ARKANSAS
DEPARTMENT OF TRANSPORTATION
STANDARD ROADWAY DRAWINGS
(ENGLISH)
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ARKANSAS DEPARTMENT OF TRANSPORTATION
STANDARD ROADWAY DRAWINGS
5/19/2022
GENERAL NOTES:

1. The full width of each section shall be poured monolithically.

2. Toe walls to be constructed full width at each end of ditch paving and poured monolithically.

3. Solid sod along ditch paving to be placed within 14 days of ditch paving construction.

4. 3" wide transverse expansion joints shall be placed in concrete ditch paving at 20' intervals. The space shall be filled with approved joint filler complying with AASHTO M213.

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1
CONCRETE COMBINATION CURB AND GUTTER

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

LONGITUDINAL SECTION
ELEVATION

ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB

CONCRETE CURB

INTEGRAL CURB

DETAILS OF MODIFIED CURB
**General Notes:***

- Sawed joint and joint sealant for transverse construction joint.
- Longitudinal construction joint and sawed longitudinal joints shall conform to the details shown for sawed longitudinal joints on standard drawings OR.
- No expansion joints will be used except as structure ends of fixed objects as shown elsewhere in the plans.
- For further information regarding the placement of concrete and reinforcement refer to the governing specifications for "continuously reinforced concrete pavement."

For details of pavement width, pavement thickness and the crown, cross slope refer to typical sections.

Within any area bordered by the feet pavement edge measured parallel to the centerline and value of pavement width measured perpendicular to the centerline, a consistent width of the regular longitudinal steel shall be specified, minimum splice requirement is the nominal diameter of the bar or 15 inches whichever is longer.

At transverse construction joints the regular longitudinal bars shall extend either side of the joint such that the bar splices for the regular longitudinal bars shall be a minimum of four feet from the construction joint. At longitudinal construction joint, if the construction joints extends to continue the regular transverse steel through the joints, the "A" bars shown herein may be deleted.

**Table of Equivalent Longitudinal Reinforcement:**

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<th>No.</th>
<th>Dia.</th>
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Note: Where the proposed pavement width data from the basic design width shown the specified "A" and the adjacent spaces it shall be adjusted as specified by the engineer.

---

**Arkansas State Highway Commission**

**Concrete Pavement Details**

**Continuously Reinforced**

**Standard Drawing CPCR-1**
CONTINUOUSLY REINFORCED STANDARD DRAWING CPCR-3

DETAILS OF TERMINAL JOINTS FOR CONCRETE PAVEMENT

WITH DOWELS

EXPANSION JOINTS

30'-0" 30'-0" 30'-0"

REINFORCED CONTINUOUSLY CONCRETE PAV'T.

A

A

B

B

B

B

B

C

C

4" JOINT

APP. SLAB END BR.

WHEN THIS JOINT CONNECTS TO CONVENTIONAL PAVEMENT USE STANDARD CONSTRUCTION JOINT REFER TO STD. DWG. NOS. CPCR-1 OR CPCR-2

1" JOINT SEAL AS PER SUBSECTION 501.02 (h)(1)

CONCRETE PAV'T. WITH STANDARD C.P.C.R. REINFORCEMENT BOTTOM OF CONC. PAV'T. FOR A DISTANCE OF 5 FEET MUST NOT BE BELOW SUPPORT JOINT FILLER AS PER SUBSECTION 501.02 (h)(1)

4" 1'-6" 1'-6"

10" 10"

20" DOWEL 14" DOWEL COATING JOINT SEAL

2" MIN. CLEARANCE BAR STOP 2" MIN.

BAR

JOINT FILLER BOARD EXPANSION BAR TIE OR WELDING AND BE SECURED BY SLEEVE TO FIT DOWEL CLOSED END DOWEL BAR WELDED AT EACH CHAIR.

EACH DOWEL AND TWO 1"O STEEL BARS GA. WIRE CHAIR AND DOWEL HOLDER AT DOWEL BAR CHAIR CONSISTING OF MIN. #6 T

" MIN. 8" 8" 10 DOWELS PER 10' LANE BAR@ 15" CTRS. 20" LONG DOWEL

" FOR 1"O DOWEL 1"" DIA. HOLE BAR TIE "UNIVERSAL"

#5 BARS @ 6" C-C 12 WF 58 STEEL BEAM

1" STYROFOAM OR EQUAL #30 LB. ROOFING FELT JOINT SEAL REINFORCED CONTINUOUSLY CONC. PAV'T.

1" REGULAR LONG. STEEL HEAVILY GREASED #5 BARS @ 8" C-C #4 BARS X 19'-6" @ 12" C-C 10'-0"

" 10" X 12" X " END PLATE 12 WF 58 WELD FIELD STEEL PLATE 12 WF 58 JIT. FILLER PREMOULDED " X 1" X 8" JOINT SUPPORT IN JT. SUPPORT CONSTR. JOINT FOR PAVING TRAIN 23'-11" CLEAN

NORMAL 24' P.C.C. PAV'T. ADDITIONAL P.C.C. PAV'T. "

16"

12WF 58 SHOP CUT FIELD WELD SHOP CUT JOINT SUPPORT IN JT. SUPPORT CONSTR. JOINT FOR PAVING TRAIN 23'-11" CLEAN

GENERAL NOTES:

OTHER TYPES OF EXPANSION JOINTS MAY BE CONSTRUCTED AT THE OPTION OF THE CONTRACTOR AFTER APPROVAL BY THE ENGINEER.

LOAD TRANSMISSION UNITS AND DOWELS SHALL BE SECURED PARALLEL TO THE PAVEMENT SURFACE AND CENTERLINE.

ALL EXPANSION JOINTS, INCLUDING ALL MATERIALS, DEVICES AND WORK REQUIRED SHALL BE CONSIDERED AS SUBSIDIARY WORK AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PORTLAND CEMENT CONCRETE PAVEMENT. NO DIRECT PAYMENT WILL BE MADE FOR ANY MATERIAL, BAR, CHAIR, STEEL OR ANY OTHER DEVICE SHOWN NOR FOR ITS INSTALLATION.

"T" DENOTES THICKNESS OF SLAB.

NOTE: WELD 12" X 10" X " STEEL PLATE TO ENDS OF BEAM AFTER PLACEMENT OF CONCRETE PAVEMENT.

NOTE: BOARD JOINT FILLER OF SPECIFIED TYPE SHALL BE SECURED ON SUBGRADE IN EXACT POSITION AND LINE AS ILLUSTRATED OR BY OTHER APPROVED DEVICE.

JOINT ASSEMBLY SHALL BE SECURELY FASTENED INTO PLACE PRIOR TO PLACING CONCRETE.

AFTER SECOND PASSAGE OF FINISHING MACHINE REMOVE CONCRETE TO 1" BELOW TOP OF BOARD AND NAIL " X " WOOD STRIP TO TOP OF BOARD FILLER TO FORM JOINT SEAL SPACE.

REPLACE CONCRETE AND FINISH WITH LONGITUDINAL FLOAT.

THE WOOD STRIP SHALL NOT BE REMOVED UNTIL IMMEDIATELY PRIOR TO POURING JOINT SEAL.

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF TERMINAL JOINTS FOR CONCRETE PAVEMENT

CONTINUOUSLY REINFORCED STANDARD DRAWING CPCR-3
LONGITUDINAL CONSTRUCTION JOINT

SECTION A - A

NOTE:

1. On curves in excess of 4°, the length "Y" may be varied to fit the case by the method of calculation shown.

GENERAL NOTES

The sequence of operation on placing the ramp shall be as directed by the engineer. The longitudinal steel shall be placed in a direction approximately parallel to the direction of the ramp.

Tie bars, joint sealant for longitudinal construction joint shall conform to the details shown for SAWED LONGITUDINAL joint on standard drawing CPCRB-6A.

DETAIL FOR JUNCTION WITH FLEXIBLE TYPE PAVEMENT STRUCTURE

LONGITUDINAL CONSTRUCTION JOINT ON STANDARD DRAWING CPCRB-6A.

DETAILS OF ENTRANCE & EXIT RAMPS FOR CONCRETE PAVEMENT CONTINUOUSLY REINFORCED

ARMSASHE STATE HIGHWAY COMMISSION

STANDARD DRAWING CPCRB-4
DETAIL FOR STATE HIGHWAY, CITY STREET, AND COUNTY ROAD TURNOUTS (PAVEMENT PRESERVATION)

DETAIL FOR DRIVEWAY TURNOUTS (PAVEMENT PRESERVATION)
NOTE: REFER TO CROSS SECTIONS FOR VARIABLE LENGTHS

NOTE: HEADWALLS SHALL BE CONSTRUCTED ONLY WHEN SPECIFIED WITH THE ITEM "PIPE SIPHON."
PIPE DIAMETERS ARE AVAILABLE IN TWO INCH INCREMENTS.
DETAILS OF CONCRETE SPILLWAY (TYPE A)

BAR LIST (CONCRETE SPILLWAY)

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<td>D402</td>
<td>2'-2&quot;</td>
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<td>D403</td>
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BAR LIST (DROP INLET)

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<td>2'-9&quot;</td>
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<td>D406</td>
<td>1'-9&quot;</td>
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DETAILED OF DROP INLET

GENERAL NOTES (GRATE & FRAME)
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.

DETAILS OF RIBBED VANE GRATE AND FRAME

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DROP INLETS AND SPILLWAY OUTLET

GENERAL NOTES:
- GRATE AND FRAME SHALL NOT BE PAINTED.
- GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
- APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.

DATE ISSUED: 8-15-91
DATE REVISED: 1-15-92
DATE FILMED: 7-02-98
DATE REVISED: 10-18-96

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD DRAWING FPC-9N
GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE "V" OPENINGS ARE PERPENDICULAR TO THE LIFT OF ACHM SURFACE COURSE SHOWN.


3. GRADE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.

4. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.

5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211 LBS.

6. THE APPROXIMATE DEIGN OF THE FRAME AND FRAME SHALL BE 211 LBS.

GENERAL NOTES (RIBBED VANE GRATE & FRAME)

1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL BE USED IN LIEU OF THE TWO RIBBED VANE GRATES WHEN CALLED FOR IN THE GENERAL NOTES.


3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.

4. THE STEPS SHALL BE OMITTED WHERE 'H' IS LESS THAN 4'-0".

5. ALL EXPOSED CORNERS ARE TO HAVE A 1/8" CHAMFER.

6. THE APPROXIMATE DEIGN OF GRATE AND FRAME SHALL BE AS DEPICTED.

7. WEIGHT OF FRAME & COVER AS SHOWN IS 15'-0" MAX.

8. APPROXIMATE WEIGHT = 333 LBS.

9. APPROXIMATE TOTAL WEIGHT = 333 LBS.

10. RIBBED VANE GRATE WITH FRAME NORMAL.

11. DIAMOND TREAD BE USED IN LIEU OF THE TWO RIBBED VANE GRATES.

12. GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

T-26-0
ADDED NOTE 4
ADDED HEAVY DUTY RING & COVER
- 1'-8" STEPS 16" O.C.

