1⅛" | 31'-1⅜" | 19'-8⅛" | 39'-1" | 44'-5" | 45'-7" | 34'-7⅛" | 52'-3" | 60'-0" | 61'-2⅜" | 48'-6⅛" | —— | —— | —— | —— |
| | | 10' | 12'-3⅜" | 13'-8" | 15'-8⅜" | 16'-11⅛" | 3'-8⅛" | 26'-8" | 30'-3⅛" | 31'-4⅜" | 18'-6⅛" | 39'-8" | 45'-3⅛" | 46'-5⅛" | 33'-6⅛" | 52'-8" | 60'-3⅜" | 61'-5⅛" | 48'-1⅛" | —— | —— | —— | —— |
| | | 11' | 13'-3⅜" | 13'-10" | 15'-10⅝" | 17'-1⅛" | 2'-3⅝" | 26'-10" | 30'-5⅛" | 31'-6⅜" | 17'-5⅜" | 39'-10" | 45'-6" | 46'-8" | 32'-5⅜" | 52'-10" | 60'-5⅜" | 61'-7⅜" | 47'-3⅛" | —— | —— | —— | —— |
| | | 12' | 15'-3⅜" | 14'-0" | 16'-1⅜" | 17'-3⅝" | 0'-10⅜" | 27'-0" | 30'-7⅛" | 31'-8⅜" | 15'-11" | 40'-0" | 45'-7⅜" | 46'-9⅜" | 30'-11" | 53'-0" | 61'-3⅜" | 62'-5⅜" | 45'-11⅛" | —— | —— | —— | —— |

Ⓐ Special case for these boxes, See Detail R and Table 'A' for revised values of $F_1$, $F_2$, $W_4$ and $W_5$, when apron width is more than 1'0" and $W_3$=0". For Details 'A' and Table 'A' for each slope, see Drawing Nos. W-X302-1, W-X302-2, or W-X303-1, W-X303-2, or W-X304-1, W-X304-2.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 30° Skews for each slope as listed below.

| 2:1 Slopes | 3:1 Slopes | 4:1 Slopes |
|---|---|---|
| W-X302-1 or W-X302-2 | W-X303-1 or W-X303-2 | W-X304-1 or W-X304-2. |

NOTE:-
This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

| SINGLES | DOUBLES | TRIPLES | QUADRUPLES | QUINTUPLES |
|---|---|---|---|---|
| R-130X-0 | R-230X-01 | R-330X-01 | R-430X-01 | R-530X-01 |
| | R-230X-02 | R-330X-02 | R-430X-02 | R-530X-02 |
| R-130X-1 | R-230X-1 | R-330X-1 | R-430X-1 | R-530X-1 |
| | R-230X-2 | R-330X-2 | | |

CLASS S CONCRETE

# ARKANSAS STATE HIGHWAY COMMISSION
## DETAILS OF STANDARD WINGS
FOR
## REINFORCED CONCRETE BOX CULVERTS
## 30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H=2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'.

STANDARD DRAWING NO. W-X30

Designed by:- W.C.H. 5-16-63 Checked by- JBMS - 8-21-63
Drawn by:- W.C.H. 7-15-63 Checked by-
Quantities by- Checked by-

Reshot 3-8-93

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 134 | |
| JOB No. | | | | | |

REAR ELEVATION OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

TYPICAL END VIEW OF WING

PLAN OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

SECTION A-A
SECTION C-C

REAR ELEVATION OF SHORT WING - 30° SKEW RIGHT FORWARD

SHOWING BACK FACE REINFORCING

SECTIONS THRU CONSTRUCTION JOINTS

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

PLAN OF SHORT WING - 30° SKEW RIGHT FORWARD

SHOWING FOOTING REINFORCING

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 Hdwl. = C | Wingwall Heights: At Headwall | Wingwall Heights: At End of Wing | Widths of Wing Footings: At Headwall | Widths of Wing Footings: At End of Wing | Footing Dimension - Parallel with Headwall: Short Wing | Long Wing | Perpendicular Dist. from Hdwl. to End of Wing | Lengths of Wingwalls: Short Wing | Long Wing | Inside Footing Dimension: Short Wing | Long Wing | * Quantity per Wing, Class S Concrete, Inlet End: Short Wing | Inlet End: Long Wing | Outlet End: Short Wing | Outlet End: Long Wing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | WB | Cw | WH1 | WH2 | WF1 | WF2 | F1 | F2 | E | W1 | W2 | W4 | W5 | Cu.Yd. | Cu.Yd. | Cu.Yd. | Cu.Yd. |
| 2' | 7" | 6" | 2'-10" | 0'-8" | 2'-4" | 2'-0" | 1'-4" | 0'-11½" | 6'-6" | 6'-6" | 13'-0" | 5'-6" | 13'-3¾" | 0.752 | 1.599 | 0.836 | 1.717 |
| 3' | 7" | 6" | 3'-10" | 1'-0" | 2'-8" | 2'-1½" | 1'-8" | 1'-7⅝" | 8'-6" | 8'-6" | 17'-0" | 7'-6" | 17'-10¾" | 1.130 | 2.340 | 1.239 | 2.565 |
| 4' | 7" | 6" | 4'-10" | 1'-4" | 3'-0" | 2'-3" | 2'-0" | 2'-3⅝" | 10'-6" | 10'-6" | 21'-0" | 9'-6" | 22'-5½" | 1.577 | 3.270 | 1.711 | 3.552 |
| 5' | 7" | 6" | 5'-10" | 1'-8" | 3'-4" | 2'-4½" | 2'-4" | 2'-11⅝" | 12'-6" | 12'-6" | 25'-0" | 11'-6" | 27'-0½" | 2.093 | 4.391 | 2.252 | 4.680 |
| | | 7" | 5'-10" | 1'-8" | 3'-4" | 2'-4½" | 2'-4" | 2'-11⅝" | 12'-6" | 12'-6" | 25'-0" | 11'-6" | 27'-0½" | 2.179 | 4.524 | 2.337 | 4.862 |
| ⊙ 6' | 8" | 7" | 6'-10" | 2'-0" | 3'-8" | 2'-6" | 2'-8" | 3'-7⅝" | 14'-6" | 14'-6" | 29'-0" | 13'-6" | 31'-7½" | 2.908 | 6.024 | 3.092 | 6.419 |
| | | 7½" | 6'-10" | 2'-0" | 3'-8" | 2'-6" | 2'-8" | 3'-7⅝" | 14'-6" | 14'-6" | 29'-0" | 13'-6" | 31'-7½" | 2.966 | 6.147 | 3.150 | 6.543 |
| | | 8" | 6'-10" | 2'-0" | 3'-8" | 2'-6" | 2'-8" | 3'-7⅝" | 14'-6" | 14'-6" | 29'-0" | 13'-6" | 31'-7½" | 3.025 | 6.272 | 3.208 | 6.667 |
| ⊙ 7' | 8½" | 7½" | 7'-10" | 2'-4" | 4'-2" | 2'-7½" | 3'-2" | 4'-7⅝" | 16'-6" | 16'-6" | 33'-0" | 15'-6" | 36'-5¾" | 3.811 | 7.895 | 4.019 | 8.350 |
| | | 8" | 7'-10" | 2'-4" | 4'-2" | 2'-7½" | 3'-2" | 4'-7⅝" | 16'-6" | 16'-6" | 33'-0" | 15'-6" | 36'-5¾" | 3.887 | 8.057 | 4.095 | 8.512 |
| ⊙ 8' | 9" | 8" | 8'-10" | 2'-8" | 4'-8" | 2'-9" | 3'-8" | 5'-7⅝" | 18'-6" | 18'-6" | 37'-0" | 17'-6" | 41'-4½" | 4.874 | 10.097 | 5.107 | 10.612 |

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.
⊙ See Table "A" for special values of F1 & F2 and W4 & W5 for Single 4x6, 5x7 and 6x8 Box Culverts.

TABLE "A" - DIMENSIONS FOR DETAIL "A".

| S | H | F1 | F2 | W3 | Y | W4 | W5 |
|---|---|---|---|---|---|---|---|
| 4' | 6' | 2'-7⅞" | 3'-3¾" | 0" | 1'-1⅞" | 13'-4¼" | 31'-3½" |
| 5' | 7' | 3'-1⅜" | 4'-1" | 0" | 1'-3¾" | 15'-2⅜" | 35'-10¾" |
| 6' | 8' | 3'-7½" | 4'-10⅝" | 0" | 1'-4⅜" | 17'-1¼" | 40'-6" |

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 | 18.85 | 19.99 | 21.13 | 22.27 | 23.41 |
| 5' | 3' | 6" | 7" | 213 | 8.35 | 9.67 | 11.01 | 12.36 | 13.70 |
| | 4' | 6" | 7" | 327 | 11.03 | 12.36 | 13.71 | 15.06 | 16.40 |
| | 5' | 6" | 7" | 460 | 14.14 | 15.48 | 16.83 | 18.17 | 19.52 |
| | 6' | 7" | 8" | 762 | 19.11 | 20.48 | 21.86 | 23.24 | 24.62 |
| | 7' | 7½" | 8½" | 1474 | 24.51 | 25.94 | 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 | 19.35 | 20.98 | 22.59 | 24.21 | 25.83 |
| | 7' | 7½" | 8½" | 1474 | 24.79 | 26.44 | 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 | 21.48 | 23.32 | 25.20 | 27.04 |
| | 7' | 7½" | 8½" | 1474 | 25.05 | 26.94 | 28.82 | 30.71 | 32.59 |
| | 8' | 8" | 9" | 1870 | 31.47 | 33.37 | 35.25 | 37.16 | 39.05 |
| 8' | 4' | 6" | 7" | 327 | 11.77 | 13.89 | 15.97 | 18.09 | 20.12 |
| | 5' | 7" | 7" | 460 | 15.46 | 17.60 | 19.70 | 21.83 | 23.89 |
| | 6' | 7" | 8" | 762 | 19.86 | 21.98 | 24.05 | 26.17 | 28.20 |
| | 7' | 7½" | 8½" | 1474 | 25.30 | 27.46 | 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 | 25.29 | 27.71 | 30.01 |
| | 7' | 7½" | 8½" | 1474 | 25.55 | 27.98 | 30.34 | 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 | 26.42 |
| | 6' | 7½" | 8" | 762 | 20.76 | 23.45 | 26.07 | 28.64 | 31.28 |
| | 7' | 7½" | 8½" | 1474 | 25.81 | 28.50 | 31.12 | 33.70 | 36.34 |
| | 8' | 8" | 9" | 1870 | 32.22 | 34.91 | 37.54 | 40.12 | 42.76 |
| 11' | 6' | 8" | 8" | 762 | 21.39 | 24.38 | 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" | 8" | 762 | 21.66 | 24.93 | 28.05 | 31.20 | —— |
| | 7' | 8" | 8½" | 1474 | 26.81 | 30.08 | 33.21 | 36.36 | —— |
| | 8' | 8" | 9" | 1870 | 32.73 | 35.99 | 39.13 | 42.28 | —— |

⊛ For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
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

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. SF5 & LF5 — Straight — Longitudinal in top of wing footing heel. SF6 & LF6 — Straight — Longitudinal in bottom of wing footing toe.

| H | Short or Long | SF1&LF1 Size | Spacing | No. Req'd | Lengths Vary Min. | Lengths Vary Max. | X Min. | X Max. | Y Min. | Y Max. | SF2&LF2 Size | Spacing | No. Req'd | Length | X | Y | SF5&LF5 Size | No. Req'd | Length | SF6&LF6 Size | No. Req'd | Length |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2' | Short | #3 | 12" | 7 | 1'-7" | 3'-11" | 0'-8" | 1'-0" | 1'-0" | 3'-0" | — | — | — | — | — | — | #3 | 1 | 9'-0" | #3 | 2 | 8'-0" |
| | Long | #3 | 12" | 14 | 1'-5" | 3'-11" | 0'-8" | 1'-0" | 0'-10" | 3'-0" | — | — | — | — | — | — | #3 | 1 | 15'-6" | #3 | 2 | 15'-6" |
| 3' | Short | #3 | 12" | 9 | 2'-1" | 5'-3" | 0'-10" | 1'-4" | 1'-4" | 4'-0" | — | — | — | — | — | — | #3 | 1 | 11'-0" | #3 | 2 | 10'-6" |
| | Long | #3 | 12" | 18 | 1'-11" | 5'-3" | 0'-10" | 1'-4" | 1'-2" | 4'-0" | — | — | — | — | — | — | #3 | 1 | 19'-6" | #3 | 2 | 20'-2" |
| 4' | Short | #3 | 12" | 11 | 2'-6" | 6'-7" | 0'-11" | 1'-8" | 1'-8" | 5'-0" | — | — | — | — | — | — | #3 | 1 | 13'-0" | #3 | 3 | 12'-0" |
| | Long | #3 | 12" | 22 | 2'-4" | 6'-6" | 0'-11" | 1'-7" | 1'-6" | 5'-0" | — | — | — | — | — | — | #3 | 1 | 23'-6" | #3 | 3 | 24'-10" |
| 5' | Short | #3 | 12" | 13 | 2'-11" | 7'-11" | 1'-0" | 2'-0" | 2'-0" | 6'-0" | #3 | 12" | 3 | 3'-6" | 1'-1" | 2'-6" | #3 | 1 | 15'-0" | #3 | 3 | 14'-0" |
| | Long | #3 | 12" | 26 | 2'-9" | 7'-10" | 1'-0" | 1'-11" | 1'-10" | 6'-0" | #3 | 12" | 6 | 3'-6" | 1'-1" | 2'-6" | #3 | 1 | 27'-6" | #3 | 6 | 15'-7" |
| 6' | Short | #4 | 12" | 15 | 3'-6" | 9'-4" | 1'-2" | 2'-4" | 2'-5" | 7'-1" | #3 | 12" | 3 | 4'-6" | 1'-4" | 3'-3" | #3 | 1 | 17'-0" | #3 | 3 | 16'-0" |
| | Long | #4 | 12" | 30 | 3'-4" | 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" |
| 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" |
| | 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" |
| 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" |
| | Long | #4 | 12" | 38 | 4'-4" | 12'-3" | 1'-5" | 3'-2" | 3'-0" | 9'-2" | #4 | 12" | 18 | 6'-6" | 1'-10" | 4'-9" | #4 | 2 | 20'-8" | #4 | 8 | 22'-9" |

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 — In back face of wing at top - on slope. SH4 & LH4 — Bent — Dowels thru construction joint at headwall.

| H | Short or Long | SH1&LH1 Size | Spacing | No. Req'd | Length | SH2&LH2 Size | Spacing | No. Req'd | Lengths Vary Max. | Lengths Vary Min. | SH3&LH3 Size | No. Req'd | Length | SH4&LH4 Size | Spacing | No. Req'd | Length | X | Quantity: Reinforcing Steel per Wing - Lbs. Short Wing | Long Wing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2' | Short | #3 | 12" | 1 | 6'-3" | #3 | 12" | 1 | — | 3'-3" | #3 | 1 | 6'-7" | #3 | 12" | 2 | 2'-8" | 1'-4" | 24.7 | 45.6 |
| | Long | #3 | 12" | 1 | 12'-8" | #3 | 12" | 1 | — | 6'-6" | #3 | 1 | 12'-11" | #3 | 12" | 2 | " | " | | |
| 3' | Short | #3 | 12" | 1 | 8'-3" | #3 | 12" | 2 | 6'-3" | 3'-3" | #3 | 1 | 8'-8" | #3 | 12" | 3 | " | " | 37.0 | 69.5 |
| | Long | #3 | 12" | 1 | 16'-8" | #3 | 12" | 2 | 12'-6" | 6'-6" | #3 | 1 | 16'-11" | #3 | 12" | 3 | " | " | | |
| 4' | Short | #3 | 12" | 1 | 10'-3" | #3 | 12" | 3 | 9'-8" | 3'-3" | #3 | 1 | 10'-9" | #3 | 12" | 4 | " | " | 56.2 | 107.2 |
| | Long | #3 | 12" | 1 | 20'-8" | #3 | 12" | 3 | 18'-6" | 6'-6" | #3 | 1 | 21'-0" | #3 | 12" | 4 | " | " | | |
| 5' | Short | #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" | 2 | 24'-8" | #3 | 12" | 3 | 18'-6" | 6'-6" | #3 | 1 | 25'-1" | #3 | 12" | 5 | " | " | | |
| 6' | Short | #3 | 12" | 2 | 14'-3" | #3 | 12" | 4 | 12'-3" | 3'-3" | #3 | 1 | 15'-0" | #3 | 12" | 6 | " | " | 127.8 | 253.1 |
| | Long | #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" | 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" | 4 | 17'-2" | #4 | 12" | 5 | *30'-6" | 6'-6" | #4 | 2 | 17'-5" | #4 | 12" | 7 | " | " | | |
| 8' | Short | #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" | 6 | 19'-2" | #4 | 12" | 5 | *30'-6" | 6'-6" | #4 | 2 | 19'-6" | #4 | 12" | 8 | 3'-6" | 1'-9" | | |

NOTE:- Dimensions are to bar centers.

NOTE:- Bars for short wing shall be marked with prefix letter "S", while those for long wing shall be marked with letter "L".

* 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:-
Drawn By:- W.C.H. 7-26-63 Checked By:- BHS 8-19-63
Quantities By:- W.C.H. 1-7-64 Checked By:- DMT 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, — ALL DEPTHS OF COVER
QUADRUPLES & QUINTUPLES. — FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X303-1

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 135 | |
| JOB No. | | | | | |

## BAR LIST FOR VARIOUS SECTIONS OF BARREL

"a" bars: STRAIGHT. In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each.
"b" bars: BENT - See Diagram at Right. In top and Bottom Slabs of Barrel - Hooked. Alternate with "a" bars.

| Section & Bar Group | Length of Section | Depth of Cover D | Clear Span S (1@) | Clear Height H | "a" Size | "a" Spacing | "a" No. Req'd 2:1 | 3:1 | 4:1 | "a" Length | "b" Size | "b" Spacing | "b" No. Req'd 2:1 | 3:1 | 4:1 | "b" Length | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| "A" | 2:1=12'-0", 3:1=22'-0", 4:1=32'-0" | 0' TO 10'-0" | 4' | 2' | #4 | 12" | 28 | 48 | 68 | 4'-9" | #4 | 12" | 24 | 44 | 64 | 5'-7" | 4'-8½" |
| | | | 6' | 3' | #5 | 12" | 28 | 48 | 68 | 6'-9" | #6 | 12" | 24 | 44 | 64 | 7'-10" | 6'-8" |
| | | | 7' | 4' | #5 | 12" | 28 | 48 | 68 | 7'-9" | #6 | 12" | 24 | 44 | 64 | 8'-10" | 7'-8" |
| | | | 8' | 4' | #6 | 12" | 28 | 48 | 68 | 8'-9" | #6 | 12" | 24 | 44 | 64 | 9'-10" | 8'-8" |
| | | | | 5' | | | 28 | 48 | 68 | 8'-11" | | | 24 | 44 | 64 | 10'-0" | 8'-10" |
| | | | 9' | 5' | #6 | 11" | 30 | 52 | 74 | 9'-11" | #7 | 11" | 26 | 48 | 70 | 11'-2" | 9'-10" |
| | | | | 6' | | | 30 | 52 | 74 | 10'-0" | | | 26 | 48 | 70 | 11'-3" | 9'-11" |
| | | | 10' | 5' | #7 | 12" | 28 | 48 | 68 | 10'-11" | #7 | 12" | 24 | 44 | 64 | 12'-2" | 10'-10" |
| | | | | 6' | | | 28 | 48 | 68 | 11'-0" | | | 24 | 44 | 64 | 12'-3" | 10'-11" |
| | | | | 7' | | | 28 | 48 | 68 | 11'-0" | | | 24 | 44 | 64 | 12'-3" | 10'-11" |
| "B" | 2:1=6'-0", 3:1=11'-0", 4:1=16'-0" | 10'-0" TO 15'-0" | 4' | 2' | #4 | 12" | 12 | 22 | 32 | 4'-9" | #5 | 12" | 12 | 22 | 32 | 5'-8" | 4'-8½" |
| | | | 6' | 3' | #6 | 12" | 12 | 22 | 32 | 6'-9" | #6 | 12" | 12 | 22 | 32 | 7'-10" | 6'-8" |
| | | | 7' | 4' | #6 | 11" | 14 | 24 | 36 | 7'-9" | #6 | 11" | 12 | 24 | 34 | 8'-10" | 7'-8" |
| | | | 8' | 4' | #7 | 12" | 12 | 22 | 32 | 8'-9" | #6 | 12" | 12 | 22 | 32 | 9'-10" | 8'-8" |
| | | | | 5' | | | 12 | 22 | 32 | 8'-11" | | | 12 | 22 | 32 | 10'-0" | 8'-10" |
| | | | 9' | 5' | #7 | 12" | 12 | 22 | 32 | 9'-11" | #7 | 12" | 12 | 22 | 32 | 11'-2" | 9'-10" |
| | | | | 6' | | | 12 | 22 | 32 | 10'-0" | | | 12 | 22 | 32 | 11'-3" | 9'-11" |
| | | | 10' | 5' | #8 | 12" | 12 | 22 | 32 | 10'-11" | #7 | 12" | 12 | 22 | 32 | 12'-2" | 10'-10" |
| | | | | 6' | | | 12 | 22 | 32 | 11'-0" | | | 12 | 22 | 32 | 12'-3" | 10'-11" |
| | | | | 7' | | | 12 | 22 | 32 | 11'-0" | | | 12 | 22 | 32 | 12'-3" | 10'-11" |
| "C" | 2:1=6'-0", 3:1=11'-0", 4:1=16'-0" | 15'-0" TO 20'-0" | 4' | 2' | #5 | 12" | 12 | 22 | 32 | 4'-9" | #5 | 12" | 12 | 22 | 32 | 5'-8" | 4'-8½" |
| | | | 6' | 3' | #6 | 11" | 14 | 24 | 36 | 6'-9" | #6 | 11" | 12 | 24 | 36 | 7'-10" | 6'-8" |
| | | | 7' | 4' | #7 | 13" | 12 | 20 | 30 | 7'-9" | #7 | 13" | 10 | 20 | 30 | 9'-0" | 7'-8" |
| | | | 8' | 4' | #7 | 12" | 12 | 22 | 32 | 8'-9" | #7 | 12" | 12 | 22 | 32 | 10'-0" | 8'-8" |
| | | | | 5' | | | 12 | 22 | 32 | 8'-11" | | | 12 | 22 | 32 | 10'-2" | 8'-10" |
| | | | 9' | 5' | #8 | 12" | 12 | 22 | 32 | 9'-11" | #7 | 12" | 12 | 22 | 32 | 11'-2" | 9'-10" |
| | | | | 6' | | | 12 | 22 | 32 | 10'-0" | | | 12 | 22 | 32 | 11'-3" | 9'-11" |
| | | | 10' | 5' | #8 | 12" | 12 | 22 | 32 | 10'-11" | #8 | 12" | 12 | 22 | 32 | 12'-4" | 10'-10" |
| | | | | 6' | | | 12 | 22 | 32 | 11'-0" | | | 12 | 22 | 32 | 12'-5" | 10'-11" |
| | | | | 7' | | | 12 | 22 | 32 | 11'-0" | | | 12 | 22 | 32 | 12'-5" | 10'-11" |
| "D" | 2:1=6'-0", 3:1=11'-0", 4:1=16'-0" | 20'-0" TO 25'-0" | 4' | 2' | #5 | 11" | 14 | 24 | 36 | 4'-9" | #5 | 11" | 12 | 24 | 34 | 5'-8" | 4'-8½" |
| | | | 6' | 3' | #7 | 12" | 12 | 22 | 32 | 6'-9" | #6 | 12" | 12 | 22 | 32 | 7'-10" | 6'-8" |
| | | | 7' | 4' | #7 | 12" | 12 | 22 | 32 | 7'-9" | #7 | 12" | 12 | 22 | 32 | 9'-0" | 7'-8" |
| | | | 8' | 4' | #8 | 12" | 12 | 22 | 32 | 8'-9" | #7 | 12" | 12 | 22 | 32 | 10'-0" | 8'-8" |
| | | | | 5' | | | 12 | 22 | 32 | 8'-11" | | | 12 | 22 | 32 | 10'-2" | 8'-10" |
| | | | 9' | 5' | #8 | 12" | 12 | 22 | 32 | 9'-11" | #9 | 12" | 12 | 22 | 32 | 11'-4" | 9'-10" |
| | | | | 6' | | | 12 | 22 | 32 | 10'-0" | | | 12 | 22 | 32 | 11'-5" | 9'-11" |
| | | | 10' | 5' | #9 | 12" | 12 | 22 | 32 | 10'-11" | #8 | 12" | 12 | 22 | 32 | 12'-4" | 10'-10" |
| | | | | 6' | | | 12 | 22 | 32 | 11'-0" | | | 12 | 22 | 32 | 12'-5" | 10'-11" |
| | | | | 7' | | | 12 | 22 | 32 | 11'-2" | | | 12 | 22 | 32 | 12'-7" | 11'-1" |
| "E" | 2:1=6'-0", 3:1=11'-0", 4:1=16'-0" | 25'-0" TO 30'-0" | 4' | 2' | #6 | 12" | 12 | 22 | 32 | 4'-9" | #5 | 12" | 12 | 22 | 32 | 5'-8" | 4'-8½" |
| | | | 6' | 3' | #7 | 11" | 14 | 24 | 36 | 6'-9" | #6 | 11" | 12 | 24 | 34 | 7'-10" | 6'-8" |
| | | | 7' | 4' | #7 | 11" | 14 | 24 | 36 | 7'-9" | #7 | 11" | 12 | 24 | 34 | 9'-0" | 7'-8" |
| | | | 8' | 4' | #8 | 11" | 14 | 24 | 36 | 8'-10" | #7 | 11" | 12 | 24 | 34 | 10'-1" | 8'-9" |
| | | | | 5' | | | 14 | 24 | 36 | 8'-11" | | | 12 | 24 | 34 | 10'-2" | 8'-10" |
| | | | 9' | 5' | #8 | 11" | 14 | 24 | 36 | 10'-0" | #8 | 11" | 12 | 24 | 34 | 11'-5" | 9'-11" |
| | | | | 6' | | | 14 | 24 | 36 | 10'-1" | | | 12 | 24 | 34 | 11'-6" | 10'-0" |
| | Varies | | 10' | 5' | #9 | 11" | Varies with Length of Barrel. | | | 11'-0" | #8 | 11" | Varies with Length of Barrel. | | | 12'-5" | 10'-11" |
| | | | | 6' | | | | | | 11'-2" | | | | | | 12'-7" | 11'-1" |
| | | | | 7' | | | | | | 11'-4" | | | | | | 12'-9" | 11'-3" |
| | | | | 8' | | | | | | 11'-6" | | | | | | 12'-11" | 11'-5" |
| | | | | 9' | | | | | | 11'-8" | | | | | | 13'-1" | 11'-7" |
| | | | | 10' | | | | | | 11'-9" | | | | | | 13'-2" | 11'-8" |
| "F" | 2:1=6'-0", 3:1=11'-0", 4:1=16'-0" | 30'-0" TO 35'-0" | 4' | 2' | #6 | 13" | 12 | 20 | 30 | 4'-9" | #6 | 13" | 12 | 20 | 30 | 5'-10" | 4'-8" |
| | | | 6' | 3' | #7 | 12" | 12 | 22 | 32 | 6'-9" | #7 | 12" | 12 | 22 | 32 | 8'-0" | 6'-8" |
| | | | 7' | 4' | #7 | 10" | 14 | 28 | 38 | 7'-11" | #7 | 10" | 16 | 26 | 40 | 9'-2" | 7'-10" |
| | | | | 5' | | | 14 | 28 | 38 | 8'-0" | | | 16 | 26 | 40 | 9'-3" | 7'-11" |
| | | | | 6' | | | 14 | 28 | 38 | 8'-2" | | | 16 | 26 | 40 | 9'-5" | 8'-1" |
| | | | | 7' | | | 14 | 28 | 38 | 8'-4" | | | 16 | 26 | 40 | 9'-7" | 8'-3" |
| | | | | 8' | | | 14 | 28 | 38 | 8'-6" | | | 16 | 26 | 40 | 9'-9" | 8'-5" |
| | | | | 9' | | | 14 | 28 | 38 | 8'-8" | | | 16 | 26 | 40 | 9'-11" | 8'-7" |
| | | | 8' | 4' | #8 | 10" | 14 | 28 | 38 | 8'-10" | #7 | 10" | 16 | 28 | 40 | 10'-1" | 8'-9" |
| | | | | 5' | | | 14 | 28 | 38 | 9'-0" | | | 16 | 28 | 40 | 10'-3" | 8'-11" |
| | | | | 6' | | | 14 | 28 | 38 | 9'-2" | | | 16 | 28 | 40 | 10'-5" | 9'-1" |
| | | | | 7' | | | 14 | 28 | 38 | 9'-4" | | | 16 | 28 | 40 | 10'-7" | 9'-3" |
| | | | | 8' | | | 14 | 28 | 38 | 9'-6" | | | 16 | 28 | 40 | 10'-9" | 9'-5" |
| | | | | 9' | | | 14 | 28 | 38 | 9'-8" | | | 16 | 28 | 40 | 10'-11" | 9'-7" |
| | | | | 10' | | | 14 | 28 | 38 | 9'-10" | | | 16 | 28 | 40 | 11'-1" | 9'-9" |
| | Varies | | 9' | 5' | #8 | 10" | | | | 10'-1" | #8 | 10" | | | | 11'-6" | 10'-0" |
| | | | | 6' | | | | | | 10'-3" | | | | | | 11'-8" | 10'-2" |
| | | | | 7' | | | | | | 10'-5" | | | | | | 11'-10" | 10'-4" |
| | | | | 8' | | | | | | 10'-7" | | | | | | 12'-0" | 10'-6" |
| | | | | 9' | | | | | | 10'-9" | | | | | | 12'-2" | 10'-8" |
| "G" | Varies with Length of Barrel | 35'-0" TO 40'-0" | 4' | 2' | #6 | 12" | Varies with Length of Barrel. | | | 4'-9" | #6 | 12" | Varies with Length of Barrel. | | | 5'-10" | 4'-8" |
| | | | 6' | 3' | #7 | 11" | | | | 6'-9" | #7 | 11" | | | | 8'-0" | 6'-8" |
| | | | | 4' | | | | | | 6'-11" | | | | | | 8'-2" | 6'-10" |
| | | | | 5' | | | | | | 7'-1" | | | | | | 8'-4" | 7'-0" |
| | | | | 6' | | | | | | 7'-3" | | | | | | 8'-6" | 7'-2" |
| | | | | 7' | | | | | | 7'-5" | | | | | | 8'-8" | 7'-4" |
| | | | | 8' | | | | | | 7'-7" | | | | | | 8'-10" | 7'-6" |
| | | | 7' | 4' | #8 | 11" | | | | 8'-0" | #7 | 11" | | | | 9'-3" | 7'-11" |
| | | | | 5' | | | | | | 8'-1" | | | | | | 9'-4" | 8'-0" |
| | | | | 6' | | | | | | 8'-3" | | | | | | 9'-6" | 8'-2" |
| | | | | 7' | | | | | | 8'-5" | | | | | | 9'-8" | 8'-4" |
| | | | | 8' | | | | | | 8'-7" | | | | | | 9'-10" | 8'-6" |
| | | | | 9' | | | | | | 8'-9" | | | | | | 10'-0" | 8'-8" |
| | | | 8' | 4' | #8 | 11" | | | | 9'-0" | #8 | 11" | | | | 10'-5" | 8'-11" |
| | | | | 5' | | | | | | 9'-2" | | | | | | 10'-7" | 9'-1" |
| | | | | 6' | | | | | | 9'-4" | | | | | | 10'-9" | 9'-3" |
| | | | | 7' | | | | | | 9'-6" | | | | | | 10'-11" | 9'-5" |
| | | | | 8' | | | | | | 9'-8" | | | | | | 11'-1" | 9'-7" |
| | | | | 9' | | | | | | 9'-10" | | | | | | 11'-3" | 9'-9" |
| | | | | 10' | | | | | | 10'-0" | | | | | | 11'-5" | 9'-11" |

"d" bars: STRAIGHT. Longitudinal in Top Slab of Barrel. "d1" bars: STRAIGHT. Longitudinal in Sidewalls. "e" bars: STRAIGHT. Longitudinal in Bottom Slab of Barrel. "f" bars: STRAIGHT. Verticals in Sidewalls.

