INDEX OF SHEETS

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17-19. QUANTITIES
20. SUMMARY OF QUANTITIES AND REVISIONS
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24-27. PLAN AND PROFILE SHEETS
28-41. CROSS SECTIONS

NOTE: CROSS SECTIONS NOT INCLUDED IN PROSPECTIVE BIDDERS' PLANS MAY BE OBTAINED UPON REQUEST.

ROADWAY STANDARD DRAWINGS

<table>
<thead>
<tr>
<th>DRWG. NO.</th>
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<tr>
<td>CD-P-1</td>
<td>CONCRETE DITCH PAVING</td>
<td>12-08-2016</td>
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<tr>
<td>CPT-1</td>
<td>TRANSVERSE &amp; LONGITUDINAL JOINTS FOR CONCRETE PAVEMENT (NOT-REINFORCED)</td>
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<tr>
<td>MB-1</td>
<td>MAIL BOX DETAILS</td>
<td>11-18-2004</td>
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<tr>
<td>PC-1</td>
<td>CONCRETE PIPE CULVERT FILL HEIGHTS &amp; BEDDING</td>
<td>02-27-2014</td>
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<tr>
<td>PC-1</td>
<td>METAL PIPE CULVERT FILL HEIGHTS &amp; BEDDING</td>
<td>02-27-2014</td>
</tr>
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<td>PC-2</td>
<td>PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)</td>
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<tr>
<td>PC-3</td>
<td>PLASTIC PIPE CULVERT (POLYPROPYLENE)</td>
<td>02-27-2020</td>
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<td>PC-3</td>
<td>PAVEMENT MARKING DETAILS</td>
<td>02-27-2020</td>
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<td>DETAILS OF PIPE UNDERBRAID</td>
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<td>RCB-2</td>
<td>REINFORCED CONCRETE BOX CULVERT DETAILS</td>
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<td>EXCAVATION PAY LIMITS. BACKFILL &amp; SOIL SODDING FOR BOX CULVERTS</td>
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<td>TABLES AND METHOD OF SUPERELAVATION FOR TWO-WAY TRAFFIC</td>
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<td>STANDARD HIGHWAY SIGNS AND SUPPORT ATTACHMENTS</td>
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<td>U-CHANNEL POST ASSEMBLIES</td>
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<td>WIRE FENCE TYPE C AND D</td>
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GOVERNING SPECIFICATIONS
ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER
ERRATA
ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHM-1273_1 REQUIRED CONTRACT PROVISIONS FEDERAL AID CONSTRUCTION CONTRACTS
FHM-1273_2 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHM-1273_2 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (29 U.S.C. 140
FHM-1273_3 SUPPLEMENT EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHM-1273_3 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHM-1273_3 SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL AID PROJECTS
FHM-1273_3 SUPPLEMENT - WAGE RATE DETERMINATION
100-5 CONTRACTORS LICENSE
100-4 DEPARTMENT NAME CHANGE
100-2 ISSUANCE OF PROPOSALS
106-1 LIQUOR (16 U.S.C. 505)
106-3 WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1 PROTECTION OF WATER QUALITY AND WETLANDS
210-1 UNCLASSIFIED EXCAVATION
300-1 AGGREGATE BASE COURSE
306-1 QUALITY CONTROL AND ACCEPTANCE
400-1 TACK COATS
400-2 DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5 PERCENT AIR Voids FOR ACIM MIX DESIGNS
400-6 LIQUID ANTSTRIP ADDITIVE
400-6 DESIGN OF ASPHALT MIXTURES
410-1 CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURES
410-2 DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
505-1 PORTLAND CEMENT CONCRETE DRINKWAT HER
505-1 RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
505-4 TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (WASH)
505-1 CONCRETE DITCH PAYING
506-1 PIPE CULVERTS FOR SIDE DRAINS
520-1 MULCH COVER
520-1 CONCRETE PLATE CONCRETE STEPS, AND HAND RAILING
723-1 GENERAL REQUIREMENTS FOR SIGNS
730-1 CHANNEL, POST SIGN SUPPORT
800-1 STRUCTURES
800-2 REINFORCING STEEL FOR STRUCTURES
JOB EF2711 BIDDING REQUIREMENTS AND CONDITIONS
JOB EF2711 BOARD FENCE
JOB EF2711 BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB EF2711 BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB EF2711 CABIN FAVORITY REQUIREMENTS
JOB EF2711 CAVES DISCOVERY
JOB EF2711 CLASS C PLANT IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS SAE CONCRETE
JOB EF2711 CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB EF2711 DOCUMENTATION OF PAYMENTS MADE TO DISADVANTAGED BUSINESS ENTERPRISES
JOB EF2711 MANDATORY ELECTRONIC CONTRACT
JOB EF2711 MANDATORY ELECTRONIC DOCUMENT SUBMITAL
JOB EF2711 NEOTRIP SITES OF MIGRATORY BIRDS
JOB EF2711 OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB EF2711 PLASTIC PIPE
JOB EF2711 RECYCLED ASPHALT SHINGLES
JOB EF2711 SELECT GRANULAR BACKFILL
JOB EF2711 SHORING FOR CULVERTS
JOB EF2711 SPECIAL CLEARING REQUIREMENTS
JOB EF2711 STORM WATER POLLUTION PREVENTION PLAN
JOB EF2711 SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB EF2711 UTILITY ADJUSTMENTS
JOB EF2711 WARM MIX ASPHALT
JOB EF2711 WELLHEAD PROTECTION