T-32-96
ADDED HEAVY DUTY RING & COVER
- 1'-8" STEPS 16" O.C.

T-90-96
ADDED NOTE 6, REVISED "V" OPENING DIMENSIONS
- 1'-8" STEPS 16" O.C.

ARMS...
**QUANTITIES & DIMENSIONS - ONE GRATE COMPLETE**

<table>
<thead>
<tr>
<th>PIPE DLG.</th>
<th>W-1</th>
<th>W-2</th>
<th>L</th>
<th>S</th>
<th>H</th>
<th>PANEL SIZE</th>
<th>NUMBER OF PANELS</th>
<th>ANGLE DIMEN.</th>
<th>APPROX. CONCRETE QUANT.</th>
<th>QUANT.</th>
<th>CONC. APPROX.</th>
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**BAR LISTS - ONE HEADWALL**

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<td>6</td>
<td>3.0&quot;</td>
</tr>
</tbody>
</table>

**NOTE:** Use 5" anchor bolts on first angle on low end only. Bolts embedded in concrete need not be galvanized.

*Steel Pipe as assembly*

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**ARKANSAS STATE HIGHWAY COMMISSION**

**STEEL GRATE ASSEMBLY (TYPE I)**

**STANDARD DRAWING G-1**
LOCATION OF ANCHOR BOLTS, TYPICAL FOR EACH ANGLE CONNECTION

END ELEVATION

BENDING DIAGRAM

QUANTITIES & DIMENSIONS - ONE CRATE COMPLETE

VARS

SIDE ELEVATION

PLAN

TYPICAL SECTION

DETAIL OF ANGLE CONNECTION

STANDARD GRATE PANEL

NOTE 3/8" STANDARD STEEL PIPES TO BE USED FOR GALVANIZING.

TABLE OF CONTENTS

ARKANSAS STATE HIGHWAY COMMISSION

STEEL GRATE ASSEMBLY

(TYPE II)

STANDARD DRAWING G-2
PLAN

TERMINAL SECTION

ELEVATION

RAIL SPlice

TERMINAL SECTION

SECTION THRU RAIL

DETAILS OF POST CONNECTIONS

CUT STEEL WASHER

NUT

SPICE BOLT

NOTE: POST BOLT SAME EXCEPT LENGTH

CUT STEEL WASHER

AND NUT

BOLT TO BE ON SIDE AWAY FROM APPROACHING TRAFFIC WHERE FEASIBLE.

STEEL POST

WOOD POST

NOTE: POST BOLT SAME EXCEPT LENGTH

WOOD POSTS SHALL BE EITHER

BETTER 9.7 f (1400 f) OR NO. 1

DENSE NO. 1 STRUCTURAL OR

SOUTHERN PINE.

STANDARD DRAWING GR-5

ARKANSAS STATE HIGHWAY COMMISSION
NORMAL ROADWAY WIDTH
WIDTH OF SURFACING

SECTION ON CURVE

NOTE: NORMAL SECTION TO EACH SIDE TO SUPPORT GUARDRAIL.

SHOULDER PIER PROTECTION
MEDIAN PIER

METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

0.02 FT/FT
0.04 FT/FT

DETAILS OF WIDENING FOR GUARDRAIL

SECTION A-A

SECTION B-B

DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY
THREE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POSTS 1-7

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

POSTS 1-6

POST 7

POST 8

GENERAL NOTES:

1. POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE AND VERTICALLY IN CROSS SECTION.
2. WOOD POSTS & WOOD BLOCKS SHALL BE EITHER NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.
THREE BEAM GUARDRAIL CONNECTION AT BRIDGE ENDS

NOTE: THIS DRAWING SHOWS THE UPDATED GUARDRAIL DETAILS AS PER THE NEW GUIDELINES. THE NEW GUARDRAIL DETAILS WILL BE IMPLEMENTED SOON.
NOTE: SIDE TYPE A-1 IS FOR USE WITH EXISTING PAVEMENT.

NOTE: SIDE TYPE A IS FOR USE WITH PROPOSED PAVEMENT.

PLAN OF CONCRETE BARRIER WALL

GENERAL NOTES FOR CONCRETE BARRIER WALLS

1. ALL BARRIER WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 631 OF THE STANDARD SPECIFICATIONS.

2. CONTRACTOR shall not remove or change unless such changes are authorized in writing by the Engineer.

3. ALL CONTRACTION JOINTS TO BE FORMED IN FRESH CONCRETE ON TOP AND IN SIDES OF BARRIER WALL.

4. DOWEL BARS FOR BARRIER TYPES MEDIAN A, SIDE A WILL NOT BE REQUIRED IF BARRIER AND EXPANSION JOINTS ARE NOT PERMITTED AT THE LEVEL BAR LOCATION.

5. CONTRACTION JOINTS ARE NOT PERMITTED AT THE DOWEL BAR LOCATIONS.

6. ALL EXPOSED EDGES OF CONCRETE BARRIER WALL SHALL HAVE A 3" CHAMFER.

7. THE DESIGN OF BARRIER WALL TYPES SIDE C, D & E IS BASED ON A MINIMUM FOUNDATION BEARING CAPACITY OF ONE TON PER SQUARE FOOT. UNSTABLE FOUNDATION MATERIAL SHALL BE REMOVED AND REPLACED TO PROVIDE A FIRM FOUNDATION AS DIRECTED BY THE ENGINEER.

8. SPACING BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 400 FT FOR BARRIER TYPES MEDIAN A AND 1000 FT FOR BARRIER TYPES SIDE C, D & E. EXPANSION JOINTS SHALL BE FORMED USING 1" PREFORMED JOINT FILLER. CONTINUOUS REINFORCEMENT SHALL BE CUT AT THE FOUNDATION JOINTS.

9. CONSTRUCT DRAINAGE OPENINGS AT EVERY 50' O.C. AND AT SAGS IF SHOWN ON THE PLANS. MEDIAN A AND SIDE A OR 120 FT FOR BARRIER TYPES SIDE C, D & E. EXPANSION JOINTS SHALL BE FORMED USING 1" PREFORMED JOINT FILLER. CONTINUOUS REINFORCEMENT SHALL BE CUT AT THE FOUNDATION JOINTS.

10. MAINTAIN 3" CLEARANCE ON ALL FOOTING REINFORCEMENT AND 2" CLEARANCE ON ALL DOWEL BARS SHALL NOT BE PLACED WITHIN 3" OF DRAINAGE OPENINGS.

11. REFER TO BARRIER MOUNTED LUMINARE SPECIAL DETAILS FOR INFORMATION REGARDING OTHER REINFORCEMENT.

12. BARRIER REINFORCING BARS ANCHORED INTO EXISTING CONCRETE PAVEMENT SHALL BE INSTALLED CONDUIT RUNS.

13. REFER TO STD. DRWG. GR-10 SPECIAL END SHOE FOR INSTALLATION.

14. REFER TO STD. DRWG. GR-10 TRANSITION SECTION - NOTE.

15. REFER TO STD. DRWG. GR-6 & GR-10 W-BEAM SECTION - PIER PROTECTION TYPE A.

16. REFER TO STD. DRWG. GR-10 STANDARD SPECIFICATIONS, 2014 EDITION.

SECTION A-A CONCRETE BARRIER WALL (SIDE TYPE A)

SECTION A-A CONCRETE BARRIER WALL (SIDE TYPE A-I)

NOTE: SIDE TYPE A IS FOR USE WITH PROPOSED PAVEMENT.

NOTE: SIDE TYPE A-I IS FOR USE WITH EXISTING PAVEMENT.
Plan - Guardrail Terminal (Type I)

Section 1

Elevation - Guardrail Terminal (Type I)

Section 2

Detail of Terminal Anchor Post (Type I)

Note: Guardrail Terminal

Note: Anchor post and terminal anchor post assembly

Note:Splice bolt

Note: Class A or S

Note: Galvanize upper 4 Flue Anchor and Anchor Assembly

Note: New anchor, A.S.H.T.O. M-164 high strength bolts shall be used with the full anchors for each bolt, installed in accordance with section 807.71(d) of the standard specifications.
GENERAL NOTES

WEED HOLES AND DRAINAGE SHALL BE PROVIDED IN EACH PRECAST CULVERT SECTION TO MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.

LEAN GROUT CAPITALS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

BAR BENDING DIAGRAM

BAR LIST

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<th>NO.</th>
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<th>(INCHES)</th>
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<tbody>
<tr>
<td>1</td>
<td>#4</td>
<td>3'-2&quot;</td>
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<tr>
<td>2</td>
<td>#4</td>
<td>1'-8&quot;</td>
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NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT.
REINFORCED CONCRETE ARCH PIPE DIMENSIONS

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

CONSTRUCTION SEQUENCE
1. Place the reinforcing material to grade, do not compact.
2. Install the pipe to the grade.
3. Compact the backfill material around the pipe to grade height.
4. Grout at the splices.
5. Complete the backfill material as specified above.

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

NOTE: If the fill height exceeds 50 feet, a special material shall be used.

NOTE: For minimum cover values, "H" shall include a minimum of 12 inches of pavement.

NOTE: If the fill height exceeds 50 feet, a special material shall be used.

NOTE: TYPE 1 INSTALLATION WILL NOT BE USED.

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NOTE: TYPE 1 INSTALLATION WILL NOT BE USE
### Corrugated Steel Pipe (Round)

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<th>Steel Thickness (Inches)</th>
<th>Minimum Height of Pipe (Inches)</th>
<th>Maximum Height of Pipe (Inches)</th>
<th>Alum. Thickness (Inches)</th>
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<td>0.164</td>
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**Construction Sequence**
1. Place structural bedding material next to pipe, do not compact.
2. Install pipe flanges inside the proper pipe size for the pipe to be installed.
3. Use pipe flanges to install pipe properly.
4. Compact structural bedding material.

