INDEX OF SHEETS

SHEET NO.       TITLE

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

ROADWAY STANDARD DRAWINGS

DRAWING NO.     TITLE                   DATE

PCC-1            PRECAST CONCRETE BOX CULVERTS   01-29-15
PCC-2            CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING  02-27-15
PCC-3            METAL PIPE CULVERT FILL HEIGHTS & BEDDING  02-27-15
PCC-4            PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)  02-27-15
PCC-5            PLASTIC PIPE CULVERT (PVC FD49)  02-27-15
PCC-6            PLASTIC PIPE CULVERT (POLYPROPYLENE)  02-27-15
PCV-1            PAVEMENT MARKING DETAILS  02-27-15
RCB-1            REINFORCED CONCRETE CULVERT DETAILS  07-28-12
RCB-2            EXCAVATION PAY LIMITS, BACKFILL, & SOIL SODDING FOR BOX CULVERTS  11-20-03
TC-1             STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION  11-07-19
TC-2             STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION  11-07-19
TC-3             STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION  11-07-19
TE-1             TEMPORARY EROSION CONTROL DEVICES  11-16-17
TE-2             TEMPORARY EROSION CONTROL DEVICES  11-03-04
DETAIL FOR TRANSITIONS

DETAIL FOR DRIVEWAY TURNOUTS

DETAILS OF SILT FENCE AT R.C. BOX

SPECIAL DETAILS
### Outlet Dimensions and Section

**Outlet Width:**
- Left: 11.72 ft
- Right: 8.85 ft

**Outlet Sides:**
- Left: 11.72 ft
- Right: 8.85 ft

**Outlet Depth:**
- Left: 9.5 ft
- Right: 7.7 ft

**Outlet Slope:**
- Left: 7%
- Right: 7%

### Details of R.C. Box Culvert

**Triple Barrel Box Culvert**

**Sta. 26+00**

**Special Details**

---

### Reinforcing Steel

#### Top Slab Reinforcing Steel
- **Rectangle:**
  - Size: 4" x 1" for 4" length
  - Size: 3" x 1" for 8" length

#### Bottom Slab Reinforcing Steel
- **Rectangle:**
  - Size: 4" x 1" for 8" length

#### Side Wall Reinforcing Steel
- **T-Bars:**
  - Size: 4" x 1" for 8" length

#### Interior Wall Reinforcing Steel
- **T-Bars:**
  - Size: 4" x 1" for 8" length

---

### Miscellaneous Notes

- All dimensions are in feet, unless otherwise noted.
- Concretes: Specified strengths are based on compressive strength.
- Bar sizes and placements are per the requirements of the project specifications.

---

**Special Details**

- All bar sizes and placements are per the project specifications.
- Concretes: Specified strengths are based on compressive strength.
CONSTRUCTION SEQUENCE NOTES

1. INSTALL ADVANCE INGRESS SIGN
2. CONSTRUCT WALK
3. PLACE PERMANENT PAINTATION MARKINGS AND OPEN TO TRAFFIC.

(Road closed
Guaranteed Head
Local Traffic Only)

(BRIDGE TYPE RTA)

(STA 22+00.00
BEGIN JOB 101004
L.M. 0.34)

(STA 30+00.00
END JOB 101004)

MAGNITUDE OF TRAFFIC DETAILS
6" PUFF REFLECTED PAVEMENT MARKING

STA 22+00 34'000 6' 1000
STA 28+00 34'000 6' 2000

5" YELLOW REFLECTED PAVEMENT MARKING

STA 22+00 34'000 5' 1000
STA 28+00 34'000 5' 2000

TYPE YELLOW/YELLOW REFLECTED PAVEMENT MARKERS AT 80 SPACING

STA 22+00 34'000 5' 1000
STA 28+00 34'000 5' 2000

STA 30+00 34'000

END JOB 105004

LM 0.34

THE 6" YELLOW STRIPED MARKERS HAVE BEEN ESTABLISHED BASED ON THE MILEAGE INDICATED ABOVE FOR THE INITIAL APPLICATION. PRIOR TO THE PLACEMENT OF ANY PAINT SYSTEMS, CONTACT THE MAINTENANCE OFFICES AFTER THE FINAL LAY OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE COMPLETION OF THE PROJECT.
### SUMMARY OF QUANTITIES

