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--- | --- | ---
55001 | STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS | 02-27-14
55004 | STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES | 02-27-14
55006 | STANDARD DETAILS FOR PERMANENT STEEL, BRIDGE DECK FORMS FOR STEEL & CONCRETE SPANNING | 03-11-16
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55020 | STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE | 01-11-17
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--- | --- | ---
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FES-2 | FLARED END SECTION | 10-18-96
GR-4 | GUARD RAIL DETAILS | 11-16-17
GR-6A | GUARD RAIL DETAILS | 11-16-17
GR-9 | GUARD RAIL DETAILS | 04-17-07
GR-9A | GUARD RAIL DETAILS | 04-17-07
GR-10 | GUARD RAIL DETAILS | 11-16-17
GR-11 | GUARD RAIL DETAILS | 11-16-17
GR-12 | GUARD RAIL DETAILS | 11-16-17
MB-1 | MAILBOX DETAILS | 11-18-04
PCC-1 | CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING | 02-27-14
PCC-2 | PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE) | 02-27-14
PCP-1 | PLASTIC PIPE CULVERT (PVC PIPE) | 02-27-14
PM-1 | PAVEMENT MARKING DETAILS | 08-01-17
PU-1 | DETAILS OF PIPE UNDERGROUND | 12-08-16
SEC-2 | TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC | 10-18-96
SES-1 | SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES | 10-18-96
SH-1 | DETAILS OF SPECIAL ITEMS | 10-25-18
TC-1 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | 04-13-17
TC-2 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | 04-13-17
TC-3 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | 04-13-17
TEC-1 | TEMPORARY EROSION CONTROL DEVICES | 11-18-17
TEC-2 | TEMPORARY EROSION CONTROL DEVICES | 08-02-94
TEC-3 | TEMPORARY EROSION CONTROL DEVICES | 11-03-94
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WF-2 | WIRE FENCE WATER GAP | 04-20-79
WF-4 | WIRE FENCE TYPE C AND D | 08-22-92

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

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103.3 CONTRACTORS LICENSE
103.4 DEPARTMENT NAME CHANGE
103.6 ISSUANCE OF PROPOSALS
103.1 LIQUIDATED DAMAGES
103.2 WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110.1 PROTECTION OF WATER QUALITY AND WETLANDS
303.1 AGGREGATE BASE COURSE
306.1 QUALITY CONTROL AND ACCEPTANCE
400.1 TACK COATS
400.2 DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400.5 PERCENT AIR voids for ACSH mix designs
400.9 LIQUID ANTI-SHORT ADDITIVE
410.1 CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410.2 DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
505.1 PORTLAND CEMENT CONCRETE DRIVEWAY
600.2 INCIDENTAL CONSTRUCTION
604.1 RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
605.1 PIPE CULVERTS FOR SIDE DRAINS
617.1 GUARDRAIL TERMINAL (TYPE 2)
620.1 MULCH COVER
621.1 FILTER SOCKS
600.1 STRUCTURES
802.3 CONCRETE FOR STRUCTURES
808.1 INSTALLATION OF ELASTOMERIC BEARINGS
808.2 ELASTOMERIC BEARINGS
JOB 090402.0 AIRPORT CLEARANCE REQUIREMENTS
JOB 090402.1 BEDDING REQUIREMENTS AND CONDITIONS
JOB 090402.2 BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 090402.3 BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 090402.4 CARO PREFERENCE ACT REQUIREMENTS
JOB 090402.5 CAVE DISCOVERY
JOB 090402.6 CLASS C (FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS (A) CONCRETE
JOB 090402.7 CLAY AND GRADING
JOB 090402.8 CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 090402.9 DISADVANTAGED BUSINESS ENTERPRISE BIDDERS RESPONSIBILITIES
JOB 090402.10 DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 090402.11 DRILLED SHAFT FOUNDATIONS
JOB 090402.12 FLEXIBLE BEGINNING OF WORK
JOB 090402.13 GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 090402.14 HEADED STEEL BARS FOR CONCRETE REINFORCEMENT
JOB 090402.15 MANDATORY ELECTRONIC CONTRACT
JOB 090402.16 MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 090402.17 MIGRATION OF SQUIRMY TURKEY BIRDS
JOB 090402.18 NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB 090402.19 OFF-SITE RECONSTRUCTION CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED SABITS
JOB 090402.20 PARTNERSHIP REQUIREMENTS
JOB 090402.21 PLASTIC PIPE
JOB 090402.22 PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 090402.23 SECTION 404 INDIVIDUAL PERMIT REQUIREMENTS
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JOB 090402.27 SOIL STABILIZATION
JOB 090402.28 SPECIAL CLEARING REQUIREMENTS
JOB 090402.29 STORM WATER POLLUTION PREVENTION PLAN
JOB 090402.30 SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 090402.31 UTILITY ADJUSTMENTS
JOB 090402.32 VALUE ENGINEERING
JOB 090402.33 VEGETATIVE BUFFER ZONE
JOB 090402.34 WARM MIX ASPHALT
JOB 090402.35 WASTE POLLUTION CONTROL & RESTRANING CONDITION

GENERAL NOTES
1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENTS WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.32 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 DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED TEMPORARILY OR PERMANENTLY.
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. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY OILMASS OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
NOTE:
FROM THE NORMAL SLOPES, NO CHANGES SHALL BE
MADE FROM THE 3% SLOPES WITHOUT THE
APPROVAL OF THE ENGINEER.

THE THICKNESS OF AGGREGATE BASE COURSE
SHALL BE AT LEAST PLUS OR MINUS ONE INCH
OF THE THICKNESS INDICATED. PAYMENT
WILL NOT BE MADE FOR MATERIAL PLACED IN
EXCESS OF THE TOLERANCE INDICATED.

THE EXISTING ASPHALT PAVEMENT TO BE REMOVED
SHALL NOT DAMAGE THE PAVEMENT THAT IS TO
REMAIN IN PLACE. ANY DAMAGE TO THE ASPHALT
PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE
REPAIRED AT THE CONTRACTOR'S EXPENSE.

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED
AFTER ALL OTHER COURSES HAVE BEEN LAYED.
TYPICAL JOINTS SHALL BE AT LANE LINES.
1. Rumble Stripes shall not be installed on bridge decks, approach slabs, intersecting streets or roadways, residential or commercial driveways or across transverse joints of concrete shoulders.

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 longitudinally along the shoulder. Length shall only include that part of the Shoulder opposite to the pavement or payment area and not connected to it.

4. The 6" depth shall generally apply for the entire 6" length. Some variation to suit shoulder slope breaks may be necessary.

5. Gap pattern shall be adjusted by the Engineer in the field allowing for driveways to serve as the gap.

**General Notes:**

- PLAN VIEW
- SECTION B-B
- SECTION A-A
- DETAILS OF RUMBLE STRIPE
- LOCATION PLAN OF RUMBLE STRIPE
- LEFT OR RIGHT SHOULDER
- DETAIL FOR RUMBLE STRIPE GAP AT DRIVeway TURNOUTS
- PLAN VIEW
- EDGE OF PAVEMENT
- EDGE OF SHLD.
- TRAVEL LANE
WIDENING FOR GUARDRAIL

DETAIL FOR DRIVeway TURNOUTS
OPEN SHOULDER SECTION
(ARTERIALS)

DETAIL FOR COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION

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

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

DETAILED FOR TRANSTIONS

SPECIAL DETAILS
**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.

---

**Section of Approach Slab**

Aggregate base course (Class 7)

- Varies

- See approach slab details in bridge drawings
STA. 101+00.00
BEGIN JOB 090402

LEGEND

ES - SAND BAG DITCH CHECKS
ER - ROCK DITCH CHECKS
CM - SEDIMENT BASIN
SF - SILT FENCE
SD - SLOPE DRAIN
FS - FILTER SOCK
SS - TRIANGULAR SILT DIKE

TEMPORARY EROSION CONTROL
CLEARING AND GRUBBING
STA. 101+00.00
BEGIN JOB 090402

E+5.0 Silt fence should be placed 2' higher than the channel bottom.