### Corrugated Aluminum Pipe (Round)

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<th>Minimum Height of Pipe (Inches)</th>
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<th>Alum. Thickness (Inches)</th>
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<td>0.105</td>
<td>8</td>
<td>12</td>
<td>0.164</td>
</tr>
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### General Notes
1. The pipe culverts shall conform to the minimum standards and requirements as specified in the plans and specifications.
2. The pipe shall be installed with a maximum deviation of the pipe diameter from the plane of the pipe center line.
3. The pipe shall be installed with a maximum difference in elevation of the pipe diameter from the plane of the pipe center line.
4. The pipe shall be installed with a maximum deviation of the pipe diameter from the center line of the pipe.
MINIMUM TRENCH WIDTH

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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<th>Pipe Diameter (&quot;D&quot;)</th>
<th>Trench Width (&quot;W&quot;)</th>
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<tr>
<td>48&quot;</td>
<td>4'-0&quot;</td>
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GENERAL NOTES

1. PIPE SHALL CONFORM TO ASHSAH M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISIONS.

2. THE STRUCTURAL BEDDING AREA SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES.

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

4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES.

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

6. FOREST MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING AND/OR BACKFILL.

7. SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."

MINIMUM TRENCH WIDTH

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

<table>
<thead>
<tr>
<th>Pipe Diameter (&quot;D&quot;)</th>
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<td>3'-0&quot;</td>
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<td>48&quot;</td>
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MINIMUM COVER FOR CONSTRUCTION LOADS

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<th>Minimum Cover (&quot;H&quot;)</th>
<th>Minimum Cover (&quot;H&quot;)</th>
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</thead>
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<td>&quot;W&quot; &lt; 10'-0&quot;</td>
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<td>&quot;W&quot; &lt; 10'-0&quot;</td>
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CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

NOTE:

1. SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."

LEGEND:

- ----- = STRUCTURAL BACKFILL
- ----- = UNCOMPACTED HAUNCH AREA
- ----- = STRUCTURAL BEDDING MATERIAL
- ----- = UNEARTHED SOIL

ARKANSAS STATE HIGHWAY COMMISSION
PLASTIC PIPE CULVERT
(HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

DATE ISSUED: 12-15-11
DATE REVISED: 11-17-10
1. Pipe shall conform to ASTM F949, Cell Class 1245. Installation shall conform to Job Special Provision Trench Sequencing.

2. Plastic pipe culvert design shall conform to AASHTO LRFD Bridge Design Specifications, Fifth Edition. In lieu of selected material, Type 2 embankment and trench installations are permitted.

3. The maximum allowable trench width shall be the minimum width plus a sufficient width to ensure working room to properly and safely place and compact backfill and other backfill materials.

4. The structural bedding shall be placed and compacted to ensure the stability of the structure. The bedding material must be placed as directed by the engineer. The bedding material shall be placed in the middle of the excavation, and the bedding material shall be placed and compacted to ensure the stability of the structure.

5. The structural backfill shall be placed and compacted in the middle of the excavation. The structural backfill shall be placed and compacted to ensure the stability of the structure.

6. The structural bedding shall be placed and compacted to ensure the stability of the structure. The bedding material must be placed as directed by the engineer. The bedding material shall be placed in the middle of the excavation, and the bedding material shall be placed and compacted to ensure the stability of the structure.

7. The structural bedding shall be placed and compacted to ensure the stability of the structure. The bedding material must be placed as directed by the engineer. The bedding material shall be placed in the middle of the excavation, and the bedding material shall be placed and compacted to ensure the stability of the structure.

8. PVC pipes shall be placed and compacted as directed by the engineer. PVC pipes shall be placed and compacted to ensure the stability of the structure.
### Plastic Pipe Culvert (Polypropylene)

**General Notes:**

1. PIPE TYPES USED TO DESIGN STRUCTURAL PIPE MATERIALS SHALL CONFORM TO THE MANDATORY, WIDE, GROUND, AND RECOMMENDED INSTALLATION PROCEDURES.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO THE REQUIREMENTS FOR THE INSTALLATION OF PIPE MATERIALS.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING, OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND EMBANKMENT.

**Trench Width and Minimum Cover:**

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**Minimum Trench Width Based on Fill Height "H"**

- MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

**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 MULTIPLE INSTALLATIONS OF SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4).
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND EMBANKMENT.

**Embankment and Trench Installations:**

- EMBANKMENT AND TRENCH INSTALLATIONS SHALL INCLUDE A MINIMUM 12'' AREA OF PAVEMENT AND/OR BASE.

**Legend:**

- **N** = FULL WEIGHING
- **1** = UNDERGROUND PIPE MOUNTED OR OTHER APPROVED METHOD
- **2** = STRUCTURAL BACKFILL MATERIAL
- **3** = EMBANKMENT MATERIAL
- **4** = UNDERLINED SOIL

**Arkansas State Highway Commission**

**Plastic Pipe Culvert (Polypropylene)**

**Standard Drawing PCP-3**
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING PM-2

ACCESS CONTROLLED ROADWAYS

ON Pavement Marking Details

Date

Revision

Filmed

4-26-96

7-02-98

9-12-13

Raised Pavement Markers

Rev. Detail of Standard

Placed in Use

2-2-95

Rev. Lane Width on Exit Ramp

Added Dimensions & Quantities;

Changed Types to Roman Numerals

Removed Hashmarks

5-18-00

8-22-02

Rev. Entrance & Exit Ramps

Added & Revised Notes;

11-18-04

Rev. Entronse & Exit Ramps

Added & Revised Notes;

6-3-10

Rev. Entronse & Exit Ramps

Added & Revised Notes;

11-17-10

Rev. RPMs Accordiug to Latest Policy

7-26-12

Rev. RPM Notation

12-8-16

Rev. Width of Striping

9-14-19

Added Crosshatch Markings on Exit Ramps

Rev. Dotted Pav't Markings;

05-14-20

Removed Crosshatch Markings on Exit Ramps

LATEST REVISION.

THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES",

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH

MARKERS SHALL BE DETERMINED BY THE ENGINEER.

AND THE FINAL LOCATION OF THE STRIPING AND PAVEMENT

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY

"D" = ACCEL LANE LENGTH + TAPER

(BASED ON 700' ACCEL. LANE + 300' TAPER)

PAVEMENT MARKING QUANTITIES

RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 48 EACH

BEGIN RAMP Pavememr Marking

2 80'- (29) STANDARD TYPE II R.P.M. @ 10' O.C.

END RAMP PAVEMENT MARKING

60'- (14) STANDARD TYPE II R.P.M. @ 10' O.C.

NOTE:

THEORETICAL GORE

40' (TYP)

10'

30' (TYP.)

4' SHLDR. (TYP.)

10' SHLDR. (TYP.)

6" YELLOW LINE

30'-0"

23'-11"

4'1"

2'-0"

2'-0"

1'-6"

7'-2"

8'

5

6" WHITE LINE

6" WHITE LINE

6" WHITE LINE

6" WHITE LINE

15'אה

24'

375'-(38) STANDARD TYPE II R.P.M. @ 10' O.C.

1520'-STANDARD TYPE II R.P.M. @ 40' O.C. (TYP.)

VAR.-STANDARD TYPE II R.P.M. @ 40' O.C. (TYP.)

VARIABLE STANDARD TYPE II R.P.M. SPACED @ 24' O.C.

30'-(TYP.)

12" WHITE = 280 LIN. FT.

12" WHITE = 370 LIN. FT.

TO THE ARDOT QUALIFIED PRODUCTS LIST.

APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING

MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING

TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR

DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE

NOTE:

DETERMINATION WORK FOR FIXED PAVEMENT MARKERS ARE

DETERMINED BASED ON THE WIDTH OF THE ROADWAY IN QUESTION.

NOTICE: DETERMINATION WORK FOR FIXED PAVEMENT MARKERS ARE

DETERMINED BASED ON THE WIDTH OF THE ROADWAY IN QUESTION.

PAVEMENT MARKER NOTATION

ENTRANCE RAMP

EXIT RAMP

6" WHITE = 815 LIN. FT.
NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE I. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS" UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR 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 EXISTING 4" PIPE UNDERDRAINS SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR 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." THE 250' DISTANCE MAY BE EXCEEDED AT SAGS AND AT 250' INTERVALS ON GRADIENTS. THE 250' DISTANCE MAY BE EXCEEDED WHERE NECESSARY FOR AN ACCEPTABLE OUTLET. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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 REMOVAL AND DISPOSAL OF EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GRADE THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

8. PROVIDE OUTLET SHAPE SLOPE TO FLOW NO. 4 OR 6 " O.D. PIPE ON GRADE.

9. THE WIDTH OF THE TRENCH AT THE TOP. LAP FABRIC 12" OR O.D. PIPE +8".

10. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

11. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND GRANULAR MATERIAL, LAPPED 12" OR DRAIN PIPE ON GRADE. WHEN PLACED ALONG PAVEMENT EDGE WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR DRAIN PIPE ON GRADE.

12. GRANULAR MATERIAL SHALL BE WRAPPED ALL AROUND & LAPPED AT TOP.

13. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO EXISTING 4" PIPE UNDERDRAINS SHALL BE INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

14. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

15. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS." THE 250' DISTANCE MAY BE EXCEEDED AT SAGS AND AT 250' INTERVALS ON GRADIENTS. THE 250' DISTANCE MAY BE EXCEEDED WHERE NECESSARY FOR AN ACCEPTABLE OUTLET. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

16. 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 REMOVAL AND DISPOSAL OF EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.
REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

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

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE R.C. BOX CULVERT.

STANDARD SPECIFICATIONS.

MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDES OF RC BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PENETRATION of THE MEMBRANE SHALL BE MADE FOR THIS ITEM BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BEING FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL MUST BE AS SHOWN IN MANUAL OF STANDARD PRACTICE PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 1-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 3/16 INCH.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL MUST BE AS SHOWN IN MANUAL OF STANDARD PRACTICE PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 1-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 3/16 INCH.

NOTES:


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

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

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REPLACEMENT BAR LENGTHS TABLE

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

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE R.C. BOX CULVERT. NO PENETRATION of THE MEMBRANE SHALL BE MADE FOR THIS ITEM BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BEING FOR THE R.C. BOX CULVERT.

STANDARD SPECIFICATIONS.

MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDES OF RC BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PENETRATION of THE MEMBRANE SHALL BE MADE FOR THIS ITEM BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BEING FOR THE R.C. BOX CULVERT. 

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL MUST BE AS SHOWN IN MANUAL OF STANDARD PRACTICE PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 1-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 3/16 INCH.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL MUST BE AS SHOWN IN MANUAL OF STANDARD PRACTICE PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 1-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 3/16 INCH.

NOTES:


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

ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1
GENERAL NOTES:
ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.
EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.
EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

SECTION B-B
DETAILS FOR NEW CHANNELS

SECTION A-A
DETAILS THROUGH EXISTING CHANNELS

EXISTING CHANNEL

CHANNEL CHANGE

PLAN
PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.
PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1, OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2.

REINFORCING DETAILS AND CULVERT DIMENSIONS SAME AS STANDARD CULVERT DRAWINGS.

THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.

IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.

REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.

ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

NOTE: NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION. SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1 OR METHOD 2.
NOTE:
The distance from the railroad crossing marking to the nearest track may vary according to the approach speed and the sight distance of the vehicular traffic approaching. It probably should not be less than 50 feet.

A three lane roadway should be marked with a center lane for two-lane approach operation on the approach to a crossing.

On multi-lane roads, the transverse bands should extend across all approach lanes, and individual RR symbols should be used in each approach lane.

Refer to Standard Alphabet for Highway Signs and Pavement Markings for RR symbol details.

For Railroad Crossing

Pavement Marking to Be Symmetrical About Railroad

Detail of Pavement Markings

Lane C.L.

Width may vary according to lane width

8'-0"

6'-0"

20'-0"

6'-0"

2'-0"

2'-0"

25'

25'

10'

50'

6" Yellow Continuous Line

6" Yellow Skip Line

VARIABLE

MARKINGS FOR RXR SYMBOLS DETAILS.

REFER TO STANDARD ALPHABET FOR HIGHWAY SIGNS AND RXR SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.

Extends Across All Approach Lanes, and Individual RR Symbols Should Be Used in Each Approach Lane.

Refer to Standard Alphabet for Highway Signs and Pavement Markings for RR Symbol Details.
Pole Foundation Minimum Dimensions and Steel Reinforcing.

<table>
<thead>
<tr>
<th>Depth (F'C)</th>
<th>Pole Diameter</th>
<th>Tie Spacing</th>
<th>Steel Reinforcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>350 psi</td>
<td>30&quot;</td>
<td>36&quot;</td>
<td>#4</td>
</tr>
<tr>
<td>420 psi</td>
<td>36&quot;</td>
<td>42&quot;</td>
<td>#4</td>
</tr>
<tr>
<td>500 psi</td>
<td>42&quot;</td>
<td>42&quot;</td>
<td>#4</td>
</tr>
</tbody>
</table>

**Notes:**
- Concrete shall be poured in the dry and all exposed corners shall be equally spaced.
- Steel reinforcing shall conform to AASHTO M31 or M53, Grade 40 (Yield Strength = 40,000 psi).
- All concrete shall be classified as Class "S" with a minimum 28-day compressive strength.

**Typical Foundation Details:**
- The shield shall be maintained continuous (through all splices).
- The communication cable shield shall be tied to the ground at one point only, indicating the shield shall be maintained continuous through all splices. Please refer to special provisions for procedures in special provisions.
- The communication cable shield shall be tied to the ground at one point only, indicating the shield shall be maintained continuous through all splices. Please refer to special provisions for procedures in special provisions.

**Grounding:**
- The ground rod shall be fusion welded to a 1C/#8 A.W.G. solid copper ground wire. Attachment to the longitudinal Charpy V-notch test specified in subsection 807.05 of the standard specifications.
- The primary ground may be by an approved clamp. The rod is to be located in the concrete fill pit next to the pole on the pole, indicating the concrete fill pit next to the pole on the pole.
COMMUNICATION CABLE CROSSING
BETWEEN SPAN WIRE POLES

Note: Communication cable shield shall be tied to ground at only one point (master cabinet). The shield shall be maintained continuous through all splices. Please refer to testing procedures in special provisions.

TYPICAL WIRING DIAGRAM
FOR COMMUNICATION CABLE

Arkansas State Highway Commission

Span Wire Installation with Communication Cable Crossing

Date: 9-12-13
Issued as Standard Drawing 50-2
ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M53, GRADE 40 (YIELD STRENGTH=40,000 PSI).

ALL CONCRETE SHALL BE CLASS "S" WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH F'C=3500 PSI. CONCRETE ITEM 701 FOR THE CONTROLLER. THE CONCRETE PULL BOX AND E.G.C. CONDUCTOR SHALL BE PAID FOR SEPARATELY.

CONTROLLER. PAYMENT FOR THE GROUND ROD AND "NMC SHALL BE INCLUDED IN ITEM 713 FOR SIGNAL POLES AND ELECTRICAL CONDUIT.

LEVELING NUT

FLAT WASHER

HEX NUT

ON THE PLANS.

BE THE SAME SIZE AS THE CONDUIT FROM THE SWEEPING "L" IN THE FOUNDATION SHALL

ANCHOR BASE

THE CONTROLLER POWER SUPPLY GROUND BUSS SHALL BE BONDED TO THE FOUNDATION GROUND A MINIMUM OF 10' BELOW CABINET FOUNDATION.

ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. THE GROUND ROD SHALL EXTEND THE ANCHOR BOLTS AND SWEEPING "L" CONDUIT SHALL BE PLACED IN THE FOUNDATION IN SPAN WIRE ASSEMBLIES WILL REQUIRE TETHER UNLESS OTHERWISE NOTED ON PLAN SHEETS.

BE OF THE SAME SHAPE,

BOLT CIRCLE

TYPICAL SPAN WIRE ASSEMBLY

NOTES: SPAN WIRE POLES SHALL BE國內 A MINIMUM OF FOUR (4) FEET BENEATH GRASS OR SOIL:

EXTENSION POLES AND PIERS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS FOR THE SPECIFIED DIAMETER OF ROUND POLES AND SQUARE, ALL POLES AND PIER NEAR THE GROUND SHALL BE BONDED TO A BARE CONDUCTOR, WHERE AVAILABLE. SPAN WIRE ASSEMBLIES SHALL REQUIRE TETHER UNLESS NOTED ON PLAN SHEETS.

THE GROUND ROD SHALL EXTEND INTO THE GROUND A MINIMUM OF 10' FROM THE BASE OF THE POLE.anker base

LEVELING NUT

FLAT WASHER

HEX NUT

ON THE PLANS.

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THE GROUND ROD SHALL EXTEND INTO THE GROUND A MINIMUM OF 10' FROM THE BASE OF THE POLE.
1. RIGHT HAND SLIDE SHOWN, LEFT SIDE OPPOSITE.

2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.

3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF TO SLIDE ASSEMBLY.

NOTES:
- DRAWER PLAN VIEW
- RIGHT SIDE ASSEMBLY
- FRONT VIEW
- 13.25" x 14.00"
CONDUIT ENTRY TO EXISTING POLE BASE

ANCHOR BASE

CONDUIT ENTRY TO EXISTING CONTROLLER CABINET

TYPE "HD" CONCRETE PULL BOX DETAIL

NOTE:

ALL TYPE 1 AND TYPE 2 HD CONCRETE PULL BOXES ARE INSTALLED WITH AN HOLE OF CONCRETE 6" IN DIA AND 7" IN DEPTH. ALL BARS SHALL BE INSULATED IN THE HOLE OF THE TYPE HD CONCRETE PULL BOX. THE CONCRETE PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GROUND UNTIL STEELWORK BONDED TO GROUND LUG ON POLE AND OTHER E.G.C. CONDUCTORS. CONCRETE SHALL BE CLASS "S" TYPE 1 CONCRETE BONDED TO GROUND LUG IN THE HOLE ON ALL SIDES OF THE CONCRETE PULL BOX BONDED IN CONCRETE.

NOTES:

ENTRY TO CABINET SHALL BE THROUGH A HOLE IN THE BASE ENOUGH TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.

NOTE:

ANCHOR BASE

LEVELING NUT

FLAT WASHER

FLAT WASHER

LEVELING NUT

1 1/2" CHAMFER FOUNDATION

1/2" DEEP HOLE

1/2" 1/4-20 CONDUIT

1/2" NMC BUSHING

1/2" COPPERWELD GROUND ROD

GROUND ROD 10' MIN.

EARTH

ROADWAY SURFACE

NOTE:

#6 REINF. BARS

TO BE GRADE 60

ALL REINFORCING BARS

ADDED REINFORCING TO BOX APRON

REVISED CLEARANCE AT CURB ENTRY

ADDED & REVISED CONDUIT ENTRY

REVISED GROUNDING

ISSUED AS STANDARD DRAWING

REVISED PULL BOX DEPTH

12-27-99 REVISED

01-04-02 REVISED

11-16-17 REVISED

09-02-15 REVISED NOTES

09-12-13 REVISED

11-18-98 ISSUED

07-02-01 REVISED

07-31-08 REVISION

06-23-04 FILMED

ARKANSAS STATE HIGHWAY COMMISSION

HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6
NOTE: USE LEFT TURN HEADS WHERE 1 ON 2 AND 2 ON 3 IS NOT CALLED FOR.

INSTALLATION HEADS SHOWN ON THESE SHEETS SHALL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.

GENERAL NOTES:

1. FOUR SECTION "PROTECTED/PERMISSIVE" LEFT TURN HEADS SHOULD BE PLACED AT A DISTANCE OF 2 FEET TO THE CURB SIDE OF THE APPROACHING LEFT TURN LANE.

2. LEFT TURN HEADS SHALL BE PLACED ON THE CURB SIDE OF THE APPROACHING LEFT TURN LANE.

3. RIGHT OF LANE LINE

4. SIGNAL HEAD PLACEMENT IS TO BE LESS THAN 8 FEET SPACING BETWEEN HEADS ON CENTER, CENTERED HORIZONTALLY TO THE APPROACH.

5. SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE SPACING AS SHOWN ON DETAIL SHEET AT THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL HEAD LOCATED BETWEEN 40 FEET AND 70 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 40-5 OF 2009 MUTCD.
NOTES:

SPAN WIRE POLES SHALL BE MOUNTED A MINIMUM OF FOUR FEET BEHIND CURB OR SHOULDER.

SPAN WIRE ASSEMBLIES SHALL REQUIRE RETIES UNLESS OTHERWISE NOTED ON PLAN SHEETS.

CABLE TIES SHALL BE SUITABLE FOR OUTSIDE USE (BLACK).

SPAN WIRE ASSEMBLIES WILL REQUIRE TETHER UNLESS OTHERWISE NOTED ON PLAN SHEETS.

SPAN WIRE POLES SHALL BE MOUNTED A MINIMUM OF FOUR (4') FEET BEHIND CURB OR SHOULDER.

NOTES:

GENERAL NOTES:

DESIGN SPECIFICATIONS ASAD IN STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION 2000-2005 AND 2008 REVISION.

CONSTRUCTION SPECIFICATIONS ASAD IN STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

THE FLASHING BEACON ASSEMBLY SHALL INCLUDE LIGHTING AND RFI SUPPRESSION.

GALVANIZED STEEL CONDUIT, TRAFFIC SIGNAL CABLE, TRAFFIC SIGNAL HEAD, 2-WAY/3-WAY BOARD WITH YELLOW LENSES ON MAIN APPROACH PLUS FLASHERS, RED LENSES ON MINOR APPROACH PLUS FLASHERS PLUS A SOLID STATE CALANDER. 