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT</th>
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<td>TOPSOIL</td>
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<td>SQFT.</td>
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<tr>
<td>203</td>
<td>REMOVAL AND DISPOSAL OF PIPE CULVERTS</td>
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<tr>
<td>204</td>
<td>DECLASSIFIED EXCAVATION</td>
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<td>206</td>
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<td>207</td>
<td>AGGREGATE BASE COURSE (CLASS T)</td>
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<td>208</td>
<td>TACK COAT</td>
<td>361</td>
<td>GAL</td>
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<td>210</td>
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<td>211</td>
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<tr>
<td>212</td>
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<td>A/COTTON MILLING</td>
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<td>STITCHING NO. 6</td>
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<td>SQ. YD</td>
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<tr>
<td>231</td>
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<td>28</td>
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<tr>
<td>232</td>
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<tr>
<td>233</td>
<td>REPAIRED DUPLICATED PAINTING MARKING WHITE (A)</td>
<td>2250</td>
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<tr>
<td>234</td>
<td>REPAIRED DUPLICATED PAINTING MARKING YELLOW (B)</td>
<td>2250</td>
<td>LIN. FT</td>
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<tr>
<td>235</td>
<td>REPAIRED DUPLICATED PAINTING MARKING BLACK (B)</td>
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<tr>
<td>236</td>
<td>STRUCTURE OVER 2F. P.A.</td>
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### STRUCTURES OVER 2F. P.A.

<table>
<thead>
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<th>ITEM NUMBER</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT</th>
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<tr>
<td>201</td>
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<td>202</td>
<td>DECLASSIFIED EXCAVATION FOR STRUCTURES/ROADWAY</td>
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<td>204</td>
<td>REINFORCING STEEL/Roadway (Grade 65)</td>
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### REVISIONS

<table>
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<tr>
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<th>SHEET NUMBER</th>
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<tr>
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<td>Added delay in right of way occupancy special provision</td>
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SURVEY CONTROL COORDINATES

Project Name: A101004
Date: 4/2/2010
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL 1102013 - 1102013A
Units: U.S. SURVEY FOOT

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<tr>
<th>Point</th>
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<th>Easting</th>
<th>Elev</th>
<th>Feature Description</th>
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<td>Pt 1 - HARY. 1</td>
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<td>88952.2936</td>
<td>70.79</td>
<td>Pt 1 - HARY. 1</td>
</tr>
</tbody>
</table>

NOTE: Unless otherwise noted, coordinates are in feet, and all points are in the ARKANSAS STATE PLANE - NORTH ZONE based on GPS Control 1102013 - 1102013A.
**GENERAL NOTES**

- All exposed corners to have 45° chamfers.
- J bars and M bars shall be embedded a minimum of 10" in precast box.
- Wingwalls, aprons, and curtain walls shall be constructed in accordance with the applicable drainage fill and drained quantity and be compacted to a minimum depth of the precast concrete box culverts.
- All exposed concrete to have 4" finish.
- Drainage fill material may be adjusted in the field as directed by the engineer.
- Lean grout shall consist of a sand cement mixture meeting the following requirements:
  - 0.5 sacks of portland cement to 1 ton of material mixture.
  - Sufficient water to hydrate the cement and form a mix that will flow through the forms.
- Membrane waterproofing shall be applied to all box culvert joints.
- Membrane waterproofing conforming to the requirements of AASHTO M 15 shall be applied to the exterior walls of the assembled culvert, see details on this drawing.
- Drainage fill material with geotextile fabric is required at the bottom of weep holes to stop drainage fill at the bottom of the assembled culvert, see details on this drawing.

