INDEX OF SHEETS

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TITLE SHEET</td>
</tr>
<tr>
<td>2</td>
<td>INDEX OF SHEETS AND STANDARD DRAWINGS</td>
</tr>
<tr>
<td>3</td>
<td>GOVERNING SPECIFICATIONS AND GENERAL NOTES</td>
</tr>
<tr>
<td>4 - 5</td>
<td>TYPICAL SECTIONS OF IMPROVEMENT</td>
</tr>
<tr>
<td>6 - 9</td>
<td>SPECIAL DETAILS</td>
</tr>
<tr>
<td>10 - 12</td>
<td>TEMPORARY EROSION CONTROL DETAILS</td>
</tr>
<tr>
<td>13 - 15</td>
<td>MAINTENANCE OF TRAFFIC DETAILS</td>
</tr>
<tr>
<td>16</td>
<td>PERMANENT PAVEMENT MARKING DETAILS</td>
</tr>
<tr>
<td>17 - 20</td>
<td>QUANTITIES</td>
</tr>
<tr>
<td>21</td>
<td>SUMMARY OF QUANTITIES AND REVISIONS</td>
</tr>
<tr>
<td>22 - 24</td>
<td>SURVEY CONTROL DETAILS</td>
</tr>
<tr>
<td>25 - 26</td>
<td>PLAN AND PROFILE SHEETS</td>
</tr>
<tr>
<td>27 - 34</td>
<td>CROSS SECTIONS</td>
</tr>
</tbody>
</table>

INDEX OF SHEETS & STANDARD DRAWINGS

<table>
<thead>
<tr>
<th>DRAWING NO.</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FES-1</td>
<td>FLARED END SECTION</td>
</tr>
<tr>
<td>FES-2</td>
<td>FLARED END SECTION</td>
</tr>
<tr>
<td>PCC-1</td>
<td>STANDARD PIPE CULVERTS</td>
</tr>
<tr>
<td>PCC-2</td>
<td>PRECAST CONCRETE BOX CULVERTS</td>
</tr>
<tr>
<td>PM-1</td>
<td>CONCRETE PIPE CULVERT FILL HEIGHTS &amp; BEDDING</td>
</tr>
<tr>
<td>PML-1</td>
<td>DETAILS OF PIPE UNDERGROUND</td>
</tr>
<tr>
<td>PML-2</td>
<td>REINFORCED CONCRETE BOX CULVERT DETAILS</td>
</tr>
<tr>
<td>PML-3</td>
<td>CEMENT BACKFILL &amp; SOLID SODDING FOR BOX CULVERTS</td>
</tr>
<tr>
<td>SE-1</td>
<td>TYPICAL TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC</td>
</tr>
<tr>
<td>SE-2</td>
<td>PLAN AND PROFILES</td>
</tr>
<tr>
<td>SE-3</td>
<td>SURVEY CONTROL DETAILS</td>
</tr>
<tr>
<td>SE-4</td>
<td>PLAN AND PROFILE SHEETS</td>
</tr>
<tr>
<td>SE-5</td>
<td>CROSS SECTIONS</td>
</tr>
<tr>
<td>SE-6</td>
<td>STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER</td>
</tr>
<tr>
<td>SE-7</td>
<td>TEMPORARY EROSION CONTROL DEVICES</td>
</tr>
<tr>
<td>SE-8</td>
<td>TEMPORARY EROSION CONTROL DEVICES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROADWAY STANDARD DRAWINGS</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FES-1</td>
<td>10-19-96</td>
</tr>
<tr>
<td>FES-2</td>
<td>10-19-96</td>
</tr>
<tr>
<td>PCC-1</td>
<td>02-27-14</td>
</tr>
<tr>
<td>PCC-2</td>
<td>02-27-14</td>
</tr>
<tr>
<td>PM-1</td>
<td>06-01-17</td>
</tr>
<tr>
<td>PML-1</td>
<td>12-06-18</td>
</tr>
<tr>
<td>PML-2</td>
<td>07-26-12</td>
</tr>
<tr>
<td>PML-3</td>
<td>11-29-03</td>
</tr>
<tr>
<td>SE-1</td>
<td>10-19-96</td>
</tr>
<tr>
<td>SE-2</td>
<td>04-13-17</td>
</tr>
<tr>
<td>SE-3</td>
<td>06-02-15</td>
</tr>
<tr>
<td>SE-4</td>
<td>02-27-14</td>
</tr>
<tr>
<td>SE-5</td>
<td>10-19-09</td>
</tr>
<tr>
<td>SE-6</td>
<td>11-18-17</td>
</tr>
<tr>
<td>SE-7</td>
<td>06-02-94</td>
</tr>
<tr>
<td>SE-8</td>
<td>11-03-94</td>
</tr>
</tbody>
</table>
GOVERNING SPECIFICATIONS

ARKANSAS 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
FWA-1273_ REQUIRED CONTRACT PROVIDING FEDERAL-AID CONSTRUCTION CONTRACTS
FWA-1273_ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FWA-1273_ SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 149)
FWA-1273_ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FWA-1273_ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FWA-1273_ SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FWA-1273_ SUPPLEMENT - WAGE RATE DETERMINATION
103-3_ CONTRACTORS LICENSE
103-4_ DEPARTMENT NAME CHANGE
103-2_ ISSUANCE OF PROPOSALS
103-2_ LIQUIDATED DAMAGES
103-2_ WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1_ PROTECTION OF VANER Quality and Wetlands
303-1_ AGGREGATE BASE COURSE
303-2_ QUALITY CONTROL AND ACCEPTANCE
400-2_ CEMENT COATS
400-4_ DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5_ PERCENT AIR Voids FOR ACI&MIX DESIGNS
400-6_ LIQUID ANT-SLIP ADDITIVE
410-2_ CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2_ DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
600-2_ INCIDENTAL CONSTRUCTION
600-2_ RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
623-1_ MULCH COVER
JOB 110619_ BIDDING REQUIREMENTS AND CONDITIONS
JOB 110619_ BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110619_ BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 110619_ CARGO PREFERENCE ACT REQUIREMENTS
JOB 110619_ CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 110619_ DEAVANTAGE BUSINESS ENTERPRISE BIDDERS RESPONSIBILITIES
JOB 110619_ FLEXIBLE BEGINNING OF WORK
JOB 110619_ GOALS FOR DEAVANTAGE BUSINESS ENTERPRISE PARTICIPATION
JOB 110619_ MANDATORY ELECTRONIC CONTRACT
JOB 110619_ MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 110619_ MIGRATORY BIRDS
JOB 110619_ MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 110619_ PRECAST REINFORCED CONCRETE BOX CULVERTS
JOB 110619_ SETTLEMENT AGREEMENTS
JOB 110619_ SHARING FOR CULVERTS
JOB 110619_ SOL STABILIZATION
JOB 110619_ STORM WATER POLLUTION PREVENTION PLAN
JOB 110619_ SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110619_ UTILITY ADJUSTMENTS
JOB 110619_ 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 ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID 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 INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DECISION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARVEST AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE Pasteures are Severed. wire fence may BE CONSTRUCTED INITIALLY OR IN LIEU THEREOF THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THE 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. THIS PROJECT IS COVERED UNDER A SECTION 404 PERMIT REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
10. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 310 - UNCLASSIFIED EXCAVATION.
11. 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.
NOTES:

1. The thickness of aggregate base course shall be within plus or minus one inch of the plan thickness shown. The contractor shall correct any deficient thickness that does not meet the tolerance indicated. Payment will not be made for material placed in excess of the tolerance indicated.

2. 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.

3. The final 2" of surface course is to be placed after all other courses have been laid. Longitudinal joints shall be at lane lines.

4. With the approval of the engineer, the contractor will be allowed to substitute, at no additional cost to the department, the first lift of AC surface course 1/2" in lieu of aggregate base course on the shoulders.

HWY. 39 - TANGENT
STA. 200+00.00 to STA. 204+37.31

HWY. 39 - SUPERELEVATION
STA. 204+37.31 to STA. 207+13.3

TYPICAL SECTIONS OF IMPROVEMENT
NOTES:

- The thickness of aggregate base course shall be those plus or minus any excess of the planned thickness shown on the plans. If any thickness greater than the tolerance indicated, payment will not be made for material placed in excess of the tolerance indicated.
- 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 final 2" of surface course is to be placed after all other courses have been laid.

- All shoulder joints shall be at lane lines.

Asphalt for leveling of existing pavement shall be placed only if and where directed by the Engineer. Calculations for the amount of leveling and/or regrading 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.

With the approval of the Engineer, the Contractor is allowed to substitute at no additional cost to the Department, the first lift of aggregate surface course (0.75") in lieu of aggregate base course on the shoulders.

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

REFERENCE SHEETS FOR WIDTH OF COUNTY ROAD.

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

CONSTRUCTION LIMITS

DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

NOTE: PIPE COLLAR TO BE UTILIZED AS APPROVED BY THE ENGINEER.

MIN. 3" COVER

VARIABLE

NO. 4 BARS @ 12" HORIZONTAL SPACING

NO. 4 BARS @ 12" VERTICAL SPACING

NO. 4 BARS @ 12" HORIZONTAL SPACING

NO. 4 BARS @ 12" HORIZONTAL SPACING

PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL

SPECIAL DETAILS

EXISTING ASPHALT
Pavement RETAIN AND OVERLAY

COLD MILL EXISTING ASPHALT PAVEMENT AND OVERLAY

100' NORMAL TRANSITION

PROPOSED OVERLAY

DETAIL FOR TRANSITIONS

ACBM surface course (1/2"
1200 LBF PER SQ. FT NO. 1 AND
AGGREGATE BASE COURSE (CLASS T)
7" COLD, DEPTH

TOP VIEW

VARIABLE

12"

VERTICAL SPACING

HORIZONTAL SPACING

VERTICAL SPACING

HORIZONTAL SPACING

SIDE VIEW

FRONT VIEW

EXTRACTION PROGRESS: 100.00%

SPECIAL DETAILS

10/21/18
METHOD OF RAISING GRADE

NOTES:

1. THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

2. QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

3. IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09, OF THE STANDARD SPECIFICATIONS.
### GENERAL NOTES


All concrete shall be Class 5 with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have 4" chamfers.

Reinforcing Steel shall be Grade 60 (yield strength > 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Reinforcing Steel Tolerances: The tolerances for reinforcing steel shall meet those listed in 'Manual of Standard Practice' published by Concrete Reinforcing Steel Institute (CRSS).

Examination and backfilling shall be in accordance with the requirements of Section 801.

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

Weep holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to drain all reinforcing steel. There shall be a minimum of (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12 1/2" above the top of the wingwall footing.

Membrane Waterproofing: Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class 3 Concrete.

### WINGWALL DETAILS

**OUTLET† WINGWALL TABLE**

<table>
<thead>
<tr>
<th>H</th>
<th>W/H</th>
<th>H1</th>
<th>W/H</th>
<th>W/H</th>
<th>H1</th>
<th>W/H</th>
<th>INLET</th>
<th>OUTLET</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>4'-0&quot;</td>
<td>1'-8&quot;</td>
</tr>
</tbody>
</table>

**VERTICAL FABRIC ALTERNATE**

- **WRAPPED FABRIC ALTERNATE**

For details of Excavation and Pay Limits, see Standard Drawing R28-1.

### SHEET 1 OF 2

**DETAILS OF WINGWALLS FOR PRECAST REINFORCED BOX CULVERTS**

**QUINTUPLE BARREL BOX CULVERT**

**51a. 205+10**

**SPECIAL DETAILS**
END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".

PLAN - PARALLEL WINGWALLS

WINGWALL SECTION P-P

Note See "Wingwall Section P-P" for additional details and reinforcing.

PLAN - PLATED WINGWALLS

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

Footers bars that conflict with precast reinforced box culverts shall be trimmed as necessary.