| Section & Bar Group | S | H | "d" Size | "d" Spacing | "d" No. Req'd | "d" Length | "d1" Size | "d1" Spacing | "d1" No. Req'd | "d1" Length | "e" Size | "e" Spacing | "e" No. Req'd | "e" Length | "f" Size | "f" Spacing | "f" No. Req'd 2:1 | 3:1 | 4:1 | "f" Length |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| "A" | 4' | 2' | #4 | 12" | 5 | 33'-3" for 32'-0" Section | #4 | 12" | 4 | 33'-3" for 32'-0" Section | #4 | 12" | 5 | 34'-3" for 32'-0" Section | #4 | 12" | 24 | 44 | 64 | 2'-10" |
| | 6' | 3' | #4 | 12" | 7 | | #4 | 12" | 6 | | #4 | 12" | 7 | | #4 | 12" | 24 | 44 | 64 | 4'-0" |
| | 7' | 4' | #4 | 12" | 8 | | #4 | 12" | 8 | | #4 | 12" | 8 | | #4 | 12" | 24 | 44 | 64 | 5'-1" |
| | 8' | 4' | #4 | 12" | 9 | | #4 | 12" | 8 | | #4 | 12" | 9 | | #4 | 12" | 24 | 44 | 64 | 5'-3" |
| | | 5' | | | 9 | | | | 10 | | | | 9 | | | | 24 | 44 | 64 | 6'-3" |
| | 9' | 5' | #4 | 12" | 10 | | #4 | 12" | 10 | | #4 | 12" | 10 | | #4 | 12" | 24 | 44 | 64 | 6'-5" |
| | | 6' | | | 10 | | | | 12 | | | | 10 | | | | 24 | 44 | 67 | 7'-5" |
| | 10' | 5' | #4 | 12" | 11 | | #4 | 12" | 10 | | #4 | 12" | 11 | | #4 | 12" | 24 | 44 | 64 | 6'-7" |
| | | 6' | | | 11 | | | | 12 | | | | 11 | | | | 24 | 44 | 64 | 7'-7" |
| | | 7' | | | 11 | | | | 14 | | | | 11 | | | | 24 | 44 | 64 | 8'-7" |
| "B" | 4' | 2' | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 4 | 34'-3" for 33'-0" Section | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 12 | 22 | 32 | 2'-10" |
| | 6' | 3' | #4 | 12" | 7 | | #4 | 12" | 6 | | #4 | 12" | 7 | | #4 | 12" | 12 | 22 | 32 | 4'-1" |
| | 7' | 4' | #4 | 12" | 8 | | #4 | 12" | 8 | | #4 | 12" | 8 | | #4 | 12" | 12 | 22 | 32 | 5'-3" |
| | 8' | 4' | #4 | 12" | 9 | | #4 | 12" | 8 | | #4 | 12" | 9 | | #4 | 12" | 12 | 22 | 32 | 5'-5" |
| | | 5' | | | 9 | | | | 10 | | | | 9 | | | | 12 | 22 | 32 | 6'-5" |
| | 9' | 5' | #4 | 12" | 10 | | #4 | 12" | 10 | | #4 | 12" | 10 | | #4 | 12" | 12 | 22 | 32 | 6'-7" |
| | | 6' | | | 10 | | | | 12 | | | | 10 | | | | 12 | 22 | 32 | 7'-7" |
| | 10' | 5' | #4 | 11" | 12 | | #4 | 12" | 10 | | #4 | 11" | 12 | | #4 | 12" | 12 | 22 | 32 | 6'-9" |
| | | 6' | | | 12 | | | | 12 | | | | 12 | | | | 12 | 22 | 32 | 7'-9" |
| | | 7' | | | 12 | | | | 14 | | | | 12 | | #5 | 12" | 12 | 22 | 32 | 8'-9" |
| "C" | 4' | 2' | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 4 | 34'-3" for 33'-0" Section | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 12 | 22 | 32 | 2'-10" |
| | 6' | 3' | #4 | 12" | 7 | | #4 | 12" | 6 | | #4 | 12" | 7 | | #4 | 12" | 12 | 22 | 32 | 4'-2" |
| | 7' | 4' | #4 | 12" | 8 | | #4 | 12" | 8 | | #4 | 12" | 8 | | #4 | 12" | 12 | 22 | 32 | 5'-5" |
| | 8' | 4' | #4 | 11" | 10 | | #4 | 12" | 8 | | #4 | 11" | 10 | | #4 | 12" | 12 | 22 | 32 | 5'-7" |
| | | 5' | | | 10 | | | | 10 | | | | 10 | | | | 12 | 22 | 32 | 6'-7" |
| | 9' | 5' | #4 | 11" | 11 | | #4 | 12" | 10 | | #4 | 11" | 11 | | #4 | 12" | 12 | 22 | 32 | 6'-10" |
| | | 6' | | | 11 | | | | 12 | | | | 11 | | | 10" | 16 | 28 | 40 | 7'-10" |
| | 10' | 5' | #4 | 10" | 13 | | #4 | 12" | 10 | | #4 | 10" | 13 | | #4 | 12" | 12 | 22 | 32 | 7'-0" |
| | | 6' | | | 13 | | | | 12 | | | | 13 | | | 10" | 16 | 28 | 40 | 8'-0" |
| | | 7' | | | 13 | | | | 14 | | | | 13 | | #5 | 12" | 12 | 22 | 32 | 9'-0" |
| "D" | 4' | 2' | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 4 | 34'-3" for 33'-0" Section | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 12 | 22 | 32 | 2'-11" |
| | 6' | 3' | #4 | 12" | 7 | | #4 | 12" | 6 | | #4 | 12" | 7 | | #4 | 12" | 12 | 22 | 32 | 4'-4" |
| | 7' | 4' | #4 | 11" | 9 | | #4 | 12" | 8 | | #4 | 11" | 9 | | #4 | 12" | 12 | 22 | 32 | 5'-7" |
| | 8' | 4' | #4 | 10" | 11 | | #4 | 12" | 8 | | #4 | 10" | 11 | | #4 | 12" | 12 | 22 | 32 | 5'-9" |
| | | 5' | | | 11 | | | | 10 | | | | 11 | | | | 12 | 22 | 32 | 6'-9" |
| | 9' | 5' | #4 | 10" | 12 | | #4 | 12" | 10 | | #4 | 10" | 12 | | #4 | 12" | 12 | 22 | 32 | 7'-0" |
| | | 6' | | | 12 | | | | 12 | | | | 12 | | #5 | 12" | 12 | 22 | 32 | 8'-0" |
| | 10' | 5' | #4 | 9½" | 14 | | #4 | 12" | 10 | | #4 | 9½" | 14 | | #4 | 12" | 12 | 22 | 32 | 7'-3" |
| | | 6' | | | 14 | | | | 12 | | | | 14 | | | 10" | 14 | 26 | 38 | 8'-3" |
| | | 7' | | | 14 | | | | 14 | | | | 14 | | #5 | 12" | 12 | 22 | 32 | 9'-3" |
| "E" | 4' | 2' | #4 | 12" | 5 | 34'-3" for 33'-0" Sect. | #4 | 12" | 4 | 34'-3" for 33'-0" Sect. | #4 | 12" | 5 | 34'-3" for 33'-0" Sect. | #4 | 12" | 12 | 12 | 32 | 3'-0" |
| | 6' | 3' | #4 | 11" | 8 | | #4 | 12" | 6 | | #4 | 11" | 8 | | #4 | 12" | 12 | 22 | 32 | 4'-5" |
| | 7' | 4' | #4 | 11" | 9 | | #4 | 12" | 8 | | #4 | 11" | 9 | | #4 | 12" | 12 | 22 | 22 | 5'-8" |
| | 8' | 4' | #4 | 10" | 11 | | #4 | 12" | 8 | | #4 | 10" | 11 | | #4 | 12" | 12 | 22 | 32 | 5'-11" |
| | | 5' | | | 11 | | | | 10 | | | | 11 | | | 11" | 14 | 24 | 36 | 6'-11" |
| | 9' | 5' | #4 | 9" | 13 | | #4 | 12" | 10 | | #4 | 9" | 13 | | #4 | 10" | 16 | 28 | 40 | 7'-2" |
| | | 6' | | | 13 | | | | 12 | | | | 13 | | #5 | 12" | 12 | 22 | 32 | 8'-2" |
| | 10' | 5' | #5 | 12" | 11 | Varies | #4 | 12" | 10 | Varies | #5 | 12" | 11 | Varies | #4 | 10" | Varies with Length of Barrel | | | 7'-5" |
| | | 6' | | | 11 | | | | 12 | | | | 11 | | | 9" | | | | 8'-5" |
| | | 7' | | | 11 | | | | 14 | | | | 11 | | #5 | 12" | | | | 9'-5" |
| | | 8' | | | 11 | | | | 16 | | | | 11 | | | 10" | | | | 10'-5" |
| | | 9' | | | 11 | | | | 18 | | | | 11 | | #6 | 12" | | | | 11'-5" |
| | | 10' | | | 11 | | | | 20 | | | | 11 | | #7 | 12" | | | | 12'-5" |
| "F" | 4' | 2' | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 4 | 34'-3" for 33'-0" Section | #4 | 12" | 5 | 34'-3" for 33'-0" Section | #4 | 12" | 12 | 22 | 32 | 3'-1" |
| | 6' | 3' | #4 | 9½" | 9 | | #4 | 12" | 6 | | #4 | 9½" | 9 | | #4 | 12" | 12 | 22 | 32 | 4'-7" |
| | 7' | 4' | #4 | 9½" | 10 | | #4 | 12" | 8 | | #4 | 9½" | 10 | | #4 | 12" | 12 | 22 | 32 | 5'-10" |
| | | 5' | | | 10 | | | | 10 | | | | 10 | | | | 12 | 22 | 32 | 6'-10" |
| | | 6' | | | 10 | | | | 12 | | | | 10 | | #5 | 12" | 12 | 22 | 32 | 7'-10" |
| | | 7' | | | 10 | | | | 14 | | | | 10 | | | 10" | 16 | 28 | 40 | 8'-10" |
| | | 8' | | | 10 | | | | 16 | | | | 10 | | #6 | 11" | 14 | 24 | 36 | 9'-10" |
| | | 9' | | | 10 | | | | 18 | | | | 10 | | #7 | 12" | 12 | 22 | 32 | 10'-10" |
| | 8' | 4' | #4 | 9" | 12 | | #4 | 12" | 8 | | #4 | 9" | 12 | | #4 | 12" | 12 | 22 | 32 | 6'-1" |
| | | 5' | | | 12 | | | | 10 | | | | 12 | | | 10" | 14 | 28 | 38 | 7'-1" |
| | | 6' | | | 12 | | | | 12 | | | | 12 | | #5 | 12" | 12 | 22 | 32 | 8'-1" |
| | | 7' | | | 12 | | | | 14 | | | | 12 | | | 11" | 14 | 24 | 36 | 9'-1" |
| | | 8' | | | 12 | | | | 16 | | | | 12 | | #6 | 12" | 12 | 22 | 38 | 10'-1" |
| | | 9' | | | 12 | | | | 18 | | | | 12 | | | 10" | 16 | 28 | 38 | 11'-1" |
| | | 10' | | | 12 | | | | 20 | | | | 12 | | #7 | 11" | 14 | 24 | 36 | 12'-1" |
| | 9' | 5' | #5 | 12" | 10 | | #4 | 12" | 10 | | #5 | 12" | 10 | | #4 | 10" | | | | 7'-4" |
| | | 6' | | | 10 | | | | 12 | | | | 10 | | | 12" | | | | 8'-4" |
| | | 7' | | | 10 | | | | 14 | | | | 10 | | #5 | 11" | | | | 9'-4" |
| | | 8' | | | 10 | | | | 16 | | | | 10 | | #6 | 12" | | | | 10'-4" |
| | | 9' | | | 10 | | | | 18 | | | | 10 | | | 10" | | | | 11'-4" |
| "G" | 4' | 2' | #4 | 12" | 5 | Varies with Length of Barrel | #4 | 12" | 4 | Varies with Length of Barrel. | #4 | 12" | 5 | Varies with Length of Barrel. | #4 | 12" | Varies with Length of Barrel. | | | 3'-2" |
| | 6' | 3' | #4 | 9½" | 9 | | #4 | 12" | 6 | | #4 | 9½" | 9 | | #4 | 12" | | | | 4'-8" |
| | | 4' | | | 9 | | | | 8 | | | | 9 | | | 12" | | | | 5'-8" |
| | | 5' | | | 9 | | | | 10 | | | | 9 | | | 10" | | | | 6'-8" |
| | | 6' | | | 9 | | | | 12 | | | | 9 | | #5 | 12" | | | | 7'-8" |
| | | 7' | | | 9 | | | | 14 | | | | 9 | | #6 | 12" | | | | 8'-8" |
| | | 8' | | | 9 | | | | 16 | | | | 9 | | | 10" | | | | 9'-8" |
| | 7' | 4' | #4 | 8½" | 11 | | #4 | 12" | 8 | | #4 | 8½" | 11 | | #4 | 12" | | | | 5'-11" |
| | | 5' | | | 11 | | | | 10 | | | | 11 | | | 10" | | | | 6'-11" |
| | | 6' | | | 11 | | | | 12 | | | | 11 | | #5 | 12" | | | | 7'-11" |
| | | 7' | | | 11 | | | | 14 | | | | 11 | | | 10" | | | | 8'-11" |
| | | 8' | | | 11 | | | | 16 | | | | 11 | | #6 | 11" | | | | 9'-11" |
| | | 9' | | | 11 | | | | 18 | | | | 11 | | #7 | 12" | | | | 10'-11" |
| | 8' | 4' | #4 | 8½" | 13 | | #4 | 12" | 8 | | #4 | 8½" | 13 | | #4 | 12" | | | | 6'-3" |
| | | 5' | | | 13 | | | | 10 | | | | 13 | | | 10" | | | | 7'-3" |
| | | 6' | | | 13 | | | | 12 | | | | 13 | | #5 | 12" | | | | 8'-3" |
| | | 7' | | | 13 | | | | 14 | | | | 13 | | | 10" | | | | 9'-3" |
| | | 8' | | | 13 | | | | 16 | | | | 13 | | #6 | 12" | | | | 10'-3" |
| | | 9' | | | 13 | | | | 18 | | | | 13 | | | 10" | | | | 11'-3" |
| | | 10' | | | 13 | | | | 20 | | | | 13 | | #7 | 11" | | | | 12'-3" |

NOTE:- Bars for each Section to be marked with the Section Letter, thus for Section B, the bars should be marked Ba, Bb, Bd, Bd1, Be and Bf.

Designed By:- W.C.H. 12-9-64 Checked By:-
Drawn By:- W.C.H. 12-11-64 Checked By:-
Quantities By:- W.C.H. 12-17-64 Checked By:-

## DIMENSIONS / QUANTITIES

| Max. Design Depth of Cover D | Clear Span 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 | Class S Conc. per Lin. Ft. of Barrel (Cu. Yd.) | Reinforcing Steel per Lin. Ft. of Barrel (Lb.) | Additional per Lap (Lb.) | Additional Two Headwalls & Aprons (Lb.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SECTION "A" - 10'-0" | 4' (1@) | 2' | 8 | 5'-0" | 6½" | 6" | 6½" | 3'-1" | 0.275 | 26.94 | 11.69 | 51.43 |
| | 6' | 3' | 18 | 7'-0" | 7½" | 6" | 7½" | 4'-3" | 0.435 | 56.32 | 16.70 | 93.29 |
| | 7' | 4' | 28 | 8'-0" | 8" | 6" | 8½" | 5'-4½" | 0.556 | 65.53 | 20.04 | 107.42 |
| | 8' | 4' | 32 | 9'-0" | 8½" | 6" | 9½" | 5'-6" | 0.648 | 80.21 | 21.71 | 154.94 |
| | | 5' | 40 | 9'-2" | | 7" | | 6'-6" | 0.725 | 83.88 | 23.38 | 156.95 |
| | 9' | 5' | 45 | 10'-2" | 9½" | 7" | 10½" | 6'-8" | 0.844 | 112.91 | 25.05 | 176.61 |
| | | 6' | 54 | 10'-3" | | 7½" | | 7'-8" | 0.911 | 114.23 | 26.72 | 177.61 |
| | 10' | 5' | 50 | 11'-2" | 10½" | 7" | 11½" | 6'-10" | 0.974 | 124.54 | 26.72 | 243.97 |
| | | 6' | 60 | 11'-3" | | 7½" | | 7'-10" | 1.042 | 128.22 | 28.39 | 245.84 |
| | | 7' | 70 | 11'-3" | | 7½" | | 8'-10" | 1.088 | 130.56 | 30.06 | 245.84 |
| SECTION "B" - 15'-0" | 4' | 2' | 8 | 5'-0" | 6½" | 6" | 6½" | 3'-1" | 0.275 | 31.30 | 11.69 | 51.43 |
| | 6' | 3' | 18 | 7'-0" | 8" | 6" | 8½" | 4'-4½" | 0.462 | 62.62 | 16.70 | 118.07 |
| | 7' | 4' | 28 | 8'-0" | 8¾" | 6" | 9¼" | 5'-6" | 0.593 | 77.39 | 20.04 | 136.88 |
| | 8' | 4' | 32 | 9'-0" | 9¾" | 6" | 10¾" | 5'-8½" | 0.718 | 89.91 | 21.71 | 192.88 |
| | | 5' | 40 | 9'-2" | | 7" | | 6'-8½" | 0.796 | 93.77 | 23.38 | 195.61 |
| | 9' | 5' | 45 | 10'-2" | 10¾" | 7" | 11¾" | 6'-10½" | 0.922 | 115.02 | 25.05 | 219.61 |
| | | 6' | 54 | 10'-3" | | 7½" | | 7'-10½" | 0.990 | 118.38 | 26.72 | 220.97 |
| | 10' | 5' | 50 | 11'-2" | 11¾" | 7" | 12¾" | 7'-0½" | 1.060 | 139.76 | 28.39 | 298.64 |
| | | 6' | 60 | 11'-3" | | 7½" | | 8'-0½" | 1.128 | 143.22 | 30.06 | 300.42 |
| | | 7' | 70 | 11'-3" | | 7½" | | 9'-0½" | 1.175 | 152.45 | 31.73 | 300.42 |
| SECTION "C" - 20'-0" | 4' | 2' | 8 | 5'-0" | 6½" | 6" | 6¾" | 3'-1¼" | 0.279 | 34.87 | 11.69 | |
| | 6' | 3' | 18 | 7'-0" | 8½" | 6" | 9" | 4'-5½" | 0.483 | 66.72 | 16.70 | |
| | 7' | 4' | 28 | 8'-0" | 9¾" | 6" | 10¼" | 5'-8" | 0.642 | 86.48 | 20.04 | |
| | 8' | 4' | 32 | 9'-0" | 11" | 6" | 11½" | 5'-10½" | 0.773 | 102.81 | 23.38 | |
| | | 5' | 40 | 9'-2" | | 7" | | 6'-10½" | 0.858 | 106.85 | 25.05 | |
| | 9' | 5' | 45 | 10'-2" | 12" | 7" | 13" | 7'-1" | 1.001 | 129.11 | 26.72 | |
| | | 6' | 54 | 10'-3" | | 7½" | | 8'-1" | 1.069 | 134.66 | 28.39 | |
| | 10' | 5' | 50 | 11'-2" | 13¾" | 7" | 14¾" | 7'-3½" | 1.164 | 157.56 | 30.06 | |
| | | 6' | 60 | 11'-3" | | 7½" | | 8'-3½" | 1.233 | 163.26 | 31.73 | |
| | | 7' | 70 | 11'-3½" | | 7¾" | | 9'-3½" | 1.298 | 170.54 | 33.40 | |
| SECTION "D" - 25'-0" | 4' | 2' | 8 | 5'-0" | 6¾" | 6" | 7¼" | 3'-2" | 0.290 | 36.95 | 11.69 | |
| | 6' | 3' | 18 | 7'-0" | 9¼" | 6" | 9¾" | 4'-7" | 0.522 | 70.27 | 16.70 | |
| | 7' | 4' | 28 | 8'-0" | 10¾" | 6" | 11¼" | 5'-10" | 0.691 | 93.80 | 21.71 | |
| | 8' | 4' | 32 | 9'-0" | 12" | 6" | 12½" | 6'-0½" | 0.829 | 115.33 | 25.05 | |
| | | 5' | 40 | 9'-2" | | 7" | | 7'-0½" | 0.909 | 119.57 | 26.72 | |
| | 9' | 5' | 45 | 10'-3" | 13½" | 7" | 14¼" | 7'-3¾" | 1.079 | 145.54 | 28.39 | |
| | | 6' | 54 | 10'-3" | | 7½" | | 8'-3¾" | 1.149 | 155.10 | 30.06 | |
| | 10' | 5' | 50 | 11'-2" | 14½" | 7" | 15½" | 7'-6" | 1.250 | 175.16 | 31.73 | |
| | | 6' | 60 | 11'-3½" | | 7¾" | | 8'-6" | 1.333 | 181.05 | 33.40 | |
| | | 7' | 70 | 11'-5½" | | 8¾" | | 9'-6" | 1.483 | 190.98 | 35.07 | |
| SECTION "E" - 30'-0" | 4' | 2' | 8 | 5'-0" | 7¼" | 6" | 7¾" | 3'-3" | 0.306 | 39.45 | 11.69 | |
| | 6' | 3' | 18 | 7'-0" | 10" | 6" | 10½" | 4'-8½" | 0.554 | 76.37 | 18.37 | |
| | 7' | 4' | 28 | 8'-0" | 11½" | 6" | 12" | 5'-11½" | 0.728 | 99.64 | 21.71 | |
| | 8' | 4' | 32 | 9'-1" | 13" | 6½" | 13½" | 6'-2½" | 0.903 | 124.37 | 25.05 | |
| | | 5' | 40 | 9'-2½" | | 7¼" | | 7'-2½" | 0.977 | 128.74 | 26.72 | |
| | 9' | 5' | 45 | 10'-3" | 14¼" | 7½" | 15¼" | 7'-5½" | 1.165 | 160.30 | 30.06 | |
| | | 6' | 54 | 10'-4½" | | 8¼" | | 8'-5½" | 1.250 | 168.15 | 31.73 | |
| | 10' | 5' | 50 | 11'-3" | 15¾" | 7½" | 16¾" | 7'-8½" | 1.360 | 195.95 | 55.63 | |
| | | 6' | 60 | 11'-5" | | 8½" | | 8'-8½" | 1.460 | 208.10 | 59.10 | |
| | | 7' | 70 | 11'-7" | | 9½" | | 9'-8½" | 1.572 | 210.29 | 62.58 | |
| | | 8' | 80 | 11'-9" | | 10½" | | 10'-8½" | 1.697 | 220.26 | 66.06 | |
| | | 9' | 90 | 11'-11" | | 11½" | | 11'-8½" | 1.834 | 232.03 | 69.58 | |
| | | 10' | 100 | 12'-0½" | | 12½" | | 12'-8½" | 1.964 | 250.93 | 73.01 | |
| SECTION "F" - 35'-0" | 4' | 2' | 8 | 5'-0" | 7¾" | 6" | 8¼" | 3'-4" | 0.321 | 42.82 | 11.69 | |
| | 6' | 3' | 18 | 7'-0" | 10¾" | 6" | 11¼" | 4'-10" | 0.586 | 82.45 | 20.04 | |
| | 7' | 4' | 28 | 8'-2" | 12¼" | 7" | 12¾" | 6'-1" | 0.803 | 110.30 | 23.38 | |
| | | 5' | 35 | 8'-3" | | 7½" | | 7'-1" | 0.868 | 113.79 | 25.05 | |
| | | 6' | 42 | 8'-5" | | 8½" | | 8'-1" | 0.964 | 123.56 | 26.72 | |
| | | 7' | 49 | 8'-7" | | 9½" | | 9'-1" | 1.073 | 131.46 | 28.39 | |
| | | 8' | 56 | 8'-9" | | 10½" | | 10'-1" | 1.194 | 145.80 | 30.06 | |
| | | 9' | 63 | 8'-11" | | 11½" | | 11'-1" | 1.327 | 160.83 | 31.73 | |
| | 8' | 4' | 32 | 9'-1½" | 13¾" | 6¾" | 14½" | 6'-4½" | 0.962 | 136.57 | 26.72 | |
| | | 5' | 40 | 9'-3½" | | 7¾" | | 7'-4½" | 1.049 | 142.02 | 28.39 | |
| | | 6' | 48 | 9'-5½" | | 8¾" | | 8'-4½" | 1.149 | 150.75 | 30.06 | |
| | | 7' | 56 | 9'-7½" | | 9¾" | | 9'-4½" | 1.261 | 157.78 | 31.73 | |
| | | 8' | 64 | 9'-9½" | | 10¾" | | 10'-4½" | 1.385 | 170.62 | 33.40 | |
| | | 9' | 72 | 9'-11½" | | 11¾" | | 11'-4½" | 1.521 | 183.51 | 35.07 | |
| | | 10' | 80 | 10'-1½" | | 12¾" | | 12'-4½" | 1.670 | 200.66 | 36.74 | |
| | 9' | 5' | 45 | 10'-4" | 15¼" | 8" | 16" | 7'-7½" | 1.244 | 172.60 | 52.15 | |
| | | 6' | 54 | 10'-6" | | 9" | | 8'-7½" | 1.346 | 186.70 | 55.63 | |
| | | 7' | 63 | 10'-8" | | 10" | | 9'-7½" | 1.461 | 194.03 | 59.10 | |
| | | 8' | 72 | 10'-10" | | 11" | | 10'-7½" | 1.588 | 207.30 | 62.58 | |
| | | 9' | 81 | 11'-0" | | 12" | | 11'-7½" | 1.728 | 220.59 | 66.06 | |
| SECTION G - 40'-0" | 4' | 2' | 8 | 5'-0" | 8¼" | 6" | 8¾" | 3'-5" | 0.336 | 45.38 | 11.69 | |
| | 6' | 3' | 18 | 7'-0" | 11½" | 6" | 12" | 4'-11½" | 0.619 | 88.05 | 20.04 | |
| | | 4' | 24 | 7'-2" | | 7" | | 5'-11½" | 0.693 | 92.21 | 21.71 | |
| | | 5' | 30 | 7'-4" | | 8" | | 6'-11½" | 0.779 | 98.15 | 23.38 | |
| | | 6' | 36 | 7'-6" | | 9" | | 7'-11½" | 0.877 | 106.27 | 25.05 | |
| | | 7' | 42 | 7'-8" | | 10" | | 8'-11½" | 0.988 | 119.14 | 26.72 | |
| | | 8' | 48 | 7'-10" | | 11" | | 9'-11½" | 1.111 | 130.77 | 28.39 | |
| | 7' | 4' | 28 | 8'-3" | 12" | 7½" | 13½" | 6'-2½" | 0.860 | 115.80 | 25.05 | |
| | | 5' | 35 | 8'-4½" | | 8¼" | | 7'-2½" | 0.940 | 121.18 | 26.72 | |
| | | 6' | 42 | 8'-6½" | | 9¼" | | 8'-2½" | 1.041 | 129.65 | 28.39 | |
| | | 7' | 49 | 8'-8½" | | 10¼" | | 9'-2½" | 1.155 | 138.51 | 30.06 | |
| | | 8' | 56 | 8'-10½" | | 11¼" | | 10'-2½" | 1.281 | 151.74 | 31.73 | |
| | | 9' | 63 | 9'-0½" | | 12¼" | | 11'-2½" | 1.420 | 166.92 | 33.40 | |
| | 8' | 4' | 32 | 9'-3" | 14¾" | 7½" | 15½" | 6'-6½" | 1.079 | 144.17 | 28.39 | |
| | | 5' | 40 | 9'-5" | | 8½" | | 7'-6½" | 1.142 | 152.91 | 30.06 | |
| | | 6' | 48 | 9'-7" | | 9½" | | 8'-6½" | 1.247 | 159.59 | 31.73 | |
| | | 7' | 56 | 9'-9" | | 10½" | | 9'-6½" | 1.364 | 168.81 | 33.40 | |
| | | 8' | 64 | 9'-11" | | 11½" | | 10'-6½" | 1.494 | 179.73 | 35.07 | |
| | | 9' | 72 | 10'-1" | | 12½" | | 11'-6½" | 1.636 | 192.77 | 36.74 | |
| | | 10' | 80 | 10'-3½" | | 13¾" | | 12'-6½" | 1.810 | 210.12 | 38.41 | |

| Bar Size | Pin Diam. | K | Add for 2 Hooks |
|---|---|---|---|
| #4 | 2" | 4" | 0'-10½" |
| #5 | 2½" | 4½" | 0'-11½" |
| #6 | 3" | 5" | 1'-2" |
| #7 | 3½" | 5¾" | 1'-4" |
| #8 | 4" | 6½" | 1'-6" |

Bars "b"

NOTE:- Dimensions are to centers of bars.

DOWEL BARS FOR TWO HEADWALLS

| Span | Size | Spacing | No. Req'd | Length | X |
|---|---|---|---|---|---|
| 4' | #4 | 11½ | 12 | 2'-5" | 1'-2½" |
| 6' | #4 | 12½ | 16 | 2'-7" | 1'-3⅛" |
| 7' | #4 | 12½ | 18 | 2'-8" | 1'-4" |
| 8' | #4 | 12¼ | 20 | 2'-10" | 1'-5" |
| 9' | #4 | 12¾ | 22 | 3'-0" | 1'-6" |
| 10' | #4 | 12¾ | 24 | 3'-2" | 1'-7" |

Bars "r" Dowel bars in Headwalls

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, & W-X004-1 or W-X004-2.

PART LONGITUDINAL SECTION

TYPICAL SECTION M-M

TYPICAL LONGITUDINAL SECTION - SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE: Lengths of Sections and Bar Groups are to be shown on Cross Section Sheets or on Special Culvert Layout Sheet.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.
REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.
BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.
CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls and slabs shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200 #/□"
Reinforcing Steel 20,000 #/□"

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

| Depths of Cover | A | B | C | D | E | F | Mid-Section and Bar Group |
|---|---|---|---|---|---|---|---|
| | Sections & Bar Groups for End Sections | | | | | | |
| 5.0' to 9.5' | A | | | | | | A |
| 10.0' to 14.5' | A | | | | | | B |
| 15.0' to 19.5' | A | B | | | | | C |
| 20.0' to 24.5' | A | B | C | | | | D |
| 25.0' to 29.5' | A | B | C | D | | | E |
| 30.0' to 34.5' | A | B | C | D | E | | F |
| 35.0' to 40.0' | A | B | C | D | E | F | G |

OR ALT.

| Depths of Cover | A | B | C | D | E | F | Mid-Section and Bar Group |
|---|---|---|---|---|---|---|---|
| | Sections & Bar Groups for End Sections | | | | | | |
| 5.0' to 9.5' | A | | | | | | A |
| 10.0' to 14.5' | A | | | | | | B |
| 15.0' to 19.5' | A | B | | | | | C |
| 20.0' to 24.5' | A | 2@C | | | | | D |
| 25.0' to 29.5' | A | B | 2@D | | | | E |
| 30.0' to 34.5' | A | 2@C | | 2@E | | | F |
| 35.0' to 40.0' | A | B | 2@D | | 2@F | | G |

LENGTH OF SECTIONS FOR SKEWED CULVERTS

| Skew Angle | Sec. of Skew Angle | 2:1 Slopes Sections A | 2:1 Slopes Sections B,C,D,E or F | 3:1 Slopes Sections A | 3:1 Slopes Sections B,C,D,E or F | 4:1 Slopes Sections A | 4:1 Slopes Sections B,C,D,E or F |
|---|---|---|---|---|---|---|---|
| 0° | 1.0 | 12.0' | 6.0' | 22.0' | 11.0' | 32.0' | 16.0' |
| 15° | 1.0353 | 12.424' | 6.212' | 22.776' | 11.388' | 33.129' | 16.564' |
| 30° | 1.1547 | 13.856' | 6.928' | 25.403' | 12.702' | 36.950' | 18.475' |
| 45° | 1.4142 | 16.970' | 8.485' | 31.113' | 15.556' | 45.255' | 22.627' |

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, & W-X004-1 or W-X004-2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

# DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

ADD'L 4', 6', 7', 8', 9' & 10' SPANS — 2:1, 3:1 OR 4:1 SLOPES
SINGLES — OVER 5'-0" COVER

STANDARD DRAWING NO. R-100X-X3

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 136 | |
| JOB No. | | | | | |

TOP SLAB REINFORCING

PART PLAN AT END OF CULVERT

BOTTOM SLAB REINFORCING

PART PLAN AT END OF CULVERT

NOTE:- The "d", "d1" and "e" bars vary in length. They should extend 1'-9" min. into SECTION "B".