LEGEND

- Sand bag ditch checks
- Rock ditch checks
- Sediment basin
- Silt fence
- Slope drain
- Filter sock
- Triangular silt dike

TEMPORARY EROSION CONTROL
STAGE 1
E-Haste fence should be placed 2' higher than the channel bottom.
STA. 101+00.00  
BEGIN JOB 090402
SEQUENCE OF CONSTRUCTION

STAGE 1
- Maintain traffic on existing lanes
- Construct approaches on LT. SIDE

STAGE 2
- Shift traffic to new location
- Remove existing bridge
- Remove existing lanes
- Finish new location on RT. SIDE

END OF JOB
- Install final lift of surface
- Install guardrail and final stripping

DETAIL FOR

STAGE 1 TRAFFIC

CONSTRUCTION PAVEMENT MARKINGS
STA 100 + 00 - STA 105 + 40 = 840 LIN. FT

DO NOT PASS SIGNS AND SHOULDER CLOSED TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1
CONSTRUCTION PAVEMENT MARKINGS
STA. 00+50 - STA. 08+91 = 800 LIN. FT

NOTE:
TURNS AND PRIVATE DRIVEWAYS SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.
SEQUENCE OF CONSTRUCTION

STAGE 1
- MAINTAIN TRAFFIC ON EXISTING LANES
- CONSTRUCT BRIDGE
- CONSTRUCT APPROACHES ON LT. SIDE

STAGE 2
- SHIFT TRAFFIC TO NEW LOCATION
- REMOVE EXISTING BRIDGE
- CONSTRUCT APPROACHES ON RT. SIDE
- FINISH NEW LOCATION ON RT. SIDE

END OF JOB
- INSTALL FINAL LIFT OF SURFACE
- INSTALL GUARDRAIL AND FINAL STRIPING

NOTE:
- TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.
- DO NOT PASS SIGNS AND SHOULDER CLOSED TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

MAINTENANCE OF TRAFFIC DETAILS

STAGE 2

MAINTENANCE OF TRAFFIC DETAILS

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

MAINTENANCE OF TRAFFIC DETAILS

STAGE 2
FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL, 332 LINEAL FT.

NOTE: CUTOFFS AND PRIVATE DRIVEWAYS SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.
STA. 101+00.00
BEGIN JOB 090402

THERMOPLASTIC PAVEMENT MARKINGS
STA. 100+00 TO 105+00
6" WHITE EDGE LINE = 1000 LIN. FT.
6" DRL. YEL. CENTERLINE = 1000 LIN. FT.

RAISED PAVEMENT MARKERS
STA. 100+00 TO 105+00
TYPE RIVET/YIELD BD. - 7 EACH

PERMANENT PAVEMENT MARKINGS DETAILS
THERMOPLASTIC PAVEMENT MARKINGS
STA 105+00 TO STA 120+00
6" WHITE EDGE LINE = 3000 LNK FT.
6" ORL. YELLOW CENTERLINE = 3000 LNK FT.
RAISED PAVEMENT MARKERS
STA 105+00 TO STA 120+00
TYPE IV/YEL/YEL/O.C. +15 EACH
THERMOPLASTIC PAVEMENT MARKINGS
STA 120+00 TO 129+80.51
6" OIL YELLOW CENTERLINE 1 FT LINE, FT
RAISED PAVEMENT MARKERS
STA 120+00 TO 129+80.51
TYPE STYRENE-ACRYLIC MIL - 3 EACH

PERMANENT PAVEMENT MARKINGS DETAILS

STA 128+80.51
END JOB 090402

PERMANENT PAVEMENT MARKINGS DETAILS
### 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>End of Job</th>
<th>Maximum Number Required</th>
<th>Total Signs Required</th>
<th>Vertical Panels</th>
<th>Traffic Drums</th>
<th>Barricades (Type III)</th>
<th>Furnishing &amp; Installing Precast Concrete Barrier</th>
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<td>W20-1</td>
<td>Road Work 1000 ft.</td>
<td>48&quot;x48&quot;</td>
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<td>CM-3L</td>
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### Construction Pavement Markings and Permanent Pavement Markings

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<thead>
<tr>
<th>Description</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Removal of Permanent Pavement Markings</th>
<th>Construction Pavement Markings</th>
<th>Raised Pavement Markers</th>
<th>Thermoplastic Pavement Marking</th>
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TOTALS: 5920 5920 13960 39 5961 5961

### Notes
- This is a high traffic volume road as defined in Section 604.03, standard specifications for highway construction.
- The project must be marked for passing and 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>Station</th>
<th>Location</th>
<th>Clearing</th>
<th>Grubbing</th>
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<td>114+00</td>
<td>120+81</td>
<td>LT AND RT.</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

**TOTALS:** 29

### Removal and Disposal of Items

<table>
<thead>
<tr>
<th>Station</th>
<th>Station</th>
<th>Location</th>
<th>Concrete Driveways</th>
<th>Guardrail</th>
<th>Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>107+88</td>
<td>112+03</td>
<td>CONCRETE DRIVE ON LT.</td>
<td>140</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>114+85</td>
<td>116+80</td>
<td>GUARDRAIL ON LT.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125+90</td>
<td>121+35</td>
<td>BUILDING ON RT.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>121+35</td>
<td>124+45</td>
<td>BUILDING ON RT.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125+90</td>
<td>121+35</td>
<td>BUILDING ON RT.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
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</table>

**TOTALS:** 140

### 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>102+00</td>
<td>104+09</td>
<td>WIRE FENCE ON LT.</td>
<td>450</td>
</tr>
<tr>
<td>104+30</td>
<td>115+45</td>
<td>WIRE FENCE ON CL.</td>
<td>340</td>
</tr>
<tr>
<td>118+00</td>
<td>120+25</td>
<td>WIRE FENCE ON CT.</td>
<td>575</td>
</tr>
<tr>
<td>120+25</td>
<td>120+25</td>
<td>WIRE FENCE ON RT.</td>
<td>300</td>
</tr>
<tr>
<td>126+75</td>
<td>128+50</td>
<td>PIPE RAIL FENCE ON RT.</td>
<td>220</td>
</tr>
</tbody>
</table>

**TOTAL:** 1915

### Removal and Disposal of Culverts

<table>
<thead>
<tr>
<th>Station</th>
<th>Description</th>
<th>Pipe Culverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>104+16</td>
<td>DBL. 72&quot; X 30' CM ON RT.</td>
<td>EACH</td>
</tr>
<tr>
<td>107+50</td>
<td>42&quot; X 30' PEW ARCH RC SIDE DRAIN ON RT.</td>
<td>1</td>
</tr>
<tr>
<td>120+26</td>
<td>102&quot; X 30' METAL SIDE DRAIN ON RT.</td>
<td>1</td>
</tr>
<tr>
<td>120+26</td>
<td>42&quot; X 4' METAL SIDE DRAIN ON RT.</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL:** 6

### EARTHWORK

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTRE PROJECT</td>
<td>STAGE 1 MAIN LINES</td>
<td>TOTALS: 13666</td>
</tr>
<tr>
<td>ENTRE PROJECT</td>
<td>STAGE 2 MAIN LINES</td>
<td>6033</td>
</tr>
<tr>
<td>ENTRE PROJECT</td>
<td>APPROACHES</td>
<td>86</td>
</tr>
<tr>
<td>111+78.07</td>
<td>112+40.04</td>
<td>BRIDGE END</td>
</tr>
<tr>
<td>114+34.47</td>
<td>114+80.03</td>
<td>BRIDGE END</td>
</tr>
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</table>