CONSTRUCTION JOINTS
Flared Wingwalls Shown

Part Plan - Flared Wingwalls

Part Plan - Parallel Wingwalls

Wing A

Wing B

Wing A

Wing B

END ELEVATION
Flared Wingwalls Shown

TYPICAL KEYWAY DETAIL
on Construction Joints

PART PLAN - FLARED WINGWALLS

PART PLAN - PARALLEL WINGWALLS

PLAN - FLARED WINGWALLS

WINGWALL ELEVATION
Showing Back Face Reinforcement
For square ends make the shaded area thickness
the greater of W and B Bottom Side Thickness.
For skewed ends make the shaded area thickness
the greater of W and B-6'-9".
CLEARING & GRUBBING

<table>
<thead>
<tr>
<th>DATE OF REVISION</th>
<th>REVISION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SAND BAG DITCH CHECKS (E-S)
9 LOCATIONS = 198 BAGS
SILT FENCE (E-I)
5 LOCATIONS = 150 LIN. FT.

LEGEND

- Sand Bag Ditch Checks
- Silv Fence

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

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

STA. 200+00.00
BEGIN JOB 106/9
LOG MILE 4.40

STA. 205+00.00

STA. 210+00.00
END JOB 106/9
STAGE 1
SAND BAG DITCH CHECKS E-SW
6 LOCATIONS = 120 BAGS

STA. 200+00.00
BEGIN JOB 1106/9
LOG MILE 4.40

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.
STAGE 2
SAND BAG DITCH CHECKS E-5:
2 LOCATIONS 1 + 94 BAGS
SILT FENCE E-8:
4 LOCATIONS 1 1000 LNL FT.

STA. 200+00.00
BEGIN JOB 110619
LOG MILE 4.40

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

TEMPORARY EROSION CONTROL DETAILS
MAINTENANCE OF TRAFFIC DETAILS

SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CONSTRUCT PROPOSED DRY, 39" DRAINAGE DITCH.
EXTEND PIPE CULVERTS LT.
MAINTAIN TRAFFIC DURING CONSTRUCTION.

STAGE 2: SHIFT TRAFFIC TO PROPOSED ROADWAY.
CONSTRUCT PROPOSED DRY, 39" DRAINAGE DITCH.
CONSTRUCT PROPOSED BOX CULVERT RT.
PLACE END OF PIPE CULVERTS RT.
PLACE FINAL SURFACE COURSE.
PLACE PERMANENT PAVEMENT MARKINGS.
PLACEMENT OF END 50 UNDERGROUND BARRIERS.

ADVANCE WARNING - CO. RD. 658
(ALL STAGES)
SEQUENCE OF CONSTRUCTION

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY.
- CONSTRUCT PROPOSAL #6 & DRAINAGE DITCH
- CONSTRUCT BOX DRAINS
- EXTEND PIPE CULVERTS

STAGE 2: SHIFT TRAFFIC TO PROPOSED ROADWAY.
- CONSTRUCT RT. SHOULDER & RT. DITCHES
- CONSTRUCT RD. RD. SDR
- REMOVAL OF EXISTING BRIDGE
- CONSTRUCT BOX DRAINS
- PLACE FINAL SURFACE COURSE
- PLACE PERMANENT PAVEMENT MARKINGS

STA. 200+00.00
BEGIN JOB #10619
LOG MILE 4.40

(6) TRAFFIC DRUMS SPACED 50' O.C.

(12) VERTICAL PANELS SPACED 50' O.C.

(9) TRAFFIC DRUMS SPACED 20' O.C.

(6) VERTICAL PANELS SPACED 50' O.C.
SEQUENCE OF CONSTRUCTION

STAGE 1:
- Maintain traffic on existing roadway.
- Construct proposed HWY 29 & drainage ditch.
- Construct box culvert LT.
- Extend pipe culverts LT.

STAGE 2:
- Shift traffic to proposed roadway.
- Construct RT, shoulder & R.T. ditches.
- Construct L.C. ditches.
- Construct box culvert RT.
- Construct jet grout.
- Extend pipe culverts RT.
- Place final surface course.
- Place permanent pavement markings.

STAGE 2:
- Maintain traffic on proposed roadway.
- Construct proposed HWY 29 & drainage ditch.
- Construct box culvert LT.
- Extend pipe culverts LT.
- Place final surface course.
- Place permanent pavement markings.

STA. 200+00.00
BEGIN JOB 110619
LOG MILE 4.40

STA. 215+00.00
END JOB 110619

FURNISH AND INSTALL 28D P.C.C.B.
& 3D SPECIAL END UNITS

MAINTENANCE OF TRAFFIC DETAILS
PERMANENT PAVEMENT MARKING DETAILS

HWY. 39

PERMANENT PAVEMENT MARKING DETAILS

REFLECTORIZED PAINT MARKING:
- RT. AND LT. EDGE LINING * 3000 LIN. FT., WHITE
- DBL. CENTERLINE * 3000 LIN. FT., YELLOW

RAISED PAVEMENT MARKERS:
- TYPE III: YELLOW 600 D.C. * EACH

THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIP FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.
### 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>BARRIACDES (TYPE II)</th>
<th>BARRIACDES (TYPE III)</th>
<th>FURNISHING &amp; INSTALLING PRECAST CONCRETE BARRIERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>W0-1</td>
<td>ROAD WORK 1500 FT.</td>
<td>48&quot;x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>240</td>
</tr>
<tr>
<td>W0-1</td>
<td>ROAD WORK 2500 FT.</td>
<td>48&quot;x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>240</td>
</tr>
<tr>
<td>W0-1</td>
<td>ROAD WORK AHEAD</td>
<td>48&quot;x48&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>160</td>
</tr>
<tr>
<td>G0-2</td>
<td>END ROAD WORK</td>
<td>48&quot;x48&quot;</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>240</td>
</tr>
<tr>
<td>R11-2</td>
<td>ROAD CLOSED</td>
<td>48&quot;x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>160</td>
</tr>
<tr>
<td>W1-6</td>
<td>LARGE ARROW</td>
<td>48&quot;x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>160</td>
</tr>
<tr>
<td>W1-6</td>
<td>LEFT SHOULDER CLOSED</td>
<td>48&quot;x48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>VERTICAL PANELS</td>
<td></td>
<td>12</td>
<td>12</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TRAFFIC DRUMS</td>
<td></td>
<td>27</td>
<td>26</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>TYPE II BARRICADE-RT (B)</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TYPE II BARRICADE-CT (B)</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FURNISHING AND INSTALLING PRECAST CONCRETE BARRIERS</td>
<td></td>
<td>280</td>
<td>280</td>
<td>320</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS:**

|             |           | 200       | 12       | 28       | 8                   | 8                   | 280                          |

**NOTE:** THIS IS A LOW TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

### CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>STAGE 2</th>
<th>END OF JOB</th>
<th>CONSTRUCTION PAVEMENT MARKINGS</th>
<th>RAISED PAVEMENT MARKERS</th>
<th>REFLECTORIZED PAVEMENT MARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>TYPE B</td>
<td>6&quot; YELLOW</td>
<td>WHITE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LIN. FT. EACH</td>
<td>LIN. FT. EACH</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6000</td>
<td>6000</td>
<td></td>
</tr>
<tr>
<td>CONSTRUCTION PAVEMENT MARKINGS</td>
<td>6000</td>
<td>6000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAISED PAVEMENT MARKERS</td>
<td>18</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFLECTORIZED PAINT PAVEMENT MARKING WHITE</td>
<td>3000</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFLECTORIZED PAINT PAVEMENT MARKING YELLOW</td>
<td>3000</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS:**

|             | 6000 | 18 | 3000 | 3000 | 3000 |

**NOTE:** THIS IS A LOW TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

**NOTE:** THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT.

THE PROJECT MUST BE MARKED FOR PASSING PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING.

CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.
### CLEARING AND GRUBBING

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>CLEARING</th>
<th>GRUBBING</th>
</tr>
</thead>
<tbody>
<tr>
<td>200+00</td>
<td>HWY. 39 - MAIN LINES LT. &amp; RT.</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

**TOTALS:**

<table>
<thead>
<tr>
<th>CLEARING</th>
<th>GRUBBING</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

### REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LUMP SUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>200+00</td>
<td>HWY. 39 - MAIN LINES (SITE NO. 1)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

### BENCH MARKS

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>BENCH MARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>205+10</td>
<td>HWY. 39 - HEADWALL ON RT</td>
<td>EACH</td>
</tr>
</tbody>
</table>

**TOTAL:**

1

**NOTE:** SHOWN FOR INFORMATION ONLY. BENCH MARKS SHALL BE FURNISHED AND PLACED BY STATE FORCES.

### EROSION CONTROL

#### PERMANENT EROSION CONTROL

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT</td>
<td>CLEARING AND GRUBBING</td>
</tr>
</tbody>
</table>

#### TEMPORARY EROSION CONTROL

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 1</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 2</td>
</tr>
</tbody>
</table>

**TOTALS:**

<table>
<thead>
<tr>
<th>BASES OF ESTIMATE</th>
<th>LINE</th>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 TONS / ACRE OF SEEDING</td>
<td>102.0 M.G. / ACRE OF SEEDING</td>
<td></td>
</tr>
<tr>
<td>2.0 TONS / SQ. YD. OF SOLID SODDING</td>
<td>12.0 M.G. / SQ. YD. OF SOLID SODDING</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** THE TEMPORARY EROSION CONTROL DEVICES SHOWN ABOVE AND ON THE PLANS SHALL BE INSTALLED IN SUCH A SEQUENCE AS TO DETECT AND REDUCE SEDIMENTATION ON U.S. WATERWAYS AS EXPLAINED BY THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.

**QUANTITIES**
### EARTHWORK

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION / DESCRIPTION</th>
<th>UNCLASSIFIED EXCAVATION</th>
<th>COMPACTED EMBANKMENT</th>
<th>TON</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 1 MAIN LANES</td>
<td>650</td>
<td>5500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 2 MAIN LANES</td>
<td>2150</td>
<td>375</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10+00.00</td>
<td>13+00.00</td>
<td>STAGE 2 CO RD 658</td>
<td>40</td>
<td>1035</td>
<td></td>
</tr>
<tr>
<td>205+10.00</td>
<td>205+10.00</td>
<td>CHANNEL CHANGE</td>
<td>332</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>20+11.13</td>
<td>21+31.60</td>
<td>CHANNEL CHANGE</td>
<td>60</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS:**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NOTE: QUANTITIES ESTIMATED SEE SECTION 104.03 OF THE STD. SPECS.*

### COLD MILLING ASPHALT PAVEMENT

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>AVG. WIDTH</th>
<th>COLD MILLING ASPHALT PAVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>196+00.00</td>
<td>200+00.00</td>
<td>MAIN LANES</td>
<td>20.00</td>
<td>222.22</td>
</tr>
<tr>
<td>213+00.00</td>
<td>214+00.00</td>
<td>MAIN LANES</td>
<td>20.00</td>
<td>222.22</td>
</tr>
</tbody>
</table>

**TOTAL:**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>444.44</td>
</tr>
</tbody>
</table>

*NOTE: AVERAGE MILLING DEPTH 1".*

### PRECAST REINFORCED CONCRETE BOX CULVERTS

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>PRECAST REINFORCED CONCRETE BOX CULVERT (LFT FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>205+10</td>
<td>QUINT. 12&quot; x 7&quot; R.C. BOX CULVERT - HWY 30</td>
<td>360</td>
</tr>
</tbody>
</table>

**TOTAL:**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>360</td>
</tr>
</tbody>
</table>

*NOTE: QUANTITIES ESTIMATED SEE SECTION 104.03 OF THE STD. SPECS.*

### ACHM PATCHING OF EXISTING ROADWAY

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>TON</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td>7</td>
</tr>
</tbody>
</table>

**TOTAL:**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

*NOTE: QUANTITIES ESTIMATED SEE SECTION 104.03 OF THE STD. SPECS.*

### SELECTED PIPE BEDDING

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SELECTED PIPE BEDDING</th>
<th>TON</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

*NOTE: QUANTITIES ESTIMATED SEE SECTION 104.03 OF THE STD. SPECS.*

### STRUCTURES

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>REINFORCED CONCRETE PIPE CULVERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>204+90</td>
<td>DEI 30&quot; x 58&quot; R.C. PIPE CULVERT</td>
<td>28</td>
</tr>
</tbody>
</table>

**BASIS OF ESTIMATE:**

<table>
<thead>
<tr>
<th>WATER</th>
<th>12.6 GAL. / SQ. YD. OF SOLID SODDING</th>
</tr>
</thead>
</table>

*NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.*
## BASE AND SURFACING

### AGGREGATE BASE COURSE (CLASS 7)

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Length</th>
<th>Tack Coat</th>
<th>ACIM Binder Course (**)</th>
<th>ACIM Surface Course (1/3°)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>TON / TON</td>
<td>FEET</td>
<td>FEET</td>
</tr>
<tr>
<td>190+00.00</td>
<td>HWY. 38 - TRANSITION</td>
<td>150.00</td>
<td>20.00</td>
<td>220.00</td>
<td>37.78</td>
</tr>
<tr>
<td>200+00.00 - 201+00.00</td>
<td>HWY. 38 - NORTH AND SOUTH TRANSITION</td>
<td>230.00</td>
<td>20.00</td>
<td>220.00</td>
<td>37.78</td>
</tr>
<tr>
<td>221+00.00 - 222+00.00</td>
<td>HWY. 38 - NORTH AND SOUTH TRANSITION</td>
<td>230.00</td>
<td>20.00</td>
<td>220.00</td>
<td>37.78</td>
</tr>
<tr>
<td>241+00.00 - 242+00.00</td>
<td>HWY. 38 - TRANSITION</td>
<td>150.00</td>
<td>20.00</td>
<td>220.00</td>
<td>37.78</td>
</tr>
</tbody>
</table>

### TACK COAT QUANTITIES

- TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

### ADDITIONAL QUANTITIES

- MAXIMUM NUMBER OF OPERATIONS = 115 FOR PG 64-22

### BASE OF ESTIMATE:

- ACIM SURFACE COURSE (1/3°) | 94.7% MIN. AGGR. | 5.3% ASPHALT BINDER
- ACIM BINDER COURSE (**) | 95.7% MIN. AGGR. | 4.3% ASPHALT BINDER

- TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.
### 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>13</td>
<td>STATION</td>
</tr>
<tr>
<td>201</td>
<td>GRUBBING</td>
<td>19</td>
<td>STATION</td>
</tr>
<tr>
<td>210</td>
<td>UNCLASSIFIED EXCAVATION</td>
<td>3120</td>
<td>CU. YD</td>
</tr>
<tr>
<td>210</td>
<td>COMPACTED EMBANKMENT</td>
<td>7205</td>
<td>CU. YD</td>
</tr>
<tr>
<td>SP &amp; 210</td>
<td>SOIL STABILIZATION</td>
<td>100</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 301</td>
<td>ASPHALT EMBASE COURSE (CLASS 7)</td>
<td>2491</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 401</td>
<td>TACK COAT</td>
<td>598</td>
<td>GAL</td>
</tr>
<tr>
<td>SS &amp; 401</td>
<td>MINERAL AGGREGATE IN ACOM BINDER COURSE (1&quot;)</td>
<td>274</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 405</td>
<td>ASPHALT BINDER (1&quot;) IN SOIL MIXTURE</td>
<td>12</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 407</td>
<td>MINERAL AGGREGATE IN ACOM SURFACE COURSE (1&quot;)</td>
<td>833</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 407</td>
<td>ASPHALT BINDER (1&quot;) IN ACOM SURFACE COURSE (1&quot;)</td>
<td>47</td>
<td>TON</td>
</tr>
<tr>
<td>412</td>
<td>COLD MILLING ASPHALT PAVEMENT</td>
<td>444</td>
<td>SQ. YD</td>
</tr>
<tr>
<td>SS &amp; 415</td>
<td>ACOM PATCHING OF EXISTING ROADWAY</td>
<td>7</td>
<td>TON</td>
</tr>
<tr>
<td>601</td>
<td>MOBILIZATION</td>
<td>1.00</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>SP &amp; 602</td>
<td>FURNISHING FIELD-OFFICE</td>
<td>1.00</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>603</td>
<td>MAINTENANCE OF TRAFFIC</td>
<td>200</td>
<td>SQ. FT</td>
</tr>
<tr>
<td>SS &amp; 604</td>
<td>SIGNS</td>
<td>16</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>SS &amp; 604</td>
<td>TRAFFIC DRUMS</td>
<td>38</td>
<td>EACH</td>
</tr>
<tr>
<td>604</td>
<td>FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER</td>
<td>380</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>604</td>
<td>CONSTRUCTION PAVEMENT MARGINS</td>
<td>6000</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>SS &amp; 604</td>
<td>VERTICAL PANELS</td>
<td>12</td>
<td>EACH</td>
</tr>
<tr>
<td>606</td>
<td>90&quot; REINFORCED CONCRETE PIPE CULVERTS (CLASS B)</td>
<td>36</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>606</td>
<td>90&quot; FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS</td>
<td>12</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>608</td>
<td>SELECTED PIPE BEDDING</td>
<td>10</td>
<td>CU. YD</td>
</tr>
<tr>
<td>SS &amp; 611</td>
<td>4&quot; PRECAST CHAIN</td>
<td>900</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>SS &amp; 611</td>
<td>UNDERGROUND OUTLET PROTECTORS</td>
<td>2</td>
<td>EACH</td>
</tr>
<tr>
<td>620</td>
<td>LIME</td>
<td>9</td>
<td>TON</td>
</tr>
<tr>
<td>620</td>
<td>SEEDING</td>
<td>4.34</td>
<td>ACRE</td>
</tr>
<tr>
<td>SS &amp; 620</td>
<td>MULCH COVER</td>
<td>13.48</td>
<td>ACRE</td>
</tr>
<tr>
<td>620</td>
<td>WATER</td>
<td>613.9</td>
<td>M. GAL</td>
</tr>
<tr>
<td>621</td>
<td>TEMPORARY SEEDING</td>
<td>6.34</td>
<td>ACRE</td>
</tr>
<tr>
<td>621</td>
<td>Silt fence</td>
<td>2865</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>621</td>
<td>Silt Bag/Ditch Checks</td>
<td>462</td>
<td>BAUX</td>
</tr>
<tr>
<td>621</td>
<td>REMOVALAL REMOVAL AND DISPOSAL</td>
<td>119</td>
<td>CU. YD</td>
</tr>
<tr>
<td>623</td>
<td>SECOND SEEDING APPLICATION</td>
<td>4.34</td>
<td>ACRE</td>
</tr>
<tr>
<td>624</td>
<td>SOIL SEEDING</td>
<td>79</td>
<td>SQ. YD</td>
</tr>
<tr>
<td>635</td>
<td>ROADWAY CONSTRUCTION CONTROL</td>
<td>1.00</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>718</td>
<td>REFOCED PAINT PAVEMENT MARKING WHITE (6&quot;)</td>
<td>3000</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>718</td>
<td>REFLECTED PAINT PAVEMENT MARKING YELLOW (6&quot;)</td>
<td>3000</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>721</td>
<td>RAISED PAVEMENT MARKERS (TYPE B)</td>
<td>19</td>
<td>EACH</td>
</tr>
</tbody>
</table>

### STRUCTURES OVER 2F SPAN

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>206</td>
<td>REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)</td>
<td>1.00</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>SP &amp; 607</td>
<td>PRECAST REINFORCED CONCRETE BOX CULVERT (1&quot;)</td>
<td>300</td>
<td>LIN. FT</td>
</tr>
<tr>
<td>801</td>
<td>UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY</td>
<td>25</td>
<td>CU. YD</td>
</tr>
</tbody>
</table>

### REVISIONS

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

**SUMMARY OF QUANTITIES & REVISIONS**
GRID CONVERGENCE DETERMINED REFERENCE GRID ARKANSAS BASIS REFERENCE HORIZONTAL GRID USE AT VERTICAL DATUM.

UNITS: U.S. STATIONERY

Date: 10/4/2016

Coordinate System: ARKANSAS STATE PLANE - 0302/SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND,

UNIT: U.S. SURVEY FOOT

<table>
<thead>
<tr>
<th>Point Name</th>
<th>Northing</th>
<th>Easting</th>
<th>Elev.</th>
<th>Feature Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1990251.60013</td>
<td>1603890.6983</td>
<td>171.279</td>
<td>CTL STD AHTD MON STAMPED Pn 1</td>
</tr>
<tr>
<td>2</td>
<td>1991042.4871</td>
<td>1606378.4446</td>
<td>172.067</td>
<td>CTL STD AHTD MON STAMPED Pn 2</td>
</tr>
<tr>
<td>3</td>
<td>1991450.2767</td>
<td>1608450.1004</td>
<td>173.917</td>
<td>CTL STD AHTD MON STAMPED Pn 3</td>
</tr>
<tr>
<td>4</td>
<td>1991590.8831</td>
<td>1608507.1384</td>
<td>174.034</td>
<td>CTL STD AHTD MON STAMPED Pn 4</td>
</tr>
<tr>
<td>5</td>
<td>1992050.0563</td>
<td>1608863.8939</td>
<td>175.824</td>
<td>CTL STD AHTD MON STAMPED Pn 5</td>
</tr>
<tr>
<td>6</td>
<td>1992270.7454</td>
<td>1608942.8815</td>
<td>174.369</td>
<td>CTL STD AHTD MON STAMPED Pn 6</td>
</tr>
<tr>
<td>100</td>
<td>1988436.3485</td>
<td>1608356.3585</td>
<td>172.302</td>
<td>GPS AHTD GPS MON 540015</td>
</tr>
<tr>
<td>101</td>
<td>1988489.1052</td>
<td>1606992.3744</td>
<td>176.311</td>
<td>GPS AHTD GPS MON 540015A</td>
</tr>
<tr>
<td>900</td>
<td>1991454.3800</td>
<td>1608662.9404</td>
<td>174.476</td>
<td>TBM CHISELED SQUARE WEST SIDE CENTER OF BRIDGE</td>
</tr>
</tbody>
</table>

**Note:** Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*standard markings common to all caps, or as indicated*

USE *CAF* = 1,0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999471588 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.

This CAF is intended for use within the project limits.

GRID DISTANCE GR - GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME s110619gi.caf

HORIZONTAL DATUM: NAD 83 (1987)

VERTICAL DATUM: NAVD 88 POSITIONAL 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 BEARINGS:
ARKANSAS STATE PLANE GRID BEARINGS - 0302/SOUTH ZONE DETERMINED FROM GPS CONTROL POINTS 540014-540144

CONVERGENCE ANGLE: DO 23 01 RIGHT AT LT 34-31-44 Lg 091-01-02
GRID AZIMUTH - ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

**Survey Control Details**

**HWY. 39**

<table>
<thead>
<tr>
<th>POINT NAME</th>
<th>TYPE</th>
<th>STATION</th>
<th>NORTHING</th>
<th>EASTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>8000</td>
<td>POB</td>
<td>192+94.72</td>
<td>1992619.6963</td>
<td>1608917.6505</td>
</tr>
<tr>
<td>8001</td>
<td>P.C.</td>
<td>196+23.39</td>
<td>1992291.5583</td>
<td>1608899.0175</td>
</tr>
<tr>
<td>8003</td>
<td>P.T.</td>
<td>200+00.00</td>
<td>1991935.7563</td>
<td>1608787.7005</td>
</tr>
<tr>
<td>8004</td>
<td>P.C.</td>
<td>204+30.41</td>
<td>1991568.7561</td>
<td>1608562.8393</td>
</tr>
<tr>
<td>8005</td>
<td>P.T.</td>
<td>210+74.49</td>
<td>1990955.9216</td>
<td>1608334.1085</td>
</tr>
<tr>
<td>8007</td>
<td>POE</td>
<td>215+24.27</td>
<td>1990506.1755</td>
<td>1608339.6688</td>
</tr>
</tbody>
</table>

**CO. RD. 658**

<table>
<thead>
<tr>
<th>POINT NAME</th>
<th>TYPE</th>
<th>STATION</th>
<th>NORTHING</th>
<th>EASTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>8010</td>
<td>POB</td>
<td>10+00.00</td>
<td>1991121.1931</td>
<td>1608103.1901</td>
</tr>
<tr>
<td>8011</td>
<td>POE</td>
<td>13+00.00</td>
<td>1991114.1002</td>
<td>1608403.1062</td>
</tr>
</tbody>
</table>

**DRAINAGE DITCH**

<table>
<thead>
<tr>
<th>POINT NAME</th>
<th>TYPE</th>
<th>STATION</th>
<th>NORTHING</th>
<th>EASTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>8020</td>
<td>POB</td>
<td>20+00.00</td>
<td>1991050.2610</td>
<td>1608416.0576</td>
</tr>
<tr>
<td>8021</td>
<td>P.I.</td>
<td>20+11.46</td>
<td>1991050.3800</td>
<td>1608427.5100</td>
</tr>
<tr>
<td>8022</td>
<td>POE</td>
<td>21+31.82</td>
<td>1991060.1710</td>
<td>1608547.5116</td>
</tr>
<tr>
<td>STA.</td>
<td>HWY.</td>
<td>CO. RD. 658</td>
<td>DRAINAGE DITCH</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>-------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>13+00.00</td>
<td>39</td>
<td>209+15.33</td>
<td>STA. 20+00.00</td>
<td></td>
</tr>
<tr>
<td>END CO. RD. 658</td>
<td>STA. 209+18.72</td>
<td>O/S 19.8' LT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HWY. 39</td>
<td>HWY. 39</td>
<td>HWY. 39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>84°08'06&quot;</td>
<td>84°08'06&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Refer to survey control detail sheets for horizontal and vertical control data.
PLAN VIEW

END VIEW

BAR LIST

<table>
<thead>
<tr>
<th>BAR NO.</th>
<th>SIZE</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>±4</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>±4</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>±4</td>
<td>5-5</td>
</tr>
<tr>
<td>L</td>
<td>±4</td>
<td>3-2</td>
</tr>
<tr>
<td>M</td>
<td>±4</td>
<td>5-6</td>
</tr>
</tbody>
</table>

*NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT*

GENERAL NOTES

1. CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTIONS BY INSTALLING BARS AS SHOWN IN SECTION "A" OF THE PLAN.
2. CURTAIN WALLS SHALL BE FLOODED A MINIMUM OF 40" IN PRECAST BOXES.
3. CURTAIN WALLS AND END SECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE PRECAST BOX CULVERT DETAIL.
4. BARS AND CONCRETE QUANTITY WILL BE DETERMINED BASED ON WIDTH AND HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.
5. ALL EXPOSED CORNERS TO HAVE R" CHAMFERS.

MINIMUMS AND FOUNDATIONS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN CROWN, AND LEAN CROWN FABRIC WATERTIGHTING, DRAINAGE MATERIALS, AND GEOTEXTILE FILTER FABRIC LAYERS SHALL BE SET UP ACCORDING TO THE SCHEDULED SPECIFICATIONS. THE APPLIED MATERIALS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

LEAN CROWN MUST CONSIST OF A SAND CEMENT MORTAR WITH THE FOLLOWING SPECIFICATIONS:
- MORTAR CEMENT MIXTURES: C12.5, C12.5, OR C12.5
- LEAN CROWN MORTAR CONCRETE MIXTURES: C12.5, C12.5, OR C12.5

MEMBRANE WATERTIGHTING CONFORMING TO THE REQUIREMENTS OF THE APPLICABLE ALARMS SPECIFICATIONS SHALL BE APPLIED TO THE EXTERIOR AND INTERIOR SURFACES OF THE BOX CULVERT.

THE MEMBRANE WATERTIGHTING WILL BE REQUIRED ON THE TOP, BOTTOM, AND HORIZONTAL JOINTS.

CURTAIN WALL AND APRON FABRIC PLACEMENT:
- FABRIC MATERIAL SHALL BE APPLIED TO THE CURTAIN WALLS AND APRONS AS SHOWN ON THE PLAN.
- FABRIC MATERIAL SHALL BE SEWN TO THE OUTER SIDE OF THE CURTAIN WALL AND APRON.
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 PLANS.

CONCRETE PAVEMENT

BROKEN LINE STRIPING

ASPHALT PAVEMENT

SOLID LINE STRIPING ON CONCRETE PAVEMENT

SOLID LINE STRIPING ON ASPHALT PAVEMENT

ASPHALT PAVEMENT

CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANCES

YIELD LINE DETAIL

CROSSWALK AND STOPBAR DETAILS

DETAL OF STANDARD RAISED PAVEMENT MARKERS

ARKANSAS HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1
NOTES FOR PIPE UNDERDRAINS

1. Geotextile fabric shall meet the requirements of Section 3.5.1 for Type I. Payment for geotextile fabric and granular filter material shall be included in the price bid per linear foot for 4" pipe underdrains in accordance with Section 6.1.2. The unit standard specifications.

2. 4" non-perforated Schedule 40 PVC pipe laterals with outlet protectors shall be installed as shown. All laterals shall be measured and paid for at 4" Schedule 40 pipe underdrains. Underdrain outlet protectors shall be measured and paid for at 4" Schedule 40 pipe underdrains.

3. Existing 4" pipe laterals may be connected to proposed drop inlets or extended where directed by the owner. Payment for connecting to existing laterals shall be considered included in the price bid for 4" pipe underdrains.

4. The location of all laterals shall be marked with 4 x 4" permanent pavement marking tape (white) at the outside edge of the shoulder, placed transverse to traffic. Payment for this work shall be included in the price bid for the various contract items.

5. Payment for the rodent screen shall be included in the price bid per each for underdrain outlet protectors.

6. Any existing underdrain that interferes with installation of the new underdrain system shall be removed and disposed of as direct by the engineer. Payment for the removal and disposal of existing underdrain outlet protectors is not to exceed the total cost of the new removal and disposal of underdrain outlet protectors.

7. At locations where a single lateral is used the contractor shall have the following options: install outlet protector as shown on standard drawing. Placement of the underdrain pipe shall be at a depth of at least 1.5 feet below the surface of the pavement. Underdrain outlet protector shall be placed at the location where the lateral enters the pavement.

8. Payment for the rodent screen shall be included in the price bid per each for underdrain outlet protectors.

9. The location of all laterals shall be marked with 4 x 4" permanent pavement marking tape (white) at the outside edge of the shoulder, placed transverse to traffic. Payment for this work shall be included in the price bid for the various contract items.

10. Payment for the rodent screen shall be included in the price bid per each for underdrain outlet protectors.

11. Any existing underdrain that interferes with installation of the new underdrain system shall be removed and disposed of as directed by the engineer. Payment for the removal and disposal of existing underdrain outlet protectors is not to exceed the total cost of the new removal and disposal of underdrain outlet protectors.

12. At locations where a single lateral is used the contractor shall have the following options: install outlet protector as shown on standard drawing. Placement of the underdrain pipe shall be at a depth of at least 1.5 feet below the surface of the pavement. Underdrain outlet protector shall be placed at the location where the lateral enters the pavement.

13. Payment for the rodent screen shall be included in the price bid per each for underdrain outlet protectors.

14. Any existing underdrain that interferes with installation of the new underdrain system shall be removed and disposed of as directed by the engineer. Payment for the removal and disposal of existing underdrain outlet protectors is not to exceed the total cost of the new removal and disposal of underdrain outlet protectors.
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;A&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2(\frac{1}{2})&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>4</td>
<td>3&quot;</td>
<td>4(\frac{1}{2})&quot;</td>
</tr>
<tr>
<td>6</td>
<td>4(\frac{1}{2})&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>7</td>
<td>5(\frac{1}{4})&quot;</td>
<td>7&quot;</td>
</tr>
<tr>
<td>8</td>
<td>6&quot;</td>
<td>8&quot;</td>
</tr>
</tbody>
</table>

IF THE OVERALL HEIGHT OF THE HOOK SEE DIAGRAM BELOW FOR A "D", "H", "N" OR "U" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 3\(\frac{1}{4}\)" INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE HOOK EXTENSION LENGTH AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE same DIAMETER AS AND PLACED AT THE same SPACING AS ALL THE "D", "H", "N" OR "U" BENT BARS THEY REPLACE.

NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM


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

REPLACEMENT BAR LENGTHS TABLE

<table>
<thead>
<tr>
<th>Bar Size</th>
<th>Length of Hooked Bar</th>
<th>Length of Straight Bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;A&quot;</td>
<td>L + F - 0&quot;</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;B&quot;</td>
<td>L + F - 2&quot;</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;C&quot;</td>
<td>L + F - 4&quot;</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;E&quot;</td>
<td>L + F - 6&quot;</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;F&quot;</td>
<td>L + F - 8&quot;</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;G&quot;</td>
<td>L + F - 10&quot;</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;H&quot;</td>
<td>L + 2&quot; - 6&quot;</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
<tr>
<td>&quot;O&quot;</td>
<td>L + 0(\frac{1}{2})&quot; - 3 INCHES</td>
<td>SEE &quot;D&quot; Bar Length</td>
</tr>
</tbody>
</table>

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 302 M 302 or M 53, Grade 60.

Construction and materials for wingwall & culvert drainage, including weep holes and granular material, shall be subject to the bid item, "Class 5 Concrete".

Membrane waterproofing shall conform to the requirements of Section 8B 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, but payment will be considered to be included in the various items bid for the R.C. Box Culvert.

Reinforcing steel tolerances for reinforcing steel to meet those listed in "Manual of Standard Practice" published by Concrete Reinforcing Steel Institute, except that the tolerance for drill bars such as Figure 5 on page 7-4 of the CRMH manual shall be minus 0 to plus 1\(\frac{1}{2}\) inch.

Weep holes in box culvert walls shall have a maximum horizontal spacing of 10"-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 30" above the top of the bottom slab. Weep holes in wingwalls shall have a maximum horizontal spacing of 10"-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 30" 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.

ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT HEADWALL MODIFICATIONS

R.C. BOX CULVERT HEADWALL MODIFICATIONS

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

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 DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DETAILS THROUGH EXISTING CHANNELS

SECTION B-B
DETAILS FOR NEW CHANNELS

ARKANSAS STATE HIGHWAY COMMISSION
EXCAVATION PAY LIMITS, BACKFILL & SOLID SODDING FOR BOX CULVERTS
STANDARD DRAWING RCB-2

DATE
REVISION
DRAWN
CHECKED
PRINTED
### Super-elevation Table for Two-Way Traffic

<table>
<thead>
<tr>
<th>Curvature (ft)</th>
<th>10 MPH</th>
<th>20 MPH</th>
<th>30 MPH</th>
<th>40 MPH</th>
<th>50 MPH</th>
<th>60 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MINIMUM</td>
<td>DESIRABLE</td>
<td>MINIMUM</td>
<td>DESIRABLE</td>
<td>MINIMUM</td>
<td>DESIRABLE</td>
</tr>
<tr>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
</tr>
<tr>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
</tbody>
</table>

#### Abbreviations
- NC: Normal Crown
- RC: Reverse Crown
- SC: Super-crown

### General Notes
1. On curves with a superelevation value, the superelevation shall be kept at the same value throughout the length of the curve unless otherwise noted.
2. In curves where superelevation values exceed the standard values, the superelevation values shall be kept at the same value throughout the length of the curve unless otherwise noted.
3. The superelevation shall be kept constant throughout the length of the curve unless otherwise noted.

#### Standard Method when Superelevation revolves around center line

- **Note:** Maintain normal crown on inside until superelevation exceeds 2c.

---

### Arkansas State Highway Commission

**Tables and Method of Superelevation for Two-Way Traffic**

**Standard Drawing SE-2**
When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual for Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."
CLEARING AND GRUBBING

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

EXCAVATION

EXISTING GROUND

INTERCEPTOR OR
DIVERSION DITCH

EXISTING GROUND

NOTE: Number of phases will vary, sizes are shown for illustration.

GENERAL NOTE
All cut slopes shall be eroded, 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. Excavate and stabilize interceptor 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. Remove erosion control devices as needed.

EMBANKMENT

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

NOTE: Number of phases will vary, sizes are shown for illustration.

GENERAL NOTE
All embankment slopes shall be eroded, prepared, seeded and mulched as the work progresses. Slopes shall be constructed and stabilized in equal increments not to exceed 25 feet, measured vertically.

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, check, SLT fences, or other erosion control devices as specified.
2. Place phase 1 embankment with permanent or temporary seeding.
3. Place phase 2 embankment with permanent or temporary seeding.
4. Place final phase of embankment with permanent or temporary seeding. Remove diversion ditches and slope drains and maintain until entire slope is stabilized.

ARKANSAS STATE HIGHWAY COMMISSION
TEMPORARY EROSION CONTROL DEVICES

L.S. & M. DIRECTOR, DRIVING
ARK. S. & R. 52-34

DATE: 2-26

STANDARD DRAWING TEC-3