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<thead>
<tr>
<th>SHEET NO.</th>
<th>TITLE</th>
<th>BRIDGE NO</th>
<th>DRAWING NO.</th>
<th>DATES</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>TITLE SHEET</td>
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<tr>
<td>2</td>
<td>INDEX OF SHEETS AND STANDARD DRAWINGS</td>
<td></td>
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<tr>
<td>3</td>
<td>GOVERNING SPECIFICATIONS AND GENERAL NOTES</td>
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<tr>
<td>4</td>
<td>1/12 TYPICAL SECTIONS OF IMPROVEMENT</td>
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<tr>
<td>5</td>
<td>1/4 SPECIAL DETAILS</td>
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<td>15</td>
<td>1/20 TEMPORARY EROSION CONTROL DETAILS</td>
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<tr>
<td>23</td>
<td>1/20 MAINTENANCE OF TRAFFIC DETAILS</td>
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</tr>
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<td>24</td>
<td>STANDARD DETAILS FOR REINFORCEMENT SCAFFOLDS AND SITE MAINTENANCE DETAILS</td>
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<td>31</td>
<td>GENERAL NOTES TO DRAWINGS</td>
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<td>32</td>
<td>SURVEY CONTROL DETAILS</td>
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</tr>
<tr>
<td>33</td>
<td>SCHEDULE OF BRIDGE QUANTITIES</td>
<td>07/15</td>
<td>030767</td>
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<tr>
<td>34</td>
<td>SUMMARY OF QUANTITIES AND REVISIONS</td>
<td></td>
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**BRIDGE STANDARD DRAWINGS**

<table>
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<th>TITLE</th>
<th>DATES</th>
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<tbody>
<tr>
<td>5900</td>
<td>STANDARD DETAILS FOR REINFORCEMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS</td>
<td>02-25-14</td>
</tr>
<tr>
<td>5901</td>
<td>STANDARD DETAILS FOR REINFORCEMENT BEAMS, AND FOR CROWN ELEVATION FOR STRUCTURES</td>
<td>02-25-14</td>
</tr>
<tr>
<td>5902</td>
<td>STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL &amp; CONCRETE GIRDER SPANS</td>
<td>03-24-16</td>
</tr>
<tr>
<td>5910</td>
<td>STANDARD DETAILS FOR PIPE &amp; BRIDGE NAME PLATE</td>
<td>05-21-19</td>
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<tr>
<td>5920</td>
<td>STANDARD DETAILS FOR STEEL PIPE AND PIPE ENSURANCE</td>
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**ROADWAY STANDARD DRAWINGS**

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<th>TITLE</th>
<th>DATES</th>
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<tbody>
<tr>
<td>PBC-1</td>
<td>PRECAST CONCRETE BOX CULVERTS</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCM-1</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-1</td>
<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCM-2</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-2</td>
<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PMA-1</td>
<td>PAVEMENT MARKING DETAILS</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PBC-1</td>
<td>REINFORCED CONCRETE BOX CULVERTS</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCM-1</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-1</td>
<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
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</tr>
<tr>
<td>PCM-2</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
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<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PMA-1</td>
<td>PAVEMENT MARKING DETAILS</td>
<td>07-28-15</td>
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<tr>
<td>PBC-1</td>
<td>REINFORCED CONCRETE BOX CULVERTS</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCM-1</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-1</td>
<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
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<tr>
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<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-2</td>
<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
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<tr>
<td>PMA-1</td>
<td>PAVEMENT MARKING DETAILS</td>
<td>07-28-15</td>
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<tr>
<td>PBC-1</td>
<td>REINFORCED CONCRETE BOX CULVERTS</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCM-1</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-1</td>
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<td>07-28-15</td>
</tr>
<tr>
<td>PCR-2</td>
<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PMA-1</td>
<td>PAVEMENT MARKING DETAILS</td>
<td>07-28-15</td>
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<tr>
<td>PBC-1</td>
<td>REINFORCED CONCRETE BOX CULVERTS</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCM-1</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-1</td>
<td>PRECAST CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCM-2</td>
<td>CONCRETE PIPE CULVERTS FOR HILLSIDES &amp; DRIVING</td>
<td>07-28-15</td>
</tr>
<tr>
<td>PCR-2</td>
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</tr>
<tr>
<td>PMA-1</td>
<td>PAVEMENT MARKING DETAILS</td>
<td>07-28-15</td>
</tr>
</tbody>
</table>

**INDEX OF SHEETS AND STANDARD DRAWINGS**
DIGITAL SIGNATURE OF AUTHORIZED PERSON

DIGITAL SIGNATURE OF AUTHORIZED PERSON

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 COVERED BY THE RESPECTIVE OWNERS AT THEIR EXPENSE.

3. ANY EQUIPMENT OR APPURTENANCES THAT INTERFERE WITH THE PROPOSED CONSTRUCTION AND WHICH MAY IMPAIR THE PROGRESS OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED OR MOBILIZED IN CONFORMITY WITH THE REQUIREMENTS OF THE PERSONS ORGANIZATIONS INVOLVED.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAIL BOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUOUS MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE WORKING BOXES.

5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPROPRIATE GOVERNMENTAL AGENCY.

6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SAWED AS DIRECTED BY THE ENGINEER, CARE AND DESTRUCTION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HANDED OFF AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK AND AWARE PASTURES TO COVER SEVERAL, WIRE FENCE MAY BE CONSTRUCTED PERMANENTLY OR IN LEU OF THE CONSTRUCTION AT THE CONTRACTOR’S EXPENSE. ANY EXCISE TO PROVIDE TEMPORARY FENCING SUBESSAGES TO CONTINUE LIVESTOCK.

8. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLAN IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT AND IN NO WAY IS INTENDED TO COVER EVERY DETAIL IN THE PROJECT. ITEMS SHOWN ON THE TRAFFIC SEQUENCE PLAN MAY NOT BE ORDERING OR STAGES AS APPROVED BY THE RESISTANT ENGINEER.

9. ALL Flexible BASE AND ASPHALT IC Pavements removed shall be paid for under the ITEM NO. 270 UNCLASSIFIED EXCAVATION.

10. THE POLY HEMI-ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAVING ALSO A NEAR LINE. AFTER SAVING, THE REMAINING PAVEMENT TO BE CLEANED AND 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 BY THE CONTRACTOR’S EXPENSE.
TYPICAL NOTCH AND WIDEN SECTION HWY. 25
STA. 700+00.00 TO STA. 790+30.00

TYPICAL SECTION HWY. 25
STA. 790+30.00 TO STA. 790+40.00

NOTES:
1. See Drainage Plans for STA. 790+30.00 TO STA. 790+45.00

TYPICAL SECTIONS OF IMPROVEMENT

EXISTING GROUND

EXISTING GROUND
METHOD OF RAISING GRADE

DETAILS OF SILT FENCE
AT CROSS DRAINS

FULL DEPTH SHOULDER
FOR MAINTENANCE OF TRAFFIC

SPECIAL DETAILS
DETAILS OF RUMBLE STRIPS

LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER

GENERAL NOTES

1. Rumble strips shall not be installed on curb sections, weep holes, appurtenant slabs, intersecting streets or pedestrian, residential or commercial driveways or across pavements joints of concrete slabs.

2. Rumble strips shall not be installed on a paved shoulder that is used as a resurfacing lane for the length served.

3. The final shoulder from the edge line will be provided to avoid longitudinal jacking. In all cases, the lateral elevation from the finished edge shall be set to a uniform.

4. Rumble strips shall be measured at the lateral point directly along the shoulder. Placement shall only include that portion of the shoulder that is at least 20 feet in length. Placement of the shoulder shall be in accordance with the lateral elevation from the finished edge shall be set to a uniform.