**TOTALS:** 20389

### Soil Log

<table>
<thead>
<tr>
<th>Station</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Location</th>
<th>Depth</th>
<th>Plasticity Index</th>
<th>AASHTO Classification</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>101+10</td>
<td>36 15</td>
<td>15.60</td>
<td>54 16</td>
<td>20.20</td>
<td>6' RT.</td>
<td>0.5</td>
<td>28</td>
</tr>
<tr>
<td>101+10</td>
<td>36 15</td>
<td>15.60</td>
<td>54 16</td>
<td>20.20</td>
<td>6' RT.</td>
<td>0.5</td>
<td>28</td>
</tr>
<tr>
<td>101+10</td>
<td>36 15</td>
<td>15.60</td>
<td>54 16</td>
<td>20.20</td>
<td>6' RT.</td>
<td>0.5</td>
<td>28</td>
</tr>
<tr>
<td>106+00</td>
<td>36 15</td>
<td>15.20</td>
<td>54 16</td>
<td>18.80</td>
<td>6' RT.</td>
<td>0.4</td>
<td>29</td>
</tr>
<tr>
<td>111+00</td>
<td>36 15</td>
<td>15.15</td>
<td>54 16</td>
<td>10.30</td>
<td>6' RT.</td>
<td>0.352</td>
<td>30</td>
</tr>
<tr>
<td>127+00</td>
<td>36 15</td>
<td>12.40</td>
<td>54 15</td>
<td>38.30</td>
<td>6' LT.</td>
<td>0.5</td>
<td>28</td>
</tr>
<tr>
<td>127+00</td>
<td>36 15</td>
<td>12.30</td>
<td>54 15</td>
<td>38.30</td>
<td>6' LT.</td>
<td>0.6</td>
<td>29</td>
</tr>
<tr>
<td>127+00</td>
<td>36 15</td>
<td>12.50</td>
<td>54 15</td>
<td>38.30</td>
<td>6' LT.</td>
<td>0.7</td>
<td>27</td>
</tr>
</tbody>
</table>

### Asphal Concrete Patching for Maintenance of Traffic

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Tack Coat</th>
<th>Gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTRE PROJECT</td>
<td>TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td>25 TON/MILE</td>
<td>50 GALL.</td>
</tr>
</tbody>
</table>

**TOTALS:** 14

### Bench Marks

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Bench Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>112+00</td>
<td>AT BRIDGE</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL:** 1

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

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>GUARDRAIL (TYPE A)</th>
<th>GUARDRAIL (TYPE B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-67.72</td>
<td>L.T.</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>106-72.58</td>
<td>L.T.</td>
<td>150</td>
<td>1</td>
</tr>
<tr>
<td>115-11.55</td>
<td>L.T.</td>
<td>120</td>
<td>1</td>
</tr>
<tr>
<td>114-61.52</td>
<td>R.T.</td>
<td>75</td>
<td>1</td>
</tr>
</tbody>
</table>

**Totals:**

| 450 | 4 | 4 |

### MAILBOXES

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>MAILBOXES</th>
<th>MAILBOX SUPPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-67.72</td>
<td>L.T.</td>
<td>1</td>
<td>EACH</td>
</tr>
</tbody>
</table>

**Totals:**

| 1 | 1 |

### 4" PIPE UNDERDRAIN

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>4&quot; PIPE UNDERDRAINS</th>
<th>UNDERDRAIN OUTLET PROTECTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>119+46</td>
<td>L.T.</td>
<td>648</td>
<td>6</td>
</tr>
</tbody>
</table>

**Totals:**

| 548 | 6 |

### EROSION CONTROL

#### PERMANENT EROSION CONTROL

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>SEEDING</th>
<th>LIME</th>
<th>MULCH</th>
<th>COVER</th>
<th>WATER</th>
<th>SECOND SEEDING APPLICATION</th>
<th>SOLID SODDING</th>
<th>TEMPORARY SEEDING</th>
<th>LIME</th>
<th>MULCH</th>
<th>COVER</th>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-050</td>
<td>L.T.</td>
<td>1.00</td>
<td>0.00</td>
<td>10.00</td>
<td>0.00</td>
<td>0.00</td>
<td>10.00</td>
<td>10.00</td>
<td>0.00</td>
<td>10.00</td>
<td>0.00</td>
<td>0.00</td>
<td>10.00</td>
</tr>
<tr>
<td>06-051</td>
<td>L.T.</td>
<td>2.00</td>
<td>0.00</td>
<td>20.00</td>
<td>0.00</td>
<td>0.00</td>
<td>20.00</td>
<td>20.00</td>
<td>0.00</td>
<td>20.00</td>
<td>0.00</td>
<td>0.00</td>
<td>20.00</td>
</tr>
<tr>
<td>06-052</td>
<td>L.T.</td>
<td>3.00</td>
<td>0.00</td>
<td>30.00</td>
<td>0.00</td>
<td>0.00</td>
<td>30.00</td>
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<td>0.00</td>
<td>0.00</td>
<td>30.00</td>
</tr>
<tr>
<td>06-053</td>
<td>L.T.</td>
<td>4.00</td>
<td>0.00</td>
<td>40.00</td>
<td>0.00</td>
<td>0.00</td>
<td>40.00</td>
<td>40.00</td>
<td>0.00</td>
<td>40.00</td>
<td>0.00</td>
<td>0.00</td>
<td>40.00</td>
</tr>
</tbody>
</table>

**TOTALS:**

| 123 | 123 | 347 |

#### TEMPORARY EROSION CONTROL

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>PIPE FOR SLOPE DRAINS</th>
<th>DUMPED RIPRAP</th>
<th>SEDIMENT BASIN</th>
<th>DEBURDENMENT OF SEDIMENT BASIN</th>
<th>ABANDONMENT OF SEDIMENT BASIN</th>
<th>SEDIMENT REMOVAL &amp; DISPOSAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-054</td>
<td>L.T.</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
</tr>
<tr>
<td>06-055</td>
<td>L.T.</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
</tr>
<tr>
<td>06-056</td>
<td>L.T.</td>
<td>40.00</td>
<td>40.00</td>
<td>40.00</td>
<td>40.00</td>
<td>40.00</td>
<td>40.00</td>
</tr>
</tbody>
</table>

**TOTALS:**

| 834 | 834 | 1184 |

### QUANTITIES

**Quantities Estimated**

SEE SECTION 104.03 OF THE STD. SPECS.
### Structures

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>LIN. FT.</th>
<th>24&quot;</th>
<th>EACH</th>
<th>SQ. YD.</th>
<th>M. GAL.</th>
<th>STD. DWG. NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>120+84</td>
<td>24&quot; CROSS DRAIN</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Totals:**
- LIN. FT: 83
- EACH: 1
- SQ. YD: 1
- M. GAL: 0.20

Basis of estimate: 12.6 GAL./SQ.YD. OF SOLID SODDING.

Note: For R.C. pipe culvert installations use type 3 bedding unless otherwise specified.

### Driveways & Turnouts

<table>
<thead>
<tr>
<th>STATION</th>
<th>SIDE</th>
<th>LOCATION</th>
<th>WIDTH</th>
<th>PORTLAND CONCRETE DRIVEWAY</th>
<th>ACHM SURFACE COURSE (1/2&quot;) 200 LBS. PER SQ. YD. (FG 84-22)</th>
<th>AGGREGATE BASE COURSE (CLASS 7)</th>
<th>SIDE DRAINS</th>
<th>STANDARD DRAWINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>104+41</td>
<td>LT</td>
<td>HWY. 264</td>
<td>24'</td>
<td>213.24</td>
<td>122.06</td>
<td>98.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>107+40</td>
<td>RT</td>
<td>HWY. 264</td>
<td>24'</td>
<td>211.06</td>
<td>121.06</td>
<td>98.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120+50</td>
<td>LT</td>
<td>HWY. 264</td>
<td>24'</td>
<td>213.85</td>
<td>122.06</td>
<td>98.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120+57</td>
<td>LT</td>
<td>HWY. 264</td>
<td>24'</td>
<td>217.16</td>
<td>122.06</td>
<td>98.52</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Totals:**
- FEET: 251.58
- SQ. YD: 785.05
- TON: 97.52
- TON LIN. FT: 0.45
- TON: 0.52

Basis of estimate: ACHM surface course (1/2") 24% MIN., AGG. 5.5% asphalt binder.

