TYPICAL SECTION OF IMPROVEMENT

TANGENT
STA. 217+05.57 APPROACH SLAB - STA. 222+98.48

TYPICAL SECTION OF IMPROVEMENT
SUPERELEVATION
STA. 222+98.48 - STA. 227+82.04

NOTES:
- REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
- THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS ShOWN. THIS CONTRACTOR W1LL NOT BE HELD RESPONSIBLE. This thickness WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
- THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAYED. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
NOTES:

- TYPICAL SECTIONS OF IMPROVEMENT

- REFER TO CROSS SECTIONS FOR DEVIATION

- LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

- ALL OTHER COURSES HAVE BEEN LAYED.

- ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER.

- LEVELING OF EXISTING PAVEMENT OPERATIONS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS PAY ITEMS.

- THE FINAL 3" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAYED.

- THE CONTRACTOR SHALL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET THE TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIALS PLACED IN EXCESS OF THE TOLERANCE INDICATED.

- THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET THE TOLERANCE INDICATED.

- THE PRICE BID FOR THE VARIOUS PAY ITEMS IS TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

- TYPICAL SECTIONS OF IMPROVEMENT

- SUPERELEVATION

- THEORETICAL PROFILE GRADE

- VARIABLE COMPACTED DEPTH

- VARIABLE TONS PER STATION

- TYPICAL SECTION OF IMPROVEMENT

- AGGREGATE BASE COURSE (CLASS 11

- VARIABLE COMPACTED DEPTH

- VARIABLE TONS PER STATION

- NOTES:

- REFER TO CROSS SECTIONS FOR DEVIATION

- LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
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 210.06, OF THE STANDARD SPECIFICATIONS.

DETAIL FOR TRANSITIONS

SECTION OF APPROACH SLAB
DETAILS OF RUMBLE STRIPE

LOCATION PLAN OF RUMBLE STRIPE
LEFT OR RIGHT SHOULDER

GENERAL NOTES

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 SHOULDER.

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 LONGITUDDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH RUMBLE STRIPES HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPES HAVE NOT BEEN CONSTRUCTED.

4. THE % DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 6' LENGTH, SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

DETAIL FOR GAP PATTERN RUMBLE STRIPE

NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.
SITE I - CLEARING & GRUBBING
TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE

REVISION

LEGEND

1. SAND BAG DITCH CHECKS
2. SILT FENCE
3. SEDIMENT BASIN
4. TRIANGULAR SILT Dike

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.
SITE 2 - CLEARING & GRUBBING
TEMPORARY EROSION CONTROL DETAILS
STA. 100+00.00
BEGIN JOB 080439
BEGIN SITE I - LOG MILE 6.95

SITE I - STAGE I
TEMPORARY EROSION CONTROL DETAILS
**LEGEND**

- **SAND BAG DITCH CHECKS**
- **SLT FENCE**
- **SEDIMENT BASIN**
- **TRIANGULAR SLT DRK**

**REVISIONS**

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

**NOTES:**
- Retain all erosion control devices until end of construction unless otherwise noted.

**SITE 2 - STAGE 1**

TEMPORARY EROSION CONTROL DETAILS
SITE 1 - STAGE 3
TEMPORARY EROSION CONTROL DETAILS

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.
MACHETE WIDEN STAGE 1

SITE 1 - STA. 30+10.50 - STA. 34+56.61
SITE 2 - STA. 40+04.79 - STA. 42+55.45
SITE 1 - STA. 50+00.00 - STA. 57+22.17
SEQUENCE OF CONSTRUCTION SITES A - Z

STAGE 1:
- MAINTAIN TRAFFIC ON EXISTING ROADWAY
- CONSTRUCT TEMPORARY WIDENING OF EXISTING PAVEMENT ON LT.
- JACK PIPES IN SITE 2.

STAGE 2:
- SHIFT TRAFFIC TO TEMPORARY WIDENING
- MAINTAIN TRAFFIC ON EXISTING ROADWAY AND TEMP. WIDENING
- CONSTRUCT TEMP. WIDENING AT & NEW LOCATION
- CONSTRUCT TEMPORARY EASEL & GRADE RAISE
- CONSTRUCT TEMPORARY EASEL & GRADE RAISE

STAGE 3:
- NOTE SITE 2 EASEL & GRADE RAISE
- CONSTRUCT TEMPORARY EASEL & GRADE RAISE
- REMOVE EASEL & GRADE RAISE TEMP. WIDENING
- REMOVE EASEL & GRADE RAISE TEMP. WIDENING
- CONSTRUCT PERMANENT PAVEMENT WIDENING