DATE: 11-21-95

ISSUED

REVISED NOTES

ISSUED AS STANDARD DRAWING

REVISION

ISSUED AS STANDARD DRAWING

REVISION

ISSUED AS STANDARD DRAWING

REVISION

ISSUED AS STANDARD DRAWING SD-10

TRAFFIC SIGNAL LEGEND

SYMBOLO

DEFINITION

ๆ

STOP

5' MIN. 10' MAX.

MINIMUM HEIGHT 28'

SERVICE POLE

SERVICE DISCONNECT

SERVICE POLE

SERVICE BREAKER

SERVICE BREAKER

WIRE SUPPORTING 2 SIGNALS

MAST ARM & POLE WITH FOUNDATION

SPAN WIRE SUPPORT POLES & SPAN

DIRECTION OF TRAFFIC IN THE LANE

ARROW IN ROADWAY LANE INDICATES

SUPPORTING 2 SIGNALS

PHASE A IN PHASING DIAGRAM

LOOP WIRING

LOOP DETECTOR

SIGNAL HEADS FROM CENTERLINE OF

THE DIFFERENCE IN ELEVATION OF THE

UNTIL PLACED INTO OPERATION.

SIGNAL HEADS SHALL REMAIN SACKED

NOTE:

ALL ELECTRICAL GROUND CONDUCTORS IS BONDED TO ALL METAL ENCLOSURES

NOTE:

EACH SIGNAL SHALL BE INSTALLED ON THE CURB SIDE OF THE ROADWAY.

NOTE:

EACH SIGNAL SHALL BE INSTALLED ON A PRECAST CONCRETE PULL BOX.

NOTE:

EACH SIGNAL PULL BOX IS TO BE INSTALLED IN A PRECAST CONCRETE PULL BOX.

NOTE:

EACH SIGNAL SHALL BE INSTALLED ON TOP OF THE STOP SIGN POST TO AVOID OBSTRUCTION OF VIEW.

NOTE:

EACH SIGNAL SHALL BE IN A PAVEMENT EMBLEM."
DETAIL OF
SIGN SUPPORT ASSEMBLY

WIRING DIAGRAM

NOTES:
1. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), DIVISION 700, TRAFFIC CONTROL FACILITIES.
2. THE FLASHING BEACON ASSEMBLY SHALL INCLUDE LIGHTING SUPPRESSORS, TRAFFIC SIGNAL CABLE, TWO 12" TRAFFIC SIGNAL HEADS (1SEC., 1 WAY) WITH YELLOW LENSES, FLASHING BEACON CONTROLLER AND A SOLID STATE CALENDAR DATE/TIME CLOCK WITH DAYLIGHT SAVING TIME PROGRAMMING AND 48 HOUR POWER FAIL PROTECTION. DATE/TIME CLOCK REQUIRED ONLY FOR SCHOOL ZONES. SIGNAL HEADS SHALL BE DESIGNED TO REFLECT ALTERNATELY.
3. ANY FITTINGS, BANDS, GROUND ROSE OR ACCESSORIES NECESSARY TO MOUNT CONDUIT AND FLASHING BEACON CONTROLLER SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM FOR FLASHING BEACON CONTROLLER.
4. ALL COUPLINGS, TEES, FLANGES AND HARDWARE NECESSARY TO MOUNT SIGNAL HEADS SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM FOR FLASHING BEACON CONTROLLER.
5. THE CITY/COUNTY SHALL BE RESPONSIBLE FOR PROVIDING, THROUGH A LOCAL UTILITY COMPANY, A SERVICE POINT AND POWER TO THE FLASHING BEACON ASSEMBLY. THE CITY/COUNTY SHALL BE RESPONSIBLE FOR PROVIDING EXISTING SIGNAL HEADS. THE CONTRACTOR SHALL REMOVE SIGNAL HEADS AND REMOUNT THEM AFTER FLASHING BEACONS ARE INSTALLED.
6. FLASHING BEACON INSTALLATION FOR HAZARDOUS CONDITIONS (SD-13) FOR SCHOOL ZONES. SIGNAL HEADS SHALL BE WIRED TO FLASH ALTERNATELY.
7. THE FLASHING BEACON ASSEMBLY SHALL INCLUDE LIGHTING SUPPRESSORS, TRAFFIC SIGNAL CABLE, TWO 12" TRAFFIC SIGNAL HEADS (1SEC., 1 WAY) WITH YELLOW LENSES, FLASHING BEACON CONTROLLER AND A SOLID STATE CALENDAR DATE/TIME CLOCK WITH DAYLIGHT SAVING TIME PROGRAMMING AND 48 HOUR POWER FAIL PROTECTION. DATE/TIME CLOCK REQUIRED ONLY FOR SCHOOL ZONES. SIGNAL HEADS SHALL BE DESIGNED TO REFLECT ALTERNATELY.
8. ANY FITTINGS, BANDS, GROUND ROSE OR ACCESSORIES NECESSARY TO MOUNT CONDUIT AND FLASHING BEACON CONTROLLER SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM FOR FLASHING BEACON CONTROLLER.
9. ALL COUPLINGS, TEES, FLANGES AND HARDWARE NECESSARY TO MOUNT SIGNAL HEADS SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM FOR FLASHING BEACON CONTROLLER.
10. THE CITY/COUNTY SHALL BE RESPONSIBLE FOR PROVIDING, THROUGH A LOCAL UTILITY COMPANY, A SERVICE POINT AND POWER TO THE FLASHING BEACON ASSEMBLY. THE CITY/COUNTY SHALL BE RESPONSIBLE FOR PROVIDING EXISTING SIGNAL HEADS. THE CONTRACTOR SHALL REMOVE SIGNAL HEADS AND REMOUNT THEM AFTER FLASHING BEACONS ARE INSTALLED.
DETAIL OF
SIGN SUPPORT ASSEMBLY

TYPICAL INSTALLATION

NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), DIVISION 700, TRAFFIC CONTROL FACILITIES.

2. THE FLASHING BEACON ASSEMBLY SHALL INCLUDE LIGHTING SUPPRESSORS, MINIMUM SIGNAL HEADS WITH YELLOW LENSES, FLASHING BEACON CONTROLLER AND A SOLID STATE CIRCUIT BREAKER WITH DAYLIGHT SAVING TIME PROGRAMMING, AND 48 HOUR POWER FAIL PROTECTION. DATE THE CLOCK REQUIRED ONLY FOR SCHOOL ZONES, SIGNAL HEADS SHALL BE HIER TO FLASH ALTERNATELY.

3. ANY FITTINGS, BANDS, GROUND ROG OR ACCESSORIES NECESSARY TO MOUNT SIGNAL AND FLASHING CONTROLLER SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM FOR FLASHING BEACON CONTROLLER.

4. ALL COUPLINGS, TEES, CLAMPS AND HARDWARE NECESSARY TO MOUNT SIGNAL HEADS SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM FOR TRAFFIC SIGNAL HEADS. THE CONTRACTOR SHALL REMOVE SIGNS AND RE-INSTALL THEM AFTER FLASHING BEACONS ARE INSTALLED.

5. THE CITY/COUNTY SHALL BE RESPONSIBLE FOR PROVIDING, THROUGH A LOCAL UTILITY COMPANY A SERVICE POINT AND POWER TO THE FLASHING BEACON CONTROLLER. THIS NOTE APPLIES ONLY WHEN USED AT A SCHOOL LOCATION.

ARKANSAS STATE HIGHWAY COMMISSION
FLASHING BEACON INSTALLATION
FOR HAZARDOUS CONDITIONS
AND SCHOOL ZONES

ARIZONA STATE HIGHWAY COMMISSION
FLASHING BEACON INSTALLATION
FOR HAZARDOUS CONDITIONS
AND SCHOOL ZONES

STANDARD DRAWING SD-14
**TYPICAL INSTALLATION**

- **Metal Band or Clamp**
- **1" Galvanized Steel Conduit**
- **3 LB. U-Channel Post**
- **3 LB. U-Channel Post Banded to Post**

**DETAIL OF SIGN SUPPORT ASSEMBLY**

- **Metal Band or Clamp**
- **1" Galvanized Steel Conduit**
- **3 LB. U-Channel Post**
- **3 LB. U-Channel Post Banded to Post**

**WIRING DIAGRAM**

- **Solar Panel**
- **Flashing Beacon Controller**
- **Flashing Beacon Controller with Timeclock**
- **F 1" Galvanized Steel Conduit Banded to Post**
- **F 1" Galvanized Steel Conduit Banded to Post**
- **F 1" Galvanized Steel Conduit Banded to Post**
- **F 1" Galvanized Steel Conduit Banded to Post**

**NOTES:**

1. All construction shall conform to the Standard Specifications for Highway Construction, current edition, Division 102, Traffic Control Facilities.

2. The flashing beacon assembly shall include lighting suppressors, traffic signal cable, two (2) traffic signal heads, (1) yellow lens, (1) controller, (1) calendar date, (1) date time clock, (1) state calendar date, (1) clock with daylight saving time programming and 48 hour power failure protection. The clock required only for school zones. Signal heads shall be powered at 120 volts, alternating current. The controller shall be powered at 24 volts, direct current. The controller shall be solar powered.

3. Any fittings, bands, ground rod or accessories necessary to mount conduit and flashing beacon controller shall be considered subsidiary to the item for flashing beacon controller.

4. All couplings, tees, flanges and hardware necessary to mount signal heads shall be considered subsidiary to the item for traffic signal head. Any provision for relocation of the controller, signal heads and associated accessories shall be considered subsidiary to the item for flashing beacon controller.

5. The flashing beacon controller and solar panel shall be located within the highway right-of-way but as far away from the vehicle travel way as possible to avoid vehicle impacts.

6. The flashing beacon assembly shall include lighting suppressors, traffic signal cable, two (2) traffic signal heads, (1) yellow lens, (1) controller, (1) calendar date, (1) date time clock, (1) clock with daylight saving time programming and 48 hour power failure protection, calendar date required only for school zones. Signal heads shall be wired to flash alternately.

7. Flashed heads shall be considered subsidiary to the item for traffic signal head. Any provision for relocation of the controller, signal heads and associated accessories shall be considered subsidiary to the item for flashing beacon controller.

8. The flashing beacon assembly shall include lighting suppressors, traffic signal cable, two (2) traffic signal heads, (1) yellow lens, (1) controller, (1) calendar date, (1) date time clock, (1) clock with daylight saving time programming and 48 hour power failure protection, calendar date required only for school zones. Signal heads shall be wired to flash alternately.

