FREEMAN BRANCH STR. & APPRS. (S)
CARROLL COUNTY
ROUTE 22I SECTION 0
JOB 090346
FEDERAL AID PROJ. NHPP-0008(32)

NOT TO SCALE

STA. 109+90 CONSTRUCT
P/H: 5’ X 5’ R.C. BOX CULVERT
W/ 3A MINGS
G/Q = UNO E/F/S, D/A = NOT ACRES
SPAN = 33’-8”

STA. 107+33.00
BEGIN JOB 090346
LOG MILE 9.87

GROSS LENGTH OF PROJECT 114.46 FEET OR 0.061 MILES
NET = ROADWAY 100.74 = 0.057
NET = BRIDGES 5.94 = 0.034
NET = PROJECT 106.68 = 0.060

11/28/16
DEPUTY DIRECTOR
AND CHIEF ENGINEER

APPROVED
INDEX OF SHEETS

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2. INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES
3. TYPICAL SECTIONS OF IMPROVEMENT
4. SPECIAL DETAILS
5. TEMPORARY EROSION CONTROL DETAILS
6. MAINTENANCE OF TRAFFIC DETAILS
7. PERMANENT PAVEMENT MARKING DETAILS
8. QUANTITIES
9. SUMMARY OF QUANTITIES AND REVISIONS
10. SURVEY CONTROL DETAILS
11. PLAN AND PROFILE SHEETS
12. CONCRETE PAVING
13. CONCRETE PIPE CULVERTS (2) HIGHTS & BEDDING
14. REINFORCED CONCRETE BOX CULVERTS
15. EXCAVATION PAY LIMITS, BACKFILL, & SOIL SODDING FOR BOX CULVERTS
16. STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
17. STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
18. STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
19. STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
20. STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
21. TEMPORARY EROSION CONTROL DEVICES
22. TEMPORARY EROSION CONTROL DEVICES
23. TEMPORARY EROSION CONTROL DEVICES
24. WIRE FENCE TYPE D AND WIRE FENCE TYPE D
25. CROSS SECTIONS

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 LAYERED 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 THE NON-OWNER OR NOED OWNERS 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 107.12 OF THE STANDARD SPECIFICATIONS.
5. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DECISIONS SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HANDLED 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. WIRE FENCE MAY BE CONSTRUCTED INTEGRALLY OR IN A LAYER THEREOF. THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN THE LIVESTOCK.
7. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIOINWIDE 14 PERMIT REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
8. ALL FLEXIBLE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210-UNCLASSIFIED EROSION.
9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAVING ALONG A NEAT LINE. AFTER SAVING, 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 CONTRACTORS EXPENSE.

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS

NUMBER
1. ERRATA FOR THE 2014 STANDARD SPECIFICATIONS
2. FHWA-1271 CONTRACT PROVISIONS FEDERAL-AG FOR CONSTRUCTION CONTRACTS
3. FHWA-1271 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
4. FHWA-1271 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 210)
5. FHWA-1271 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
6. FHWA-1271 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
7. FHWA-1271 SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL AID PROJECTS
8. FHWA-1271 SUPPLEMENT - WSHA STANDARDS DETERMINATION
9. 100-3 CONTRACTORS LICENSE
10. 167-1 LIQUIDATED DAMAGES
11. 167-2 WORK ALLOWED FOR ISSUANCE OF WORK ORDER
12. 300-1 AGGREGATE BASE COURSE
13. 400-1 TACK COAT
14. 410-1 CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
15. 604-1 RETROFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
16. 750-7 MULCH COVER

INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES
NOTES:

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

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH 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.

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

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.

WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST 3" OF ACWM SURFACE COURSE (1/8") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.
NOTES:

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

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLANTHICKNESS 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.

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

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.

WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACAM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.
DETAIL FOR COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION

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

NOTE: REFER TO PLAN SHEETS FOR WIDTH OF COUNTY ROAD.

CONSTRUCTION LIMITS

ADHIM SURFACE COURSE (1/2"
220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH

DETAIL FOR TRANSITIONS

PROPOSED OVERLAY
EXISTING ASPHALT PAVEMENT RETAIN AND OVERLAY
COLD MILL EXISTING ASPHALT PAVEMENT

100 NORMAL TRANSITION
### OUTLET WINGWALL TABLE

<table>
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<th>FOOTING WRAP</th>
<th>WALL ANGLE (DEG)</th>
<th>FOOTING DIMENSION</th>
<th>LENGTH OF FOOTING</th>
<th>CLASS &quot;F&quot; CONCRETE</th>
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<th>INTERIOR WALL REINFORCING STEEL</th>
<th>TOP SLAB DISTRIBUTION REINFORCING STEEL</th>
<th>Bottom SLAB DISTRIBUTION REINFORCING STEEL</th>
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### OUTLET SUNK END SECTION

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### SHEET 2 OF 2

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

TRIPLE BARREL BOX CULVERT

STA. 109+90

SPECIAL DETAILS

The required number of bars and lengths shown are for estimating purposes only. The actual number and length required shall be determined in FIE.

Unless otherwise noted, all dimensions are in inches.
LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

GENERAL NOTES


LIVE LOADING: HL-93

All concrete shall be Class C with a minimum 28-day compressive strength of 5,000 psi and shall be poured in the dry. All exposed concrete to have 1 8" chamfers.