BEGIN JOB 080439
BEGIN SITE 1 - LOG MILE 6.95

SITE 100+00.00

VERBAL PANELS
STA.90+00 - STA.107+00 LT. - 5 EACH
STA.190+00 - STA.207+00 LT. - 5 EACH

SITE 120+00.00

END SITE 1

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

NOTCH & WIDEN
STAGE 2
STA. 100+00.00 - STA. 105+50.00
STA. 115+50.00 - STA. 120+00.00
STA. 201+00.00 - STA. 206+25.00
STA. 223+80.00 - STA. 228+50.30

FULL DEPTH
STAGE 2
STA. 105+50.00 - STA. 115+50.00
STA. 206+25.00 - STA. 223+80.00
SEQUENCE OF CONSTRUCTION SITES 1A & 1B

STAGE 1:
Shift Traffic on Existing Roadway,

Maintain Traffic on Existing Roadway,
Construct Temporary Widening of Existing Pavement on Lt.

Stage 2:
Shift Traffic on Lt. Temporary Widening,
Construct Traffic on Existing Roadway, and Temp. Widening,
Construct Bridges, Construct Elevation & Grade Balance,
Construct Curvatures on Lt.

Stage 3:
Single Track Traffic for Bridge Construction,
Construct Traffic on Existing Roadway,
Remove Elevation Bridging and Temp. Widening,
Remove of Lt. & Lt. Temporary Widening and Permanent Pavement Widening.

Removal of Permanent Pavement Markings:
STA. 104+17 - STA. 105+25 = 772 Lin. Ft.
STA. 200+62 - STA. 208+20 = 368 Lin. Ft.

SITE 1 - STAGE 1

BEGIN JOB 080439
BEGIN SITE 1 - LOG MILE 6.95

SITE 1 - STAGE 2

MAINTENANCE OF TRAFFIC DETAILS
SEQUENCE OF CONSTRUCTION SITES 1 & 2:

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY
CONSTRUCT TEMPORARY WIDENING OF EXISTING PAVEMENT ON RT.

STA. 99+00 - STA. 105+50
STA. 214+00 - STA. 229+50

CONSTRUCTION PAVEMENT MARKINGS:
STA. 99+00 - STA. 105+50
STA. 214+00 - STA. 229+50

TRAFFIC DRUMS:
STA. 205+75 - STA. 206+75 RT. + B EACH
STA. 39+00 - STA. 223+50 RT. + B EACH

STAGE 2:
SHIFT TRAFFIC ON TO TEMPORARY WIDENING.
MAINTAIN TRAFFIC ON EXISTING ROADWAY AND TEMP. WIDENING.

CONSTRUCT HORIZONTAL & VERTICAL RAMP & NEW LOCATION
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISE.
CONSTRUCT TURNOUTS ON RT.

STAGE 3:
SHIFT TRAFFIC ON TO TEMPORARY WIDENING.
MAINTAIN TRAFFIC ON EXISTING ROADWAY AND TEMP. WIDENING.

CONSTRUCT NOTCH & TEMP. RAMP
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISE.

TRAFFIC ORUTIS:
STA. 205+75 - STA. 206+75 RT.
STA. 214+00 - STA. 223+50 RT.

PADMENT ON RT.

START JOB 080439
BEGIN SITE 1 - LOG MILE 6.95

ROAD CLOSED
STA. 100+00.00

BUMP
STA. 120+80.00
END SITE 1
PERMANENT PAVEMENT MARKING DETAILS

SITE 1

PERMANENT PAVEMENT MARKINGS:

THERMOPLASTIC PAVEMENT MARKING:
RT. AND LT. EDGE LINES - 4500 LNK. FT. WHITE 6"!
DBL. CENTERLINE - 375 LNK. FT. YELLOW 6"

ENHANCED THERMOPLASTIC PAVEMENT MARKING:
DBL. CENTERLINE - 845 LNK. FT. YELLOW 6"
RAISED PAVEMENT MARKERS:
TYPE II; YEL./YEL. 40" O.C. ON CENTERLINE = 57 EACH

THERMOPLASTIC PAVEMENT MARKING:
WHITE 6" - EDGE LINE
CENTERLINE (6") DBL. YELLOW
THERMOPLASTIC PAVEMENT MARKING:
YELLOW 6"

RAISED PAVEMENT MARKERS:
TYPE II; YEL./YEL. 40" O.C. ON CENTERLINE = ?? EACH

SITE 2

PERMANENT PAVEMENT MARKINGS:

THERMOPLASTIC PAVEMENT MARKING:
RT. AND LT. EDGE LINES - 4500 LNK. FT. WHITE 6"
DBL. CENTERLINE - 504 LNK. FT. YELLOW 6"