Maximun number of deviations = 115 for FG 84-22

* Quantity estimated.

See section 104.03 of the std. specs.

**Note:** For R.C. pipe culvert installations use type 3 bedding unless otherwise specified.

### Paving Repairs

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>TON</th>
</tr>
</thead>
<tbody>
<tr>
<td>0+00</td>
<td>OR RT</td>
<td>8.50</td>
<td>30</td>
<td>19</td>
</tr>
</tbody>
</table>

**Total:**

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>AVG. WIDTH</th>
<th>COLD MILLING ASPHALT PAVEMENT</th>
<th>SQ. YD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td>100+00.00</td>
<td>100+00.00</td>
<td>22.00</td>
<td>244.44</td>
</tr>
<tr>
<td>ENGINER</td>
<td>128+80.51</td>
<td>129+80.51</td>
<td>22.00</td>
<td>244.44</td>
</tr>
</tbody>
</table>

**Total:**

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>AVG. WIDTH</th>
<th>COLD MILLING ASPHALT PAVEMENT</th>
<th>SQ. YD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL:</td>
<td></td>
<td></td>
<td></td>
<td>486.80</td>
</tr>
</tbody>
</table>

**Note:** Average milling depth 1".

* Quantity estimated.

See section 104.03 of the std. specs.

**To be used if and where directed by the engineer.**
### BASE AND SURFACING

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>TON COAT</th>
<th>ACHM BINDER COURSE (1&quot;)</th>
<th>ACHM SURFACE COURSE (1/2&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+00.00</td>
<td>100+00.00</td>
<td>100.00</td>
<td>121.50</td>
<td>112.50</td>
<td>24.00</td>
</tr>
</tbody>
</table>

**TOTALS:**

- TTACK COAT: 124+37.21
- TTACHM BINDER COURSE (1"): 126+47.83
- TTACHM SURFACE COURSE (1/2"): 129+49.51

### ADDITIONAL FOR LEVELING

#### FOR FULL DEPTH

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>TON</th>
<th>AVG. W.D.</th>
<th>SQ.YD.</th>
<th>GALLONS / SQ.YD.</th>
<th>GALLON</th>
<th>AVG. W.D.</th>
<th>SQ.YD.</th>
<th>POUND / SQ.YD.</th>
<th>PG 64-22</th>
<th>AVG. W.D.</th>
<th>SQ.YD.</th>
<th>POUND / SQ.YD.</th>
<th>PG 64-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>101+00.00</td>
<td>101+00.00</td>
<td>101.00</td>
<td>121.50</td>
<td>112.50</td>
<td>24.00</td>
<td>766.67</td>
<td>0.17</td>
<td>45.33</td>
<td>26.00</td>
<td>268.89</td>
<td>200.00</td>
<td>37.41</td>
<td>37.41</td>
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<td></td>
</tr>
</tbody>
</table>

**TOTALS:**

- TLEVELING AND GRADE RABE: 124+37.21
- TLEVELING AND GRADE RABE: 126+47.83
- TLEVELING AND GRADE RABE: 129+49.51

### ADDITIONAL FOR SUPER-ELEVATION

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>TON</th>
<th>AVG. W.D.</th>
<th>SQ.YD.</th>
<th>GALLONS / SQ.YD.</th>
<th>GALLON</th>
<th>AVG. W.D.</th>
<th>SQ.YD.</th>
<th>POUND / SQ.YD.</th>
<th>PG 64-22</th>
<th>AVG. W.D.</th>
<th>SQ.YD.</th>
<th>POUND / SQ.YD.</th>
<th>PG 64-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>102+00.00</td>
<td>111+00.00</td>
<td>111.00</td>
<td>121.50</td>
<td>112.50</td>
<td>24.00</td>
<td>766.67</td>
<td>0.17</td>
<td>45.33</td>
<td>26.00</td>
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<td>200.00</td>
<td>37.41</td>
<td>37.41</td>
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<td></td>
</tr>
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</table>

**TOTALS:**

- TLEVELING AND GRADE RABE: 124+37.21
- TLEVELING AND GRADE RABE: 126+47.83
- TLEVELING AND GRADE RABE: 129+49.51

### APPROACH GUTTERS AND SLABS

#### APPROACH SLABS

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>APPROACH GUTTER (TYPE C)</th>
<th>APPROACH SLABS</th>
<th>REINFORCING STEEL ROW (GR. 60)</th>
<th>AGGREGATE BASE CR. (GAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>111+42.00</td>
<td>112+00.00</td>
<td>APPROACH SLAB</td>
<td>49.15</td>
<td>5775</td>
<td>28.10</td>
<td></td>
</tr>
<tr>
<td>115+02.19</td>
<td>115+00.00</td>
<td>APPROACH SLAB</td>
<td>49.15</td>
<td>5775</td>
<td>28.10</td>
<td></td>
</tr>
<tr>
<td>111+54.97</td>
<td>111+50.00</td>
<td>APPROACH GUTTER ON R.T</td>
<td>14.80</td>
<td>810</td>
<td></td>
<td></td>
</tr>
<tr>
<td>111+73.83</td>
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**TOTALS:**

- TAPPROACH GUTTER AND SLABS: 115+11.52

Note: Use T-11/" FOR SHOULDER.

### QUANTITIES

- BASE OF ESTIMATE:
  - ACHM SURFACE COURSE (1/2") 94.5% MIN. AGG. 5.5% ASPHALT BINDER
  - ACHM SURFACE COURSE (1"): 94.5% MIN. AGG. 4.5% ASPHALT BINDER
  - MAXIMUM NUMBER OF CYCLES = 115 FOR PG 64-22
  - TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.
SCHEDULE OF BRIDGE QUANTITIES-JOB 090402

<table>
<thead>
<tr>
<th>UNIT NO.</th>
<th>UNIT DESCRIPTION</th>
<th>UNIT ITEM</th>
<th>REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)</th>
<th>CLASS 5 CONCRETE-BRIDGE</th>
<th>CLASS 2 PROTECTIVE SURFACE TREATMENT</th>
<th>EPOXY COATED REINFORCING STEEL (GRADE 60)</th>
<th>REINFORCING STEEL- BRIDGE (GRADE 60)</th>
<th>STEEL PLATING (HP 2453)</th>
<th>STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50)</th>
<th>ELASTOMERIC BEARINGS</th>
<th>SILICONE JOINT SEALANT</th>
<th>BRIDGE NAME PLATE (TYPE DI)</th>
<th>FILTER BLANKET</th>
<th>FOUNDATION PROTECTION BMP</th>
<th>CROSSHOLE SONIC LOGGING (42&quot; DAI)</th>
<th>DRILLED SHAFT (48&quot; DAI)</th>
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</table>

1. All steel plating are required to have approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Plating HP (2453)."
2. Installation of permanent casing at Bents 4 & 5 shall be installed by means of pushing or twisting. Impact driving of permanent casing will not be allowed at these locations.
3. No deviations from the pouring sequence shown on Spec No. 0202 will be allowed.

KYLE YEARY
BRIDGE SECTION SUPERINTENDENT
<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>SUMMARY OF QUANTITIES</th>
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<tbody>
<tr>
<td>ITEM</td>
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</tr>
<tr>
<td>1</td>
<td>GRUBBING</td>
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<td>REMOVAL AND DISPOSAL OF FENCE</td>
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<td>3</td>
<td>DRIVEWAYS</td>
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<tr>
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<td>REMOVAL AND DISPOSAL OF PIPE</td>
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<td>REMOVAL AND DISPOSAL OF GIARDRAIL LIN.</td>
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**SUMMARY OF QUANTITIES AND REVISIONS**

*<Date>*
**SURVEY CONTROL COORDINATES**

**Project Name:** 909402

**Date:** 3/12/2018

**Coordinate System:** ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.

**Unit:** U.S. SURVEY FOOT

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<th>Elev</th>
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**NEW LOCATION HWY. 264**

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**SURVEY CONTROL DETAILS**

**Note:** Repair and Cap - Standard - SW/B Repair with 2" Aluminum Cap stamped

*standard markings common to all caps, or as indicated

Other markings indicated in the point description of the individual point.