Reinforcing Steel shall be Grade 40 (yield strength = 40,000 psi) conforming to AASHTO M31 or M32, Type A, with mill test 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 tolerances for bars such as Figure 4-1 on page 7-4 of the OSM Manual shall be minus zero plus 3/8 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 saddles of R.C. Box culvert and to the construction joint between wingwalls and R.C. Box culvert walls.

Wrap Holes in box culvert walls shall have a maximum horizontal spacing of 10'-0" 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.

Wrap Holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) wrap holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

The barrel components of the barrel may be constructed using continuous seams. For longer culvert sections, the Contractor may use multiple pieces with in-place construction joints spaced a minimum of 50' apart unless supervised by stage construction or site constrains as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. All forms shall be made and removed in accordance with the Engineer.

Membrane Waterproofing, Wrap Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class 5 Concrete.

When the top slab of the box culvert serves as finished roadway surface, curbing and finishing shall be in accordance with subsections 802.17 and 803.20 for bridge roadway surface and a test finish shall be applied in accordance with subsection 802.19 for Class 3 Treated Bridge Roadway Surfacing. Coating and finishing shall not be paid for directly, but shall be considered incidental to the Item "Class 3 Concrete Roadway". Class 3 Protective Surface Treatment shall be applied to the roadway surface and this work shall not be paid for under the unit price bid for "Class 3 Protective Surface Treatment".

When presents reinforced concrete box culvert are substituted for cast in place box culvert, they shall be manufactured according to ASTM C 1377 and meet the requirements of Section 801. When the top slab of the box culvert serves as the finished roadway surface, a prestressed reinforced concrete box culvert substitution is not allowed.

SHEET 1 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE

ELEVATIONS
SPECIAL DETAILS

CULVERT DRAINAGE DETAIL FOR ROCK FILL

VERTICAL FABRIC ALTERNATE
(Shown for Culvert, Stabb for Wingwall)

WRAPPED FABRIC ALTERNATE
(Shown for Wingwall, Stabb for Culvert)

For details of Excavation and Pay Limits, see Standard Grading R26-2.

WINGWALL & CULVERT DRAINAGE DETAIL
STAGE 1 CONSTRUCTION SEQUENCE

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AS SHOWN IN THE ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAILS. INSTALL ROAD WORK AHEAD #20-17 SIGN AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT PROPOSED DETOUR AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' ON CENTER TO DELINATE THE WORK ZONE.

INSTALL TYPE III BARRICADES WITH ROAD CLOSED (#R-27) SIGNS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC PLANS AS PROPOSED ROADWAY EMBANKMENT IS CONSTRUCTED.

STAGE 2 CONSTRUCTION SEQUENCE

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS AND SHIFT TRAFFIC ONTO THE PROPOSED DETOUR CONSTRUCTED IN STAGE 1.

INSTALL TYPE III BARRICADES WITH ROAD CLOSED (#R-27) SIGNS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC PLANS AS PROPOSED ROADWAY EMBANKMENT IS CONSTRUCTED.

USE TRAFFIC DRUMS SPACED 40' ON CENTER TO DELINATE THE WORK ZONE.

REMOVE EXISTING CROSS DRAIN, BRIDGE, AND PAVEMENT AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT PROPOSED ROADWAY AND PORTIONS OF PROPOSED R.C. BOX CULVERTS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 3 CONSTRUCTION SEQUENCE

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS AND SHIFT TRAFFIC ONTO THE PROPOSED ROADWAY CONSTRUCTED IN STAGE 2.

INSTALL TYPE III BARRICADES WITH ROAD CLOSED (#R-27) SIGNS AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC PLANS AS PROPOSED ROADWAY EMBANKMENT IS CONSTRUCTED.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 40' ON CENTER TO DELINATE THE WORK ZONE.

REMOVE PROPOSED DETOUR.

CONSTRUCT FINAL PORTIONS OF PROPOSED R.C. BOX CULVERTS AND EMBANKMENTS AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKINGS DETAILS.

ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAILS
STAGE I QUANTITIES

SIGNS: 256.5 SQ. FT.
VERTICAL PANELS: 12 EACH
TRAFFIC DRUMS: 10 EACH
TYPE II BARRIERS: 64 LIN. FT.
FURNISH AND INSTALL P.C.C.B.: 160 LIN. FT.
T.L.A.B.: 1 EACH
T.L.A.B. REPAIR: 1 EACH

ROAD CLOSED

STA, 103+96.40
BEGIN DETOUR

STA, 107+33.00
BEGIN JOB 090346
LOG, MILE 9.89

STA, 110+67.66
END JOB 090346
END DETOUR

MAINTENANCE OF TRAFFIC DETAILS
STAGE 3 QUANTITIES

SIGNS = 296.6 SQ. FT.
VERTICAL PANELS = 5 EACH
TRAFFIC DRUMS = 10 EACH
TYPE 3 BARRIERS = 64 LIN. FT.
FURNISH AND INSTALL P.C.C.B. = 220 LIN. FT.
RELOCATE P.C.C.B. = 180 LIN. FT.
T.I.A.B. RELOCATE = 5 EACH
CONSTRUCTION PAVEMENT MARKINGS = 404 LIN. FT.