9. Flashed heads shall be considered subsidiary to the item for traffic signal head. Any provision for relocation of the controller, signal heads and associated accessories shall be considered subsidiary to the item for flashing beacon controller.

10. The flashing beacon assembly shall include lighting suppressors, traffic signal cable, two (2) traffic signal heads, (1) yellow lens, (1) controller, (1) calendar date, (1) date time clock, (1) clock with daylight saving time programming and 48 hour power failure protection, calendar date required only for school zones. Signal heads shall be wired to flash alternately.

11. Flashed heads shall be considered subsidiary to the item for traffic signal head. Any provision for relocation of the controller, signal heads and associated accessories shall be considered subsidiary to the item for flashing beacon controller.
**OVERHEAD SIGN MOUNTING DETAILS**

Signals shall be mounted 17' to 18' from high point of roadway.

1. The signal mounting bracket shall be subsidiary to the pay item - traffic signal mast arm and pole with foundation.
2. Mast arm, pole, hardware, and mounting bracket shall be galvanized in accordance with Section 714.
3. A commercially manufactured mounting plate or bracket may be submitted for use in lieu of the mounting plate shown.
4. Each signal head shall have a separate 5 conductor signal cable.

**NOTES**

- 0.625" DIA. THRU W/0.5 SLOT 4 PLACES
- 0.625" STEEL ARM
- MAST ARM
- 1.5" I.D. G.S. WEATHER HEAD
- 2" I.D. N.M.C. CONDUIT
- 1.25" I.D. G.S. WEATHER HEAD
- INSTALL PULL BOX IF GREATER THAN 20'
- 0.3125" STEEL ARM
- 1.5" I.D. G.S. CONDUIT
- 0.375" X 4" X 33"
- 1.5" I.D. G.S. CONDUIT
- MAST ARM
- BREAKER DISCONNECT BOX
- FLASHER CONTROLLER
- MOUNTING BRACKET
- STEEL POLE WITH MAST ARM
- OVERHEAD SIGN MOUNTED ON STEEL POLE WITH MAST ARM

**ARKANSAS STATE HIGHWAY COMMISSION**

**STANDARD DRAWING SD-16**

W3-3 (48" X 48")

**AERIAL ALTERNATE**

- 0.375" STEEL ARM
- MAST ARM
- 0.3125" STEEL ARM
- MAST ARM

**AERIAL ALTERNATE**

- 0.375" STEEL ARM
- MAST ARM

**NOTES**

- EACH SIGNAL HEAD SHALL HAVE A SEPARATE 5 CONDUCTOR SIGNAL CABLE.
- STEEL POLE WITH MAST ARM
- OVERHEAD SIGN MOUNTED ON STEEL POLE WITH MAST ARM
- MOUNTING BRACKET
- BREAKER DISCONNECT BOX
- FLASHER CONTROLLER

**ARKANSAS STATE HIGHWAY COMMISSION**

**STANDARD DRAWING SD-16**
### Table of Super-elevation for One-Way Traffic

<table>
<thead>
<tr>
<th>Curve</th>
<th>30 MPH</th>
<th>35 MPH</th>
<th>40 MPH</th>
<th>45 MPH</th>
<th>50 MPH</th>
<th>55 MPH</th>
<th>60 MPH</th>
<th>65 MPH</th>
<th>70 MPH</th>
<th>75 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>4° 5'</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
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<td>5° 0'</td>
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<td>10° 0'</td>
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<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
</tbody>
</table>

**Notes:**
1. **On pavement with one-way traffic, the super-elevation shall be**
   - **desired**
   - **minimum**
   - **desirable**

2. **Super-elevation shall be more than the amount shown in the**
   - **desired**
   - **minimum**
   - **desirable**

3. **Lengths** may be changed in multiples of 25 ft. or 50 ft.

4. **Minimum Ls Values** may be used for ramps; desirable values shall
   - **apply to main lanes.**

5. **Transition lengths to be followed.**

<table>
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<th>Curve</th>
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<tr>
<td>5° 4'</td>
<td>NC</td>
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</tr>
</tbody>
</table>

**Abbreviations:**
- NC - Normal Crown
- RC - Reverse Crown, Super-elevation at normal crown slope
- S - Super-elevation
- 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.)

**Formula:**

- **Inside Lane:**
  \[ S = \frac{L(d-e-C)}{Ls} \]

- **Outside Lane:**
  \[ S = \frac{L(e+C)}{Ls} \]

**ARKANSAS STATE HIGHWAY COMMISSION**

**Standard Drawing SE-1**
## GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS.

3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT.

4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION AS FOLLOWS:

| 3 LANE UNDIVIDED | - - - - - | +20% |
| 4 LANE UNDIVIDED | - - - - - | +50% |
| 5 LANE UNDIVIDED | - - - - - | +80% |
| 6 LANE UNDIVIDED | - - - - - | +100% |

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

RATES OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

## SUPERELEVATION TABLE FOR TWO-WAY TRAFFIC

<table>
<thead>
<tr>
<th>DEVIANCE</th>
<th>25 MPH</th>
<th>30 MPH</th>
<th>35 MPH</th>
<th>40 MPH</th>
<th>45 MPH</th>
<th>50 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MINIMUM</td>
<td>MINUS</td>
<td>MINIMUM</td>
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### SUPERELEVATION FORMULA

\[
\text{SUPERELEVATION} = \frac{L_{de}}{L_{s}}
\]

### 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

- 10-18-96
- 01-09-87
- 11-07-91

### Date

- 534-1-9-87

### Arkansas State Highway Commission

### Standard Drawing SE-2
### General Notes

1. On pavement with two-way traffic, the super-elevation shall be revolved on the inside pavement edge unless otherwise noted on the plans.
2. Super-Elevation values shown on the cross sections are to be superimposed from the point of control.
3. Lengths for "L" may be added in multiples of 25 ft. or 50 ft.
4. Super-Elevation for 2 lanes shall have additional transition lengths as follows:
   - 1 lane under 25 ft. = +10 ft.
   - 2 lane under 50 ft. = +20 ft.
   - 5 lane under 50 ft. = +50 ft.

### 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.)
- e: Rate of super-elevation (ft. per ft.)

### Super-Elevation Table for Two-Way Traffic (4% Maximum)

<table>
<thead>
<tr>
<th>Degree</th>
<th>33 MPH</th>
<th>35 MPH</th>
<th>40 MPH</th>
<th>45 MPH</th>
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<tbody>
<tr>
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</tbody>
</table>

### Standard Method When Super-Elevation Revolves Around Inner Subgrade Point or Inner Pavement Edge

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

### Maximum Super-Elevation

- Outside pavement or subgrade edge
- Actual Profile
- Theoretical Profile

### Control Point

- P.C.O. or P.T.
- C

### Standard Method When Super-Elevation Revolves Around Center Line

- Note: Return gradually from center line

### Arkansas State Highway Commission

- Tables and Method of Super-Elevation for Two-Way Traffic (4% Maximum)
- Standard Drawing SE-3
### General Notes

End sections shall be fabricated from galvanized steel meeting the requirements of Subsection 66022.28 of the standard specifications. When specified optional toe plate extension shall be punched and bolted to end section and pipe spigot with 3/4-inch galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6 by 8 high. All work and materials required for construction and installation of safety end sections shall be end sections with a 6:1 slope. Class 2 extensions shall be end sections with a 4:1 slope.

### Steel End Section for Concrete Pipes

Alternate for Concrete End Section

**Details**

- **Top view circular or arch section**
  - 1/4" plated with flanged nut

### Type 1 Connector Detail

- For 10" thru 24" pipe

### Type 2 Connector Detail

- For 36" and larger round pipes & 21" x 30" thru 64" x 43" arch pipes

### Safety End Sections for Arch Pipes

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>A</th>
<th>M</th>
<th>N</th>
<th>L</th>
<th>E</th>
<th>D</th>
<th>M</th>
<th>Total</th>
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<tbody>
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<td>36&quot;</td>
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### Safety End Sections for Circular Pipes

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<th>M</th>
<th>N</th>
<th>L</th>
<th>E</th>
<th>D</th>
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<th>Total</th>
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</table>

### Standard Drawing SES-1

- **Type 2 Connector Detail**
  - For 36" and larger round pipes & 21" x 30" thru 64" x 43" arch pipes

### Steel End Section for Concrete Pipes

- Alternate for Concrete End Section

**Details**

- **Top view circular or arch section**
  - 1/4" plated with flanged nut

### Type 1 Connector Detail

- For 10" thru 24" pipe

### Type 2 Connector Detail

- For 36" and larger round pipes & 21" x 30" thru 64" x 43" arch pipes

### Safety End Sections for Arch Pipes

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>A</th>
<th>M</th>
<th>N</th>
<th>L</th>
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<th>D</th>
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### Safety End Sections for Circular Pipes

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<th>N</th>
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</tbody>
</table>
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. POSTS. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.
NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ASSEMBLIES
U-CHANNEL POST
EXTRUDED PANEL
SIGN FACE
CLIP
POST
DETAIL C
WITH EXTRUDED PANELS SHOWING GUIDE SIGN MOUNTING (TYP)

EMBEDMENT
2'-6" MIN.

NOTE: ALIGN WITH 4TH HOLE FROM TOP OF VERT. SUPPORT

DETAIL B
SEE U-1
U-2
U-3
U-4
U-5
U-6
U-7
U-8
U-9
U-10
U-11
U-12
U-13
U-14
U-15
U-16
U-17
U-18

DETAIL A
SHOWING HORIZONTAL BRACE
5'-10" MIDDLE POST MIN.
WITH FLAT SHEET SIGNS
(HORIZONTAL BRACE FOR ALL MULTIPLE POST ASSEMBLIES)
DETAIL C
SHOWING BACK-TO-BACK HORIZONTAL BRACE AS REQUIRED BY SIGN PLACEMENT SHALL BE AS SHOWN IN DETAIL B

DETAIL E
SEE U-2
U-3
U-4
U-5
U-6
U-7
U-8

DETAIL F
DETAIL OF SPLICES

HOLE SPACING. AS REQUIRED BY SIGN PLACEMENT SHALL BE AS SHOWN IN DETAIL B.

U-CHANNEL POST FROM TOP CENTER TO CENTER 12"O.C.
HOLE SPACING. AS REQUIRED BY SIGN PLACEMENT SHALL BE AS SHOWN IN DETAIL B.

NOTE: ALL SPLICES NEEDED TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (F).
SPLICES FOR U-CHANNEL POST SPLICE BOLTS L AND C TO GROUND MIN. 30''

2" (TYP.) NYLON WASHER OVERLAP 18" MINIMUM
6" MIN. SPLICE BOLTS L AND C WITH NYLON WASHERS AND (1) LOCK WASHER IN BETWEEN BOLTS L AND C

MAIN SIGN
MATCH U6-1 STD. SIGN " HEX HEAD
3/8" HEX HEAD
4 X 3/8"
THREADED SQ. TUBING X 12GA.