**BAR LIST**

<table>
<thead>
<tr>
<th>BAR</th>
<th>NO.</th>
<th>SIZE</th>
<th>LENGTH</th>
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<tbody>
<tr>
<td>I</td>
<td>2</td>
<td>#4</td>
<td>4'</td>
</tr>
<tr>
<td>J</td>
<td>2</td>
<td>#4</td>
<td>1'-8&quot;</td>
</tr>
<tr>
<td>L</td>
<td>2</td>
<td>#4</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>M</td>
<td>2</td>
<td>#4</td>
<td>1'-0&quot;</td>
</tr>
<tr>
<td>J</td>
<td>2</td>
<td>#4</td>
<td>1'-0&quot;</td>
</tr>
</tbody>
</table>

**SECTION A - A**

- Drainage fill material with geotextile fabric is required at the bottom of the assembled culvert, see details on this drawing.
- Wingwalls, aprons, and curtain walls shall be constructed in accordance with the applicable drainage fill and drained quantity and be compacted to a minimum depth of the precast concrete box culverts.

**END VIEW**

- Drainage fill material with geotextile fabric is required at the bottom of the assembled culvert, see details on this drawing.
- Wingwalls, aprons, and curtain walls shall be constructed in accordance with the applicable drainage fill and drained quantity and be compacted to a minimum depth of the precast concrete box culverts.

**PLAN VIEW**

- Drainage fill material with geotextile fabric is required at the bottom of the assembled culvert, see details on this drawing.
- Wingwalls, aprons, and curtain walls shall be constructed in accordance with the applicable drainage fill and drained quantity and be compacted to a minimum depth of the precast concrete box culverts.

**BAR BENDING DIAGRAM**

- Drainage fill material with geotextile fabric is required at the bottom of the assembled culvert, see details on this drawing.
- Wingwalls, aprons, and curtain walls shall be constructed in accordance with the applicable drainage fill and drained quantity and be compacted to a minimum depth of the precast concrete box culverts.

**PREFABRICATED FABRIC STATEMENT**

- Drainage fill material with geotextile fabric is required at the bottom of the assembled culvert, see details on this drawing.
- Wingwalls, aprons, and curtain walls shall be constructed in accordance with the applicable drainage fill and drained quantity and be compacted to a minimum depth of the precast concrete box culverts.
### Minimum Height of Fill "H" Over Circular R.C. Pipe Culverts

<table>
<thead>
<tr>
<th>CLASS OF PIPE</th>
<th>INSTALLATION TYPE</th>
<th>CLASS ID</th>
<th>CLASS II</th>
<th>CLASS III</th>
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<td>10-15</td>
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<td>2</td>
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<td>16</td>
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<td>16</td>
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</table>

**NOTES:**
- Minimum Height of Fill "H" shall follow a minimum of 12" from the bottom of pipe.
- Minimum Height of Fill "H" shall not be less than 24" in any case.

### Maximum Height of Fill "H" Over Circular R.C. Pipe Culverts

<table>
<thead>
<tr>
<th>INSTALLATION TYPE</th>
<th>CLASS ID</th>
<th>CLASS II</th>
<th>TOTAL</th>
<th>CLASS III</th>
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</table>

**NOTES:**
- Maximum Height of Fill "H" shall not be less than 24" in any case.
- Maximum Height of Fill "H" shall be measured using Type 1 installation.

---

### General Notes

2. Reinforced concrete (R.C.) pipe culverts shall conform to AASHTO M-207, Circular R.C. Pipe Culverts, and AASHTO M-170, Circular R.C. Arch Pipe Culverts, or other specifications as approved by the Engineer.
3. Horizontal elliptical pipe culverts shall conform to AASHTO M-208, Horizontal Elliptical Pipe Culverts, or other specifications as approved by the Engineer.

---

### Construction Sequence

1. Place the bedding material to a thickness not exceeding the embedment size of the pipe, or as noted in the Plans and Specifications.
2. Compact the bedding material to a height not exceeding the embedment size of the pipe, or as noted in the Plans and Specifications.
3. Place the pipe in the excavation, or as noted in the Plans and Specifications.
4. Compact the bedding material to a height not exceeding the embedment size of the pipe, or as noted in the Plans and Specifications.
5. Backfill the excavation with materials specified in the Plans and Specifications, or as noted in the Plans and Specifications.
6. Do not exceed the fill height specified in the Plans and Specifications.
CONSTRUCTION SEQUENCE

1. Place the structural backfill material into place, do not compact.
2. Install the corrugated steel or aluminum pipe with the corrugated side facing outward. Make sure to use the proper type of structural bedding material specified in the plans, section, and specifications. Refer to the standard construction specifications.
3. Metal pipe culverts shall be installed with a minimum clearance of 1.5 feet from the bottom of the pipe to the underside of the corrugated cover. For corrugated covers, a minimum clearance of 18 inches from the bottom of the pipe to the underside of the corrugated cover shall be maintained.