**USE CAP A 1.5 FOR STAKEOUT FOR THIS PROJECT.**

A PROJECT CAP OF 0.900000130 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES. THIS CAP IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.

**GRID DISTANCE - EARTH DISTANCE X CAP.**

**GRID COORDINATES ARE STORED UNDER FILE NAME 909402GCL.txt**

**HORIZONTAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.**

**REFERENCE POINTS (1500 SERIES) ARE FILE TO BE USED TO ENSURE CONTROL.**

IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED, REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL.

**BASIS OF BEARING**

ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE - 0301 EARTH DISTANCE X CAP

LAT Control Points: GPS - ARDOT - OGS 04012 - 04013A

Convergence Angle: 01 19 18.11 LEFT AT 0.1760 TO 14.44 00094 16.16.86

Grid Azimuth = Astronomical Azimuth + Convergence Angle.
STA, 101+00.00
BEGIN JOB 090402

NEW LOCATION CL. HWY. 264

SURVEY CONTROL DETAILS
NEW LOCATION CL. HWY, 264

P1 = 123+49.22
A = 28°13' 08", 260° LT.
D = 03°30' 00", 00°
T = 021.48"
L = 006.20°
PC = 119+37.74
PT = 127+44.00
NEW LOCATION CL. HWY. 264
STA. 128+80.51
END JOB 090402

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
For details of elastomeric bearings, see Dep. No. 60107.

For Sections B-B thru E-E, see Dep. No. 60108.

For additional information, see Details Layout.

GENERAL NOTES

1. Minimum penetration into competent rock below permanent casing.
2. Length of Permanent Casing shown is for dispersing quantities only. Exact lengths are to be determined in the field. See Special Provision No. 090402 "Driven Shaft Foundations." Permanent casing shall not extend below top of competent rock without approval from the Engineer. Installation of permanent casing in Bents 4 & 5 shall be limited by means of sinking or tailing, excepting the lower portion of permanent casing will not be confined to these locations.
3. Reinforcement shall have headed Steel Bars in accordance with Special Provision No. 601042 "Reinforced Steel Bar for Concrete Reinforcement."
4. Provide return as per manufacturer's recommendations but no less than what is shown.

Arkansas State Highway Commission

Bridge No. 07431

Drawing No.: 07431-D

Design Engineer: GHS

Drawing Date: 10/26/01

Drawing No.: 6007

501 MARKET STREET, LITTLE ROCK, AR 72201

TYPICAL ANCHOR BOLT LAYOUT

No Scale

SECTION A-A

Scale 1/4" = 1'-0"

DETAILS OF BENTS 2, 3, 4 & 5

SHEET 1 OF 2

ARKANSAS STATE HIGHWAY COMMISSION

N. H. MIKKELSON, P.E.
SECTION C-C
No Scale

SECTION B-B
No Scale

SECTION D-D
No Scale

SECTION E-E
No Scale

BAR LIST - PER BENT

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<tr>
<td>4</td>
<td>32</td>
<td>24'-4&quot;</td>
<td>10&quot;</td>
</tr>
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</table>

Dimensions are out to out of bars.

(1) Reinforcing steel, subsidiary to Special Provision Job No. 090402 for "Rigged Short Foundations".
(2) Reinforcement and hoop steel bars, in accordance with Special Provision Job No. 090402 for "Rigged Short Foundations".

NOTE: All dimensions are out to out of bars.
All panels joints throug lifting concrete is conform to following proportions before the concrete is set. Sealing of the joints must be considered as it will make the ground joint.

Bar to tighten smooth wire shall be fiberglass or epoxy coated.

The extruded portion shall adhere to the horizontal and vertical bars shown on the plans or as directed by the Engineer. If not extruded, the conformed surface may be given a light brush finish or a piece of glass finishing film. In the case of the Class C, Ruisse finish,

DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL

PARAPET RAIl REINFORCING

3/4" x 1'-0"

Visible sp.0 5" from top to bottom of rail.

Note:
The surfaces of the 3/4" plates which will not be in contact with concrete shall be painted with ethylene glycol paint in accordance with Section 550C1 as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for: work to be considered subsidiary to "Structural Steel in Beam Spans W 770, Gr. 50, 60, 80."

Parapet shroud shall be 3/4" long, granular flux filled, solid round, and automatically welded to the plate. Studs and plates shall meet the requirements of Section 550C and shall be measured and paid for as "Structural Steel in Beam Spans W 770, Gr. 50, 60, 80."

Dimensions are out to out of bars.
All bars with an "O" suffix shall be epoxy coated.

Section A-B

SECTION B-B

DETAIL C

Characteristics

BAR LIST

Dimensions are out to out of bars.
All bars with an "O" suffix shall be epoxy coated.
CROSS SECTION STA. 115.50 TO STA. 116.50
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS

EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment not less than 20 feet long adjacent to the bridge end, beginning with the abutments and slopes under the bridge end including abutments. The end of embankment adjacent to structures shall be constructed if and applied to structures to be determined by the engineer. Refer to Subsections 26029, 26030, and 26031 for construction requirements.

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION
GENERAL NOTES FOR STEEL H-PILES

Steel H-Piles shall conform to AASHTO M 275, Grade 36 or greater.

See Bridge Layout sheet for additional notes, any pile encasement restrictions and required location of pile encasements.

Concrete shall be Class 5 with a minimum 28-day compressive strength, Fc ≥ 3000 psi.

If concrete cannot be placed in this area, considered concrete may be used for top 3 ft. below bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 276 or M 337, Type A.

Reinforcing wire fabric shall conform to AASHTO M 55 or A 276. Submerged Corrugated Steel Pipe shall conform to AASHTO M 36 and M 293.

Concrete, welded wire fabric or reinforcing steel and geotextile pipe shall not be placed for direct or shall be considered subsidiary to the item "Pipe Encasement".

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

Given with Partial Height Encasement

Notes:

1. Flange shall be cut and welded to the specified

2. When required on the Bridge Layout sheet, pile encasements shall be noted. See Notes and Details for Pile Encasements.

3. When required on the Bridge Layout sheet, pile encasements shall be noted. See Notes and Details for Pile Encasements.

TYPICAL SPACING DETAILS

Tolerances shall be 0.125" or less than on Bridge Layout.

Note: All pile spacings shall be noted on Bridge Layout.

REINFORCING DETAIL FOR STEEL H-PILE TIP

Detailed sketched example is noted.

TYPICAL SPACE DETAILS

Arrive piles manufactured by Associated Pipe and Fitting Corporation.

Flange Fillet Welding and reinforcing are provided as necessary at pile spacing.

Minimum spacing between piles shall be 3 feet.

Notes:

1. All reinforcing is required when piles are placed in the driving pattern.

2. All reinforcing shall be noted on the Bridge Layout.

3. All reinforcing shall be noted on the Bridge Layout.

4. All reinforcing shall be noted on the Bridge Layout.

STANDARD DETAILS FOR

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: J.M. HICKS
CHECKED BY: J.M. HICKS

5/1/2021
5/1/2021

N SCALE

DRAWING NO. 55020

TABLE OF VARIABLES FOR PILE ENCASEMENT

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ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

GENERAL NOTES FOR H-PILE ENCASEMENTS

See Bridge Layout sheet for additional notes, any pile encasement restrictions and required location of pile encasements.