ROAD CLOSED

STA. 103+98.40
BEGIN DETOUR

STA. 107+33.00
BEGIN JOB 090346
LOG. MILE 9.89

STA. 110+67.66
END JOB 090346

STA. 113+85.85
END DETOUR

MAINTENANCE OF TRAFFIC DETAILS
PERMANENT PAVEMENT MARKINGS

REFLECTORIZED PAINT PAVEMENT MARKING WHITE (9") x 2290 LFT.
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (9") x 2290 LFT.
RAISED PAVEMENT MARKERS (TYPE: YELLOW/YELLOW/WHITE /G.C.) x 25 EACH

NOTE: THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPIING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL
TRAFFIC SIGNS AND/ OR SIGNS HAS BEEN PLACED TO SCHEDULE THE ZONING OF
THE PROJECT.

STA. 103+98.40
BEGIN DETOUR

STA. 107+33.00
BEGIN JOB 090346
LOG MILE 9.89

STA. 00+67.66
END JOB 090346

STA. 113+85.85
END DETOUR

PERMANENT PAVEMENT MARKING DETAILS
### CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

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Note: This is a low traffic volume road as defined in Section B04.03, Standard Specifications for Highway Construction.

#### ADVANCE WARNING SIGNS AND DEVICES

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<th>Sign Number</th>
<th>Description</th>
<th>Sign Size</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
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<th>Total Signs Required</th>
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<th>Traffic Drums</th>
<th>Barricades (Type B)</th>
<th>FURNISHING &amp; INSTALLING Precast Concrete Barrier</th>
<th>Relocating Precast Concrete Barrier</th>
<th>TEMP. IMPACT ATTENUATION Barrier</th>
<th>TEMP. IMPACT ATTEN BARR. (REPAIR)</th>
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<td>Traffic Drums</td>
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<td>Type B Barricade - (18&quot;)</td>
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<td>2</td>
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<tr>
<td>Type B Barricade - (18&quot;)</td>
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<tr>
<td>FURNISHING AND INSTALLING Precast Concrete Barrier</td>
<td>160</td>
<td>220</td>
<td>360</td>
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<tr>
<td>TEMP. IMPACT ATTENUATION Barrier</td>
<td>1</td>
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<tr>
<td>TEMP. IMPACT ATTENUATION BARR. (REPAIR)</td>
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<td>1</td>
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<td>TOTALS:</td>
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<td>12</td>
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<td>48</td>
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<td>360</td>
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Note: This is a low traffic volume road as defined in Section B04.03, Standard Specifications for Highway Construction.
### REMOVAL AND DISPOSAL OF CULVERTS

<table>
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<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>BOX CULVERTS</th>
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<tr>
<td>107+52</td>
<td>4' X 7' X 24' R.C. BOX CULVERT</td>
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**TOTAL:** 1

**NOTE:** QUANTITIES SHOWN ABOVE SHALL INCLUDE REMOVAL, DISPOSAL OF ALL HEADWALLS AND FLARED END SECTIONS IF APPLICABLE.

### EARTHWORK

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>UNCLASSIFIED EXCAVATION</th>
<th>COMPACTED RENDEMENT</th>
<th><strong>SOIL STABILIZATION</strong></th>
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<tr>
<td>108+47</td>
<td>108+47</td>
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<tr>
<td>110-14</td>
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**TOTALS:** 4711.3 3558.16 10

### SOIL LOG

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<thead>
<tr>
<th>STATION</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>LOCATION</th>
<th>DEPTH</th>
<th>LIQUID LIMIT</th>
<th>PLASTICITY INDEX</th>
<th>AASHTO CLASSIFICATION</th>
<th>COLOR</th>
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<tr>
<td>109-58</td>
<td>23 11.07</td>
<td>89.35 15.0</td>
<td>15.00</td>
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<td>42</td>
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<td>109-59</td>
<td>23 21.70</td>
<td>89.55 15.0</td>
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<td>110-05</td>
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<td>89.35 15.0</td>
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<td>A-4.1</td>
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<td>110-14</td>
<td>23 21.70</td>
<td>89.55 15.0</td>
<td>15.00</td>
<td>4.20</td>
<td>0.42</td>
<td>20</td>
<td>21</td>
<td>A-4.1</td>
</tr>
</tbody>
</table>

SOIL CHARACTERISTICS SHOWN ABOVE ARE REPRESENTATIVE AT 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 EXTENT OF SAME DIFFERING FROM THE ABOVE TABULATIONS. A-93 REFUSAL.