SECTION N-N

TYPICAL SECTION M-M

| | SECTIONS / Bar Group | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2:1 Slope = | SECTIONS | A = 12'-0" | B = 6'-0" | C = 6'-0" | D = 6'-0" | E = 6'-0" | F = 6'-0" | MID-SECTION G - Varies |
| | Bar Group | A | B | C | D | E | F | G |
| 3:1 Slope = | SECTIONS | A = 22'-0" | B = 11'-0" | C = 11'-0" | D = 11'-0" | E = 11'-0" | F = 11'-0" | MID-SECTION G - Varies |
| | Bar Group | A | B | C | D | E | F | G |
| 4:1 Slope = | SECTIONS | A = 32'-0" | B = 16'-0" | C = 16'-0" | D = 16'-0" | E = 16'-0" | F = 16'-0" | MID-SECTION G - Varies |
| | Bar Group | A | B | C | D | E | F | G |

These lengths are perpendicular to ℄ of roadway. See Table of Skew Lengths below.

TYPICAL LONGITUDINAL SECTION - SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections and Bar Groups are to be shown on Cross Section Sheets or on Special Culvert Layout Sheet.

PART PLAN

NOTE:- For Details and Bar Lists for SECTIONS B thru G, see Barrel Drawing Nos. R-100X-X1 or R-100X-X2.

LENGTH OF SECTIONS ON 30° SKEW

| SLOPE | 2:1 | | 3:1 | | 4:1 | |
|---|---|---|---|---|---|---|
| SECTIONS | A | B, C, D, E & F | A | B, C, D, E & F | A | B, C, D, E & F |
| LENGTHS | 13'-10¼" | 6'-11⅝" | 25'-4¾" | 12'-8⅝" | 36'-11¼" | 18'-5¾" |

NOTE:- Minimum ℄ Length of SECTION "A" on 30° Skew = (0.288675 OW + 2").

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

| DEPTHS OF COVER | A | B | C | D | E | F | MID-SECTION AND BAR GROUP |
|---|---|---|---|---|---|---|---|
| 5.0' to 9.5' | A | | | | | | A |
| 10.0' to 14.5' | A | | | | | | B |
| 15.0' to 19.5' | A | B | | | | | C |
| 20.0' to 24.5' | A | B | C | | | | D |
| 25.0' to 29.5' | A | B | C | D | | | E |
| 30.0' to 34.5' | A | B | C | D | E | | F |
| 35.0' to 40.0' | A | B | C | D | E | F | G |

(Columns A–F: SECTIONS & BAR GROUPS FOR END SECTIONS)

OR ALT.

| DEPTHS OF COVER | A | B | C | D | E | F | MID-SECTION AND BAR GROUP |
|---|---|---|---|---|---|---|---|
| 5.0' to 9.5' | A | | | | | | A |
| 10.0' to 14.5' | A | | | | | | B |
| 15.0' to 19.5' | A | B | | | | | C |
| 20.0' to 24.5' | A | 2@C | | | | | D |
| 25.0' to 29.5' | A | B | 2@D | | | | E |
| 30.0' to 34.5' | A | 2@C | | 2@E | | | F |
| 35.0' to 40.0' | A | B | 2@D | | 2@F | | G |

(Columns A–F: SECTIONS & BAR GROUPS FOR END SECTIONS)

| BAR SIZE | PIN DIAM. | K | ADD FOR 2 HOOKS |
|---|---|---|---|
| #4 | 2" | 4" | 0'-10½" |
| #5 | 2½" | 4¼" | 0'-11½" |
| #6 | 3" | 5" | 1'-2" |
| #7 | 3½" | 5¾" | 1'-4" |

BENDING DIAGRAM FOR BARS "b"

| BAR SIZE | PIN DIAM. | K | ADD FOR 1 HOOK |
|---|---|---|---|
| #4 | 2" | 4" | 0'-5¼" |
| #5 | 2½" | 4¼" | 0'-5¾" |
| #6 | 3" | 5" | 0'-7" |
| #7 | 3½" | 5¾" | 0'-8" |

BENDING DIAGRAM FOR BARS "b1"

NOTE:- Dimensions are to centers of bars. ("b" and "b1")

DOWEL BARS FOR ONE HEADWALL

| SPAN | SIZE | SPACING | NO. REQ'D | LENGTH | X |
|---|---|---|---|---|---|
| 4' | #4 | 12"± | 6 | 2'-5" | 1'-2½" |
| 5' | #4 | 12"± | 8 | 2'-6" | 1'-3" |
| 6' | #4 | 12"± | 9 | 2'-7" | 1'-3½" |
| 7' | #4 | 12"± | 10 | 2'-8" | 1'-4" |
| 8' | #4 | 12"± | 11 | 2'-10" | 1'-5" |
| 9' | #4 | 12"± | 13 | 3'-0" | 1'-6" |
| 10' | #4 | 12"± | 14 | 3'-2" | 1'-7" |

Dowel bars "r" in One Headwall

BARREL DIMENSIONS AND * QUANTITIES - ONE SECTION "A"

MAX. DESIGN DEPTH OF COVER (D): SECTION "A" = 10'-0"

| Clear Spans S | Clear Height H | Sq. Ft. Opening A | Overall Width OW | Thickness of Top Slab T | Thickness of Sidewalls C | Thickness of Bottom Slab B | Overall Height OH | Roadway Length RL | Length of Headwall K | Class S Concrete, Barrel Only 2:1 Cu.Yd. | 3:1 Cu.Yd. | 4:1 Cu.Yd. | Reinforcing Steel, Barrel, Apron and Headwall 2:1 Lb. | 3:1 Lb. | 4:1 Lb. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 @ 4' | 2' | 8 | 5'-0" | 6½" | 6" | 6½" | 3'-1" | 5'-9¾" | 6'-11⅝" | 3.81 | 6.98 | 10.16 | 453 | 764 | 1074 |
| | 3' | 12 | 5'-0" | | 6" | | 4'-1" | " | " | 4.32 | 7.92 | 11.59 | 492 | 834 | 1175 |
| | 4' | 16 | 5'-0" | | 6" | | 5'-1" | " | " | 4.84 | 8.86 | 12.89 | 531 | 904 | 1276 |
| | 5' | 20 | 5'-0" | | 6" | | 6'-1" | " | " | 5.35 | 9.80 | 14.26 | 571 | 975 | 1377 |
| | 6' | 24 | 5'-2" | | 7" | | 7'-1" | 5'-11⅝" | 7'-1½" | 6.47 | 11.86 | 17.25 | 614 | 1053 | 1492 |
| 1 @ 5' | 3' | 15 | 6'-0" | 7" | 6" | 7" | 4'-2" | 6'-11⅛" | 8'-1" | 5.13 | 9.40 | 13.67 | 687 | 1188 | 1693 |
| | 4' | 20 | 6'-0" | | 6" | | 5'-2" | " | " | 5.64 | 10.34 | 15.03 | 726 | 1258 | 1794 |
| | 5' | 25 | 6'-0" | | 6" | | 6'-2" | " | " | 6.15 | 11.28 | 16.40 | 765 | 1323 | 1895 |
| | 6' | 30 | 6'-2" | | 7" | | 7'-2" | 7'-1½" | 8'-3¼" | 7.29 | 13.36 | 19.43 | 816 | 1413 | 2024 |
| | 7' | 35 | 6'-3" | | 7½" | | 8'-2" | 7'-2⅜" | 8'-4¾" | 8.23 | 15.09 | 21.94 | 893 | 1525 | 2171 |
| 1 @ 6' | 3' | 18 | 7'-0" | 7½" | 6" | 7½" | 4'-3" | 8'-1" | 9'-2⅞" | 6.03 | 11.05 | 16.07 | 894 | 1538 | 2192 |
| | 4' | 24 | 7'-0" | | 6" | | 5'-3" | " | " | 6.54 | 11.99 | 17.44 | 934 | 1609 | 2293 |
| | 5' | 30 | 7'-0" | | 6" | | 6'-3" | " | " | 7.05 | 12.93 | 18.80 | 973 | 1679 | 2394 |
| | 6' | 36 | 7'-2" | | 7" | | 7'-3" | 8'-3⅜" | 9'-5⅛" | 8.19 | 15.01 | 21.83 | 1027 | 1773 | 2529 |
| | 7' | 42 | 7'-3" | | 7½" | | 8'-3" | 8'-4⅜" | 9'-6⅜" | 9.14 | 16.76 | 24.38 | 1105 | 1908 | 2727 |
| | 8' | 48 | 7'-4" | | 8" | | 9'-3" | 8'-5⅜" | 9'-7½" | 10.18 | 18.67 | 27.15 | 1242 | 2156 | 3080 |
| 1 @ 7' | 4' | 28 | 8'-0" | 8" | 6" | 8½" | 5'-4½" | 9'-2⅞" | 10'-4¾" | 7.70 | 14.12 | 20.54 | 1054 | 1815 | 2565 |
| | 5' | 35 | 8'-0" | | 6" | | 6'-4½" | " | " | 8.22 | 15.06 | 21.90 | 1094 | 1885 | 2666 |
| | 6' | 42 | 8'-2" | | 7" | | 7'-4½" | 9'-5¼" | 10'-7" | 9.35 | 17.14 | 24.93 | 1147 | 1979 | 2800 |
| | 7' | 49 | 8'-3" | | 7½" | | 8'-4½" | 9'-6⅜" | 10'-8⅛" | 10.31 | 18.89 | 27.48 | 1210 | 2088 | 2956 |
| | 8' | 56 | 8'-4" | | 8" | | 9'-4½" | 9'-7⅜" | 10'-9⅜" | 11.35 | 20.80 | 30.25 | 1282 | 2263 | 3234 |
| | 9' | 63 | 8'-6" | | 9" | | 10'-4½" | 9'-9¾" | 10'-11⅝" | 12.93 | 23.69 | 34.46 | 1432 | 2484 | 3525 |
| 1 @ 8' | 4' | 32 | 9'-0" | 8½" | 6" | 9½" | 5'-6" | 10'-4⅝" | 11'-6¼" | 8.98 | 16.46 | 23.94 | 1293 | 2219 | 3191 |
| | 5' | 40 | 9'-2" | | 7" | | 6'-6" | 10'-7" | 11'-8⅜" | 10.04 | 18.41 | 26.78 | 1362 | 2329 | 3294 |
| | 6' | 48 | 9'-2" | | 7" | | 7'-6" | " | " | 10.65 | 19.53 | 28.41 | 1401 | 2400 | 3395 |
| | 7' | 56 | 9'-3" | | 7½" | | 8'-6" | 10'-8¼" | 11'-10" | 11.61 | 21.28 | 30.95 | 1438 | 2474 | 3506 |
| | 8' | 64 | 9'-4" | | 8" | | 9'-6" | 10'-9⅜" | 11'-11⅛" | 12.66 | 23.21 | 33.76 | 1589 | 2735 | 3884 |
| | 9' | 72 | 9'-6" | | 9" | | 10'-6" | 10'-11⅝" | 12'-1¼" | 14.24 | 26.11 | 37.97 | 1683 | 2907 | 4128 |
| | 10' | 80 | 9'-8" | | 10" | | 11'-6" | 11'-2" | 12'-3¾" | 15.99 | 29.31 | 42.63 | 1789 | 3089 | 4398 |
| 1 @ 9' | 5' | 45 | 10'-2" | 9½" | 7" | 10½" | 6'-8" | 11'-8⅝" | 12'-10¾" | 11.69 | 21.49 | 31.18 | 1674 | 2940 | 4221 |
| | 6' | 54 | 10'-3" | | 7½" | | 7'-8" | 11'-10" | 13'-0" | 12.61 | 23.11 | 33.61 | 1792 | 3096 | 4416 |
| | 7' | 63 | 10'-3" | | 7½" | | 8'-8" | " | " | 13.26 | 24.30 | 35.35 | 1831 | 3166 | 4517 |
| | 8' | 72 | 10'-4" | | 8" | | 9'-8" | 11'-11⅞" | 13'-1" | 14.31 | 26.23 | 38.16 | 1981 | 3435 | 4905 |
| | 9' | 81 | 10'-6" | | 9" | | 10'-8" | 12'-1½" | 13'-3¼" | 15.91 | 29.15 | 42.40 | 2085 | 3615 | 5161 |
| | 10' | 90 | 10'-8" | | 10" | | 11'-8" | 12'-3⅜" | 13'-5⅝" | 17.68 | 32.41 | 47.19 | 2196 | 3806 | 5445 |
| | 11' | 99 | 10'-10" | | 11" | | 12'-8" | 12'-6⅛" | 13'-8" | 19.62 | 35.96 | 52.30 | 2357 | 4104 | 5869 |
| 1 @ 10' | 5' | 50 | 11'-2" | 10½" | 7" | 11½" | 6'-10" | 12'-10⅜" | 14'-0⅛" | 13.49 | 24.74 | 35.98 | 1980 | 3417 | 4898 |
| | 6' | 60 | 11'-3" | | 7½" | | 7'-10" | 12'-11⅞" | 14'-1⅜" | 14.94 | 26.96 | 38.49 | 2047 | 3522 | 5042 |
| | 7' | 70 | 11'-3" | | 7½" | | 8'-10" | " | " | 15.07 | 27.63 | 40.19 | 2103 | 3621 | 5183 |
| | 8' | 80 | 11'-4" | | 8" | | 9'-10" | 13'-1" | 14'-3" | 16.19 | 29.59 | 43.03 | 2224 | 3852 | 5524 |
| | 9' | 90 | 11'-6" | | 9" | | 10'-10" | 13'-2⅝" | 14'-5½" | 17.75 | 32.53 | 47.32 | 2298 | 3981 | 5658 |
| | 10' | 100 | 11'-8" | | 10" | | 11'-10" | 13'-5⅜" | 14'-7⅛" | 19.52 | 35.78 | 52.05 | 2445 | 4231 | 6024 |
| | 11' | 110 | 11'-10" | | 11" | | 12'-10" | 13'-8" | 14'-9¾" | 21.47 | 39.36 | 57.25 | 2609 | 4534 | 6455 |
| | 12' | 120 | 12'-0" | | 12" | | 13'-10" | 13'-10⅞" | 15'-0⅛" | 23.61 | 43.27 | 62.94 | 2758 | 4790 | 6817 |

* For remainder of quantities see Std. Wing and Barrel Drawings listed below. Total steel quantities listed above include one lap of longitudinal bars.

BAR LIST FOR SECTION "A" ON 30° SKEW - ONE END ONLY.

SECTION "A" & BAR GROUP "A". LENGTH OF SECTION: 2:1 = 13'-10¼", 3:1 = 25'-4¾", 4:1 = 36'-11¼". DEPTH OF COVER (D): 0'-0" TO 10'-0" MAXIMUM.

"a" bars: STRAIGHT - In Top and Bottom Slabs of Barrel. "a1" bars (▼): STRAIGHT - In Top and Bottom Slab of Barrel - (Two of each Length.)

| S | H | "a" Size | Spacing | No. Req'd 2:1 | 3:1 | 4:1 | Length | "a1" Size | Spacing | No. Req'd | Length Max. | Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 @ 4' | 2' | #4 | 12" | 27 | 49 | 73 | 4'-9" | #4 | 12" | 2 | 3'-0" | — |
| | 3' | | | 27 | 49 | 73 | " | | | 2 | " | — |
| | 4' | | | 27 | 49 | 73 | " | | | 2 | " | — |
| | 5' | | | 27 | 49 | 73 | " | | | 2 | " | — |
| | 6' | | | 27 | 49 | 73 | 4'-11" | | | 2 | 3'-2" | — |
| 1 @ 5' | 3' | #5 | 12" | 25 | 49 | 73 | 5'-9" | #5 | 12" | 4 | 4'-0" | 2'-3" |
| | 4' | | | 25 | 49 | 73 | " | | | 4 | " | " |
| | 5' | | | 25 | 49 | 73 | " | | | 4 | " | " |
| | 6' | | | 25 | 49 | 73 | 5'-11" | | | 4 | 4'-2" | 2'-5" |
| | 7' | | | 25 | 49 | 73 | 6'-0" | | | 4 | 4'-3" | 2'-6" |
| 1 @ 6' | 3' | #5 | 12" | 25 | 49 | 71 | 6'-9" | #5 | 12" | 4 | 5'-0" | 3'-8" |
| | 4' | | | 25 | 49 | 71 | " | | | 4 | " | " |
| | 5' | | | 25 | 49 | 71 | " | | | 4 | " | " |
| | 6' | | | 25 | 49 | 71 | 6'-11" | | | 4 | 5'-2" | 3'-5" |
| | 7' | | | 25 | 49 | 71 | 7'-0" | | | 4 | 5'-3" | 3'-6" |
| | 8' | | | 25 | 49 | 71 | 7'-1" | | | 4 | 5'-4" | 3'-7" |
| 1 @ 7' | 4' | #5 | 12" | 25 | 47 | 71 | 7'-9" | #5 | 12" | 6 | 6'-0" | 2'-6" |
| | 5' | | | 25 | 47 | 71 | " | | | 6 | " | " |
| | 6' | | | 25 | 47 | 71 | 7'-11" | | | 6 | 6'-2" | 2'-8" |
| | 7' | | | 25 | 47 | 71 | 8'-0" | | | 6 | 6'-3" | 2'-9" |
| | 8' | | | 25 | 47 | 71 | 8'-1" | | | 6 | 6'-4" | 2'-10" |
| | 9' | | | 25 | 47 | 71 | 8'-3" | | | 6 | 6'-6" | 3'-0" |
| 1 @ 8' | 4' | #6 | 12" | 25 | 47 | 71 | 8'-9" | #6 | 12" | 6 | 7'-0" | 3'-6" |
| | 5' | | | 25 | 47 | 71 | 8'-11" | | | 6 | 7'-2" | 3'-8" |
| | 6' | | | 25 | 47 | 71 | " | | | 6 | " | " |
| | 7' | | | 25 | 47 | 71 | 9'-0" | | | 6 | 7'-3" | 3'-9" |
| | 8' | | | 25 | 47 | 71 | 9'-1" | | | 6 | 7'-4" | 3'-10" |
| | 9' | | | 25 | 47 | 71 | 9'-3" | | | 6 | 7'-6" | 4'-0" |
| | 10' | | | 25 | 47 | 71 | 9'-5" | | | 6 | 7'-8" | 4'-2" |
| 1 @ 9' | 5' | #6 | 11" | 25 | 51 | 75 | 9'-11" | #6 | 11" | 8 | 8'-4" | 3'-7" |
| | 6' | | | 25 | 51 | 75 | 10'-0" | | | 8 | 8'-5" | 3'-8" |
| | 7' | | | 25 | 51 | 75 | " | | | 8 | " | " |
| | 8' | | | 25 | 51 | 75 | 10'-1" | | | 8 | 8'-6" | 3'-9" |
| | 9' | | | 25 | 51 | 75 | 10'-3" | | | 8 | 8'-8" | 3'-11" |
| | 10' | | | 25 | 51 | 75 | 10'-5" | | | 8 | 8'-10" | 4'-1" |
| | 11' | | | 25 | 51 | 75 | 10'-7" | | | 8 | 9'-0" | 4'-3" |
| 1 @ 10' | 5' | #7 | 12" | 23 | 45 | 69 | 10'-11" | #7 | 12" | 10 | 9'-2" | 2'-2" |
| | 6' | | | 23 | 45 | 69 | 11'-0" | | | 10 | 9'-3" | 2'-3" |
| | 7' | | | 23 | 45 | 69 | " | | | 10 | " | " |
| | 8' | | | 23 | 45 | 69 | 11'-1" | | | 10 | 9'-4" | 2'-4" |
| | 9' | | | 23 | 45 | 69 | 11'-3" | | | 10 | 9'-6" | 2'-6" |
| | 10' | | | 23 | 45 | 69 | 11'-5" | | | 10 | 9'-8" | 2'-8" |
| | 11' | | | 23 | 45 | 69 | 11'-7" | | | 10 | 9'-10" | 2'-10" |
| | 12' | | | 23 | 45 | 69 | 11'-9" | | | 10 | 10'-0" | 3'-0" |

"b" bars: BENT - See Diagrams at Right. In Top and Bottom Slabs of Barrel - hooked. Alternate with "a" bars. "b1" bars (▼): In Top and Bottom Slabs of Barrel - one end hooked. (Two of each Length) Alternate with "a1" bars.

| S | H | "b" Size | Spacing | No. Req'd 2:1 | 3:1 | 4:1 | Length | X | "b1" Size | Spacing | No. Req'd | Length Max. | Min. | X Max. | X Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 @ 4' | 2' | #4 | 12" | 25 | 49 | 71 | 5'-7" | 4'-8½" | #4 | 12" | 4 | 4'-3" | 2'-6" | 3'-10" | 2'-1" |
| | 3' | | | 25 | 49 | 71 | " | " | | | 4 | " | " | " | " |
| | 4' | | | 25 | 49 | 71 | " | " | | | 4 | " | " | " | " |
| | 5' | | | 25 | 49 | 71 | " | " | | | 4 | " | " | " | " |
| | 6' | | | 25 | 49 | 71 | 5'-9" | 4'-10½" | | | 4 | 4'-5" | 2'-8" | 4'-0" | 2'-3" |
| 1 @ 5' | 3' | #5 | 12" | 25 | 47 | 71 | 6'-8" | 5'-8½" | #5 | 12" | 4 | 5'-4" | 3'-7" | 4'-10" | 3'-1" |
| | 4' | | | 25 | 47 | 71 | " | " | | | 4 | " | " | " | " |
| | 5' | | | 25 | 47 | 71 | " | " | | | 4 | " | " | " | " |
| | 6' | | | 25 | 47 | 71 | 6'-10" | 5'-10⅝" | | | 4 | 5'-6" | 3'-9" | 5'-0" | 3'-3" |
| | 7' | | | 25 | 47 | 71 | 6'-11" | 5'-11½" | | | 4 | 5'-7" | 3'-10" | 5'-1" | 3'-4" |
| 1 @ 6' | 3' | #6 | 12" | 25 | 47 | 71 | 7'-10" | 6'-8" | #6 | 12" | 6 | 6'-5" | 2'-11" | 5'-10" | 2'-4" |
| | 4' | | | 25 | 47 | 71 | " | " | | | 6 | " | " | " | " |
| | 5' | | | 25 | 47 | 71 | " | " | | | 6 | " | " | " | " |
| | 6' | | | 25 | 47 | 71 | 8'-0" | 6'-10" | | | 6 | 6'-7" | 3'-1" | 6'-0" | 2'-6" |
| | 7' | | | 25 | 47 | 71 | 8'-1" | 6'-11" | | | 6 | 6'-8" | 3'-2" | 6'-1" | 2'-7" |
| | 8' | | | 25 | 47 | 71 | 8'-2" | 7'-0" | | | 6 | 6'-9" | 3'-3" | 6'-2" | 2'-8" |
| 1 @ 7' | 4' | #6 | 12" | 23 | 47 | 69 | 8'-10" | 7'-8" | #6 | 12" | 6 | 7'-5" | 3'-11" | 6'-10" | 3'-4" |
| | 5' | | | 23 | 47 | 69 | " | " | | | 6 | " | " | " | " |
| | 6' | | | 23 | 47 | 69 | 9'-0" | 7'-10" | | | 6 | 7'-7" | 4'-1" | 7'-0" | 3'-6" |
| | 7' | | | 23 | 47 | 69 | 9'-1" | 7'-11" | | | 6 | 7'-8" | 4'-2" | 7'-1" | 3'-7" |
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| | 9' | | | 23 | 47 | 69 | 9'-4" | 8'-2" | | | 6 | 7'-11" | 4'-5" | 7'-4" | 3'-10" |
| 1 @ 8' | 4' | #6 | 12" | 23 | 47 | 69 | 9'-10" | 8'-8" | #6 | 12" | 8 | 8'-5" | 3'-2" | 7'-10" | 2'-7" |
| | 5' | | | 23 | 47 | 69 | 10'-0" | 8'-10" | | | 8 | 8'-7" | 3'-4" | 8'-0" | 2'-9" |
| | 6' | | | 23 | 47 | 69 | " | " | | | 8 | " | " | " | " |
| | 7' | | | 23 | 47 | 69 | 10'-1" | 8'-11" | | | 8 | 8'-8" | 3'-5" | 8'-1" | 2'-10" |
| | 8' | | | 23 | 47 | 69 | 10'-2" | 9'-0" | | | 8 | 8'-9" | 3'-6" | 8'-2" | 2'-11" |
| | 9' | | | 23 | 47 | 69 | 10'-4" | 9'-2" | | | 8 | 8'-11" | 3'-8" | 8'-4" | 3'-1" |
| | 10' | | | 23 | 47 | 69 | 10'-6" | 9'-4" | | | 8 | 9'-1" | 3'-10" | 8'-6" | 3'-3" |
| 1 @ 9' | 5' | #7 | 11" | 25 | 49 | 75 | 11'-2" | 9'-10" | #7 | 11" | 10 | 9'-9" | 3'-5" | 9'-1" | 2'-9" |
| | 6' | | | 25 | 49 | 75 | 11'-3" | 9'-11" | | | 10 | 9'-10" | 3'-6" | 9'-2" | 2'-10" |
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| | 8' | | | 25 | 49 | 75 | 11'-4" | 10'-0" | | | 10 | 9'-11" | 3'-7" | 9'-3" | 2'-11" |
| | 9' | | | 25 | 49 | 75 | 11'-6" | 10'-2" | | | 10 | 10'-1" | 3'-9" | 9'-5" | 3'-1" |
| | 10' | | | 25 | 49 | 75 | 11'-8" | 10'-4" | | | 10 | 10'-3" | 3'-11" | 9'-7" | 3'-3" |
| | 11' | | | 25 | 49 | 75 | 11'-10" | 10'-6" | | | 10 | 10'-5" | 4'-1" | 9'-9" | 3'-5" |
| 1 @ 10' | 5' | #7 | 12" | 21 | 45 | 69 | 12'-2" | 10'-10" | #7 | 12" | 10 | 10'-8" | 3'-8" | 10'-0" | 3'-0" |
| | 6' | | | 21 | 45 | 69 | 12'-3" | 10'-11" | | | 10 | 10'-9" | 3'-9" | 10'-1" | 3'-1" |
| | 7' | | | 21 | 45 | 69 | " | " | | | 10 | " | " | " | " |
| | 8' | | | 21 | 45 | 69 | 12'-4" | 11'-0" | | | 10 | 10'-10" | 3'-10" | 10'-2" | 3'-2" |
| | 9' | | | 21 | 45 | 67 | 12'-6" | 11'-2" | | | 10 | 11'-0" | 4'-0" | 10'-4" | 3'-4" |
| | 10' | | | 21 | 45 | 67 | 12'-8" | 11'-4" | | | 10 | 11'-2" | 4'-2" | 10'-6" | 3'-6" |
| | 11' | | | 21 | 45 | 67 | 12'-10" | 11'-6" | | | 10 | 11'-4" | 4'-4" | 10'-8" | 3'-8" |
| | 12' | | | 21 | 45 | 67 | 13'-0" | 11'-8" | | | 10 | 11'-6" | 4'-6" | 10'-10" | 3'-10" |

"d" bars: STRAIGHT - Longitudinal in Top Slab of Barrel. Lengths Vary - Average Length; 2:1 = 15'-6", 3:1 = 27'-1", 4:1 = 39'-8". "d1" bars: Longitudinal in Sidewalls. Lengths Vary - Average Length; 2:1 = 15'-6", 3:1 = 27'-1", 4:1 = 38'-8". "e" bars: Longitudinal in Bottom Slab of Barrel. Lengths Vary - Average Length; 2:1 = 16'-8", 3:1 = 28'-3", 4:1 = 39'-10". "f" bars: STRAIGHT - Verticals in Sidewalls. "k1" bars (▼): STRAIGHT - In Bottom of Headwall. "k2" bars (▼): In Top of Headwall and Apron. (2 Each)

| S | H | "d" Size | Spacing | No. Req'd | "d1" Size | Spacing | No. Req'd | "e" Size | Spacing | No. Req'd | "f" Size | Spacing | No. Req'd 2:1 | 3:1 | 4:1 | Length | "k1" Size | No. Req'd | Length | "k2" Size | No. Req'd | Length |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 @ 4' | 2' | #4 | 12" | 5 | #4 | 12" | 4 | #4 | 12" | 5 | #4 | 12" | 28 | 51 | 74 | 2'-10" | #5 | 3 | 5'-6" | #5 | 4 | 6'-8" |
| | 3' | | | 5 | | | 6 | | | 5 | | | 28 | 51 | 74 | 3'-10" | | 3 | " | | 4 | " |
| | 4' | | | 5 | | | 8 | | | 5 | | | 28 | 51 | 74 | 4'-10" | | 3 | " | | 4 | " |
| | 5' | | | 5 | | | 10 | | | 5 | | | 28 | 51 | 74 | 5'-10" | | 3 | " | | 4 | " |
| | 6' | | | 5 | | | 12 | | | 5 | | | 28 | 51 | 74 | 6'-10" | | 3 | 5'-8" | | 4 | 6'-10" |
| 1 @ 5' | 3' | #4 | 12" | 6 | #4 | 12" | 6 | #4 | 12" | 6 | #4 | 12" | 28 | 51 | 74 | 3'-11" | #5 | 3 | 6'-8" | #5 | 4 | 7'-10" |
| | 4' | | | 6 | | | 8 | | | 6 | | | 28 | 51 | 74 | 4'-11" | | 3 | " | | 4 | " |
| | 5' | | | 6 | | | 10 | | | 6 | | | 28 | 51 | 74 | 5'-11" | | 3 | " | | 4 | " |
| | 6' | | | 6 | | | 12 | | | 6 | | | 28 | 51 | 74 | 6'-11" | | 3 | 6'-10" | | 4 | 8'-0" |
| | 7' | | | 6 | | | 14 | | | 6 | | 10" | 34 | 61 | 89 | 7'-11" | | 3 | 6'-11" | | 4 | 8'-1" |
| 1 @ 6' | 3' | #4 | 12" | 7 | #4 | 12" | 6 | #4 | 12" | 7 | #4 | 12" | 28 | 51 | 74 | 4'-0" | #5 | 3 | 7'-10" | #5 | 4 | 9'-0" |
| | 4' | | | 7 | | | 8 | | | 7 | | | 28 | 51 | 74 | 5'-0" | | 3 | " | | 4 | " |
| | 5' | | | 7 | | | 10 | | | 7 | | | 28 | 51 | 74 | 6'-0" | | 3 | " | | 4 | " |
| | 6' | | | 7 | | | 12 | | | 7 | | | 28 | 51 | 74 | 7'-0" | | 3 | 8'-0" | | 4 | 9'-2" |
| | 7' | | | 7 | | | 14 | | | 7 | | 10" | 34 | 61 | 89 | 8'-0" | | 3 | 8'-1" | | 4 | 9'-3" |
| | 8' | | | 7 | | | 16 | | | 7 | #5 | 11" | 31 | 56 | 81 | 9'-0" | | 3 | 8'-2" | | 4 | 9'-4" |
| 1 @ 7' | 4' | #4 | 12" | 8 | #4 | 12" | 8 | #4 | 12" | 8 | #4 | 12" | 28 | 51 | 74 | 5'-1" | #6 | 3 | 9'-0" | #6 | 4 | 10'-2" |
| | 5' | | | 8 | | | 10 | | | 8 | | | 28 | 51 | 74 | 6'-1" | | 3 | " | | 4 | " |
| | 6' | | | 8 | | | 12 | | | 8 | | | 28 | 51 | 74 | 7'-1" | | 3 | 9'-2" | | 4 | 10'-4" |
| | 7' | | | 8 | | | 14 | | | 8 | | 11" | 31 | 56 | 81 | 8'-1" | | 3 | 9'-3" | | 4 | 10'-5" |
| | 8' | | | 8 | | | 16 | | | 8 | #5 | 12" | 28 | 51 | 74 | 9'-1" | | 3 | 9'-4" | | 4 | 10'-6" |
| | 9' | | | 8 | | | 18 | | | 8 | | 11" | 31 | 56 | 81 | 10'-1" | | 3 | 9'-6" | | 4 | 10'-8" |
| 1 @ 8' | 4' | #4 | 12" | 9 | #4 | 12" | 8 | #4 | 12" | 9 | #4 | 12" | 28 | 51 | 74 | 5'-3" | #6 | 3 | 10'-1" | #6 | 4 | 11'-3" |
| | 5' | | | 9 | | | 10 | | | 9 | | | 28 | 51 | 74 | 6'-3" | | 3 | 10'-4" | | 4 | 11'-6" |
| | 6' | | | 9 | | | 12 | | | 9 | | | 28 | 51 | 74 | 7'-3" | | 3 | " | | 4 | " |
| | 7' | | | 9 | | | 14 | | | 9 | | | 28 | 51 | 74 | 8'-3" | | 3 | 10'-5" | | 4 | 11'-7" |
| | 8' | | | 9 | | | 16 | | | 9 | #5 | 12" | 28 | 51 | 74 | 9'-3" | | 3 | 10'-6" | | 4 | 11'-8" |
| | 9' | | | 9 | | | 18 | | | 9 | | 11" | 31 | 56 | 81 | 10'-3" | | 3 | 10'-8" | | 4 | 11'-10" |
| | 10' | | | 9 | | | 20 | | | 9 | | 10" | 34 | 61 | 89 | 11'-3" | | 3 | 10'-11" | | 4 | 12'-0" |
| 1 @ 9' | 5' | #4 | 12" | 10 | #4 | 12" | 10 | #4 | 12" | 10 | #4 | 12" | 28 | 51 | 74 | 6'-5" | #6 | 3 | 11'-5" | #6 | 4 | 12'-7" |
| | 6' | | | 10 | | | 12 | | | 10 | | | 28 | 51 | 74 | 7'-5" | | 3 | 11'-7" | | 4 | 12'-9" |
| | 7' | | | 10 | | | 14 | | | 10 | | | 28 | 51 | 74 | 8'-5" | | 3 | " | | 4 | " |
| | 8' | | | 10 | | | 16 | | | 10 | #5 | 12" | 28 | 51 | 74 | 9'-5" | | 3 | 11'-8" | | 4 | 12'-10" |
| | 9' | | | 10 | | | 18 | | | 10 | | 11" | 31 | 56 | 81 | 10'-5" | | 3 | 11'-10" | | 4 | 13'-0" |
| | 10' | | | 10 | | | 20 | | | 10 | | 10" | 34 | 61 | 89 | 11'-5" | | 3 | 12'-1" | | 4 | 13'-2" |
| | 11' | | | 10 | | | 22 | | | 10 | #6 | 12" | 28 | 51 | 74 | 12'-5" | | 3 | 12'-3" | | 4 | 13'-5" |
| 1 @ 10' | 5' | #4 | 12" | 11 | #4 | 12" | 10 | #4 | 12" | 11 | #4 | 12" | 28 | 51 | 74 | 6'-7" | #7 | 3 | 12'-7" | #7 | 4 | 13'-9" |
| | 6' | | | 11 | | | 12 | | | 11 | | | 28 | 51 | 74 | 7'-7" | | 3 | 12'-8" | | 4 | 13'-10" |
| | 7' | | | 11 | | | 14 | | | 11 | | 11" | 31 | 56 | 81 | 8'-7" | | 3 | " | | 4 | " |
| | 8' | | | 11 | | | 16 | | | 11 | #5 | 12" | 28 | 51 | 74 | 9'-7" | | 3 | 12'-10" | | 4 | 14'-0" |
| | 9' | | | 11 | | | 18 | | | 11 | | | 28 | 51 | 74 | 10'-7" | | 3 | 13'-0" | | 4 | 14'-2" |
| | 10' | | | 11 | | | 20 | | | 11 | | 10" | 34 | 61 | 89 | 11'-7" | | 3 | 13'-2" | | 4 | 14'-4" |
| | 11' | | | 11 | | | 22 | | | 11 | #6 | 12" | 28 | 51 | 74 | 12'-7" | | 3 | 13'-5" | | 4 | 14'-6" |
| | 12' | | | 11 | | | 24 | | | 11 | | 11" | 31 | 56 | 81 | 13'-7" | | 3 | 13'-7" | | 4 | 14'-9" |