5. The shoulder shall be provided with a 20-foot length. This section shall be extended as necessary to provide proper installation of the shoulder.

NOTE: The pattern shall be installed on the shoulder to provide the required visual and surface texture as necessary.

DETAIL FOR GAP PATTERN RUMBLE STRIP

PLAN VIEW
REVISED

DATE

REVISION

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
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<td></td>
</tr>
</tbody>
</table>

LEGEND
- • SAND BAG DITCH CHECKS
- • ROCK DITCH CHECKS
- • SALT FENCE

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

STAGE 1

TEMPORARY EROSION CONTROL DETAILS
TEMPORARY EROSION CONTROL DETAILS

STAGE 3

REVOLUTIONS

<table>
<thead>
<tr>
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<th>VERSION</th>
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<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

LEGEND

- + SAND BAG DRAIN CHECKS
- • ROCK DRAIN CHECKS
- + SAT FENCE

Erosion control measures to be placed during construction stages. These devices shall be left in place as long as required to control erosion.
# COLD MILLING ASPHALT PAVEMENT

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Avg. Width</th>
<th>Cold Milling Asphalt Paving</th>
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<tbody>
<tr>
<td>755-00</td>
<td>HWY 25</td>
<td>36.00</td>
<td>100</td>
</tr>
<tr>
<td>755-10</td>
<td>HWY 25</td>
<td>36.00</td>
<td>100</td>
</tr>
<tr>
<td>755-20</td>
<td>HWY 25</td>
<td>20.00</td>
<td>222.22</td>
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</tbody>
</table>

Total: 1022.22

*Note: Average milling depth 1"*

---

# ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

**ACM Patching of Existing Roadway**

<table>
<thead>
<tr>
<th>Location</th>
<th>Tonnage</th>
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<tbody>
<tr>
<td>Entire Project</td>
<td>100 Tonnage</td>
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</tbody>
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**Trench Bedding**

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<tr>
<th>Location</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project</td>
<td>100 Tonnage</td>
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</tbody>
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# REMOVAL AND DISPOSAL OF CULVERTS

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<tr>
<th>Station</th>
<th>Description</th>
<th>Pipe Culverts</th>
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<tbody>
<tr>
<td>800-100</td>
<td>HWY 25 L-T</td>
<td>0745</td>
</tr>
<tr>
<td>800-300</td>
<td>HWY 25 L-T</td>
<td>0745</td>
</tr>
<tr>
<td>1200-10</td>
<td>HWY 25 L-T</td>
<td>0745</td>
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**Overall:** 0745

---

# REMOVAL AND DISPOSAL OF ITEMS

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<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Measure</th>
<th>Guaranty</th>
<th>Concrete Ditch Paying</th>
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</thead>
<tbody>
<tr>
<td>755-20</td>
<td>HWY 25</td>
<td>1</td>
<td>164</td>
<td>100</td>
</tr>
<tr>
<td>755-10</td>
<td>HWY 25</td>
<td>1</td>
<td>164</td>
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</tr>
<tr>
<td>755-20</td>
<td>HWY 25</td>
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<td>164</td>
<td>100</td>
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**Total:** 488 Tonnage

---

# EARTHWORK

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<th>Location</th>
<th>Description</th>
<th>Unclassified Excavation</th>
<th>Compacted Excavation</th>
<th>Uncompacted Excavation</th>
<th>Stabilization</th>
<th>Total Tonnage</th>
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<tbody>
<tr>
<td>Entire Project</td>
<td>Stage 1: HWY 25</td>
<td>989</td>
<td>101</td>
<td>968</td>
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<td>1014</td>
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<tr>
<td>Entire Project</td>
<td>Stage 2: HWY 25</td>
<td>989</td>
<td>101</td>
<td>968</td>
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<td>1014</td>
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**Total:** 1488 Tonnage

---

# APPROACH COUNTERS AND SLABS

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<th>Station</th>
<th>Location</th>
<th>Approach Counters (Type 1)</th>
<th>Approach Counters (Type 2)</th>
<th>Approach Slabs (Type 1)</th>
<th>Approach Slabs (Type 2)</th>
<th>Reinforcing Steel (Type 6)</th>
<th>Aggregate Base (Type 7)</th>
<th>Total Tonnage</th>
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<tbody>
<tr>
<td>755-53</td>
<td>HWY 25</td>
<td>14.00</td>
<td>14.00</td>
<td>84.11</td>
<td>84.11</td>
<td>25.47</td>
<td>788</td>
<td>220.73 Tons</td>
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**Total:** 220.73 Tons

---

# CONCRETE DITCH PAYING

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<th>Location</th>
<th>Length</th>
<th>Unk. Ft</th>
<th>Sq. Yd.</th>
<th>M - G</th>
<th>Solid</th>
<th>Water</th>
<th>Total</th>
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<tbody>
<tr>
<td>755-10</td>
<td>HWY 25</td>
<td>755-A</td>
<td>500.00</td>
<td>15.00</td>
<td>10.00</td>
<td>50.00</td>
<td>100.00</td>
<td>200.00</td>
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<tr>
<td>755-35</td>
<td>HWY 25</td>
<td>755-A</td>
<td>500.00</td>
<td>15.00</td>
<td>10.00</td>
<td>50.00</td>
<td>100.00</td>
<td>200.00</td>
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</table>

**Total:** 417.50 Tons

---

*Note: Quantities shown above for the removal and disposal of culverts shall include the removal and disposal of all guartanty and terminal anchor posts.

---

*Note: Quantities estimated. See Section 15A.03 of the Std. Specs.

---

*Note: Quantities estimated. See Section 15A.03 of the Std. Specs.
### Structures

<table>
<thead>
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<tbody>
<tr>
<td>1151</td>
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<td>17</td>
<td>66.7</td>
<td>58.14</td>
<td>21</td>
<td>31</td>
<td>0.34</td>
<td>31</td>
<td>0.34</td>
<td>ROB-1, ROB-3, ROB-3, Special Details, B-300X</td>
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</tbody>
</table>

**TOTAL:**

|          | 66.7   | 58.14 | 21      | 31      | 0.34 |

### 4" Pipe Underdrain

<table>
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<tr>
<th>Station</th>
<th>Location</th>
<th>4&quot; Pipe Lined</th>
<th>Underdrain Outlet Protection</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>506</td>
<td>FL. Ft. 41 1/2</td>
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</tbody>
</table>

**TOTAL:**

|          | 506 |

*Note: Quantity estimated.