GENERAL NOTES
1. GRADE LINE NOTES Finished Grade Where Shown in Plans.
2. UTILITIES INTERFERING WITH CONSTRUCTION SHALL BE MOVED BY THE OWNERS.
3. THE CONTRACTOR SHALL MAINTAIN MAILBOXES WITHIN THE PROJECT LIMITS SUCH THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. THE CONTRACTOR SHALL REMOVE AND RESTORE TO THE PROPER HEIGHT THE EXISTING MAILBOX POSTS AND MAILBOXES AS DIRECTED BY THE ENGINEER. ITEMS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT NO COST TO THE DEPARTMENT. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES BID FOR OTHER ITEMS OF THE CONTRACT.
4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5. ALL TREES NOT TO BE REMOVED SHALL BE HARVEST AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
6. THE CONTRACTOR SHALL PROVIDE A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SERVED. WIRE FENCE MAY BE CONSTRUCTED IN FULLY, OR IN PARTLY. THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
7. THIS PROJECT IS COVERED UNDER A SECTION 404 WIDE TRACT 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS FOR PERMIT REQUIREMENTS.
8. ALL FLEXIBLE BASE AND ASPHALT PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
9. PAVEMENT TO BE REMOVED SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. PAVEMENT THAT WILL BE REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT RETAINED. ANY DAMAGE TO RETAINED PAVEMENT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
10. TEMPORARY EASEMENTS ARE PROVIDED FOR CONTRACTOR ACCESS. AREAS OUTSIDE THE CONSTRUCTION LIMITS SHALL NOT BE CLEARED OR GRUBBED UNLESS DIRECTED BY THE ENGINEER.
11. AREAS NOT TO BE CLEARED OR GRUBBED SHALL BE SCALPED AS DIRECTED BY THE ENGINEER. SCALPING WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICES BID FOR OTHER ITEMS OF THE CONTRACT.
12. SUPERSIZATION SHALL BE COMPUTED IN ACCORDANCE WITH STANDARD DRAWINGS SE-2 USING 30 M.P.H. DESIGN VALUES AND REVOLVE ABOUT THE CENTERLINE UNLESS OTHERWISE SHOWN.
13. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLAN IS A GENERAL GUIDELINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESPECTED ENGINEER.
TYPICAL SECTIONS OF IMPROVEMENT

NOTE: REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES.
NO CHANGE SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE
APPROVAL OF THE ENGINEER.

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

ADD'L BASE COURSE AND SURFACING
SEE QUANTITY BOX

NOTE: THE ABOVE DETAILS MAY BE MODIFIED TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

PORTLAND CEMENT CONCRETE PAVEMENT

REQUIRED CONSTRUCTION JOINT

3" COVER (MIN.)

3" REQUIRED CONSTRUCTION JOINT

2 LAYERS OF 45# ROOFING FELT BETWEEN CONCRETE PAVEMENT AND CONCRETE CONTAINMENT AROUND PIPE

CLASS A CONCRETE

36" X 33" X 43" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)

CONCRETE CONTAINMENT BENEATH SHARED USE PATH

"6" CONCRETE PATHWAY, 4000 PSI WITH FIBER MESH, MEDIUM BROOM FINISH PERPENDICULAR TO PATHWAY. SAWCUT CONTROL JOINTS @ 10' O.C. CONSTRUCTION JOINTS TO BE DOWELED. SEE SECTION 507.02 OF THE STANDARD SPECIFICATIONS.

SHARED USE PATH

AGGR. BASE COURSE (CLASS 7) 31 TONS PER 100' STA.