▼ These bars are in the skewed portion of barrel only. The length of "a1" bars and overall length X of "b1" bars vary by 1'-9" for 12" spacing and 1'-7" for 11" spacing.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961

AND

SPECIAL MILITARY LOADING

Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-

Class S Concrete (n=10) 1200#/□"

Reinforcing Steel 20,000#/□"

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.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls and slabs shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. 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.
For Barrels of 4', 5' & 6' Spans, See Drawing No. R-100X-X1.
For Barrels of 7', 8', 9' & 10' Spans, See Drawing No. R-100X-X2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

30° SKEW - SECTIONS "A" ONLY

4', 5', 6', 7', 8', 9' & 10' SPANS — 2:1, 3:1 OR 4:1 SLOPES

SINGLES — OVER 5'-0" COVER

STANDARD DRAWING NO. R-130X-1

Designed by:- W.C.H. 9-5-62 Checked by:- R.H.S. 11-8-62
Drawn by:- W.C.H. 1-24-64 Checked by:-
Quantities by:- W.C.H. 4-21-64 Checked by:-

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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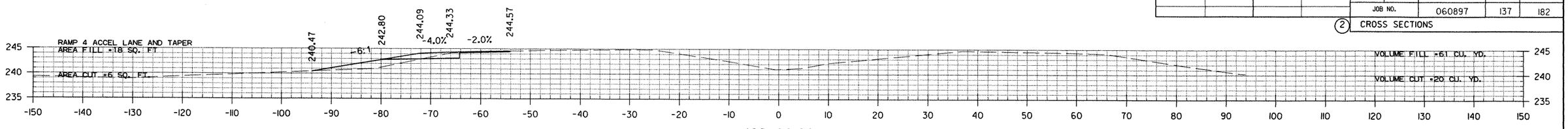


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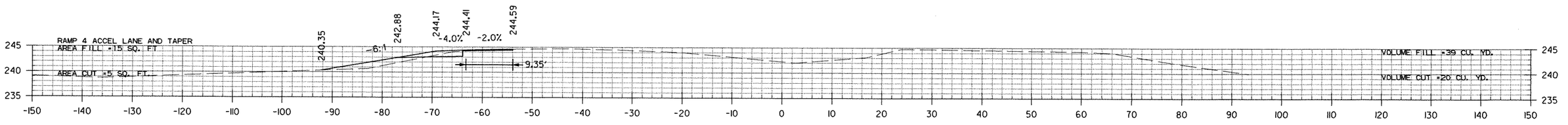


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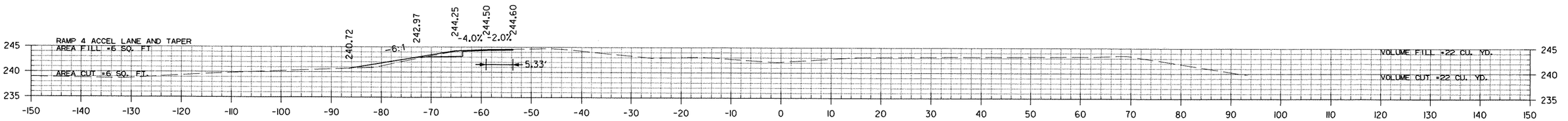


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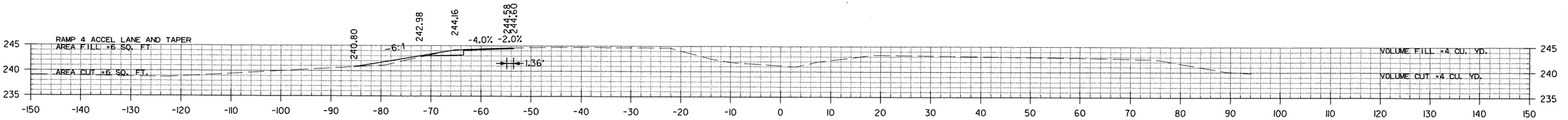


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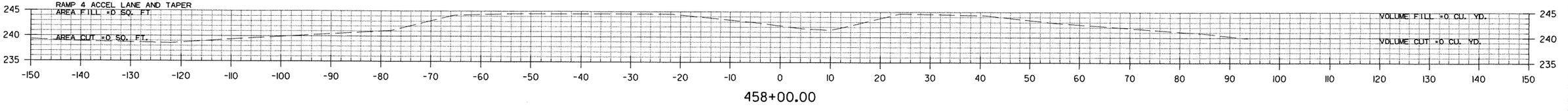


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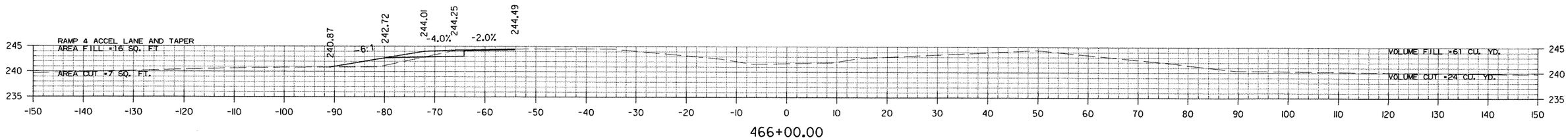


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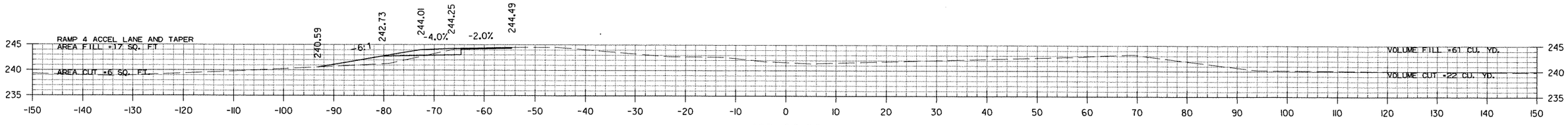


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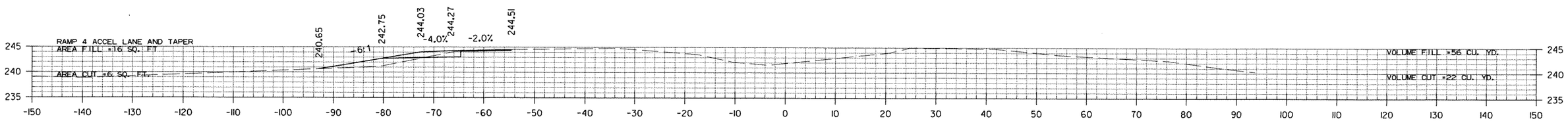


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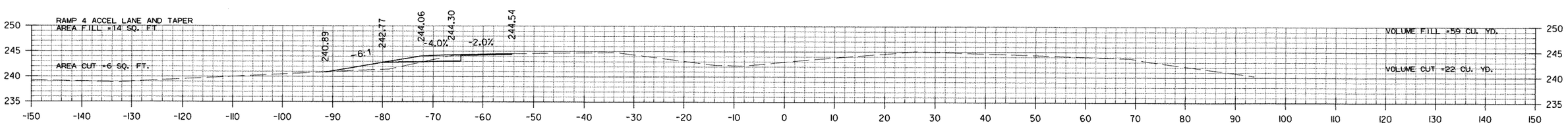


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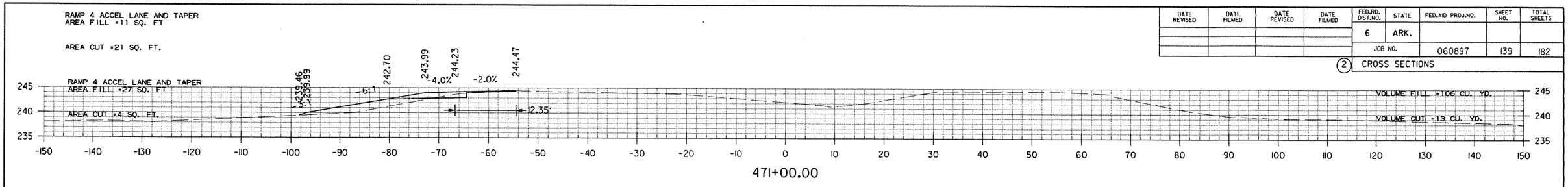


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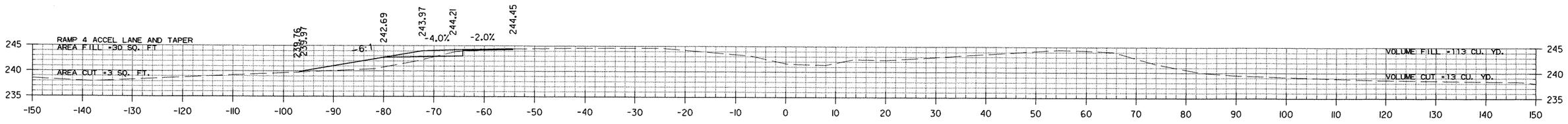


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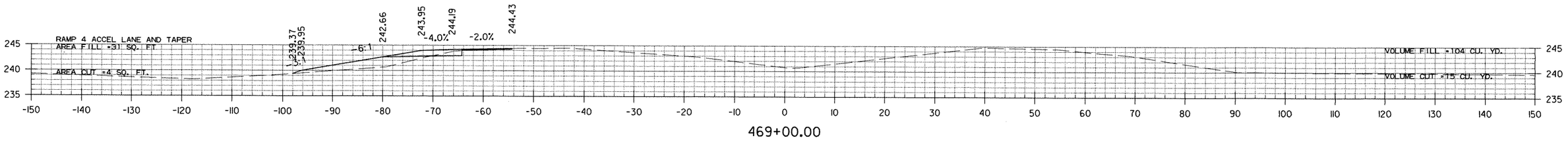


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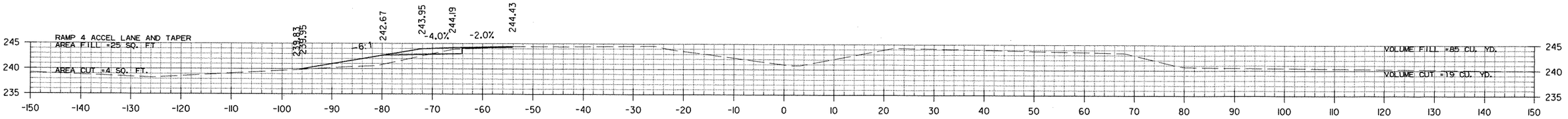


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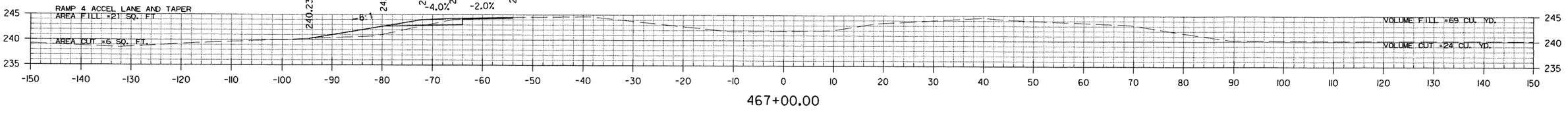


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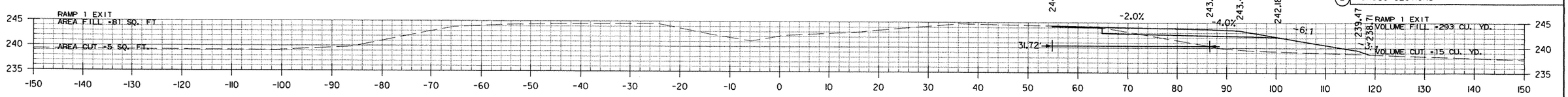


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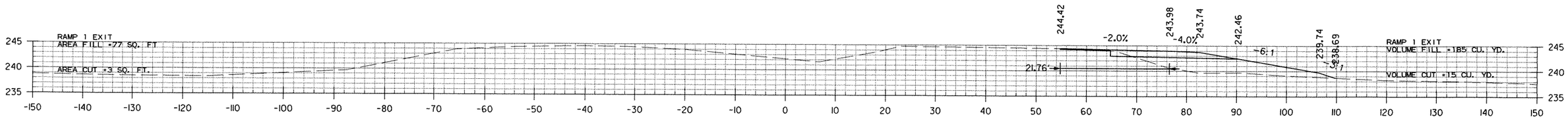


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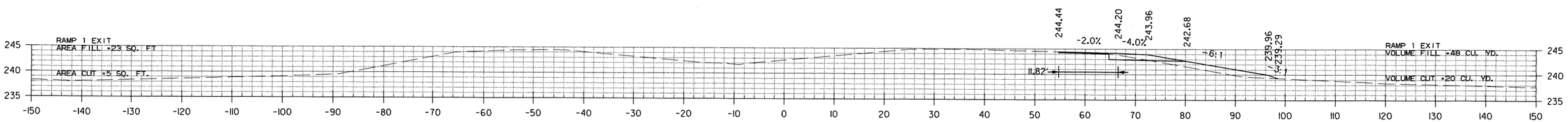


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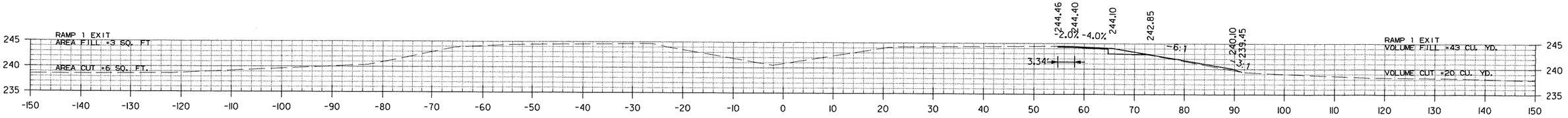
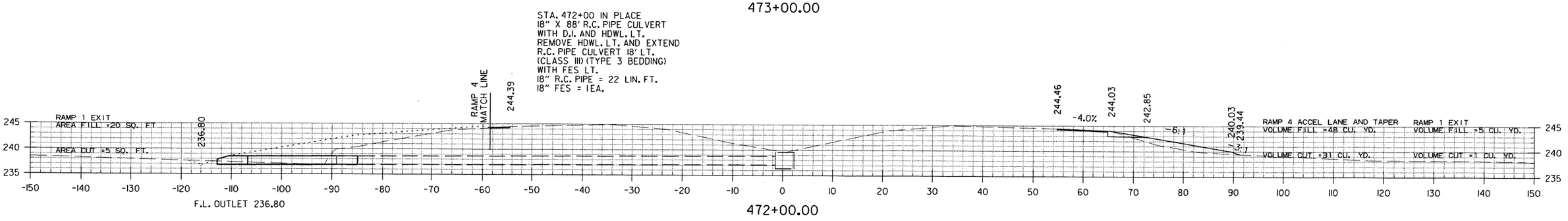



473+00.00




472+00.00

STA. 472+00 TO STA. 476+00

saroberson 10/20/2011 3:45:38 PM
WORKSPACE: AHTD
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REVISED DATE:

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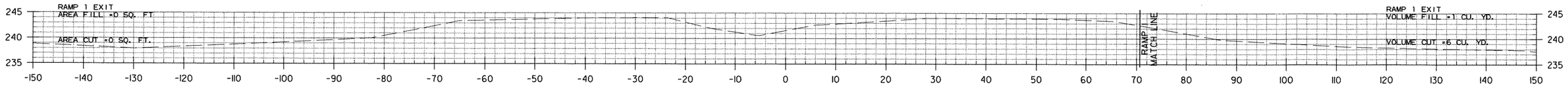
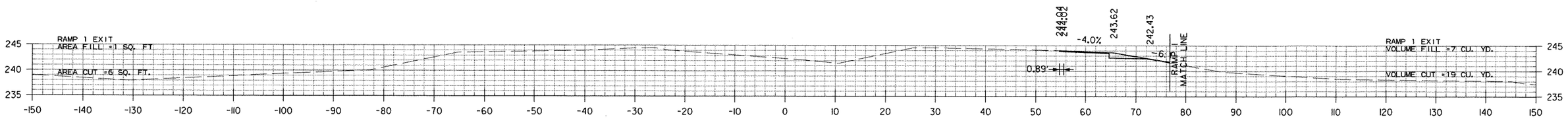
| FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | | |
| JOB NO. | | 060897 | 141 | 182 |

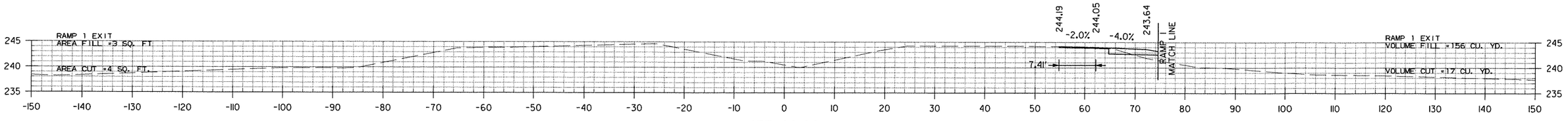
(2) CROSS SECTIONS




479+00.00




478+00.00




477+00.00

STA. 477+00 TO STA. 479+00

sarobertson 10/20/2011 3:45:48 PM
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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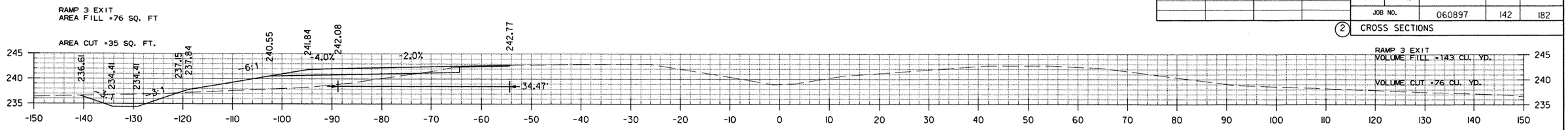
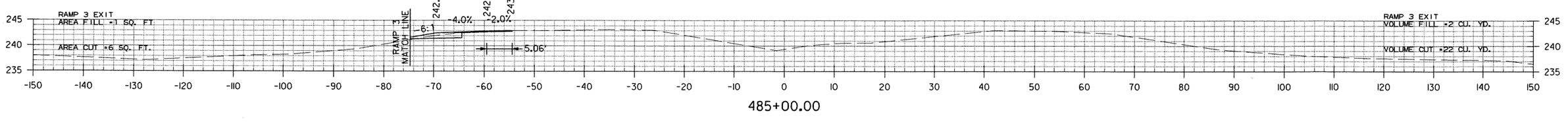
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 142 | 182 |

(2) CROSS SECTIONS

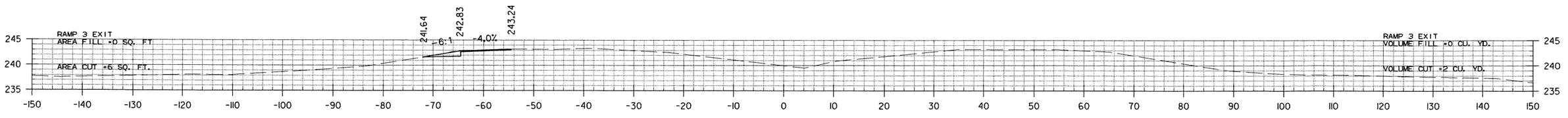



486+00.00

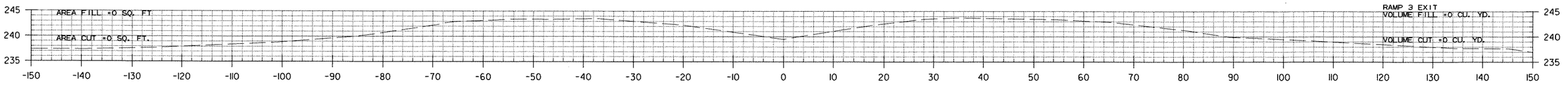
STA. 485+85.37
BEGIN SP. DITCH LT. -0.49%
ELEV. 234.48




485+00.00

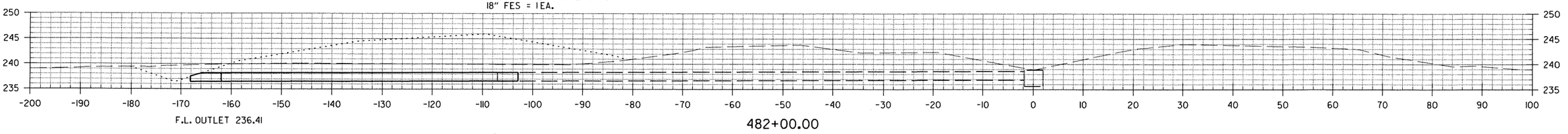



484+00.00




483+00.00

STA. 482+00 IN PLACE
18" X 104' R.C. PIPE CULVERT
WITH D.I. AND HDWL. LT.
REMOVE HDWL. LT. AND EXTEND
R.C. PIPE CULVERT 56' LT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT.
18" R.C. PIPE = 60 LIN. FT.
18" FES = 1EA.




482+00.00

STA. 482+00 TO STA. 486+00

sarobertson 10/20/2011 3:46:01 PM
WORKSPACE: AHTD
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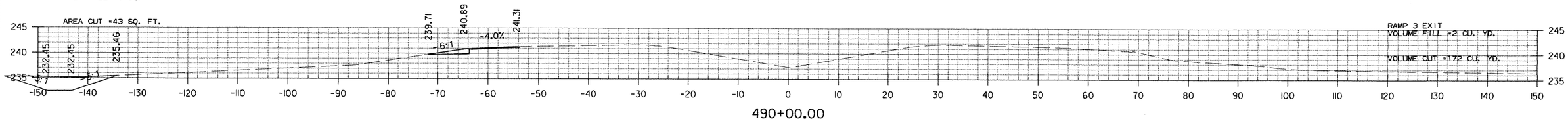
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 143 | 182 |

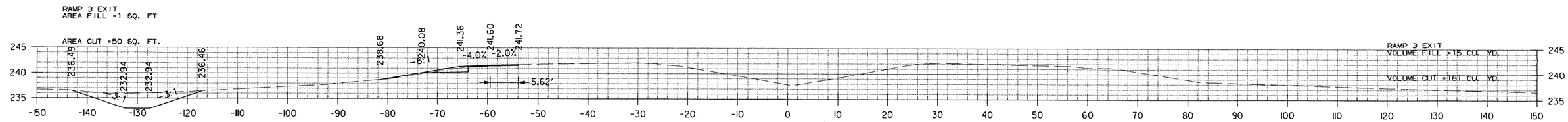
(2) CROSS SECTIONS

STA. 490+02
END SP. DITCH LT. -0.49%
ELEV. 232.44

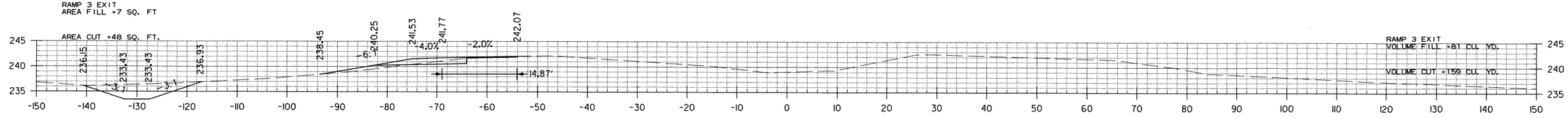
STA. 490+55.00
BEGIN SP. DITCH RT. -0.81%
ELEV. 235.40



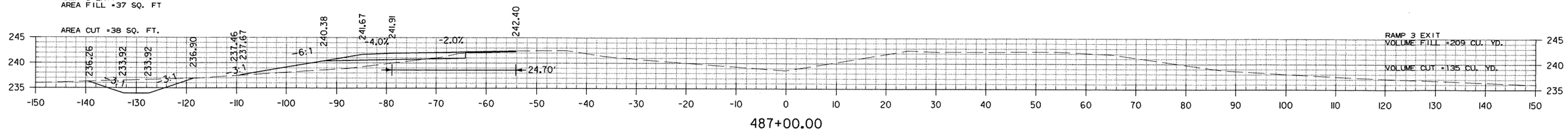

490+00.00




489+00.00




488+00.00




487+00.00

STA. 487+00 TO STA. 490+00


saroberson 10/20/2011 3:46:08 PM
WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 144 | 182 |

(2) CROSS SECTIONS

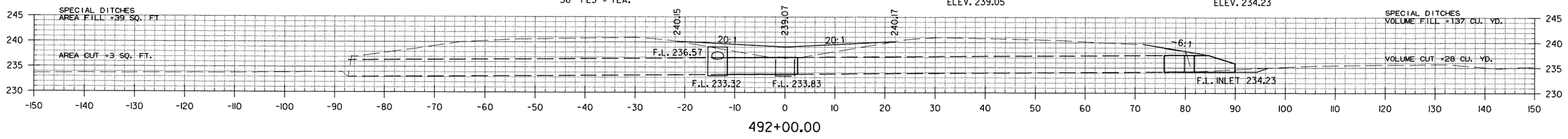
STA. 492+00 IN PLACE
36" X 169' R.C. PIPE CULVERT
WITH D.I. AND HDWLS. LT. AND RT.
REMOVE HDWL. RT. AND EXTEND
R.C. PIPE CULVERT 2' RT. (CLASS III) (TYPE 3 BEDDING)
WITH FES RT.
REMOVE DROP INLET AND 15' OF PIPE CULVERT LT.
CONSTRUCT JUNCTION BOX (TYPE ST) 14' LT. OF C.L. MEDIAN
(4'0" X 4'0" X H = 5'9")
WITH 14' OF 36" R.C. PIPE RT. OF JUNCTION BOX
(CLASS III) (TYPE 3 BEDDING)
Q50 = 41 CFS DA = 34.5 ACRES
TOP J.B. = 239.07
F.L. J.B. = 233.32
36" R.C. PIPE = 20 LIN. FT.
36" FES = 1EA.

STA. 492+26.22
END SP. DITCH MEDIAN -10.00%
BEGIN SP. DITCH MEDIAN -0.33%
ELEV. 236.94

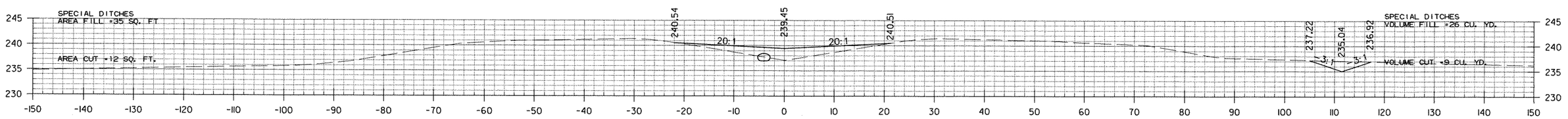
STA. 492+05.00
END SP. DITCH MEDIAN -0.38%
BEGIN SP. DITCH MEDIAN -10.00%
ELEV. 239.05

STA. 492+55.00
END SP. DITCH RT. 5.38%
ELEV. 237.19

STA. 492+00.00
END SP. DITCH RT. -0.81%
BEGIN SP. DITCH RT. 5.38%
ELEV. 234.23




492+00.00

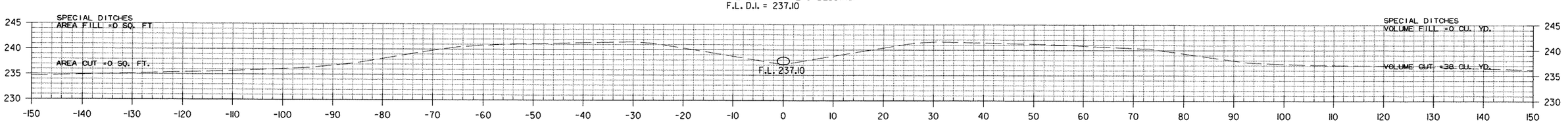



491+00.00

STA. 490+60 - CONSTRUCT
CLASS II SAFETY END SECTION
IN MEDIAN WITH
29" X 18" X 134' R.C. ARCH PIPE OUTLET
(CLASS III) (TYPE 3 BEDDING)
F.L. D.I. = 237.10

STA. 490+74.66
END SP. DITCH MEDIAN 16.67%
BEGIN SP. DITCH MEDIAN -0.38%
ELEV. 239.54

STA. 490+60.00
BEGIN SP. DITCH MEDIAN 16.67%
ELEV. 237.10




490+60.00

STA. 490+60 TO STA. 492+00

sarobertson 10/20/2011 3:46:16 PM
WORKSPACE UNTD
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REVISED DATE:

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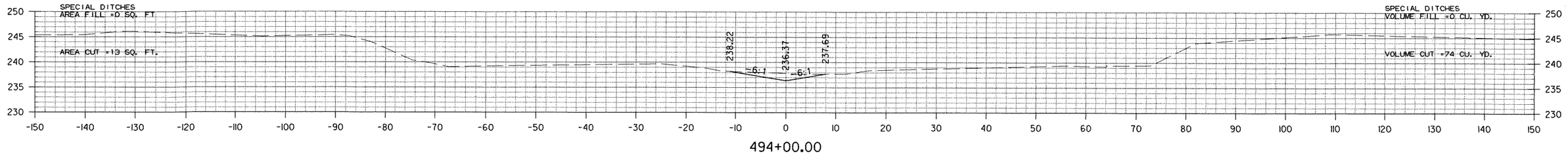
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 145 | 182 |

(2) CROSS SECTIONS

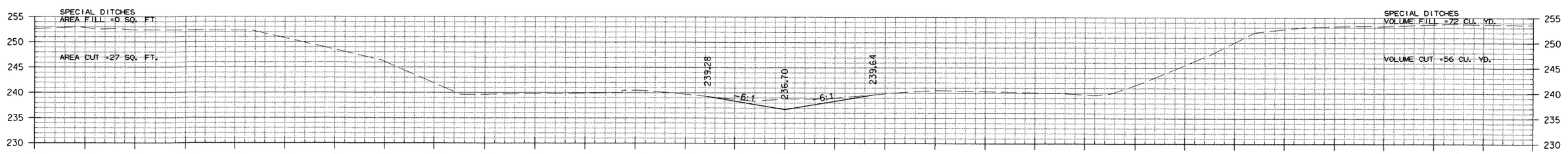
STA. 494+75.00
END SP. DITCH MEDIAN -0.33%
ELEV. 236.13

SPECIAL DITCHES
VOLUME FILL =0 CU. YD.

