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<th>SHEET NO.</th>
<th>TITLE</th>
<th>BRIDGE NO.</th>
<th>DRWG.NO.</th>
<th>DATE</th>
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### INDEX OF SHEETS

<table>
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<th>BRIDGE NO.</th>
<th>DRWG.NO.</th>
<th>DATE</th>
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### INDEX OF SHEETS (CONTINUED)

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<th>TITLE</th>
<th>BRIDGE NO.</th>
<th>DRWG.NO.</th>
<th>DATE</th>
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</table>

**NOTE:** Cross sections not normally included in plans sold to prospective bidders, but may be had upon request.
GOVERNING SPECIFICATIONS
ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER | TITLE
--- | ---
ERRATA | ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHW-1273 | FHW-1273 REVISIONS
FHW-1273 | REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHW-1273 | SUPPLEMENTAL CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHW-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHW-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY ROLES AND RESPONSIBILITIES (23 U.S.C. 140)
FHW-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY GOALS AND TIMETABLES
FHW-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY FEDERAL STANDARD
FHW-1273 | SUPPLEMENT - TRAINING PROGRAM JOB 100710
FHW-1273 | SUPPLEMENT - POSTS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHW-1273 | SUPPLEMENT - WALL, FENCE, AND CONCRETE

100-2- | MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
105-1- | DETERMINATION OF DEE PARTICIPATION
105-1- | CONSTRUCTION CONTROL MARKINGS
105-2- | EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
107-1- | WORKER VITALITY
108-1- | LIQUIDATED DAMAGES
303-1- | PROTECTION OF WATER QUALITY AND WETLANDS
303-1- | AGGREGATE BASE COURSE
603-1- | WATER FOR VEGETATION
603-1- | PIPE CULVERTS FOR SIDE DRAINS
603-2- | PIPE CULVERTS

JOB 100710 | BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 100710 | CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 100710 | DELAY IN RIGHT-OF-WAY OCCUPANCY
JOB 100710 | DRIVEN STEEL PILING BY METHOD B
JOB 100710 | GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION EIGHT MILE CREEK
JOB 100710 | GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION RAILROAD OVERPASS
JOB 100710 | GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 100710 | INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (UPRR)
JOB 100710 | INTERNET BIRDING
JOB 100710 | NESTING SITES OF MIGRATORY BIRDS
JOB 100710 | PARTNERING REQUIREMENTS
JOB 100710 | SECTION 404 LETTER OF PERMISSION REQUIREMENTS
JOB 100710 | SILICONE JOINT SEALANT
JOB 100710 | SOIL STABILIZATION
JOB 100710 | SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB 100710 | STEEL SHELL PILES
JOB 100710 | STORMWATER POLLUTION PREVENTION PLAN
JOB 100710 | TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES LEFT IN PLACE
JOB 100710 | UTILITY ADJUSTMENTS
JOB 100710 | VALUE ENGINEERING

GENERAL NOTES

1. GRADE LINE NOTES 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 INTERFERS 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 ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARVESTED 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 SERVED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY OR IN LIEU OF THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
7. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 310 - UNCLASSIFIED EXCAVATION.
4 LANE DIVIDED W/ LT. TURN LANE
TANGENT SECTION
GRADING
STA. 376+70, 00 - 376+75, 00

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. IT IS INTENDED THAT THE SUBGRADE SHALL BE FINISHED IN CONFORMITY WITH THE LINES, GRADES, AND CROSS SECTIONS SHOWN ON THE PLANS. HOWEVER, A TOLERANCE OF PLUS OR MINUS ONE-TENTH FOOT WILL BE ALLOWED.
4 LANE DIVIDED
TANGENT SECTION
GRADING
STA. 383+95, DC=400±35.38
STA. 421+15, DC=429±71.70
STA. 467+75, DC=514±81.00
STA. 549+66, DC=613±01.50
STA. 635+70, DC=630±80.00

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

2. IT IS INTENDED THAT THE SUBGRADE SHALL BE FINISHED IN CONFORMITY WITH THE LINES, GRADES, AND CROSS SECTIONS SHOWN ON THE PLANS, HOWEVER, A TOLERANCE OF PLUS OR MINUS ONE-TENTH FOOT WILL BE ALLOWED.

4 LANE DIVIDED
SUPERELEVATION SECTION
GRADING
STA. 406+10, DC=421±15.40
STA. 514+67, DC=549±86.07
STA. 613+47, DC=613±10.00
STA. 814+20, DC=823±11.08
STA. 835+80, DC=837±74.00

TYPICAL SECTIONS OF IMPROVEMENT
5 LANE
TANGENT SECTION
GRADING
STA. 652+17, 72+653-75, 00

STA.637+74-648+50 TRANSITION
FROM 4 LANE DIVIDED SUPERELEVATION
TO 6 LANE SUPERELEVATION

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

2. IT IS INTENDED THAT THE SUBGRADE SHALL BE FINISHED IN
CONFORMITY WITH THE LINES, GRADAMES, AND CROSS SECTIONS
SHOWN ON THE PLANS. HOWEVER, A TOLERANCE OF PLUS OR
MINUS ONE-TENTH FOOT WILL BE ALLOWED.

5 LANE
SUPERELEVATED SECTION
GRADING
STA. 648+50, 652+17, 72

NOTE: REVOLVE SUPERELEVATION
AROUND PROFILE GRADATION POINT.

ON ALL SUPERELEVATED CURVES AND THRU
SUPERELEVATION TRANSITIONS THE ALGEBRAIC
DIFFERENCE BETWEEN PAYMENT SLOPE AND
SHOULDER SLOPE SHALL NOT EXCEED 0.08%.
DETAILED FOR COUNTY ROAD TURNOUTS

DETAILED FOR DRIVEWAY TURNOUTS

DETAILED OF ACCESS OPENINGS (NOT TO SCALE)

WIDENING FOR GUARDRAIL
MODIFICATION TO STANDARD R.C. BOX CULVERT DRAWINGS

Bar List for Special Skewed "B" Section

Dimensions and Quantities for Special Skewed "B" Section

SPECIAL DETAILS
### ADVANCE WARNING SIGNS AND DEVICES

<table>
<thead>
<tr>
<th>SIGN NUMBER</th>
<th>DESCRIPTION</th>
<th>SIGN SIZE</th>
<th>STAGE 1</th>
<th>MAXIMUM NUMBER REQUIRED</th>
<th>TOTAL SIGNS REQUIRED</th>
<th>BARRICADES LEFT IN PLACE (TYPE B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W20-1</td>
<td>ROAD WORK 1500 FT</td>
<td>48x48&quot;</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
</tr>
<tr>
<td>W20-2</td>
<td>ROAD WORK 1000 FT</td>
<td>48x48&quot;</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
</tr>
<tr>
<td>W20-3</td>
<td>ROAD WORK 500 FT</td>
<td>48x48&quot;</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
</tr>
<tr>
<td>W20-4</td>
<td>ROAD WORK AHEAD</td>
<td>48x48&quot;</td>
<td>5 x</td>
<td>5 x</td>
<td>5 x</td>
<td>5 x</td>
</tr>
<tr>
<td>G02-0</td>
<td>END ROAD WORK</td>
<td>48x48&quot;</td>
<td>11 x</td>
<td>11 x</td>
<td>11 x</td>
<td>11 x</td>
</tr>
<tr>
<td>PT1-2</td>
<td>ROAD CLOSED</td>
<td>48x48&quot;</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
<td>6 x</td>
</tr>
<tr>
<td>R-1</td>
<td>DO NOT PASS</td>
<td>24x30&quot;</td>
<td>4 x</td>
<td>4 x</td>
<td>20 x</td>
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**TOTALS:**
- RIGHT: 276 x
- LEFT: 60 x