### EROSION CONTROL

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>PERMANENT EROSION CONTROL</th>
<th>TEMPORARY EROSION CONTROL</th>
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<tr>
<td></td>
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<td>SEEDING</td>
<td>LIME</td>
</tr>
<tr>
<td></td>
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<td>ACRE</td>
<td>TON</td>
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<tr>
<td>ENGINE</td>
<td>PROJECT</td>
<td>CLEARING AND GRUBBING</td>
<td>2.17</td>
</tr>
<tr>
<td>ENGINE</td>
<td>PROJECT</td>
<td>STAGE 1</td>
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</tr>
<tr>
<td>ENGINE</td>
<td>PROJECT</td>
<td>STAGE 2</td>
<td>0.9</td>
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<tr>
<td>ENGINE</td>
<td>PROJECT</td>
<td>STAGE 3</td>
<td>0.9</td>
</tr>
<tr>
<td>CENTER</td>
<td>PROJECT</td>
<td>TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
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**TOTALS:** 1.33 2.64 1.33 13.8 1.33 1.91 1.91 39.8 0.9 220 0.42 0.2 200 250 133 133 1.04

### QUANTITIES

- **QUANTITIES ESTIMATED:** SEE SECTION 104.03 OF THE STD. SPECS.
### CONCRETE DITCH PAVING

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>&quot;W&quot;</th>
<th>CONC. DITCH PAVING</th>
<th>SOLID SODDING</th>
<th>WATER</th>
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</thead>
<tbody>
<tr>
<td>107+33.00</td>
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<td>HAY, 221-LT</td>
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<tr>
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<tr>
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#### TOTALS:
- BASIS OF ESTIMATE: 12.6 GAL / SQ. YD. OF SOLID SODDING.
- WATER: 211.20 / 2.65

### ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>TON</th>
<th>TACK COAT</th>
</tr>
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<tbody>
<tr>
<td>TOTAL</td>
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### BENCH MARKS

<table>
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<tr>
<td>107+50</td>
<td>HEADWALL ON L.T. OF R.C. BOX CULVERT</td>
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<tr>
<td>109+90</td>
<td>HEADWALL ON L.T. OF R.C. BOX CULVERT</td>
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</table>

#### TOTAL:
- NOTE: SHOWN FOR INFORMATION ONLY. BENCH MARKS SHALL BE PUBLISH AND PLACED BY STATE FORCES.
- WATER: 568.66

### COLD MILLING ASPHALT PAVEMENT

#### STATION DESCRIPTION:

<table>
<thead>
<tr>
<th>TEMPORARY CULVERTS SPAN</th>
<th>HEIGHT</th>
<th>LENGTH</th>
<th>CLASS S CONCRETE ROADWAY</th>
<th>REINF. STEEL</th>
<th>ROADWAY (GRADE 00)</th>
<th>UNEXC. FOR STR. ROADWAY</th>
<th>SOIL SODDING</th>
<th>WATER</th>
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</thead>
<tbody>
<tr>
<td>107+12.43</td>
<td>12' X 14'</td>
<td>12' X 14'</td>
<td>68.12</td>
<td>37.78</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>107+12.49</td>
<td>12' X 14'</td>
<td>12' X 14'</td>
<td>64.12</td>
<td>7297</td>
<td></td>
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<tr>
<td>107+12.72</td>
<td>12' X 14'</td>
<td>12' X 14'</td>
<td>64.12</td>
<td>7297</td>
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<tr>
<td>110+12.75</td>
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<td>64.12</td>
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#### TOTALS:
- NOTE: AVERAGE MILLING DEPTH 1'
- WATER: 568.66

### 4" PIPE UNDERDRAIN

#### UNDERDRAIN OUTLET PROTECTORS

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### STRUCTURES

#### STATION DESCRIPTION:

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<th>LENGTH</th>
<th>CLASS S CONCRETE ROADWAY</th>
<th>REINF. STEEL</th>
<th>ROADWAY (GRADE 00)</th>
<th>UNEXC. FOR STR. ROADWAY</th>
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<th>WATER</th>
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<tbody>
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<td>107+12.43</td>
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<td>12' X 14'</td>
<td>68.12</td>
<td>37.78</td>
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<tr>
<td>107+12.49</td>
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<td>12' X 14'</td>
<td>68.12</td>
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<tr>
<td>107+12.72</td>
<td>12' X 14'</td>
<td>12' X 14'</td>
<td>68.12</td>
<td>37.78</td>
<td></td>
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<tr>
<td>110+12.75</td>
<td>12' X 14'</td>
<td>12' X 14'</td>
<td>68.12</td>
<td>37.78</td>
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#### TOTALS:
- NOTE: AVERAGE MILLING DEPTH 1'
- WATER: 568.66

### ACHIM PATCHING OF EXISTING ROADWAY

#### DESCRIPTION:

<table>
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### BASE AND SURFACING

#### STATION LOCATION LENGTH AGGREGATE BASE (GRADE 12") TACK COAT ACHIM SURFACE COURSE (12")

<table>
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<tr>
<th>TON STATION</th>
<th>TON AVG. WID. SQ.YD. GALLONS / GALLON AVG. WID. SQ.YD. POUND / SQ.YD. PG 64-22</th>
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<tbody>
<tr>
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<tr>
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<td>110+07.66</td>
<td>110+17.67</td>
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#### TOTALS:
- BASE OF ESTIMATE: 12.6 GAL / SQ. YD. OF SOLID SODDING.
- WATER: 211.20 / 2.65

### QUANTITIES

- ACHIM SURFACE COURSE (12") 34.7% MIN. AGGR. 5.3% ASPHALT BINDER
- MAXIMUM NUMBER OF GALS/RICTION = 115 FOR PG 64-22
## SUMMARY OF QUANTITIES