VOLUME CUT =18 CU. YD.




494+00.00




493+00.00

STA. 493+00 TO STA. 494+00

saroberson 10/20/2011 3:46:25 PM
WORKSPACE: AHTD
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REVISED DATE:

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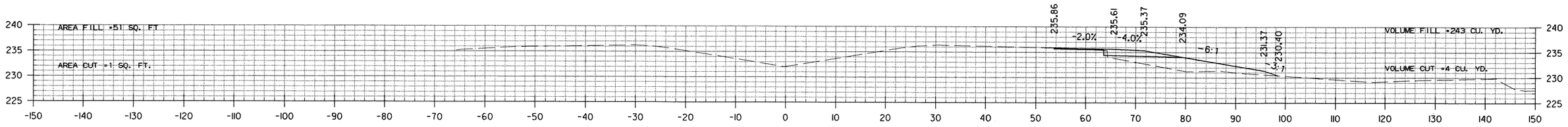
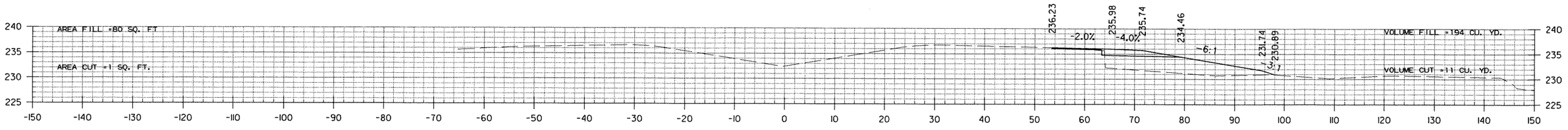
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 146 | 182 |

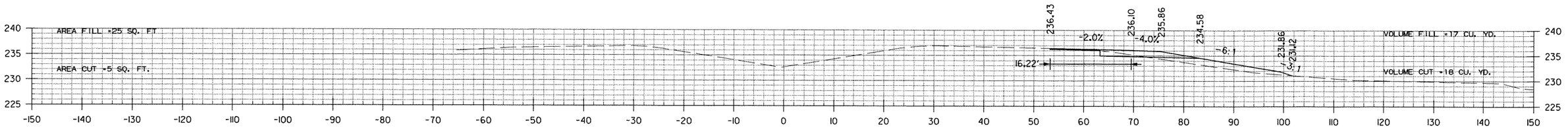
(2) CROSS SECTIONS




508+00.00

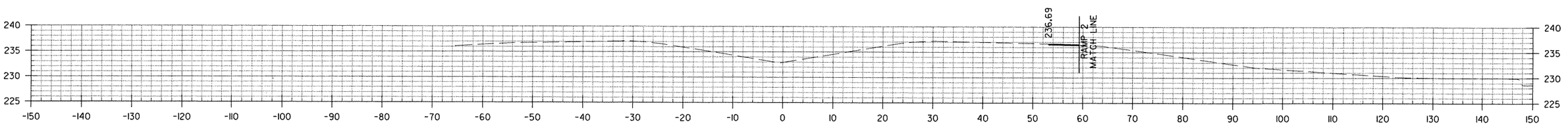



507+00.00




506+00.00

AREA FILL =6 SQ. FT
AREA CUT =27 SQ. FT.




505+00.00

STA. 505+00 TO STA. 508+00


sarobertson 10/20/2011 3:46:34 PM
WORKSPACE: AHTD
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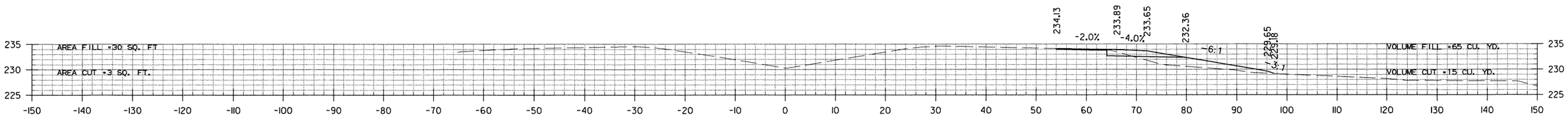
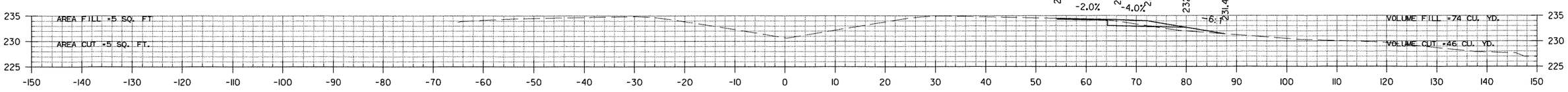
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 147 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |

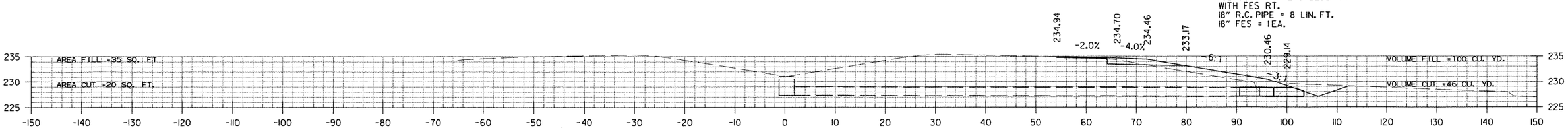



512+00.00



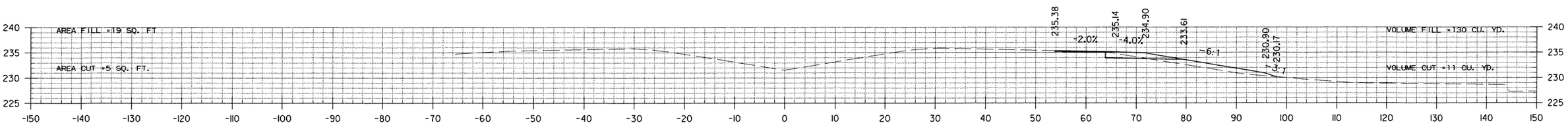

511+00.00

STA. 510+00 IN PLACE
18" X 92' R.C. PIPE CULVERT
WITH D.I. AND HDWL. RT.
REMOVE HDWL. RT. AND EXTEND
R.C. PIPE CULVERT 4' RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES RT.
18" R.C. PIPE = 8 LIN. FT.
18" FES = 1EA.




510+00.00

F.L. OUTLET = 227.08




509+00.00

STA. 509+00 TO STA. 512+00

sgroberson 10/20/2011 3:46:42 PM
WORKSPACE: AHTD
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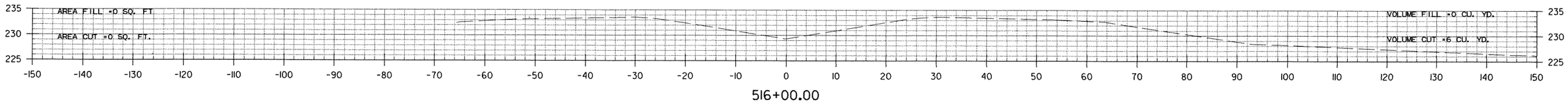
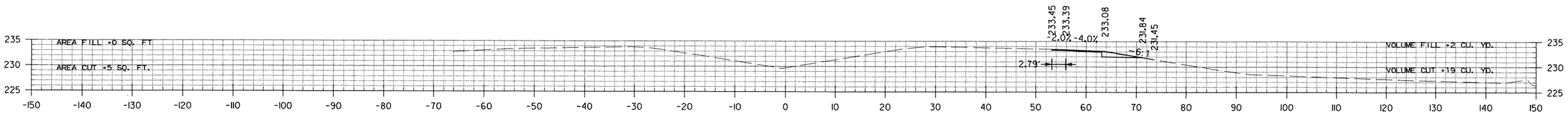
| | | | | JOB NO. | | 060897 | 148 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |



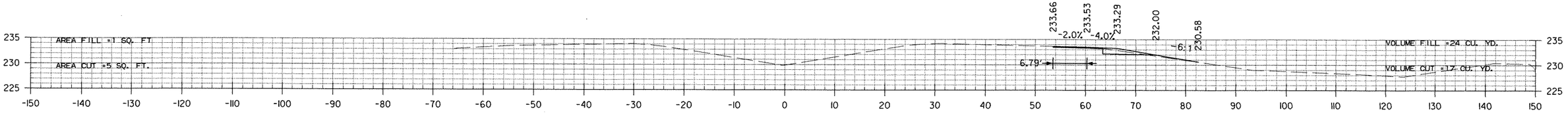

516+00.00

STA. 515+69.85 END TAPER

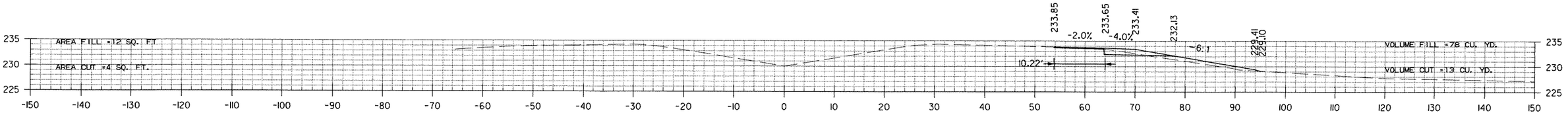
STA. 515+69.85 END JOB 060897




515+00.00




514+00.00




513+00.00

STA. 512+69.85 BEGIN TAPER

STA. 513+00 TO STA. 516+00

saroberson 10/20/2011 3:46:55 PM
WORKSPACE: AHTD
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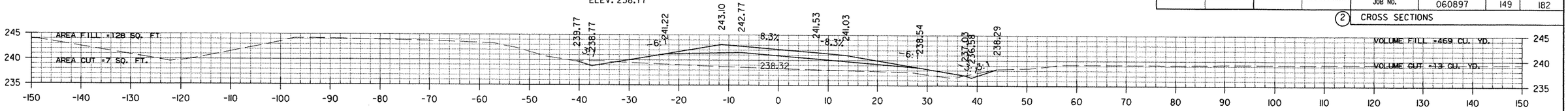
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 149 | 182 |

(2) CROSS SECTIONS

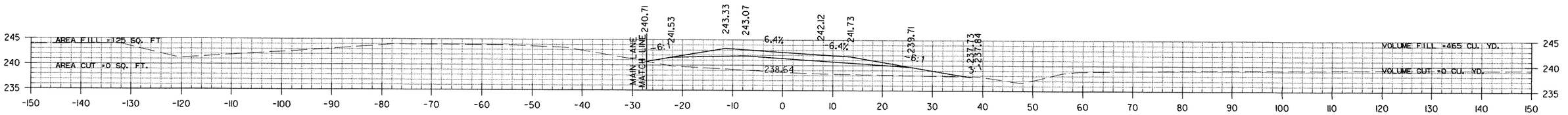
STA. 480+00.00
BEGIN SP. DITCH LT. -0.99%
ELEV. 238.77



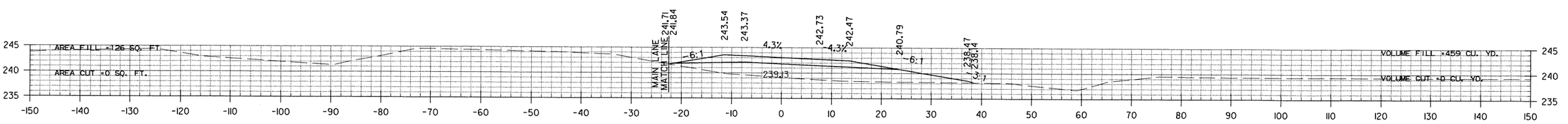

480+00.00

STA. 479+91.48 MAX SUPERELEVATION (0.083 FT./FT.)

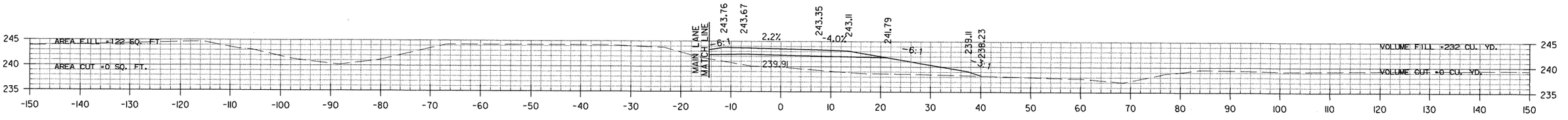
STA. 479+75.00
BEGIN SP. DITCH RT. -0.07%
ELEV. 236.60




479+00.00

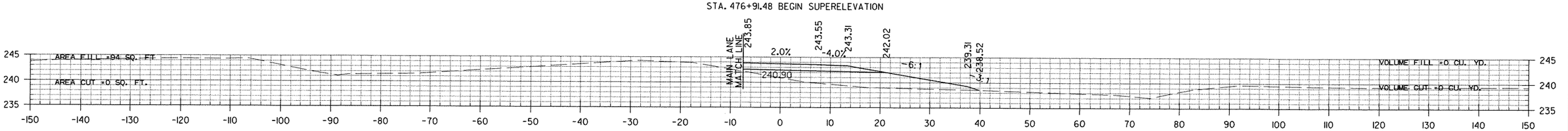



478+00.00




477+00.00

STA. 476+91.48 BEGIN SUPERELEVATION




476+42.01

STA. 476+42.01 BEGIN RAMP I

RAMP I
STA. 476+42 TO STA. 480+00


saroberson 10/20/2011 3:57:50 PM
WORKSPACE: AHTD
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REVISED DATE:

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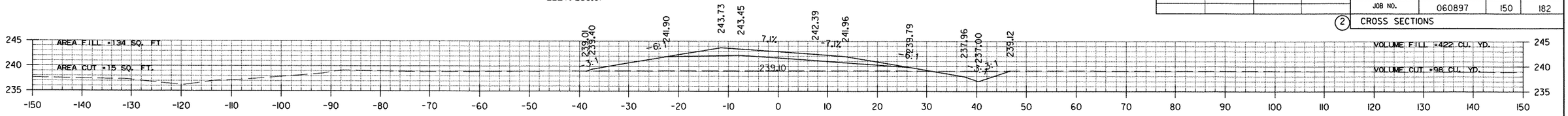
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 150 | 182 |

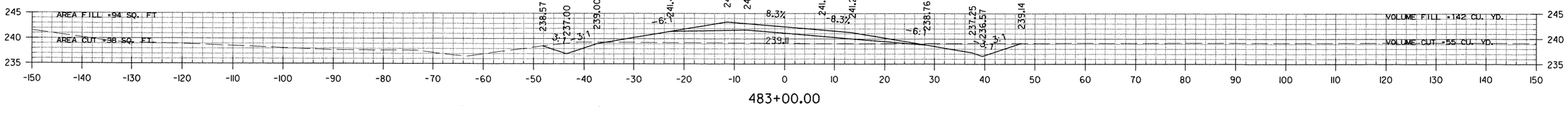
(2) CROSS SECTIONS

STA. 484+00.00
END SP. DITCH LT. 2.01%
ELEV. 239.01




484+00.00

STA. 483+41.48 MAX SUPERELEVATION (0.083 FT./FT.)

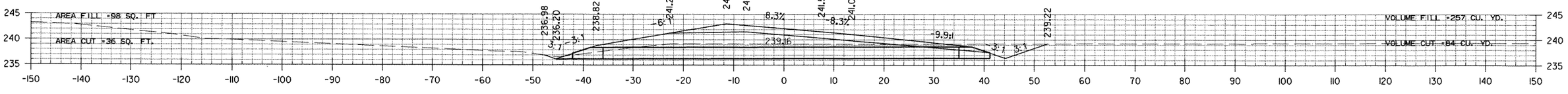



483+00.00

STA. 482+60.00 - CONSTRUCT
DBL. 24" X 72' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 31CFS DA = 24.7 ACRES

STA. 482+60.00
END SP. DITCH LT. -0.99%
BEGIN SP. DITCH LT. 2.01%
ELEV. 236.20

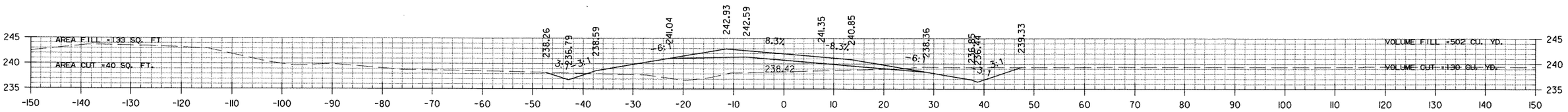
STA. 482+60.00
END SP. DITCH RT. -0.07%
BEGIN SP. DITCH RT. 0.43%
ELEV. 236.40



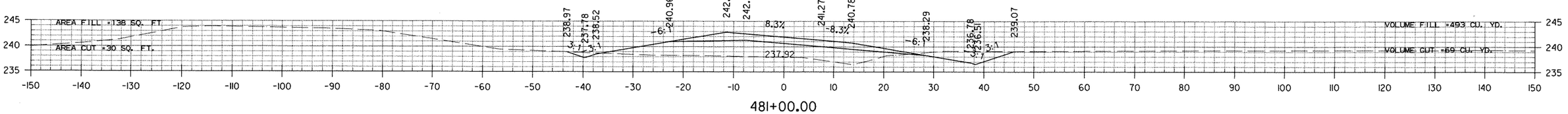

F.L. OUTLET 236.20

482+60.00

F.L. INLET 236.40




482+00.00




481+00.00

RAMP I
STA. 481+00 TO STA. 484+00

saroberson 10/20/2011 3:57:57 PM
WORKSPACE: AHTD
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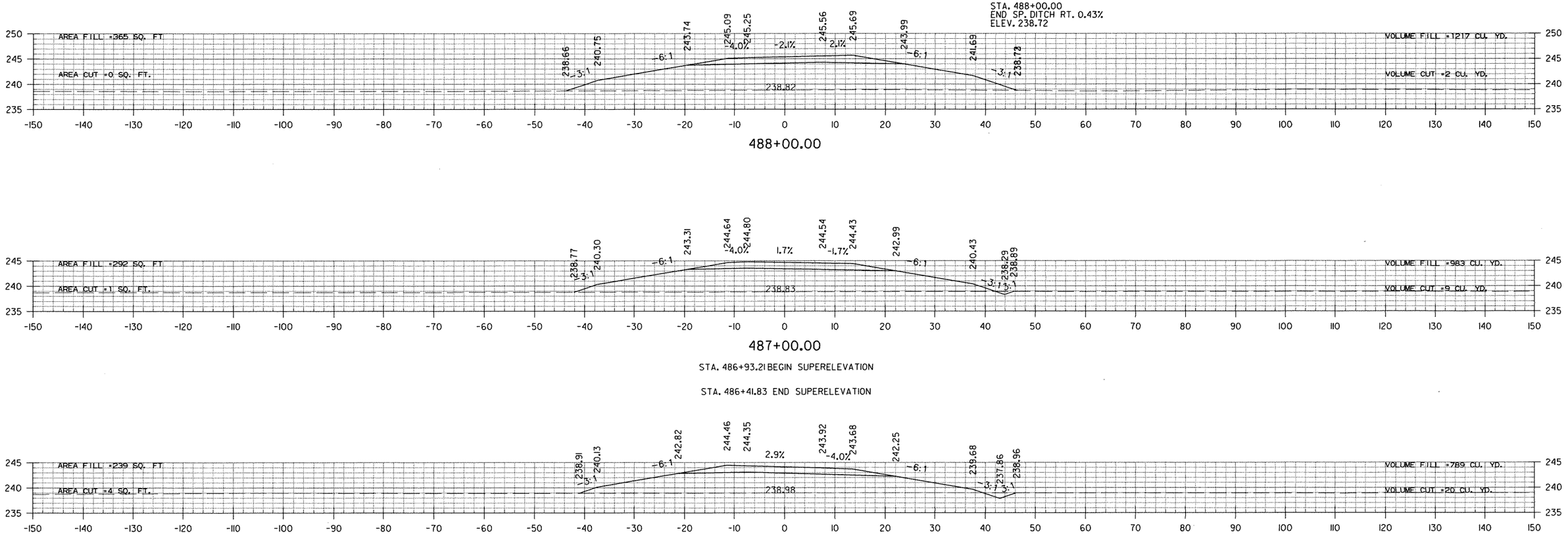
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 151 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |




RAMP I
STA. 485+00 TO STA. 488+00

saroberson 10/20/2011 3:58:05 PM
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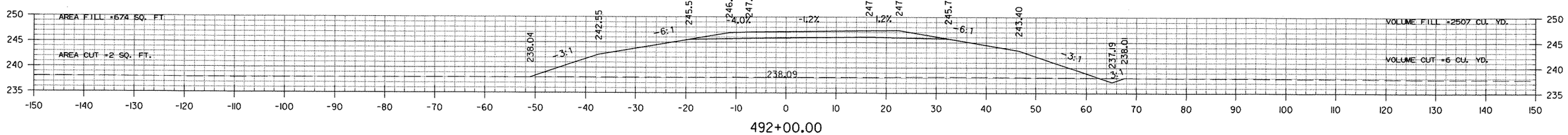
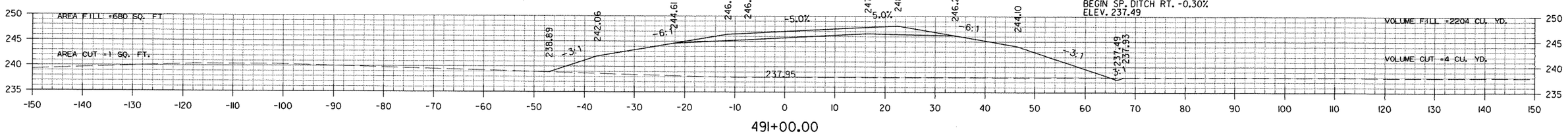
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 152 | 182 |

(2) CROSS SECTIONS



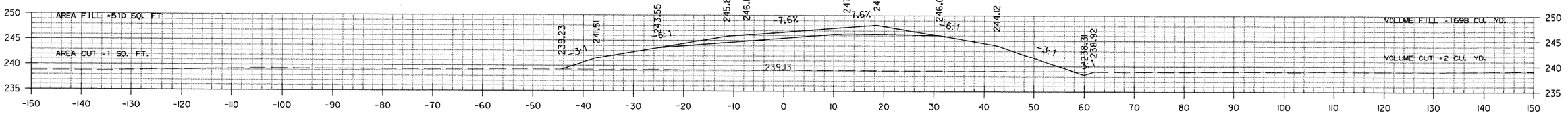

492+00.00




491+00.00

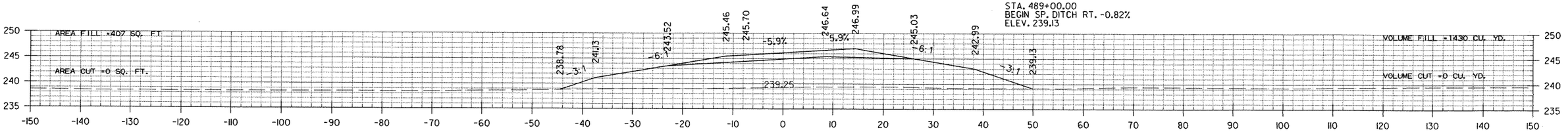
STA. 490+95.21 END TAPER

STA. 490+32.71 MAX SUPERELEVATION (0.076 FT./FT.)




490+00.00

STA. 489+43.21 MAX SUPERELEVATION (0.076 FT./FT.)




489+00.00

STA. 488+80.71 BEGIN TAPER

RAMP I
STA. 489+00 TO STA. 492+00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WORKSPACE: AHTD
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REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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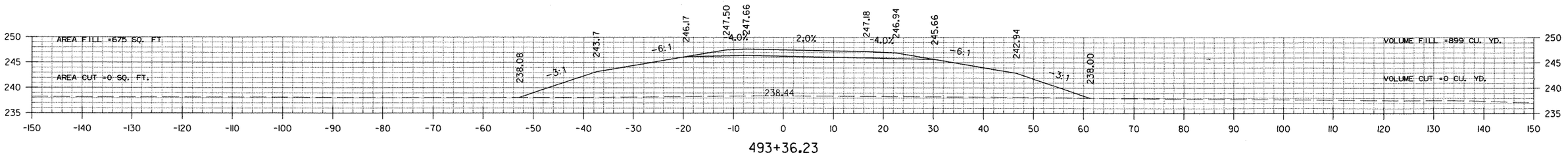
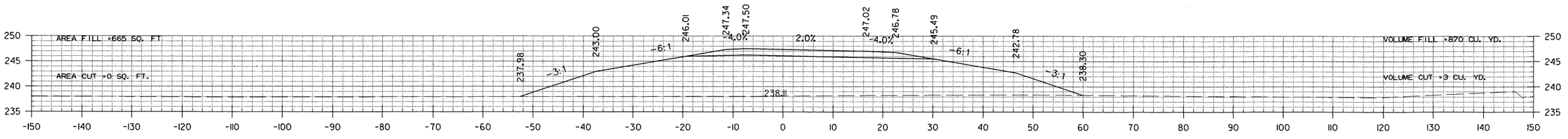
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 153 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |

## STA. 493+36.23 END RAMP I




493+36.23

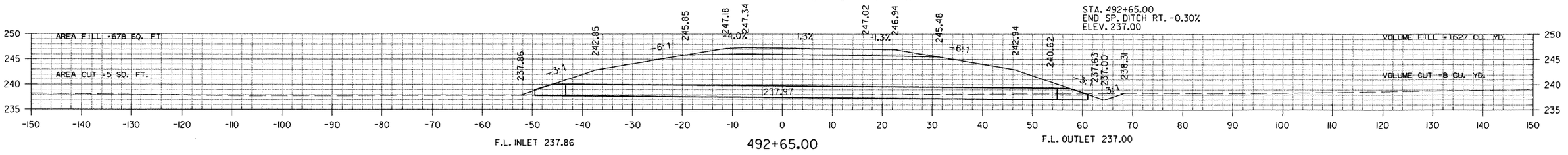



493+00.00

STA. 492+82.71 END SUPERELEVATION

STA. 492+65.00 CONSTRUCT
24" X 100' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 5 CFS DA = 1.8 ACRES

STA. 492+65.00
END SP. DITCH RT. -0.30%
ELEV. 237.00




F.L. INLET 237.86

492+65.00

F.L. OUTLET 237.00

RAMP I
STA. 492+65 TO STA. 493+36

sgroberson 10/20/2011 3:58:19 PM
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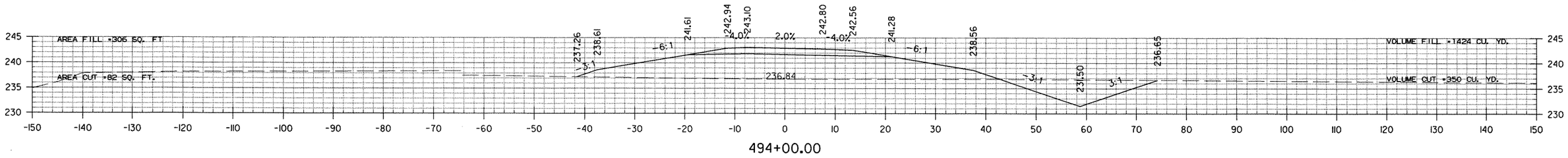
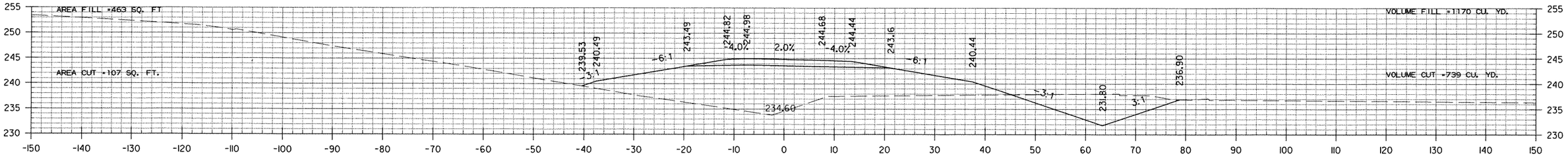
REVISED DATE:

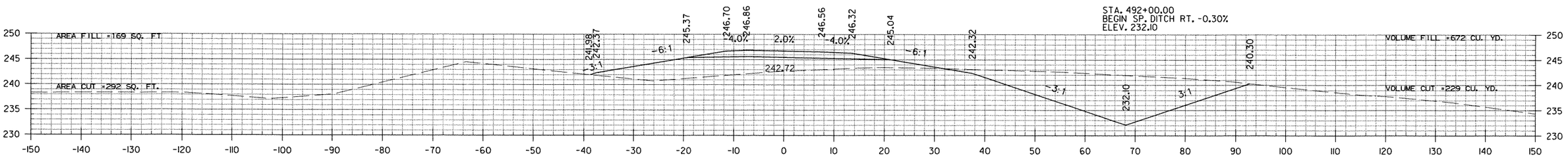
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 154 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |



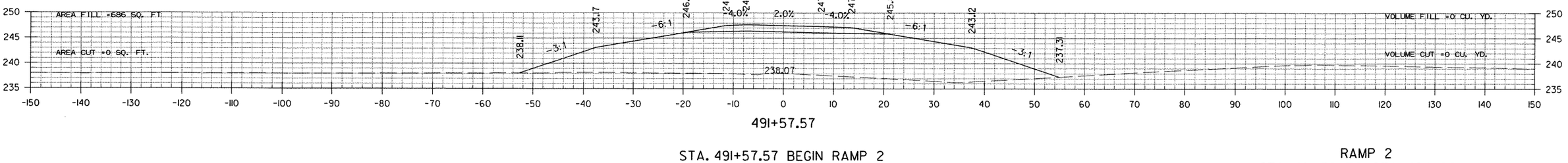

494+00.00




493+00.00




492+00.00




491+57.57

STA. 491+57.57 BEGIN RAMP 2

RAMP 2
STA. 491+58 TO STA. 494+00

saroberson 10/20/2011 4:04:23 PM
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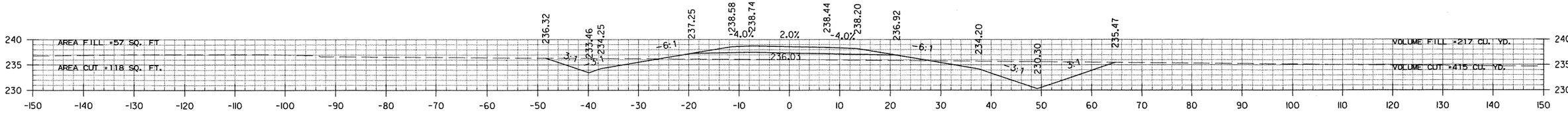
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 155 | 182 |

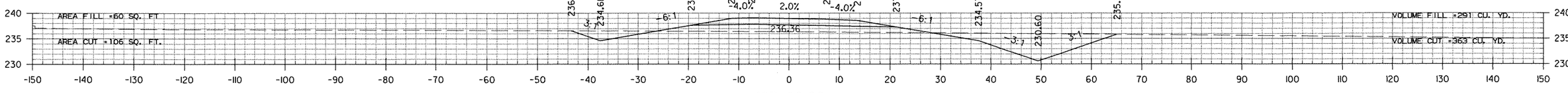
(2) CROSS SECTIONS

STA. 498+47.60 BEGIN SUPERELEVATION

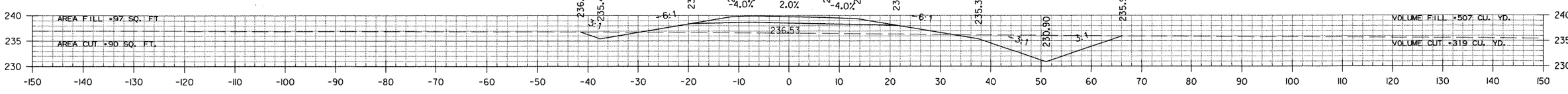



498+00.00

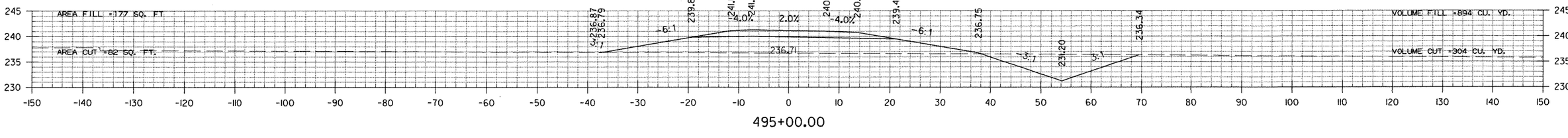
STA. 497+00.00
BEGIN SP. DITCH LT. -1.15%
ELEV. 234.61




497+00.00




496+00.00




495+00.00

RAMP 2
STA. 495+00 TO STA. 498+00

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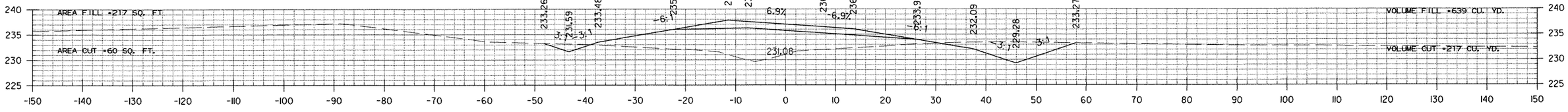
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 156 | 182 |

(2) CROSS SECTIONS



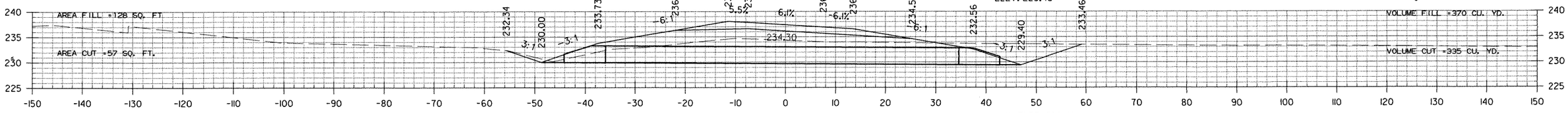

502+00.00

STA. 501+47.60 MAX SUPERELEVATION (0.069 FT./FT.)

