HURRICANE CREEK STR. & APPRS.(S)

LITTLE RIVER COUNTY

ROUTE 234 SECTION 1

JOB 030487

FED. AID PROJ. ER-0041(42)

NOT TO SCALE

DESIGN TRAFFIC DATA

DESIGN YEAR: 2038
2018 ADT: 480
2038 ADT: 750
2038 OHM: 0.60
DIRECTIONAL DISTRIBUTION: 0.60
TRUCKS: 20

DESIGN SPEED: 55 MPH

STRUCTURES OVER 20'-0' SPAN

1. STA. 114+14 CONSTRUCT
   QUINT. 10' X 9' X 48' R.C. BOX CULVERT
   15° LT, FMD, SKEW
   WITH 3' WINGS LT. & RT.
   025: 2530 C.F.S., D.A.: 5734.4 ACRES
   SPAN=54'-0'

STA. 114+70.00
END JOB 030487

LOG MILE 1.41

LATITUDE: N 33°57'57" W 91°47'52"

LONGITUDE: N 33°57'57" W 91°47'52"

LENGTHS OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF PROJECT 180.00 FEET OR 0.00 MILES
NET: PROJECT 120.00 FEET OR 0.02 MILES

P.E. 030487

APPROVED
DEPUTY DIRECTOR
AND CHIEF ENGINEER

2-8-78
INDEX OF SHEETS, STANDARD DRAWINGS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES

INDEX OF SHEETS

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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 SHEET
12. CROSS SECTIONS

ROADWAY STANDARD DRAWINGS

DRAWING NO. TITLE DATE
PBC-1 PRECAST CONCRETE BOX CULVERTS 1-28-15
PM-1 PAVEMENT MARKING DETAILS 6-01-17
RCB-1 REFLECTIVE CONCRETE BOX CULVERT DETAILS 7-26-12
RCB-2 EXCAVATION PAY LIMITS, BACKFILL, & SOIL SLOPING FOR BOX CULVERTS 11-02-03
TC-1 STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION 4-13-17
TG-1 TEMPORARY EROSION CONTROL DEVICES 8-03-17
TEC-1 TEMPORARY EROSION CONTROL DEVICES 11-16-17
WF-4 WIRE FENCE TYPE C & D 9-22-02

GOVERNING SPECIFICATIONS

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

NUMBER TITLE
ERRATA ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FWHA-1773 REQUESTED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FWHA-1775 SUPPLEMENT - SPECIFIC EQUA. EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FWHA-1776 SUPPLEMENT - SPECIFIC EQUA. EMPLOYMENT OPPORTUNITY - RESPONSIBILITIES (23 U.S.C. 140)
FWHA-1777 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FWHA-1779 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FWHA-1779 SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FWHA-1779 SUPPLEMENT - WAGE RATE DETERMINATION
103-1 CONTRACTORS LICENSE
103-2 DEPARTMENT NAME CHANGE
103-3 ISSUANCE OF PROPOSALS
108-1 LIQUIDATED DAMAGES
108-2 WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
303-1 AGGREGATE BASE COURSE
403-1 DRAINAGE COATS
403-2 DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
403-3 CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1 RETROSPECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
605-1 MULCH COVER
606-1 ASSESSMENT OF WORKING DAYS/Maintenance of TRAFFIC
606-2 BIDDING REQUIREMENTS AND CONDITIONS
606-3 BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
606-4 BROADBAND INTERNET SERVICE FOR FIELD OFFICE
606-5 JOB CLASS RANKS/PREFERENCE ACT REQUIREMENTS
606-6 DELAYS IN RIGHT OF WAY OCCUPANCY
606-7 DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
606-8 GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
606-9 MAINTENANCE OF TRAFFIC
606-10 MANDATORY ELECTRONIC CONTRACT
606-11 MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
606-12 SHORING FOR CULVERTS
606-13 SOIL STABILIZATION
606-14 SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
606-15 UTILITY ADJUSTMENTS
606-16 WARM MIX ASPHALT

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAIL BOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BD FOR THE VARIOUS BD ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERO WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMS AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALY OR PURCHASED, AND THE CONTRACTOR MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONAL PERMIT REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. 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 CONTRACTORS EXPENSE.