See Section 104.03 of this standard.*

### Erosion Control

<table>
<thead>
<tr>
<th>Location</th>
<th>Seeding L &amp; E</th>
<th>Water</th>
<th>Temporary Seeding L &amp; E</th>
<th>Water</th>
<th>Filter socks</th>
<th>Rock Ditch Checks</th>
<th>Silt Fence</th>
<th>Sediment Basin</th>
<th>Obliteration of Sediment Basin</th>
<th>Removable &amp; Obliteration of Sediment Basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire project to be used if and when directed by the Engineer.</td>
<td>7.48</td>
<td>7.48</td>
<td>702.8</td>
<td>7.48</td>
<td>828.0</td>
<td>1342.7</td>
<td>752</td>
<td>100</td>
<td>100</td>
<td>47</td>
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</tbody>
</table>

**TOTAL:**

|          | 7.48 | 7.48 | 702.8 | 7.48 | 828.0 | 1342.7 | 752 | 100 | 100 | 47 |

**BASE OF ESTIMATE:**

- **LIME:** 3 TONS ACRE OF SEEDING
- **WATER:** 132 GALLONS PER ACRE OF SEEDING
- **WATER:** 224 GALLONS ACRES OF TEMPORARY SEEDING
- **SAND BAG DITCH CHECKS:** 24 BAGS PER LOCATION
- **ROCK DITCH CHECKS:** 16 CT. PER LOCATION

*Note: The quantities shown are based on the performance of the work as directed.*

### Mailboxes

<table>
<thead>
<tr>
<th>Location</th>
<th>Mailboxes</th>
<th>Mailbox Supports</th>
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</thead>
<tbody>
<tr>
<td>Hwy 29 S. 707-90 ft.</td>
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</tbody>
</table>

**TOTAL:**

|          | 1 |

### Rumble Strips in asphalt shoulders

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Rumble Strips in asphalt shoulders</th>
</tr>
</thead>
<tbody>
<tr>
<td>795-110</td>
<td>392-109</td>
<td>Hwy 29 29.30</td>
</tr>
<tr>
<td>795-108</td>
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**TOTAL:**

|          | 392-109 |

### Fencing

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**TOTAL:**

|          | 1300 |

### Retaining Wall

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**TOTAL:**

|          | 590     |

*Note: Filter blanket shall be geo-textile fabric (type B).*

### Quantities

**TOTAL:**

|          | 485     |

*Note: All quantities shown are based on the performance of the work as directed.*
# DRAIWWAYS & TURNOUTS

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<th>TOT. T</th>
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**BASE & ESTIMATE:**
- ACMB Surface Course T1 = 34.5% Min. Absorbed 5.5% ACMB Binder
- ACMB Binder Course T2 = 55.5% Min. Absorbed 42% ACMB Binder
- Maximum Number of Girnments = 12 for PG 64-22
- Tack Coat Quantities Were Calculated Using the Hassler Asphalt Types. Refer to Table 4 for the Residual Asphalt Application Rates.

**BASE & DRAWINGS:**
- ACMB Surface Course T1 = 34.5% Min. Absorbed 5.5% ACMB Binder
- ACMB Binder Course T2 = 55.5% Min. Absorbed 42% ACMB Binder
- Maximum Number of Girnments = 12 for PG 64-22
- Tack Coat Quantities Were Calculated Using the Hassler Asphalt Types. Refer to Table 4 for the Residual Asphalt Application Rates.

**BASE & ESTIMATE:**
- ACMB Surface Course T1 = 34.5% Min. Absorbed 5.5% ACMB Binder
- ACMB Binder Course T2 = 55.5% Min. Absorbed 42% ACMB Binder
- Maximum Number of Girnments = 12 for PG 64-22
- Tack Coat Quantities Were Calculated Using the Hassler Asphalt Types. Refer to Table 4 for the Residual Asphalt Application Rates.
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1. These steel piles shall be Grade 50 and are required to have special pile test reports. Design will not be made for checking, but will be considered acceptable to the Item "Steel Filing (M40A)."
2. Quantities shown are for reinforcing and bedding purposes only. Actual quantities, if any, will be determined in the field.
### Alignment Chart

**Alignment Name: HAY 26**

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**Alignment Name: HAY 167**

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**Alignment Name: 801+25 WESTERN ACCESS**

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**Note:** All points are referenced to ARKANSAS STANDARD 1983 North Zone and GPS Control Points: 120000 - 120232 & 120233 - 120234.
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</table>

### BAR BENDING DIAGRAMS

![Bar Bending Diagrams](attachment:image.png)

**Notations:**
- Scale: 1" = 1'-0" (as shown)
- Common bars shown are for one bent.
- Non-Prp Bar: Subdivide to two bars.

### GENERAL NOTES

- Every steel bar shall be Grade 60 (yield strength = 50,000 psi) conforming to ASTM A705, or if A705, Type 4, when not otherwise specified.
- Bearing bars shall be Grade 60 and shall be poured in. All rebar shall be identified "A" unless noted otherwise.
- Dimensions of bars are not shown.
- Scale: 1" = 1'-0" (as shown)

### TABLE OF VARIABLES

<table>
<thead>
<tr>
<th>BENT NO.</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
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<tr>
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<td>14'-4&quot;</td>
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### TABLE OF ELEVATIONS

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<td>B</td>
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<td>I</td>
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<td>J</td>
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<td>K</td>
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**Details of Intermediate Bents**

**Arkansas State Highway Commission**

**Little Rock, AR**

**Drawing No. 63823**
FRAMING PLAN

NOTE: For SECTION C-A, see Chap. No. 13286.

LEGEND
EF = Each Face

CL Bearing & CL Line Slab

CL Bearing

Required Construction

S41E

Normal Finish Grade

SECTION A-A

Scale: 1" = 1'-0"

SECTION B-B

Scale: 1" = 1'-0"

FLUSH CONSTRUCTION

End of Girder

Temporary Steel Diaphragm (Top)

Temporary Steel Diaphragm (Top)

Temporary Steel Diaphragm (Top)

Temporary Steel Diaphragm (Top)

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GENERAL NOTES - SUPERSTRUCTURE

PRESTRESSED CONCRETE GIRDERS:

- Re-inforcing steel shall be of low carbon steel with a minimum ultimate strength of 279 ksi and shall conform to ASME A615 and A616.

- Distances from the forms and splicing of the prestressing shall be maintained by stays, bights, or other approved supports which shall be shown on the shop drawings.

- All girders shall be Type II as noted on the details and shall be the standard prestressing anchors adopted by the Joint Committee of ASME and the Prestressed Concrete Institute. All girders shall be cast in bonded pairs and in initial forms. All work and materials shall be as specified in Subsection 8.2.2.2.

- Concrete shall be Class G and shall have a minimum 28-day compressive strength of 6,000 psi. The total horizontal force applied to each girder shall be 2,000 kips, unless as noted. Transfer of the bending load to the girders shall not be done until the compressive strength of the concrete is 6,000 psi.

- Dimensions shown are to the center of the member.

- The contractor shall submit the method and sequence for release of strands to the engineer for approval prior to casting of the girders.

- Index den is to be cast into the girders. Field STL of holes shall not be permitted.

- The type of girders shall be selected to permit the use of 12 or 18 equally spaced girders at the same time. The type of girders shall be selected in consultation with the engineer to ensure compatibility with the bridge layout.

- Concrete used in the girder shall be Type II as noted on the details and shall be the standard prestressing anchors adopted by the Joint Committee of ASME and the Prestressed Concrete Institute. The concrete shall be cast in bonded pairs and in initial forms. All work and materials shall be as specified in Subsection 8.2.2.2.

- Concrete shall be mixed, proportioned, and tested in accordance with the requirements of the specifications. The concrete shall be placed in the girders in such a manner as to ensure the grout is free of air bubbles and other contaminants.

- The ends of all reinforced concrete beams shall be cast with concrete of a quality and strength comparable to the concrete in the girders. The concrete shall be cast in bonded pairs and in initial forms. All work and materials shall be as specified in Subsection 8.2.2.2.

- Reinforcement shall be placed in the girders in accordance with the specifications. The reinforcement shall be of Type II as noted on the details and shall be the standard prestressing anchors adopted by the Joint Committee of ASME and the Prestressed Concrete Institute. The reinforcement shall be cast in bonded pairs and in initial forms. All work and materials shall be as specified in Subsection 8.2.2.2.

- Rubber shear keys shall be installed in the girders at the specified locations. The rubber shear keys shall be of Type II as noted on the details and shall be the standard prestressing anchors adopted by the Joint Committee of ASME and the Prestressed Concrete Institute. The rubber shear keys shall be cast in bonded pairs and in initial forms. All work and materials shall be as specified in Subsection 8.2.2.2.