STA. 501+00.00 CONSTRUCT
36" X 72' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 21CFS DA = 7.4 ACRES

STA. 501+00.00
END SP. DITCH LT. -1.15%
BEGIN SP. DITCH LT. 1.59%
ELEV. 230.00

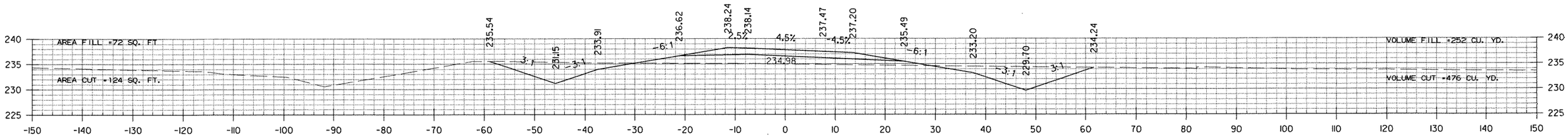
STA. 501+00.00
END SP. DITCH RT. -0.30%
BEGIN SP. DITCH RT. -0.12%
ELEV. 229.40



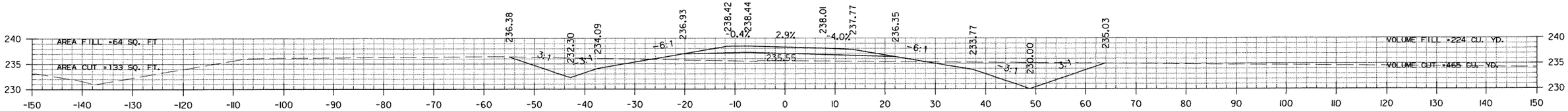

F.L. INLET 230.00

501+00.00

F.L. OUTLET 229.40




500+00.00




499+00.00

RAMP 2
STA. 499+00 TO STA. 502+00


saroberson 10/20/2011 4:04:39 PM
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REVISED DATE:

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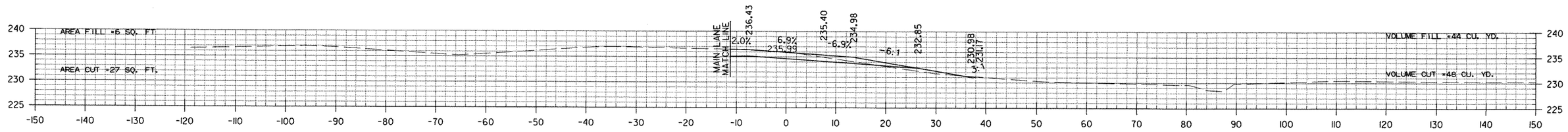
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 157 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |

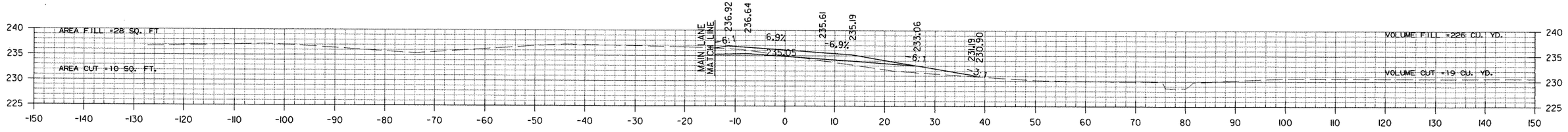
# STA. 505+69.98 END RAMP 2

STA. 509+36.95 END SUPERELEVATION

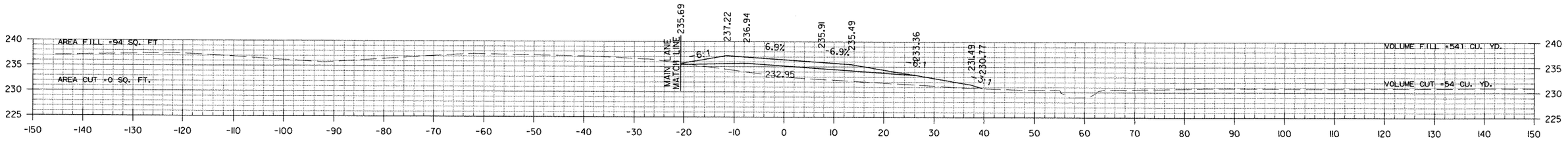
STA. 506+36.95 MAX SUPERELEVATION (0.069 FT./FT.)



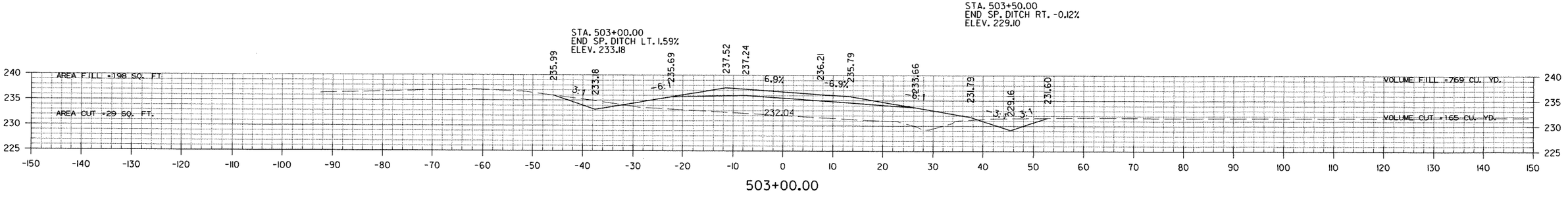

505+69.98




505+00.00




504+00.00




503+00.00

RAMP 2
STA. 503+00 TO STA. 505+70

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WORKSPACE: AHTD
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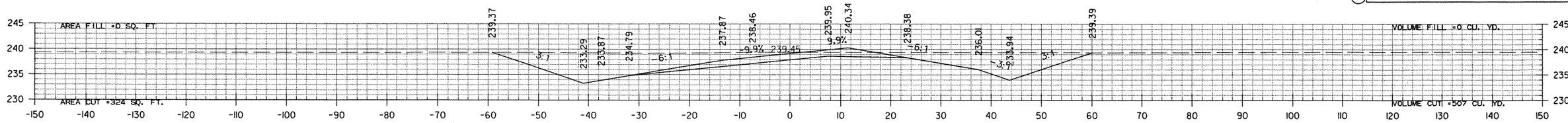
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 158 | 182 |

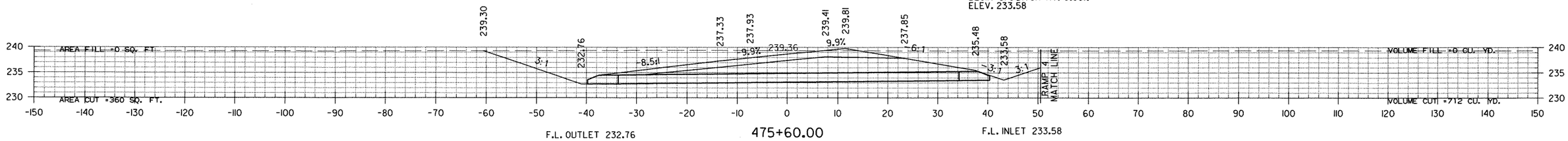
(2) CROSS SECTIONS




476+00.00

STA. 475+60.00 CONSTRUCT
29" X 18" X 68' R.C. ARCH PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 14 CFS DA = 4.7 ACRES

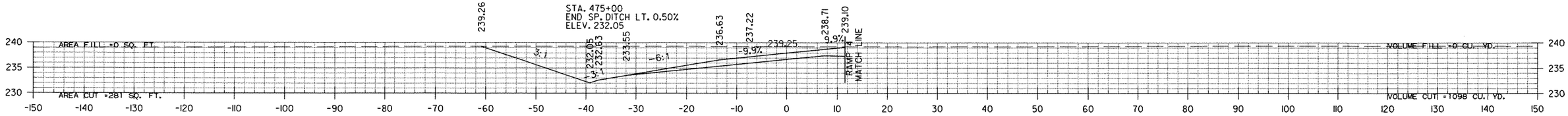
STA. 475+60.00
BEGIN SP. DITCH RT. 0.89%
ELEV. 233.58




F.L. OUTLET 232.76

475+60.00

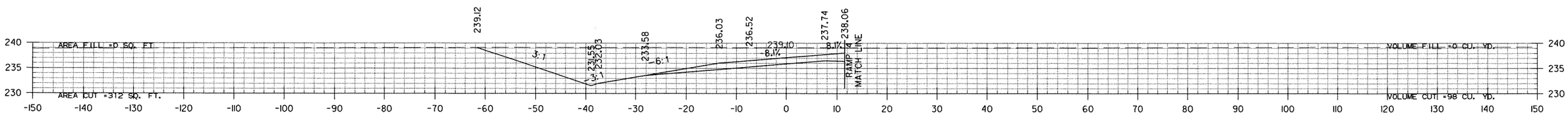
F.L. INLET 233.58




STA. 475+00
END SP. DITCH LT. 0.50%
ELEV. 232.05

475+00.00

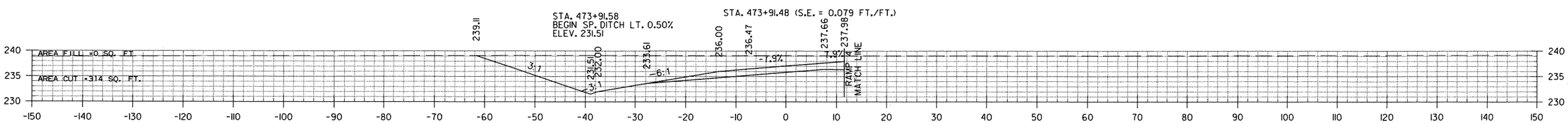
STA. 474+66.58 MAX SUPERELEVATION (0.099 FT./FT.)




474+00.00

STA. 473+91.58
BEGIN SP. DITCH LT. 0.50%
ELEV. 231.51

STA. 473+91.48 (S.E. = 0.079 FT./FT.)




473+91.58

STA. 473+91.58 BEGIN RAMP 3

RAMP 3
STA. 473+92 TO STA. 476+00

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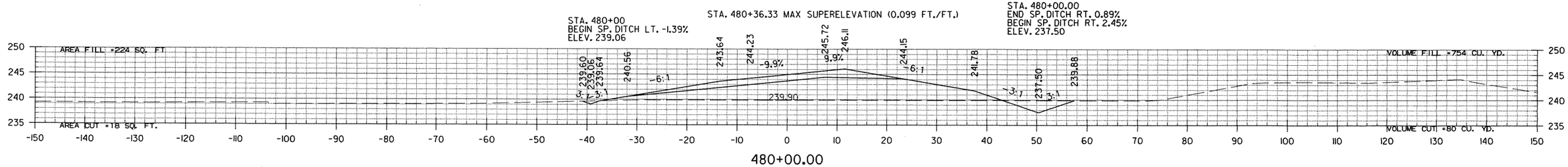
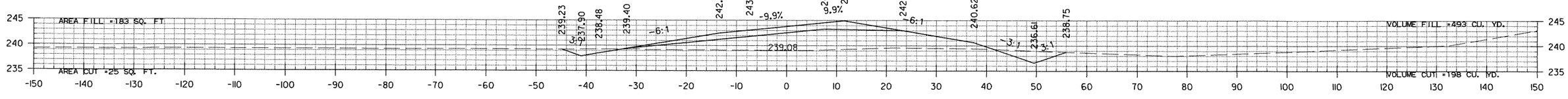
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 159 | 182 |

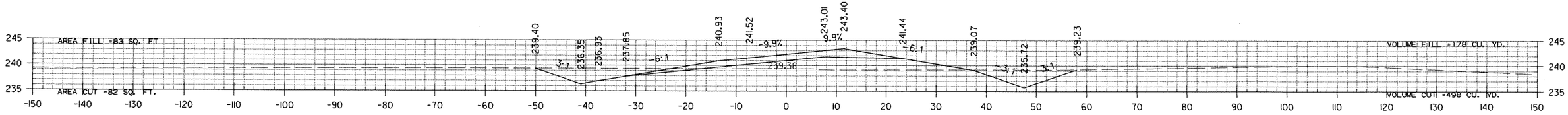
(2) CROSS SECTIONS



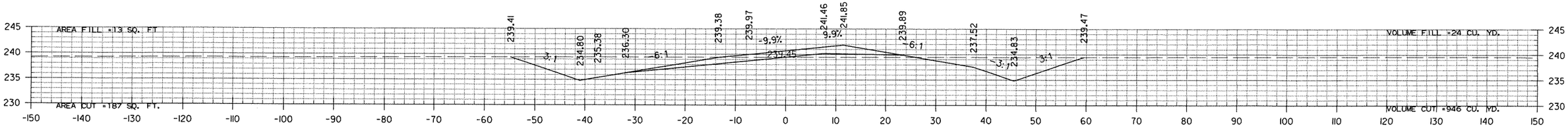

480+00.00




479+00.00




478+00.00




477+00.00

RAMP 3
STA. 477+00 TO STA. 480+00

saroberson 10/20/2011 4:08:07 PM
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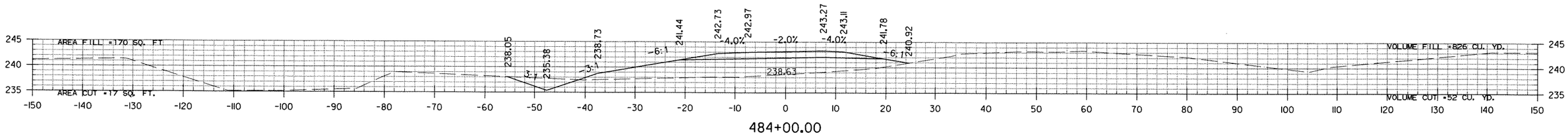
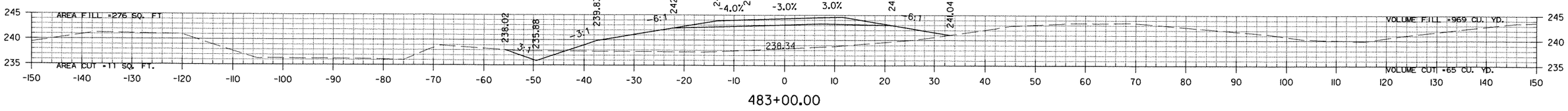
| | | | | JOB NO. | | 060897 | 160 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |

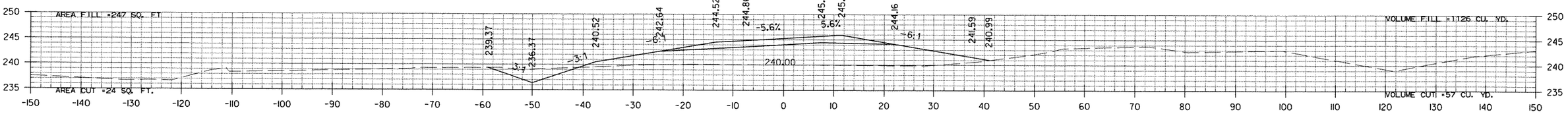



484+00.00

STA. 483+36.33 END SUPERELEVATION



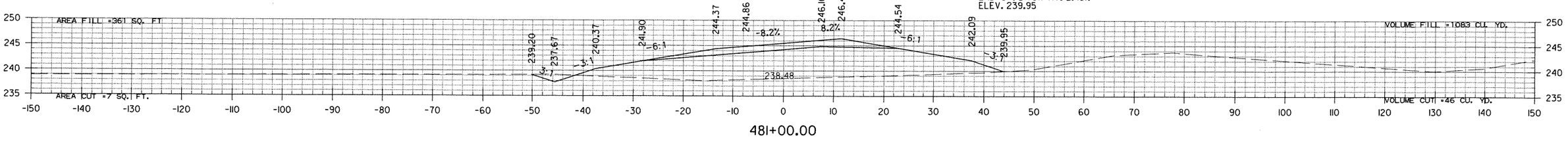

483+00.00




482+00.00

STA. 481+91
END SP. DITCH LT. -1.39%
BEGIN SP. DITCH LT. -0.49%
ELEV. 236.41

STA. 481+00.00
END SP. DITCH RT. 2.45%
ELEV. 239.95




481+00.00

RAMP 3
STA. 481+00 TO STA. 484+00

saroberson 10/20/2011 4:08:15 PM
WORKSPACE: AHTD
L:\2006\060860-140-H89 INT\Drawings\RWY\H89_CX_R3.dgn
REVISED DATE:

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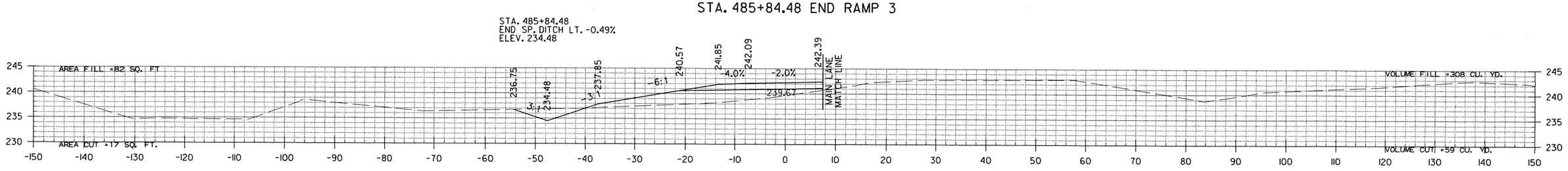
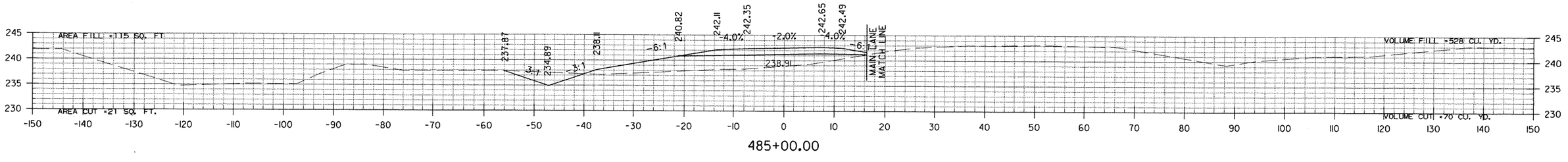
| FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | | |
| JOB NO. | | 060897 | 161 | 182 |

(2) CROSS SECTIONS

## STA. 485+84.48 END RAMP 3




485+84.48




485+00.00

RAMP 3
STA. 485+00 TO STA. 485+84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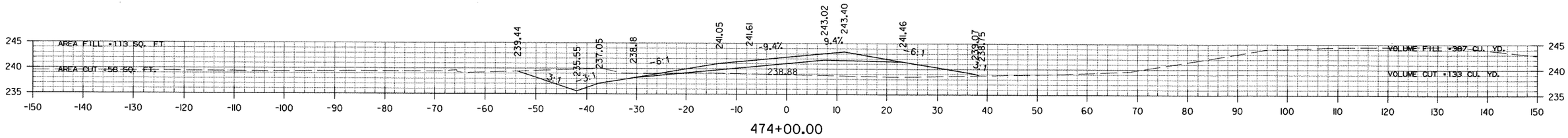
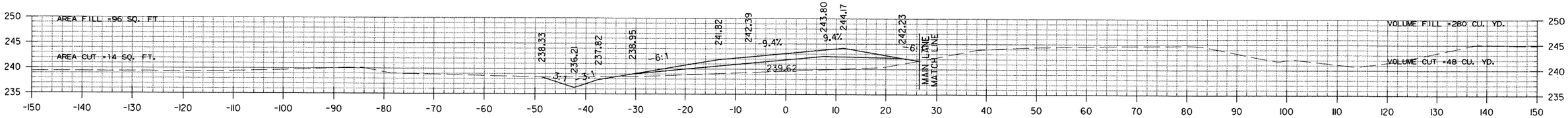
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 162 | 182 |

(2) CROSS SECTIONS



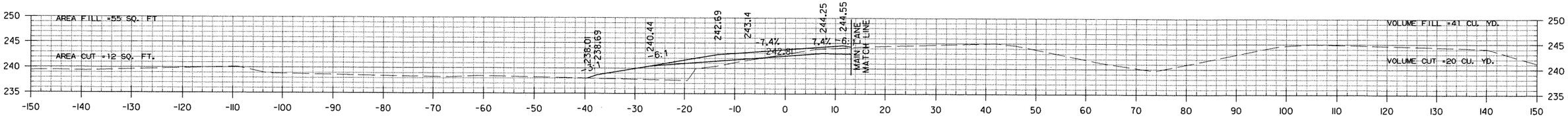

474+00.00



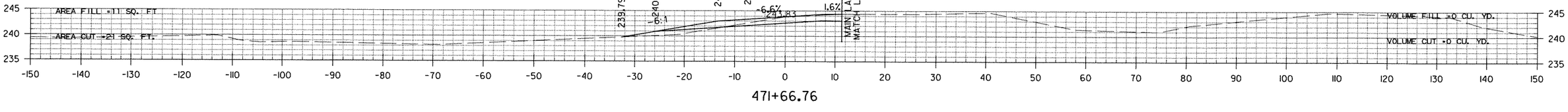

473+00.00

STA. 472+11
BEGIN SP. DITCH LT. -0.66%
ELEV. 236.80

STA. 472+80.27 MAX SUPERELEVATION (0.094 FT./FT.)




472+00.00




471+66.76

STA. 469+80.27 BEGIN SUPERELEVATION

STA. 471+66.76 BEGIN RAMP 4

RAMP 4
STA. 471+67 TO STA. 474+00


sarobertson 10/20/2011 4:12:09 PM
WORKSPACE: AHTD
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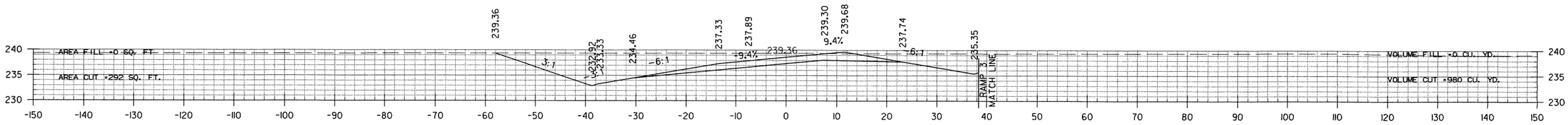
REVISED DATE:

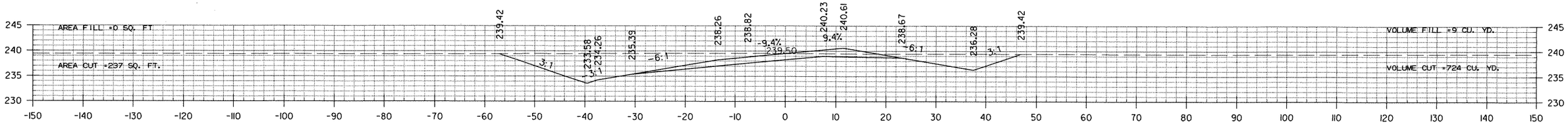
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 163 | 182 |

(2) CROSS SECTIONS

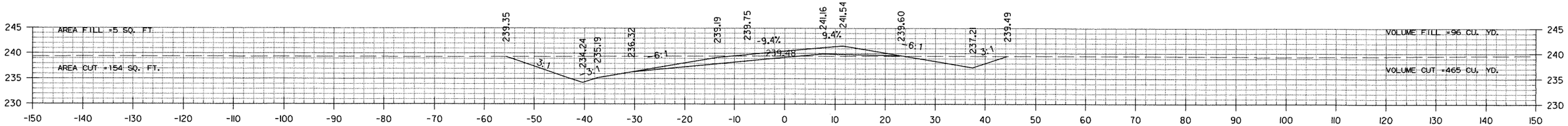
STA. 478+83.92 MAX SUPERELEVATION (0.094 FT./FT.)



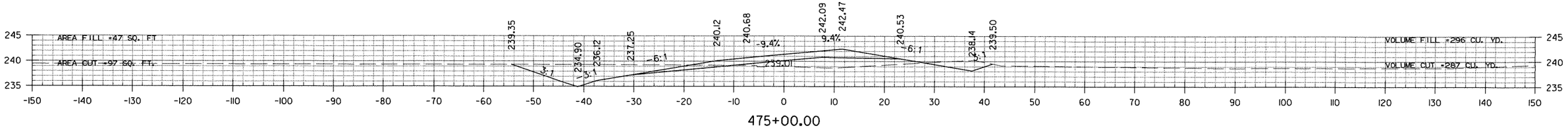

478+00.00




477+00.00




476+00.00




475+00.00

RAMP 4
STA. 475+00 TO STA. 478+00

sarobarson 10/20/2011 4:12:24 PM
WORKSPACE: AHTD
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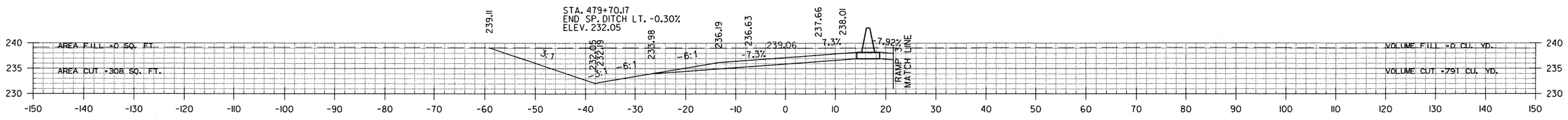
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 164 | 182 |

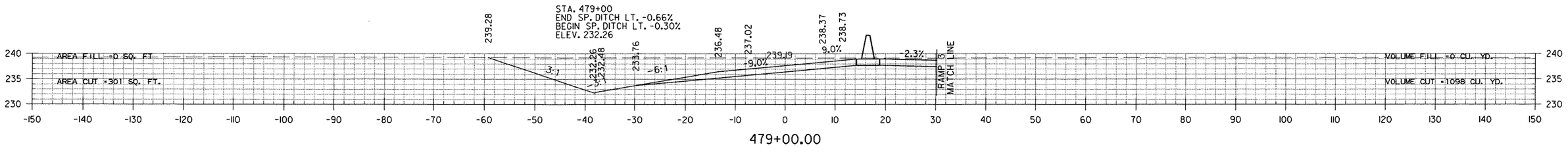
(2) CROSS SECTIONS

## STA. 479+70.17 END RAMP 4




479+70.17

STA. 479+70.17 (S.E. = 0.073 FT./FT.)




479+00.00

RAMP 4
STA. 479+00 TO STA. 479+70

saroberson 10/20/2011 4:23:39 PM
WORKSPACE: AHTD
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REVISED DATE:

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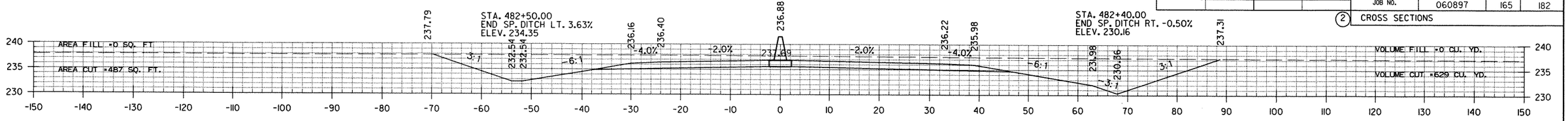
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 165 | 182 |

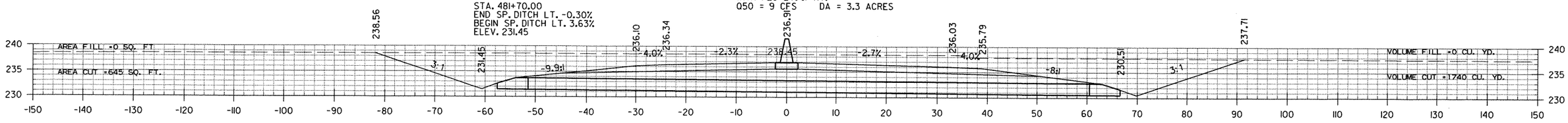
(2) CROSS SECTIONS




## 482+00.00

STA. 481+83.92 LT. RAMP END SUPERELEVATION
STA. 481+95.17 RT. RAMP END SUPERELEVATION

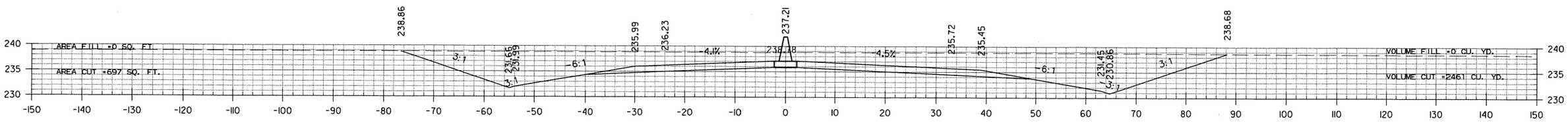
STA. 481+70.00 CONSTRUCT
24" X 112' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 9 CFS DA = 3.3 ACRES




F.L. INLET 231.45

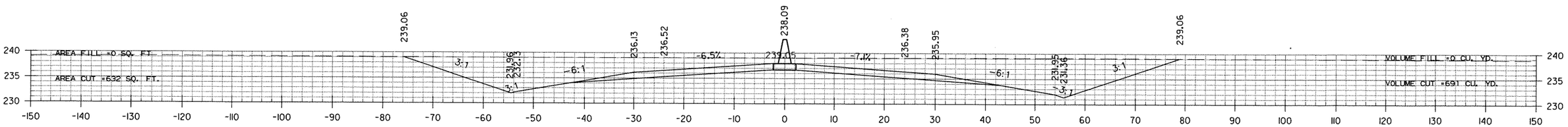
## 481+70.00

F.L. OUTLET 230.51



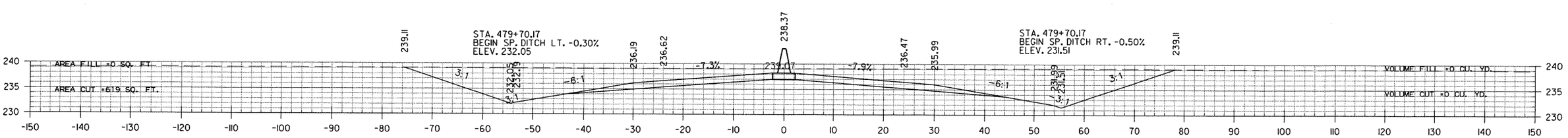

## 481+00.00

STA. 481+00 END TAPER




## 480+00.00

STA. 480+00 BEGIN TAPER




## 479+70.17

STA. 479+70.17 LT. RAMP (S.E. = 0.073 FT./FT.)
STA. 479+70.17 RT. RAMP( S.E. = 0.079 FT./FT.)