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<th>ITEM NUMBER</th>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
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<td>STATION</td>
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<tr>
<td>201</td>
<td>GRADING</td>
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<td>STATION</td>
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<td>202</td>
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<td>BD TEMPORARY CULVERT</td>
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<tr>
<td>SS &amp; 604</td>
<td>DRAIN</td>
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<td>BARRIERS</td>
<td>96</td>
<td>LIN FT</td>
</tr>
<tr>
<td>SS &amp; 604</td>
<td>TRAFFIC CURVES</td>
<td>36</td>
<td>EACH</td>
</tr>
<tr>
<td>604</td>
<td>FURNISHING AND INSTALLING PRECAST CONCRETE BASIN</td>
<td>360</td>
<td>LIN FT</td>
</tr>
<tr>
<td>604</td>
<td>RELOCATING PRECAST CONCRETE BASIN</td>
<td>180</td>
<td>LIN FT</td>
</tr>
<tr>
<td>604</td>
<td>CONSTRUCTION PAVEMENT MARKING</td>
<td>8088</td>
<td>LIN FT</td>
</tr>
<tr>
<td>SS &amp; 604</td>
<td>VERTICAL PANELS</td>
<td>12</td>
<td>EACH</td>
</tr>
<tr>
<td>605</td>
<td>CONCRETE DITCH COVER</td>
<td>324</td>
<td>SQ YD</td>
</tr>
<tr>
<td>611</td>
<td>UNDERDRAIN OUTLET PROTECTORS</td>
<td>2</td>
<td>EACH</td>
</tr>
<tr>
<td>611</td>
<td>F-PIPE UNDERDRAIN</td>
<td>900</td>
<td>LIN FT</td>
</tr>
<tr>
<td>619</td>
<td>WIRE FENCE (TYPE D)</td>
<td>1063</td>
<td>LIN FT</td>
</tr>
<tr>
<td>619</td>
<td>IF STEEL GATE</td>
<td>5</td>
<td>EACH</td>
</tr>
<tr>
<td>619</td>
<td>ALUMINUM GATES (ALTERNATE NO. 1)</td>
<td>5</td>
<td>EACH</td>
</tr>
<tr>
<td>620</td>
<td>ASH</td>
<td>3</td>
<td>TOW</td>
</tr>
<tr>
<td>620</td>
<td>SEEDING</td>
<td>1.33</td>
<td>ACRE</td>
</tr>
<tr>
<td>620</td>
<td>MULCH COVER</td>
<td>3.24</td>
<td>ACRE</td>
</tr>
<tr>
<td>620</td>
<td>FLOWER</td>
<td>177</td>
<td>BAGS</td>
</tr>
<tr>
<td>621</td>
<td>TEMPORARY SEEDING</td>
<td>1.91</td>
<td>ACRE</td>
</tr>
<tr>
<td>621</td>
<td>Silt fence</td>
<td>520</td>
<td>LIN FT</td>
</tr>
<tr>
<td>621</td>
<td>SAND BAG, TRASH BAG</td>
<td>200</td>
<td>BAG</td>
</tr>
<tr>
<td>621</td>
<td>SEEDING BED</td>
<td>133</td>
<td>CU YD</td>
</tr>
<tr>
<td>621</td>
<td>SEEDING OF SEEDING BED</td>
<td>133</td>
<td>CU YD</td>
</tr>
<tr>
<td>621</td>
<td>SEEDING REMOVAL AND DISPOSAL</td>
<td>231</td>
<td>CU YD</td>
</tr>
<tr>
<td>621</td>
<td>ROCK DRIP GROOVE</td>
<td>254</td>
<td>CU YD</td>
</tr>
<tr>
<td>621</td>
<td>WIRE FENCE</td>
<td>90</td>
<td>LIN FT</td>
</tr>
<tr>
<td>621</td>
<td>TRUNKAL ON TREE</td>
<td>250</td>
<td>LIN FT</td>
</tr>
<tr>
<td>623</td>
<td>SEEDING SEEDING APPLICATION</td>
<td>1.33</td>
<td>ACRE</td>
</tr>
<tr>
<td>624</td>
<td>SOLO RODMON</td>
<td>260</td>
<td>SQ YD</td>
</tr>
<tr>
<td>505</td>
<td>ROADWAY CONSTRUCTION CONTROL</td>
<td>1.00</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>718</td>
<td>REFLECTORIZED PAINT PAVEMENT MARKER WHITE (C)</td>
<td>2799</td>
<td>LIN FT</td>
</tr>
<tr>
<td>719</td>
<td>REFLECTORIZED PAINT PAINT PAVEMENT MARKER YELLOW (A)</td>
<td>2301</td>
<td>LIN FT</td>
</tr>
<tr>
<td>721</td>
<td>RAISED PAVEMENT MARKERS (TYPE)</td>
<td>26</td>
<td>EACH</td>
</tr>
<tr>
<td>731</td>
<td>TEMPORARY IMPACT ATTENUATION BARRIER</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>731</td>
<td>TEMPORARY IMPACT ATTENUATION BARRIER</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>801</td>
<td>UNCLASSIFIED EXCAVATION FOR STRUCTURES ROADWAY</td>
<td>80</td>
<td>CU YD</td>
</tr>
<tr>
<td>802</td>
<td>CLASS S CONCRETE ROADWAY</td>
<td>63</td>
<td>CU YD</td>
</tr>
<tr>
<td>804</td>
<td>REINFORCING STEEL ROADWAY (GRADE 60)</td>
<td>7297</td>
<td>POUND</td>
</tr>
<tr>
<td></td>
<td><strong>SUMMARY OF QUANTITIES</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### REVISIONS

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISION</th>
<th>SHEET NUMBER</th>
</tr>
</thead>
</table>

* DENOTES ALTERNATE (D) ITEMS.
The steel and additional concrete for the walls shall not be paid for. Correctly filled concrete shall be considered to be included in the price bid for concrete ditch paving.

Toe wall depth may be increased by the amount of excavation.

Toe wall detail for concrete ditch paving.

GENERAL NOTES:

The full width of each section shall be poured monolithically.

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

Solid side rows of ditch paving to be placed within 14 days of ditch paving construction.

2' wide transverse expansion joints shall be placed in concrete ditch paving at 10 ft intervals. The space shall be filled with approved joint filler complying with AASHTO M323.

Arkansas State Highway Commission
Concrete Ditch Paving

Standard Drawing CPD-1
CONSTRUCTION SEQUENCE
1. Place structural bedding material to grade, do not compact.
2. Install pipe to grade.
3. Compact structural bedding inside the notles [sic] of the pipe.

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

- LEGEND
  - DL = Outside diameter of pipe
  - MAX = Maximum length
  - HD = Maximum HD
  - UND = Undisturbed soil
  - SH = Fill cover height over pipe (feet)

EMBANKMENT AND TRENCH INSTALLATIONS
1. Structural backfill, embankment, and outer structural bedding material shall be compacted to 90% of the maximum density according to the type or class of material used.
2. Installation type 1 or 2 may be used for corrugated steel or aluminum pipe.
3. Installation type 1 shall be used for corrugated steel or aluminum pipe with 2%/5" compacted backfill.
4. Installation type 2 may be used for corrugated steel or aluminum pipe with 3%/7" compacted backfill.

GENERAL NOTES
1. Metal pipe culvert construction shall conform to the Arkansas Highway and Transportation Department's Standards Specifications for Highway Construction Current Edition. When adopted, Special Provisions and Specifications noted in the plan section and drawing shall replace the standards in this document.
3. Metal pipe culvert materials and installations shall conform to Section 406 and those special specifications required by the Department.
4. All pipes shall be protected against rust by a coating sufficient to prevent rusting from exposure of equipment.
5. The minimum width of the pipe shall be the outside diameter of the pipe plus 24 inches.
6. Multiple pipe culvert shall be installed with a minimum clearance of 24 inches between the centers of adjacent pipes.
7. If the fill is required to be placed less than 72 inches deep, the fill shall be placed in 12" lifts with at least 24" of clear space between lifts.
8. In cases where the fill is required to be placed less than 72 inches deep, the fill shall be placed in 12" lifts with at least 24" of clear space between lifts.
9. If the fill is required to be placed less than 72 inches deep, the fill shall be placed in 12" lifts with at least 24" of clear space between lifts.
10. If the fill is required to be placed less than 72 inches deep, the fill shall be placed in 12" lifts with at least 24" of clear space between lifts.
11. If the fill is required to be placed less than 72 inches deep, the fill shall be placed in 12" lifts with at least 24" of clear space between lifts.
MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

<table>
<thead>
<tr>
<th>Trench Width</th>
<th>&quot;H&quot;</th>
<th>0-0.5&quot;</th>
<th>0.5-1.0&quot;</th>
<th>1.0-1.5&quot;</th>
<th>1.5-2.0&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;H&quot;&lt; 0.5&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>0.5&quot;&lt; &quot;H&quot;&lt; 1&quot;</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>1&quot;&lt; &quot;H&quot;&lt; 1.5&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>1.5&quot;&lt; &quot;H&quot;&lt; 2&quot;</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>12&quot;</td>
</tr>
</tbody>
</table>

MINIMUM COVER FOR CONSTRUCTION LOADS

<table>
<thead>
<tr>
<th>Load</th>
<th>0-Max Cover (ft) for Indicated Construction Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>6&quot;</td>
</tr>
<tr>
<td>50</td>
<td>8&quot;</td>
</tr>
<tr>
<td>100</td>
<td>10&quot;</td>
</tr>
<tr>
<td>200</td>
<td>12&quot;</td>
</tr>
</tbody>
</table>

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASHHT HDPE TYPE 5 INSTALLATION SHALL CONFORM TO AASHTO M422, FIFTH EDITION DESIGN, WHICH IS THE STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION EMBANKMENT AND TRENCH INSTALLATION.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Class Distance (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>2</td>
</tr>
<tr>
<td>3&quot;</td>
<td>3</td>
</tr>
<tr>
<td>4&quot;</td>
<td>4</td>
</tr>
</tbody>
</table>

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 PIPE FILL SHALL BE PLACED AND COMPACTED IN SUCH A MANNER AS TO AVOID THE ELEVATION OF THE STRUCTURAL PIPE FILL.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, MOULDING, OR OTHER APPR Proven Methods in order to help maintain the integrity of the alignment.