INDEX OF SHEETS, STANDARD DRAWINGS, 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.
**Mid-Section**

### Bar Lap Table

<table>
<thead>
<tr>
<th># of Longs</th>
<th>Min. Bar Lap-Depth</th>
<th>Section Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-40.0 ft</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>+40.0 ft</td>
<td>&gt;230.0 ft</td>
</tr>
<tr>
<td>2</td>
<td>+80.0 ft</td>
<td>&gt;230.0 ft</td>
</tr>
<tr>
<td>3</td>
<td>+120.0 ft</td>
<td>&gt;192.0 ft</td>
</tr>
<tr>
<td>4</td>
<td>+160.0 ft</td>
<td>&gt;150.0 ft</td>
</tr>
<tr>
<td>5</td>
<td>+200.0 ft</td>
<td>&gt;116.0 ft</td>
</tr>
<tr>
<td>6</td>
<td>+230.0 ft</td>
<td>&gt;80.0 ft</td>
</tr>
<tr>
<td>7</td>
<td>+260.0 ft</td>
<td>&gt;40.0 ft</td>
</tr>
<tr>
<td>8</td>
<td>+290.0 ft</td>
<td></td>
</tr>
</tbody>
</table>

**Top Slab Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Bottom Slab Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Side Wall Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Interior Wall Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Top Slab Distribution Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Bottom Slab Distribution Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Side Wall Distribution Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Interior Wall Distribution Reinforcing Steel**

- # of Longs: 0, 1, 2, 3, 4, 5, 6, 7, 8
- Section Length: >40.0 ft, >80.0 ft, >116.0 ft, >150.0 ft, >192.0 ft, >230.0 ft
- Bar Lap-Depth: -40.0 ft, +40.0 ft, +80.0 ft, +120.0 ft, +160.0 ft, +200.0 ft, +230.0 ft, +260.0 ft, +290.0 ft

**Details of R.C. Box Culvert**

- Length: 124 ft
- Width: 6 ft
- Height: 8 ft
-材料:
  - Top Slab Reinforcing Steel
  - Bottom Slab Reinforcing Steel
  - Side Wall Reinforcing Steel
  - Interior Wall Reinforcing Steel
- Distribution Reinforcing Steel

**Note:**

- All dimensions and details are subject to professional engineer's approval.
- Any Bar Lap Required for the Box Culvert shall be considered subsidiary to the item "Reinforcing Steel - Box Culvert."
The required number of bars and lengths shown are for estimating purposes only. The actual number and length required shall be determined in field. Unless otherwise noted, all dimensions are in inches.
GENERAL NOTES:


LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have 90° chamfers.

Reinforcing Steel: Grade 60 (yield strength = 60,000 psi) conforming to ASHTO M201 or M222, Type 2A, 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 tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 3/8 inch.

Excavation and backfilling shall be in accordance with the requirements of Section B11. Membrane Waterproofing shall conform to the requirements of Section B11. Membrane Waterproofing shall be Type M and as directed by the Engineer applied to all construction joints in the top slab and the sidewalks of R.C. Box Culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

Weep Holes in Box culvert shall have a maximum horizontal spacing of 16" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

Weep Holes in wingwalls shall have a maximum horizontal spacing of 16" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

The barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be normal to the centerline of the barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise. All longitudinal construction joints shall be substituted to the Engineer for approval.

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

When the top slab of the box culvert serves as finished roadway surface, curving and finishing shall be in accordance with subsections B22.17 and B22.18 for bridge roadway construction, and a fine finish shall be applied in accordance with subsections B22.19 for Class S Treated Bridge Roadway Surface Finish. Curving and finishing shall not be paid for directly, but the Engineer shall be paid for incidental to the item “Class S Concrete-Roadway.” Class S Protective Surface Treatment shall be applied to the roadway surface and the work shall be paid for under the unit price listed for “Class S Protective Surface Treatment.”

When precast reinforced concrete box culverts are substituted for cast-in-place box culverts, they shall be manufactured according to ASTM C 1537 and meet the requirements of Section B17. When the top slab of the box culvert serves as the finished roadway surface, a precast 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

SPECIAL DETAILS
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.

Longitudinal Bar Spacing at Individual sections shall be maintained, which may result in noncontact bar laps.

LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWS, BOTTOM SLAB SIMILAR

WINDWALL ATTACHMENT

See "Details of Windwals" for additional information and windwal details.

TYPICAL KEYWAY DETAIL

See Construction Notes.

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF SINGLE BARREL

R.C. BOX CULVERT

SPECIAL DETAILS
ADVANCE WARNING
STA. 07+50.00
STA. 07+50.00

STA. 113+50.00
BEGIN JOB 030487
L.M. 1.41

STA. 114+70.00
END JOB 030487

MAINTENANCE OF TRAFFIC DETAILS
PERMANENT PAVEMENT MARKINGS

- ReflectORIZED paint pavement marking white (6") 640 lin. ft.
- ReflectORIZED paint pavement marking yellow (6") 640 lin. ft.

**TYPICAL STRIPING DETAIL**

- 6" dbl. yellow reflectORIZED paint pavement marking
- 6" white reflectORIZED paint pavement marking
### Advance Warning Signs and Devices

<table>
<thead>
<tr>
<th>Sign Number</th>
<th>Description</th>
<th>Sign Size</th>
<th>Entire Job</th>
<th>Maximum Number Required</th>
<th>Total Signs Required</th>
<th>Barricades (Type B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W00-1</td>
<td>Road Work Ahead</td>
<td>48x48&quot;</td>
<td>2</td>
<td>2</td>
<td>32</td>
<td>640</td>
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<tr>
<td>G02-2</td>
<td>End Road Work</td>
<td>48x48&quot;</td>
<td>2</td>
<td>2</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>R1-1</td>
<td>Road Closed</td>
<td>48x48&quot;</td>
<td>3</td>
<td>3</td>
<td>20</td>
<td>640</td>
</tr>
<tr>
<td>R1-3A</td>
<td>Road Closed Local Traffic Only</td>
<td>48x48&quot;</td>
<td>3</td>
<td>3</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>M4-2</td>
<td>Detour</td>
<td>48x48&quot;</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>M4-4</td>
<td>Detour/Shadow</td>
<td>48x48&quot;</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>3</td>
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<tr>
<td>M0-2</td>
<td>Detour</td>
<td>48x48&quot;</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>3</td>
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<tr>
<td>W0-2</td>
<td>ReflectORIZED</td>
<td>3</td>
<td>3</td>
<td>24</td>
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<tr>
<td></td>
<td>Raised Pavement Markers Type (B)</td>
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<td>32</td>
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<td></td>
<td>ReflectORIZED</td>
<td>4</td>
<td>4</td>
<td>640</td>
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</table>

**Note:** This is a low traffic volume road as defined in Section 604.03, standard specifications for highway construction.

### Permanent Pavement Markings

<table>
<thead>
<tr>
<th>Description</th>
<th>End of Job</th>
<th>Raised Pavement Markers</th>
<th>ReflectORIZED Paint Pavement Marking</th>
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<tr>
<td></td>
<td></td>
<td>Type (B) (300)</td>
<td>Type (B) (300)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(White)</td>
<td>(Yellow)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Raised Pavement Markers Type (B)</td>
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<td>640</td>
<td>640</td>
</tr>
<tr>
<td>ReflectORIZED Paint Pavement Marking White (B)</td>
<td>3</td>
<td>640</td>
<td>640</td>
</tr>
<tr>
<td>ReflectORIZED Paint Pavement Marking Yellow (F)</td>
<td>3</td>
<td>640</td>
<td>640</td>
</tr>
</tbody>
</table>

**Note:** This is a low traffic volume road as defined in Section 604.03, standard specifications for highway construction.

### Clearing and Grubbing

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Clearing/Grubbing</th>
</tr>
</thead>
<tbody>
<tr>
<td>113+00</td>
<td>HWY. 234</td>
<td>2</td>
</tr>
<tr>
<td>114+00</td>
<td>HWY. 234</td>
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**Total:** 2

### Removal and Disposal of Items

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Guardrail</th>
</tr>
</thead>
<tbody>
<tr>
<td>113+00</td>
<td>HWY. 234</td>
<td>150</td>
</tr>
<tr>
<td>114+00</td>
<td>HWY. 234</td>
<td>150</td>
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</tbody>
</table>

**Total:** 300

**Note:** The quantity shown above for the removal and disposal of guardrail shall include the removal and disposal of all guardrail, terminal, and terminal anchor posts.

### Removal and Disposal of Fencing

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Fencing</th>
</tr>
</thead>
<tbody>
<tr>
<td>112+59</td>
<td>HWY. 234</td>
<td>291</td>
</tr>
</tbody>
</table>

**Total:** 291

### Removal and Disposal of Culverts

<table>
<thead>
<tr>
<th>Station</th>
<th>Description</th>
<th>Type Culverts</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>114+14</td>
<td>Quad. 12x17 12x5 5&quot; CM ARCH PIPE</td>
<td>4</td>
<td></td>
</tr>
</tbody>
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**Total:** 4

### Earthwork

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Description</th>
<th>Unclassified Excavation</th>
<th>Compacted Embankment</th>
<th>Stabilization Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>114+14</td>
<td>HWY. 234</td>
<td>Headwall of R.C. Box Culvert</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 1

### Fence

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Wire Fence</th>
<th>Gates</th>
</tr>
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<tbody>
<tr>
<td>112+59</td>
<td>HWY. 234</td>
<td>147</td>
<td>1</td>
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</tbody>
</table>

**Total:** 269

### Soil Log

<table>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>113+00</td>
<td>31° 34' 40&quot; N</td>
<td>89° 31' 40&quot; W</td>
<td>60' RT.</td>
<td>0.6</td>
<td>NP</td>
<td>A-420</td>
<td>BROWN</td>
<td></td>
</tr>
<tr>
<td>114+00</td>
<td>31° 34' 40&quot; N</td>
<td>89° 31' 40&quot; W</td>
<td>60' RT.</td>
<td>0.6</td>
<td>NP</td>
<td>A-420</td>
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<td>31° 34' 40&quot; N</td>
<td>89° 31' 40&quot; W</td>
<td>60' RT.</td>
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<tr>
<td>116+00</td>
<td>31° 34' 40&quot; N</td>
<td>89° 31' 40&quot; W</td>
<td>60' RT.</td>
<td>0.6</td>
<td>NP</td>
<td>A-420</td>
<td>BROWN</td>
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</table>

**Note:** Soil characteristics tabulated 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/or extent of same differing from the above tabulations.

NP - Non-plastic
ND - Not Determinable
### SUMMARY OF QUANTITIES

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
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<td>GAL</td>
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**STRUCTURES OVER 25' SPAN**

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* DEMOTES ALTERNATE BID ITEMS.

### REVISIONS

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<tr>
<th>DATE</th>
<th>REVISION</th>
<th>SHEET NUMBER</th>
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### SUMMARY OF QUANTITIES AND REVISIONS
SURVEY CONTROL COORDINATES

Project Name: 030487
Date: 10/13/2016
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, CAF IS BASED ON ARC Pts
1:6 PROJECTED TO GROUND.

[Table]

<table>
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<tr>
<th>Point</th>
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</table>

Note:
- Bar and Cap - Standard: 5/8" Bar with 2" Aluminum Cap stamped
- Standard markings common to all captions, or as indicated

ALL DISTANCES ARE GROUND.
USE CAF = 0.9999991459 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
GRID COORDINATES ARE STORED UNDER FILE NAME 030487g; CTL
HORIZONTAL DATUM: NAV D 1983
VERTICAL DATUM: NAV D POSITONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.
REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL.
IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED, REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL.

BASIS OF COORDINATES:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE DETERMINED FROM GPS CONTROL POINTS 980000-980000
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

SURVEY CONTROL 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 8 FT. SPACING UNLESS OTHERWISE SHOWN IN THE PLAN.

CONCRETE PAVEMENT

BROKEN LINE STRIPING

CONTINUOUS YELLOW

CENTER JOIN

RAISED PAVEMENT MARKER (TYP)

APPLY ASphalt PAVEMENT

SOLID LINE STRIPING ON CONCRETE PAVEMENT

CROSSWALK AND STOPBAR DETAILS

APPLY

CONCRETE PAVEMENT

SOLID LINE STRIPING ON ASPHALT PAVEMENT

CROSSWALK AND STOPBAR DETAILS

CONTINUOUS YELLOW

RAISED PAVEMENT MARKER (TYP)

OMIT BROKEN LINE STRIPING

ASPHALT PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

WHITE YIELD LINE PERPENDICULAR TO ENTRY LANE

DICTION OF TRAVEL

YIELD LINE DETAIL

CROSSWALK AND STOPBAR DETAILS

STOPBAR OFFSET 4 FT. FROM CROSSWALK 4 FT. CROSSWALK STRIPES OFFSET NEAR EDGE OF CROSSWALK 3 FT. WALL FROM LANE EDGE

PAVEMENT EDGE LINE MARKING

CONTINUOUS WHITE

ROAMICS REFLECTOR

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

TYPE II RED/CLEAR OR YELLOW/YELLOW TRAFFIC MOVEMENT

NOTE: DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

ARKANSAS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1
Steel fabrication, reinforcing steel fabrication shall conform to the dimensions listed in the table below:

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>PIN DIAMETER</th>
<th>HOOK EXTENSION &quot;K&quot;</th>
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<tbody>
<tr>
<td>3</td>
<td>2 1/2&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>4</td>
<td>3&quot;</td>
<td>4 1/2&quot;</td>
</tr>
<tr>
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<td>6</td>
<td>6 1/2&quot;</td>
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</tr>
<tr>
<td>7</td>
<td>7 1/2&quot;</td>
<td>8&quot;</td>
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</table>

If the overall height of the hook (see diagram below) for a "b", "b', "b", "b", "b", or "b" bent bar is greater than the corresponding top or bottom slab thickness, less 2", holes, each bent bar shall be replaced with one hooked bar and one straight bar. See table below for lengths of replacement hooked and straight bars.

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: &quot;b&quot;, &quot;b&quot;, &quot;b&quot;, or &quot;b&quot;:</th>
<th>LENGTH OF HOOKED BAR</th>
<th>LENGTH OF STRAIGHT BAR</th>
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</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>L = r - 0&quot;</td>
<td>SEE &quot;c&quot; BAR LENGTH</td>
</tr>
<tr>
<td>5&quot;</td>
<td>L = r - 2&quot;</td>
<td>SEE &quot;c&quot; BAR LENGTH</td>
</tr>
<tr>
<td>6&quot;</td>
<td>L = r - 4&quot;</td>
<td>SEE &quot;c&quot; BAR LENGTH</td>
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<tr>
<td>7&quot;</td>
<td>L = r - 8&quot;</td>
<td>SEE &quot;c&quot; BAR LENGTH</td>
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<tr>
<td>8&quot;</td>
<td>L = r - 10&quot;</td>
<td>SEE &quot;c&quot; BAR LENGTH</td>
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<tr>
<td>9&quot;</td>
<td>L = r - 12&quot;</td>
<td>SEE &quot;c&quot; BAR LENGTH</td>
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<tr>
<td>L = &quot;01Y&quot; - 3 INCHES</td>
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<td></td>
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Drainage fill material (class 3 aggregate as specified in subsection 4.2.2.2) and reinforcing steel (length of culvert and wingwall) shall have same diameter as, and shall be spaced to conform below. See Table below for lengths of replacement hooked and straight bars.

Reinforced concrete box culvert general notes:

Concrete shall be class 5 with a minimum 28 day compressive strength of 3500 psi. Reinforcing steel shall be ASTM A 36 or in 53, Grade 60.

Construction and materials for wingwall & culvert drainage including deep holes and granular material, shall be subsidiary to the bid item "class 5 concrete".

Membrane waterproofing shall conform to the requirements of section 8.4B of the standard specifications.

Membrane waterproofing shall be applied to all construction joints in the top slab and the sidewalls of R.C. box culverts as directed by the Engineer. No payment shall be made for this item. Payment will be considered to be included in the various items bid for the R.C. box culvert.

Reinforcing steel tolerances; the tolerances for reinforcing steel shall meet those listed in manual of standard practice published by concrete reinforcing steel institute, except for various items such as Figure 3 on page 7-4 of the material manual shall be minus zero plus 1/2".

Deep holes in box culvert walls shall have a maximum horizontal spacing of 10" and shall be spaced to clear reinforcing steel. The drain opening shall be 4" in diameter and shall be placed 12" above the top of the bottom slab.

Deep holes in wingwalls shall have a maximum horizontal spacing of 0'-0" and shall be placed to clear all reinforcing steel. There shall be a minimum of two holes in each wingwall, the drain opening shall be 4" in diameter and shall be placed 12" above the top of the wingwall footing.

The requirements shown on this drawing shall supersede the corresponding requirements on all reinforced concrete box culvert standard drawings.

R.C. Box Culvert Headwall Modifications:

For all skewed R.C. box culverts, the length "X" of the modified headwall shall be equal to the roadway length "RL", the ends of the headwall shall be constructed parallel to the skew angle of the box culvert.