### CLEARING AND GRUBBING

<table>
<thead>
<tr>
<th>STATN</th>
<th>STATION</th>
<th>LOCATION</th>
<th>CLEARING/GRUBBING</th>
</tr>
</thead>
<tbody>
<tr>
<td>375+00</td>
<td>377-00</td>
<td>HAY 412 Bypass</td>
<td>2 x 2</td>
</tr>
<tr>
<td>380+00</td>
<td>380-00</td>
<td>HAY 412 Bypass</td>
<td>15 x 15</td>
</tr>
<tr>
<td>424+00</td>
<td>424-00</td>
<td>HAY 412 Bypass</td>
<td>9 x 9</td>
</tr>
<tr>
<td>500+00</td>
<td>510-00</td>
<td>HAY 412 Bypass</td>
<td>4 x 4</td>
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<tr>
<td>528+00</td>
<td>520-00</td>
<td>HAY 412 Bypass</td>
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<tr>
<td>537+00</td>
<td>514-00</td>
<td>HAY 412 Bypass</td>
<td>1 x 1</td>
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<tr>
<td>515+00</td>
<td>522-00</td>
<td>HAY 412 Bypass</td>
<td>1 x 1</td>
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<td>535+00</td>
<td>535-00</td>
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<tr>
<td>535+00</td>
<td>530-00</td>
<td>HAY 412 Bypass</td>
<td>3 x 3</td>
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**TOTALS:**
- 60 x

### BENCH MARKS

<table>
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<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>BENCH MARKS</th>
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<tbody>
<tr>
<td>384+19</td>
<td>BOX CULVERT HEADWALL ONLY</td>
<td>1 x</td>
</tr>
<tr>
<td>623+11</td>
<td>BRIDGE END</td>
<td>1 x</td>
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</table>

**TOTAL:** 5

### REMOVAL AND DISPOSAL OF ITEMS

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>CONCRETE DITCH PAVING</th>
<th>BUILDINGS</th>
<th>SIGNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>375+00</td>
<td>RT</td>
<td>1 x</td>
<td>1 x</td>
<td>1 x</td>
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<tr>
<td>379+00</td>
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<td>379+50</td>
<td>LT</td>
<td>1 x</td>
<td>1 x</td>
<td>1 x</td>
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<td>382+50</td>
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<tr>
<td>382+60</td>
<td>LT</td>
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**TOTALS:** 3 x

### EARTHWORK

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION / DESCRIPTION</th>
<th>UNCLASSIFIED EXCAVATION</th>
<th>COMPACTED EMBANKMENT</th>
<th>COMPACTED EMBANKMENT (SPECIAL)</th>
<th>SELECTED MATERIAL CLASS SM-3</th>
<th>SOIL STABILIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>375+47</td>
<td>MAINLANES</td>
<td>1500 x</td>
<td>380 x</td>
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<tr>
<td>475+00</td>
<td>MAINLANES</td>
<td>371 x</td>
<td>426 x</td>
<td></td>
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</tr>
<tr>
<td>500+00</td>
<td>MAINLANES</td>
<td>26 x</td>
<td>26 x</td>
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<tr>
<td>475+00</td>
<td>MAINLANES</td>
<td>363 x</td>
<td>358 x</td>
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<tr>
<td>417+11</td>
<td>MAINLANES</td>
<td>1053 x</td>
<td>1480 x</td>
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<td>500+00</td>
<td>MAINLANES</td>
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<td>26 x</td>
<td></td>
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<tr>
<td>475+00</td>
<td>MAINLANES</td>
<td>364 x</td>
<td>440 x</td>
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</tr>
<tr>
<td>475+00</td>
<td>UNDERCUT AND BACKFILL</td>
<td>899 x</td>
<td>899 x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>475+00</td>
<td>UNDERCUT AND BACKFILL</td>
<td>927 x</td>
<td>927 x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>475+00</td>
<td>APPROACHES</td>
<td>810 x</td>
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<tr>
<td>356+19</td>
<td>MAINLANES</td>
<td>778 x</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>475+00</td>
<td>MAINLANES</td>
<td>1000 x</td>
<td></td>
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</tbody>
</table>

**TOTALS:** 6030 x

**QUANTITIES**

- **REMOWAL AND DISPOSAL OF CULVERTS**
  - STATION: 813-79
  - DESCRIPTION: 6" X 22" C.M. PIPE CULVERT
  - EACH: 1

**TOTAL:** 1
### Driveways & Turnouts

<table>
<thead>
<tr>
<th>STATION</th>
<th>SIDE</th>
<th>LOCATION</th>
<th>WIDTH (FEET)</th>
<th>AGGREGATE BASE COURSE (CLASS 7)</th>
<th>SIDE DRAINS</th>
<th>STANDARD DRAWINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>40H00</td>
<td>LT</td>
<td>HWY 412 Bypass</td>
<td>15</td>
<td>35</td>
<td>24</td>
<td>PC1-PC2</td>
</tr>
<tr>
<td>41H00</td>
<td>LT</td>
<td>HWY 412 Bypass</td>
<td>15</td>
<td>26</td>
<td>24</td>
<td>PC1-PC2</td>
</tr>
<tr>
<td>41H10</td>
<td>LT</td>
<td>HWY 412 Bypass</td>
<td>15</td>
<td>40</td>
<td>24</td>
<td>PC1-PC2</td>
</tr>
<tr>
<td>45H00</td>
<td>LT</td>
<td>HWY 412 Bypass</td>
<td>15</td>
<td>60</td>
<td>24</td>
<td>PC1-PC2</td>
</tr>
<tr>
<td>45H10</td>
<td>LT</td>
<td>HWY 412 Bypass</td>
<td>15</td>
<td>80</td>
<td>24</td>
<td>PC1-PC2</td>
</tr>
<tr>
<td>55H00</td>
<td>LT</td>
<td>HWY 412 Bypass</td>
<td>15</td>
<td>100</td>
<td>24</td>
<td>PC1-PC2</td>
</tr>
<tr>
<td>55H10</td>
<td>LT</td>
<td>HWY 412 Bypass</td>
<td>15</td>
<td>120</td>
<td>24</td>
<td>PC1-PC2</td>
</tr>
</tbody>
</table>

**TOTALS:**
- 3016.3 (Note: Average width = 8'-0'"

### Dumped Riprap and Filter Blanket

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>DUMPED RIPRAP</th>
<th>FILTER BLANKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>384-12</td>
<td>Outlet of Box Culvert</td>
<td>170 x 20</td>
<td>30 x 5</td>
</tr>
<tr>
<td>383-28</td>
<td>Outlet of Pipe Culvert</td>
<td>15 x 20</td>
<td>30 x 5</td>
</tr>
<tr>
<td>635-30</td>
<td>Outlet of Pipe Culvert</td>
<td>9 x 20</td>
<td>30 x 5</td>
</tr>
</tbody>
</table>

**TOTALS:** 210 x 410

*Quantities are estimated. See Section 104.05 of the standard specifications.

**Notes:** Filter blanket shall be geotextile fabric (Type 5).

### Erosion Control Matting

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH (LIN. FT.)</th>
<th>CLASS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>377+00</td>
<td>L.t. of Mainlanes</td>
<td>100.0</td>
<td>88.9</td>
</tr>
<tr>
<td>377+10</td>
<td>R.t. of Mainlanes</td>
<td>100.0</td>
<td>88.9</td>
</tr>
</tbody>
</table>

**TOTAL:** 3016.3

*Note: Average width = 8'-0"

### Concrete Ditch Paving

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH (LIN. FT.)</th>
<th>CONC. DITCH PAVING (TYPE B)</th>
<th>SOLID CONTENTS (GAL)</th>
<th>WATER (GAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>377+00</td>
<td>L.t. of Mainlanes</td>
<td>144</td>
<td>6.5</td>
<td>104</td>
<td>1.12</td>
</tr>
<tr>
<td>382+00</td>
<td>L.t. of Mainlanes</td>
<td>200</td>
<td>6.5</td>
<td>177</td>
<td>1.12</td>
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<tr>
<td>358+00</td>
<td>R.t. of Mainlanes</td>
<td>109</td>
<td>6.5</td>
<td>77</td>
<td>1.12</td>
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<tr>
<td>593+00</td>
<td>R.t. of Mainlanes</td>
<td>200</td>
<td>6.5</td>
<td>144</td>
<td>1.12</td>
</tr>
</tbody>
</table>

**TOTALS:** 613 x 377.5 x 4.76

*Note: Average width = 8'-0"

**WATER: 12.8 GAL / SQ. YD. OF SOLID SODGING**
## Structures

<table>
<thead>
<tr>
<th>Station</th>
<th>Description</th>
<th>Reinforced Concrete Pipe Culvert Length</th>
<th>Flared End Sections for R.C. Pipe Culverts</th>
<th>Automatic Floodgates Span</th>
<th>Height</th>
<th>Length</th>
<th>Class B Concrete Roadway</th>
<th>Reinforced Steel Roadway (Grade 60)</th>
<th>Unlc Excl for Str Roadway</th>
<th>Solid Sodding</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>564+19</td>
<td>CONST. D6L 12&quot; X 7&quot; R.C. BOX CLVT ON 42&quot; R.P. S.</td>
<td>8' 7&quot; 194</td>
<td>342.36</td>
<td>43637</td>
<td>149</td>
<td>31</td>
<td>0.05</td>
<td>RC-B-1, RC-B-2, W-X, X-X, W, K-X, R-X, R-200X-X, R-2403-1, SPEC. DETAIL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>430+29</td>
<td>CONST. D6L 36&quot; R.C. PIPE CLVT ON 12' L.F. S.</td>
<td>220</td>
<td>4</td>
<td>36</td>
<td>0.04</td>
<td>FOS-1, FES-2, PCC-1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>470+04</td>
<td>CONST. D6L 48&quot; R.C. PIPE CLVT</td>
<td>180</td>
<td>4</td>
<td>50</td>
<td>0.05</td>
<td>FOS-1, FES-2, PCC-1</td>
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<td>172</td>
<td>4</td>
<td>86</td>
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<td>FOS-1, FES-2, PCC-1</td>
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### Structures Over 26’-3” Span

<table>
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<th>Station</th>
<th>Description</th>
<th>Reinforced Concrete Pipe Culvert Length</th>
<th>Flared End Sections for R.C. Pipe Culverts</th>
<th>Automatic Floodgates Span</th>
<th>Height</th>
<th>Length</th>
<th>Class B Concrete Roadway</th>
<th>Reinforced Steel Roadway (Grade 60)</th>
<th>Unlc Excl for Str Roadway</th>
<th>Solid Sodding</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>569+42</td>
<td>CONST. D6L 12&quot; X 7&quot; R.C. BOX CLVT ON 42&quot; R.P. S.</td>
<td>8' 4&quot; 46</td>
<td>244.64</td>
<td>34701</td>
<td>123</td>
<td>32</td>
<td>0.40</td>
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<tr>
<td>600+15</td>
<td>CONST. TRL 12&quot; X 11&quot; R.C. BOX CLVT</td>
<td>12</td>
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<td>416.21</td>
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### Total

<table>
<thead>
<tr>
<th>Station</th>
<th>Description</th>
<th>Reinforced Concrete Pipe Culvert Length</th>
<th>Flared End Sections for R.C. Pipe Culverts</th>
<th>Automatic Floodgates Span</th>
<th>Height</th>
<th>Length</th>
<th>Class B Concrete Roadway</th>
<th>Reinforced Steel Roadway (Grade 60)</th>
<th>Unlc Excl for Str Roadway</th>
<th>Solid Sodding</th>
<th>Water</th>
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<tr>
<td>644 160</td>
<td>124 172 160 324</td>
<td>8 1 4</td>
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</tbody>
</table>

### Note

- Quantity estimates may be conducted by engineers in the field; however, ordering materials will be based on the quantities in this document. These quantities do not necessarily reflect the intent of the contract documents. Therefore, the quantities should be verified by the engineer.

### Erosion Control

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Permanent Erosion Control</th>
<th>Temporary Erosion Control</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Acre</td>
<td>Ton</td>
</tr>
<tr>
<td>Entire Project</td>
<td>Clearing and grubbing</td>
<td>70.82</td>
<td>141.64</td>
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<tr>
<td>Entire Project</td>
<td>Stage 1</td>
<td>156</td>
<td>141.64</td>
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### Total

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Permanent Erosion Control</th>
<th>Temporary Erosion Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Acre</td>
<td>Ton</td>
</tr>
<tr>
<td>Entire Project to be used if and where directed by the engineer</td>
<td></td>
<td>70.82</td>
<td>141.64</td>
</tr>
</tbody>
</table>

### Note

- The temporary erosion control devices shown above and on the plans shall be installed in such a sequence as to deter erosion and sedimentation of U.S. waterways as explained by the National Pollutant Discharge Elimination System permit.

- *Quantities are estimated; see Section 104.03 of the STD. SPECs.*
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>69</th>
<th>801</th>
<th>802</th>
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<th>804</th>
<th>805</th>
<th>SP &amp; 805</th>
<th>SP &amp; 805</th>
<th>807</th>
<th>807</th>
<th>808</th>
<th>82</th>
<th>86</th>
<th>86</th>
<th>SP JOB 10070</th>
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<tbody>
<tr>
<td>UNIT</td>
<td>LNL, FT.</td>
<td>CU. YD.</td>
<td>CU. YD.</td>
<td>Cu. YD.</td>
<td>Cu. YD.</td>
<td>SAL</td>
<td>LB</td>
<td>LB</td>
<td>LB</td>
<td>LB</td>
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**SCHEDULE OF BRIDGE QUANTITIES - JOB 10070**

**Bridges Over UP Railroad (Bridge A) & Eight Mile Creek Bridge (Bridge B)**

**Hwy 49 - Hwy 420 East Greene County Route 62, Sec 2, T 2S, R 8E, AR 33030 ARKANSAS STATE HIGHWAY COMMISSION LITTLE ROCK, ARKANSAS 72201**

**Bridge No.** 47223 & 47224 **Construction No.** 52733
ORDER END FABRICATION NOTES:
1. Top flange parallel to C.L. joint.
2. See detail D-1206 for bumper, pier, and CMS bar details.

DETAIL M
Not to Scale

DETAIL N
Not to Scale

DETAIL P
Not to Scale

DETAIL R
Not to Scale

TYPICAL BEAM ELEVATION UNIT 1
Scale: 1" = 3' Vert.
F" = 5' Horiz.

TYPICAL BEAM ELEVATION UNIT 2
Scale: 1" = 3' Vert.
F" = 5' Horiz.

TYPICAL BEAM ELEVATION UNIT 4
Scale: 1" = 3' Vert.
F" = 5' Horiz.
### TABLE OF DEAD LOAD DEFLECTIONS

<table>
<thead>
<tr>
<th>Point</th>
<th>Structural Steel</th>
<th>Steel + Slab</th>
<th>Steel + Slab + Parapets</th>
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<tr>
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<td>Girders 4, 5</td>
<td>Girders 1, 2, 3</td>
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<td>U.6</td>
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<td>U.7</td>
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<td>U.9</td>
<td>0.384</td>
<td>0.543</td>
<td>0.815</td>
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</tbody>
</table>

Note: For dead load deflection plus vertical curve 1/2' diameter. Deflection shown only for slab. For Girders 1, 2, 3, 4, 5 of Structural Steel, where not included, negative sign is omitted. Negative sign indicates point above chord.

---

### DEADLOAD DEFLECTION DIAGRAM

- **Point of Deflection:**
  - C.L. Brg.
  - C.L. Brg.
  - C.L. Brg.
- **Deadload Diagram:**
  - Step was 1/8" from slab.
  - 3/4" of slabs, 2.5, 5, 6, 8, 8, 10 of slabs, 4.1, 6.7 A & 5.0 Gap measured perpendicular to slab.

---

### LONGITUDINAL RESTRAINER DETAILS

- **Scale:** 1" = 1'-0"
- **Description:** Longitudinal restrainer was fabricated to account for grade so as to find position of this plate wite vertical.

---

### SECTION S-5

- **Scale:** 1" = 1'-0"

---

### TABLE FOR WELD

<table>
<thead>
<tr>
<th>Material/Thickness of Plate</th>
<th>Minimum Size of Weld</th>
</tr>
</thead>
<tbody>
<tr>
<td>To 1/4&quot; inclusive</td>
<td>To 1/2&quot; inclusive</td>
</tr>
<tr>
<td>Over 1/4&quot;</td>
<td>Over 1/2&quot;</td>
</tr>
</tbody>
</table>

Note: When a Weld size, as shown on the table, is larger than the minimum the first pass shall be that specified for minimum size of Weld size.

---

### ARKANSAS STATE HIGHWAY COMMISSION

**Bridger Farmer & Associates, Inc.**

**Consulting Engineers**

**Sheet 10 of 9**

**Details of 280' Continuous Composite Plate Girder Unit Bridge Over U.S. 67 at Bridge A1**

**Greene County, Route 42 (S) Section 8 & 9**

**Arkansas State Highway Commission**

**Little Rock, Ark.**

**Bridger No. 41221**

**Drawing No. 51224**
DETAILS OF OPEN PARAPET RAIL

SECTION T-T

SECTION U-U

PARAPET RAIL VARIABLES

Details of optional slip-forming of concrete parapet rail
REINFORCING PLAN & POURING SEQUENCE

Scale 1" = 10'

CONCRETE PLACEMENT PROCEDURE

Note: Pour strips must be made in order as numbered. Pour with the zone number may be poured simultaneously or sequentially, but hours shall not be placed simultaneously between the end of a zone and the start of the next one. Pour hours shall not be placed between the end of a pour and the start of the next one. Pour hours shall not be placed between the end of a pour and the start of a pour before the entire slab unit has been poured. Slab edges and slab edges shall be positioned so that the entire slab before any concrete has taken its initial set. This may require the use of a rebar-stirrup agent.

The contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

Note: Required slab joints and pouring sequence joints shall align with pour pan joint at the gutter line.
**Notes:**

1. Core shots taken to ensure that the external load plate is in flat and complete contact with the base or grider flange before welding begins.

2. Thus the C of Bearings shall coincide with the C of Grider.
<table>
<thead>
<tr>
<th>BEARING NO.</th>
<th>BRACING</th>
<th>LOCATION</th>
<th>NOS.</th>
<th>BENDING TYPE</th>
<th>SIDE NO.</th>
<th>MINIMUM DESIGN LOAD (KIP)</th>
<th>THICKNESS OF STEEL (IN.)</th>
<th>ELASTOMER PID</th>
<th>EXTERNAL LOAD PLATE Thickness</th>
<th>ANCHOR BOLT</th>
<th>ANCHOR BOLT</th>
<th>SHEET METAL LAYER</th>
<th>SHEET METAL LAYER</th>
</tr>
</thead>
</table>

*Maximum Load = Service Limit x State
**All dimensions in inches. Unless noted otherwise.
GENERAL NOTES
(Supplemental flows shown in layout, Fig. 6, 2292)

STRUCTURAL STEEL
- Structural steel: AASHTO M270, Grade G50, unless otherwise noted. AASHTO M270, Grade G50 shall be used unless otherwise noted. AASHTO M270, Grade G60 shall be used unless otherwise noted.

- Concrete: C30/34 concrete shall be used unless otherwise noted.

- Paint: Black paint shall be used unless otherwise noted.

Requests for substitution of structural steel shapes shown with greater size and strength shall be submitted by the Contractor to the Engineer for approval. Stresses of other materials and strengths shall be determined by the Engineer and shall be submitted to the Contractor for approval. Stresses of other materials and strengths shall be determined by the Engineer and shall be submitted to the Contractor for approval.

- Light-gauge galvanized steel shall be used unless otherwise noted.

- Field connections shall be bolted with high-strength bolts, only if specified in the specifications.

- Painted steel shall be used unless otherwise noted.

- Concrete shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Special bolts shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Concrete shall be used unless otherwise noted.

- Light-gauge galvanized steel shall be used unless otherwise noted.

- Painted steel shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Special bolts shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Concrete shall be used unless otherwise noted.

- Light-gauge galvanized steel shall be used unless otherwise noted.

- Painted steel shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Special bolts shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Concrete shall be used unless otherwise noted.

- Light-gauge galvanized steel shall be used unless otherwise noted.

- Painted steel shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Special bolts shall be used unless otherwise noted.

- Bases shall be used unless otherwise noted.

- Concrete shall be used unless otherwise noted.

- Light-gauge galvanized steel shall be used unless otherwise noted.

- Painted steel shall be used unless otherwise noted.

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* Bars B00 & B02 are only required for Bents K & L and cap seat under Bents A & B.

The dimensions shown for the bending diagrams are out-to-out of Bents.

### CONCRETE RESTRAINER DETAIL

**Concreting Preparation:**

- Remove any debris to ensure a clean surface for concrete placement.
- Apply a waterproofing membrane as specified by the engineer.
- Ensure proper reinforcement placement according to the design specifications.

**Concrete Placement and Cure:**

- Use a concrete mix designed for the specific project conditions.
- Place concrete in successive lifts, ensuring each lift is properly compacted.
- Cure the concrete according to the appropriate curing standards.

**Quality Control:**

- Regularly check the concrete strength and temperature to ensure they meet the project requirements.
- Inspect for any voids or defects during the curing process.

### TYPICAL ANCHOR BOLT LAYOUT

**Bolt Placement and Rotation:**

- Position the anchor bolts to align with the required shear forces from the superstructure.
- Ensure bolts are rotated as required to accommodate any tension or compression forces.

**Bearing and Connection:**

- Use a suitable bearing and connection method as specified by the engineer.
- Ensure proper alignment of the bolts to prevent misalignment.

**Welding and Grouting:**

- Apply the appropriate welds between the anchor bolts and the steel structure.
- Grout as required to fill any voids and ensure a secure connection.

### PILE ANCHORAGE DETAIL

**Pile Design and Installation:**

- Design the piles according to soil conditions and load requirements.
- Ensure proper installation methods are used to avoid damage to the piles.

**Pile Grouping and Spacing:**

- Arrange piles in groups as required for the project conditions.
- Ensure adequate spacing to reduce interaction between piles.

**Pile Cap and Capping:**

- Construct the pile cap with appropriate thickness and reinforcement.
- Capping should be designed to distribute loads evenly across the foundation.

**Subgrade and Backfill:**

- Ensure the subgrade is properly prepared and backfilled to support the pile cap.
- Use appropriate backfill materials to ensure stability.

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**Note:**

- The diagram provided includes all necessary details for the construction of the bridge beams and supports, including the concrete restrainer detail and typical anchor bolt layout. Additional specifications are available in the attached engineering reports and drawings.
CONCRETE FILLED STEEL SHELL PILES

- Straps or reinforcing bars shall be placed to maintain cover requirements, exclude interference with power bolts and cap or footing reinforcing.
- 3" x 3" "H" splice for 24" piles.

ALTERNATE CONN. DETAIL "A"

TYPICAL SPLICE DETAILS

ALTERNATE VANED TIP DETAIL

GENERAL NOTES FOR CONCRETE FILLED STEEL SHELL PILES

Steelshells shall conform to ASTM A500, Grade 50, Fe 36000 psi.
Concrete used for filling steel-concrete Class 5 with a minimum 28 day compressive strength 3000 psi and shear poured in the dry.
See bridge layout for length of shell piles and for additional driving information.
Concrete and structurally reinforcing steel, including welding, will be paid for directly, but would be considered as part of the corresponding item "Steel Sheathing".

GENERAL NOTES FOR PILE ENCASEMENTS

See bridge layout for required location of encasements.
Concrete shall have a minimum 28 day compressive strength 3000 psi.
Concrete cannot be used in the dry Class 5 concrete may be used as well.
Concrete placed continuously from bottom to top of encasement.
Reinforcing steel shall conform to ASTM A615 or A606, Grade D6.
Concrete, welded wire fabric or reinforcing steel, or a posteriori, corrugated steel shall be paid for directly, but would be considered as part of the item "Pile Encasements".

DETAILS OF CONCRETE FILLED STEEL SHELL PILES

EIGHT MILE CREEK BRIDGE (BRIDGE A) HWY 49 - HWY, 42 EAST
GREANE COUNTY
ROUTE 4212, SEC 8 & 9
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE RICK, AR

BRIDGE FARMER & ASSOCIATES, INC.
CONSULTING ENGINEERS

No scale
SECTION A-A BENT 1

SECTION B-B BENT 1

SECTION C-C BENT 1

SECTION A-A BENTS

SECTION B-B BENTS

SECTION C-C BENTS

SECTION A-A BENTS 4 7/16, 15

SECTION B-B BENTS 4 7/16, 13

SECTION C-C BENTS 4 7/16, 13

RESTRAINER ROD INSTALLATION DETAIL

Concrete Diaphragm

End of Beam or Girder - Vertical

"B" - Gap Width at 24 Hour Average Temperature

Bent Number

40°F 60°F 80°F

4, 5, 10 1/4" 1/2" 3/4" 1/4" 1/2" 3/4" -

NOTES:

1. Grout Coated #6 bar in the top and one #6 non-coated #6 bar at the bottom may be substituted for each #40E, #50E and #60E ranked bar based on the weight of 1300 lbs.

2. MaxiProtective Surface Treatment shall be applied to the roadway surface and the faces and top of panel ribs.

3. All bars designated with an "A" suffix are to be covered with plastic sheathing.

4. Horizontal Conduit is rapid between the slab cast in place and slab for access to substructure.

SLAB REINFORCING:

Transverse:

SS05E # 13 Centers (Top)
SS05E # 13 Centers (Top, Overhang)
SS05E # 13 Centers (Step, up beam)
SS05E # 13 Centers (Bottom)

Lengthwise:

S40E # 8" Centers (Top and Bottom)
S50E # 20" Centers (Top and Bottom)
S60E # 20" Centers (Top and Bottom)

EXPANSION DEVICE:

Pouring Silicon joint
Roadway Channal: 26-35.5 (M70, Dr. 50)
Cross section: 2-1/2 x 3-1/2

For Additional Details of Expansion Device, See Exp. No. 52376.
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<tr>
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<td>0.004</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Note: Center for Dead Load Deflection and Vertical curve 150' clearance. Deflections shown are from a point 1 ft. bearing to 1 ft. bearing. Positive deflection = right side of point. Negative deflection = left side of point above there.
### TABLE OF DEAD LOAD DEFLECTIONS

<table>
<thead>
<tr>
<th>Point</th>
<th>Structural Steel</th>
<th>Steel + Sub</th>
<th>Steel + Slab + Panels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exterior</td>
<td>Interior</td>
<td>Exterior</td>
</tr>
<tr>
<td>L0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>L1</td>
<td>0.02</td>
<td>0.02</td>
<td>0.06</td>
</tr>
<tr>
<td>L2</td>
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<td>0.03</td>
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<tr>
<td>L3</td>
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</tr>
<tr>
<td>L4</td>
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<td>0.05</td>
<td>0.05</td>
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<tr>
<td>L5</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
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<td>L6</td>
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<td>0.08</td>
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</tr>
<tr>
<td>L9</td>
<td>0.09</td>
<td>0.09</td>
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</tr>
<tr>
<td>L10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
</tbody>
</table>

**Note:**
- The figure shows deflection due to live load as a percentage of the clear span. Deflections shown are from a chord from 1. Bearing to 1. Bearing. For this curve, the centerline is centered at the point above the chord.
- The longitudinal restrainer details are not included. The bearing wall is labeled with the number of bolts.