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STA. 788+00 TO STA. 789+00

CROSS SECTIONS

36' EXIST. PAVEMENT

E X . 7 0 0 . 5 6
E X . 6 9 5 . 5 9
6 8 4 . 6 5
6 9 7 . 6 2
6 9 9 . 9 5
7 0 0 . 2 7
7 0 0 . 7 5
7 0 0 . 5 1
7 0 0 . 1 9
6 9 6 . 9 8
7 0 6 . 7 9

3 : 1
6 : 1
4 . 0 %
2 . 0 %
2 . 0 %
4 . 0 %
6 : 1
3 : 1

HWY. 25

STAGE 1 TEMP. SLOPE
STAGE 1 C.L.
STAGE 2 C.L.
STAGE 3 C.L.

8.1' RT.
0.4' RT.
18.0' LT.
1.9' RT.
11.4' RT.

STAGE 3 = 7 SQ. FT.
STAGE 2 = 75 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA FILL
STAGE 3 = 5 SQ. FT.
STAGE 2 = 44 SQ. FT.
STAGE 1 = 1 SQ. FT.

AREA CUT
STAGE 3 = 28 SQ. FT.
STAGE 2 = 5 SQ. FT.
STAGE 1 = 62 SQ. FT.

VOLUME FILL
STAGE 3 = 21 CU. YD.
STAGE 2 = 220 CU. YD.
STAGE 1 = 2 CU. YD.

VOLUME CUT
STAGE 3 = 174 CU. YD.
STAGE 2 = 23 CU. YD.
STAGE 1 = 194 CU. YD.

STAGE 3 = 17 CU. YD.
STAGE 2 = 263 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME FILL
STAGE 3 = 229 CU. YD.
STAGE 2 = 31 CU. YD.
STAGE 1 = 122 CU. YD.

VOLUME CUT
STAGE 3 = 174 CU. YD.
STAGE 2 = 23 CU. YD.
STAGE 1 = 194 CU. YD.
STA. 790+00 TO STA. 792+00

CROSS SECTIONS

36' EXIST. PAVEMENT

ELEV. 686.88
BEGIN SP. DT. RT. -7.60%
STA. 790+00

6 8 4 .2 0
6 8 7 .5 2
6 8 9 .8 6
6 9 0 .18
6 9 0 .6 6
6 9 0 .4 2
6 9 0 .10
6 8 6 .8 8
6 8 9 .2 1
3 :1
6 :1
4 .0 %
2.0%
2.0%
4 .0 %

STAGE 1 TEMP. SLOPE

3 :1
6 :1
4 .0 %
2.0%
2.0%
4 .0 %

STAGE 2 RETAIN. WALL

RAISING GRADE

METHOD OF
SELECT GRANULAR BACKFILL

STAGE 1 C.L.

STAGE 2 C.L.

STAGE 3 C.L.

ARENA FILL

STAGE 3 = 39 SQ. FT.
STAGE 2 = 69 SQ. FT.
STAGE 1 = 2 SQ. FT.

AREA CUT

STAGE 3 = 0 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 44 SQ. FT.

VOLUME FILL

STAGE 3 = 76 SQ. FT.
STAGE 2 = 152 SQ. FT.
STAGE 1 = 3 SQ. FT.

VOLUME CUT

STAGE 3 = 53 CU. YD.
STAGE 2 = 9 CU. YD.
STAGE 1 = 197 CU. YD.

STAGE 3 = 0 CU. YD.
STAGE 2 = 0 CU. YD.
STAGE 1 = 132 CU. YD.

STAGE 3 = 81 CU. YD.
STAGE 2 = 209 CU. YD.
STAGE 1 = 6 CU. YD.

STAGE 3 = 139 SQ. FT.
STAGE 2 = 429 SQ. FT.
STAGE 1 = 3 SQ. FT.

STAGE 3 = 0 CU. YD.
STAGE 2 = 0 CU. YD.
STAGE 1 = 132 CU. YD.

STAGE 3 = 212 CU. YD.
STAGE 2 = 408 CU. YD.
STAGE 1 = 9 CU. YD.

STAGE 3 = 212 CU. YD.
STAGE 2 = 408 CU. YD.
STAGE 1 = 9 CU. YD.

STAGE 3 = 398 CU. YD.
STAGE 2 = 1076 CU. YD.
STAGE 1 = 11 CU. YD.

STAGE 3 = 398 CU. YD.
STAGE 2 = 1076 CU. YD.
STAGE 1 = 11 CU. YD.

STAGE 3 = 398 CU. YD.
STAGE 2 = 1076 CU. YD.
STAGE 1 = 11 CU. YD.

STAGE 3 = 398 CU. YD.
STAGE 2 = 1076 CU. YD.
STAGE 1 = 11 CU. YD.

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STAGE 1 = 11 CU. YD.

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STAGE 2 = 1076 CU. YD.
STAGE 1 = 11 CU. YD.

STAGE 3 = 398 CU. YD.
STAGE 2 = 1076 CU. YD.
STAGE 1 = 11 CU. YD.

STAGE 3 = 398 CU. YD.
STAGE 2 = 1076 CU. YD.
STAGE 1 = 11 CU. YD.
STA 796+30 TO STA 796+31

ELEVATION 637.61'

AREA FILL
STAGE 3 = 0 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA CUT
STAGE 3 = 18 CU. YD.
STAGE 2 = 20 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME CUT
STAGE 3 = 479 CU. YD.
STAGE 2 = 1014 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME FILL
STAGE 3 = 0 CU. YD.
STAGE 2 = 0 CU. YD.
STAGE 1 = 0 CU. YD.

ELEV. 641.60
END SP. DT. RT. -3.00%
STA 796+28 TO STA 796+31
HWY. 25

WORKSPACE: AEWCIAK


CROSS SECTIONS

EX.637.61

STAGE 3 = 0 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA FILL
STAGE 3 = 0 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA CUT
STAGE 3 = 18 CU. YD.
STAGE 2 = 20 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME CUT
STAGE 3 = 479 CU. YD.
STAGE 2 = 1014 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME FILL
STAGE 3 = 0 CU. YD.
STAGE 2 = 0 CU. YD.
STAGE 1 = 0 CU. YD.

ELEVATION 637.61'

STA 796+30 TO STA 796+31

ELEVATION 637.61'

STA 796+31 TO STA 796+32
STA 804+00 TO STA 804+55

HWY. 25
ELEV. 662.60
8' FLAT BOTTOM
END SP. DT. LT. 4.17%
STA. 803+50

ELEV. 662.60
8' FLAT BOTTOM
END SP. DT. LT. 4.17%
STA. 803+50

STA, 804+00 TO STA, 804+55

STAGE 1 C.L.
STAGE 2 C.L.
STAGE 3 C.L.

12'

2.7' LT.
3.2' RT.
7'

STAGE 3 = 7 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.
AREA FILL

STAGE 3 = 15 CU. YD.
STAGE 2 = 0 CU. YD.
STAGE 1 = 0 CU. YD.
VOLUME FILL

STAGE 3 = 8 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.
AREA CUT

STAGE 3 = 35 SQ. FT.
STAGE 2 = 1 SQ. FT.
STAGE 1 = 0 SQ. FT.
AREA CUT

STAGE 3 = 23 SQ. FT.
STAGE 2 = 3 SQ. FT.
STAGE 1 = 0 SQ. FT.
AREA CUT

STAGE 3 = 15 CU. YD.
STAGE 2 = 3 CU. YD.
STAGE 1 = 0 CU. YD.
VOLUME CUT

STAGE 3 = 42 CU. YD.
STAGE 2 = 192 CU. YD.
STAGE 1 = 0 CU. YD.
VOLUME CUT

STAGE 3 = 58 CU. YD.
STAGE 2 = 3 CU. YD.
STAGE 1 = 0 CU. YD.
VOLUME CUT
STA 805+00 TO STA 806+00

Cross Sections

36' EXIST. PAVEMENT

E X . 683.12

STA. 806+89.76 END SUPERELEVATION

683.73

682.82

680.49

679.65

4.5%

6:1

3:1

0.0%

673.89

686.55

688.88

688.20

687.94

685.06

2.1%

4.0%

6:1

1:2

686.53

687.70

1:2

693.19

VOLUME FILL

STAGE 3 = 14 CU. YD.