STA. 479+70.17 BEGIN MERGED RAMPS 3 & 4

MERGED RAMPS 3 & 4
STA. 479+70 TO STA. 482+00


saroberson 10/20/2011 4:14:57 PM
WORKSPACE: AHTD
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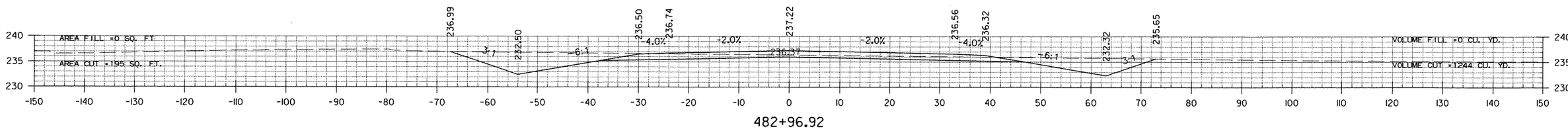
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 166 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |

STA. 482+96.92 END MERGED RAMPS 3 & 4




482+96.92

MERGED RAMPS 3 & 4
STA. 482+97

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WORKSPACE: AHTD
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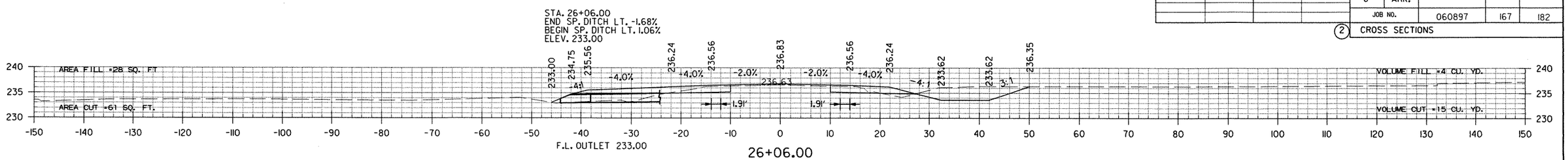
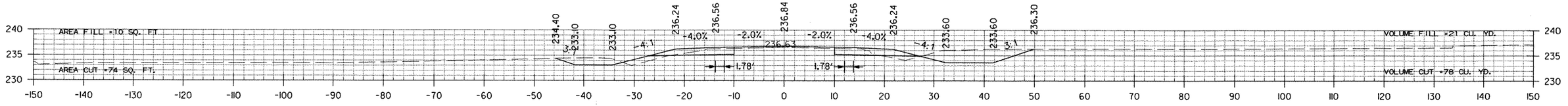
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 167 | 182 |

(2) CROSS SECTIONS



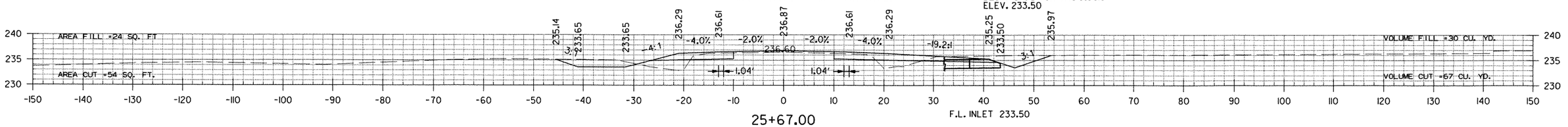

26+06.00




26+00.00

STA. 25+86 CONSTRUCT
TRIPLE 29" X 18" X 84' R.C. ARCH PIPE CULVERT
25° LT. FWD. SKEW
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 31 CFS DA = 14.5 ACRES

STA. 25+67.00
END SP. DITCH RT. -1.81%
BEGIN SP. DITCH RT. 0.30%
ELEV. 233.50



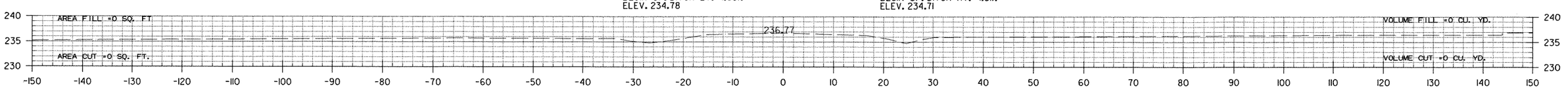

25+67.00

STA. 25+20 BEGIN TAPER

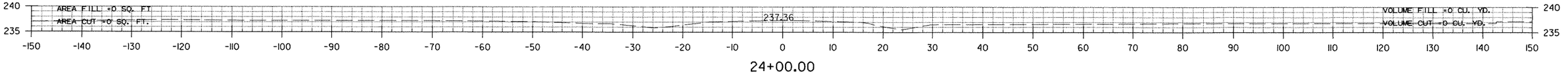
STA. 25+20 BEGIN HWY. 89

STA. 25+00.00
BEGIN SP. DITCH LT. -1.68%
ELEV. 234.78

STA. 25+00.00
BEGIN SP. DITCH RT. -1.81%
ELEV. 234.71




25+00.00




24+00.00

HWY 89
STA. 24+00 TO STA. 26+06

sarobertson 10/20/2011 4:17:46 PM
WORKSPACE: AHTD
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REVISED DATE:

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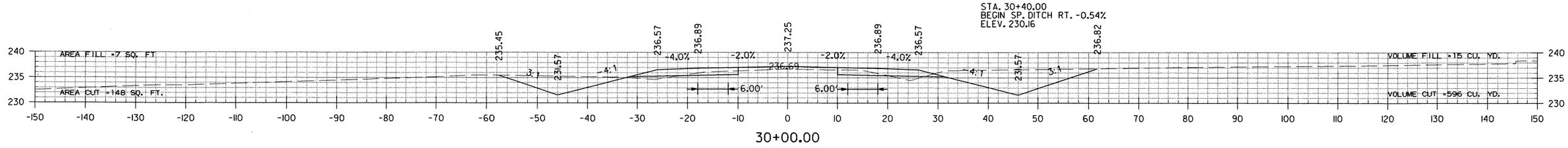
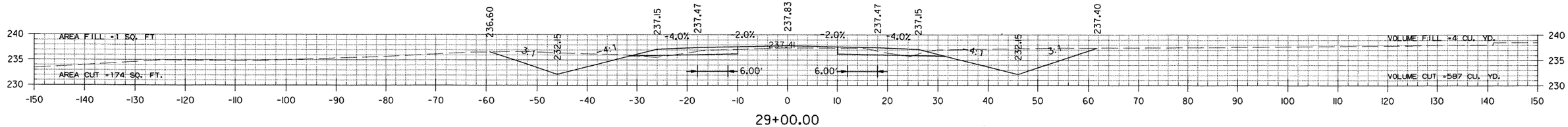
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 168 | 182 |

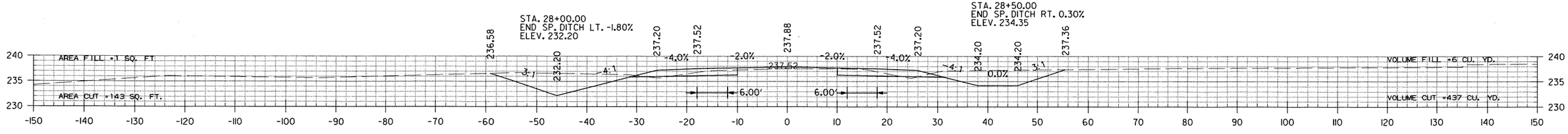
(2) CROSS SECTIONS




30+00.00

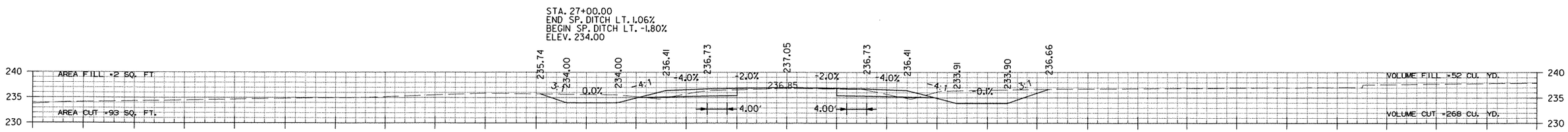



29+00.00




28+00.00

STA. 27+90 END TAPER




27+00.00

HWY 89
STA. 27+00 TO STA. 30+00


soroberson 10/20/2011 4:17:53 PM
WORKSPACE: AHTD
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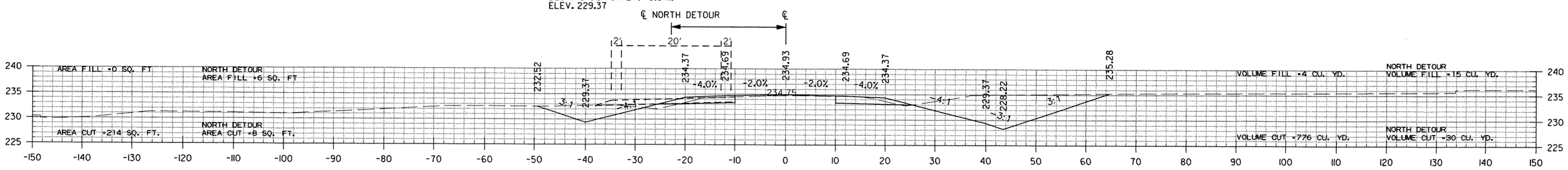
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 169 | 182 |

(2) CROSS SECTIONS

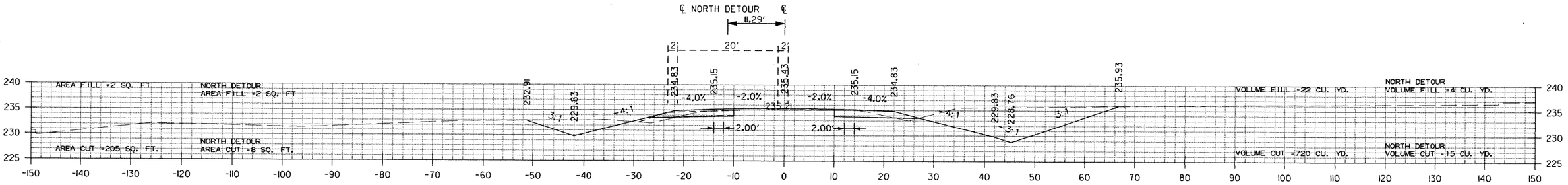
STA. 34+00.00
BEGIN SP. DITCH LT. -0.94%
ELEV. 229.37

STA. 34+45.48 BEGIN SUPERELEVATION

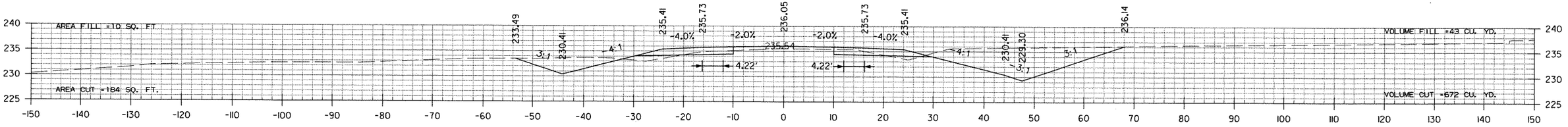



34+00.00

STA. 33+90 END TAPER

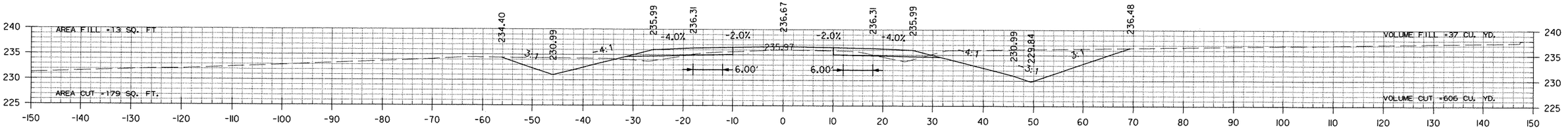



33+00.00




32+00.00

STA. 31+20 BEGIN TAPER




31+00.00

HWY 89
STA. 31+00 TO STA. 34+00

saroberson 10/20/2011 4:18:03 PM
WORKSPACE: AHTD
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REVISED DATE:

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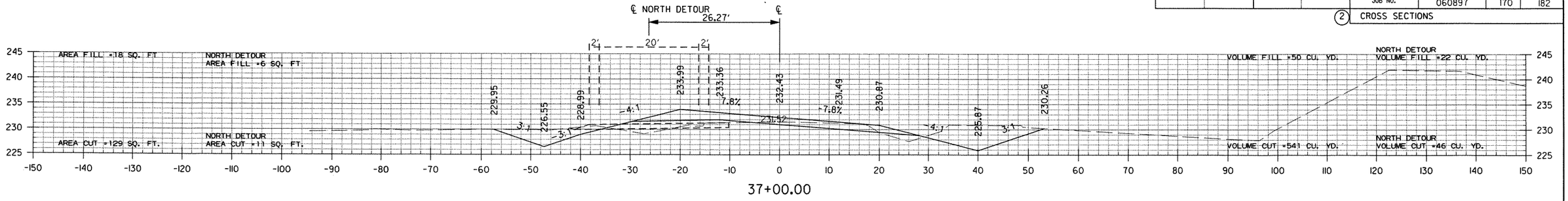
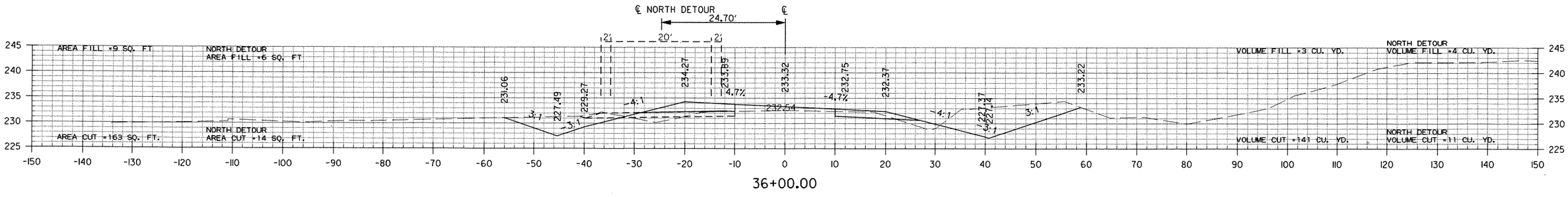
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 170 | 182 |

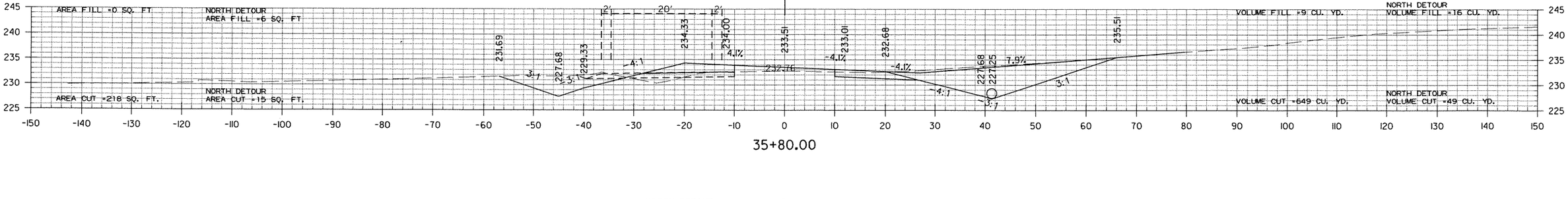
(2) CROSS SECTIONS



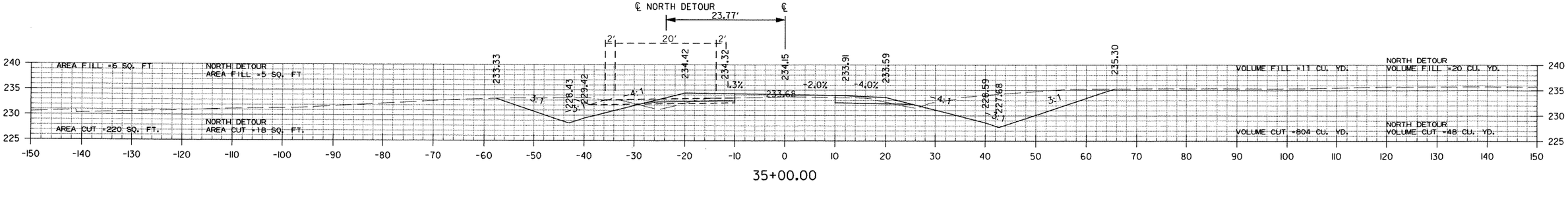

37+00.00




36+00.00




35+80.00




35+00.00

HWY 89
STA. 35+00 TO STA. 37+00

sroberson 10/20/2011 4:18:14 PM
WORKSPACE: AHTD
L:\2006\060501060-140-189 INT\Drawings\RWY\189_CX_89.dgn

REVISED DATE:

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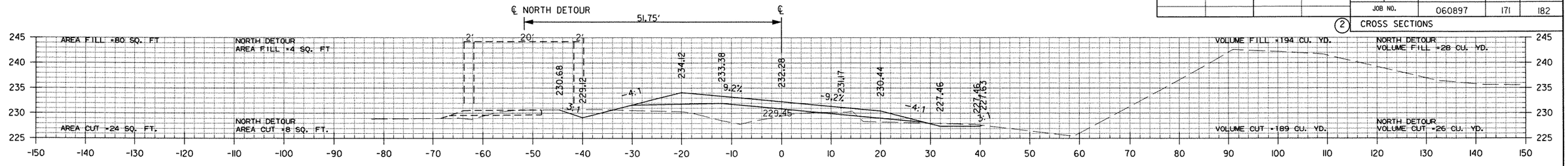
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 171 | 182 |

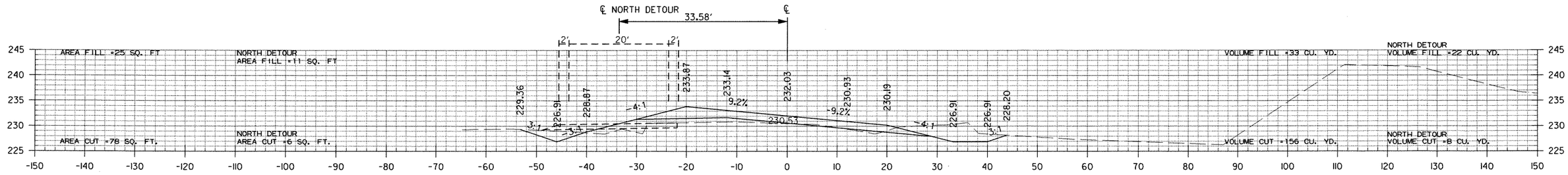
(2) CROSS SECTIONS

STA. 39+00.00
END SP. DITCH LT. 2.21%
ELEV. 229.12



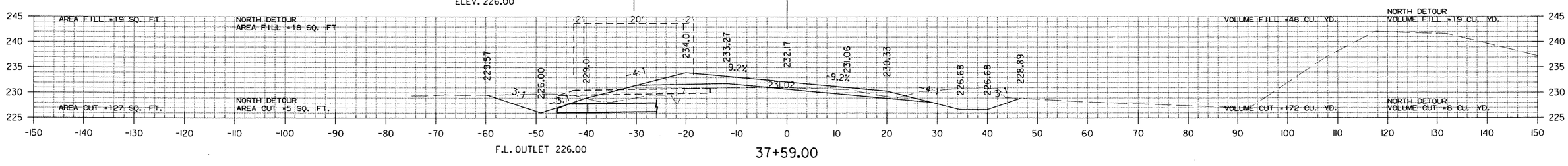

39+00.00

STA. 38+00.00




38+00.00

STA. 37+59.00
END SP. DITCH LT. -0.94%
BEGIN SP. DITCH LT. 2.21%
ELEV. 226.00



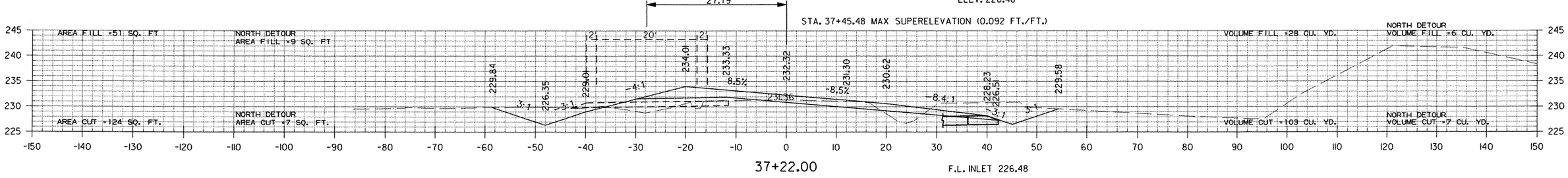

F.L. OUTLET 226.00

37+59.00

STA. 37+39.56 CONSTRUCT
TRIPLE 29" X 18" X 84' R.C. ARCH PIPE CULVERT
23° LT. FWD. SKEW
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 49 CFS DA = 21.8 ACRES

STA. 37+22.00
END SP. DITCH RT. -0.54%
BEGIN SP. DITCH RT. 0.55%
ELEV. 226.48

STA. 37+45.48 MAX SUPERELEVATION (0.092 FT./FT.)




F.L. INLET 226.48

37+22.00

HWY 89
STA. 37+22 TO STA. 39+00


saroberson 10/20/2011 4:18:22 PM
WORKSPACE: AHTD
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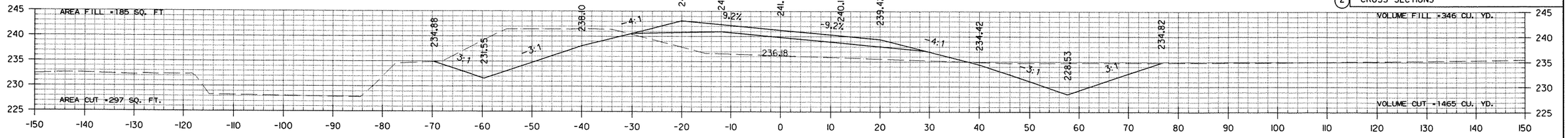
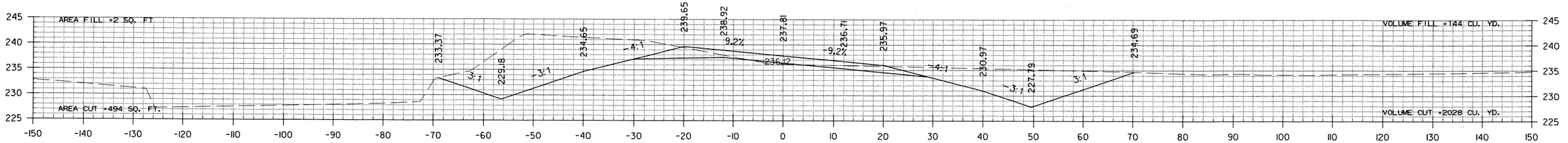
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 172 | 182 |

(2) CROSS SECTIONS




43+00.00

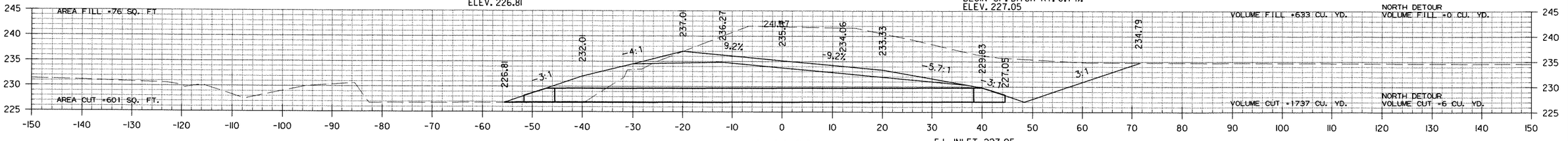



42+00.00

STA. 41+00.00 CONSTRUCT
DOUBLE 30" X 84' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 28 CFS DA = 12.7 ACRES

STA. 41+00.00
BEGIN SP. DITCH LT. 2.37%
ELEV. 226.81

STA. 41+00.00
END SP. DITCH RT. -0.95%
BEGIN SP. DITCH RT. 0.74%
ELEV. 227.05




F.L. OUTLET 226.81

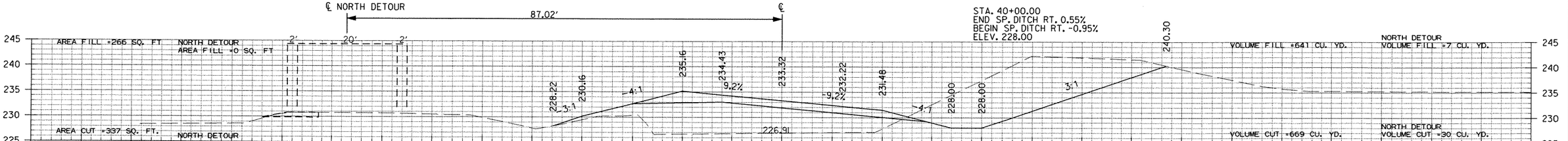
41+00.00

F.L. INLET 227.05

℄ NORTH DETOUR

87.02'

STA. 40+00.00
END SP. DITCH RT. 0.55%
BEGIN SP. DITCH RT. -0.95%
ELEV. 228.00




40+00.00

HWY 89
STA. 40+00 TO STA. 43+00

soroberson 10/20/2011 4:18:30 PM
WORKSPACE: AHTD
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REVISED DATE:

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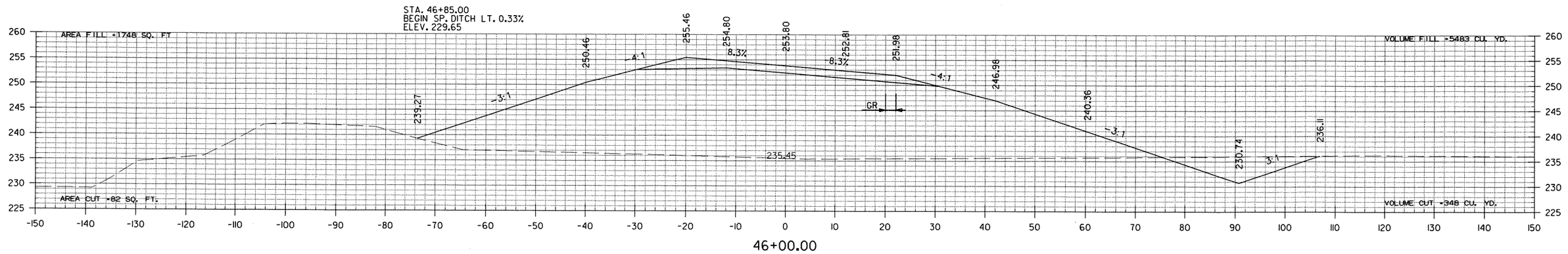
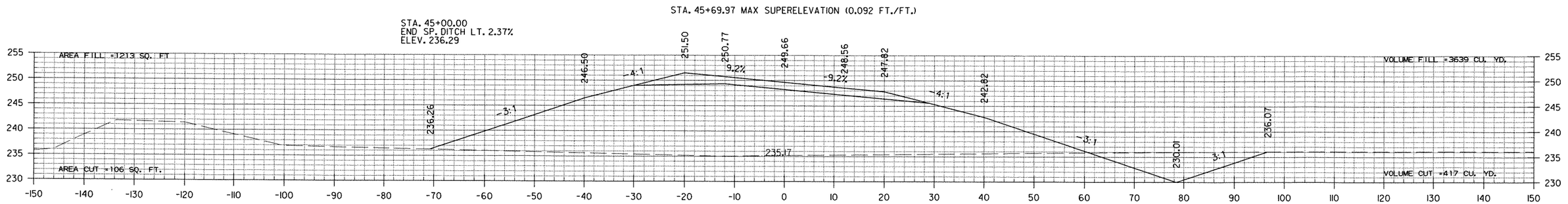
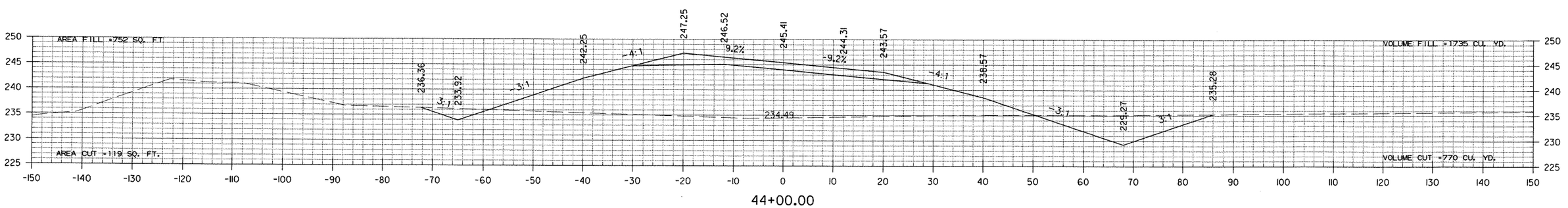
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 173 | 182 |

(2) CROSS SECTIONS




HWY 89
STA. 44+00 TO STA. 46+00

saroberson 10/20/2011 4:26:07 PM
WORKSPACE: AHTD
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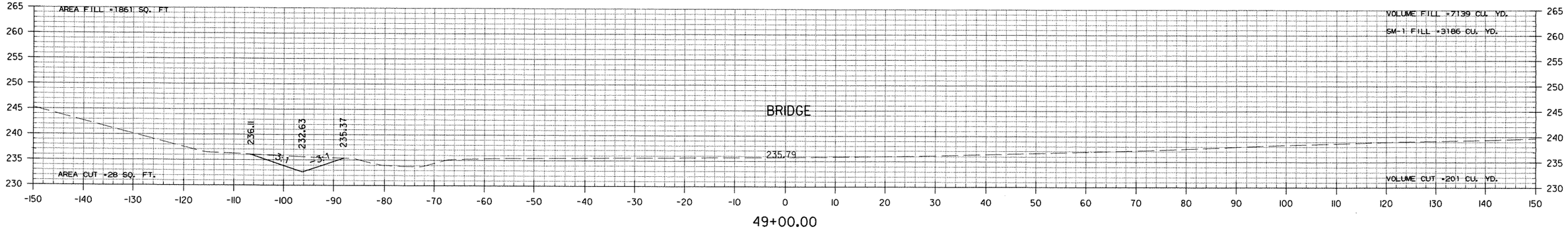
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 174 | 182 |