GENERAL NOTES

1. Structural backfill and structural bedding material shall be compacted to 95% of the maximum density according to the type or class of material used.
2. Installation type 2 may be used for corrugated steel or aluminum pipe arches.
3. Installation type 2 shall be used for corrugated steel or aluminum pipe arches with 2 2/3" x 1" corrugation.
4. Installation type 2 may be used for corrugated steel or aluminum pipe arches with 2 2/3" x 1" corrugation.
5. Structural backfill, embankment, and other structural bedding materials shall be compacted to 95% of the maximum density according to the type or class of material used.
6. The maximum fill height shall be the maximum allowable fill height for the specific material and conditions as specified in the plans, section, and specifications.
7. Metal pipe culverts shall be installed with a minimum clearance of 24 inches from the bottom of the pipe to the underside of the corrugated cover. For corrugated covers, a minimum clearance of 18 inches from the bottom of the pipe to the underside of the corrugated cover shall be maintained.
8. The maximum fill height shall be the maximum allowable fill height for the specific material and conditions as specified in the plans, section, and specifications.
9. Structural backfill, embankment, and other structural bedding materials shall be compacted to 95% of the maximum density according to the type or class of material used.

EMBANKMENT AND TRENCH INSTALLATIONS

A structural backfill, embankment, and other structural bedding materials shall be compacted to 95% of the maximum density according to the type or class of material used. Structural backfill shall be placed between the pipes, and the side to side structural bedding differential shall not exceed 24 inches or 1/3 the size of the pipe, side to side structural bedding differential shall not exceed 24 inches or 1/3 the size of the pipe.

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

INSTALLATION TYPE

1. Structural backfill, embankment, and other structural bedding materials shall be compacted to 95% of the maximum density according to the type or class of material used.
2. Installation type 2 may be used for corrugated steel or aluminum pipe arches.
3. Installation type 2 shall be used for corrugated steel or aluminum pipe arches with 2 2/3" x 1" corrugation.
4. Installation type 2 may be used for corrugated steel or aluminum pipe arches with 2 2/3" x 1" corrugation.

INSTALLATION MATERIALS

1. Structural backfill, embankment, and other structural bedding materials shall be compacted to 95% of the maximum density according to the type or class of material used.
2. Installation type 2 may be used for corrugated steel or aluminum pipe arches.
3. Installation type 2 shall be used for corrugated steel or aluminum pipe arches with 2 2/3" x 1" corrugation.
4. Installation type 2 may be used for corrugated steel or aluminum pipe arches with 2 2/3" x 1" corrugation.
**GENERAL NOTES**

1. PIPE SHALL CONFORM TO ANSI/AWWA C-350.  ALL INSTALLATION SHALL CONFORM TO USE SPECIAL PROVISIONS NECESSARY TO THE INSTALLATION OF A AASHTO M294, TYPE S.  INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION

2. PLACE PIPE TO GRADE.

3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.

4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8".  THE LAYERS SHALL BE BROUGHT UP EVENLY SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

6. THE MINIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.

7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SEEN TO THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.

8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH WIDTH MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION.

**CONSTRUCTION SEQUENCE**

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE.  DO NOT COMPACT.  UNCOMPACTED = UNDISTURBED SOIL

2. INSTALL PIPE TO GRADE.  BE MIDDLE STRUCTURAL BEDDING AREA

3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.

4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8".  THE LAYERS SHALL BE BROUGHT UP EVENLY SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

6. THE MINIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.

7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SEEN TO THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.

8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH WIDTH MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION.

**RECOMMENDATIONS**

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

2. MINIMUM TRENCH WIDTH SHALL INCLUDE A MINIMUM 12" CLEAR DISTANCE BETWEEN THE STRUCTURAL BEDDING AND THE ROADWAY.  THE OUTSIDE DIAMETER OF THE PIPE SHALL BE INCLUDED IN THE PRICE BID.

3. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE, BORROW MATERIAL OR SELECTED MATERIAL (CLASS SM-1, SM-2 OR SM-4) SHALL BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.

4. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.

5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH WIDTH MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

6. THE MINIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.

7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SEEN TO THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.

8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH WIDTH MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION.
**GENERAL NOTES**

1. PVC shall conform to Class SM-1, SM-2, or SM-4 as defined in the Standard Specifications for Highway Construction.
3. Pipe shall conform to ASTM F949, Cell Class 12454. Installation shall conform to Job Special Provision No. 10-2010 with 2010 Interims.
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, unconsolidated material that is encountered at the bottom of the excavated area shall be compacted to 95% of the maximum density according to the type or class of material used.
6. Structural bedding, embankment, and outer structural bedding material shall be compacted to 100% of maximum density according to the type or class of material used.
7. Structural bedding shall be compacted in multiple layers not exceeding 8". The layers shall be brought up evenly and compacted simultaneously to the elevation of the minimum cover.
8. PVC pipes of diameters other than shown will not be allowed.
9. Joins for PVC pipe shall meet the requirements for use specified in AASHTO LRFD Bridge Specifications and AASHTO Bridge Design Specifications, or as directed by the engineer.
10. All other construction specifications apply. Jobs shall be installed per manufacturer's recommendations.

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

<table>
<thead>
<tr>
<th>TRENCH WIDTH (FEET)</th>
<th>MIN. TRENCH WIDTH (FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5'</td>
<td>5'-0&quot;</td>
</tr>
<tr>
<td>6'</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>7'</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>8'</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>9'</td>
<td>9'-0&quot;</td>
</tr>
</tbody>
</table>

**MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL**

<table>
<thead>
<tr>
<th>PIPE TYPE</th>
<th>MAX. FILL HEIGHT (KIPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>110.0 - 175.0 KIPS</td>
</tr>
<tr>
<td>Type 2</td>
<td>40.0 - 75.0 KIPS</td>
</tr>
</tbody>
</table>

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>DIAMETER (EACH)</th>
<th>MIN. COVER (FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>12'-0&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>15'-0&quot;</td>
</tr>
</tbody>
</table>

**LEGEND**

- **D** = OUTSIDE DIAMETER OF PIPE
- **H** = MAXIMUM FILL HEIGHT
- **F** = MINIMUM COVER
- **L** = MINIMUM COVER NOTE; DELETED

**TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS**

1. Structural bedding, embankment, and outer structural bedding material shall be compacted to 100% of the maximum density according to the type or class of material used.

**CONSTRUCTION SEQUENCE**

1. Place structural bedding material to grade, do not compact.
2. Install pipe to grade.
3. Compact structural bedding outside the middle third of the pipe.
4. The structural bedding shall be placed and compacted in multiple layers not exceeding 8".

**NOTE:**

-imens Note 1. Date filmed 2-27-14
-imens Note 2. Date filmed 11-17-10
-imens Note 3. Date filmed 12-15-11
-imens Note 4. Date filmed
GENERAL NOTES

1. Pipe shall conform to design and specifications as allocated herein. It shall conform to all general provisions, except those specifically stated herein.

2. Water main design shall conform to automatic tube design specifications, or the edition used with the contract.

3. Structural backfill material shall be placed in layers no greater than 6 inches in thickness and shall be compacted to 95% of the maximum density according to the type or class of material used.

4. Structural backfill shall be placed in layers no greater than 6 inches in thickness and shall be compacted to 95% of the maximum density according to the type or class of material used.

5. The structural backfill shall be placed in layers no greater than 6 inches in thickness and shall be compacted to 95% of the maximum density according to the type or class of material used.

6. Structural backfill shall be placed in layers no greater than 6 inches in thickness and shall be compacted to 95% of the maximum density according to the type or class of material used.

EMBANKMENT AND TRENCH INSTALLATIONS

1. Where structural backfill material to grade, do not compact, or install pipe to grade.

2. Compact structural backfill outside the middle third of the pipe.

3. The structural backfill shall be placed and compacted in the manner specified by the engineer in order to maintain grade and alignment.