STAGE 2 = 0 CU. YD.

STAGE 1 = 0 CU. YD.

VOLUME CUT

STAGE 3 = 51 CU. YD.

STAGE 2 = 1 CU. YD.

STAGE 1 = 0 CU. YD.

AREA FILL

STAGE 3 = 9 SQ. FT.

STAGE 2 = 0 SQ. FT.

STAGE 1 = 0 SQ. FT.

AREA CUT

STAGE 3 = 26 SQ. FT.

STAGE 2 = 1 SQ. FT.

STAGE 1 = 0 SQ. FT.
STA 807+00 TO STA 808+00

EX. 697.43

STAGE 3 = 0 SQ. FT.
STAGE 2 = 49 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA FILL

STAGE 3 = 0 CU. YD.
STAGE 2 = 91 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME FILL

STAGE 3 = 274 SQ. FT.
STAGE 2 = 3 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA CUT

STAGE 3 = 575 CU. YD.
STAGE 2 = 27 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME CUT

STAGE 3 = 508 CU. YD.
STAGE 2 = 6 CU. YD.
STAGE 1 = 0 CU. YD.
STA. 12+27 to STA. 13+25

HWY. 107

Cross Sections

Method of Raising Grade

79 CU. YDS. FILL
18 CU. YDS. CUT

Construct Approach =
1. Left Side Drain
   Double 24" x 41' Pipe Culvert
   Remove and Install
   Left Side Drain
   24" x 25' CM Pipe Culvert

STA. 12+27 in Place

Volume Fill
Stage 3 = 0 CU. YD.
Stage 2 = 77 CU. YD.
Stage 1 = 0 CU. YD.

Volume Cut
Stage 3 = 3 CU. YD.
Stage 2 = 3 CU. YD.
Stage 1 = 0 CU. YD.

Area Fill
Stage 3 = 1 CU. YD.
Stage 2 = 4 CU. YD.
Stage 1 = 0 CU. YD.

Area Cut
Stage 3 = 34 CU. YD.
Stage 2 = 60 CU. YD.
Stage 1 = 0 CU. YD.

Stage 3 = 0 SQ. FT.
Stage 2 = 2 SQ. FT.
Stage 1 = 0 SQ. FT.

Stage 3 = 29 SQ. FT.
Stage 2 = 125 SQ. FT.
Stage 1 = 0 SQ. FT.

Stage 3 = 2 SQ. FT.
Stage 2 = 7 SQ. FT.
Stage 1 = 0 SQ. FT.

STA. 13+25

Volume Fill
Stage 3 = 0 SQ. FT.
Stage 2 = 107 SQ. FT.
Stage 1 = 0 SQ. FT.

Volume Cut
Stage 3 = 2 SQ. FT.
Stage 2 = 0 SQ. FT.
Stage 1 = 0 SQ. FT.

Area Fill
Stage 3 = 44 SQ. FT.
Stage 2 = 5 SQ. FT.
Stage 1 = 0 SQ. FT.

Area Cut
Stage 3 = 2 SQ. FT.
Stage 2 = 0 SQ. FT.
Stage 1 = 0 SQ. FT.
STA 14+00 TO STA 14+25 END 100' TRANSITION

VOLUME FILL
STAGE 3 = 61 CU. YD.
STAGE 2 = 7 CU. YD.
STAGE 1 = 0 CU. YD.

VOLUME CUT
STAGE 3 = 0 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA FILL
STAGE 3 = 0 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.

AREA CUT
STAGE 3 = 0 SQ. FT.
STAGE 2 = 0 SQ. FT.
STAGE 1 = 0 SQ. FT.
The name of the bridge as shown on the plans shall be placed on Lines 1-3 using \# raised letters and numerals \# high. Examples: HL-03.

Place the name of the company awarded the construction contract here using \# raised letters and numerals \# high. Example: AKCO CONSTRUCTION, INC.

Place the year in which Contract was awarded here using \# raised numerals \# high. Example: 2003.

Place the Bridge number here using \# raised letters and numerals \# high. Example: A1234.

Place the design live loading here using \# raised numerals \# high. Example: HL-03.

The name of the bridge shall be as designated on the plans. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

Additional attachments may be used provided such attachments are secured before fabrication and meet the material requirements as specified in Specifications and Special Provisions.

The border and all lettering shall be polished and shall be raised \# above the face of plate and shall be tapered. All lettering shall be plain gothic, square cut and not tapered.

Name plates shall be cast bronze and shall meet the material requirements as specified in Specifications and Special Provisions.

Assembly of plates shall be \# thick and shall include four tapering cone lugs \# to \# long. The border and all lettering shall be raised \# above the face of plate and shall be tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

GENERAL NOTES:


Alternate attachments may be used provided such attachments are secured before fabrication and meet the material requirements as specified in Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Specifications and Special Provisions.

Assembly of plates shall be \# thick and shall include four tapering cone lugs \# to \# long. The border and all lettering shall be raised \# above the face of plate and shall be tapered. All lettering shall be plain gothic, square cut and not tapered.

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The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

GENERAL NOTES:


Alternate attachments may be used provided such attachments are secured before fabrication and meet the material requirements as specified in Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Specifications and Special Provisions.

Assembly of plates shall be \# thick and shall include four tapering cone lugs \# to \# long. The border and all lettering shall be raised \# above the face of plate and shall be tapered. 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.
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 10' intervals. The space shall be filled with approved joint filler complying with AASHTO M213.

The walls shall not be paid for directly, but shall be considered to be included in the price bid for concrete ditch paving.

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.

Slope: Variable

For "W" dimensions refer to tabulation of quantities

For "W" & "B" dimensions refer to tabulation of quantities

Energy dissipators to be used for the entire length of ditch when slope of ditch paving exceeds 7%. The dissipators will not be paid for directly, but shall be considered to be included in the price bid for concrete ditch paving.

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

Energy dissipators to be used for the entire length of ditch when slope of ditch paving exceeds 7%. The dissipators will not be paid for directly, but shall be considered to be included in the price bid for concrete ditch paving.

SOLID SODDING.

DITCH PAVING AND LINES TO CONSTRUCT EXCAVATE TO NEAT TOE WALL DETAIL FOR CONCRETE DITCH PAVING

Rock excavation

The engineer shall alter to 1'-0" toe wall depth may vary.

SLOPE: VARIABLE

4' rounding at 10'-0" centers

3" dia. weep hole at 10'-0" centers

"W" dimensions refer to tabulation of quantities

"B" dimensions refer to tabulation of quantities

FOR "W" DIMENSIONS REFER TO TABULATION OF QUANTITIES

FOR "W" & "B" DIMENSIONS REFER TO TABULATION OF QUANTITIES

THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

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 10' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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.

EXCAVATE TO BRIDGE LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED.
**General Notes:**

All bolts shall be supplementary length to extend through the hole of the post and no more than 1" beyond it. Holes in posts and blocks to be 3/16" dia. with a tolerance of ± 1/32".