(2) CROSS SECTIONS

STA. 49+25.00
END SP. DITCH LT. 1.47%
ELEV. 233.00

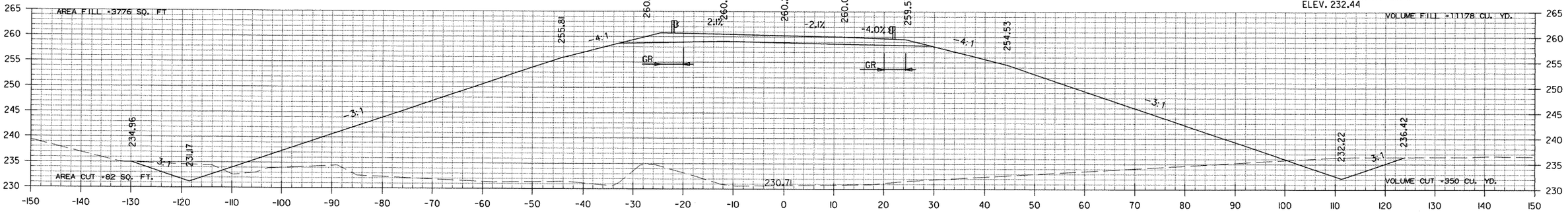



49+00.00

STA. 48+98.91 BEGIN BRIDGE

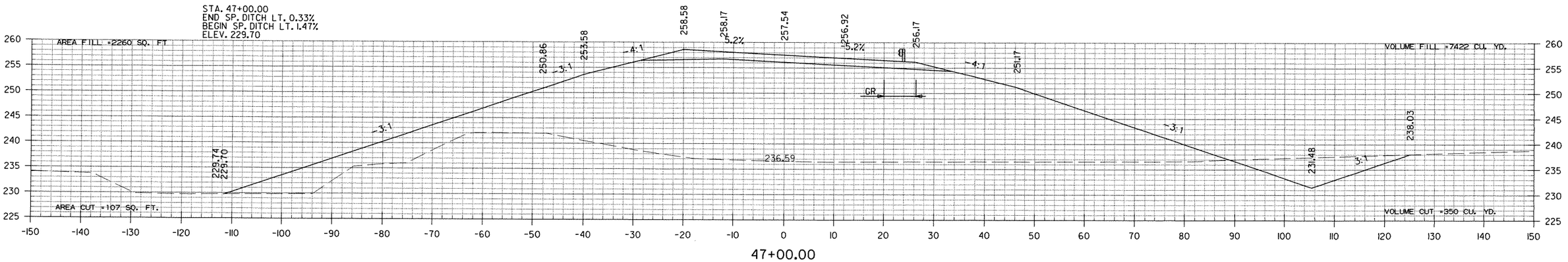
STA. 48+69.97 END SUPERELEVATION

STA. 48+30.00
END SP. DITCH RT. 0.74%
ELEV. 232.44




48+00.00

STA. 47+00.00
END SP. DITCH LT. 0.33%
BEGIN SP. DITCH LT. 1.47%
ELEV. 229.70




47+00.00

HWY 89
STA. 47+00 TO STA. 49+00

saroberson 10/20/2011 4:18:53 PM
WORKSPACE: AHTD
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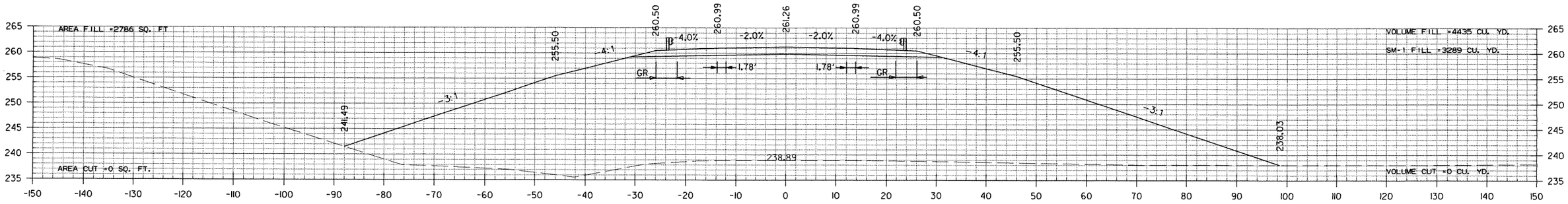
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 175 | 182 |

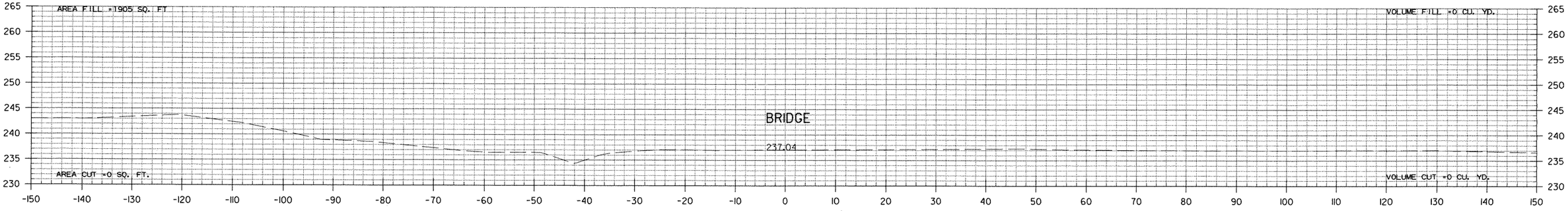
(2) CROSS SECTIONS



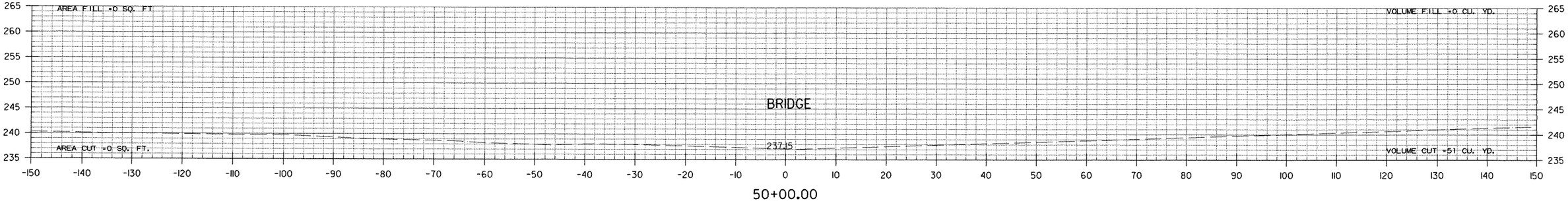

52+00.00

STA. 51+20 BEGIN TAPER

STA. 51+11.09 END BRIDGE




51+00.00




50+00.00

HWY 89
STA. 50+00 TO STA. 52+00

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WORKSPACE: AHTD
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REVISED DATE:

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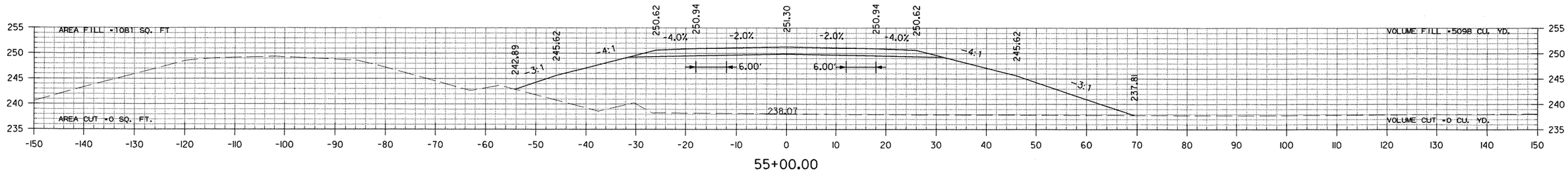
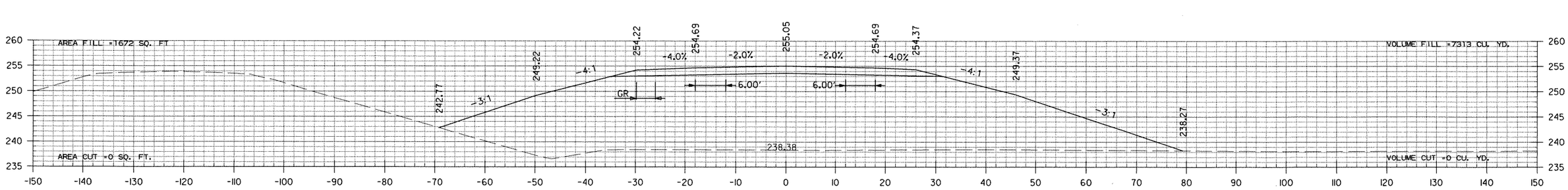
| FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | | |
| JOB NO. | | 060897 | 176 | 182 |

(2) CROSS SECTIONS

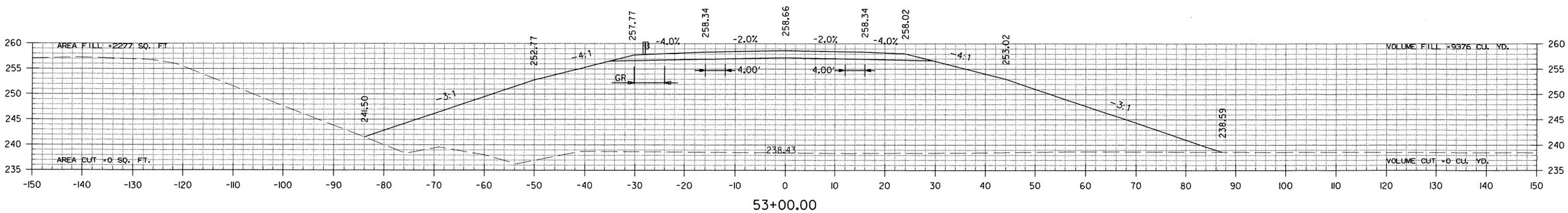



55+00.00




54+00.00

STA. 53+90 END TAPER




53+00.00

HWY 89
STA. 53+00 TO STA. 55+00

scarberson 10/20/2011 4:19:13 PM
WORKSPACE: AHTD
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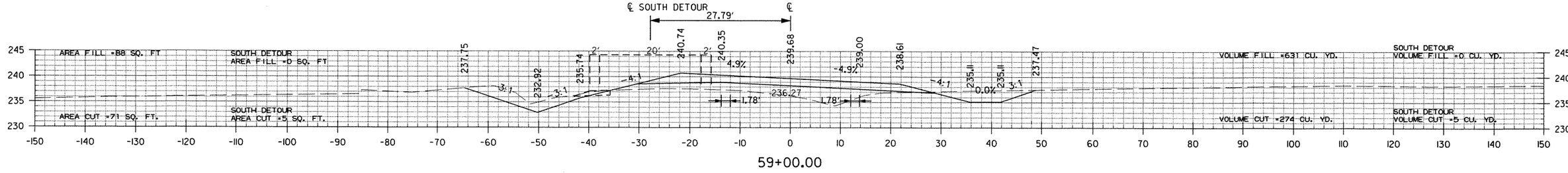
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 177 | 182 |
| | | | | (2) CROSS SECTIONS | | | | |

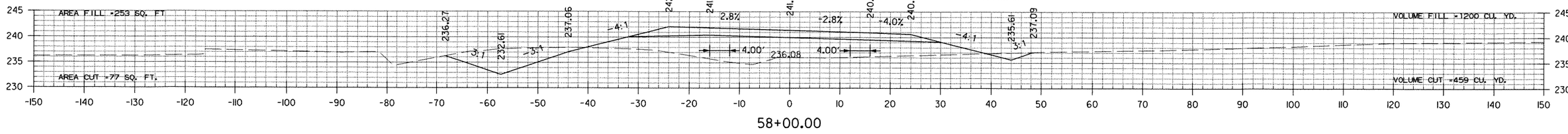
STA. 59+80 END TAPER




59+00.00

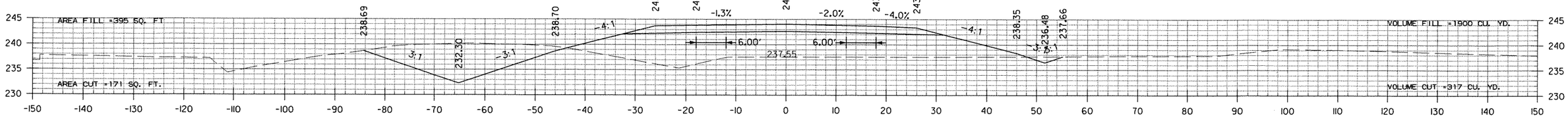
STA. 58+84.82 MAX SUPERELEVATION (0.049 FT./FT.)

STA. 58+00.00
END SP. DITCH RT. -0.87%
BEGIN SP. DITCH RT. -0.50%
ELEV. 235.61




58+00.00

STA. 57+10 BEGIN TAPER

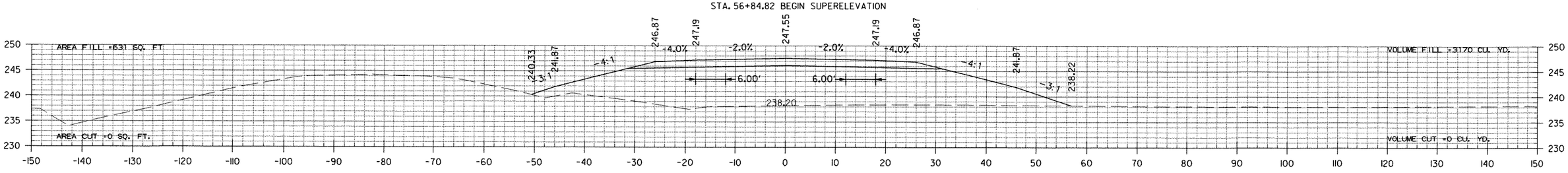



57+00.00

STA. 56+50.00
BEGIN SP. DITCH LT. 0.31%
ELEV. 232.15

STA. 56+40.00
BEGIN SP. DITCH RT. -0.87%
ELEV. 237.00

STA. 56+84.82 BEGIN SUPERELEVATION




56+00.00

HWY 89
STA. 56+00 TO STA. 59+00

saroberson 10/20/2011 4:26:22 PM
WORKSPACE: AHTD
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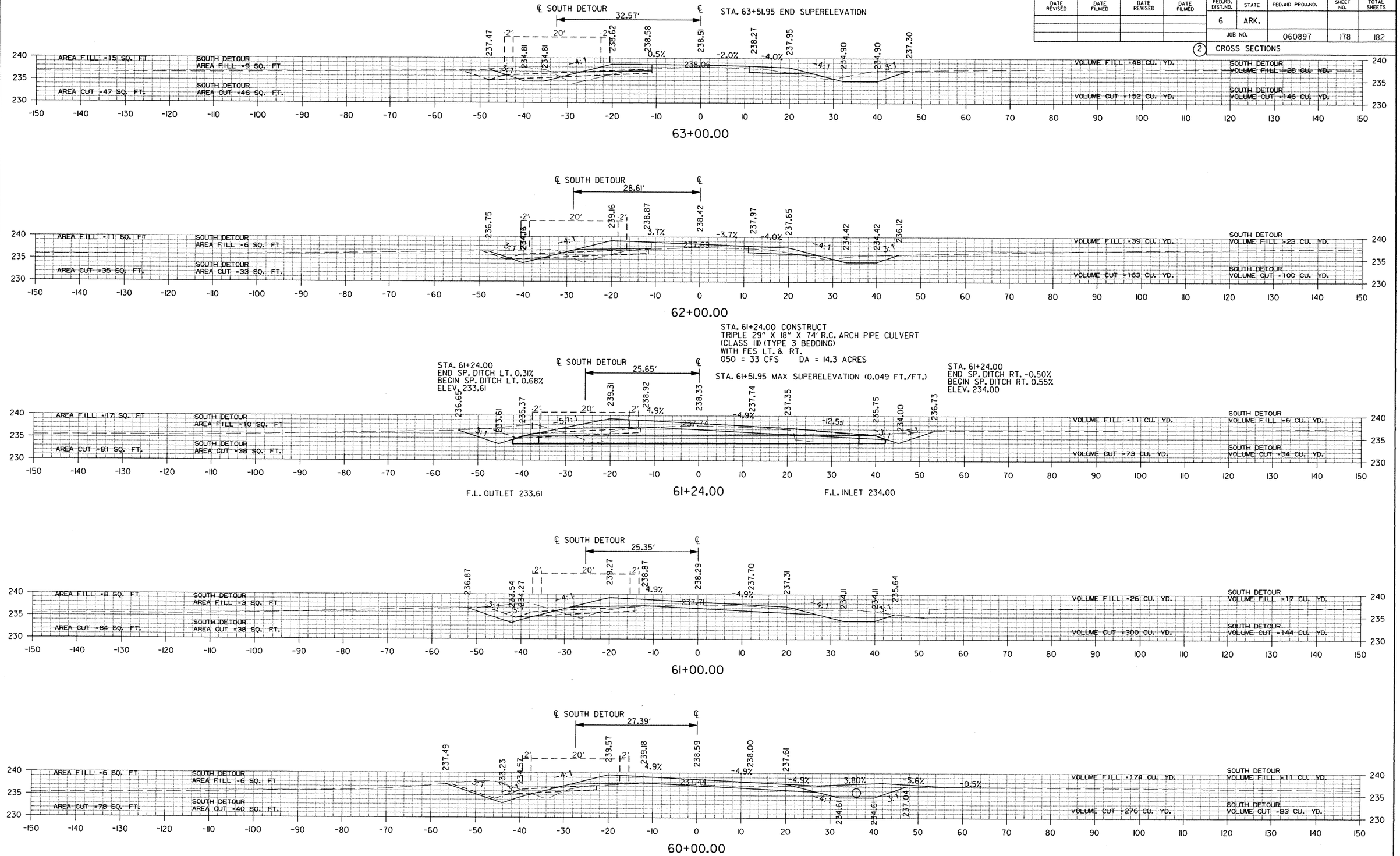
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 178 | 182 |

(2) CROSS SECTIONS




HWY 89
STA. 60+00 TO STA. 63+00

saroberson 10/20/2011 4:19:40 PM
WORKSPACE: AHTD
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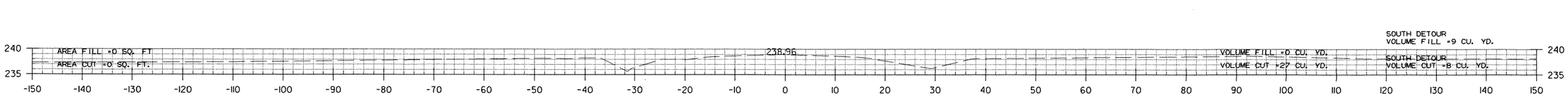
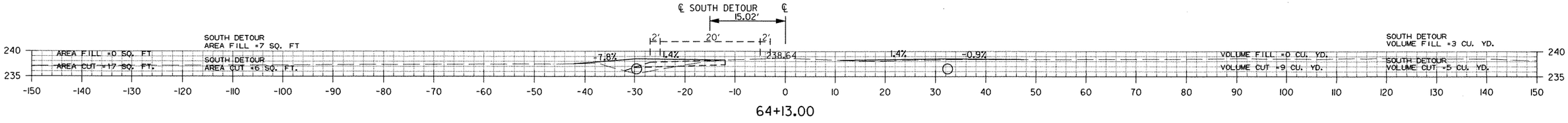
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 179 | 182 |

(2) CROSS SECTIONS

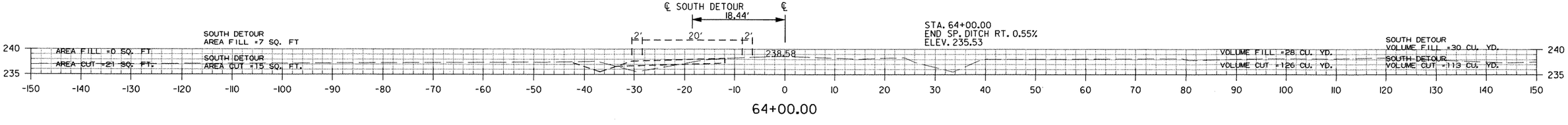



65+00.00




64+13.00

STA. 64+00.00
END SP. DITCH LT. 0.68%
ELEV. 235.49




64+00.00

STA. 63+60 END HWY. 89

HWY 89
STA. 64+00 TO STA. 65+00

saroberson 10/20/2011 4:19:50 PM
WORKSPACE: AHTD
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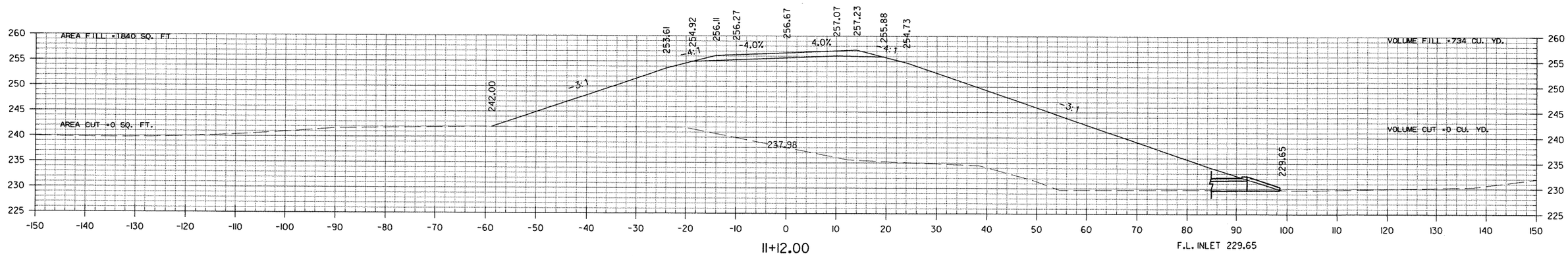
REVISED DATE:

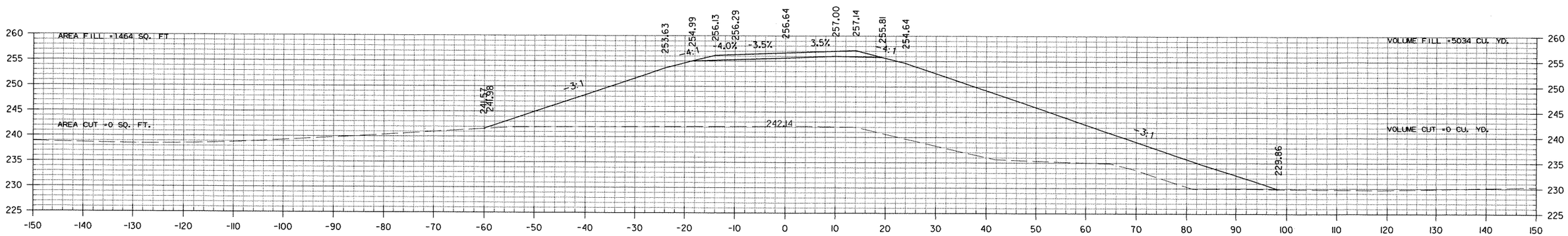
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 180 | 182 |

(2) CROSS SECTIONS

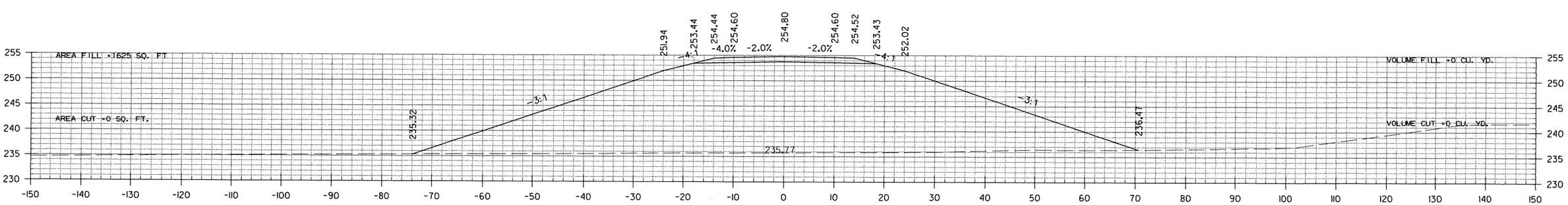



11+12.00

F.L. INLET 229.65




11+00.00




10+12.00

STA. 10+12.00 BEGIN SUPERELEVATION

STA. 10+12 BEGIN SAYLOR RD.

SAYLOR RD.
STA. 10+12 TO STA. 11+12

saroberson 10/20/2011 4:31:03 PM
WORKSPACE: AHTD
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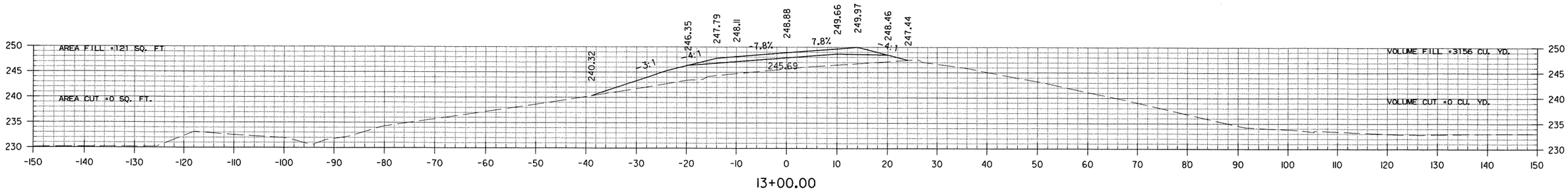
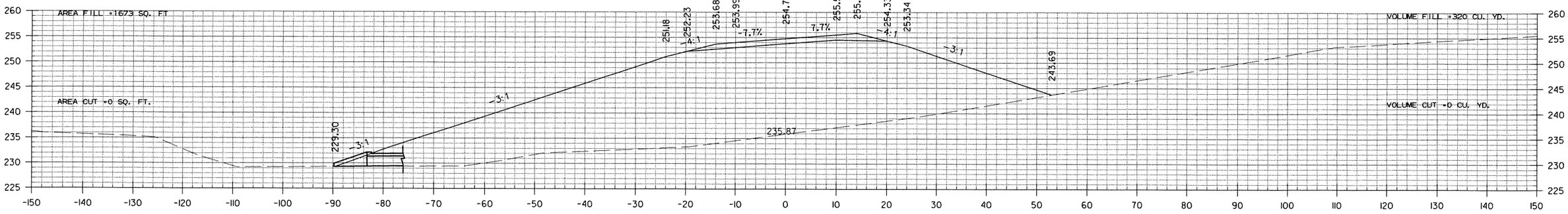
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 181 | 182 |
| | | | | (2) | CROSS SECTIONS | | | |




13+00.00

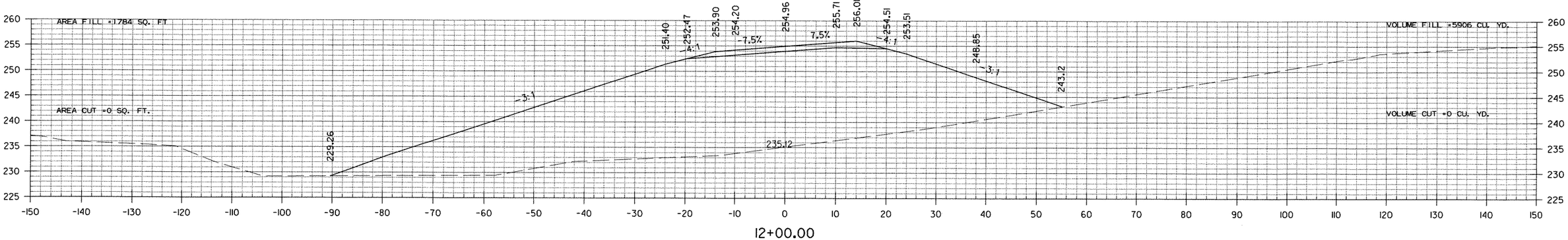
STA. 12+53.01 MAX SUPERELEVATION (0.096 FT./FT.)




F.L. OUTLET 229.30

12+05.00

STA. 11+42.00 CONSTRUCT
4' X 2' X 195' R.C. BOX CULVERT
24° LT. FWD. SKEW
WITH 3:1 WINGS LT. & RT.
Q50 = 36 CFS DA = 38.2 ACRES



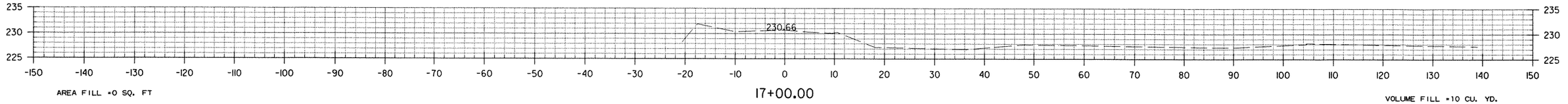

12+00.00

SAYLOR RD.
STA. 12+00 TO STA. 13+00

sgroberson 10/20/2011 4:31:16 PM
WORKSPACE: AHTD
L:\2006\060510160-140-H89 INT\Drawings\RWY\H89_CY_SAY.dgn
REVISED DATE:

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 060897 | 182 | 182 |

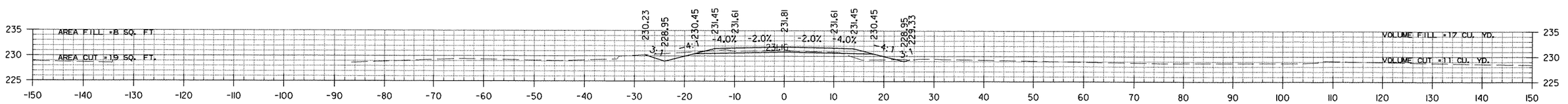
(2) CROSS SECTIONS



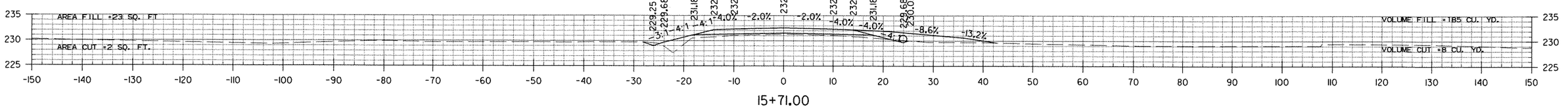

17+00.00

STA. 16+70 END SAYLOR RD.

STA. 16+00.00
END SP. DITCH LT. -1.05%
ELEV. 228.95

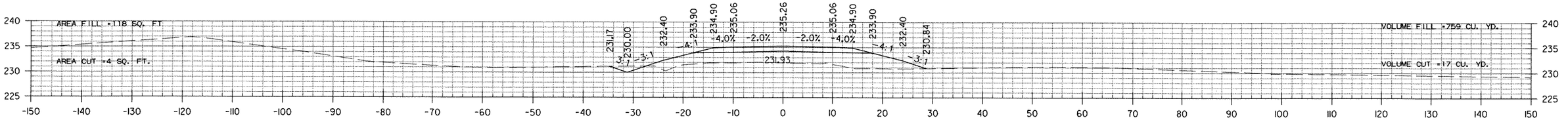



16+00.00




15+71.00

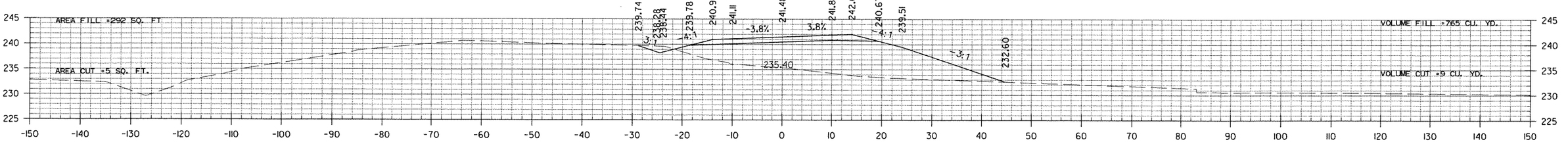
STA. 15+00.00
END SP. DITCH LT. -8.28%
BEGIN SP. DITCH LT. -1.05%
ELEV. 230.00




15+00.00

STA. 14+94.02 END SUPERELEVATION

STA. 14+00.00
BEGIN SP. DITCH LT. -8.28%
ELEV. 238.28




14+00.00

SAYLOR RD.
STA. 14+00 TO STA. 17+00

saroberson 10/20/2011 4:31:26 PM
WORKSPACE: AHTD
L:\2006\060510060-140-H89 INT\Drawings\RWY\H89_CX_SAY.dgn
REVISED DATE: