"A PARTIALLY CONTROLLED ACCESS FACILITY"
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 412 WEST - HWY. 49 (S)

GREENE COUNTY
ROUTE 412 SECTION 8

JOB 100708
FED. AID PROJ. NHPP-9332(13)

NOT TO SCALE

STA. 373+77.85
END JOB 100708

APPROVED

DEPUTY DIRECTOR
AND CHIEF ENGINEER
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NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.
## Governing Specifications

### Errata

ERRATA__ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS

### FHWA-127-1

- **Supplement**
  - **Equal Employment Opportunity - Notice to Contractors**
  - **Supplement - Specific Equal Employment Opportunity Responsibilities (23 U.S.C. 149)**
  - **Supplement - Equal Employment Opportunity - Goals and Timetables**
  - **Supplement - Equal Employment Opportunity - Federal Standards**
  - **Supplement - Training Programs - Job 100708**
  - **Supplement - Posters and Notices Required for Federal-Aid Projects**
  - **Supplement - Wage Rate Determination**
  - **Contractors License**
  - **Issuance of Proposals**
  - **Liquidated Damages**
  - **Work Allowed Prior to Issuance of Work Order**
  - **Agreeable Base Course**
  - **Tack Coats**
  - **Construction Requirements and Acceptance of Asphalt Concrete Plant Mix Courses**
  - **Retrorreflective Sheeting for Traffic Control Devices in Construction Zones**
  - **Pipe Culverts for Side Drains**
  - **MULCH COVER**
  - **Airport Clearance Requirements**
  - **Broadband Requirements and Conditions**
  - **Broadband Internet Service for Asphalt Concrete Plant**
  - **Broadband Internet Service for Field Office**
  - **Cabinet Drawer Assembly**
  - **Card Access Assembly Requirements**
  - **Construction in Special Flood Hazard Areas**
  - **Delay in Right of Way Occupancy**
  - **Disadvantaged Business Enterprise (DBE) Responsibilities**
  - **Edge Card Video Processor**
  - **Electrical Conductors For Luminaries**
  - **Electrical Conductors - In-Contact**
  - **Goals For Disadvantaged Business Enterprise (DBE) Participation**
  - **LED Traffic Signal Head**
  - **LED Luminaires Assembly (Bug U) Type**
  - **Loop Wiring Revision 1.4**
  - **Mandatory Electronic Contract**
  - **Mandatory Electronic Document Submittal**
  - **Partnering Requirements**
  - **Percent Within Limits/Pavement Smoothness**
  - **Plastic Pipe**
  - **Price Adjustment for Asphalt Binder**
  - **Requirements of Liability Insurance**
  - **Service Point Assembly (Traffic Control Devices)**
  - **Shoring for Culverts**
  - **SWM, Stabilization**
  - **Storm Water Pollution Prevention Plan**
  - **Submission of Asphalt Concrete Hot Mix Acceptance Test Results**
  - **Traffic Signal Controller (Modifications)**
  - **Utility Adjustments**
  - **Value Engineering**
  - **Video Detector (Color)**
  - **Warm Mix Asphalt**

### General Notes

1. Grade line denotes finished grade where shown on plans.
2. All pipe lines, power, telephone, and telegraph lines to be moved or lowered by the respective owners as per agreement with such owners.
3. Any equipment or appurtenance that interferes with the proposed construction and which may be the property of utility service organizations shall be moved by the owners unless otherwise provided.
4. All land monuments located within the construction area shall be protected in accordance with section 10.12 of the standard specifications.
5. All trees that do not directly interfere with the proposed construction shall be spared and protected. All trees not to be removed shall be harnessed as little as possible during the construction operations.
6. The contractor shall be responsible for providing a fence to control livestock in areas where pastures are severed. The fence may be constructed initially, or in lieu thereof, the contractor at his own expense, may elect to provide temporary fencing suitable to contain livestock.
7. This project is covered under an individual Section 404 permit. Refer to Section 110 of the standard specifications, Edition of 2014, for permit requirements.
8. All flexible base and asphaltic pavements removed shall be paid for under the item No. 210 - Unclassified Excavation.
9. The existing asphalt pavement to be removed from the remaining pavement shall be separated by sawing along a neat line. After sawing, the pavement to be removed shall be carefully removed in a manner that will not damage the pavement that is to remain. Any damage of the asphalt pavement that is to remain in place shall be repaired at the contractor's expense.

---

**Governing Specs. and General Notes**
5 LANE TANGENT SECTION

STA. 104+32.23 TO 102+00.00 TRANSITION FROM 5 LANE SECTION TO FUTURE 4 LANE DIVIDED SECTION

5 LANE SUPERELEVATED SECTION

STA. 102+00.00 TO STA. 104+36.23

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAYED. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08/".
FUTURE 4 LANE DIVIDED TANGENT SECTION
BUILD 2 LANES ON LT.

STA. 117.74, 96-STA. 126-09.88
STA. 148-33, 93-STA. 204-63, 84
STA. 229-78, 86-STA. 240-58, 00
STA. 256-54, 63-STA. 272-32, 45
STA. 303-24, 06-STA. 371-00, 00

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1/8" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN Laid. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

FUTURE 4 LANE DIVIDED SUPERELEVATION SECTION
BUILD 2 LANES ON LT.

STA. 106-05, 71-STA. 117.74, 96
STA. 126-09, 88-STA. 148-33, 93
STA. 204-63, 84-STA. 229-78, 86
STA. 240-58, 05-STA. 256-54, 63
STA. 272-32, 45-STA. 303-06, 06

TYPICAL SECTIONS OF IMPROVEMENT
NOTES
1. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.

2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

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

5. PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHODS USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.
FUTURE 4 LANE DIVIDED TANGENT SECTION
BUILD 2 LANES ON LT. W/LT. TURN LANE
STA. 363+71.00 - STA. 373+77.65

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1/8" OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN Laid. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

AGGREGATE BASE COURSE (CLASS 7) (VAR. COMP. DEPTH)
95.00 TONS/STA.

PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
NOTE: TURNOUTS SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

NOTE: SPECIAL DETAILS

NOTE: USE 2' RADII ON ALL CORNERS OF CONCRETE ISLANDS
UNDERCUT AND BACKFILL
STA. 28+00 TO STA. 29+00
STA. 29+14 TO 29+49

PROPOSED TRAVELED WAY WIDTH
EXIST. OR PROPOSED SHLD. WIDTH

EXIST. OR PROPOSED TRAVELED WAY WIDTH

EXIST. OR PROPOSED SHLD. WIDTH

EXIST. OR PROPOSED SHLD. WIDTH

SHLD. WIDTH PLUS 8'-6"

1'-6" CURB & GUTTER

TRANSITION FROM OPEN SHOULDER TO CURB & GUTTER SECTION
STA. 10+48.37 TO STA. 103+58.1
GENERAL NOTES

1. Rumble strips shall not be installed on curb sections, bridge decks, approach slabs, intersecting streets or roadways.
2. Residential or commercial drainways or across transverse joints of concrete shoulders.
3. Rumble strips shall not be installed on a paved shoulder that is used as a deceleration lane for the length deemed appropriate by the engineer.
4. The +offset from the edge line may be increased to avoid longitudinal joints. In all cases, the lateral deviation from the planned offset should be kept to a minimum.
5. Rumble strips shall be measured by the linear foot longitudinally along the shoulder. Payment shall only include that portion of the shoulder on which rumble strips have been constructed. No measurement or payment will be made for gaps, drainways, turnouts, or other public road intersections where rumble strips have not been constructed.
6. The 3/8" depth shall generally apply for the entire 12" length. Some variation to suit shoulder slope breaks may be necessary.
The required number of bars and lengths shown are for estimating purposes only. The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.
### MID-SECTION TABLE

**BAR LAP TABLE**

<table>
<thead>
<tr>
<th># of Long Lap</th>
<th>SL</th>
<th>Section Length</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

**Length = SL**

Max Bar Lap Length:

- 4 = 0.0
- 5 = 0.0
- 6 = 0.0
- 7 = 0.0
- 8 = 0.0
- 9 = 0.0
- 10 = 0.0

**DIMENSIONS**

- **Height = SL**
- **Width = SL**
- **Section Depth = SL**

**SPECIAL DETAILS**

- **Top Slab Reinforcing Steel**
- **Bottom Slab Reinforcing Steel**
- **Side Wall Reinforcing Steel**
- **Interior Wall Reinforcing Steel**
- **Top Slab Distribution Reinforcing Steel**
- **Bottom Slab Distribution Reinforcing Steel**
- **Side Wall Distribution Reinforcing Steel**
- **Interior Wall Distribution Reinforcing Steel**

**MIX DESIGN**

**Concrete**

- **Cement**
- **Sand**
- ** aggregate**

**FINISHING**

**Special Instructions**

- **Boundary Walls**
- **Walls**
- **Reinforcing Steel**

**NOTES**

- **Details of R.C. Box Culvert**
- **Details of Multi-Barrel R.C. Box Culvert**
- **Details of Reinforcing Steel**
- **Standard Section Details**

For additional information and data sections, see Sheet 2 of 2.
The required number of bars and lengths shown are for estimating purposes only. The actual number and length required shall be determined in field, unless otherwise noted, all dimensions are in inches.
## OUTLET WINGWALL TABLE

<table>
<thead>
<tr>
<th>Class &quot;B&quot; Concrete (includes spandrels)</th>
<th>Reinforcing Steel</th>
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<tbody>
<tr>
<td>OUTLET 1</td>
<td>OUTLET 2</td>
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<td>17.60</td>
<td>16.68</td>
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</table>

### SPECIAL DETAILS

The required number of bars and lengths shown are for estimating purpose only. The actual number and length required shall be determined in field. Unless otherwise noted, all dimensions are in inches.
**Mid-Section Bar Lap Table**

<table>
<thead>
<tr>
<th># of Lap Bar</th>
<th>Size</th>
<th>Length</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>1/2&quot;</td>
<td>9'</td>
</tr>
<tr>
<td>2</td>
<td>1/2&quot;</td>
<td>9'</td>
</tr>
<tr>
<td>3</td>
<td>1/2&quot;</td>
<td>9'</td>
</tr>
<tr>
<td>4</td>
<td>1/2&quot;</td>
<td>9'</td>
</tr>
</tbody>
</table>

This drawing is to be used in conjunction with:

- Sheet I of 4: "General Details of R.C. Box Culvert," Section Length Schedule.
- Sheet 2 of 4: "General Details of R.C. Box Culvert," Details of Reinforcement, R.C. Box Culvert.
- Drawings: R.C. Box Culvert, Standard Details of Reinforcement, and Reinforcement Bar Sizes.

For additional information and layout sections, see Sheet 2 of 2.

**Mid-Section Details of R.C. Box Culvert**

**Double Barrel Box Culvert**

Sta. 305+00

**Special Details**
### OUTLET SLOPE SECTIONS

<table>
<thead>
<tr>
<th>No.</th>
<th>SLOPE</th>
<th>CLEAR SPAN (FT)</th>
<th>CLEAR ELEV (FT)</th>
<th>TOP ELAB THK</th>
<th>OVER ALL WIDTH</th>
<th>OVER ALL HEIGHT</th>
<th>SECTION LENGTH</th>
<th>PARTS EMPLOYED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### OUTLET SKewed END SECTION

<table>
<thead>
<tr>
<th>No.</th>
<th>SLOPE</th>
<th>CLEARANCE (FT)</th>
<th>CLEAR ELEV (FT)</th>
<th>TOP ELAB THK</th>
<th>LENSING VAR</th>
<th>HENG. DEPTH</th>
<th>OVER ALL WIDTH</th>
<th>OVER ALL HEIGHT</th>
<th>SECTION LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

### OUTLET WINGWALL TABLE

<table>
<thead>
<tr>
<th>No.</th>
<th>WING A</th>
<th>WING B</th>
<th>OVERALL WIDTH</th>
<th>CLEARANCE (FT)</th>
<th>FOOTING THE.</th>
<th>BODY WALL THK</th>
<th>BOX SKIRT (IN)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

### DETAILS OF R.C. BOX CULVERT

<table>
<thead>
<tr>
<th>No.</th>
<th>SLOPE</th>
<th>DESIGN FULL DEPTH (FT)</th>
<th>CLEAR ELEV (FT)</th>
<th>TOP ELAB THK</th>
<th>OVER ALL WIDTH</th>
<th>OVER ALL HEIGHT</th>
<th>SECTION LENGTH</th>
<th>PARTS EMPLOYED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECIAL DETAILS

Sheet 2 of 2

Double Barrel Box Culvert

Sno. 305+00

---

For the design of R.C. Culvert:
- Checks shall be made for the design of section:
  - Slab Design
  - Column Design

For the design of Box Culvert:
- Checks shall be made for the design of section:
  - Slab Design
  - Column Design

---

*Note: The design and calculations are for illustrative purposes only.*
LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10' (Continued)

**GENERAL NOTES**


**LIVE LOADING:** HL-93

All concrete shall be Class C with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have V-notch cutoffs.

**Reinforcing Steel:** Grade 40 (yield strength = 60,000 psi) conforming to AASHTO M21 or M22, Type A, with tensile tests reports.

**Reinforcing Steel Tolerances:** The tolerances for reinforcing steel shall meet those listed in "Manual of Standard Practice" published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for bars such as Figure 3 on page 3-4 of the CRSI Manual shall be minus zero to plus 0.3 inch.

**Excavation and Backfilling:** shall be in accordance with the requirements of Section 801.

**Membrane Waterproofing:** shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalks of R.C. Box Culverts and to the construction joint between wingwalls and R.C. Box Culvert.

**Weep Holes in Box Culvert walls:** shall have a maximum horizontal spacing of 10' and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

**Weep Holes in wingwalls:** shall have a maximum horizontal spacing of 20' and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

**Barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless supervised by stage construction or site contractor as approved by the Engineer. Construction joints between barrel sections shall be made only where shown in the Plans. Joints shall be normal to the centerline of barrel and shall be sealed. Longitudinal reinforcing shall be continuous through joints unless otherwise specified. All longitudinal construction joints shall be submitted to the Engineer for approval.

**Membrane Waterproofing:** Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material shall not be paid for directly but shall be considered supplementary to Class 5 Concrete.

When the top side of the box culvert serves as finished roadway surface, curbing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surfacing and a like finish shall be applied in accordance with subsection 802.20 for Class 5 Treated Bridge Roadway Surface Finish. Curbing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class 5 Concrete-Roadway". Class 3 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 3 Protective Surface Treatment".

When prescored reinforced concrete box culverts are substituted for cast-in-place box culverts, they shall be manufactured according to ASTM C 5177 and meet the requirements of Section 607. When the top side of the box culvert serves as the finished roadway surface, a prescored reinforced concrete box culvert substitution is not allowed.

**SPECIAL DETAILS**

**SKewed END SECTION LENGTH:** See "Skewed End Section Details" length L1 varies with skew angle, overall box width and fill depth and may exceed the need for some side section lengths as shown.

**CULVERT DRAINAGE DETAIL FOR ROCK FILL**

The detail shall be used when a rock fill is specified for embankment construction.

**VERTICAL FABRIC ALTERNATE**

Shown for Culvert Top Sub."

**WRAPPED FABRIC ALTERNATE**

Shown for Culvert, Skidder For Wingwall.

For details of Excavation and Pay Limits, see Standard Drawing R6B-2.

**WINGWALL & CULVERT DRAINAGE DETAIL**

**SHEET 1 OF 4**

**GENERAL DETAILS OF R.C. BOX CULVERT**

**GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE**

**LAYOUT FOR VARIABLE FILL DEPTHS OVER 10'**

**ENGINEER**
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION

REVISION

CLEARING AND GRUBBING STAGE
TEMPORARY EROSION CONTROL DETAILS
LEGEND

1 = SAND BAG DITCH CHECKS
2 = ROCK DITCH CHECKS
3 = SILT FENCE
4 = SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
LEGEND

- = Sand Bag Ditch Checks
- = Rock Ditch Checks
- = Silt Fence
- = Sediment Basin

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
## REVISIONS

<table>
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## LEGEND

- **1**: Sand bag ditch checks
- **2**: Rock ditch checks
- **3**: Silt fence
- **4**: Sediment basin

*Note: Perimeter controls shall be placed as clearing and grubbing operations are started.*

---

**CLEARING AND GRUBBING STAGE**

**TEMPORARY EROSION CONTROL DETAILS**
TEMPORARY EROSION CONTROL DETAILS

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

LEGEND

- Sand Bag Ditch Checks
- Rock Ditch Checks
- Silt Fence
- Sediment Basin
- Erosion Control Details

CLEARING AND GRUBBING STAGE

TEMPORARY EROSION CONTROL DETAILS
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
LEGEND

- SAND BAG DITCH CHECKS
- ROCK DITCH CHECKS
- SILT FENCE
- SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
NOTE: PERMITTER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
LEGEND

= Sand Bag Ditch Checks
= Rock Ditch Checks
= Silt Fence
= Sediment Basin

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND grubbing OPERATIONS ARE STARTED.

= OBLITERATE
LEGEND

- = SAND BAG DITCH CHECK
- = ROCK DITCH CHECK
- = DROP INLET SILT FENCE
- = SILT FENCE
- = SEDIMENT BASIN
- = PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
- = OBLITERATE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

REVISIONS

DATE OF REVISION

REVISION

STAGE 1

TEMPORARY EROSION CONTROL DETAILS
LEGEND

- Sand Bag Ditch Checks
- Rock Ditch Checks
- Silt Fence
- Sediment Basin

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

OBLITERATE

TEMPORARY EROSION CONTROL DETAILS
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

OBLITERATE
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

- = OBLITERATE
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
STAGE 1
TEMPORARY EROSION CONTROL DETAILS

LEGEND
- + SAND BAG DITCH CHECKS
- - ROCK DITCH CHECKS
- - SALT FENCE
- - SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEAVING AND GRUBBING OPERATIONS ARE STARTED.
- = OBLITERATE
REVISIONS

DATE OF REVISION

REVISION

LEGEND

(22) = SAND BAG DITCH CHECKS
(24) = ROCK DITCH CHECKS
(25) = SILT FENCE
(26) = SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

(27) = OBLECTRATE

STAGE I
TEMPORARY EROSION CONTROL DETAILS
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

R2: OBLITERATE
MAINTENANCE OF TRAFFIC DETAILS

WESTBROOK RD.

SRPING GROVE RD, STAGE 2
MAINTENANCE OF TRAFFIC DETAILS
SOUTH ROCKINGCHAIR RD.

STA. 3+78.21
BEGIN SOUTH ROCKINGCHAIR RD.

STA. 9+30.81
END SOUTH ROCKINGCHAIR RD.

BROWN'S CHAPEL RD.

STA. 10+24.29
BEGIN BROWN'S CHAPEL

STA. 15+46.51
END BROWN'S CHAPEL RD.

PERMANENT PAVEMENT MARKINGS
PERMANENT PAVEMENT MARKINGS

6" DBL. YELLOW IN/FIELD TY, RI
6" WHITE SOLID EDGE LINE

24" WHITE SOLID STOP LINE

6" WHITE DOTTED

WHITE WORDS

6" WHITE SOLID

WHITE ARROWS

6" WHITE SOLID

WHITE ARROWS

HWY. 412

PERMANENT PAVEMENT MARKINGS
### Erosion Control Matting

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### Removal and Disposal of Culverts

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### Quantities

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### Erosion Control

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### Quantities Estimate

- Quantities estimated: See Section 104.03 of the Standard Specifications.
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### Soil Characteristics

- The soil characteristics tabulated above are representative of the location of the sample and from surface indications are typical for the limits shown. These data are shown for information only. The State will not be responsible for variations in the soil characteristics and/or extent of same differing from the above tabulations.

### Removal and Disposal of Items

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<th>STATION</th>
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### Clearing and Grubbing

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Quantities:
GRID CONVERGENCE BASIS ARKANSAS GRID SURVEY CONTROL

THE PRIMARY ARKANSAS GRID SURVEY CONTROL PROJECTED TO GROUND.

SURVEY CONTROL DETAILS

**Project Name:** e00708
**Date:** 7/9/2012

**Description:** Arkansas State Plane - North Zone based on GPS control projected to ground.

**Reference Points:** (1500 Names) are to be used to establish control. If the primary control points listed above have been destroyed, reference points are not to be used for vertical control.

**Basis of Bearing:**

- **ARKANSAS STATE PLANE GRID BEARINGS:** 3000 North Zone
- **Determined from GPS control points:** 280000-280008, 280009-280010, 280012-280020, 280016-280046
- **Accuracy Reference:** 0.51-43 ft
- **Altitude:** 1,040'-1,300' ASL
- **AHD:** 1,300'-1,300' ASL - AHD CONVERGENCE

**SURVEY CONTROL DETAILS**
### VERTICAL SURVEY CONTROL PROJECT

#### Project Details:
- **Project Name:** 80708
- **Date:** 7/9/2012
- **Coordinate System:** ARAKANS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL
- **Control Surveyed:** PROJECTED TO GROUND.

#### Survey Foot Details:
- **Unit:** U.S. SURVEY FOOT

#### Survey Point Details:
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<td>Elevation of Pole, 464'</td>
<td>SOUTH OF CENTERLINE OF PAVEMENT CROWN 807. 138' NORTH OF FIELD EDGE. 410' SOUTH OF FIELD EDGE. APPROX 3000' EAST OF EDGE OF GRAVEL. 1.5 BELOW SURFACE</td>
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<td>SOUTH OF CENTERLINE OF PAVEMENT CROWN 807. 190' NORTH OF FIELD EDGE. 425' SOUTH OF FIELD EDGE. APPROX 4000' EAST OF EDGE OF GRAVEL. 1.6 BELOW SURFACE</td>
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#### Additional Details:

- **NOTE:** Rester & Cap - Standard - 5/8" Rester with 2" Aluminum Cap stamped with 44 marks.
- **STANDARD MARKINGS:** Common to all points, or as indicated (other markings indicated in the point description of the individual point).

**ALL DISTANCES ARE GROUND.**

**USE CAUTION:** 1.0 for Stakeout for this project, a PROJECT CA M 0.0995972903486 has been used to compute the GROUND COORDINATES LISTED ABOVE.

This CAf is intended for use within the PROJECT LIMITS.

**GRID DISTANCE = GROUND DISTANCE X CAf.**

**GRID COORDINATES ARE STORED UNDER FILE NAME 100445914 CTL.**

**HORIZONTAL DATUM:** NAD 83 I997.

**VERTICAL DATUM:** NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

**REFERENCE POINTS (1500' SERV) ARE TO BE USED TO ESTABLISH CONTROL, IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED.**

REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL.

**BASIS OF REFERENCE:**
- ARKANSAS STATE PLANE GRID BEARINGS - 030° NORTH ZONE
- DETERMINED FROM GPS CONTROL POINTS 280006-280006A, 280009-280010, 280012-280012A, 280016-280016A
- **CONVERSION ANGLES:** 0.5141-3.2º RH 21, 17.3º-30-34.5, 5.9°-09-31-01.7
- **GRID AZIMUTH:** ASTRONOMICAL AZIMUTH - CONVERSION ANGLES.
SURVEY CONTROL COORDINATES

Project Name: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.

Unit: U.S. SURVEY FOOT

Point

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<th>Elev</th>
<th>Feature Description</th>
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Note: Refer to Page 1 for additional details.
SURVEY CONTROL DETAILS

STA 100+00.00 HWY 412
STA 23+20.5 (HWY 412 EXISTING)
Δ = 90°00'00.00"

EXISTING HWY. 412 CENTERLINE

STA 100+29.50 BEGIN JOB 100708
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
STA. 105+17 INSTALL 18" + 34" PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH + 95 CU. YDS.

STA. 110-00 INSTALL 18" + 36" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH + 925 CU. YDS.

STA. 114-31 CONSTRUCT APPROACH ON RT. + 425 CU. YDS.

STA. 118-00 INSTALL 18" + 32" PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH + 105 CU. YDS.

STA. 122-00 END LT. LANE ALG - STA. 120-00 END MAIN LANE ALG 5.5' LT.

STA. 120-00 END MAIN LANE ALG 2.5' RT.

STA. 124+20.00 END TRANSITION (INCL.)
STA. 169+00 INSTALL
18' x 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 75 CU. YDS.

STA. 175+00 INSTALL
24' x 43' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 85 CU. YDS.

Refer to survey control detail sheets for horizontal and vertical control data.
**STA. 315-00 INSTALL**
18" x 48" PIPE CULVERT
LT. 5-DE DRAIN
CONSTRUCT APPROACH = 190 CL. YDS.

**STA. 319-00 CONSTRUCT**
10" x 36" R.C. PIPE CULVERT
ON AN 8' RT. FENCE, SHEAR
WITH EXIT R & W
(CLASS 11) TYPE 3 BEDDING)
G.A. = 73 AC. GSD = 150 FPS
60' X 36' PIPE = 133 LIN. FT.
50' X 36' FES = 2 EACH

**STA. 321-45 CONSTRUCT**
10" x 36" R.C. PIPE CULVERT
ON AN 8' RT. FENCE, SHEAR
WITH EXIT R & W
(CLASS 11) TYPE 3 BEDDING)
G.A. = 73 AC. GSD = 150 FPS
60' X 36' PIPE = 133 LIN. FT.
50' X 36' FES = 2 EACH

**STA. 20-00 INSTALL**
18" x 36" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 250 CL. YDS.

Refer to Survey Control Detail Sheets for Horizontal and Vertical Control Data.

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**STA. 327-58 CONSTRUCT**
36" x 38" R.C. PIPE CULVERT
ON AN 22' LT. FENCE, SHEAR
WITH EXIT R & W
(CLASS 11) TYPE 3 BEDDING)
G.A. = 4 AC. GSD = 150 FPS
24' X 36' PIPE = 68 LIN. FT.
24' FES = 2 EACH

---

Refer to Survey Control Detail Sheets for Horizontal and Vertical Control Data.

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**TRIBUTARY TO VILLAGE CREEK**
AT STA. 327-69 - STA. 327-73 (5)
CLASSIFIED AS DRAINAGE, THE TOP OF THE TRIBUTARY TO VILLAGE CREEK IS ABOVE THE CLASSIFICATION LEVEL.
REFER TO SECTION 110-020.11 TEMPORARY FILL OF THE 2018 STANDARD SPECIFICATIONS.

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**HWY. 412**

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**PLAN AND PROFILE SHEETS**

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**CLASSIFIED AS DRAINAGE, THE TOP OF THE TRIBUTARY TO VILLAGE CREEK IS ABOVE THE CLASSIFICATION LEVEL.
REFER TO SECTION 110-020.11 TEMPORARY FILL OF THE 2018 STANDARD SPECIFICATIONS.**
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
Refer to survey control detail sheets for horizontal and vertical control data.
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
STA. 30+57.53 (HWY 42)

STA. 9+36.36 (SOUTH ROCKINGCHAIR RD)

\[ \Delta = 98'17.58'6'' \]

STA. 5+25 IN PLACE
DBL. 48 X 54 PIPER CULVERT ON
15' LT. FORWARD SWEEP
WITH FES LT & RT.

REMOVING AND CONSTRUCT
DBL. 48 X 78 R.C. PIPE CULVERT
(TYPE 2 BENDING)

D.A. = 527 AC, 2956 R.C.

48" R.C. PIPE = 156 LTR. FT.
48" R.C. FES = 4 EACH

STA. 3+78.71
BEGIN JOB 100708

STA. 8+33 INSTALL
48" X 10' X 54" ARCH PIPER CULVERT
CONSTRUCT APPROACH X 10 CU. YDS.

STA. 9+30.81
END JOB 100708

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

SOUTH ROCKINGCHAIR RD.
BROWN'S CHAPEL RD.

STA. 336+44.80 (HWY. 402)

STA. 10+24.29 (BROWNS CHAPEL RD.)

Δ = 98°12'3.32"

STA. 9+69 IN PLACE
24' x 40'-RC PIPE CULVERT
RETAIL

STA. 15+14.58
END BROWN'S CHAPEL RD.

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
STA. 294+00 INSTALL DBL. 36' x 94' PIPE CULVERT RT. SIDE DRAIN CONSTRUCT APPROACH +1500 CU. YDS.

STA. 99+74.23 BEGIN JETTON DRIVE

STA. 84+28.24 END JETTON DRIVE
### SUMMARY OF SIGNALIZATION QUANTITIES

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<tr>
<th>ITEM NUMBER</th>
<th>ITEM</th>
<th>HWY. 412 (W. KINGS HWY.) AT HWY. 412 BYPASS</th>
<th>HWY. 49 AT HWY. 412 BYPASS</th>
<th>TOTAL JOB QUANTITY</th>
<th>UNIT</th>
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* ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED FOR HWY. 412 (W. KINGS HWY.) AT HWY. 412 BYPASS.
16. **TRAFFIC SIGNAL NOTES:**


2. **EXTEND GREEN EARTH GROUNDING CONDUCTOR (E.G.C.) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE SOLIDLY BOND E.G.C. TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXISTS IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.**

3. **ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY TO A SERVICE POLE WITH EXTERNAL RAIN TIGHT BREAKER (MAIN BREAKER), GALVANIZED STEEL SERVICE RISER, METER LOOP (IF REQUIRED), AND WEATHERHEAD AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. IF THE SERVICE POLE IS OVER 10 FEET FROM THE CITY'S MAIN BREAKER AS PART OF THIS CONTRACT, CONDUIT IS FURNISHED FOR A SEPARATE ITEM OF THIS CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT ARE NEEDED WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (20/12 A.W.G. U.F. RATED, TYPICAL) SHALL BE KEPT FROM THE CIRCUIT SERVING THE SIGNAL CONTROL EQUIPMENT FROM THE POINT OF TIE IN AT THE SECONDARY BREAKER PROVIDED BY THE CONTRACTOR.**

4. **CONTRACTOR SHALL INSTALL A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.**

5. **TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO THE CONTROLLER.**

6. **CONTRACTOR CABINET SHALL BE WIRING SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUS.**

7. **ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE AHJ STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, STANDARD DRAWINGS AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.**

8. **CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHODS. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD AS SHOWN IN THE DETAILS MAY BE USED.**

9. **TRAFFIC SIGNAL POLES SHALL BE GALVANIZED. BACKPLATES SHALL BE SUPPLIED FOR ALL SIGNAL HEADS.**

10. **PAVEMENT MARKING SHOWN FOR REFERENCE ONLY. SEE PAVEMENT MARKING PLAN SHEETS.**

11. **FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON STANDARD DRAWING). PAYMENT WILL BE INCLUDED IN SECTION 714, AHJ STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.**

12. **ALL CONCRETE PULL BOXES SHALL BE OF TYPE 2 HD. SEE NOTES ON STANDARD DRAWING. ALL CONDUIT SHALL BE 3" DIAMETER UNLESS OTHERWISE INDICATED. ALL CONDUIT SHALL BE 3" DIAMETER UNLESS SPECIFIED ON PLANS.**

13. **CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.**

14. **LUMINAIRE ASSEMBLIES SHALL BE OF THE FULL CUT-OFF TYPE.**

15. **HARDWARE INPUTS MAY BE DETERMINED BY SUPPLIER. EACH DETECTOR OUTPUT SHALL INSERT THE CONTROLLER THROUGH A SEPARATE INPUT UNLESS OTHERWISE NOTED AND BE PROGRAMMED TO ACTUATE THE ASSOCIATED PHASE. COMBINATION (COMB.) DETECTORS SHALL ALSO BE PROGRAMMED TO PROVIDE VEHICLE COUNT/OCUPANCY DATA.**

16. **TO DETERMINE UTILITY CLEARANCES ABOVE THE TRAFFIC SIGNAL POLE, REFER TO THE POLE SCHEDULE FOR VERTICAL SHAFT HEIGHT. WHERE THE POLE SCHEDULE INDICATES THAT A LUMINAIRE ARM WILL BE USED, 38 FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE LUMINAIRE ARM. WHERE THE POLE SCHEDULE INDICATES A TRAFFIC SIGNAL POLE WITHOUT A LUMINAIRE ARM, A HEIGHT OF 21' SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL 6 FEET SHOULD BE USED DIRECTLY ABOVE VIDEO DETECTOR AT LOCATIONS SHOWN ON THE SIGNAL PLANS.**

17. **THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS 6 FEET. REFER TO TRAFFIC SIGNAL PLANS FOR SPECIFIC LOCATION OF POLES. CONTROLLER AND ANY OTHER NON-BREAKAWAY OBSTRUCTIONS. REFER TO "DESIGN PARAMETERS, MINIMUM CLEARANCE ZONE" FOR MINIMUM DISTANCE FROM THE FACE OF TRAVERSED WALK TO THE FACE OF A NON-BREAKAWAY POLE OR OBSTRUCTION. TRAFFIC SIGNAL POLES OR ANY OTHER NON-BREAKAWAY OBSTRUCTION SHALL NOT BE INSTALLED WITHIN THE CLEAR ZONE.**

18. **AS DETERMINED BY THE ENGINEER, FOUNDATION EMBEDMENT MAY BE DECREASED BY A MAXIMUM OF TWO FEET IF COMPETENT ROCK IS ENCOUNTERED PRIOR TO ACHIEVING PLAN EMBEDMENT AND AT LEAST HALF OF THE REMAINING EMBEDMENT LENGTH IS KEYED INTO COMPETENT ROCK.**

19. **connection of traffic signal display to field wiring shall utilize an approved terminal strip behind hand-hole cover at base of pole. terminal strip shall provide protection to prevent exposure to the public in the event that pole cover is missing. payment for terminal strips shall be included in item 714 traffic signal mast arm and pole with foundation.**

20. **controller cabinet layout and orientation shall conform to imsa standards.**

21. **one video programming module shall be provided for aiming and setup of detectors if the video system cannot be adjusted through hardware and software provided by items within the job.**

22. **traffic signal controller must notify resident engineer or assigned department project inspector each day prior to signal related work. no work on traffic signals will be allowed or approved without this prior notification.**

23. **all steel poles shall be designed to meet the aashto standard specifications for structural supports for highway signals, luminaires and traffic signals, 4th edition (2001) with 2003 and 2006 interims.**

24. **door panel test push buttons shall activate indicated phases. detector assignments and/or side panel jumpers may require modification.**

25. **all system detector racks and associated equipment shall be protected by the main controller cabinet power surge protection.**
TRAFFIC SIGNAL QUANTITIES

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP &amp; 701</td>
<td>ACTUATED CONTROLLER (TS2 TYPE 2 8 PHASES)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 706</td>
<td>TRAFFIC SIGNAL HEAD, LED. (2 SECTION, 1 WAY)</td>
<td>8</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 706</td>
<td>TRAFFIC SIGNAL HEAD, LED. (4 SECTION, 1 WAY)</td>
<td>3</td>
<td>EACH</td>
</tr>
<tr>
<td>708</td>
<td>TRAFFIC SIGNAL CABLE (2C/14 A.W.G.)</td>
<td>504</td>
<td>LIN FT</td>
</tr>
<tr>
<td>708</td>
<td>TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)</td>
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<tr>
<td>708</td>
<td>TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)</td>
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<td>LIN FT</td>
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<tr>
<td>SP</td>
<td>ELECTRICAL CONDUCTORS IN CONDUIT (10C/8 A.W.G., E.G.C.)</td>
<td>526</td>
<td>LIN FT</td>
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<tr>
<td>SP</td>
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<tr>
<td>SP</td>
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<td>LIN FT</td>
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<tr>
<td>SP</td>
<td>ELECTRICAL CONDUCTORS FOR LUMINAIRES</td>
<td>809</td>
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<td>GALVANIZED STEEL CONDUIT (1.25&quot;)</td>
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<tr>
<td>710</td>
<td>NON-METALLIC CONDUIT (1.25&quot;)</td>
<td>20</td>
<td>LIN FT</td>
</tr>
<tr>
<td>710</td>
<td>NON-METALLIC CONDUIT (2&quot;)</td>
<td>60</td>
<td>LIN FT</td>
</tr>
<tr>
<td>710</td>
<td>NON-METALLIC CONDUIT (4&quot;)</td>
<td>568</td>
<td>LIN FT</td>
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<tr>
<td>711</td>
<td>CONCRETE PULL BOX (TYPE 2 HD)</td>
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<tr>
<td>714</td>
<td>TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (30&quot;)</td>
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<tr>
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<td>TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (60&quot;)</td>
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<tr>
<td>714</td>
<td>TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (72&quot;)</td>
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<tr>
<td>SP</td>
<td>LED LUMINARE ASSEMBLY</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>SP</td>
<td>SERVICE POINT ASSEMBLY (2 CIRCUITS)</td>
<td>1</td>
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<tr>
<td>SP</td>
<td>10&quot; STREET NAME SIGN</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 733</td>
<td>VIDEO DETECTOR (CLR)</td>
<td>7</td>
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<td>733</td>
<td>VIDEO CABLE</td>
<td>1514</td>
<td>LIN FT</td>
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<tr>
<td>733</td>
<td>VIDEO MONITOR (CLR)</td>
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<tr>
<td>SP &amp; 733</td>
<td>VIDEO PROCESSOR, EDGE CARD (2 CAMERA)</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 733</td>
<td>VIDEO EDGE CARD EXTENDER</td>
<td>2</td>
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<tr>
<td>SP &amp; 733</td>
<td>VEHICLE DETECTOR RACK (24 CHANNEL)</td>
<td>1</td>
<td>EACH</td>
</tr>
</tbody>
</table>

* ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED PERMANENT TRAFFIC SIGNAL.

NOTES:
1. REFLECTIVE SHEETING SHALL COMPLY WITH ASTM 4956 TYPE B OR 9 REFLECTIVE SHEETING. SHEETING AND LEGEND SHALL BE APPLIED IN SUCH A MANNER TO PROVIDE MIRRORED AND BUBBLE FREE SURFACES. APPLICATION OF SHEETING IS CAUSE FOR REJECTION OF MATERIAL'S DUE TO WORKMANSHIP.
2. ALUMINUM SIGN BLANK SHALL BE ALLOY 6061-T6 OR 5052-H38. THE ALUMINUM SIGN BLANK SHALL ALSO BE ANODIZED. THE ALUMINUM SHEETING SHALL BE GOOD MIRRORED, THICKNESS, AND THE EDGE SHARPNESS MUST BE REJECTION STANDARD. THE LAYOUT SHALL FIRST BE APPROVED BY AN AGENT OF THE CITY.
3. WHEN CROSSTRADE HAS TWO NAMES, THE SIGN FOR THE CROSSROAD TO THE LEFT MAY BE INSTALLED ON THE BACKSIDE OF THE MAST ARM OF THE NEAR SIDE LEFT POLE. SEE STD. DETAIL SHEET FOR MORE INFORMATION ON MAST ARM ASSEMBLY.
4. THE 2000 STANDARD ALPHABET SHALL BE USED FOR ALL LETTERS.

LOCATION: HWY. 412 (BYPASS) HWY. 412 (W. KINGS HWY.)
CITY: PARAGOULD
COUNTY: GREENE
DISTRICT: 10
DATE: 12-15-16
FILE NAME: 100708-02.png
NOTES TO CONTRACTOR:

1. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE Brought TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.

2. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

GROUND WIRING:

- SINGLE PORT FUSION WELDS
- SOLID EGC
- PER GROUND RING
- FUSION WELD
- SOLID EGC
- PER GROUND RING
- FUSION WELD

GROUND WIRING TO ANTENNA (STANDARD)

- SINGLE PORT FUSION WELD
- SOLID EGC
- PER GROUND RING
- FUSION WELD
- SOLID EGC
- PER GROUND RING
- FUSION WELD

WIRING DIAGRAM

PHASING DIAGRAM

INTERVAL CHART

DETECTOR SYSTEM DESCRIPTION & SCOPE

DETERMINATION OF ADDRESS TO DETECTOR ASSIGNMENTS

HARDWARE INPUTS

SENSOR ASSIGNMENTS

COMMENTS

TUBE LINES

LOCATION: 4212 EUROPEAN AVENUE, WESTERN KINGS WAY

DATE: 12/15/16

FILE NAME: 100708-02.png
### Traffic Signal Quantities

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>Traffic Signal Controller (Modification)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>704</td>
<td>Vehicle Detector Rack Mount</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>SP</td>
<td>Loop Wiring Class III (12 AWG)</td>
<td>424</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>704</td>
<td>Feeder Wire</td>
<td>1912</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>SP &amp; 706</td>
<td>Traffic Signal Head, LED (3 Section, 1 Way)</td>
<td>6</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 706</td>
<td>Traffic Signal Head, LED (4 Section, 1 Way)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>708</td>
<td>Traffic Signal Cable (G5/14 AWG)</td>
<td>142</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>710</td>
<td>Non-Metallic Conduit (1&quot;)</td>
<td>767</td>
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<td>710</td>
<td>Non-Metallic Conduit (1.25&quot;)</td>
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<td>LIN. FT</td>
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<tr>
<td>711</td>
<td>Concrete Pull Box (Type 1 HO)</td>
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<td>EACH</td>
</tr>
<tr>
<td>SP</td>
<td>18&quot; Street Name Sign</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 733</td>
<td>Video Detector (CLR)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>733</td>
<td>Video Cable</td>
<td>270</td>
<td>LIN. FT</td>
</tr>
</tbody>
</table>

**Notes:**
1. Reflective sheathing shall comply with ASTM 4956, Type B or 9. Reflective sheeting, sheathing and legend shall be applied in such a manner to provide wrinkle and bubble-free surfaces. Application of sheeting is cause for rejection of materials due to workmanship.

2. Aluminum sign blank shall be alloy 6061-T6 or 5052-H38. The aluminum sheathing shall be 0.005-inch nominal thickness and of the size shown with 1/8" corner radius prior to fabrication of the sign, the layout shall first be approved by an agent of the City.

3. When crossroad has two names, the sign for the crossroad to the left may be installed on the backside of the mast arm of the nearside left pole. See STD. DETAIL SHEET for more information for mounting on mast arm assembly.

4. The C 2000 Standard Alphabet shall be used for all letters.
DESIGN PARAMETERS

POSTED SPEED LIMIT:
55 MPH EAST AND WEST APPROACH
55 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS
LOCATION OF STOP BARS
SHOWN ON PAVEMENT MARKING PLAN.
SEE SEPARATE SHEET.
MINIMUM CLEAR ZONE DISTANCE
30 FEET FROM HWYS. 42 AND 49

LOCATION: HWAY. 412 (BYPASS) HWAY. 49 (LINTWOOD OR.)
CITY: PARAGOULD
COUNTY: GREENE
DISTRICT: 10
SCALE: 1" = 40'
DRAWN BY: GWE

DATE: 12-15-16
FILE NAME: D110708.10.dwg
NOTES TO CONTRACTOR:

1. ALL DETECTOR RACK CHANNELS, INCLUDING UNIDEX, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.

2. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.
**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 G60 along ditch paving to be placed within 14 days of ditch paving construction.

1'-0" wide transverse expansion joints shall be placed in concrete ditch paving at 40 foot intervals, the space shall be filled with approved joint filler complying with AASHO M203.

**Type A**

- Refer to tabulation of quantities for W-10 dimensions.
- Excavate to waste lines to construct ditch paving and back footing.
- 2" dia. deep hole at 10'-0" centers.

**Type B**

- Refer to tabulation of quantities for W-10 dimensions.
- Toe wall depth may be altered to 1'-0" if the concrete is solid rock excavation.
- 2" dia. deep hole at 10'-0" centers.

**Toe Wall Detail for Concrete Ditch Paving**

- Toe wall detail for concrete ditch paving.

**Energy Dissipators**

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.

**Standard Notes**

Concrete Ditch Paving

Standard Drawing COP-1
CONCRETE COMBINATION CURB AND GUTTER

GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.

DETAIL OF GUTTER SLOPE

ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB

DETAILS OF MODIFIED CURB

NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR. L. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.
**TYPICAL CURB**

**EXTENSION TYPICAL SECTIONS**

1. **CONCRETE** - 6" P.C. CONCRETE DRIVEWAY
2. **ASPHALT** - 2" AC/CH SURFACE COURSE (6'/2')
3. **AC/H Binder Course (7')** OR
4. **AC/H Base Course (11'/2')**
5. **AGGREGATE BASE COURSE**

**NOTE:** EXPANSION Joint ISLANDS SHOWN ON THE PLANS.

**VAR. WIDTH CONCRETE ISLAND (When shown on the plans)**

**VAR. WIDTH CONCRETE WALK (When shown on the plans)**

**VAR. WIDTH GRASS BERM (When shown on the plans)**

**VAR. WIDTH CONCRETE ISLAND (Typical All Sides)**

**VAR. WIDTH CONCRETE ISLAND 6" Nor. Uniform Thickness**

**VAR. WIDTH CONCRETE ISLAND 8" Nor. Uniform Thickness**

**VAR. WIDTH CONCRETE ISLAND 6" UNIFORM THICKNESS**

**CURVED ISLANDS FOR CHANNELIZATION**

**REFRIGERATION FACE TO BE USED, NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS, PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM CONCRETE ISLANDS.**

**PLAN VIEW**

**ISOMETRIC VIEW**

**SECTION A-A**

**SECTION B-B**

**CURBED ISLAND BEHIND WALK**

**ARKANSAS STATE HIGHWAY COMMISSION DETAILS OF DRIVEWAYS & ISLANDS STANDARD DRAWING DR-1**

**REVISED PLAN & ISOMETRIC VIEW**

**DATE MODIFIED:** FEB 27 14

**REVISED SCALE & ISOMETRIC VIEW:** 1/2" = 1'-0"
### CORRUGATED STEEL PIPE (ROUND)

<table>
<thead>
<tr>
<th>PIPE DIAMETER (INCHES)</th>
<th>MAX. FILL HEIGHT &quot;H&quot; ABOVE TOP OF PIPE FEET</th>
<th>MAX. METAL THICKNESS (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>8</td>
<td>0.08</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
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<td>15</td>
<td>0.09</td>
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<tr>
<td>8</td>
<td>19</td>
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</tbody>
</table>

**Installation Requirements**

1. **Type 1**: Aggregate base course (class 4, 5, 6 or 7).
2. **Type 2**: Selected materials (class 5, 6, 7, or others).
3. **SM-3** will not be allowed.

### CORRUGATED ALUMINUM PIPE (ROUND)

<table>
<thead>
<tr>
<th>PIPE DIAMETER (INCHES)</th>
<th>MAX. FILL HEIGHT &quot;H&quot; ABOVE TOP OF PIPE FEET</th>
<th>MAX. METAL THICKNESS (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>8</td>
<td>0.08</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
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<td>19</td>
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</table>

**Installation Requirements**

1. **Type 1**: Aggregate base course (class 4, 5, 6 or 7).
2. **Type 2**: Selected materials (class 5, 6, 7, or others).
3. **SM-3** will not be allowed.

### CORRUGATED METAL PIPE ARCHES

<table>
<thead>
<tr>
<th>EQUIL. DIA. (INCHES)</th>
<th>PIPE DIAMETER</th>
<th>MAX. COVER TOP OF PIPE TO TOP OF HOE &quot;H&quot;</th>
<th>MAX. METAL THICKNESS</th>
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<td>3.08</td>
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</tr>
<tr>
<td>24</td>
<td>18</td>
<td>6.08</td>
<td>0.10</td>
</tr>
</tbody>
</table>

### LEGEND

- **-** Outside diameter of pipe
- **H** = Fill height over pipe feet
- **MIN.** = Minimum
- **MAX.** = Maximum
- **=** Structural backfill material
- **=** Unimproved soil
- **=** Equation / Equivalent

### EQUIVALENT METAL THICKNESSES AND GAUGES

<table>
<thead>
<tr>
<th>STEEL</th>
<th>GAUGE NUMBER</th>
<th>ZINC COATED</th>
<th>UNCOATED</th>
<th>ALUMINUM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>0.06</td>
<td>0.06</td>
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<tr>
<td></td>
<td></td>
<td>80</td>
<td>0.09</td>
<td>0.06</td>
</tr>
</tbody>
</table>

### INSTALLATION SEQUENCE

1. Place structural backfill material, to grade, do not compact.
2. Install pipe to grade.
3. Compact structural backfill, outside the pipe, until the pipe is at the elevation of the pipe centerline or as directed by the Engineer.
4. No backfilling shall be done until the fill has been placed to the required height.

### GENERAL NOTES

1. **Type 1**: Steel pipe culvert construction shall conform to Arkansas State Highway and Transportation Department (AHTD) Specifications for Highway Construction currently in effect, with applicable Special Provisions.
2. **Type 2**: Steel or other pipe shall be used for the specified pipe arches.
3. **Type 3**: Steel or other pipe shall be placed as directed by the Engineer. In the absence of the Engineer's direction, steel pipe should be placed as specified in the AHTD Specifications.
4. **Type 4**: Steel or other pipe shall be used as specified in the AHTD Specifications.

### METAL PIPE CULVERT FILL HEIGHTS & BEDDING

**Standard Drawing PCM-1**

**Arkansas State Highway Commission**
MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

MINIMUM COVER FOR
CONSTRUCTION LOADS

GENERAL NOTES
1. PIPE SHALL CONFORM TO ASHTO TYPE. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO ASHTO LIMIT BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM ALLOWABLE WIDTH TO ENSURE WORKING ROOM FOR PROPERLY AND SAFELY PLACE AND COMPACT MACHINERY AND OTHER BEDDING MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE USED FOR PROFESSORIAL BEDDING AND STRUCTURAL BACKFILL.
5. WHEN DETAILED BY THE ENGINEER, UNSTABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATION THAT IS NOT 0.5' ABOVE THE PROJECTED BASELINE OF THE pipe, UNSTABLE BACKFILL OR TO BEDDING MATERIAL SHALL BE REMOVED FROM THE TRENCH AND REPLACED WITH STRUCTURAL BACKFILL PAEING LAY (DESIGNATED PIPE) WILL BE MEASURED AND PAY FOR AS SELECTED PIPE BEDDING.
6. IF VIVA, MATERIAL IN TRENCH FROM THE TRENCH LINE ONWARD IS NOT AS STRUCTURAL BACKFILL, MICRON MATERIAL OR MATERIAL SELECTED TO BE IN TRENCH WEST MATERIAL, UNSTABLE BACKFILL OR TRENCH MATERIAL IS NOT PLANED, THE USE OF RESTRAINTS MAY BE NEEDED TO HELP MAINTAIN GRADE AND ALIGNMENT.
7. FOR PIPE TYPES THAT ARE NOT SUITABLE ON THE OUTSIDE CORNERS OR PROFILE WALLS, BACKFILL OR TO BEDDING MATERIAL IS NOT SUITABLE MEASURED AS SELECTED PIPE BEDDING. MATERIALS OTHER THAN PIPES THAT ARE NOT SUITABLE FOR IN TRENCH WEST MATERIAL, UNSTABLE BACKFILL OR TRENCH MATERIAL IS NOT USED, THE USE OF RESTRAINTS MAY BE NEEDED TO HELP MAINTAIN GRADE AND ALIGNMENT.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN 1/2" WILL NOT BE ALLODED.
9. JOINTS FOR HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN 1/2" WILL NOT BE ALLODED.

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

MINIMUM COVER FOR
CONSTRUCTION LOADS

GENERAL NOTES
1. PIPE SHALL CONFORM TO ASHTO TYPE. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO ASHTO LIMIT BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM ALLOWABLE WIDTH TO ENSURE WORKING ROOM FOR PROPERLY AND SAFELY PLACE AND COMPACT MACHINERY AND OTHER BEDDING MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE USED FOR PROFESSORIAL BEDDING AND STRUCTURAL BACKFILL.
5. WHEN DETAILED BY THE ENGINEER, UNSTABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATION THAT IS NOT 0.5' ABOVE THE PROJECTED BASELINE OF THE pipe, UNSTABLE BACKFILL OR TO BEDDING MATERIAL SHALL BE REMOVED FROM THE TRENCH AND REPLACED WITH STRUCTURAL BACKFILL PAEING LAY (DESIGNATED PIPE) WILL BE MEASURED AND PAY FOR AS SELECTED PIPE BEDDING.
6. IF VIVA, MATERIAL IN TRENCH FROM THE TRENCH LINE ONWARD IS NOT AS STRUCTURAL BACKFILL, MICRON MATERIAL OR MATERIAL SELECTED TO BE IN TRENCH WEST MATERIAL, UNSTABLE BACKFILL OR TRENCH MATERIAL IS NOT PLANED, THE USE OF RESTRAINTS MAY BE NEEDED TO HELP MAINTAIN GRADE AND ALIGNMENT.
7. FOR PIPE TYPES THAT ARE NOT SUITABLE ON THE OUTSIDE CORNERS OR PROFILE WALLS, BACKFILL OR TO BEDDING MATERIAL IS NOT SUITABLE MEASURED AS SELECTED PIPE BEDDING. MATERIALS OTHER THAN PIPES THAT ARE NOT SUITABLE FOR IN TRENCH WEST MATERIAL, UNSTABLE BACKFILL OR TRENCH MATERIAL IS NOT USED, THE USE OF RESTRAINTS MAY BE NEEDED TO HELP MAINTAIN GRADE AND ALIGNMENT.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN 1/2" WILL NOT BE ALLODED.
9. JOINTS FOR HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN 1/2" WILL NOT BE ALLODED.
INSTALLATION TYPE

** MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING

** TYPE 2

- SELECTED MATERIALS
  - K-CLASS 300 (MIN. 230) OR SIMILAR
- UNSTABLE FILL

** Maximum Fill Height Based on Structural Backfill

<table>
<thead>
<tr>
<th>Diameter (in.)</th>
<th>Minimum Cover Value (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
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<td>15</td>
<td>1.7</td>
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<tr>
<td>20</td>
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** Notes:
- Minimum cover value, H., shall include a minimum of 0.5 of pavement and/or base.
- Determine width of embankment based on structural backfill.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

<table>
<thead>
<tr>
<th>Diameter (in.)</th>
<th>Trench Width (ft)</th>
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<tr>
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<td>10</td>
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<td>12</td>
<td>11</td>
</tr>
</tbody>
</table>

MINIMUM COVER FOR CONSTRUCTION LOADS

<table>
<thead>
<tr>
<th>Pipe Diameter (in.)</th>
<th>Construction Loads (kip)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>120</td>
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<tr>
<td>4</td>
<td>180</td>
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<td>6</td>
<td>300</td>
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</tbody>
</table>

MULTIPLE INSTALLATION OF PVC PIPES

<table>
<thead>
<tr>
<th>Pipe Diameter (in.)</th>
<th>Clear Distance Between Pipes (ft)</th>
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<tbody>
<tr>
<td>3</td>
<td>3.0</td>
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<tr>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>6</td>
<td>6.0</td>
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</table>

GENERAL NOTES

1. PVC pipe conform to ASTM F949. Vall Class Type installation shall conform to job specifications.

2. Plastic pipe design shall conform to AASHTO LRFD Bridge Specifications, 7th edition and/or other industry specifications.

3. The maximum allowable trench width shall be the minimum pipe plus 6 inches, minimum 12 inches, or minimum 12 inches for Type 1 installation.

4. Unstable material shall be placed as directed by the engineer. The area adjacent to the ends of the culvert shall be compacted to prevent loss of structural bedding when pervious material is used for structural bedding and/or backfill.

5. When directed by the engineer, a minimum 6-inch structural backfill of structural bedding, will be covered by the area excavated as structural bedding. Structural bedding shall be compacted and placed as indicated. Selected pipe bedding, the quantity of backfill required to backfill the area excavated as structural backfill, shall be specified by the engineer.

6. When the existing material excavated for the pipe trench is determined by the engineer to be unsuitable for backfilling, the pipe shall be placed using the area excavated as structural bedding. Efficient material or native material may be used for backfill. Unsuitable material is not to be used as backfill. The area excavated as structural bedding may be required to be compacted and placed as indicated. Selected pipe bedding, the quantity of backfill required to backfill the area excavated as structural bedding, shall be specified by the engineer.

7. For pipe types that are not smooth on the outside (corrugated or profile rails), backfill gradations should be selected that will permit the filling of the corrugations or profile valleys.

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 26.2.4.2 and 30.4.2. "AASHTO LRFD Bridge Construction Specifications" joints shall be installed per manufacturer's recommendations.

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 backfill shall be placed and compacted in layers not exceeding the specified distance. The layers shall be placed, compacted, and placed at specified intervals.
5. The installation may require the use of different material, or other approved methods in order to help maintain grade and alignment.

- LEGEND -

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>'H'</td>
<td>Fill height</td>
</tr>
<tr>
<td>D</td>
<td>Diameter of pipe</td>
</tr>
<tr>
<td>W</td>
<td>Minimum width</td>
</tr>
<tr>
<td>M</td>
<td>Maximum width</td>
</tr>
</tbody>
</table>

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

J-27-14 REvised GENERAL NOTE: 1.2-5-14 REvised GENERAL NOTES & MINIMUM COVER NOTES DELETED AS MATERIAL.
NOTES:
1. Refer to the striping details for pavement marking line widths.
2. This drawing shall be used in conjunction with the latest revised edition of the "Manual on Uniform Traffic Control Devices."
3. Raised pavement markers shall be placed on an 80 feet spacing unless otherwise shown in the plans.

CONCRETE PAVEMENT ASPHALT PAVEMENT

BROKEN LINE STRIPING

SOLID LINE STRIPING ON CONCRETE PAVEMENT

SOLID LINE STRIPING ON ASPHALT PAVEMENT

ASPHALT PAVEMENT CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LINES

CROSSWALK AND STOPBAR DETAILS

ARKANSAS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1
REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

Concrete shall be Class 5 with a minimum 28 Day Compressive Strength of 3500 psi. Reinforcing steel shall be AASHTO M 309, M 55, Grade 60.

Construction and materials for wingwall & culvert drainage, including weep holes and granular material, shall be subsidiary to the use of Class 5 concrete.

Membrane waterproofing shall conform to the requirements of Section 6 of the Standard Specifications.

Membrane waterproofing shall be applied to all construction joints in the top slabs and the sides of R.C. box culverts as directed by the Engineer. No payment shall be made for this item, but payment shall be considered to be included in the various items bid for the R.C. box culverts.

REINFORCED STEELS: TOLERANCES: The tolerances for reinforcing steel shall meet those listed in manual of standard practice published by Concrete Reinforcing Steel Institute (C.R.S.I.) that the tolerances for round bars such as Figure 3 on page 14 of the manual, shall be within plus or minus 3/16 inch. REINFORCED STEEL, TO BE USED IN BOX CULVERTS, SHALL BE OF THE SAME SPACE, SIZE, BAR & DIAMETER AS LISTED IN THE R.C. BOX CULVERT DRAWING.

WEAP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 40'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4'-0" and shall be placed 4' above the top of the bottom slab. Deep hole in wingwalls shall have a maximum horizontal spacing of 40'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4'-0" and shall be placed 4' above the top of the wingwall footing.

The requirements shown on this drawing shall supersede any requirements on all reinforced concrete box culvert standards drawings.

REINFORCED CONCRETE BOX CULVERT HEADDOWN MODIFICATIONS

R.C. BOX CULVERT HEADDOWN MODIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1
ARKANSAS STATE HIGHWAY COMMISSION

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

SECTION A-A
DETAILS THROUGH EXISTING CHANNELS

SECTION B-B
DETAILS FOR NEW CHANNELS

GENERAL NOTES:
ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THE 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 THE AVERAGE END AREA METHOD. ROADWAY EXCAVATION 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.

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING RCB-2
DRAWER PLAN VIEW

FRONT VIEW

RIGHT SIDE ASSEMBLY

NOTE:
1. RIGHT HAND SLIDE ASSEMBLY, LEFT SLIDE ASSEMBLY
2. GENERAL DETAILS LOCATED IN FIG. 5-1 OD ON DRAWING AND CONTAINS 3) RIGHT HAND SLIDE ASSEMBLY, 11) LEFT HAND
3. DETAIL "A" IS NEEDED TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHOWN

CONTROLLER CABINET
UTILITY DRAWER

ARKANSAS STATE HIGHWAY COMMISSION

ISSUED AS STANDARD DRAWING
11-11-20
A-1

STANDARD DRAWING SD-5
**GENERAL NOTES:**

1. FOUR SECTION "PROTECTED-PERM-SHIELD" LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2) FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEETS: RECESSING IN MUST EXTEND NO EXTENDING MORE THAN TWO FEET PAST THE LEFT SIDE OF THE APPROACHING LEFT TURN LANE. POLES SHOWN IN DRAWING CENTERED SHALL BE PLACED 12" TO 18" BACK FROM CURB OR MEDIAN CENTERLINE. A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS DESIGN TO INSTALLING THE POLES IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SMALL, IN NO CASE, BE LESS THAN EIGHT (8) FEET BETWEEN HEADS ON CENTER. MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEAD SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE GEOMETRY SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL PANELS LOCATED BETWEEN 40 FEET AND 73 FEET FROM STOPBAR SHALL BE IN ACCORDANCE WITH FIGURE 40-9 OF 2009 MUTCD.

---

**NOTE:** WHERE LEFT TURN HEAD IS ON IN LANE 3, IS NOT CALLED FOR OR PLAIN, MUST HN LENGTH MAY STIL BE ALLOWED FOR FIXED INSTALLATION. HEADS FOR THROUGH LANES SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.
NOTES TO CONTRACTOR AND AGENCY RESPONSIBLE FOR MAINTENANCE OF THE INTERSECTION (CITY/COUNTY): ELECTRICAL SERVICE TYPICALLY FALLS INTO TWO CATEGORIES:

1. MAIN BREAKER NEAR CONTROL CABINET: THE MAIN BREAKER ASSEMBLY, GALVANIZED STEEL CONDUIT, LIGHTNING ARRESTOR, POWER ISOLATION ASSEMBLY WHERE REQUIRED, METER BASE IF REQUIRED BY LOCAL UTILITY, AND THE CONTRACTOR'S RESPONSIBILITY VARIES ACCORDINGLY AS INDICATED ON THESE DETAILS.