---

### SECTION 5-5

- **Sheet 6 of 7**
- **Details of 230' Continuous Composite W-Beam Units**
- **Eight Mile Creek Bridge (Bridge A)**
- **Hwy. 49 - Hwy. 62 East**
- **Greene County**, **Armed Forces Reserve Route - Hwy. 310**
- **Arkansas State Highway Commission**, **Little Rock, Ark.**

---

### DEAD LOAD DEFLECTION

Figure shows deflection due to live load as a percentage of the clear span. Deflections shown are from a chord from 1. Bearing to 1. Bearing. For this curve, the centerline is centered at the point above the chord.
<table>
<thead>
<tr>
<th>Location</th>
<th>Bearing No. Type</th>
<th>Bearing No.</th>
<th>Bending Moment (kips)</th>
<th>Elastomer Pad</th>
<th>Strain in Elastomer Pad</th>
<th>Maximum Strain in Steel Laminae</th>
<th>Anchor Bolt</th>
<th>Anchor Bolt Grade</th>
<th>Steel Metal</th>
<th>Steel Metal Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ALL</td>
<td>5</td>
<td>95</td>
<td>1/16</td>
<td>1/4</td>
<td>5/12 in.</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>1/8</td>
</tr>
<tr>
<td>4</td>
<td>ALL</td>
<td>5</td>
<td>95</td>
<td>1/16</td>
<td>1/4</td>
<td>5/12 in.</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>1/8</td>
</tr>
<tr>
<td>7</td>
<td>ALL</td>
<td>5</td>
<td>95</td>
<td>1/16</td>
<td>1/4</td>
<td>5/12 in.</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>1/8</td>
</tr>
<tr>
<td>10</td>
<td>ALL</td>
<td>5</td>
<td>95</td>
<td>1/16</td>
<td>1/4</td>
<td>5/12 in.</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>1/8</td>
</tr>
<tr>
<td>13</td>
<td>ALL</td>
<td>5</td>
<td>95</td>
<td>1/16</td>
<td>1/4</td>
<td>5/12 in.</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>1/8</td>
</tr>
<tr>
<td>16</td>
<td>ALL</td>
<td>5</td>
<td>95</td>
<td>1/16</td>
<td>1/4</td>
<td>5/12 in.</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>1/8</td>
</tr>
</tbody>
</table>

*Maximum Load = Service Limit in State

**All Dimensions are in Inches Unless Noted Otherwise.
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

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 and together with the side slopes and slopes under the bridge and including around the end of wharfages. Embankment adjacent to structures shall be constructed in four horizontal layers to be measured and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to subsection 6603.1200 and 6605.6 of the Specification for construction requirements.

Rev. and reprinted 04/05/2003

EMBANKMENT CONSTRUCTION AND BACKFILL
AT BRIDGE ENDS

ROUTE 6-023
ARKANSAS STATE HIGHWAY COMMISSION
OWNER/CLIENT
REVIEWED
NARRATE
REVISION LEVEL
DATE

DESIGNED BY:
DATE:

BRIEVE DOW:
DRAWING NO.

3600 AVE., LITTLE ROCK, ARKANSAS 72201
(501) 682-6500
BRIEVE DOW:
DRAWING NO.

BRIEVE DOW:
DRAWING NO.

BRIEVE DOW:
DRAWING NO.

BRIEVE DOW:
DRAWING NO.

BRIEVE DOW:
DRAWING NO.

BRIEVE DOW:
DRAWING NO.
TOE WALL DETAIL 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 sed 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 40' intervals. The space shall be filled with approved joint filler complying with Angha MCO.

Number of elements per row varies with width of paving specified.

Energy dissipators to be used for the entire length of ditch when slope of ditch paving exceeds 1%. The dissipators will not be paid for directly, but shall be considered to be included in the price bid for concrete ditch paving.

Arkansas State Highway Commission

Concrete Ditch Paving

Standard Drawing CD-1
CASE 1

Plan View Steel
Pier
Other pipe configuration acceptable

Notes for varying soil types ranging from 0 to 6 ft the depth of required
driving is equal to 25 ft.

Zone A
Backfill in G'crct with materials meeting the
requirements of Section 312-300. Marginal
placement acceptable. Compress to 97% maximum dry density
for AASHO 5-95.

Zone A & B
Backfill according to Section 512-320.

CASE 2

Plan View Wood
Pier
Other pipe configuration acceptable

Notes for varying soil types ranging from 0 to 4 ft the depth of required
driving is equal to 25 ft.

Zone A & B
Backfill according to Section 512-320.

DETAIOL OF POST PLACEHMENT
IN SOLID ROCK (W-BEAM)

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8A
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

ONE-WAY TRAFFIC

TWO-WAY TRAFFIC

METHODS OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

ONE-WAY TRAFFIC

TWO-WAY TRAFFIC

METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE 2) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING OR-9
EDGE OF TRAVELED WAY

TRAFFIC

END TERMINAL

GUARD RAIL

SLOPE AS SHOWN ON TYPICAL SECTION

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL

NORMAL ROADWAY WIDTH

WIDTH OF SURFACING

SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

SECTION A-A

DETAILS OF WIDENING FOR GUARD RAIL

SECTION B-B

SHOULDER PIER PROTECTION

MEDIAN PIER PROTECTION

METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

GUARD RAIL DETAILS

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING GR-9A
### Corrugated Steel Pipe (Round) H-20 Loading

| Pipe Diameter (Inches) | Load | Cover Top of Pipe to Top of Subgrade (Tons) | Minimum | Minimum | Minimum | Minimum
|------------------------|------|--------------------------------------------|--------|--------|--------|--------
|                        |      |                                            |        |        |        |        |
| 12                     | 15   | 0.814                                      | 15+    | 8.002  | 10     |
| 16                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 20                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 24                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 28                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 30                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 36                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 40                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 42                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 48                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 52                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 56                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |
| 60                     | 38   | 0.814                                      | 13+    | 8.002  | 10     |

**Notes:**
- **Zinc Coated:**
- **Uncoated:**
- **Aluminum:**

### Corrugated Aluminum Pipe (Round) H-20 Loading

| Pipe Diameter (Inches) | Cover Top of Pipe to Top of Subgrade (Tons) | Minimum | Minimum | Minimum | Minimum
|------------------------|--------------------------------------------|--------|--------|--------|--------
| 12                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 16                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 20                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 24                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 28                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 30                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 36                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 40                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 42                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 48                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 52                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 56                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |
| 60                     | 41   | 0.824                                      | 15+    | 8.797  | 10     |

**Notes:**
- **Zinc Coated:**
- **Uncoated:**
- **Aluminum:**

### Corrugated Metal Pipe Arches (H - 20 Loading)

| Pipe Diameter (Inches) | Cover Top of Pipe to Top of Subgrade (Tons) | Minimum | Minimum | Minimum | Minimum
|------------------------|--------------------------------------------|--------|--------|--------|--------
| 12                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 16                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 20                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 24                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 28                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 30                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 36                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 40                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 42                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 48                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 52                     | 6.75                                      | 12     | 20     | 8.002  | 10     |
| 56                     | 6.75                                      | 12     | 20     | 8.002  | 10     |

**Notes:**
- **Zinc Coated:**
- **Uncoated:**
- **Aluminum:**

### General Notes

1. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
2. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES.
3. THE MAXIMUM ALLOWABLE TRENCH SHALL BE THE MINIMUM WITH PLUS 36 INCHES.
4. THE MINIMUM PIPE COVER SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES.
5. REFER TO FIG. 2 FOR MATERIALS USED FOR CLEARANCE WHERE PLACED END SECTIONS ARE USED.
6. UNCOATED MATERIALS SHALL BE PLACED AS DIRECTED BY THE ENGINEER AT THE END OF THE PIPE.
7. METAL PIPE ON THE END TRENCH COVER PIPE MATERIALS FOR STRUCTURAL SECTORS AND CRITICAL AREAS.
8. BOTH PIPE AND MACHINE Pipe MATERIALS FOR STRUCTURAL SECTORS AND CRITICAL AREAS.
9. BOTH PIPE AND MACHINE Pipe MATERIALS FOR STRUCTURAL SECTORS AND CRITICAL AREAS.
10. BOTH PIPE AND MACHINE Pipe MATERIALS FOR STRUCTURAL SECTORS AND CRITICAL AREAS.
11. BOTH PIPE AND MACHINE Pipe MATERIALS FOR STRUCTURAL SECTORS AND CRITICAL AREAS.

### Construction Sequence

1. **Type 1 Embankment and Trench Installations**
2. **Type 2 Embankment and Trench Installations**
3. **Type 3 Embankment and Trench Installations**
4. **Type 4 Embankment and Trench Installations**

### Structural Backfill Material

- **Type 1**
- **Type 2**
- **Type 3**
- **Type 4**

### Notes

- Structural backfill and structural bedding material will not be paid for separately. Compensation will be included in the price bid per linear foot of metal pipe.

### Arkansas State Highway Commission

**Metal Pipe Culvert Fill Heights & Bedding**

**Standard Drawing PCM-1**
REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

Concrete shall be class 5 with a minimum 28 day compressive strength of 3500 psi.

Reinforced steel shall be ASTM H 122 or M 355, grade 60.

Construction and materials for wingwalls, drainages, wingwall openings, and reinforcing steel shall be as directed by the Engineer.

Payment shall be made for this item, but payment will be considered to be included in the various items bids for the R.C. box culvert.

REINFORCED STEEL TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "STANDARDS OF PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE. (EXCEPT THAT THE TOLERANCES FOR TAPERED BARS SUCH AS FIGURE 2 ON PAGE 74 OF THE CRSC MANUAL SHALL BE MINUS 1/8 INCH)

Wingwall holes in wingwall, the maximum horizontal spacing of wingwall holes in any panel shall be 6'-0" and shall 3'-0" spaced to clear all reinforcing steel. The drain openings shall be 4'-0" diameter and placed 1'-0" above top of wingwall footing.

The requirements shown on these drawings shall supersede the corresponding requirements on all reinforced concrete box culvert standard drawings.

# TABLES:

### STEEL FABRICATION: REINFORCING STEEL FABRICATION

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>PIN DIAMETER</th>
<th>HOOK EXTENSION %</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2½&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>4</td>
<td>3&quot;</td>
<td>4½&quot;</td>
</tr>
<tr>
<td>5</td>
<td>3½&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>6</td>
<td>4½&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>7</td>
<td>5½&quot;</td>
<td>7&quot;</td>
</tr>
<tr>
<td>8</td>
<td>6&quot;</td>
<td>8&quot;</td>
</tr>
</tbody>
</table>

If the overall height of the hook see diagram below for a "5", "6", "7", or "8" bent bar is greater than the corresponding top or bottom slab thickness, less 2½", each bent bar shall be replaced with one hooked and one straight bar. Dimensions as shown in the table below. The two bars shall be the same diameter as and placed at the same spacing as the "5", "6", "7", or "8" bent bars they replace.

### WINGWALL DRAINAGE DETAIL

**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

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>LENGTH OF HOOKED BAR</th>
<th>LENGTH OF STRAIGHT BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>L + 1' - 0&quot;</td>
<td>See &quot;5&quot; bar length</td>
</tr>
<tr>
<td>6</td>
<td>L + 1' - 4&quot;</td>
<td>See &quot;6&quot; bar length</td>
</tr>
<tr>
<td>7</td>
<td>L + 1' - 6&quot;</td>
<td>See &quot;7&quot; bar length</td>
</tr>
<tr>
<td>8</td>
<td>L + 1' - 10&quot;</td>
<td>See &quot;8&quot; bar length</td>
</tr>
<tr>
<td>9</td>
<td>L + 2' - 0&quot;</td>
<td>See &quot;9&quot; bar length</td>
</tr>
</tbody>
</table>

L = "w" - 3 INCHES

CONSTRUCTION OF BOX CULVERT MODIFICATIONS

Bar diameter shall be 0.5 or 1.0 inch (whichever is greater).

SOLID SODDING

R.C. BOX CULVERT

SLICED SODDING

PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

SECTION B-6

DETAILS FOR NEW CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION CHANNEL CHANGES 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 CHANGES SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MOVING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE CENTERLINE AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSURFACE WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

ARMSKASS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2
### SUPERELEVATION TABLE FOR ONE-WAY TRAFFIC

<table>
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</tr>
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<tbody>
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</tr>
<tr>
<td>0° 0' 30&quot;</td>
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<tr>
<td>1° 0' 0&quot;</td>
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<td></td>
<td></td>
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<tr>
<td>1° 0' 30&quot;</td>
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</tr>
<tr>
<td>2° 0' 0&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2° 0' 30&quot;</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td>3° 0' 0&quot;</td>
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<td>4° 0' 0&quot;</td>
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<td>4° 0' 30&quot;</td>
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<td>5° 0' 0&quot;</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5° 0' 30&quot;</td>
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</tr>
<tr>
<td>6° 0' 0&quot;</td>
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<td>6° 0' 30&quot;</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### ABBREVIATIONS
- WC: NORMAL CROWN
- RC: REVERSE CROWN
- SC: NORMAL SUPERELEVATION AT NORMAL CROWN SLOPE
- L: DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT)
- W: WIDTH OF PAVEMENT (FT)
- M: MAXIMUM RATE OF SUPERELEVATION (FT/FT)
- L: LENGTH OF SUPERELEVATION TRANSITION (FT)
- C: NORMAL CROWN (FT/FT)

### GENERAL NOTES
1. For speaking with one-way traffic, the superposition shall be placed on the profile grade point.
2. Superposition values shown on the cross sections are values to be added or subtracted from the point of control.
3. Values for W, M, and L are applied in multiples of 25 ft or 50 ft, as required.
4. Values for W, M, and L may be used for ramps only.
5. Values for W, M, and L shall apply to ramps only.
6. LANE DIVIDED: 30 FT
7. LANE DIVIDED: 60 FT

---

**ARKANSAS STATE HIGHWAY COMMISSION**

**TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC**

**STANDARD DRAWING SE-1**
### SuperElevation Table for Two-Way Traffic

<table>
<thead>
<tr>
<th>Degree Curve</th>
<th>Lw (ft)</th>
<th>Le (ft)</th>
<th>Ke</th>
<th>La (ft)</th>
<th>Le (ft)</th>
<th>Ks</th>
<th>La (ft)</th>
<th>Le (ft)</th>
<th>全体</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
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<td></td>
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<td>0.18</td>
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<td>0.18</td>
<td>0.18</td>
<td>0</td>
<td>0.18</td>
<td>0.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Abbreviations:**
- Ke: Normal Crown
- Kw: Reverse Crown SuperElevation at Normal Crown Slope
- Lw: Length of SuperElevation Transition (ft)
- Le: Length of Inner Subgrade (ft)
- d: Width of Pavement (ft) - Width of Subgrade (ft)
- L: Normal Crown (ft)

**General Notes:**
1. For pavements with two-way traffic, the SuperElevation shall be resolved on the inside pavement edge unless otherwise noted on the plans.
2. SuperElevation values shown on the cross sections are values.
3. Lw and Le may be rounded in multiples of 2 ft or 5 ft.
4. Lw and Le shall be in multiples of 2 ft or 5 ft.

**Standard Method When SuperElevation Revolves Around Inner Subgrade Point:**
- Note: Maintain normal crown on inner until superElevation exceeds 0.

**Standard Method When SuperElevation Revolves Around Center Line:**
- Note: Maintain normal crown on inner until superElevation exceeds 0.

---

**Arkansas State Highway Commission**

**Tables and Method of SuperElevation for Two-Way Traffic**

**Standard Drawing SE-2**
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
1. PLACE PERIMETER CONTROLS (E.G. SILT FENCES, DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION

EXISTING GROUND
INTERCEPTOR OR DIVERSION DITCH
EXISTING GROUND

NOTE:
NUMBER OF PHASES WILL VARY, THESE PHASES SHOWN FOR ILLUSTRATION.

PHASE 1 EXCAVATION
PHASE 2 EXCAVATION
PHASE 3 EXCAVATION
FINAL PHASE EXCAVATION

GENERAL NOTE

ALL CUT SLOPES SHALL BE COVERED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL, INCREMENTS NOT TO EXCEED 20 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 SLOPES, CONSTRUCT SLOPE SHEETS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT

NOTE:
NUMBER OF PHASES WILL VARY, THESE PHASES SHOWN FOR ILLUSTRATION.

SIDE DITCH UTILIZE AS REQUIRED

FINAL PHASE EMBANKMENT
PHASE 2 EMBANKMENT
PHASE 1 EMBANKMENT

GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE COVERED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 20 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE
1. CONSTRUCT INTERCEPTOR DITCHES, SLOPE SHEETS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING, SLOPE SHEETS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING, SLOPE SHEETS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING, PLACE EMBANKMENT DITCHES AND SLOPE SHEETS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.
### Detail Specifications

**ARHANSAS STATE HIGHWAY COMMISSION**

**DETAILS OF STANDARD WINGS**

**REINFORCED CONCRETE BOX CUVERTS**

**SIZES, DOUBLE, TRIPLE, ALL DEPTHS OF COVER, QUADRUPLES & QUINTUPLES FOR M-0.5 OR LESS**

**STANDARD DRAWING NO: M-003-4**

---

**Table: Class B Concrete**

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>cu. yd.</td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Concrete</td>
<td>ft³</td>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

---

**Notes:**

- Dimensions are approximate and may vary depending on the size of the cover.
- Materials and accessories shall conform to the specifications of this drawing and applicable standards.
- This detail is to be used in conjunction with Standard Drawing Reference.

---

**Drawing Reference:**

- Standard Drawings: [Reference Link]
- Material Specifications: [Reference Link]
### Table of Barrel Section 400 ft in Length

<table>
<thead>
<tr>
<th>Section</th>
<th>Diameter (in.)</th>
<th>Length (ft)</th>
<th>Bar Size</th>
<th># Bars</th>
<th>Banding (in.)</th>
<th>Span (ft)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>36</td>
<td>400</td>
<td>1/2</td>
<td>10</td>
<td>1/4</td>
<td>400</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>400</td>
<td>3/8</td>
<td>12</td>
<td>1/2</td>
<td>400</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
<td>400</td>
<td>1/2</td>
<td>14</td>
<td>1/2</td>
<td>400</td>
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<tr>
<td>4</td>
<td>48</td>
<td>400</td>
<td>3/8</td>
<td>16</td>
<td>1/2</td>
<td>400</td>
</tr>
</tbody>
</table>

### Dimensions of Barrel Sections

<table>
<thead>
<tr>
<th>Section</th>
<th>Diameter (in.)</th>
<th>Length (ft)</th>
<th>Banding (in.)</th>
<th>Span (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>36</td>
<td>400</td>
<td>1/4</td>
<td>400</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>400</td>
<td>1/2</td>
<td>400</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
<td>400</td>
<td>3/8</td>
<td>400</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
<td>400</td>
<td>1/2</td>
<td>400</td>
</tr>
</tbody>
</table>

### Typical Section 400 ft

- **Barrel Length**: 400 ft
- **Bandage Diameter**: 1/4 in.
- **Span**: 400 ft

### General Notes:
- Concrete: All concrete is to be Class C and should be placed in dry, loose, and properly compacted forms.
- Dimensions: All dimensions are to be determined on a construction plan or specification.
- Materials: Materials used shall comply with Arkansas State Highway Commission standards.

### Class B Concrete

- **AR-ARKANSAS A.R.S.C.O. 1961**
- **Spreading Material**: 30% by weight of concrete.
- **Bandage Diameter**: 1/4 in.

### Reinforced Concrete Box Culverts

- **Spans**: 30 ft, 60 ft, and 90 ft
- **Slopes**: 1% to 5%
- **Under Full Cover**: Standard Drawing No. R-10000-C

---

**Note:** These drawings are to be used in conjunction with standard shop drawings and specifications. Any changes or modifications shall be subject to the approval of the Arkansas State Highway Commission.
### Box List for Barrel Section 600' in Length

#### Dimensions

<table>
<thead>
<tr>
<th>Section</th>
<th>4'</th>
<th>6'</th>
<th>8'</th>
<th>10'</th>
<th>12'</th>
<th>14'</th>
<th>16'</th>
<th>18'</th>
<th>20'</th>
<th>22'</th>
<th>24'</th>
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</thead>
<tbody>
<tr>
<td>Exterior Dimensions</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Width</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
</tr>
<tr>
<td>Height</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
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<tr>
<td>Depth</td>
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<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
<td>3'6&quot;</td>
</tr>
</tbody>
</table>

#### Quantities

- **Concrete**: Required quantities to be determined by the engineer.
- **Steel**: Required quantities to be determined by the engineer.

### Typical Sections

- **Length**: 600'

### General Notes

- **Concrete** should be Class C and shall be placed in the way.
- **Steel** shall be approved by the engineer.

### Construction Section

- **Materials**: Standard Specifications for Highway Construction and Agricultural Products.

### Design Load

- **Title**: 10-16 inch 100 year 100 year
- **Special Loadings**: 100 year and 100 year

### Class C Concrete

- **Properties**: 100 year and 100 year

### Reinforced Concrete Box Culverts

- **Slopes**: 3:1SR 4:1S
- **Under 6' Cover**: Standard Drawing No. R-3000C-0