### ROADWAY STANDARD DRAWINGS

<table>
<thead>
<tr>
<th>DRAWING NO.</th>
<th>TITLE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0503.12_</td>
<td>CONCRETE DITCH PAVING</td>
<td>12-08-18</td>
</tr>
<tr>
<td>0503.13_</td>
<td>METAL PIPE DITCH PAVING</td>
<td>10-18-86</td>
</tr>
<tr>
<td>0503.14_</td>
<td>PLASTIC PIPE DITCH PAVING</td>
<td>05-10-86</td>
</tr>
<tr>
<td>0503.15_</td>
<td>GRANITE PIPE DITCH PAVING</td>
<td>05-24-86</td>
</tr>
<tr>
<td>0503.16_</td>
<td>PLASTIC PIPE DITCH PAVING</td>
<td>08-12-86</td>
</tr>
<tr>
<td>0503.17_</td>
<td>CONCRETE DITCH PAVING</td>
<td>08-12-86</td>
</tr>
<tr>
<td>0503.18_</td>
<td>CEMENT CURED IN SITU PAVING</td>
<td>10-18-86</td>
</tr>
<tr>
<td>0503.19_</td>
<td>CONCRETE PAVEMENT</td>
<td>05-24-86</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR COVERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.

2. 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.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY BE ACCESSIBLE TO CONTINUOUS MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS WORK ITEMS.

4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 137.12 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 DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED 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 WHERE FENCE MAY BE CONSTRUCTED INFILL OR INLieu THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WHERE FENCE MAY BE CONSTRUCTED INFILL OR IN-LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.

8. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLAN IS A GENERAL GUIDE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.

9. ALL FLEXIBLE BASE AND ASPHALT PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.

10. ALL EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SANDING, ENSLAGE, OR EARTH. AFTER SANDING 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.
SHOULDER WIDENING SECTION

- Log Max. 4.5% to Log Max. 4.0%
- Log Max. 6.0% to Log Max. 5.5%
- Log Max. 7.5% to Log Max. 7.0%

24" EXISTING PAVEMENT RETAIN

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 permitted. Payment will not be made for material placed in excess of the tolerance permitted.
- Asphalt for leveling of existing pavement shall be placed only if and where directed by the engineer. Calculations for the amount of leveling as well as leveling operations shall be performed before constructing notch and widening. Calculations will not be paid for directly, but payment will be considered included in the various pay items.
- The final 2" of surface course is to be placed after all other courses have been laid. Longitudinal joints shall be at lane lines. With the approval of the engineer, the contractor will be allowed to substitute, at no additional cost to the department, the first left of the aggregate surface course w/2" in lieu of aggregate base course on the shoulders.

SITE 1 - NOTCH, RINK, AND OVERLAY SECTION

574.105-58.00 TO 581.640-30.00

TYPICAL SECTIONS OF IMPROVEMENT
DETAIL FOR COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION

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

CONSTRUCTION LIMITS

DETAIL FOR DRIVEWAY TURNOUTS
OPEN SHOULDER SECTION
(ARTERIALS)

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

ACI/ SURFACE COURSE (1/2")
3" LKD. PER SQ. YD., AND
ADJACENT BASE COURSE (CLASS 7)
7" Comp. Depth

DETAIL FOR TRANSITIONS

ACI/ SURFACE COURSE (1/2")
3" LKD. PER SQ. YD., AND
ADJACENT BASE COURSE (CLASS 7)
7" Comp. Depth IF ASPHALT OR
GRAVEL DRIVE EXISTING OR 6"
CONCRETE DRIVE EXISTING

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL
DETAIL FOR BOX CULVERT EXTENSIONS

L. M. 4.71 - RT.
L. M. 5.33 - LT. & RT.
L. M. 8.10 - LT. & RT.
L. M. 8.27 - LT. & RT.

DETAIL FOR R.C. PIPE EXTENSIONS

L. M. 9.70 - LT.
L. M. 10.34 - LT. & RT.
DETAILS OF RUMBLE STRIPE

LOCATION PLAN OF RUMBLE STRIPE
LEFT OR RIGHT SHOULDER

GENERAL NOTES
1. Rumble Stripes shall not be installed on driveway medians, approach slabs, intersecting streets or roadways, residential or commercial driveways or across transverse joints of concrete sidewalks.
2. Rumble Stripes shall not be installed on a paved shoulder that is used as a deceleration lane for the length deemed appropriate by the Engineer.
3. Rumble Stripes shall be measured by the linear foot laterally along the shoulder. Payment shall only include that portion of the shoulder on which rumble stripes have been constructed. No measurement or payment will be made for gaps, driveways, turnouts, or other public road intersections where rumble stripes have not been constructed.
4. The ¾” depth shall generally apply for the entire 6” length. Some variation to suit shoulder slope breaks may be necessary.

PLAN VIEW

DETAIL FOR GAP PATTERN RUMBLE STRIPE

NOTE: Gap pattern shall be provided by the Engineer in the field allowing for driveways to serve as the gap.
ASPHALT PAVEMENT

CONTINUOUS YELLOW

TRAVEL LANE

LOCATION PLAN OF CENTERLINE Rumble STRIPES

CONCRETE PAVEMENT

TRAVEL LANE

CONTINUOUS YELLOW

TRAVEL LANE

EDGE LINE

SHOULDER

PLAN

SECTION B-B

SECTION A-A

DETAILS OF CENTERLINE Rumble STRIPES

GENERAL NOTES

1. RAILED STRIPES SHALL NOT BE INSTALLATION ON BRIDGE DECKS, APPROACH SLABS, INTERSECTION SHARKS OR ROADWAYS.

2. THE STRIPES SHALL BE MEASURED FROM THE OUTSIDE FOOT LONGITUDINALLY ALONG THE CENTERLINE.

3. THE 16' DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 16' LENGTH, SOME varation TO SUIT SLOPE BREAKS MAY BE NECESSARY.

SPECIAL DETAILS
STA. 102+62.00
END SHOULDER WIDENING
BEGIN SITE 1
LOG MILE 10.60

STA. 110+30.00
END SITE 1
END JOB 050313

LEGEND

REVISIONS

DATE OF REVISION

REVISION

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS
STA. 102+62.00
END SHOULD WIDENING
BEGIN SITE 1
LOG MILE 10.60

STA. 110+30.00
END SITE 1
END JOB 050313

LEGEND

REVISIONS

DATE OF REVISION

REVISION
ADVANCE WARNING (ALL STAGES)

ALL STAGES TO BE USED F AND WHERE DIRECTED BY THE ENGINEER

DO NOT PASS

(3) W/Rg-1
150' x 30'

ALL STAGES TO BE USED F AND WHERE DIRECTED BY THE ENGINEER

(24) B-6-1
24' x 30'

ALL STAGES TO BE USED F AND WHERE DIRECTED BY THE ENGINEER

(10) R-6-1
150' x 70'

ADVANCE WARNING - SIDE ROADS (ALL STAGES)

L.M. 4.35, LOOP ROAD
L.M. 4.35, HWY. 230
L.M. 4.77, JENIFER LANE
L.M. 4.94, JEFFERY CUTOFF
L.M. 5.76, LOOP ROAD
L.M. 7.63, VAN EMBURG ROAD
L.M. 7.97, ALDERBROOK ROAD
L.M. 8.00, VAN LANE
L.M. 8.03, BOGGY STREET
L.M. 8.09, DESHAWN ROAD
L.M. 8.27, BUFFORD STREET
L.M. 8.28, FOUSHEE ROAD
L.M. 8.45, CATER FERRY ROAD
L.M. 8.48, JAMESTOWN ROAD
L.M. 8.54, LESTER ROAD
L.M. 9.00, FRED STREET
L.M. 9.44, HIPPIE LANE
L.M. 9.69, BOYD ROAD
L.M. 9.78, BARRETT LANE
L.M. 9.92, ZACK STREET
L.M. 10.02, AMANDA DRIVE
L.M. 10.07, CAROL LANE
L.M. 10.25, ATCHISON PLACE
L.M. 10.28, PONAROSA ROAD
L.M. 10.32, SIMPSON ROAD
L.M. 10.48, CHAMBLEE CIRCLE
STA. 105+96, CHAMBLEE CIRCLE
STA. 106+01, CHAMBLEE DRIVE
L.M. 10.86, TRIANGLE LANE

NOTE: ALL STATIONS/LOG MILES BASED OFF HWY. 25.
DETAIL FOR STAGE CONSTRUCTION
STA. 102+62.00 - STA. 110+30.00

TURNBACK: 200'
* SPECIAL END UNIT OR T.J.A.R.

TURNBACK: 53'
* SPECIAL END UNIT

VARIABLE

REFER ALSO TO STANDARD DRAWING TC-5
FOR DETAILS OF PLACEMENT OF PCGB TURNBACKS.

NOTE: OM-1L & OM-3R SIGNS SHALL
BE EQUALLY SPACED ALONG PCGB
TURNBACK.

DETAIL OF OBJECT MARKERS
AT PRECAST CONCRETE BARRIER TURNBACKS

TRAFFIC DRUMS AND SIGNS ON EXISTING SHOULDER
FOR EXTENDING/CONSTRUCTING PIPE CULVERTS LT. AND RT.
## CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>END OF</th>
<th>CONSTRUCTION</th>
<th>RAISED PAVEMENT</th>
<th>THERMOPLASTIC PAVEMENT</th>
<th>REFLECTORIZED PAINT PAVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LBL FT</td>
<td>EACH</td>
<td>LBL FT</td>
<td>EACH</td>
<td>LBL FT</td>
<td>LBL FT</td>
<td>LBL FT</td>
</tr>
<tr>
<td>CONSTRUCTION PAVEMENT MARKINGS</td>
<td>3872</td>
<td>110</td>
<td>7744</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAISED PAVEMENT MARKERS TYPE (YELLOW/WHITE)</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THERMOPLASTIC PAVEMENT MARKING WHITE (WHITE)</td>
<td>1830</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THERMOPLASTIC PAVEMENT MARKING YELLOW (YELLOW)</td>
<td>2542</td>
<td>12</td>
<td>2542</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THERMOPLASTIC PAVEMENT MARKING GREEN (GREEN)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THERMOPLASTIC PAVEMENT MARKING ARROWS (ARROWS)</td>
<td>280</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFLECTORIZED PAINT PAVEMENT MARKING WHITE (WHITE)</td>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (YELLOW)</td>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>7744</td>
<td>19</td>
<td>1830</td>
<td>2942</td>
<td>1</td>
<td>2</td>
<td>280</td>
</tr>
</tbody>
</table>

### NOTE:
This is a high traffic volume road as defined in section 04-03. Standard specifications for highway construction.

### ADVANCE WARNING SIGNS AND DEVICES

<table>
<thead>
<tr>
<th>SIGN NUMBER</th>
<th>DESCRIPTION</th>
<th>SIGN SIZE</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>MAXIMUM NUMBER REQUIRED</th>
<th>TOTAL SIGNS REQUIRED</th>
<th>VERTICAL PANELS</th>
<th>TRAFFIC DRUMS</th>
<th>TRAFFIC CONE</th>
<th>FUNCTIONAL INSTALLING PRECAST CONCRETE BARRIER</th>
<th>RELOCATING PRECAST CONCRETE BARRIER</th>
<th>TEMPORARY IMPACT ATTENUATION BARRIER (TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR))</th>
<th>TEMP IMPACT ATTEN BARR. (REPAIR)</th>
<th>TEMP IMPACT ATTEN BARR. (RELOCATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VD0-1</td>
<td>ROAD WORK 1000 FT</td>
<td>48 x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VD1-1</td>
<td>ROAD WORK 1000 FT</td>
<td>48 x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VD0-1</td>
<td>ROAD WORK 500 FT</td>
<td>48 x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VD0-1</td>
<td>ROAD WORK AHEAD</td>
<td>48 x48&quot;</td>
<td>26</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>486</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O2-1</td>
<td>END ROAD WORK</td>
<td>48 x48&quot;</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>249</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VD0-1</td>
<td>ROAD WORK NEXT 6 MILES</td>
<td>60 x60&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OML-1</td>
<td>OBJECT MARKER</td>
<td>12 x12&quot;</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OML-3R</td>
<td>OBJECT MARKER</td>
<td>12 x12&quot;</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DoN-1</td>
<td>DO NOT PASS</td>
<td>24 x30&quot;</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VD1-5S</td>
<td>RIGHT SHOULDER CLOSED</td>
<td>24 x36&quot;</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VD1-5R</td>
<td>SLIP</td>
<td>30 x30&quot;</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>37.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VERTICAL PANELS</td>
<td></td>
<td>235</td>
<td>235</td>
<td>235</td>
<td>235</td>
<td>235</td>
<td>235</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRAFFIC DRUMS</td>
<td></td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRAFFIC CONE</td>
<td></td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FUNCTIONAL INSTALLING PRECAST CONCRETE BARRIER</td>
<td>399</td>
<td>150</td>
<td>532</td>
<td>532</td>
<td>532</td>
<td>399</td>
<td>399</td>
<td>4</td>
<td>399</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELOCATING PRECAST CONCRETE BARRIER</td>
<td>399</td>
<td>399</td>
<td>399</td>
<td>399</td>
<td>399</td>
<td>399</td>
<td>399</td>
<td>4</td>
<td>399</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>1095.5</td>
<td>235</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>532</td>
<td>399</td>
<td>4</td>
<td>399</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### NOTE:
This is a high traffic volume road as defined in section 04-03. Standard specifications for highway construction.

The quantity of vertical panels provided in the contract is one side of the roadway for 2 miles. This is the maximum quantity required to allow the contractor to notch one mile, backfill to a point where the vertical differential is 4" or less, and then notch another one mile section. This is the maximum number of vertical panels that will be paid for. Refer to section 060 of the standard specifications for construction requirements.

### CLEARING AND GRUBBING

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>CLEARING AND GRUBBING</th>
</tr>
</thead>
<tbody>
<tr>
<td>104-80</td>
<td>105-60</td>
<td>HWY 25 L.T 6 RT</td>
<td>1</td>
</tr>
<tr>
<td>108-60</td>
<td>111-50</td>
<td>HWY 25 L.T</td>
<td>5</td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

### REMOVAL AND DISPOSAL OF FENCE

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>FENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>104-21</td>
<td>105-21</td>
<td>HWY 25 RT</td>
<td>1</td>
</tr>
<tr>
<td>106-22</td>
<td>110-60</td>
<td>HWY 25 L.T</td>
<td>2</td>
</tr>
<tr>
<td>108-60</td>
<td>110-50</td>
<td>HWY 25 L.T 8 RT</td>
<td>1</td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td></td>
<td>42</td>
</tr>
</tbody>
</table>

### REMOVAL AND DISPOSAL OF ITEMS

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>CURB AND GUTTER</th>
<th>DRAINAGE</th>
<th>CONCRETE FOUNDATIONS</th>
<th>SIGN FOUNDATIONS</th>
<th>SIGNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-21</td>
<td>102-21</td>
<td>HWY 75 LT</td>
<td>67</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102-21</td>
<td>102-21</td>
<td>HWY 75 RT</td>
<td>58</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>108-60</td>
<td>108-60</td>
<td>HWY 75 RT</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>108-60</td>
<td>108-60</td>
<td>HWY 75 LT</td>
<td>78</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td></td>
<td>76</td>
<td>27</td>
<td>126</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### REMOVAL AND DISPOSAL OF CULVERTS

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>PIPE CULVERTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-21</td>
<td>18&quot; x 24&quot; C.M. IDE DRAIN</td>
<td>1</td>
</tr>
<tr>
<td>102-21</td>
<td>18&quot; x 24&quot; IDE DRAIN</td>
<td>1</td>
</tr>
<tr>
<td>102-21</td>
<td>18&quot; x 24&quot; IDE DRAIN</td>
<td>1</td>
</tr>
<tr>
<td>104-10</td>
<td>18&quot; x 24&quot; IDE DRAIN</td>
<td>1</td>
</tr>
<tr>
<td>104-14</td>
<td>18&quot; x 24&quot; IDE DRAIN</td>
<td>1</td>
</tr>
<tr>
<td>104-14</td>
<td>18&quot; x 24&quot; IDE DRAIN</td>
<td>1</td>
</tr>
</tbody>
</table>

### TOTAL QUANTITIES

5

### NOTE:
Quantities shown above shall include removal & disposal of all headwalls and flared end sections if applicable.
### 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>Plastic Index</th>
<th>AASHTO Classification</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>104-50</td>
<td>38 44 26.80</td>
<td>91 38 48.20</td>
<td>6’ L.T.</td>
<td>0.5</td>
<td>30</td>
<td>17</td>
<td>A-6(0)</td>
<td>BROWN</td>
</tr>
<tr>
<td>104-50</td>
<td>38 44 26.80</td>
<td>91 38 48.20</td>
<td>18’ L.T.</td>
<td>5.5</td>
<td>28</td>
<td>14</td>
<td>A-6(3)</td>
<td>BROWN</td>
</tr>
</tbody>
</table>

SOIL CHARACTERISTICS TABULATED ABOVE ARE REPRESENTATIVE AT THE LOCATION OF THE SAMPLE AND PROXIMITY 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.

### Earthwork

<table>
<thead>
<tr>
<th>Station</th>
<th>Location / Description</th>
<th>Unclassified</th>
<th>Uncompacted</th>
<th>Excavation</th>
<th>Embankment</th>
<th>Stabilization</th>
<th>Soil Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project Shoulder Profiling Section</td>
<td>2022</td>
<td>2086</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entire Project Cross Drain Extension</td>
<td>481</td>
<td>504</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-50 111+50 Stage I - Site 1</td>
<td>1503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-50 111+50 Site 2 - Site 1</td>
<td>759</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entire Project Approaches</td>
<td>5</td>
<td>245</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Entire Project To be used if and where directed by the engineer.

TOTALS: 5703 3520 200

* Quantity estimated. See Section 104.03 of the Std. Spec.

NOTE: Earthwork quantities shown above shall be paid as plan quantity.

### Cold Milling Asphalt Pavement

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Avg. Width</th>
<th>Cold Milling Asphalt Pavement</th>
</tr>
</thead>
<tbody>
<tr>
<td>104-02</td>
<td>102-02</td>
<td>25</td>
<td>24.00</td>
</tr>
<tr>
<td>110-30</td>
<td>111+30</td>
<td>25</td>
<td>24.00</td>
</tr>
</tbody>
</table>

TOTAL: 633.34

NOTE: AVERAGE MILLING DEPTH 1”

### Asphalts Concrete Patching for Maintenance of Traffic

<table>
<thead>
<tr>
<th>Location</th>
<th>Ton</th>
<th>Thick Coat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project - To be specified if and where directed by the engineer.</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

TOTALS: 4 8

NOTE: QUANTITIES ARE ESTIMATED. SEE SECTION 104.03 OF THE STD. SPEC.

### Basis of Estimate:
- Asphalt Concrete Patching for Maintenance of Traffic: 20 Tonnage
- Thick Coat for Maintenance of Traffic: 50 Gallons

### Structures

#### Log Mile

<table>
<thead>
<tr>
<th>Station</th>
<th>Description</th>
<th>Reinforced Concrete Pipe Culvert</th>
<th>Flared End Sections for R.C. Pipe Culverts</th>
<th>Span</th>
<th>Length</th>
<th>Class D Concrete Roadway</th>
<th>Reinforced Steel-Roadway (Grade 60)</th>
<th>Uncompacted Embankment</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.71 17”X12” R.C. BOX CULVERT - EXTEND RT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.32 18”X12” R.C. BOX CULVERT - EXTEND LT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.10 24”X12” R.C. BOX CULVERT - EXTEND LT &amp; RT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.70 24”X12” R.C. PIPE - ADD F.E.E. LT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.31 24”X12” R.C. PIPE - EXTEND F.E.E. LT &amp; RT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTALS: 20 3 147.73 16488 97 101 1.26

#### Basis of Estimate
- Water: 128 Gal. / 30 yd. of soil sooding

NOTE: For R.C. pipe culvert installations, use the 3 beddings unless otherwise specified.

### Selected Pipe Bedding

<table>
<thead>
<tr>
<th>Location</th>
<th>Selected Pipe Bedding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project To be used if and where directed by the engineer.</td>
<td>20</td>
</tr>
</tbody>
</table>

TOTAL: 20

* Quantity estimated. See Section 104.03 of the Std. Spec.

### Driveways & Cutouts

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Width</th>
<th>Ciment Surface Concrete Driveway</th>
<th>Base course</th>
<th>Standard Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-2</td>
<td>LT SIT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102-28</td>
<td>RT SIT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102-30</td>
<td>RT SIT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-10</td>
<td>RT SIT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-30</td>
<td>RT SIT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-35</td>
<td>LT SIT 1 - CHAMPAIGNE CR.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-45</td>
<td>RT SIT 1 - CHAMPAIGNE DR.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-03</td>
<td>LT SIT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-10</td>
<td>LL SIT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTALS: 122.17 617.16 67.69 332.01 200

### Quantities

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Drainage</th>
<th>Standard Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project Temporary Drives</td>
<td>80.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Basis of Estimate: AC-610 Surface Course (1/2” - 0.94% mix. Aggr.) 3.2% Asphalt Binder

** Maximum Number of Cutouts = 115 for PG 44-22**

* Quantity estimated. See Section 104.03 of the Std. Spec. To be used if and where directed by the engineer.

NOTE: For R.C. pipe culvert installations, use the 3 beddings unless otherwise specified.

NOTE: For C.M. pipe culvert installations use the 2 beddings unless otherwise specified.
### CONCRETE DITCH PAVING

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>&quot;W&quot;</th>
<th>DITCH PAVING TYPE (E)</th>
<th>SOLID SODDING</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>SITE_1</em></td>
<td>SITE_1_</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>100-10</td>
<td>MWY 25</td>
<td>40.00</td>
<td>6.32</td>
<td>28.69</td>
<td>17.78</td>
</tr>
<tr>
<td>100-10</td>
<td>100-10</td>
<td>MWY 25</td>
<td>40.00</td>
<td>6.32</td>
<td>28.69</td>
<td>17.78</td>
</tr>
<tr>
<td>TOTALS</td>
<td>TOTALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>64.37</td>
<td></td>
<td>33.34</td>
<td>0.67</td>
</tr>
</tbody>
</table>

**BASE OF ESTIMATE:**
- WATER: 12.6 GAL / SQ YD. OF SOLID SODDING.

### EROSION CONTROL MATING

**NOTE:** AVERAGE WIDTH = 8' 0".

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>CLASS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-00</td>
<td>100-00</td>
<td>HWY 25 LT</td>
<td>70.00</td>
<td>62.22</td>
</tr>
<tr>
<td>100-00</td>
<td>100-00</td>
<td>HWY 25 LT</td>
<td>70.00</td>
<td>62.22</td>
</tr>
<tr>
<td>TOTALS</td>
<td>TOTALS</td>
<td></td>
<td>131.55</td>
<td></td>
</tr>
</tbody>
</table>

**BASE OF ESTIMATE:**
- WATER: 12.6 GAL / SQ YD. OF SOLID SODDING.

### RUMBLE STRIPES IN ASPHALT SHOULDERs

**NOTE:** AVERAGE WIDTH = 8' 0".

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ROOM MILLAGE (MP)</th>
<th>LOCATION</th>
<th>Rumble Stripes in Asphalt Shoulder</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>SITE_1</em></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-00</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>TOTALS</td>
<td></td>
<td>42658</td>
</tr>
</tbody>
</table>

**BASE OF ESTIMATE:**
- WATER: 12.6 GAL / SQ YD. OF SOLID SODDING.

### CENTERLINE RUMBLE STRIPES IN ASPHALT ROADWAYS

**NOTE:** AVERAGE WIDTH = 8' 0".

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ROOM MILLAGE (MP)</th>
<th>LOCATION</th>
<th>CENTERLINE Rumble Stripes in Asphalt Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>SITE_1</em></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-00</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>TOTALS</td>
<td></td>
<td>10540</td>
</tr>
</tbody>
</table>

**BASE OF ESTIMATE:**
- WATER: 12.6 GAL / SQ YD. OF SOLID SODDING.

### BASE AND SURFACING

**NOTE:** AVERAGE WIDTH = 8' 0".

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ROOM MILLAGE (MP)</th>
<th>LOCATION</th>
<th>BASE AND SURFACING (GAL)</th>
<th>EROSION CONTROL (GAL)</th>
<th>ADDITIONAL FOR LEVELING (GAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE_1_</td>
<td>1</td>
<td></td>
<td>2600</td>
<td>6400</td>
<td>3600</td>
</tr>
<tr>
<td>100-00</td>
<td>1</td>
<td></td>
<td>8000</td>
<td>10400</td>
<td>5600</td>
</tr>
<tr>
<td>TOTALS</td>
<td>TOTALS</td>
<td></td>
<td>9600</td>
<td>16800</td>
<td>9000</td>
</tr>
</tbody>
</table>
## SUMMARY OF QUANTITIES

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>CLEARING</td>
<td>6</td>
<td>STATION</td>
</tr>
<tr>
<td>201</td>
<td>QUADING</td>
<td>1</td>
<td>LNT. FT</td>
</tr>
<tr>
<td>202</td>
<td>REMOVAL AND DISPOSAL OF CUM AND CUTTER</td>
<td>127</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>REMOVAL AND DISPOSAL OF POSTS</td>
<td>27</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>REMOVAL AND DISPOSAL OF CONCRETE DRAYWAYS</td>
<td>126</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>REMOVAL AND DISPOSAL OF SEK FOUNDATIONS</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>REMOVAL AND DISPOSAL OF PIPE CULVERTS</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>REMOVAL AND DISPOSAL OF SWIM</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>UNCLASSIFIED EXCAVATION</td>
<td>745</td>
<td>CU.YD</td>
</tr>
<tr>
<td>202</td>
<td>COMMERICAL DEMOLITION</td>
<td>550</td>
<td>CU.YD</td>
</tr>
<tr>
<td>202</td>
<td>RISK STUDY STUDIES</td>
<td>200</td>
<td>QM</td>
</tr>
<tr>
<td>202</td>
<td>AGGRESSIVE BASE COURSE (CLASS 7)</td>
<td>2245</td>
<td>TPN</td>
</tr>
<tr>
<td>202</td>
<td>THICK COAT</td>
<td>1681</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>MINERAL AGGREGATE ACHD BINDER COURSE (1&quot;)</td>
<td>4753</td>
<td>TON</td>
</tr>
<tr>
<td>202</td>
<td>ASPHALT BINDER (PG 58-20) IN ACME BINDER COURSE (1&quot;)</td>
<td>116</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>ASPHALT BINDER (PG 58-20)</td>
<td>368</td>
<td>TON</td>
</tr>
<tr>
<td>202</td>
<td>ASPHALT BINDER (PG 58-20) IN ACME SURFACE COURSE (1&quot;)</td>
<td>103</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>COLD MELT ASPHALT PAVING</td>
<td>22</td>
<td>TON</td>
</tr>
<tr>
<td>202</td>
<td>ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC</td>
<td>2</td>
<td>TON</td>
</tr>
<tr>
<td>202</td>
<td>PORTLAND CEMENT CONCRETE DRIVEWAY</td>
<td>126.17</td>
<td>SQ. YD</td>
</tr>
<tr>
<td>202</td>
<td>MAINTENANCE</td>
<td>3</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>202</td>
<td>TRAFFIC DRUMS</td>
<td>3</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>TRAFFIC CONE</td>
<td>10</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>REPAIRING AND INSTALLING PRECAST CONCRETE BARRIER</td>
<td>530</td>
<td>LNT. FT</td>
</tr>
<tr>
<td>202</td>
<td>REPAIRING PRECAST CONCRETE BARRIER</td>
<td>249</td>
<td>LNT. FT</td>
</tr>
<tr>
<td>202</td>
<td>CONSTRUCTION PAVING MARKINGS</td>
<td>7774</td>
<td>LFT</td>
</tr>
<tr>
<td>202</td>
<td>VERTICAL PANELS</td>
<td>230</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>CONCRETE DITCH PAYING TYPE B</td>
<td>34</td>
<td>SQ. YD</td>
</tr>
<tr>
<td>202</td>
<td>24&quot; REINFORCED CONCRETE PIPE CULVER (CLASS B)</td>
<td>202</td>
<td>SQ. FT</td>
</tr>
<tr>
<td>202</td>
<td>24&quot; FLARED PIPE SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS</td>
<td>10</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>SELECTED PIPE BEDDING</td>
<td>85</td>
<td>CU.YD</td>
</tr>
<tr>
<td>202</td>
<td>UNDERGROUND OUTLET PROTECTORS</td>
<td>27</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>LIASE</td>
<td>21</td>
<td>TON</td>
</tr>
<tr>
<td>202</td>
<td>MUCH COVER</td>
<td>297</td>
<td>ACRE</td>
</tr>
<tr>
<td>202</td>
<td>WATER</td>
<td>1123.4</td>
<td>M.CAL</td>
</tr>
<tr>
<td>202</td>
<td>TEMPORARY SEEDING</td>
<td>284</td>
<td>LNT. FT</td>
</tr>
<tr>
<td>202</td>
<td>SAME BAG DRIBLING</td>
<td>91</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>SEDIMENT BASIN</td>
<td>113</td>
<td>CU.YD</td>
</tr>
<tr>
<td>202</td>
<td>REHABILITATION OF SETTLEMENT Basin</td>
<td>113</td>
<td>CU.YD</td>
</tr>
<tr>
<td>202</td>
<td>SEDIMENT REMOVAL AND DISPOSAL</td>
<td>136</td>
<td>CU.YD</td>
</tr>
<tr>
<td>202</td>
<td>MOCK DRIBLING</td>
<td>20</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>SECOND SEEDING APPLICATION</td>
<td>152</td>
<td>ACRE</td>
</tr>
<tr>
<td>202</td>
<td>VAUL SEEDING</td>
<td>124</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>CASING CONTROL MATTING (CLASS 3)</td>
<td>1.97</td>
<td>SQ YD</td>
</tr>
<tr>
<td>202</td>
<td>ROADWAY CONSTRUCTION CONTROL</td>
<td>1.97</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>202</td>
<td>MAL ROSES</td>
<td>5</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>MAL ROSE SUPPORTS (SINGLE)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>MAL ROSE SUPPORTS (DOUBLE)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>CENTERLINE REBAR STRIPES IN ASPHALT ROADWAY</td>
<td>1684</td>
<td>L.F. FT</td>
</tr>
<tr>
<td>202</td>
<td>REFLECTORIZED Paint PAINT MARKING BLACK</td>
<td>987</td>
<td>LNT FT</td>
</tr>
<tr>
<td>202</td>
<td>REFLECTORIZED Paint PAINT MARKING RED</td>
<td>987</td>
<td>LNT FT</td>
</tr>
<tr>
<td>202</td>
<td>THERMOPLASTIC PAINT MARKING YELLOW</td>
<td>380</td>
<td>LNT FT</td>
</tr>
<tr>
<td>202</td>
<td>THERMOPLASTIC PAINT MARKING WHITE</td>
<td>10</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>THERMOPLASTIC PAINT MARKING PINK</td>
<td>7</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>THERMOPLASTIC PAINT MARKING AMBER</td>
<td>2</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>REFLECTORIZED Paint PAINT MARKING WHITE (SP)</td>
<td>10</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>BASE PAINT MARKING TYPE E</td>
<td>10</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>TEMPORARY IMPACT ATTENUATION BARRIER</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>TEMPORARY IMPACT ATTENUATION BARRIER REPAIR</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>TEMPORARY IMPACT ATTENUATION BARRIER RELOCATION</td>
<td>3</td>
<td>EACH</td>
</tr>
<tr>
<td>202</td>
<td>UNCLASSIFIED EXCAVATION FOR STRUCTURE ROADWAY</td>
<td>147.73</td>
<td>CU.YD</td>
</tr>
<tr>
<td>202</td>
<td>CLASS B CONCRETE ROADWAY</td>
<td>10082</td>
<td>YARD</td>
</tr>
</tbody>
</table>

## REVISIONS

<table>
<thead>
<tr>
<th>REVISION</th>
<th>SHEET NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6.18</td>
<td></td>
</tr>
<tr>
<td>2.6.19</td>
<td></td>
</tr>
</tbody>
</table>

**SUMMARY OF QUANTITIES AND REVISIONS**
**SURVEY CONTROL COORDINATES**

Project Name: 000123

Date: 8/17/2015

Coordinate System: Arkansas State Plane Coordinates

Projected to Ground Coordinates

**UNITS:** U.S. Survey Foot

**COORDINATES LISTED BELOW ARE GROUND (Localized) COORDINATES!!!**

<table>
<thead>
<tr>
<th>Point No.</th>
<th>Northing</th>
<th>Easting</th>
<th>Elevation</th>
<th>Feature Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>213263.3090</td>
<td>301.03</td>
<td>505.18</td>
<td>CTL</td>
<td>PD STD AHFTD MERN STAMPED/PM 21</td>
</tr>
<tr>
<td>22</td>
<td>213263.3490</td>
<td>301.03</td>
<td>520.15</td>
<td>CTL</td>
<td>PD STD AHFTD MERN STAMPED/PM 22</td>
</tr>
<tr>
<td>23</td>
<td>213263.3688</td>
<td>301.03</td>
<td>523.94</td>
<td>CTL</td>
<td>PD STD AHFTD MERN STAMPED/PM 23</td>
</tr>
<tr>
<td>24</td>
<td>213263.3027</td>
<td>301.03</td>
<td>509.90</td>
<td>CTL</td>
<td>PD STD AHFTD MERN STAMPED/PM 24</td>
</tr>
</tbody>
</table>

**Standard Primary Control Monument - Rebar and Cap - Standard - 5/8" x 24" Rebar with 2" Aluminum Cap stamped: "Include all common information here" plus other markings indicated in the point description of the individual point. AHFTD monuments will be stamped "Arkansas Hwy & Trans Dept" with "PM". "N44" & "10-14". Monuments that are set by Consultants will be stamped "Arkansas Hwy & Trans Dept" with "PLM". "N44" & "10-14". The consultant Professional Surveyor in charge will stamp his/her PLM number on the cap.

**Standard GPS Control Point Monument - 5/8" x 8" Rebar with 2" x 2" Aluminum Cap stamped: "Include all common information here" plus other markings indicated in the point description of the individual point. These monuments will be stamped "Ark. State Hwy Trans Dept." "GPS Survey" & "Point No. [PLM]."

**SK, SY, SZ:** Represents the standard error estimate of the coordinate values of each point at the 67% confidence level (one sigma) based on the least squares analysis of the control network. See the AASHTO SDMS Technical Data Guide data tag definition for SK, SY, and SZ for additional information. These values should be used when control points are added and the entire network (unprocessed using least square analysis) is created. A value of 0.00 is defined as fixed (no adjustment) in the least square analysis (process). A value of 0.00 is defined as left blank by handheld GPS device or scaled from UGS Quadrant.

Reference Control Points (E50 series) shall be used to re-establish horizontal datum if the primary control has been destroyed. These reference control points shall not be used for vertical control as the elevation has been established from the project datum with 3-wire leveling techniques.

All additional control points shall be occupied, measured, and adjusted with direct survey ties to at least two of the control points listed in the table above. New survey control shall not be independent of the survey control listed above. This includes horizontal and vertical coordinates and elevations.

<table>
<thead>
<tr>
<th>Positional Accuracy</th>
<th>Horizontal - GPS (1.0m cent 1PPM) ( \pm 300 \mp )</th>
<th>Horizontal - Primary (2.0m cent 20PPM) ( \pm 1 \pm 26 )</th>
<th>Horizontal - Secondary (3.0m cent 50PPM) ( \pm 3 \pm 50 \pm 60 )</th>
<th>Vertical - NGS 1st Order (40mm x sighted in km) ( \pm 1 \pm 50 \pm 50 )</th>
</tr>
</thead>
</table>
|                     | Vertical - NGS 2nd Order (200mm x sighted in km) \( \pm 1 \pm 50 \pm 100 \) | Vertical - NGS 3rd Order (800mm x sighted in km) \( \pm 1 \pm 50 \pm 100 \) | Horizontal Datum: NAD 1983 (1997) State Plane Zone: North Zone | The reference point is based on coordinates in the UGS Control Project.

PROJECT CAF:
0.000001639

The project CAF shall have a minimum precision of 5 feet right of the desktop. This CAF is intended for use within the project limits only.

Grid Distance - Ground Distance X CAF
If Coordinates are listed as Grid:

To compute Grid Coordinates, multiply the Ground Coordinates by CAF about the origin of X00 & Y00
If Coordinates are listed as Grid:

To compute Grid Coordinates, divide the Grid Coordinates by CAF about the origin of X00 & Y00

Vertical Datum:
NAVD 1988 based NGS BM I:
A project: elevation factor of 0.000000000 is computed and incorporated in the above CAF.
This is based on the average elevation of the project.
3-Wire leveling techniques have been used to establish elevations on
Points: L-13
From NGS BM: FE 67 - E 384

<table>
<thead>
<tr>
<th>Basis of Bearing</th>
<th>Grids Bearings based on AHFTD GPS points:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Convergence Angle is: 00-13-45 EAST</td>
</tr>
<tr>
<td></td>
<td>at PM: 104</td>
</tr>
<tr>
<td></td>
<td>LT: 34°15'51.8&quot;</td>
</tr>
<tr>
<td></td>
<td>LG: 00°47'30.33&quot;</td>
</tr>
<tr>
<td></td>
<td>Grid Acimeth = 0.3408</td>
</tr>
<tr>
<td></td>
<td>Convergence angle = 00-13-45 RIGHT</td>
</tr>
</tbody>
</table>

Note: Information in Italic is for clarification only. It is not to be part of the Thematic Control Table or Control Detail Sheets.
STA. 102+62.00
END SHOULDER WIDENING
BEGIN SITE 1
LOG MILE 10.60

STA. 110+30.00
END SITE 1
END JOB 050313
**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. **1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 10' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.**

**EXCAVATION DETAILS ADDED**

**TYPED A & B**

**REVISED AND REDRAWN**

**ADDED NOTE TO ENERGY DISSIPATOR DETAILS**

**ADDED**

**MODIFIED NOTE ON ENERGY DISSIPATOR**

**REVISED DISSIPATOR NOTE**

**ADDED NOTE TO ENERGY DISSIPATOR**

**ENERGY DISSIPATOR DETAILS**

**EXCAVATION DETAILS ADDED**

**ADDED GENERAL NOTE**

**GENERAL NOTES:**

- Approved joint filler complying with AASHTO M213.
- Ditch paving at 45' intervals. The space shall be filled with 1" wide transverse expansion joints shall be placed in concrete ditch paving and poured monolithically.
- Solid sod along ditch paving to be placed within 14 days of ditch paving construction.
- 1" wide transverse expansion joints shall be placed in concrete ditch paving at 10' intervals. The space shall be filled with approved joint filler complying with AASHTO M213.

**CONCRETE DITCH PAVING**

**STANDARD DRAWING CDP-1**

**ARKANSAS STATE HIGHWAY COMMISSION**
GENERAL NOTES
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. WOOD PIPE, STEEL, AND OTHER METAL PIPE TREATED WOOD POSTS ARE DISCLAIMED.
4. MUFFLER CLAMP SHALL BE FOR TREATMENT OF SMALL 22 IN. DIAMETER STEEL WITH A WALL THICKNESS OF .145" AND A NOMINAL 2" OUTSIDE DIAMETER.
5. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE ACCEPTED PROVIDED THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.
6. MAILBOX SUPPORT SYSTEM LOUGHER FROM THOSE SHOWN MAY BE USED PROVIDED THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.

MAILBOX DETAILS

SINGLE INSTALLATION

DOUBLE INSTALLATION

SPACING FOR MULTIPLE POST INSTALLATION

ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.

WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.

BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X 2" FLATHEAD SPACERS SHALL BE A MINIMUM OF 2" THICK AND SHALL BE ASSEMBLED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED, PROVIDED THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.

WOODEN SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.

SECTION 637.02 OF THE STANDARD SPECIFICATIONS.

CONCRETE PLANTER SHELF & PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.

THE MAILBOX SHELF AND PLATFORM FIRST SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SHOWN ARE FOR POSTMASTER, HEIGHT MAY VARY AS DIRECTED BY THE ENGINEER.

* IF REQUESTED BY THE LOCAL POSTMASTER, HEIGHT MAY VARY AS DIRECTED BY THE ENGINEER.

PACKING MATERIALS OF MAILBOX SUPPORTS.

MAILBOX SUPPORT SYSTEM LOUGHER FROM THOSE SHOWN MAY BE ACCEPTED PROVIDED THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.

3" O.D. STEEL PIPE

4" X 4" OR 4 1/2" DIA. WOODEN POST OR 2" O.D. STEEL PIPE

SHELF PLATFORM

MUFFLER CLAMP

PLATFORM

ANTI-TWIST PLATE

CLAMP

SPACER

LENGTH TO FIT

SMALLER 3" O.D. STEEL PIPE

MAILBOX SUPPORT SYSTEM LOUGHER FROM THOSE SHOWN MAY BE ACCEPTED PROVIDED THEY ARE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.

PACKING MATERIALS OF MAILBOX SUPPORTS.
CONSTRUCTION SEQUENCE

1. PLACE THE REINFORCING MATERIAL TO GRADE. DO NOT COMPACT.
2. PLACE THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN +2 PERCENT FROM THE VALUES SHOWN ON THE DRAWING.
3. THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN +2 PERCENT FROM THE VALUES SHOWN ON THE DRAWING.
4. THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN +2 PERCENT FROM THE VALUES SHOWN ON THE DRAWING.
5. THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN +2 PERCENT FROM THE VALUES SHOWN ON THE DRAWING.

NOTE: HANSON AND STRUCTURAL BEDDING MATERIAL WILL NOT BE INCLUDED IN THE PRICE FOR EACH LINE OF CONCRETE PIPE.

- LEGEND -
- #1: NORMAL WHITE DURANCE OF PIPE
- #2: ALL FROM ABOVE THE PIPE FEED
- #3: COMPLETED

INSTALLATION TYPE MATERIAL REQUIREMENTS FOR REINFORCEMENT AND STRUCTURAL BEDDING

TYPE 1: MATERIALS MUST CONFORM TO AASHTO M-174.

TYPE 2: MATERIALS MUST CONFORM TO AASHTO M-207.

TYPE 3: MATERIALS MUST CONFORM TO AASHTO M-206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS.

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

- INSTALLATION TYPE
- MATERIALS REQUIREMENTS FOR REINFORCEMENT AND STRUCTURAL BEDDING

TYPE 1: MATERIALS MUST CONFORM TO AASHTO M-174.

TYPE 2: MATERIALS MUST CONFORM TO AASHTO M-207.

TYPE 3: MATERIALS MUST CONFORM TO AASHTO M-206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS.

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

- INSTALLATION TYPE
- MATERIALS REQUIREMENTS FOR REINFORCEMENT AND STRUCTURAL BEDDING

TYPE 1: MATERIALS MUST CONFORM TO AASHTO M-174.

TYPE 2: MATERIALS MUST CONFORM TO AASHTO M-207.

TYPE 3: MATERIALS MUST CONFORM TO AASHTO M-206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS.
GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION.
   
2. THE STRUCTURAL BACKFILL MATERIAL SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION.
   
3. INSTALL PIPE TO GRADE. DO NOT COMPACT.
   
4. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
   
5. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
   
6. WHEN DIRECTED BY THE ENGINEER, UNDISTURBED MATERIAL THAT IS COMPACTED TO QUESTIONABLE DENSITY OF THE SELECTED MATERIAL SHALL BE SELECTED AND COMPACTED TO QUESTIONABLE DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
   
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHALL BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
   
8. PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS) MAY BE USED IN MULTIPLE INSTALLATIONS IN ACCORDANCE WITH SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

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

<table>
<thead>
<tr>
<th>DIAMETER (INV.)</th>
<th>MIN. TRENCH WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'-0&quot;</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>3'-6&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>4'-0&quot;</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>4'-6&quot;</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>6'-0&quot;</td>
<td>5'-6&quot;</td>
</tr>
<tr>
<td>7'-0&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>8'-0&quot;</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>9'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td>12'-0&quot;</td>
<td>10'-6&quot;</td>
</tr>
<tr>
<td>12'-15&quot;</td>
<td>12'-0&quot;</td>
</tr>
<tr>
<td>15'-0&quot;</td>
<td>15'-0&quot;</td>
</tr>
</tbody>
</table>

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>COVER (FEET)</th>
<th>DIAMETER (INV.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'-0&quot;</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>3'-6&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>4'-0&quot;</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>4'-6&quot;</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>6'-0&quot;</td>
<td>5'-6&quot;</td>
</tr>
<tr>
<td>7'-0&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>8'-0&quot;</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>9'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td>12'-0&quot;</td>
<td>10'-6&quot;</td>
</tr>
</tbody>
</table>

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

**TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS**

1. STRUCTURAL BEDDING MATERIAL AND OTHER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO USE OF THE MINIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

**MAINTAINED CONSTRUCTION ROADWAY SURFACE**

The surface shall be maintained.

**PLASTIC PIPE CULVERT**

Plastic pipe culverts shall conform to AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.

**HIGH DENSITY POLYETHYLENE PIPES**

High density polyethylene pipes shall conform to AASHTO M294, TYPE S. Installation shall conform to Job Special Provision.

**NOTES**

1. UNDISTURBED MATERIAL SHALL BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO MAINTAIN CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

2. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO MAINTAIN CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

3. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

**PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."**
GENERAL NOTES
1. Pipe shall conform to AASHTO M164. Type I installation shall conform to special provision "plastic pipe" and section 9.11.16 of the standards specifications for highway construction current editions.
2. Structural backfill and structural bedding material shall be compacted to 95% of the maximum density according to the type or class of material used.
3. The maximum allowable trench width shall be the minimum width plus a sufficient margin to ensure working room to property and safety and Class I, II, and III bedding material.
4. Structural backfill shall be placed as directed by the engineer at the ends of the culvert to prevent loss of structural bedding. For structural bedding material, the minimum cover shall be maintained.
5. When directed by the engineer, unsuitable material that is encountered at the bottom of the excavated trench below the pipe, identified as "structural bedding," will be excavated and replaced with structural backfill in accordance with the provisions of this section
6. Structural backfill shall be placed as directed by the engineer at the ends of the culvert to prevent loss of structural bedding. For structural bedding material, the minimum cover shall be maintained.
7. Pipe installation may require the use of restraints, excavation, or other approved methods in order to help maintain grade and alignment.

CONSTRUCTION SEQUENCE
1. Place structural bedding material to grade, do not compact.
2. Install pipe to grade.
3. Compact structural bedding outside of the middle third of the pipe.
4. The structural backfill shall be placed and compacted in layers not exceeding 15 in., the layers shall be brought up to the elevation of the minimum cover and uniformly to the elevation of the maximum cover.
5. Pipe installation may require the use of restraints, excavation, or other approved methods in order to help maintain grade and alignment.

EMBANKMENT AND TRENCH INSTALLATIONS
4. The structural backfill shall be placed and compacted in layers not exceeding 15 in., the layers shall be brought up to the elevation of the minimum cover and uniformly to the elevation of the maximum cover.
5. Pipe installation may require the use of restraints, excavation, or other approved methods in order to help maintain grade and alignment.

PLASTIC PIPE CULVERT (POLYPROPYLENE)

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING PCP-3

DATE: [ ]

REVISION: [ ]

DATE FILMED: [ ]
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.

DETAILED DESCRIPTION OF STANDARD RAISED PAVEMENT MARKERS

- CONTINUOUS WHITE
- SKIP YELLOW
- CONTINUOUS WHITE
- PRISMATIC REFLECTOR

NOTES:
- THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.
- 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 ARKANSAS QUALIFIED PRODUCTS LIST.

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- OMIT BROKEN LINE STRIPING
- CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

CONTINUOUS WHITE

NOTES ON CONCRETE PAVEMENT ASPHALT PAVEMENT

- SKIP YELLOW
- CENTER LINE
- CONTINUOUS YELLOW
- CENTER LINE
- SKIP YELLOW
- CONTINUOUS YELLOW
- CENTER LINE
- OFFSET STOP LINE 4' - PLACED YELLOW, 3' FROM LANE EDGE
- OFFSET NEAR EDGE OF CROSSWALK

NOTE: THE CENTER LINE OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.
NOTE: GEOTEXTILE FABRIC SHOWN ON PLAN. THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUPERINTENDENT TO PIPE UNDERDRAIN. GEOTEXTILE MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC ALL AROUND & LAPED AT TOP.

PLAN VIEW

UNDERDRAIN OUTLET PROTECTORS

SIDE VIEW

NOTE: GEOTEXTILE FABRIC SHOWN ON PLAN. THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUPERINTENDENT TO PIPE UNDERDRAIN. GEOTEXTILE MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC ALL AROUND & LAPED AT TOP.

DRAWING PU-1

STANDARD DRAWING PU-1

NOTE: GEOTEXTILE FABRIC SHOWN ON PLAN. THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUPERINTENDENT TO PIPE UNDERDRAIN. GEOTEXTILE MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC ALL AROUND & LAPED AT TOP.
**REINFORCED CONCRETE BOX CULVERT DETAILS**

**CONCRETE BOX CULVERT GENERAL NOTES**

Concrete shall be Class 5 with a minimum 28-day compressive strength of 3500 psi. Reinforcing steel shall be AASHTO M 31 or M 53, Grade 60.

Construction and materials for reinforced concrete box culverts shall be subsidiary to the bid items. No payment shall be made for this item; but payment will be considered to be included in the various items bid for the R.C. box culvert.

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 but payment will be considered to be included in the various items bid for the R.C. box culvert.

**REINFORCED CONCRETE BOX CULVERT HEADWALL MODIFICATIONS**

For skewed R.C. box culverts, the length "K" 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.

Notes:
- For all skewed R.C. box culverts, replace bent bars "r" with straight bars cut as required.
- "D" or "T + 3" whenever is greater.

**HELMAND SLOPE**

- Embankment slope
- Fill slope

**REINFORCED CONCRETE BOX CULVERT HEADWALL**

- Reinforced concrete box culvert headwall modifications

**R.C. BOX CULVERT HEADWALL MODIFICATIONS**

- 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.

**NOTES FOR ALL SKEWED R.C. BOX CULVERTS**

- The length "K" 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.

**WINGWALL & CULVERT DRAINAGE DETAIL**

- Wingwall and culvert drainage detail
- Drainage fill material and details
- 2 bars "a" placed 12" above the top of the bottom slab.

**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>&quot;A&quot;</td>
<td>L + f - 0&quot;</td>
<td>See &quot;a&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;A&quot;</td>
<td>L + f - 2&quot;</td>
<td>See &quot;a&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;A&quot;</td>
<td>L + f - 4&quot;</td>
<td>See &quot;a&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;A&quot;</td>
<td>L + f - 6&quot;</td>
<td>See &quot;a&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;A&quot;</td>
<td>L + f - 8&quot;</td>
<td>See &quot;a&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;A&quot;</td>
<td>L + f - 10&quot;</td>
<td>See &quot;a&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;A&quot;</td>
<td>L + 2&quot; - 6&quot;</td>
<td>See &quot;a&quot; Bar Length</td>
</tr>
</tbody>
</table>

**DATE FILMED**

8-15-91
6-2-94
8-5-93
7/26/12
6-2-94
10-12-95
10-18-96
5-25-06
11-16-01
8-15-91
8-5-93
6-2-94
10-12-95
12/15/11
11-16-01

**BAR SIZE**

- Diameter: 
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8

**NOTES**

- Dimensions of bars are measured out of bars.
- Overall height of hooked bar diagram.

**STANDARD DRAWING RCB-1**

**ARKANSAS STATE HIGHWAY COMMISSION**

**CONCRETE BOX CULVERT DETAILS**

**REINFORCED CONCRETE BOX CULVERT HEADWALL MODIFICATIONS**
GENERAL NOTES:

ROADWAY EXCAVATION CHANNEL CHANGES 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 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 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 above the flow line. ROADWAY EXCAVATION CHANNEL CHANGES shown in section A-A above are not paid for directly, but payment will be considered to be included in the various items of excavation.

BACKFILL DETAILS FOR BOX CULVERT

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.

HORIZONTAL LAYERS

EMBANKMENT-PLACED IN HORIZONTAL LAYERS

LONGITUDINAL SECTION

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

THE STANDARD SPECIFICATIONS.

801.10 AND 801.11, RESPECTIVELY, OF PAID FOR ACCORDING TO SECTIONS UNDERCUT SHALL BE MEASURED AND EMBANKMENT-PLACED IN HORIZONTAL LAYERS.
PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1, METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER 1 & 2.

FOOTINGS AND TOEWALLS
REMOVE WINGS, APRONS, FOOTINGS AND TOEWALLS, EACH SPLICE 3 WIRE TIES

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 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 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.

NOTE: ANY OF THE 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.
End sections shall be made of galvanized steel meeting the requirements of Subsection 606.22(c) of the Standard Specifications. When specified, optional tee plate extension shall be hot dipped galvanized after fabrication. All work and materials required for construction and installation of safety end sections shall be included in the bid. See each of the Price Bid EACH FOR SAFETY END SECTIONS FOR PIPE SILVERTS.

- Longitudinal and transverse bars shall be required for cross drain structures when span is greater than 30'. No safety bars will be required for 30' span or less when used on cross drain structures. Transverse bars will be required for all sizes of side drain structures.
- Class 1 safety end sections shall be made of a 4:1 slope.
- Class 2 safety end sections shall be made of a 6:1 slope.

### Dimensions

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Dia.</th>
<th>W</th>
<th>H</th>
<th>T</th>
<th>Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 12</td>
<td>12</td>
<td>6</td>
<td>3</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>15 to 24</td>
<td>12</td>
<td>9</td>
<td>6</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>27 to 30</td>
<td>12</td>
<td>9</td>
<td>6</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>36 to 42</td>
<td>12</td>
<td>9</td>
<td>6</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>48 to 54</td>
<td>12</td>
<td>9</td>
<td>6</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>60 to 72</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>75 to 84</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>87 to 108</td>
<td>12</td>
<td>15</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>120 to 138</td>
<td>12</td>
<td>15</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>140 to 156</td>
<td>12</td>
<td>18</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>176 to 198</td>
<td>12</td>
<td>18</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>200 to 228</td>
<td>12</td>
<td>21</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>230 to 264</td>
<td>12</td>
<td>21</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>270 to 300</td>
<td>12</td>
<td>21</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>302 to 330</td>
<td>12</td>
<td>24</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>332 to 360</td>
<td>12</td>
<td>24</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>362 to 390</td>
<td>12</td>
<td>24</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>392 to 420</td>
<td>12</td>
<td>27</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>422 to 450</td>
<td>12</td>
<td>27</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>452 to 480</td>
<td>12</td>
<td>27</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>482 to 510</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>512 to 540</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>542 to 570</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>572 to 600</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>602 to 630</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>632 to 660</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>662 to 690</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>692 to 720</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>722 to 750</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>752 to 780</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>782 to 810</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>812 to 840</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>842 to 870</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>872 to 900</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>902 to 930</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>932 to 960</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>962 to 990</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>992 to 1020</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>1022 to 1050</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>1052 to 1080</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>1082 to 1110</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>1112 to 1140</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>1142 to 1170</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
<tr>
<td>1172 to 1200</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td></td>
<td>4:1</td>
</tr>
</tbody>
</table>

### Notes

- Metal end section to be firmly wedged into pipe end before backfilling pipe.
- Alternate for Concrete End Section.
- Class I safety end sections shall be end sections with a 4:1 slope.
- Class 2 safety end sections shall be end sections with a 6:1 slope.

### Section A-A

- Top view circular or arch section
- Transverse safety bars
- Galvanized pipe with both ends snugly against steel rod.
- Longitudinal bar detail
- ISOMETRIC VIEW

### Section B-B

- Dome view circular or arch section
- TYPE #1 CONNECTOR DETAIL
- TYPE #2 CONNECTOR DETAIL
- Optional toe plate extension
- Longitudinal bar detail
- ISOMETRIC VIEW
GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL COMPLY WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION AND THE STANDARD DRAWING TC-3, LATEST EDITION, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE CONSTRUCTION OPERATION. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE INTERPRETED TO BE CLEAN AND CLEAR. WHERE ALL SIGNS DO NOT APPLY TO EXISTING CONDITIONS, SIGNS THAT ARE DAMAGED, REPAIRED, OR LEFT ACCUMULATING DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

4. SIGNS ARE CONTRACTUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THERE MAY BE MORE THAN 3 Posts OR LARGER POSTS, ALL SIGNS SHALL BE MOUNTED ON A MINIMUM OF 2 Posts OR LARGER POST SPACER.

5. SIGN POSTS DIRECTED IN THE LINE OF SITE, SHALL BE 48" IN DIAMETER, POSTS DEFORMED, OR THOSE WIDER THAN 36" WIDE, SHALL BE FRAMED WITH MATERIALS THAT SHALL BE RIGIDLY MOUNTED TO THE SIGNPOSTS. ALL SIGNS SHALL BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE A MINIMUM OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, 2' FEET FROM THE PAVEMENT EDGE.

6. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL COMPLY WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

7. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE INTERPRETED TO BE CLEAN AND CLEAR. WHERE ALL SIGNS DO NOT APPLY TO EXISTING CONDITIONS, SIGNS THAT ARE DAMAGED, REPAIRED, OR LEFT ACCUMULATING DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

8. SIGNS ARE CONTRACTUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THERE MAY BE MORE THAN 3 Posts OR LARGER POSTS, ALL SIGNS SHALL BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE A MINIMUM OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE.

9. SIGN POSTS DIRECTED IN THE LINE OF SITE, SHALL BE 48" IN DIAMETER, POSTS DEFORMED, OR THOSE WIDER THAN 36" WIDE, SHALL BE FRAMED WITH MATERIALS THAT SHALL BE RIGIDLY MOUNTED TO THE SIGNPOSTS. ALL SIGNS SHALL BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE A MINIMUM OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, 2' FEET FROM THE PAVEMENT EDGE.

10. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL COMPLY WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

11. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE INTERPRETED TO BE CLEAN AND CLEAR. WHERE ALL SIGNS DO NOT APPLY TO EXISTING CONDITIONS, SIGNS THAT ARE DAMAGED, REPAIRED, OR LEFT ACCUMULATING DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

12. SIGNS ARE CONTRACTUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THERE MAY BE MORE THAN 3 Posts OR LARGER POSTS, ALL SIGNS SHALL BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE A MINIMUM OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE.
**CLEARING AND GRUBBING**

**CONSTRUCTION SEQUENCE**
1. Place perimeter controls (e.g., silty fences, diversion ditches). Stabilize immediately.
2. Perform clearing and grubbing operation.

**EXISTING GROUND**

**DIVERSION DITCH**

**INTERCEPTOR OR**

**PHASE 1 EXCAVATION**

**PHASE 2 EXCAVATION**

**FINAL PHASE EXCAVATION**

**GENERAL NOTE**

**CONSTRUCTION SEQUENCE**
1. Excavate and stabilize interceptors and diversion ditches. The work progresses slowly until excavated and stabilized in equal increments not to exceed 25 feet, measured vertically.
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, etc.

**EMBANKMENT**

**EXISTING GROUND**

**PHASE 1 EMBANKMENT**

**PHASE 2 EMBANKMENT**

**FINAL PHASE EMBANKMENT**

**GENERAL NOTE**

**CONSTRUCTION SEQUENCE**
1. Construct diversion ditches, check valves, etc. Maintain silt fences, etc., as specified.
2. Place phase 1 embankment with permanent or temporary seeding.
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 21 days.
4. Place final phase of embankment with permanent or temporary seeding. Provide diversion ditches and slope drains and maintain until entire slope is stabilized.

**VERIFICATION**

**DATE 11-03-94**

**DISTRIBUTION SIGNATURE**

**ARKANSAS STATE HIGHWAY COMMISSION**

**TEMPORARY EROSION CONTROL DEVICES**

**STANDARD DRAWING TEC-3**
### Bar List for Barrel Section 70° in Length

<table>
<thead>
<tr>
<th>Bar Size</th>
<th>No. Bars</th>
<th>C.C.</th>
<th>Length</th>
<th>Use</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 3/8</td>
<td>4</td>
<td>3</td>
<td>47.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 1/2</td>
<td>3</td>
<td>3</td>
<td>44.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 5/8</td>
<td>2</td>
<td>3</td>
<td>42.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 3/4</td>
<td>1</td>
<td>3</td>
<td>39.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

- **Barrel Length:** 45.00 ft
- **Barrel Diameter:** 12.00 ft
- **Wall Thickness:** 3.00 ft

### Quantities

- **Reinforcing Steel:**
  - Ø 3/8: 4 bars, 47.16 ft
  - Ø 1/2: 3 bars, 44.57 ft
  - Ø 5/8: 2 bars, 42.00 ft
  - Ø 3/4: 1 bar, 39.50 ft

---

**General Notes:**
- Concrete: Use Class B, and shall be placed in the day.
- Bars: All bars shall be ASTM A615, Grade 60.
- Joint Spacing: Splices shall be at a maximum of 12 ft.

**Design Live Load:**
- 0.25 PLV, 0.25 QL, 0.50 L/O

**Class S Concrete**
- Under 9° Cover

---

**ARKANSAS STATE HIGHWAY COMMISSION**

**DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS**

**Singles**

**Standard Drawing No:** choco-0