LEGEND

- \( H \) = Full Height (ft)
- \( D_p \) = Outside Diameter of Pipe
- \( w_i \) = Maximum
- \( w_m \) = Minimum
- \( S \) = Structural Backfill Material
- \( U \) = Undisturbed Soil

ARKANSAS STATE HIGHWAY COMMISSION
PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)
STANDARD DRAWING PCP-1
**MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DIAMETER (IN.)</th>
<th>MAX FILL HEIGHT (FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.375</td>
<td>0.25</td>
</tr>
<tr>
<td>3</td>
<td>0.50</td>
<td>0.30</td>
</tr>
<tr>
<td>4</td>
<td>0.625</td>
<td>0.35</td>
</tr>
<tr>
<td>6</td>
<td>0.75</td>
<td>0.40</td>
</tr>
<tr>
<td>8</td>
<td>0.875</td>
<td>0.45</td>
</tr>
</tbody>
</table>

*NOTE: MINIMUM COVER VALUE "M" SHALL INCLUDE A MINIMUM "H" OF PAVEMENT AND/OR BASE.*

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>MAX COVER (FT)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.375</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>0.50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>0.625</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>0.75</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>0.875</td>
<td>0.70</td>
<td></td>
</tr>
</tbody>
</table>

*MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTENANCE CONSTRUCTION DESIGN SURFACE. THE SURFACE SHALL BE MAINTAINED.*

**MULTIPLE INSTALLATION OF PVCPIPES**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>MAX COVER (FT)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.375</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>0.50</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>0.625</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>0.75</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>0.875</td>
<td>0.70</td>
<td></td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. PVC SHALL CONFORM TO ASTM F924 - PVC PIPE CLASS 2A INSTALLATION SHALL CONFORM TO ASSO CI-SP-6 SPECIAL PROVISION.

2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO ASABO LIPO BRIDGE DESIGN SPECIFICATION, 12TH EDITION.

3. THE MATERIALS AND DESIGN SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS AND PREVIOUSLY SELECTED DESIGN.

4. THE MINIMUM COVER SHALL BE IN CONFORMITY WITH THE REQUIREMENTS OF THE RECOMMENDED MINIMUM COVER.

5. CONSTRUCTION SEQUENCE

   1. PLACE STRUCTURAL BACKFILL MATERIAL TO GRADE, DO NOT COMPACT.
   2. INSTALL PIPE TO GRADE.
   3. INFERIOR MATERIALS OUTSIDE THE MIDDLE THIRD OF THE PIPE.
   4. THE STRUCTURAL BACKFILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 1.5 FT. THE SURFACE SHALL BE FLATTENED TO THE TRENCH BASELINE.
   5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WELDING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALONGMENT.

   **- LEGEND -**

   - FILL HEIGHT "M"
   - OUTSIDE DIAMETER OF PIPE "Dp"  
   - MINIMUM "H"  
   - STRUCTURAL BACKFILL MATERIAL  
   - UNDISTURBED SOIL

ARKANSAS STATE HIGHWAY COMMISSION
PLASTIC PIPE CULVERT
(PVC F949)

STANDARD DRAWING PCP-2

REV 04 7-21-14
REVISION DATE 08-31-14
CONCRETE PAVEMENT

BROKEN LINE STRIPING

ASPHALT PAVEMENT

SOLID LINE STRIPING ON CONCRETE PAVEMENT

SOLID LINE STRIPING ON ASPHALT PAVEMENT

ASPHALT PAVEMENT

CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

CROSSWALK AND STOPBAR DETAILS

NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION 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 PLAN.

2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT

PAVEMENT EDGE LINE MARKING

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

NOTES:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REASONS FOR SMALL MARKERS MAY BE MADE BY REFERRING TO THE AHD QUALIFIED PRODUCTS LIST.
REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 7-DAY COMPRESSIVE STRESS OF 3500 PSI.
REINFORCEMENT STEEL SHALL BE ASHLEYS M-3 0/14 Ø 5/32, GRADE 60.
CONSTRUCTION AND MATERIALS FOR WINDWALLS & CULVERT DRAINS TO INCLUDE WEEP HOLES AND GRANULAR MATERIAL SHALL BE SUBSEQUENT TO THE BIG ITEM, "CLASS S CONCRETE".
MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 8.8 OF THE STANDARD SPECIFICATIONS.
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF THE BOX CULVERTS AS DIRECTED BY THE ENGINEER.
PAYMENT FOR ALL SUCH ITEMS WILL BE MADE FOR THIS ITEM, BUT PAYMENT WILL CONSIDER TO BE INCLUDED IN THE VARIOUS ITEMS INDICATED FOR THE OTHER BOX CULVERT.

REINFORCED STEEL, TOLERANCES: THE TOLERANCES FOR REINFORCED STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCEMENT INSTITUTE (CRI) EXCEPT THAT THE TOLERANCE FOR TRESS BARS SUCH AS FIGURE 3 ON PAGE 7-14 OF THE CRI MANUAL SHALL BE MINUS 0.20 TO PLUS 0.03 INCHES.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MINIMUM HORIZONTAL SPACING OF 12"-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCED STEEL. THE DIAMETER OPENING SHALL BE 4"-0" AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WINDWALLS IN WINDWALLS SHALL HAVE A MINIMUM HORIZONTAL SPACING OF 12"-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCED STEEL. THERE SHALL BE A MINIMUM OF 12"-0" WINDWALL TO WINDWALL, THE GROUND OPENING SHALL BE 4"-0" AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINDWALL FOOTING.