ARKANSAS STATE HIGHWAY COMMISSION

Reinforced Concrete Box Culvert Details

Standard Drawing RCB-1
ARKANSAS STATE HIGHWAY COMMISSION

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

SECTION A-A
DETAILS THROUGH EXISTING CHANNELS

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 LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE. ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR SEPARATELY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

SECTION B-B
DETAILS FOR NEW CHANNELS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.
NOTICE: Use light only when necessary for construction, maintenance, installation, or for the protection of individual or public safety.

 channelizing devices

**Traffic Control Devices** for vertical pavement differentials

1. To 3" edge of traveled lane
2. Greater than 3" edge of traveled lane
3. Greater than 3" shoulder

NOTE: Where used with acceptable traffic conditions and as directed by the Engineer.

channelizing devices

**Vertical Differential**

**Locations**

- NB
- SB
- NS
- RS

**Traffic Control**

- Standard line closure required
- Shoulder closure required
- Shoulder closure required

*When shown on the plans concrete barrier will be used.

channelizing devices

**NOTE:** For all road closures, the type & arrangement of channelizing devices will be determined by the Engineer.

**Key**

- Arrow Panel (Required)
- Channelizing Device
- Traffic drum

**General Notes**

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the roadway design division.
2. When the existing speed limit is 50mph and the zone requires a speed limit of 30mph, the 40/50 traffic signs shall be installed on the right shoulder.
3. Speed limit signs shall be installed at the end of the work zone on a 72"-long stand to match original-speed limit.
4. When the existing speed limit is 50mph and the zone requires a speed limit of 50mph, the 40/50 traffic signs shall be installed at a corner cut line to match original-speed limit.
5. The minimum spacing between channelizing devices in a taper should be one channelizing device in the work zone.
6. The speed limit on the channelizing devices shall not be exceeded or modified as soon as possible.
7. The 0.75"-long white line shall be applied to the edge of the shoulder.
8. Channelizing devices must be of sufficient length to extend across the entire roadway.

**Channelizing Devices**

- Type 1: Orange
- Type 2: White

**Vertical Panel Placement**

Spacing: 2 x Spaced Panel
Spaced to be installed on panels.

**Vertical Panel**

Visibility: 360°

**STOP SLOW PADDLE**

- Left: Orange
- Center: White
- Right: Black

**DETAIL OF SPlices**

- Splices shall be of standard length.

**Locations**

- Greater than 3" Shoulder
- Greater than 3" Shoulder
- Greater than 3" Shoulder

**Channelizing Devices**

- Delineator: Orange
- Delineator: White

**Standard Dimensions**

<table>
<thead>
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<th>Dimensions</th>
<th>Notes</th>
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<tr>
<td>2'-6&quot;</td>
<td>Width of lane and shoulder</td>
</tr>
<tr>
<td>3'-6&quot;</td>
<td>Width of lane and shoulder</td>
</tr>
<tr>
<td>5'-6&quot;</td>
<td>Width of lane and shoulder</td>
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</tbody>
</table>

**NOTES:** Use space only when necessary for construction, maintenance, installation, or for the protection of individual or public safety.

channelizing devices

**Channelizing Devices**

- Type 1: Orange
- Type 2: White

**Vertical Panel Placement**

Spacing: 2 x Spaced Panel
Spaced to be installed on panels.

**Vertical Panel**

Visibility: 360°

**STOP SLOW PADDLE**

- Left: Orange
- Center: White
- Right: Black

**DETAIL OF SPlices**

- Splices shall be of standard length.

**Standard Dimensions**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Notes</th>
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<tr>
<td>2'-6&quot;</td>
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</tbody>
</table>
CLEARING AND GRUBBING

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

EXCAVATION

EXISTING GROUND

EXISTING GROUND

INTERCEPTOR OR DIVERSION DITCH

EXISTING GROUND

INTERCEPTOR OR DIVERSION DITCH

GENERAL NOTE

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

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. Stabilize ditches, construct ditch checks, diversion ditches, sediment basins, or other erosion control devices as required.

EMBANKMENT

Embarkment

DIVERSION DITCH TO BE IN PLACE UNTIL SLOPE IS COMPLETELY STABILIZED.

PHASE 1 EMBANKMENT

PHASE 2 EMBANKMENT

PHASE 3 EMBANKMENT

GENERAL NOTE

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

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, ditch checks, sediment basins, silt fences, or other erosion control devices as specified.
2. Place Phase 1 embankment with permanent or temporary seeding. Stabilize ditches, construct ditch checks, diversion ditches, sediment basins, or other erosion control devices as required.
3. Place Phase 2 embankment with permanent or temporary seeding. Provide diversion ditches and slope drains if embankment construction is to be temporarily abandoned for a period of greater than 14 days.
4. Place final Phase 3 embankment with permanent or temporary seeding. Provide diversion ditches and slope drains and maintain until entire slope is stabilized.