SUBGRADE 10" BELOW PROFILE GRADE
PLAN VIEW

PROFILE VIEW

RETAINING WALL DETAILS
STA. 100+00.00
BEGIN JOB EF7211

STA. 106+50.00
END JOB EF7211

TEMPORARY EROSION CONTROL DEVICES

SAND BAG DITCH CHECKS (R-5)

<table>
<thead>
<tr>
<th>STATION</th>
<th>BAGS</th>
<th>SIDEWALK REMOVAL</th>
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<td>STA. 100+00</td>
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<tr>
<td>STA. 106+50</td>
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<td>SBA</td>
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<td>STA. 106+50</td>
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<td>STA. 106+50</td>
<td>22</td>
<td>SBA</td>
</tr>
<tr>
<td>STA. 106+50</td>
<td>22</td>
<td>SBA</td>
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ROCK DITCH CHECKS (R-5)

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<td>STA. 106+50</td>
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SILT FENCE (R-11)

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<tr>
<td>STA. 106+50</td>
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<td>SBA</td>
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<tr>
<td>STA. 106+50</td>
<td>108</td>
<td>SBA</td>
</tr>
<tr>
<td>STA. 106+50</td>
<td>108</td>
<td>SBA</td>
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</table>

NOTE: FOR THE CONSTRUCTION OF TEMPORARY WORK DAMS OR DITCHES, REFER TO SECTION 11.04.3 OF THE ENGINEERING DEPARTMENT SPECIFICATIONS.
Cleared  and Grubbing

Removal and Disposal of Concrete Pavement (Non-Participating)

<table>
<thead>
<tr>
<th>STATION</th>
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<th>SIDE</th>
<th>DESCRIPTION</th>
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<tr>
<td>104+45</td>
<td>104+55</td>
<td>RT</td>
<td>SHARED USE PATH</td>
<td>307</td>
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<tr>
<td>104+47</td>
<td>104+57</td>
<td>LT</td>
<td>SHARED USE PATH</td>
<td>306</td>
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Total: 713

Removal and Disposal of Pipe Culverts

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<td>104+45</td>
<td>18&quot; X 22&quot; DIA CULVERT</td>
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Total: 3

Removal and Disposal of Existing Bridge Structure

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<tr>
<td>103+55</td>
<td>103+72</td>
<td>30' X 12' SINGLE SPAN WITH CONCRETE DECK AND STEEL BEAMS SITE NO. 1. 1.00</td>
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Total: 1.00

Fencing and Gates

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<tr>
<td>BOARD FENCE (TYPE A)</td>
<td>WIRE FENCE (TYPE A)</td>
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<td>REMOVAL AND DISPOSAL</td>
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<tr>
<td>OF BOARD FENCE</td>
<td>OF GATE</td>
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<tr>
<td>100+60</td>
<td>100+72</td>
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<tr>
<td>100+63</td>
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<td>100+67</td>
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<td>101+46</td>
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Total: 382

Note: Board fence shall have a height of 6' and shall be constructed in accordance with board fence special provision.

Removal and Disposal of Signs (Non-Participating)

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Total: 9

Earthwork

Unclassified Excavation

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<td>104+34</td>
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<td>MAIN LINES</td>
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<td>104+54</td>
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<td>CHANNEL CROSS INLET</td>
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<td>104+57</td>
<td>104+62</td>
<td>W. ROY EXCAVATION</td>
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<td>104+59</td>
<td>104+64</td>
<td>CHANNEL CROSS OUTLET</td>
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<td>SHARED USE PATH</td>
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<td>104+71</td>
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<td>104+72</td>
<td>COURSE AGGREGATE OUTLET</td>
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<tr>
<td>104+68</td>
<td>104+75</td>
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<tr>
<td>104+70</td>
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<tr>
<td>104+72</td>
<td>104+75</td>
<td>DRIVE ON RIGHT</td>
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<tr>
<td>104+74</td>
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Unclassified Excavation Non-Participating

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Total: 2,722

Note: earthwork quantities shown above analyse pit as plain quantity.

Quantities

May 22 2000 4:25 PM
### BASE SURFACING

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<th>ENDING STATION</th>
<th>LOCATION</th>
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<th>AGGREGATE BASE COURSE (CLASS 7)</th>
<th>PRIME COAT</th>
<th>ASPHALT SURFACE COURSE (10&quot;)</th>
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### PORTLAND CEMENT CONCRETE PAVEMENT (NON-PARTICIPATING)

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### BASE OF ESTIMATE:

- **AGGREGATE BASE COURSE (CLASS 7):**
  - **101+00 (150 YD) 101+00 (150 YD)**
  - **101+60 (60 YD) 101+60 (60 YD)**

### VOLUME CONTROL:

- **ASPHALT CEMENT (PO 44-42) IN ASPHALT SURFACE COURSE (10"):**
  - **66%**

### CONCRETE DITCH PATCING

#### PORTLAND CEMENT CONCRETE DRIVEWAY

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>PORTLAND CEMENT DRIVEWAY</th>
<th>WIDTH</th>
<th>SQ. YD.</th>
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<tbody>
<tr>
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<td>100+00</td>
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</tr>
<tr>
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<td>101+00</td>
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<td>101+00</td>
<td>60.0</td>
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<tr>
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<td>102+00</td>
<td>1.00</td>
<td>102+00</td>
<td>60.0</td>
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<tr>
<td>102+00</td>
<td>103+00</td>
<td>1.00</td>
<td>103+00</td>
<td>60.0</td>
<td>60.0</td>
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</table>