All concrete shall be Class 5 with a minimum 28-day compressive strength, Fc ≥ 3000 psi.

If concrete cannot be placed in this area, considered concrete may be used for top 3 ft. below bottom of encasement.

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*Note: The measured span and rise shall not vary more than 1/2 per cent from the values specified by AASHTO.*

# Circular Pipe

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# C.M. Arch Pipe

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# Multiple R.C. Pipe Culverts

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*Note: Alternate connections to the pipe culverts in accordance with manufacturer's standard practices may be made subject to the approval of the Engineer.*

# End Sections for Corrugated Metal Pipe Culverts

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**ARAKANS STATE HIGHWAY COMMISSION**

**FLARED END SECTION**

**STANDARD DRAWING FES-2**
**DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)**

For design speeds of 60 mph or less, all curb faced as shown on plan. Guardrail posts may be used for design speeds of 55 mph or more. Type "C" curb face shall be used.

**Plan View Steel Posts**
- Either base configuration acceptable.

**Plan View Wood Posts**
- Either base configuration acceptable.

Notes for oversizing loadcases (10-100') or steeper grade:
- Depth of required drilled hole is equal to 1/4 ft.

Zone A-B: Backfill in 6" lift with centerfielding the placement of Section 622300 - Alternative provision. Compact to 95% maximum dry density per ASTM D6910.

**DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)**

- For existing loadcases (10-100') or steeper grade:
  - Depth of required drilled hole is equal to 1/4 ft.

Zone A-B: Backfill in 6" lift with centerfielding the placement of Section 622300 - Alternative provision. Compact to 95% maximum dry density per ASTM D6910.
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL, TYPE II TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.

VARIES ACCORDING TO SHOULDER WIDTH

TERMINAL ANCHOR POST TYPE II

CL MEDIAN

ONE-WAY TRAFFIC

TWO-WAY TRAFFIC

METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL, TYPE II TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.

VARIES ACCORDING TO SHOULDER WIDTH

TERMINAL ANCHOR POST TYPE II

CL MEDIAN

ONE-WAY TRAFFIC

TWO-WAY TRAFFIC

LEGEND

* THREE BEAM GUARD RAIL TERMINAL
** GUARD RAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE II) (FULL SHOULDER WIDTH OR LESS BRIDGES)

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-9
 DETAILS OF WIDENING FOR GUARD RAIL

SECTION A-A

SECTION B-B

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-9A
**General Notes:**

The three beam rail, special end shoe, and the transition section shall be made of steel and shall be 1/8" C type. The covering shall be the same type as the beam posts of the same job.

- All holes shall be drilled or punched to the exact dimensions.
- POST BOLT SLOTS
- POST BOLT SLOTS
- POST BOLT SLOTS

**Structural Steel Tubing Blockout Detail:**

- HOLE PUNCHING DETAIL FOR STEEL, WOOD, OR WOOD BLOCKOUTS
- NOTE: BLOCKER SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMIT.

**Three Beam Rail Splice at Post:**

- SPECIAL END SHOE
- THREE BEAM RAIL
- TRANSITION SECTION

**Connector Plate:**

- CONNECTOR PLATE shall be as noted in GR-10 and shall be galvanized after fabrication. The connector shall be a rebar type of the special type with a 1.5" high strength bolt with the heads placed on the traffic face. The connectors shall be used under the rails and rail, rail, metal, nuts, and washers shall be galvanized and shall conform to Subsection 907.06.

**Stakeout Diagram:**

- STAKEOUT DIAGRAM
- STAKEOUT DIAGRAM
- STAKEOUT DIAGRAM

**Standard Guard Rail Details:**

- STANDARD DRAWING GR-10

**Arkansas State Highway Commission:**

- ARKANSAS STATE HIGHWAY COMMISSION
- ARKANSAS STATE HIGHWAY COMMISSION
- ARKANSAS STATE HIGHWAY COMMISSION
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

THREE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POSTS 1-7

THREE BEAM RAIL WITH WOOD OR PLASTIC BLOCKOUTS & WOOD POSTS POSTS 1-6

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

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

GENERAL NOTES:
Rail posts shall be set perpendicular to the roadway profile grade and vertically in cross section.
Wood posts & wood blocks shall be either dense No. 1 (structural) or better 5.7F 4400 ft or No. 1350 ft Southern Pine.

ARKANSAS STATE HIGHWAY COMMISSION

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THREE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

- The three beam guardrail special end shoe and the transition section shall be made of steel and shall be 6' 6" long. One column shall be type 1.
- Rail posts shall be set perpendicular to the roadway profile grade and vertically in cross section.
- All bolts shall be sufficient length to extend through the full thickness of the rail and no more than 1/8" behind it.
- All lap splices of standard end shoes shall be made in the direction shown in standard drawings for a 6' 6" span.
- Refer to standard drawing for post details.
- Use three beam guardrail components of same material for entire job.
- Three beam posts shall be same material as W-beam posts for entire job.
- Posts shall be placed at the mid-span of the W-beam.
- Wood posts & wood block shall be either Grade No. 3/structural or better 8/4 inch or Grade No. 1 Southern Pine.

CONSTRUCTION DETAILS:

- Verify bolt spacing from rail transition producer.
- Refer to guardrail approach gutter details.
- Length of blockout on post 8 to be modified to fit rail width.

WOOD OR PLASTIC BLOCKOUT (TYP.)
- Wood or plastic blockout shall be used between the three beam posts.
Mailbox Details

**GENERAL NOTES**

1. Mailbox posts may be wood or metal. Wood posts shall be pressure treated for ground contact in accordance with section 631.02 of the standard specifications.
2. Anti-twist plates shall be used only on metal posts.
3. Metal post shall be furnished in lengths of 5', 6', and 6' from shelf to post to the platform.
4. The mailbox shelf and platform that is shown is for standard size mailboxes. The shelf and platform size shall be varied to fit the size of the mailbox.
5. Metal pipe for mailbox support shall be 2" outside diameter steel with a wall thickness of 0.145" and a weight of 2.75 lbs per ft. Outside diameter and weight shall have a tolerance of +5/-3% according to AASHTO.
6. Mailbox support system offerings from those shown may be used provided they are on the AASHTO qualified products list for mailbox supports.

**PLATFORM**

- 4.5" x 4.5" hex bolt (fasten bolt, washer, lockwasher, nut)
- 3.5" x 4.5" hex bolt (fasten bolt, washer, lockwasher, nut)
- 3.5" x 4.5" shelf bracket
- 2" O.D. steel pipe

**SINGLE INSTALLATION**

- Mailbox
- Platform
- Single installation
- Bracket
- Nominal 3" S.W.P. clamp
- Anti-twist brace, needed with pipe supports

**DOUBLE INSTALLATION**

- Mailbox
- Platform
- Double installation
- Bracket
- Nominal 3" S.W.P. clamp

**ANTI-TWIST PLATE**

- If requested by the local postmaster, vendor may vary as directed by the engineer.

**SPACING FOR MULTIPLE POST INSTALLATION**

- 3' - 0" min.
- 3' - 6" min.

**SHIELD**

- 3.5" x 4.5" shelf bracket
- 2" O.D. steel pipe

**SHELF**

- 3.5" x 4.5" shelf bracket
- 2" O.D. steel pipe

**BRACKET**

- 3.5" x 4.5" shelf bracket
- 2" O.D. steel pipe

**CLAMP**

- Nominal 3" S.W.P. clamp

**SPACER**

- Nominal 1/2" S.W.P. spacer

**CLAMP**

- Nominal 3" S.W.P. clamp

**LENGTH TO FIT**

- 3.5" S.W.P. clamp

**STEPS AT PIPE**

- 3.5" S.W.P. clamp

**STANDARD DRAWING MB-1**

Arkansas State Highway Commission
### Construction Sequence

1. Place structural bedding material to grade. Do not compact.
2. Compact structural bedding outside the middle third of the pipe.
3. Excavation will be performed by working from sides to middle, differential shall not exceed 24 inches or ½ the size of the pipe, whichever is less.