Holes in posts and blocks to be 3/16" dia.

Galvanized 16d nail to prevent block rotation.

Any backfilling under or around post shall be damp sand thoroughly tamped in place.

Wood posts and blocks shall be either close-in structural or better type wood suitable to the section.

Cut steel blockout and nuts to be used in wood blockouts for steel beams. Nuts and bolts required for manual for assessing safety hardware (MASH) for wood guardrail.

**Steel Post:**

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS

W-BEAM GUARDRAIL

 DETAILS OF WOOD LINE POST CONNECTIONS

- GENERAL NOTES -

All bolts shall be supplementary length to extend through the hole in the post and no more than 1" beyond it. Holes in posts and blocks to be 3/16" dia. with a tolerance of ± 1/32".

Galvanized 16d nail to prevent block rotation.

Any backfilling under or around post shall be damp sand thoroughly tamped in place.

Wood posts and blocks shall be either close-in structural or better type wood suitable to the section.

Cut steel blockout and nuts to be used in wood blockouts for steel beams. Nuts and bolts required for manual for assessing safety hardware (MASH) for wood guardrail.

**Standard Drawing GR-6**

**Arkansas State Highway Commission**

**Guardrail Details**

**Engineering and Design**

- General Notes:

- Cutting and Notch Requirements:

- Guardsrail Details:

- Typical Cut Steel Washer:

- Typical Post Bolt - Same Except Length:

- Splice Bolt:

- Wood Blockout Connections:

- Plastic Blockout Connections:

- Details of Steel Line Post Connections (W-Beam):

- Details of Wood Line Post Connections (W-Beam):

- REVISED WOOD LINE POST DETAIL

- REVISED WOOD POST NOTE:

- TYPE "A" HOLE FOR TYPE "B"
METHODS OF INSTALLATION OF GUARDRAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARDRAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1)
(FULL SHOULDER WIDTH OR LESS BRIDGES)
DETAILED WIDENING FOR GUARDRAIL

SECTION A-A
DETAILS OF WIDENING FOR GUARDRAIL

SECTION B-B
DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

GUARDRAIL DETAILS

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-9
THREE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POSTS 1-7

W-BEAM TO THREE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST 8

GENERAL NOTES:
- POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE, GRADE AND VERTICALLY IN CROSS SECTION.
- WOOD POSTS & WOOD BLOCKS SHALL BE EITHER NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.
- PLASTIC BLOCKOUT & WOOD POST TRANSITION RAIL WITH WOOD OR W-BEAM TO THREE BEAM RAIL WITH WOOD OR PLASTIC BLOCKOUT & WOOD POST 8

LIP CURB - REFER TO APPROACH GUTTER DETAILS
THREE BEAM GUARDRAIL CONNECTION AT BRIDGE ENDS

General Notes:
The guard rail for grade and the transition section shall be of a type that will blend in with the surrounding area and is especially selected for the area.

1. Each guard rail shall be installed on the side of the roadway that will blend in with the surrounding area.
2. The guard rail shall be extended through the full length of the roadway and shall be installed on the side of the roadway.
3. The guard rail shall be extended through the full length of the roadway and shall be installed on the side of the roadway.

Refer to the appropriate detail for further information.

ARKANSAS STATE HIGHWAY COMMISSION
GUARDRAIL DETAILS
STANDARD DRAWING GR-12
GENERAL NOTES

1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT. ALL POSTS SHALL MEET SECTION 470.22 OF THE STANDARD SPECIFICATIONS.

2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.

3. MAILBOX SHELF AND PLATFORM SIDE SHOULDS BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.

4. STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM MIGHT NOT BE LARGE ENOUGH FOR MAILBOXES OF A DIFFERENT SIZE.

5. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE PROPOSED. THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORT.

6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE PROPOSED. THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORT.

SPECIFICATIONS

1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT. ALL POSTS SHALL MEET SECTION 470.22 OF THE STANDARD SPECIFICATIONS.

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5. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE PROPOSED. THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORT.

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MAILBOX DETAILS

Standard Drawing MB-1

Arkansas State Highway Commission
**GENERAL NOTES**

WINGWALLS, CURTAIN WALLS, AND APRONS SHALL BE TIED TO THE PRECAST CULVERTS FORMED IN THE FOLLOWING MANNER:

**WINGWALLS**
- All exposed corners to have 4" chamfers.
- WINGWALLS AND CURTAIN WALLS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.
- ALL CONCRETE寶到整鋼 LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, AND ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS DIRECTED BY THE ENGINEER.
- BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS DIRECTED BY THE ENGINEER.
- LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST CULVERTS, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS DIRECTED BY THE ENGINEER.

**CURTAIN WALLS**
- CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERTS FORMED IN THE FOLLOWING MANNER:
- BOX CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**APRONS**
- ALL EXPOSED CORNERS TO HAVE 4" CHAMVERS.
- THAT THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**WINGWALLS/FOOTINGS**
- ALL EXPOSED CORNERS TO HAVE 4" CHAMVERS.
- THAT THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**CONSTRUCTION**
- ALL CONCRETE TO BE PlACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

**LEAKY GROUT**
- A SAND CEMENT MIXTURE CONFORMING TO THE REQUIREMENTS OF SUBSECTION 607 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 SAND CEMENT MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE PORTLAND CEMENT AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
- PORTLAND CEMENT SHALL BE TYPE 1 AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
- LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

**PLACEMENT**
- THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
- THE SAND CEMENT MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE PORTLAND CEMENT AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
- PORTLAND CEMENT SHALL BE TYPE 1 AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
- LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

**CUT OFF**
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**EXTERIOR WALLS**
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**DETAILS**
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**EQUIPMENT**
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**CONSTRUCTION MACHINERY**
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**MATERIALS**
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**REINFORCING STEEL**
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.
- THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP SURFACE OF THE PRECAST CONCRETE CULVERT.

**BAR LIST**

<table>
<thead>
<tr>
<th>NO.</th>
<th>SIZE</th>
<th>LENGTH</th>
<th>BAR BENDING DIAGRAM</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>#4</td>
<td>3'-2&quot;</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>#4</td>
<td>1'-5&quot;</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>#4</td>
<td>6&quot;</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>#4</td>
<td>2&quot;</td>
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</tr>
</tbody>
</table>

**SECTION A - A**

*NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT*
CONSTRUCTION SEQUENCE

1. Place structural backfill material, do not compact.
2. Install pipe, and backfill inside the pipe with backfill material of the type indicated in the plans. See note 3.
3. Final structural backfill operation is completed by working from foot to top of the pipe. Use of the pipe as a core for structural backfill differential may result, where 3’ of the pipe is used. The difference in pipe elevation will be equal to the difference in pipe elevation.

NOTE: Structural backfill and structural bedding material will not be paid for separately, but compensation will be considered to be included in the price bid per linear foot of metal pipe.