### TRAFFIC CONTROL DEVICES

| STATION | INDEX | ROAD TYP | YD2-1 | Q3-2 END ROAD WORKS | Q3-1 END ROAD WORKS | T YD2 | T Q3-1 | T YD2| T Q3-1 | T YD3 | T Q3-2 | T YD4 | T Q3-3 | T YD5 | T Q3-4 |
|---------|-------|----------|-------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 900-00  | 1     | 140.0    | 1     | 140.0               | 140.0               | 1     | 140.0 | 1     | 140.0 | 1     | 140.0 | 1     | 140.0 | 1     |

### EROSION CONTROL

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<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LIME</th>
<th>SEEDING</th>
<th>WILDCODER</th>
<th>WATER</th>
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### QUANTITIES

- **BASE OF ESTIMATE:**
  - **125.0 GALLONS PER ACRE OF SEEDING**

**Note:** The above quantities are estimated and may vary depending on the actual conditions and specifications. For more detailed information, please refer to the relevant sections of the project specifications.
### TEMPORARY EROSION CONTROL

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>TEMPORARY SEEDING</th>
<th>MULCH COVER</th>
<th>WATER</th>
<th>MK TRENCH</th>
<th>EROSION COUNTER</th>
<th>ROCK TRENCH (G-6)</th>
<th>SEDIMENT</th>
<th>EROSION COUNTER</th>
<th>EROSION</th>
<th>RICH</th>
<th>REMOVAL AND DISPOSAL</th>
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<tr>
<td>1000+00</td>
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<td>0.45</td>
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<td>100+00</td>
<td>L1</td>
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<td>100+50</td>
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<td>0.30</td>
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<td>44</td>
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<td>100+25</td>
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<td>L1</td>
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<td>8.1</td>
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<td>44</td>
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<td>16</td>
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**BASE OF ESTIMATE:** 341 YD² / ACRE (AREA OF TEMPORARY SEEDING)

**NOTE:** TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED IN SUCH A SEQUENCE AS TO EROSION CONTROL AND DEMANAGEMENT OF chronologies (as described by the Highway Agency) TO SUBSTANTIATE THE REQUIREMENTS FOR TEMPORARY EROSION CONTROL.

**NOTE:** ALL TEMPORARY EROSION CONTROL QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

### STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES

<table>
<thead>
<tr>
<th>STATION</th>
<th>INDIC</th>
<th>WTY (QUALITY LINE)</th>
<th>LTH (QUALITY LINE)</th>
<th>CMHL</th>
<th>CMHR</th>
<th>Type A</th>
<th>Type C</th>
<th>STANDARD DRAWING NUMBER</th>
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<tbody>
<tr>
<td>100+00</td>
<td></td>
<td>1</td>
<td>1.4</td>
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<td>1</td>
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<td>1</td>
<td>1.4</td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td>100+50</td>
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<td>1</td>
<td>1.4</td>
<td>1</td>
<td>1</td>
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</tbody>
</table>

**NOTE:** ALL STANDARD SIGNS SHALL BE 0.05% = 1/2 IN. REFER TO STANDARD DRAWING DESC. 2 FOR DIMENSIONS, PAGE 24.

### STRUCTURES OVER 20’ – 0” SPAN

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>SPAN</th>
<th>LENGTH</th>
<th>CLASS &quot;B&quot; CONCRETE (ROADWAY)</th>
<th>REINFORCED STEEL (ROADWAY)</th>
<th>UNCLASSIFIED EXCAVATION FOR STRUCTURES (ROADWAY)</th>
<th>SOLID ROCING</th>
<th>WATER</th>
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<tbody>
<tr>
<td>100+00</td>
<td>100+00</td>
<td></td>
<td>12</td>
<td>302.33</td>
<td>468.05</td>
<td>538.20</td>
<td>90</td>
<td>15</td>
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<tr>
<td>100+25</td>
<td>100+25</td>
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<td>12</td>
<td>302.33</td>
<td>468.05</td>
<td>538.20</td>
<td>90</td>
<td>15</td>
</tr>
<tr>
<td>100+50</td>
<td>100+50</td>
<td></td>
<td>12</td>
<td>302.33</td>
<td>468.05</td>
<td>538.20</td>
<td>90</td>
<td>15</td>
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</tbody>
</table>

**WATER:** 17.5 GALLONS PER SQUARE YARD

### CONCRETE CONTAINMENT (NON-PARTICIPATING)

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>SIZE</th>
<th>CLASS A CONCRETE ROADWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+00</td>
<td>100+00</td>
<td>L1</td>
<td>11.65</td>
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<tr>
<td>100+25</td>
<td>100+25</td>
<td>L1</td>
<td>11.65</td>
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</table>