CARRIAGE BOLT WITH MATERIAL REQUIREMENTS SHOWN IN DETAIL E.

TYPICAL MILE MARKER INSTALLATION
TYPICAL OM-3 INSTALLATION AT EDGE OF OBSTRUCTION

U-CHANNEL POST ASSEMBLIES

ARAKANSAS STATE HIGHWAY COMMISSION
STANDARD DRAWING SHS-2
NOTE:

All additional mounting hardware (bolts, nuts, channels, and bar supports) required to mount secondary signs will be considered to be supplemental to the main support specified. Hardware will be consistent with that of the main support.

The galvanized steel channel and bar supports may be ASTM A-36.

Refer to the PC. Rutledge formula on page 58 of the AASHTO Publication "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

All bolt holes shall be 3⁄8" unless otherwise specified.

The offset will be a minimum of 10'

From the edge of paved surface.

DIST. TO BE BY SIGN AS REQUIRED.

HOLE SPACING 4" C.L.

SAW CUT 4" BOTTOM OF LOWEST SIGN.

LOCK WASHERS "X1⁄2" HEX HEAD BOLT AND NUT (A307).

FLAT WASHER NYLON WASHER.

I-BEAM (TYP.) .5" TYP. BETWEEN SIGNS.

SIGN POST.

3"X4.1 CHANNEL (TYPICAL).

YIELD SIGN.

ROUTE MARKER SET.

ONE PER SET OF ROUTE MARKERS (TYPICAL).

DETAIL A

DETAIL B

DETAIL C

DETAIL D

DETAIL E

DETAIL F

BOTTOM OF SECONDARY SIGN.

BOTTOM OF SECONDARY SIGN.

BOTTOM OF SECONDARY SIGN.

BOTTOM OF SECONDARY SIGN.

BOTTOM OF SECONDARY SIGN.

NOTE:

The offset will be a minimum of 10'

From the edge of paved surface.

DIST. TO BE BY SIGN AS REQUIRED.

HOLE SPACING 4" C.L.

SAW CUT 4" BOTTOM OF LOWEST SIGN.

LOCK WASHERS "X1⁄2" HEX HEAD BOLT AND NUT (A307).

FLAT WASHER NYLON WASHER.

I-BEAM (TYP.) .5" TYP. BETWEEN SIGNS.

SIGN POST.

3"X4.1 CHANNEL (TYPICAL).
DETAILS OF GUIDE SIGN PANELS

SUBSIDIARY TO THE ITEM "EXIT NUMBER PANEL".

SECONDARY SIGN INSTALLATION ON BACKSIDE OF GUIDE SIGN…

"X1" BAR POSITION AS REQ. BY SIGN ASSEM.

STANDARD SIGN

GUIDE SIGN

APPROX. THICKNESS OF REFLECTIVE SHEETING

OFFSET ACCEPTABLE

ONE PIECE EXTRUDED SIGN PANELS

ONE PIECE EXTRUDED SIGN PANEL

PANEL BOLT

POST CLIPS

SIGN POST

SLOTTED HOLES (7/16" X ‡") DRILLED OR PUNCHED @ 12" O.C. BEGINNING 6" FROM ONE END

SIGN POST

SIGN PANEL

ALUMINUM PANEL BOLT AND HEX NUT (3/8"-16X3/4"

ALUMINUM POST CLIP BOLT AND FLAT WASHER

ALUMINIUM STOP NUT

MOUNTING HARDWARE

POST CLIP BOLT

POST CLIPS

POST CLIP PLACEMENT

EXIT PANEL DETAILS

NOTE: EXIT NUMBER PANELS SHALL HAVE WHITE LEGENDS AND BACKGROUND. THE BACK GROUND COLOR WILL BE AS SPECIFIED.

SHIPPED UNLESS OTHERWISE SPECIFIED. PANELS BEGINNING 6" FROM ONE END.

EXIT NUMBER PANELS SHALL HAVE WHITE LEGENDS AND BACKGROUND. THE BACK GROUND COLOR WILL BE AS SPECIFIED.

PAYMENT FOR ALL POST CLIPS, BOLTS, AND ANGLES SHALL BE AS SPECIFIED.

EXITS WITH 1 DIGIT PLUS "A" OR "B" 96"X30"=20.0 SF

EXIT WITH 1 DIGIT PLUS "A" OR "B" 42"X30"=8.75 SF

EXIT WITH 2 DIGITS PLUS "A" OR "B" 60"X30"=12.50 SF

EXIT WITH 3 DIGITS PLUS "A" OR "B" 78"X30"=16.25 SF

EXIT WITH 1 DIGIT PLUS "A" OR "B" 96"X30"=20.0 SF

EXIT WITH 2 DIGITS PLUS "A" OR "B" 114"X30"=23.57 SF

EXIT WITH 3 DIGITS PLUS "A" OR "B" 126"X30"=26.25 SF

EXITS WITH 1 DIGIT PLUS "A" & "B" 132"X30"=27.50 SF

EXITS WITH 2 DIGITS PLUS "A" & "B" 150"X30"=31.25 SF

EXITS WITH 3 DIGITS PLUS "A" & "B" 168"X30"=35.00 SF

1 DIGIT 24"X30" =5.0 SF

2 DIGITS 42"X30" =8.75 SF

3 DIGITS 60"X30" =12.50 SF

1 DIGIT PLUS "A" OR "B" 42"X30"=8.75 SF

2 DIGITS PLUS "A" OR "B" 60"X30"=12.50 SF

3 DIGITS PLUS "A" OR "B" 78"X30"=16.25 SF

EXIT PANEL DETAILS

EXIT WITH 1 DIGIT 84"X30"=17.50 SF

EXIT WITH 2 DIGITS 96"X30"=20.0 SF

EXIT WITH 3 DIGITS 114"X30"=23.57 SF

EXIT WITH 1 DIGIT PLUS "A" OR "B" 96"X30"=20.0 SF

EXIT WITH 2 DIGITS PLUS "A" OR "B" 114"X30"=23.57 SF

EXIT WITH 3 DIGITS PLUS "A" OR "B" 126"X30"=26.25 SF

EXITS WITH 1 DIGIT PLUS "A" & "B" 132"X30"=27.50 SF

EXITS WITH 2 DIGITS PLUS "A" & "B" 150"X30"=31.25 SF

EXITS WITH 3 DIGITS PLUS "A" & "B" 168"X30"=35.00 SF

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF GUIDE SIGN PANELS

STANDARD DRAWING SHS-5
THE CONTRACTOR SHALL DRILL AND POP-RIVET LEGEND, SHIELDS, ARROWS, OR OTHER COPY AS SHOWN.

MOUNTING DETAILS FOR DEMOUNTABLE LEGEND ON GUIDE SIGNS

No other method of applying characters is allowed.

Legend on guide signs on the main lanes shall be demountable legend. Legend on guide signs on cross roads and ramps shall be direct applied. The demountable and direct applied legends shall be type IX sheeting.

The background on all guide signs and standard signs shall be constructed using type III sheeting.

Type IX sheeting for border, legend, shields, arrows, or other copy shall be oriented vertically as per manufacturer's datum marks, orientation marks, or other recommendations.

No other method of applying characters is allowed.

Arkansas State Highway Commission

St. Louis, Missouri

Standard Drawing SHS-6
**Typical Exit Ramp Delineator Placement**

**Type 2 Delineator Details**

- **Directional Signs:**
  - Wrong-way signs are normally placed about 20 feet outside of the shoulder, as close to the exit ramp as possible.
  - The ramp advisory speed is 30 mph or less.
  - Delineator spacing in curves shall be reduced to 30' when the ramp advisory speed is 20 mph or less.
  - If multiple lanes exist at the ramp terminal, the thermoplastic wrong-way arrows shall be placed as close to the ramp terminal as possible.

**Delineator Details**

- The delineators shall be placed at a height measured from the pavement edge to the bottom of the delineator to be not less than 6 feet, or less outside the outer edge of the shoulder.

**Permanent Barrier Wall Delineator Detail**

- The delineators shall be placed at a 4' height measured from the pavement edge to the bottom of the delineator.

**Legend**

- **Delineator**

---

**Ramp Intersection Sign Assembly Details**

- **10' Spacing**

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**Typical Exit Ramp Sign and Delineator Details**

- **Standard Drawing SHS-8**

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**Arkansas State Highway Commission**

- **Revision Date:** 11-16-17

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**Arkansas State Highway Commission**

- **Standard Drawing SHS-8**

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BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

- Offset Distance Table

<table>
<thead>
<tr>
<th>Speed</th>
<th>Offset Distance (*ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 45</td>
<td>18</td>
</tr>
</tbody>
</table>

**Offset Distance for Two Way Traffic Only

- Minimum Offset Distance:

  - 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (See Barrier Stabilization). For Highway Construction - Precast Units shall be connected to slab (See Barrier Stabilization). For Highway Construction - Precast Units shall be connected to slab (See Barrier Stabilization). For Highway Construction - Precast Units shall be connected to slab (See Barrier Stabilization). For Highway Construction - Precast Units shall be connected to slab (See Barrier Stabilization). For Highway Construction - Precast Units shall be connected to slab (See Barrier Stabilization).

- Taper Rate 10:1

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with a Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."
NOTE: SLOPE TO BE 1:1 OR FLATTER

FLOW PLAN
SECTION ON FLOW LINE

6' MAX.
2' MIN.
1'-6'' MINIMUM

FLOW
SOIL
COMPACTED

10' TYP.
EMBANKMENT
WITH HEIGHT OF FINISHED
REQUIRED TO COINCIDE
EXTEND DRAIN AS

6' MAX.
12'' SLOPE DRAIN PIPE

RIPRAP
DUMPED

SLOPE TO BE 1:1 OR FLATTER

18'' MIN. PERFORATED RISER PIPE

RATIO OF 2:1 SHALL BE USED.
A MINIMUM LENGTH-TO-WIDTH
BY VOLUME REQUIRED; HOWEVER
SIZE OF BASIN TO BE DETERMINED
NOTE:

FILTER
ROCK
ANTI-SEEP COLLAR
PIPE WITH
NON-PERFORATED
18'' MIN.
(TYPE 5)
GEOTEXTILE FABRIC
(6'' MIN. THICKNESS)
ROCK FILTER
A
CUT
FILL

DIVERSION DITCH (E-8)

DITCH BLOCK
COMPACTED SOIL

NOTE: SLOPE DRAIN SHALL BE USED AT THE INLET
FOR TWO-DIRECTIONAL FLOW.
A T-SECTION SHALL BE USED AT THE INLET

PROFILE VIEW

FLOOR VIEW

SLOPE DRAIN (E-12)

4' MIN.
3' MIN.