INSTALLATION TYPE

MATERIAL REQUIREMENTS FOR STRUCTURAL PIPE AND STRUCTURAL BEDDING

<table>
<thead>
<tr>
<th>INSTALLATION TYPE</th>
<th>MATERIAL REQUIREMENTS FOR STRUCTURAL PIPE AND STRUCTURAL BEDDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE 1</td>
<td>Structural pipe and bedding material shall be compacted to 95% of the maximum density according to the type or class of material used.</td>
</tr>
<tr>
<td>TYPE 2</td>
<td>Structural pipe and bedding material shall be compacted to 95% of the maximum density for the specified type or class of material used.</td>
</tr>
</tbody>
</table>

EQUIVALENT METAL THICKNESSES AND GAUGES

<table>
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<tr>
<th>STEEL</th>
<th>TYPE 1</th>
<th>TYPE 2</th>
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<tbody>
<tr>
<td>Metal thickness in inches</td>
<td>0.138</td>
<td>0.135</td>
</tr>
<tr>
<td>Thickness in inches</td>
<td>0.168</td>
<td>0.164</td>
</tr>
<tr>
<td>Grade number</td>
<td>0.109</td>
<td>0.105</td>
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INSTALLATION TYPE

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>TYPE 1</td>
<td>Structural pipe and bedding material shall be compacted to 95% of the maximum density for the specified type or class of material used.</td>
</tr>
<tr>
<td>TYPE 2</td>
<td>Structural pipe and bedding material shall be compacted to 95% of the maximum density for the specified type or class of material used.</td>
</tr>
</tbody>
</table>

GENERAL NOTES

1. Metal pipe culvert construction shall conform to applicable requirements of the transportation division of the Arkansas Department of Transportation, and standard specifications for highway construction and specifications for transportation, including all applicable special provisions, and standards generally applied to the project, and subject to the requirements of the project, and subject to the requirements of the Arkansas Department of Transportation.
2. Structural pipe and bedding material shall be compacted to 95% of the maximum density for the specified type or class of material used.
3. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
4. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
5. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
6. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
7. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
8. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
9. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
10. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
11. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
12. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
13. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
14. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
15. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
16. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
17. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
18. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
19. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
20. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
21. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
22. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
23. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
24. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
25. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
26. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
27. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
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59. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.
60. Aggregate base course (Class 4, 5, 6, or 7) shall be used for foundation material.

NOTE: Structural backfill and structural bedding material will not be paid for separately, but compensation will be considered to be included in the price bid per linear foot of metal pipe.
**GENERAL NOTES**

1. **Type 1 Embankment and Trench Installations**
   - Structural bedding materials shall be placed and compacted in layers not exceeding 8". The layers shall be brought up evenly and simultaneously to the elevation of the minimum cover.

2. **Type 2 Embankment and Trench Installations**
   - Structural bedding and structural bedding material shall be compacted to 95% of the maximum density according to the type or class of material used.

3. **Constructions Sequence**
   - Place structural bedding material to grade, do not compact.
   - Install pipe to grade.
   - Place structural bedding material outside the middle third of the pipe. Do not compact.

4. Impervious material should be placed as directed by the engineer at the ends of the culvert to prevent loss of structural bedding when pervious material is used for structural bedding and/or backfill.

5. The structural bedding shall be placed and compacted in layers not exceeding 8". The layers shall be brought up evenly and simultaneously to the elevation of the minimum cover.

6. The existing material excavated for the pipe trench shall be used to backfill the pipe. If suitable material is not available, the engineer may determine the use of selected pipe bedding.

7. For pipe types that are not shown on the current construction specifications, special construction specifications shall be written and manufacturer's recommendations.

---

**MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"**

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<thead>
<tr>
<th>H (FT.)</th>
<th>2'-6&quot;</th>
<th>3'-0&quot;</th>
<th>3'-6&quot;</th>
<th>4'-0&quot;</th>
<th>4'-6&quot;</th>
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</tbody>
</table>

**MINIMUM TRENCH WIDTH**

- **Type 1 Embankment and Trench Installations**
- **Type 2 Embankment and Trench Installations**

**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.

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>D (IN.)</th>
<th>MIN. COVER (FEET) FOR CONSTRUCTION LOADING</th>
</tr>
</thead>
<tbody>
<tr>
<td>36&quot;</td>
<td>3</td>
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<td>42&quot;</td>
<td>4</td>
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<tr>
<td>48&quot;</td>
<td>5</td>
</tr>
<tr>
<td>54&quot;</td>
<td>6</td>
</tr>
</tbody>
</table>

**LEGEND**

- **Structural Backfill Material**
- **Uncompacted loose material**
- **Normal bedding**
- **Structural bedding**
- **Middle structural bedding**
- **Outer structural bedding**
- **Structural backfill**
**GENERAL NOTES**

1. PVC SHELL SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. ALL PVC INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.

3. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.

4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.

5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.

6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR SELECTED PIPE BACKFILL SHALL BE USED. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS BASED ON STRUCTURAL BACKFILL "H" SHALL INCLUDE A MINIMUM 12'' OF PAVEMENT AND/OR BASE.

8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.

9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS."

10. JOINTS SHALL BE INSTALLED PER MANUFACTURER’S RECOMMENDATIONS.

11. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION

12. STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN DIAMETER, ROCK FREE OF ORGANIC MATERIAL.

**CONSTRUCTION SEQUENCE**

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE, DO NOT COMPACT.

2. INSTALL PIPE TO GRADE.

3. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.

4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATION OF PIPE./

5. INSTALL PIPE TO GRADE.

6. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.

**MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL**

**MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"**

**MINIMUM COVER FOR CONSTRUCTION LOADS**

**MULTIPLE INSTALLATION OF PVC PIPES**

**REVISIONS**

- **110.0-175.0 REVISED GENERAL NOTE**

- **3'-0" PER LINEAR FOOT OF PVC PIPE. WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID. WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION**

**Legend**

- **- UNCOMPACTED LOOSELY PLACED**

- **- STRUCTURAL BACKFILL**

- **- OUTER STRUCTURAL BEDDING**

- **- UNDISTURBED SOIL**

- **- STRUCTURAL BEDDING**

- **- AREA**

- **- HAUNCH**

**Arkansas State Highway Commission**

**Plastic Pipe Culvert**

**(PVC F949)**

**Standard Drawing PCP-2**
### GENERAL NOTES

1. Pipe shall conform to AASHTO M330, Type S. Installation shall conform to job special provisions.
2. Plastic pipe used to support shall be compacted to fill level.
3. Structural backfill, embankment, and outer structural bedding material shall be compacted to fill level.
4. Structural backfill, embankment, and outer structural bedding material shall be compacted to fill level.
5. Structural backfill, embankment, and outer structural bedding material shall be compacted to fill level.
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26. Structural backfill, embankment, and outer structural bedding material shall be compacted to fill level.
REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS 5 WITH A MINIMUM 28 DAY COMpressive STRENGTH OF 3000 PSi.

REINFORCING STEEL SHALL BE ASHTOK M 30 OR M 55, GRADE 60.

CONSTRUCTION MATERIALS FOR MINERAL & CULVERT DRAINAGE, INCLUDING WEEL HOLES AND OR MINERAL MATERIAL, SHALL BE SUBMITTED TO THE BID ITEM, "CLASS 5 CONCRETE".

MEMBRANE WAaTERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION B5 OF THE STANDARDS SPECIFICATIONS.

REINFORCING STEEL TOLERANCES: The tolerances for reinforcing steel shall meet those listed in "Manual of Standard Practice" published by Concrete Reinforcing Steel Institute with the exception that the tolerances for bars such as Figure 3 on page 7-4 of the C.R.S. Manual shall be in both 0.00 to +0.05-Inch.?

WEEL HOLES IN BOX CULVERT WULLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRN OPENING SHALL BE 4'-0" DIAMETER AND SHALL BE PLACED 6'-0" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEL HOLES IN MINERAL WULLS 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 10'-0" WEEL HOLES IN EACH MINERAL, THE DRN OPENING SHALL BE 4'-0" DIAMETER AND SHALL BE PLACED 6'-0" ABOVE THE TOP OF THE WEEL HOLE FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERSEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.