2. MAIN BREAKER NOT NEAR CONTROL CABINET: ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER BASE IS REQUIRED, METER BASE AND HARDWARE IS PROVIDED BY THE CITY/COUNTY AND INSTALLED BY THE CONTRACTOR.
### Super elevation Table for One-Way Traffic

<table>
<thead>
<tr>
<th>Degree of Curve</th>
<th>Lc (ft)</th>
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**General Notes:**
1. On ramps with one-way traffic, the super elevation shall be calculated on the outside edge of the road.
2. On ramps the length of super elevation shall be in multiples of 25 ft. or 50 ft.
3. Lengths for ramps may be rounded in multiples of 25 ft. or 50 ft.
4. Minimum super elevation may be used for ramps.
5. Divided roadways wider than 3 lanes shall have additional transition lengths as follows:
   - 6 lanes divided: +25 ft.
   - 8 lanes divided: +30 ft.

**Abbreviations:**
- Lc: Normal Crown
- Ls: Reverse Crown
- Lr: Super elevation at normal crown slope
- Lc: Normal Crown Transition to any point
- Ls: Length of super elevation transition
- C: Normal Crown

**Super Elevation Formula:**
\[ S = \frac{\theta \times Lc}{C} \]
### SuperElevation Table for Two-Way Traffic

<table>
<thead>
<tr>
<th>Degree of Curve</th>
<th>20 MPH</th>
<th>40 MPH</th>
<th>60 MPH</th>
<th>80 MPH</th>
<th>100 MPH</th>
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<tr>
<td></td>
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</tbody>
</table>

**Abbreviations:**

- NC: Normal Crown
- RC: Reverse Crown (SuperElevation at Normal Crown Slope)
- *a*: Rate of SuperElevation (ft. per ft.)
- *L*: Length of SuperElevation Transition (ft.)
- *C*: Normal Crown (ft.)
- *t*: Width of Subgrade (ft.)
- *Ls*: SuperElevation Transition Length (ft.)
- *Ls*: Normal Subgrade Length (ft.)
- *D*: Distance from Middle of SuperElevation Transition to Any Point (ft.)
- *D*: Distance from Middle of Subgrade to Any Point (ft.)
- *d*: Inside Pavement or Subgrade Edge Rate of SuperElevation
- *D*: Inside Pavement or Subgrade Edge Control Point
- *L*: Outside Pavement or Subgrade Edge Rate of SuperElevation
- *D*: Outside Pavement or Subgrade Edge Control Point

**General Notes:**

1. **Standard Method When SuperElevation Revolves Around Center Line**
   - SuperElevation Formula: $L = \frac{D}{C}$
   - Maximum SuperElevation: $\frac{L}{2}$
   - Least Curvature: $\frac{L}{4}$
   - Control Point: $\frac{L}{2}$

2. **Standard Method When SuperElevation Revolves Around Inner Subgrade Point or Inner Pavement Edge**
   - SuperElevation Formula: $L = \frac{D}{C}$
   - Maximum SuperElevation: $\frac{L}{2}$
   - Least Curvature: $\frac{L}{4}$
   - Control Point: $\frac{L}{2}$

3. **General Method When SuperElevation Revolves Around Inner Pavement Edge**
   - SuperElevation Formula: $L = \frac{D}{C}$
   - Maximum SuperElevation: $\frac{L}{2}$
   - Least Curvature: $\frac{L}{4}$
   - Control Point: $\frac{L}{2}$

4. **General Method When SuperElevation Revolves Around Inner Pavement Edge**
   - SuperElevation Formula: $L = \frac{D}{C}$
   - Maximum SuperElevation: $\frac{L}{2}$
   - Least Curvature: $\frac{L}{4}$
   - Control Point: $\frac{L}{2}$

**Note:** Maintain normal crown on Inside until superElevation exceeds 2°.

**Standard Drawing SE-2**

**ARKANSAS STATE HIGHWAY COMMISSION**

**Tables and Method of SuperElevation for Two-Way Traffic**
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PROTECTION CONTROLS (I.E. SILT FENCES, DIVERSION DITCHES, SEDIMENT SLOPES, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATIONS

EXCAVATION

EXISTING GROUND

INTERCEPTOR OR DIVERSION DITCH

EXISTING GROUND

GENERAL NOTE

NUMBER OF PHASES WILL VARY.

PHASE 1 EXCAVATION

PHASE 2 EXCAVATION

PHASE 3 EXCAVATION

GENERAL NOTE

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS REQUIRED. ALL WORK PROGRESSIVE SLOPES WILL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM PHASE 3 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. REMOVE SEDIMENT BASINS OR OTHER SEDIMENT CONTROL DEVICES AS REQUIRED.

EMBANKMENT

EMBANKMENT SHOWN FOR ILLUSTRATION

GENERAL NOTE

NOTE NUMBER OF PHASES WILL VARY.

PHASE 1 EMBANKMENT

PHASE 2 EMBANKMENT

PHASE 3 EMBANKMENT

GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS REQUIRED. ALL WORK PROGRESSIVE SLOPES SHALL BE STABILIZED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. CONSTRUCT COMPRESS DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCE, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PLACE PHASE 2 EMBANKMENT. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PLACE PHASE 3 EMBANKMENT. PLACE PERMANENT OR TEMPORARY SEEDING.

EMBANKMENT SHOWN FOR ILLUSTRATION

FOOTNOTES

DRAFT DATED:

ACKNOWLEDGED BY:

STANDARD DRAWING TEC-3

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES
NOTE:

12'-16' VEHICULAR
4' PEDESTRIAN

GATE FROM CORNER DISTURBED AS RIGHT-OF-WAY

LATCH WITH LOCK

LINE POST 10' MIN. LENGTH

LINE POST (WOOD)

NOTE: STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRE OF WOVEN FABRIC FOR WOOD LINE POSTS.

RIGHT-OF-WAY MONUMENTS SHALL NOT BE DETACHED BY FORCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGH-OF-WAY MONUMENT AS DIRECTED BY THE ENGINEER.

PRIVATE PROPERTY

CONCRETE FOOTING

CONCRETE POST 4' X 4' X 6' FOR WOOD POSTS

CONCRETE POST 4' X 4' X 6' FOR STEEL POSTS

TYPICAL WIRE FENCE

TYPICAL WIRE FENCE ASSEMBLY

ANCHOR BARRED WIRE TO MINS.

ANCHOR BARRED WIRE TO MINS.

TYPE A FENCE (WOOD POSTS)

TYPE A FENCE (STEEL POSTS)

TYPE B FENCE

PRIVATE FENCE OR HWY INSTALLATION

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE

TYPE A AND B

STANDARD DRAWING WF-1
GENERAL NOTES

These installations to be used where normal fencing causes the collecting of debris in the
channel or depression will not permit normal installation. Installations will be made only where directed by the
engineer.

When a fence line approaches a ditch, gully or depression, the line, ground level, or depressed should be
made to the edge of the depression so that the fence may be spaced to the post in the depression without touching the ground.

In terms of such extreme irregularity, that minor grading will not be feasible. The normal fence shall continue
or grade, or be set in the channel or depressions as shown.

Payment for the type installation used will not be made.

Directly but will be included in the contract unit price bid for wire fence or chain link fence.

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

STANDARD DRAWING

WF-2

20'-0" MAX

20'-0" MAX

20'-0" MAX

25'-0" MAXIMUM
STA. 104+00 INSTALL
18" X 30" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 90 CU. YDS.
STA. 113+54.96 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 205+47 CONSTRUCT
30' x 257" R.C. PIPE CULVERT
ON AN 45° BT. 7260.5 FT. SHARP
WITH FES LT & RT.
I CLASS IV TYPE 3 BEDDING
DIA. + 4 AD. 600 x 2.8 DFS
30° R.C. PIPE + 257 L.R. FT,
30° FES + 2 EACH

STA. 204+63.84 BEGINS SURRELEVATION

STA. 204+00.00 TO STA. 204+18.00
STA. 205+47 CONSTRUCT
30' x 257' R.C. PIPE CULVERT
WITH FES LT. & RT.
(CLASS III) (TYPE I BEDDING)
D.A. = 4 AC. .050 + 2.8 CFS
30' R.C. PIPE = 257 LIN. FT.
30' FES + 2 EACH
STA. 218.00 INSTALL
24" x 63" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 1925 CU. YDS.
STA. 3+60.25 BEGIN SUPERELEVATION (N.C.)

STA. 2+33.29 TO STA. 3+00.00
STA. 10+30, B1 END 100' TRANSITION

STA. 9+30, B1 END SOUTH ROCKINGCHAIR RD,
BEGIN 100' TRANSITION

STA. 8+31 INSTALL
22' x 14' x 34' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 10 OJ, YDS.