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

OVERALL HEIGHT OF HOOKED BAR DIAMETER


FOR SKewed CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>LENGTH OF HOOKED BAR</th>
<th>LENGTH OF STRAIGHT BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
<tr>
<td>1&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
<tr>
<td>2&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
<tr>
<td>3&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
<tr>
<td>4&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
<tr>
<td>5&quot;</td>
<td>L = 7'-0&quot;</td>
<td>See &quot;G&quot; Bar LENGTH</td>
</tr>
</tbody>
</table>

L = 7'-0" - 3 INCHES

REINFORCED CONCRETE BOX CULVERT HEADWALL MODIFICATIONS

R/C BOX CULVERT HEADWALL MODIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION
REINFORCED CONCRETE BOX CULVERT DETAILS
STANDARD DRAWING RGB-1
SOLID SODDING
R. C. BOX CULVERT

PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

EXCAVATION LINE

GRADE LINE

REDUCTION-PLACED IN HORIZONTAL LAYERS

BACKFILL-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:
ROADWAY EXCAVATION CHANNEL CHANGES WILL BE PAID FOR AT R.C. BOX CULVERT LOCATION. 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 CHANGES 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 LOCATION. 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 SECTIONS IN SECTION C-C ABOVE ARE SUBSTITUTED BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

SECTION B-B
DETAILS FOR NEW CHANNELS

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS,
BACKFILL & SOLID SODDING
FOR BOX CULVERTS

STANDARD DRAWING RCB-2
The contractor shall furnish the Precast Concrete Barriers and shall be responsible for the manufacture, delivery, storage, placement and removal. At the completion of the project, the Precast Concrete Barriers shall become the property of the Contractor.

Materials shall meet the following minimum requirements:

- **Concrete:** Strength Class C30 in accordance with AASHTO M 30.
- **Steel Plates:** Minimum thickness 3/16" thickness.
- **Steel Connection:** Minimum of #10 galvanized eyelets for connection to the Precast Concrete Barriers.

Specimens shall be cured in accordance with the requirements of AASHTO M 30. The Precast Concrete Barriers shall be fabricated in accordance with the requirements of AASHTO M 30 and shall be certified by an independent testing laboratory.

The Precast Concrete Barriers shall be fabricated in accordance with the requirements of AASHTO M 30. The Precast Concrete Barriers shall be certified by an independent testing laboratory.

**Roadway Section:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Bridge Decks:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Precast Concrete Barriers:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Steel Connection:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Stabilization Pin:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Preceding Existing and Installing Precast Concrete Barriers:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Bridges:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Stabilization Pin:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Preceding Existing and Installing Precast Concrete Barriers:**

- **Concrete Pavement:**
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**Bridges:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Stabilization Pin:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Preceding Existing and Installing Precast Concrete Barriers:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
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**Bridges:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Stabilization Pin:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Preceding Existing and Installing Precast Concrete Barriers:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.

**Bridges:**

- **Concrete Pavement:**
  - 6" thick concrete pavement.
  - Concrete pavement shall be placed in accordance with the requirements of AASHTO M 30.
4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (see BARRIER STABILIZATION DETAIL - BRIDGE DECKS STD, DRWG. TC-41)

** Offset Distance for Two Way Traffic Only

<table>
<thead>
<tr>
<th>Speed (m/s)</th>
<th>Offset Distance (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>30</td>
<td>15</td>
</tr>
</tbody>
</table>

If offset distance is not available, then see "Barrier Placement With Attenuator" detail shown below.

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION
TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-5
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
1. PLACe PERMITTOR CONTROLS SILT DITCHES - EXCAVATION DITCHES
2. PERFORM CLEARING AND GRUBBING OPERATION

EXCAVATION

EXISTING GROUND

INTERCEPTOR DITCH

EXISTING GROUND

PHASE 1 EXCAVATION

PHASE 2 EXCAVATION

PHASE 3 EXCAVATION

GENERAL NOTE

ALL CUT SLOPES SHALL BE DIGGED, PREPARED, SEEDED AND COVERED AS SPECIFIED.
SLOPES WILL BE EXCAVATED AND STABILIZED IN
EQUAL INCREMENTS NOT TO EXCEED 25 FT PERPENDICULARLY.

EMBANKMENT

EMBANKMENT DITCH TO BE 4' AS PLACED.

FINAL PHASE EMBANKMENT

PHASE 2 EMBANKMENT

PHASE 1 EMBANKMENT

GENERAL NOTE

ALL EMBANKMENT SLOPES WILL BE DUG, PREPARED, SEEDED AND COVERED AS
SPECIFIED. SLOPES WILL BE DUG AND STABILIZED IN
EQUALLY INCREMENTS NOT TO EXCEED 25 FT PERPENDICULARLY.

CONSTRUCTION SEQUENCE
1. INSTALL DRAINAGE DITCHES, CUT & CHECK ADJACENT VEGETATION, SILT DITCHES,
2. PERFORM PHASE 1 EMBANKMENT, PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EMBANKMENT, PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM PHASE 3 EMBANKMENT, PLACE PERMANENT OR TEMPORARY SEEDING.
5. DRIVE ROCK, PLACE PERMANENT OR TEMPORARY SEEDING.

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