**TOTAL:** 11.65

**NOTE:** STATIONS ARE MEASURED ALONG CENTERLINE OF SHARE-LANE PATH.

### PAVEMENT MARKING

<table>
<thead>
<tr>
<th>STATION</th>
<th>REFLECTORIZED PART</th>
<th>REFLECTORIZED Part</th>
<th>PAVEMENT MARKING</th>
<th>PAVEMENT MARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+00</td>
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</table>

**NOTE:** THIS IS A LOW VOLUME ROAD AS DEFINED IN SECTION 104.33 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

### CONCRETE BALLAST (NON-PARTICIPATING)

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>SIDE</th>
<th>METAL BRIDGE RAILING</th>
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<tbody>
<tr>
<td>100+00</td>
<td>100+00</td>
<td>L1</td>
<td>12.00</td>
</tr>
<tr>
<td>100+25</td>
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<tr>
<td>100+50</td>
<td>100+50</td>
<td>L1</td>
<td>12.00</td>
</tr>
</tbody>
</table>

**TOTAL:** 12.00

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

### FILTER BLANKET AND DUMPED RIPSAP

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>SIDE</th>
<th>FILTER BLANKET (ROUTED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+00</td>
<td>100+00</td>
<td>L1</td>
<td>12.00</td>
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<tr>
<td>100+25</td>
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<td>12.00</td>
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<tr>
<td>100+50</td>
<td>100+50</td>
<td>L1</td>
<td>12.00</td>
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</table>

**TOTAL:** 12.00

**NOTE:** QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM</th>
<th>PARTICIPATING</th>
<th>NON-PARTICIPATING</th>
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<th>UNIT</th>
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<td>CM2</td>
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<tr>
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<td>GRADING</td>
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<td>0</td>
<td>STATION</td>
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<td>220</td>
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<td>502</td>
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<td>502</td>
<td>LIN. FT</td>
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<tr>
<td>221</td>
<td>REMOVAL AND DISPOSAL OF GATE</td>
<td>52</td>
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<td>52</td>
<td>LIN. FT</td>
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<tr>
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<td>REMOVAL AND DISPOSAL OF CONCRETE PAVERMENT</td>
<td>0</td>
<td>730</td>
<td>730</td>
<td>SQ. YD</td>
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<td>223</td>
<td>REMOVAL AND DISPOSAL OF PIPE COVERS</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>EACH</td>
</tr>
<tr>
<td>227</td>
<td>REMOVAL AND DISPOSAL OF BINS</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>EACH</td>
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<td>250</td>
<td>UNPAVED PEDESTRIAN PLACER</td>
<td>19151</td>
<td>1072</td>
<td>20223</td>
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<td>260</td>
<td>SELECT GRAVEL BACKFILL</td>
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<td>COMPACTED EMBANKMENT</td>
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<tr>
<td>262</td>
<td>S &amp; S 333</td>
<td>1365</td>
<td>167</td>
<td>1532</td>
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<td>CM</td>
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<td>264</td>
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<td>120</td>
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<td>120</td>
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<td>1.60</td>
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<td>296</td>
<td>ROADING CONSTRUCTION CONTROL</td>
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<td>297</td>
<td>REFLECTED PAINT PAINTED HARM WHITE AP</td>
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<td>300</td>
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<td>301</td>
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<td>1</td>
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<tr>
<td>302</td>
<td>CLASS A CONCRETE BARRIER</td>
<td>7.20</td>
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<td>7.20</td>
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<td>DUMPED BITER (GRADED)</td>
<td>585</td>
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<td>CM2</td>
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</table>

**SUMMARY OF QUANTITIES AND REVISIONS**

**DATE**: Jan 28, 2023

**REVISION**: 1, 2, 3, 4, 5

**NOTE**: All prices are subject to change without notice.
LEFT DITCH GRADE

CONCRETE CONTAINMENT AROUND 8" X 12" REINFORCED CONCRETE ARTERIAL CULVERTS (CLASS A) SEE SPECIAL DETAILS FOR PARTICIPATING MUNICIPALITIES

CONCRETE CONTAINMENT AROUND 8" X 12" REINFORCED CONCRETE ARTERIAL CULVERTS (CLASS A) SEE SPECIAL DETAILS FOR PARTICIPATING MUNICIPALITIES

PLAN AND PROFILE SHEETS

May 22 2008 4:27 PM
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.

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-foot intervals; the space shall be filled with approved joint filler complying with Arkansas R-93.

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."
**CONSTRUCTION SEQUENCE**

1. Place structural bedding material to grade, do not compact.
2. Ensure pipe is centered inside the module limits of the flap.
3. Place structural bedding over the module limits of the pipe. (optional)
4. Install culvert box above structural bedding to hit the proper elevation of the pipe.
5. Transverse structural bedding, if needed.
6. Make sure the top of the pipe does not extend beyond the structural bedding.

**GENERAL NOTES**

- Structural bedding material shall be placed at the base of the pipe to provide support and prevent erosion.
- Structural bedding material shall have a minimum thickness of 6 inches.
- Structural bedding material shall have a minimum ultimate resistance of 100 pounds per square inch (psi).
- Structural bedding material shall be placed in accordance with the plans and specifications.

**EQUIVALENT METAL THICKNESSES AND GAUGES**

<table>
<thead>
<tr>
<th>Metal Thickness in Inches</th>
<th>Grade Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**INSTALLATION TYPE**

- **Type 1:** Minimum pipe thicknesses and gauges
- **Type 2:** Required pipe thicknesses and gauges

**EMBANKMENT AND TRENCH INSTALLATIONS**

1. Structural bedding material shall be placed at the base of the pipe to provide support and prevent erosion.
2. Minimum pipe thicknesses and gauges shall be used for structural bedding material.
3. Structural bedding material shall have a minimum thickness of 6 inches.
4. Structural bedding material shall have a minimum ultimate resistance of 100 pounds per square inch (psi).
5. Structural bedding material shall be placed in accordance with the plans and specifications.

**GENERAL NOTES**

- Structural bedding material shall be placed at the base of the pipe to provide support and prevent erosion.
- Structural bedding material shall have a minimum thickness of 6 inches.
- Structural bedding material shall have a minimum ultimate resistance of 100 pounds per square inch (psi).
- Structural bedding material shall be placed in accordance with the plans and specifications.

**SELECTED PIPE BEDDING**

- When the existing material excavated for the pipe trench is determined by the engineer to be unsuitable for backfilling the pipe, the engineer may authorize the use of selected pipe bedding.
- Selected pipe bedding shall be placed in accordance with the plans and specifications.

**REVISIONS**

- Revised for LRFD Design Specifications.
- Revised for LRFD Design Specifications.

**DATE**

- 3-30-00
- 12-15-11
**MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES**

<table>
<thead>
<tr>
<th>DIAMETER</th>
<th>MIN. COVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot;</td>
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<tr>
<td>24&quot;</td>
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<tr>
<td>30&quot;</td>
<td>3'-0&quot;</td>
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<tr>
<td>36&quot;</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>42&quot;</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>TRENCH WIDTH (FT)</th>
<th>MINIMUM TRENCH WIDTH (FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>2'-6&quot;</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>3'</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>3'-6&quot;</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>4'</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>CONSTRUCTION LOADS</th>
<th>MINIMUM COVER (FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.0-50.0</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>42.0-110.0</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>50.0-75.0</td>
<td>3'-6&quot;</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. PIPE SHALL CONFORM TO ASHWAH HIGH DENSITY POLYETHYLENE PIPES TO USE SPECIAL PROVISION.

2. INSTALL PIPE TO GRADE.

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

4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATION OF THE EXCAVATED TRENCH WITH A SUFFICIENT WIDTH TO ENSURE PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.

5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

6. IMPERVIOUS MATERIAL SHOULD BE PLACED AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL.

7. PRIOR TO THE INSTALLATION OF SELECTED PIPE BEDDING MATERIAL, SHALL INCLUDE A MINIMUM 12" OF PAVER MATERIAL AND/OR BASE.

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

9. PIPES FOR THIS TYPE SHALL MEET THE REQUIREMENTS FOR THE MATERIALS AS DESCRIBED IN SECTION 26.4.2.4 AND 26.4.2.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.  JOINTS SHALL BE INSTALLED PER MANUFACTURER’S 26.4.2.4.2.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.  JOINTS SHALL BE INSTALLED PER MANUFACTURER’S 26.4.2.4.4 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.  JOINTS SHALL BE INSTALLED PER MANUFACTURER’S 26.4.2.4.6.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.  JOINTS SHALL BE INSTALLED PER MANUFACTURER’S 26.4.2.4.8 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.
PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION.
- 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.
- THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATIONS OF PVC PIPES.
- 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 INSTALLATIONS OF PVC PIPES.

GENERAL NOTES:
1. PVC PIPES SHALL CONFORM TO ASM A634, CLASS SM-1, SM-2, OR SM-4. PVC PIPES SHALL CONFORM TO THE DESIGN AND SPECIAL REQUIREMENTS OF THE ENGINEER.
2. PLASTIC PIPE DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. PVC PIPE DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE MAINTENANCE OF THE CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.
4. 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.
5. '*', MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS BASED ON STRUCTURAL BACKFILL.
6. MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H".
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4.
10. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH BORROW MATERIAL OR FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 2.00 INCH.
11. WHEN EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE, MATERIAl SHALL BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
12. PVC PIPES SHALL MEET THE REQUIREMENTS FOR USE NUMBERED AS SHOWN IN ACCESSORIES LIST AND "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS" AND SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

STANDARD DRAWING PCP-2
ARKANSAS STATE HIGHWAY COMMISSION
PLASTIC PIPE CULVERT (PVC F949)

NOTE:
- "H" = FILL HEIGHT (FT.)
- "D" = OUTSIDE DIAMETER OF PIPE
- "R" = CLEAR DISTANCE BETWEEN PIPES (FEET)
- "F" = TRENCH WIDTH (FEET)
- "L" = ENHANCEMENT OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
- THE LAYERS SHALL BE BROUGHT UP EVENLY LAYERS NOT EXCEEDING 8".
- THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATIONS OF PVC PIPES.
- THE MINIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE MAINTENANCE OF THE CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.
- THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATIONS OF PVC PIPES.
- THE STRUCTURAL BEDDING, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

MINIMUM COVER FOR CONSTRUCTION LOADS

<table>
<thead>
<tr>
<th>EVENT LOADS</th>
<th>MIN. COVER (FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>2'-6&quot;</td>
<td>2</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>2'-0&quot;</td>
<td>2</td>
</tr>
<tr>
<td>2'-6&quot;</td>
<td>2</td>
</tr>
</tbody>
</table>

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

<table>
<thead>
<tr>
<th>FILL HEIGHT &quot;H&quot;</th>
<th>TRENCH WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;H&quot; &lt; 10'-0&quot;</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td>&quot;H&quot; &gt;= 10'-0&quot;</td>
<td>12'-0&quot;</td>
</tr>
</tbody>
</table>

MINIMUM COVER FOR STRUCTURAL BACKFILL

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>CLEAR DISTANCE</th>
<th>TRENCH WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; - 24&quot;</td>
<td>9'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>24&quot; - 36&quot;</td>
<td>12'-0&quot;</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>36&quot; - 48&quot;</td>
<td>15'-0&quot;</td>
<td>3'-0&quot;</td>
</tr>
</tbody>
</table>

TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

- 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.
- THE MINIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE MAINTENANCE OF THE CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

** MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING **

- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL SHALL BE INSTALLATION SHALL CONFORM TO AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. PVC PIPE DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.
- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL SHALL BE INSTALLATION SHALL CONFORM TO AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.
MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT “H”

GENERAL NOTES
1. Size pipe used for culvert shall conform to AASHTO M330, Type S. Installation shall conform to Job Special Provision.
2. Plastic pipe shall conform to the provisions of the 2012 Interim Specifications for Highway Construction.
3. 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.
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 round wall pipe surface.
5. Pipe installed shall be compacted and rounded in diameter. The use of materials without rounded or compressed surface shall be subject to approval of the engineer.
6. Pipe installation may require the use of restraints, weights, and/or other approved methods in order to maintain grade and alignment.

EMBANKMENT AND TRENCH INSTALLATIONS
1. Pipe structural backfill and outer structural bedding material shall be compacted to 95% of the maximum density according to the type or class of material used.
2. In laying pipe of diameters other than shown in the table, the engineer shall approve the pipe type and installation method.
3. Pipe installation may require the use of restraints, weights, and/or other approved methods in order to maintain grade and alignment.

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. When structural bedding is placed, the pipe shall be compacted and rounded in diameter.
5. 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 round wall pipe surface.

STRUCTURAL BEDDING AND OUTER STRUCTURAL BEDDING MATERIAL
1. Structural backfill material shall be compacted to 95% of the maximum density according to the type or class of material used.
2. Pipe installation may require the use of restraints, weights, and/or other approved methods in order to maintain grade and alignment.
**NOTES FOR PIPE UNDERDRAINS**

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE 1. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 625 OF THE STANDARD SPECIFICATIONS.

2. NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO GRADIENT SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

4. LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAINTING MARKING TAPE (TYPICAL) AT THE OUTSIDE EDGE OF THE SLOPE; PLACED TRANSVERSE TO TRAFFIC; PAINTED FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON PLANS. 2. CONNECT EXISTING PIPE UNDERDRAIN DROP INLETS.

8. DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

**DETAILS OF PIPE UNDERDRAIN**

1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THROUGHLY COMPACTED EARTH AND GRANULAR MATERIAL SHALL BE WRAPPED ALL AROUND AND LAPPED AT TOP.

2. GRANULAR MATERIAL SHALL BE WRAPPED ALL AROUND AND LAPPED AT TOP.

3. EXISTING PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO GRADIENT SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

4. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

6. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON PLANS. 2. CONNECT EXISTING PIPE UNDERDRAIN DROP INLETS.

7. DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

8. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

9. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON PLANS. 2. CONNECT EXISTING PIPE UNDERDRAIN DROP INLETS.

10. DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" Pipe UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.
REINFORCED CONCRETE BOX CULVERT DETAIL

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSIG. REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR REINFORCED CULVERTS AND DRAINAGE, INCLUDING REINFORCING STEEL AND GRANULAR MATERIAL, SHALL BE SUBMITTED TO THE BID PER "REINFORCEMENT SPECIFICATIONS" OF THIS DRAWING.

REINFORCED CULVERT HEADWALL MODIFICATIONS

STEEL FABRICATION REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW.

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

WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCEMENT STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCEMENT STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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REINFORCEMENT STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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REINFORCEMENT STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.
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 CONFRTED 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 AT ALL R.C. BOX CULVERT 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.

DETAILS THROUGH EXISTING CHANNELS

SECTION A-A

DETAILS FOR NEW CHANNELS

SECTION B-B
### GENERAL NOTES

2. Super-elevation values shown on the cross sections are values to permit simpler calculations.

### ABBREVIATIONS

- **NC**: Normal Crown
- **RC**: Reverse Crown, Super-elevation at Normal Crown Slope
- **L**: Distance from beginning of super-elevation transition to any point (FT.)
- **d**: Width of pavement
- **Ls**: Length of super-elevation transition (FT.)
- **C**: Normal Crown (FT.)

### ADDED FORMULA

**Issued Date**: 10-18-96

**Date Film**: 01-09-87

### REVISED SUPER-ELEVATION TABLE

#### SUPER-ELEVATION FOR TWO-WAY TRAFFIC

<table>
<thead>
<tr>
<th>Degree of Curve</th>
<th>30 MPH</th>
<th>MIN</th>
<th>MIN</th>
<th>CURVABLE</th>
<th>30 MPH</th>
<th>MIN</th>
<th>MIN</th>
<th>CURVABLE</th>
<th>30 MPH</th>
<th>MIN</th>
<th>MIN</th>
<th>CURVABLE</th>
<th>30 MPH</th>
<th>MIN</th>
<th>MIN</th>
<th>CURVABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6° 30'</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>6° 30'</td>
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<td>NC</td>
<td>NC</td>
<td>6° 30'</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
</tbody>
</table>

**NOTE**: Maintain normal crown on inside until super-elevation exceeds 2C.

**Rate of super-elevation** shall be computed on straight line method using applicable Ls.

**Control Point**

### SUPER-ELEVATION FORMULA

\[ e = \frac{L}{3} \]

**Profile**

### STANDARD METHOD WHEN SUPER-ELEVATION REVOLVES AROUND CENTER LINE OR INNER PAVEMENT EDGE

**Maximum super-elevation**

**Outside pavement or subgrade edge**

**Inside pavement or subgrade edge**

- **Note**: Maintain normal crown on inside until super-elevation exceeds 2C.
NOTES:

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (F).

ALL SIGN POSTS SHALL BE PLUMB.

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

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

DETAIL E

R6-1 EXTENSION FOR U-CHANNEL POST

DETAIL F

DETAIL OF SPLICES

NOTES:

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

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ALL SIGN POSTS SHALL BE PLUMB.

THE RIVET FOR "TYPE U" SUPPORTS SHALL BE 1" DIA. GALVANIZED.

ARKANSAS STATE HIGHWAY COMMISSION

U-CHANNEL POST ASSEMBLIES

NOTE:

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ALL SIGN POSTS SHALL BE PLUMB.

THE RIVET FOR "TYPE U" SUPPORTS SHALL BE 1" DIA. GALVANIZED.
TYPICAL APPLICATION OF TRAFFIC CONTROLS AND SIGNS ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

NOTES:
1. FLASHING DEVICES SHOULD BE USED WHERE NEEDED FOR OPERATING TRAFFIC CONES.

2. COMPLETE RAMP MARKINGS ONLY ON CROSSEVENTS.
3. AREA STREETS ARE NOT TO BE ENTERED IN ANY TRAFFIC CONORDER.
4. INSTALL RAISED PAVEMENT MARKERS AS OPTIMAL TO NOTES.

TYPICAL APPLICATION - 1-LANE ENDED ROADWAY WHERE THE ROADWAY IS CLOSED.

NOTES:
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TYPICAL APPLICATION - 4-LANE ENDED ROADWAY WHERE THE ROADWAY IS CLOSED.

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CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
1. Place perimeter controls (i.e., silt fences, diversion ditches, sediment basins)
2. Perform clearing and grubbing operation.

EXCAVATION

EXISTING GROUND

EXISTING GROUND

INTERCEPTOR OR DIVERSION DITCH

PHASE 1 EXCAVATION

PHASE 2 EXCAVATION

FINAL PHASE EXCAVATION

GENERAL NOTE

CONSTRUCTION SEQUENCE

1. Excavate and stabilize interceptor and/or diversion ditches.
2. Perform phase 1 excavation, phase 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.
5. Establish other erosion control devices as required.

EMBANKMENT

EXISTING GROUND

PHASE 1 EMBANKMENT

PHASE 2 EMBANKMENT

FINAL PHASE EMBANKMENT

GENERAL NOTE

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.
3. Place phase 2 embankment with permanent or temporary seeding.
4. Place final phase of embankment with permanent or temporary seeding.
5. Establish other erosion control devices and slope drains and maintain until entire slope is stabilized.