4. Pipe installation may require the use of restraints, including any necessary pipe installation materials to properly and safely place and compact the fill.

TRENCH INSTALLATION


3. When the existing material excavated for the pipe trench is determined by the engineer to be unsuitable, the engineer may authorize the use of "selected pipe bedding".

4. The quantity of material required to fill the trench area up to the selected pipe bedding pay limit designated above will be measured and paid for as "selected pipe bedding".

5. The structural backfill, embankment, and outer structural bedding material shall be compacted to 95% of the maximum density according to the type or class of material used.

6. The structural backfill, embankment, and outer structural bedding material shall be compacted to 95% of the maximum density according to the type or class of material used.

PLASTIC PIPE CULVERT

1. Pipe shall conform to AASHTO M330, Type S. Installation shall conform to job special provisions and manufacturer's recommendations, or other approved methods in order to help maintain grade and alignment.

2. Place structural bedding material to grade, do not compact, or install pipe to grade.

3. Compact structural bedding outside the middle third of the pipe.

4. The structural bedding shall be placed and compacted in the manner specified by the engineer in order to maintain grade and alignment.

5. When directed by the engineer, unsuitable material that is encountered at the bottom of the excavated trench shall be excavated and replaced with borrow material or other approved methods in order to help maintain grade and alignment.

**Pavement Marking Details**

1. **Broken Line Striping**
   - Concrete Pavement
   - Asphalt Pavement

2. **Solid Line Striping**
   - Solid line striping on concrete pavement
   - Solid line striping on asphalt pavement

3. **Striping at Adjacent No Passing Lanes**
   - Asphalt Pavement
   - Concrete Pavement

4. **Yield Line Detail**
   - White yield line perpendicular to entry lane
   - Direction of travel

5. **Crosswalk and Stop Line Details**
   - 10' stop line
   - 10' center strip
   - 30' center line

6. **Raised Pavement Markers**
   - Continuous yellow
   - Skip yellow

7. **Edge of Pavement**
   - Yellow line
   - Continuous white

8. **Pavement Edge Line Marking**
   - 2" for asphalt or concrete pavement
   - 6" for bituminous surface treatment

9. **Notes**
   - Refer to the striping details for pavement working line details.
   - The drawing shall be used in conjunction with the latest revised edition of the "Manual on Uniform Traffic Control Devices." (MUTCD)
   - Raised pavement markers shall be placed on an 80 feet spacing unless otherwise shown in the plans.
   - For asphalt or concrete pavement, the product made by referring to the ARDOT Qualified Products List.
   - ARKANSAS STATE HIGHWAY COMMISSION
   - PAVEMENT MARKING DETAILS
   - STANDARD DRAWING PM-1

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**ARMS-PM1**

10. **General Notes & Date**
    - 9-30-80
    - R.E.V. NOTES 3 & 4; ADDED R.P.M.
    - 7-02-98
    - 11-18-04
    - 9-12-13
    - 5-12-16
    - 6-1-17
    - 2-27-20

**Products List**

- 2-27-20 CROSSWALK AND STOP LINE DETAILS
- 1-02-16 EDGE DETAIL OF L.C.D.
- 11-12-15 CENTER STRIPE DETAIL OF L.C.D.
- 7-26-15 WHITE YIELD LINE DETAIL
- 5-12-16 REMOVED PLOWABLE PVMT MRKRS
- 10-09-15 REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS
- 9-30-80 REVISED GENERAL NOTES & DATE

---

**Yield Line Detail**

- White yield line perpendicular to entry lane
- Direction of travel

---

**Crosswalk and Stop Line Details**

- 10' stop line
- 10' center strip
- 30' center line

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**Raised Pavement Markers**

- Continuous yellow
- Skip yellow

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**Edge of Pavement**

- Yellow line
- Continuous white

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**Pavement Edge Line Marking**

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**Notes**

- Refer to the striping details for pavement working line details.
- The drawing shall be used in conjunction with the latest revised edition of the "Manual on Uniform Traffic Control Devices." (MUTCD)
- Raised pavement markers shall be placed on an 80 feet spacing unless otherwise shown in the plans.
- For asphalt or concrete pavement, the product made by referring to the ARDOT Qualified Products List.
REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS 5 WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I.
REINFORCING STEEL SHALL BE ASTM M 310 OR M 55, GRADE 60.