ARMSKED 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>1&quot;</td>
<td>L + 1'-0&quot;</td>
<td>SEE &quot;C&quot; BAR LENGTH</td>
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<td>L + 1'-0&quot;</td>
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<td>3&quot;</td>
<td>L + 1'-0&quot;</td>
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<td>10&quot;</td>
<td>L + 1'-0&quot;</td>
<td>SEE &quot;C&quot; BAR LENGTH</td>
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</tbody>
</table>

L = "C" - 3 INCHES
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.

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.

UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.

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

DETAILS THROUGH EXISTING CHANNELS

SECTION B-B
DETAILS FOR NEW CHANNELS

SECTION C-C
DETAILS THROUGH EXISTING CHANNELS

NOTE:
LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.
**ARKANSAS STATE HIGHWAY COMMISSION**

**METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS**

**STANDARD DRAWING RCB-3**

**GENERAL NOTES**

The resident engineer will make individual calculations of quantities for each structure lengthened, making no allowance for overbreakage beyond the lines indicated.

In all instances concrete shall be removed so as to permit full 40 diameter splice of reinforcing steel.

Reinforcing steel removed from existing structure shall not be reused in constructing extension.

On R.C. box culverts that have an existing concrete apron, concrete apron shall be removed with the wings, the cost of removing all old concrete will be included in the price bid per cubic yard for new construction and no additional compensation will be allowed.

Materials for securing dowel bars shall meet the requirements of Section 507.02 of the standard specifications.

Dowel bars shall be installed as follows: the drilling procedure shall be approved by the engineer, the filling system shall be an injection-type system which will ensure that sufficient material is injected so it completely surrounds the bars and fills the holes.

The contractor shall have the option of using either Method 1 or Method 2. Regardless of which method is used, pay quantities will be calculated based on Method 1.

Part of this standard is to be used for any details relative to new construction.

See standard drawings listed in tabulation of structures for all new construction details.

**SECTION A-A**

**METHOD 1**

Remove wings, aprons, footings and toewalls.

These dimensions to be 2 inches plus 40 times diameter of steel.

Remove top slab, bottom slab, walls, and wings beyond these lines.

**SECTION A-A**

**METHOD 2**

Deformed steel bars shall be placed in top slab, bottom slab, walls, and wings beyond these lines.

- #6 deformed dowel bars
- Number and spacing to match longitudinal bars in box culvert extension

**NOTE:** Part of this standard is to be used for any details relative to new construction.

See standard drawings listed in tabulation of structures for all new construction details.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES TO PERMIT SIMPLER CALCULATIONS.

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
C - NORMAL CROWN (FT.)

ADDED FORMULA

ISSUED 534-1-9-87

DATE 10-18-96

ARKANSAS STATE HIGHWAY COMMISSION

REVISED SUPERELEVATION TABLE

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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</tbody>
</table>

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

SUPERELEVATION FOR TWO-WAY TRAFFIC

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING SE-2

SUPERELEVATION FORMULA

SC = \frac{Ld}{e}

SUPERELEVATION

L = \text{LENGTH OF SUPERELEVATION TRANSITION (FT.)}
d = \text{WIDTH OF PAVEMENT (FT.)}
<table>
<thead>
<tr>
<th>Sign</th>
<th>Description</th>
<th>Standard Size (inches)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROAD CLOSED</td>
<td>Indicates the road is closed for traffic.</td>
<td>48&quot; x 48&quot;</td>
<td>Prepared for further construction work.</td>
</tr>
<tr>
<td>ROAD WORK</td>
<td>Indicates work is in progress on the road.</td>
<td>36&quot; x 36&quot;</td>
<td>Provides information on the nature of the work.</td>
</tr>
<tr>
<td>END WORK</td>
<td>Signals the end of the work zone.</td>
<td>36&quot; x 36&quot;</td>
<td>Assists in safely directing traffic away from the work area.</td>
</tr>
<tr>
<td>DETOUR</td>
<td>Indicates a detour route due to road closure or significant work.</td>
<td>36&quot; x 36&quot;</td>
<td>Helps motorists and vehicles avoid affected areas.</td>
</tr>
<tr>
<td>LOCAL TRAFFIC</td>
<td>Indicates local traffic should be used for the road.</td>
<td>36&quot; x 36&quot;</td>
<td>Encourages local traffic to use designated paths.</td>
</tr>
<tr>
<td>MILE</td>
<td>Displays the distance along the road.</td>
<td>36&quot; x 36&quot;</td>
<td>Provides a clear indication of the road's length and direction.</td>
</tr>
<tr>
<td>ROAD END</td>
<td>Marks the end of a particular road section.</td>
<td>36&quot; x 36&quot;</td>
<td>Signals the conclusion of a specific road segment.</td>
</tr>
<tr>
<td>STREET</td>
<td>Identifies the street name and number.</td>
<td>36&quot; x 36&quot;</td>
<td>Helps in navigation and emergency services.</td>
</tr>
<tr>
<td>SPEED LIMIT</td>
<td>Indicates the speed limit for vehicles on the road.</td>
<td>36&quot; x 36&quot;</td>
<td>Ensures safe driving conditions.</td>
</tr>
<tr>
<td>險 CURVE</td>
<td>Indicates a curve in the road.</td>
<td>36&quot; x 36&quot;</td>
<td>Aids in road safety by warning drivers of the upcoming curve.</td>
</tr>
<tr>
<td>KEEP LEFT</td>
<td>Directs traffic to remain in the left lane.</td>
<td>36&quot; x 36&quot;</td>
<td>Helps in managing traffic flow and reducing accidents.</td>
</tr>
<tr>
<td>ONE WAY</td>
<td>States the direction of traffic flow.</td>
<td>36&quot; x 36&quot;</td>
<td>Ensures unidirectional flow and maintains safety.</td>
</tr>
<tr>
<td>ROAD open</td>
<td>Signals the road is open for traffic.</td>
<td>36&quot; x 36&quot;</td>
<td>Indicates the end of work or a return to normal traffic conditions.</td>
</tr>
</tbody>
</table>

*Note: All signs should be properly maintained and placed according to the MUTCD (Manual on Uniform Traffic Control Devices) guidelines.*
Arkansas State Highway Commission
Temporary Erosion Control Devices
Standard Drawing TEC-2

**Diversion Ditch (E-8)**
- Diversion Ditch (E-8) is shown with a minimum depth of 2', and recommended heights with flow to coincide with the height of finished embankments.
- Directions for extending drains as needed to coincide with height of finished embankments are given.
- An example of how to handle drainage is also provided.

**Sediment Basin with Riprap Outlet (E-9)**
- The size of the basin is determined by volume requirements.
- A minimum length-to-width ratio of 2:1 shall be used for riprap.
- Rock filters with non-perforated pipe and anti-seep collars are suggested.

**Sediment Basin with Pipe Outlet (E-10)**
- The size of the basin is determined by volume requirements.
- A minimum length-to-width ratio of 2:1 shall be used for pipe outlet.
- Geotextile fabric (Type 5) is recommended for the rock filter.

**Slope Drain (E-12)**
- Slope drains are shown with a minimum depth of 3', and recommended heights with flow.
- Directions for extending drains as needed to coincide with height of finished embankments are provided.

**Sediment Basin (E-14)**
- The size of the basin is determined by volume requirements.
- A minimum length-to-width ratio of 2:1 shall be used for sediment basin.
- Geotextile fabric (Type 5) is recommended for the rock filter.
**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**

**EXISTING GROUND**

1. Interceptor or Diversion Ditch

**PHASE 1 EXCAVATION**

**PHASE 2 EXCAVATION**

**FINAL PHASE EXCAVATION**

**GENERAL NOTE**

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.

**EMBANKMENT**

**EXISTING GROUND**