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

### Installation Material Requirements for Type A, B, C, & D

<table>
<thead>
<tr>
<th>Type</th>
<th>AVERAGE BASE CLASS A, B, C, OR D</th>
<th>EQUIVALENT METAL THICKNESSES AND GAUGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>60&quot; (MIN)</td>
<td>2.25&quot;</td>
</tr>
<tr>
<td>B</td>
<td>72&quot; (MIN)</td>
<td>2.50&quot;</td>
</tr>
<tr>
<td>C</td>
<td>24&quot; (MIN)</td>
<td>2.25&quot;</td>
</tr>
<tr>
<td>D</td>
<td>30&quot; (MIN)</td>
<td>2.50&quot;</td>
</tr>
</tbody>
</table>

### Equivalency Metal Thicknesses and Gauges

<table>
<thead>
<tr>
<th>Steel</th>
<th>Thickness in Inches</th>
<th>CAUGE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZINC COATED UNCOATED</td>
<td>0.064</td>
<td>0.088</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.070</td>
<td>0.074</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.089</td>
<td>0.094</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.108</td>
<td>0.114</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.128</td>
<td>0.136</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.148</td>
<td>0.157</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.168</td>
<td>0.178</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.188</td>
<td>0.199</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.208</td>
<td>0.220</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.248</td>
<td>0.262</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.288</td>
<td>0.304</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.328</td>
<td>0.346</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.368</td>
<td>0.388</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.408</td>
<td>0.430</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.448</td>
<td>0.472</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.488</td>
<td>0.516</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>0.528</td>
<td>0.560</td>
</tr>
</tbody>
</table>

### General Notes

1. Metal pipe culvert construction shall comply with Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction. Structural steel pipe shall be made of ASTM A500/A500M Grade B with a minimum yield strength of 40 ksi and complies with AASHTO LRFD Bridge Design Specifications.
2. Installation Type 1 or 2 may be used for corrugated steel or aluminum pipe.
3. Installation Type 1 shall be used for corrugated steel or aluminum pipe with 0.062"/0.092" corrugation.
4. Installation Type 2 may be used for corrugated steel or aluminum pipe with 0.085"/0.115" corrugation.

### Embankment and Trench Installations

1. 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.
2. Installation Type 1 or 2 may be used for corrugated steel or aluminum pipe round.
3. Installation Type 1 shall be used for corrugated steel or aluminum pipe round with 0.062"/0.092" corrugation.
4. Installation Type 2 may be used for corrugated steel or aluminum pipe round with 0.085"/0.115" corrugation.
**MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT “H”**

<table>
<thead>
<tr>
<th>TRENCH WIDTH (FEET)</th>
<th>MINIMUM “H” (FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4’</td>
<td>2’</td>
</tr>
<tr>
<td>5’</td>
<td>2.5’</td>
</tr>
<tr>
<td>6’</td>
<td>3’</td>
</tr>
<tr>
<td>7’</td>
<td>3.5’</td>
</tr>
<tr>
<td>8’</td>
<td>4’</td>
</tr>
<tr>
<td>9’</td>
<td>4.5’</td>
</tr>
<tr>
<td>10’</td>
<td>5’</td>
</tr>
</tbody>
</table>

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>40 TON LOAD TABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8”</td>
<td>6”</td>
</tr>
<tr>
<td>10”</td>
<td>8”</td>
</tr>
<tr>
<td>12”</td>
<td>10”</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. PIPE SHALL CONFORM TO ASHTO M294, TYPE S INSTALLATION SHALL COMPLY WITH SPECIAL PROVISIONS OF ASHTO M294, SECTION E40 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION CURRENT EDITION.

2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO ASHTO LIFP SPECIFICATIONS.

3. THE MAXIMUM ALLOWABLE TRENCH BETH SHALL BE THE MINIMUM WITH PLUS A SUFFICIENT BETH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT MACHINERY AND OTHER BACKFILL MATERIAL.

4. UNPERVIOUS MATERIAL SHALL BE PLACED AS DIRECTED BY THE ENGINEER AT THE END OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.

5. WHEN DIRECTED BY THE ENGINEER, UNPERVIOUS MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH OR IN THE AREA NAMED AS “STRUCTURAL BACKFILL” MUST BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING AS DIRECTED BY THE ENGINEER. OTHER BACKFILL MATERIAL TO BE USED IN STRUCTURAL BACKFILL, EXCEPT IN THE AREA NAMED AS “SELECTED PIPE BEDDING”, SHOULD BE SELECTED TO MEET THE REQUIREMENTS OF THE AREA NAMED AS “STRUCTURAL BACKFILL” AND MUST NOT EXCEED THE COMBINATION OF BACKFILL MATERIAL FROM THE MOUNTAIN EXCAVATION.

6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNPERVIOUS (IN THE AREA NAMED AS “STRUCTURAL BACKFILL” EXCEPT IN THE AREA NAMED AS “SELECTED PIPE BEDDING”), MATERIAL FROM THE MOUNTAIN EXCAVATION WILL BE USED TO REPLACE THE PIPE, IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF SELECTED PIPE BEDDING.

7. FOR PIPE TYPES THAT ARE NOT SMOTH, THE OUTSIDE CORRUGATIONS OR PROFILE WELLS, BACKFILL, CRADLES, OR OTHER APPROPRIATE METHODS SHALL BE SELECTED THAT WILL PERMIT THE FILLING OF THE PIPE OF LOAD SUPPORTED BY THEapia.

8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.

9. JOINTS FOR HIGH DENSITY POLYETHYLENE SHOULD BE IN ACCORDANCE WITH THE MANUFACTURER’S RECOMMENDATIONS.
**INSTALLATION REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING**

**TYPE 2**

- **SELECTED MATERIALS**
  - GLASS FILLED PVC, OR GLASS-FILLED PVC

**NOTES:**
- Aggregate base course class A, B, or C may be used in lieu of selected material. Sand will not be allowed.
- Structural bedding material shall have a minimum particle size of 2 inches. Structural backfill material shall be compacted to the maximum density according to the type of class of material used.
- Structural backfill and structural bedding material will not be considered to be satisfactorily placed for linear feet of pipe in:
  - Minimum trench depth
  - Minimum pipe diameter

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

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>&quot;H&quot; Depth</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>0'-6&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>0'-6&quot;</td>
<td>0'-0&quot;</td>
</tr>
</tbody>
</table>

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Cover Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>1'-0&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>1'-0&quot;</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. **PIECE SHALL CONFORM TO AS/NZS 1045**

2. **PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AS/NZS 1045**
   - Designing the engineers responsible for the selected pipe design specifications, fifth edition, agreed with 200m internal.

3. **THE MINIMUM ALLOTTED TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUITABLE MARGIN TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT Handling AND OTHER BACKFILL MATERIALS.**

4. **IMPROVEMENTS MATERIAL SHALL BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.**

5. **WHEN DIRECTED BY THE ENGINEER, UNSTABLE MATERIALS THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH OR BEDDING AREA IDENTIFIED AS "STRUCTURAL BEDDING" MATERIAL WILL BE EXCAVATED AND REPLACED WITH THE SELECTED PIPE MATERIAL ACCORDING TO THE DESIGN INDICATED. **

6. **THE SELECTED PIPE MATERIAL WILL BE COMPACTED AND PAINT FOR A SUFFICIENT MARGIN TO ENSURE COMPLIANCE WITH THE DESIGN INDICATED.**

7. **WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED TO BE UNSTABLE OR UNSUITABLE FOR USE AS STRUCTURAL BEDDING, THE STRUCTURAL BEDDING MATERIAL SHALL BE USED IN PLACE OF THE BURIED MATERIAL FROM THE UNSTABILIZED EXCAVATION WILL BE USED TO BACKFILL THE PIPE.**

8. **FOR PIPE TYPES THAT ARE NOT SHOWN ON THE OUTSIDE Diameters OR PROFILE WILL BE BACKFILL, Grades shall be selected that will permit the filling of the corrugation of profile Valley.**

9. **PIECE SHALL NOT BE ALLOWED.**

**MINIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL**

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>&quot;H&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>3'-6&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**
- 6" pipe, 18" & 36" diameters:
  - Minimum cover value: "H" shall include a minimum of "H" of payment and/or soil.