CONSTRUCTION AND MATERIALS FOR BOX CULVERTS INCLUDING REINFORCING STEEL AND MATERIALS SHALL BE SUBJECT TO THE BID ITEM, "CLASS 5 CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 85 OF THE STANDARD SPECIFICATIONS.

MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE BOX CULVERTS. THE INSTALLATION OF ALL R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. CONSTRUCTION OR MATERIALS OR WORKMANSHIP NOT CONFORMING TO THE REQUIREMENTS OF THE DRAWING OR SPECIFICATIONS WILL NOT BE ALLOWED.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE OR SHALL BE WITHIN 1/8" PLUS OR MINUS 0" IN LENGTH, BARS SHALL NOT BE CURVED OR BENT.

WELL HOLES IN BOX CULVERTS SHALL HAVE A MAXIMUM DIAMETER AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DIAMETER OPENING SHALL BE 4" AND SHALL BE PLACED 4' ABOVE THE TOP OF THE BOTTOM SLAB.

WELL HOLES IN BOX CULVERTS SHALL HAVE A MAXIMUM DIAMETER AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO WELL HOLES IN EACH MINIMUM. THE DIAMETER OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 4' ABOVE THE TOP OF THE BOTTOM SLAB.

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

ARMS BOX CULVERT HEADWALL MODIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1
GENERAL NOTES:
ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS
NOTE: LENGTH MEASURED ALONG THE CENTER OF 2'-0" STRIP OF SOLID SODDING.
A. General Notes:
1. A stop sign, except where directed by the engineer, shall be used where the roadway is unobstructed.
2. Advise drivers in advance of a speed limit change, if and where directed by the engineer.
3. The speed limit is fixed and shall not be exceeded by any vehicle.
4. The speed limit is fixed and shall not be exceeded by any vehicle.
5. The speed limit is fixed and shall not be exceeded by any vehicle.
6. The speed limit is fixed and shall not be exceeded by any vehicle.
7. The speed limit is fixed and shall not be exceeded by any vehicle.

B. Special Notes:
1. The speed limit is fixed and shall not be exceeded by any vehicle.
2. The speed limit is fixed and shall not be exceeded by any vehicle.
3. The speed limit is fixed and shall not be exceeded by any vehicle.
4. The speed limit is fixed and shall not be exceeded by any vehicle.
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6. The speed limit is fixed and shall not be exceeded by any vehicle.
7. The speed limit is fixed and shall not be exceeded by any vehicle.

C. General Notes:
1. A stop sign, except where directed by the engineer, shall be used where the roadway is unobstructed.
2. Advise drivers in advance of a speed limit change, if and where directed by the engineer.
3. The speed limit is fixed and shall not be exceeded by any vehicle.
4. The speed limit is fixed and shall not be exceeded by any vehicle.
5. The speed limit is fixed and shall not be exceeded by any vehicle.
6. The speed limit is fixed and shall not be exceeded by any vehicle.
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

INTERCEPTOR OR
DIVERSION DITCH

EXISTING GROUND

NOTE: NUMBER OF PHASES WILL VARY. TIMES SHOWN FOR ILLUSTRATION.

GENERAL NOTE

4. CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE
1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION, PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION, PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION, PLACE PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

EMBANKMENT

EXISTING GROUND

INTERCEPTOR OR
DIVERSION DITCH

EXISTING GROUND

NOTE: NUMBER OF PHASES WILL VARY. TIMES SHOWN FOR ILLUSTRATION.

GENERAL NOTE

2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

CONSTRUCTION SEQUENCE
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

NOTE: NUMBER OF PHASES WILL VARY. TIMES SHOWN FOR ILLUSTRATION.

ARKANSAS STATE HIGHWAY COMMISSION
TEMPORARY EROSION CONTROL DEVICES
STANDARD DRAWING TEC-3