3' MIN. WIDTH

DIVERSION DITCH BERM
STAKES
ANCHOR
AS NEEDED
DUMPED RIPRAP

NOTE: SLOPE DRAIN SHALL BE USED AT THE INLET
FOR TWO-DIRECTIONAL FLOW.
A T-SECTION SHALL BE USED AT THE INLET

PROFILE VIEW

PROFILE VIEW

FLOW VIEW

SLOPE DRAIN

FLOW VIEW

UNDERWATER GROTES

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)

SEDIMENT BASIN WITH PIPE OUTLET (E-10)

SEDIMENT BASIN (E-14)
CLEARING AND GRUBBING

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

GENERAL NOTE
All cut slopes shall be cleared, trimmed, seeded, and mulched as shown. The work progresses to include all phases shown for illustration.

EXCAVATION

EXISTING GROUND

EXISTING GROUND

EXCAVATION

NUMBER OF PHASES WILL VARY. THREE PHASES SHOWN FOR ILLUSTRATION.

GENERAL NOTE
Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured vertically.

CONSTRUCTION SEQUENCE
1. Excavate and stabilize interceptor and/or diversion ditches.
2. Perform Phase 1 excavation, place permanent or temporary seeding.
3. Perform Phase 2 excavation, place permanent or temporary seeding.
4. Perform final Phase of excavation, place permanent or temporary seeding, sediment basins, other erosion control devices as required.

EMBANKMENT

EXISTING GROUND

EXISTING GROUND

EMBANKMENT

NOTE:
PHASE 1 EMBANKMENT
PHASE 2 EMBANKMENT
PHASE 3 EMBANKMENT

GENERAL NOTE

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, ditch checks, sediment basins, silt fences, or other erosion control devices as required.
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.

EMBANKMENT SLOPES

EMBANKMENT SLOPES

EMBANKMENT SLOPES

SIX SLOPES TO STABILIZE AS REQUIRED.

GENERAL NOTE

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, ditch checks, sediment basins, silt fences, or other erosion control devices as required.
2. Place permanent or temporary seeding. Erosion control devices shall be constructed and stabilized in three phases shown for illustration. The work progresses to include all phases shown for illustration.

NOTE:
SIX SLOPES TO STABILIZE AS REQUIRED.

EMBANKMENT SLOPES

EMBANKMENT SLOPES

EMBANKMENT SLOPES

SIX SLOPES TO STABILIZE AS REQUIRED.

GENERAL NOTE

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, ditch checks, sediment basins, silt fences, or other erosion control devices as required.
2. Place permanent or temporary seeding. Erosion control devices shall be constructed and stabilized in three phases shown for illustration. The work progresses to include all phases shown for illustration.

NOTE:
SIX SLOPES TO STABILIZE AS REQUIRED.

EMBANKMENT SLOPES

EMBANKMENT SLOPES

EMBANKMENT SLOPES

SIX SLOPES TO STABILIZE AS REQUIRED.
DROP INLETS IN SUMP LOCATIONS. SILT DIKE SHOULD ONLY BE USED FOR DROP INLETS FOR TRIANGULAR SILT DIKE INSTALLATION.

ROADWAY DITCH OR DRAINAGE DITCH FOR TRIANGULAR SILT DIKE INSTALLATION WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

POINT '1' MUST BE HIGHER THAN POINT '2' TO ENSURE THAT DIVERSION DITCH AND/OR DITCH LINER FOR TRIANGULAR SILT DIKE INSTALLATION CONTINUOUS BARRIER FOR TRIANGULAR SILT DIKE INSTALLATION TEMPORARY DITCH LINER FOR TRIANGULAR SILT DIKE INSTALLATION SECTION A-A TEMPORARY DITCH LINER GENERAL NOTES

7-26-12 REVISED GENERAL NOTE 2.

DIRECTED BY THE ENGINEER.

COST OF FURNISHING THE DIKES, INSTALLING, MAINTAINING AND REMOVAL WHEN THE CONTRACT UNIT PRICE BID FOR TRIANGULAR SILT DIKE. PRICE BID WILL INCLUDE THE 3. ACCEPTED TRIANGULAR SILT DIKE, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT REMOVAL PROCESS, THE CONTRACTOR SHALL IMMEDIATELY REPLACE AFTER DAMAGE OCCURS. IF THE DIKES ARE DAMAGED OR INADVERTENTLY MOVED DURING THE SILT ACCUMULATED SILT OR DEBRIS SHALL BE REMOVED AND RELOCATED AS DIRECTED BY OR GREATER. ANY DEFICIENCIES OR DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR.

THE CONTRACTOR SHALL INSPECT ALL DIKES AFTER EACH RAINFALL EVENT OF AT LEAST 0.5'' STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.

STAPLES. THE STAPLES SHALL BE NO. 11 GAUGE WIRE AND BE AT LEAST 6'' TO 8'' LONG.

SEDIMENT CONTROL IN AASHTO M288. THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE ROT-PROOF AND RESISTANT TO HEAT AND ULTRAVIOLET RADIATION MEETING REQUIREMENTS FOR BOTH SIDES OF THE TRIANGLE 24'' TO 36''. THIS FABRIC SHOULD BE MILDEW RESISTANT, GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL & ALLOWED TO EXTEND BEYOND SHAPED INNER MATERIAL SHALL BE URETHANE FOAM. THE OUTER COVER SHALL BE A WOVEN 8'' TO 10'' IN THE CENTER WITH EQUAL SIDES AND A 16'' TO 20'' BASE. THE TRIANGULAR CONSTRUCTION WILL ALLOW OR AS DIRECTED BY THE ENGINEER.

DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED AND LOCATED AS SOON AS OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. DRAINAGE CONTROL POINT B ON PLANS SYMBOLOGY SHOWN ON PLANS TO BE USED TO DENOTE SYMBOLOGY FOR DROP INLETS SHOWN ONLY FOR DROP INLETS IN DUMP LOCATIONS.

ARKANSAS STATE HIGHWAY COMMISSION TEMPORARY EROSION CONTROL DEVICES STANDARD DRAWING TEC-4
DETAIL OF EXPANSION JOINT & JOINT SUPPORT


END OF RAMP PAVEMENT.

LONGITUDINAL JOINTS WITH #5 DEFORMED BAR 2'-6" LONG @ 2'-6" CENTERS

ABERACERATION LANE

BEGIN ACCEL. LANE.

LONGITUDINAL JOINTS WITH #5 DEFORMED BAR 2'-6" LONG @ 2'-6" CENTERS

CONTRACTION JOINTS TO BE SPACED AT REGULAR INTERVALS ON NORMAL PAVEMENT.

SEAL JOINT ACCORDING TO DETAILS SHOWN ON STD. DWG. CPTJ-6A TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON SEAI JOINT ACCORDING TO DETAILS SHOWN ON
GENERAL NOTES:

THOSE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OR DRIFT IN THE CHANNEL OF THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE GULLY OR DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRAVING WILL NOT BE FEASIBLE THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES 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.

INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL.

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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.
**Double Swing Gate**

- **Gate Width**: May be modified as shown in the plans.
- **Concrete Placement**: May be modified as shown in the plans.
- **Concrete Footing**: Minimum thickness of material from which expansion sleeves shall be made will be 0.078".
- **Tie Wire**: Minimum thickness of material from which expansion sleeves shall be made will be 0.078".
- **Aluminum Tension Wire**: Shall be 0.192" in diameter.
- **Gate Posts**: Where gate width is 12' and less, shall have an outside diameter of 3" for fence heights of 6' and less. Gate posts where gate width is 12' and less shall have an outside diameter of 3" for fence heights of 6' and less. Gate posts where gate width is 12' and less shall have an outside diameter of 3" for fence heights of 6' and less.
- **Aluminum Posts**: Shall be capped over the exterior of the post, and shall be a minimum of a circle in diameter.

**NOTES**: All miscellaneous fittings and hardware shall meet the requirements and production tolerances as set forth in the specifications. Gate rails shall be acceptable for use with posts to 10' high and well finished members of steel fence.

**TYPICAL INSTALLATION DIAGRAM**
**RAMP SELECTION CRITERIA**

**FIRST CHOICE**
- Type 1 ramp locations where the curb ramp can be placed at the end of the driveway.

**SECOND CHOICE**
- Type 2 ramp locations where the curb ramp can be placed at the end of the driveway.

**THIRD CHOICE**
- Type 3 ramp locations where the curb ramp can be placed at the end of the driveway.

**FOURTH CHOICE**
- Type 4 ramp locations where the curb ramp can be placed at the end of the driveway.

**REVISION MODEL**
- Type 5 ramp locations where the curb ramp can be placed at the end of the driveway.

**ALTERATIONS ONLY**
- Type 6 ramp locations where the curb ramp can be placed at the end of the driveway.

**GENERAL NOTES**
- The ramp selection criteria above are based on the amount of right-of-way available and the presence of other site constraints, such as utilities, buildings, etc.

**WARNING DEVICE DETAIL**
- The detectable warning device shall be located in a manner that provides a clear indication to pedestrians.

**GENERAL NOTES**
- All detectable warning devices shall be installed in accordance with the latest edition of the Manual on Uniform Traffic Control Devices published by the Federal Highway Administration.

**DETECTABLE WARNING DEVICE**
- The detectable warning device shall be located in a manner that provides a clear indication to pedestrians.

**WARNING DEVICE DETAIL**
- The detectable warning device shall be located in a manner that provides a clear indication to pedestrians.

**TACTILE PANELS (ADA DETECTABLE WARNING)**
- The detectable warning device shall be located in a manner that provides a clear indication to pedestrians.

**GENERAL NOTES**
- All detectable warning devices shall be installed in accordance with the latest edition of the Manual on Uniform Traffic Control Devices published by the Federal Highway Administration.

**FINISH ACCORDING TO SECTION 802.19.**
- The surface texture of the ramp shall conform to a class 6 finish according to section 802.19.

**LONGITUDINAL GRADE.**
- The cross slope of the ramp and sidewalks shall not exceed 2.0% unless required by National Street Longitudinal Grade.

**UNLESS REQUIRED**
- The cross slope of the ramp and sidewalks shall not exceed 2.0% unless required by National Street Longitudinal Grade.

**SIDEWALKS SHALL NOT EXCEED**
- The cross slope of the ramp and sidewalks shall not exceed 2.0% unless required by National Street Longitudinal Grade.

**THE CROSS SLOPE OF THE RAMPS AND SIDEWALKS SHALL NOT EXCEED**
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