**MULTIPLE INSTALLATION OF PVC PIPES**

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Material Pipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>1'-0&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>1'-0&quot;</td>
</tr>
</tbody>
</table>

**CONSTRUCTION SEQUENCE**

1. **PLACE STRUCTURAL BEDDING MATERIAL TO GRADE, DO NOT COMPACT.**
2. **INSTALL PIPE TO GRADE.**
3. **COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.**
4. **THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED TO GRADE.**
5. **THE STRUCTURAL BEDDING SHALL BE BROUGHT TO GRADE IF NEEDED.**

**PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING, OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.**

**LEGEND**

- **FILL HEIGHT "H"**
- **OUTSIDE DIAMETER OF PIPE**
- **MIN.**
- **MAX.**
- **SELECTED PIPE BEDDING**
- **STRUCTURAL BEDDING MATERIAL**
- **UNDISTURBED SOIL**

**ARAKANS STATE HIGHWAY COMMISSION**

**PLASTIC PIPE CULVERT (PVC 949)**

**STANDARD DRAWING PCP-2**

**REVISED GENERAL NOTE**

**GENERAL NOTES & MINIMUM COVER NOTES/DELETED DATA MATERIAL**

**DATE**

**REVISION**

**DATE FILED**
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.

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

CONTINUOUS WHITE
SKIP YELLOW
CONTINUOUS WHITE

NOTE:
THE RED LENS OF THE TYPE N R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.
TYPE N RED/CLEAR OR YELLOW/YELLOW

OMIT BROKEN LINE STRIPING
CONTINUOUS YELLOW
OMIT BROKEN LINE STRIPING
CONTINUOUS YELLOW

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

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

ARAKANS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1
NOTES FOR PIPE UNDERDRAINS

1. Geotextile fabric shall meet the requirements of Section 625 for Type I. Payment for geotextile fabric and granular filter material shall be included in the price bid per lin. ft. for "4" pipe underdrains" in accordance with Section 625 of the standard specifications.

2. "4" non-perforated concrete 40 psi pipe laterals with outlet protectors shall be installed by shown detail. Laterals will be measured and paid for as "4" pipe underdrains. Underdrain outlet protectors will be measured and paid for by the unit in accordance with Section 625 of the standard specifications.

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

4. The location of all laterals shall be marked with 4" x 12" permanent pavement marking tape (type B1/B1). 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 protector(s)."

6. Any existing underdrains that interfere with the installation of the new underdram system shall be removed and disposed of as directed by the engineer, payment for the removal and disposal of the various contract items. Existing "underdrain outlet protectors shall be removed under the item "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 PC-150 in the immediate hole or E. install an outlet protector with a single hole.

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

1/2" STAINLESS STEEL BOLT WITH ANCHOR B - 3/4" UNC X 2 1/2" STEEL SCREW A" A0. OPENING SIZE = 0.32" X 100"
SUPERELEVATION TABLE FOR TWO-WAY TRAFFIC

<table>
<thead>
<tr>
<th>Degree of Curve</th>
<th>30 MPH</th>
<th>45 MPH</th>
<th>60 MPH</th>
<th>75 MPH</th>
<th>90 MPH</th>
<th>105 MPH</th>
<th>120 MPH</th>
<th>135 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>50</td>
<td>75</td>
<td>100</td>
<td>125</td>
<td>150</td>
<td>175</td>
<td>200</td>
<td>225</td>
</tr>
<tr>
<td>Desired</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>350</td>
<td>400</td>
<td>450</td>
</tr>
</tbody>
</table>

ABBREVIATIONS

NC = Normal Crown
RC = Reverse Crown
CL = Crown Super elevation at Normal Crown Slope
CR = Reverse Crown Super elevation at Normal Crown Slope
a = Rate of Super elevation (FT/FT)
L = Length of Super elevation Transition (FT)
D = Distance from beginning of Super elevation Transition to any point (FT)
T = Normal Crown (FT)
W = Width of Subgrade (FT)

GENERAL NOTES

1. On pavement with two-way traffic, the super elevation shall be revolted on the inside pavement edge unless otherwise noted on the plans.
2. Super elevation values shown on the cross sections are values to be used to determine those obtained from the point of control.
3. In applying formulae to determine super elevation values, divide values by multiples of 25 FT, or 50 FT, to permit simpler calculations.
4. Pavements wider than 2 lanes shall have additional transition lengths as follows:
   - 3 lane divided : +100 FT
   - 3 lane undivided : +200 FT
   - 4 lane divided : +400 FT

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

SUPER ELEVATION FORMULA

L = a \times D

WHERE:

- L = Maximum Super elevation
- D = Distance from beginning of super elevation transition to any point
- a = Rate of super elevation

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPER ELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2
(A) Typical application - daily maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.

(B) Typical application - 3-lane roadway where center lane is closed.

- ODD Arrow Panel (Required)
- Traffic drum

**GENERAL NOTES:**

1. A speed limit reduction may be implemented only when designated in the plan or when recommended by the roadway design division.
2. When the existing speed limit is 55 mph and the zone requires a speed limit of 35 mph, the 12"-high plastic and the 8.5"-high metal temporary traffic control devices shall be installed at all locations where such devices are required. In the event of the work area is 92"-high metal and metal temporary traffic control devices shall be installed at such devices are required.
3. When the existing speed limit is 35 mph and the zone requires a speed limit of 25 mph, the 12"-high plastic and the 8.5"-high metal temporary traffic control devices shall be installed at all locations where such devices are required.
4. The speed limit should be shown on the centerline of the roadway in a manner that is visible to motorists.
5. Warning signs and/or flags may be mounted on or near the centerline of the roadway as needed.
6. Overhead signs no longer applicable with existing traffic conditions in this area or vehicle operation may be removed or deferred as soon as practicable.

7. The 12"-high plastic or metal temporary traffic control devices shall be installed at all locations where such devices are required.
8. The 12"-high plastic or metal temporary traffic control devices shall be installed at all locations where such devices are required.
9. The 12"-high plastic or metal temporary traffic control devices shall be installed at all locations where such devices are required.
10. The 12"-high plastic or metal temporary traffic control devices shall be installed at all locations where such devices are required.

**NOTES:**

- USE SIGNS ONLY WHEN NECESSARY FOR INSTRUCTION, WARNING, INSTALLATION OF ROAD SIGNS OR OTHER PURPOSES.
- SIGNS OF WOOD OR METAL SHALL BE USED THE ENTRANCE TO A WORK AREA.
- SIGNS OF WOOD OR METAL SHALL BE USED THE ENTRANCE TO A WORK AREA.
- SIGNS OF WOOD OR METAL SHALL BE USED THE ENTRANCE TO A WORK AREA.
- SIGNS OF WOOD OR METAL SHALL BE USED THE ENTRANCE TO A WORK AREA.

(D) Typical application - closing multiple lanes of a multilane highway.
GENERAL NOTES:

These installations to be used where normal fencing installation would cause the collecting of drift in the channel or the depression will not permit normal installation. Installations will be made only where directed by the engineer.

When a fence line approaches a ditch, gully or depression, the last post on level ground shall be placed close enough to the edge of the drop off that the fence may be strung to the post in the depression without touching the ground. In terrain of such extreme irregularity that minor grading will not be feasible, the normal fence shall continue on grade and the gullies or depressions treated by auxiliary fences as shown.

Payment for the type installation used will not be made directly but will be included in the contract unit price bid for wire fence or chain link fence.