ENHANCED THERMOPLASTIC PAVEMENT MARKING:
DBL. CENTERLINE - 827 LNK. FT. YELLOW 6"
RAISED PAVEMENT MARKERS:
TYPE II; YEL./YEL. 40" O.C. ON CENTERLINE = 76 EACH

THERMOPLASTIC PAVEMENT MARKING:
WHITE 6" - EDGE LINE
CENTERLINE (6") DBL. YELLOW
THERMOPLASTIC PAVEMENT MARKING:
YELLOW 6"

RAISED PAVEMENT MARKERS:
TYPE II; YEL./YEL. 40" O.C. ON CENTERLINE = ?? EACH

SITE 1

+THE 6" YELLOW STRIPES QUANTITY HAS BEEN ESTIMATED BASED ON A
DOUBLY YELLOW CENTERLINE. SIMS FOR THE ENTIRE PROJECT. THE PROJECT
MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE
PLACEMENT OF ANY FINAL STRIPES. CONTACT THE MAINTENANCE DIVISION
AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE
THE ZONING OF THE PROJECT.

SITE 2

+THE 6" YELLOW STRIPES QUANTITY HAS BEEN ESTIMATED BASED ON A
DOUBLY YELLOW CENTERLINE. SIMS FOR THE ENTIRE PROJECT. THE PROJECT
MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE
PLACEMENT OF ANY FINAL STRIPES. 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>STAGE 3</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>CONSTRUCTION PROJECT INFORMATION SIGN UPDATE</th>
<th>BARRICADES (TYPE III)</th>
<th>FURNISHING &amp; INSTALLING PRECAST CONCRETE BARRIER</th>
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<tbody>
<tr>
<td>W20-1</td>
<td>ROAD WORK 1500 FT</td>
<td>48”x48”</td>
<td>4</td>
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<td>W20-2</td>
<td>ROAD WORK 1000 FT</td>
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<td>W20-3</td>
<td>ROAD WORK 500 FT</td>
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<tr>
<td>W20-1</td>
<td>ROAD WORK AHEAD</td>
<td>48”x48”</td>
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<td>R11-2</td>
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<td>W1-6</td>
<td>LARGE ARROW</td>
<td>48”x24”</td>
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<td>N4-1</td>
<td>DO NOT PASS</td>
<td>24”x24”</td>
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<td>W21-5</td>
<td>RIGHT SHOULDER CLOSED</td>
<td>30”x30”</td>
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<td>W21-9</td>
<td>RAMP</td>
<td>30”x30”</td>
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</table>

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

### CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
<th>END OF JOB</th>
<th>REMOVAL OF PERMANENT PAVEMENT MARKINGS</th>
<th>REMOVABLE CONSTRUCTION PAVEMENT MARKINGS</th>
<th>RAISED PAVEMENT MARKERS</th>
<th>THERMOPLASTIC PAVEMENT MARKING</th>
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<tbody>
<tr>
<td>REMOVAL OF PERMANENT PAVEMENT MARKINGS</td>
<td>6820</td>
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<tr>
<td>CONSTRUCTION PAVEMENT MARKINGS</td>
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<td>6820</td>
<td>6820</td>
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<tr>
<td>REMOVABLE CONSTRUCTION PAVEMENT MARKINGS</td>
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<tr>
<td>THERMOPLASTIC PAVEMENT MARKING WHITE (6&quot;)</td>
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<td>THERMOPLASTIC PAVEMENT MARKING YELLOW (6&quot;)</td>
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**TOTALS:** 6820 6820 6820 3740 3740 133 133 10661 10661

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

### QUANTITIES

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

**THE PROJECT MUST ALWAYS BE MARKED FOR PASSING/DIVIDING 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.**

**NOTE:** NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED UNTIL A MINIMUM OF 3 DAYS AFTER ALL MAIN LANE PAVING HAS BEEN COMPLETED. IN ADDITION, NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED DURING THE TIME PERIOD FROM DECEMBER 21 TO MARCH 15, INCLUSIVE.
# Earthwork

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION / DESCRIPTION</th>
<th>UNCLASSIFIED EXCAVATION</th>
<th>COMPACTED EMBANKMENT</th>
<th>ROCK PILL</th>
<th>REMOVING AND REPLACING TOPSOIL</th>
<th>*SOIL STABILIZATION</th>
<th>CG. YD.</th>
<th>TON</th>
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</thead>
<tbody>
<tr>
<td>100+00</td>
<td>229+50.30</td>
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<td>258</td>
<td>340</td>
<td>2700</td>
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<td>100+00</td>
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<td>100+00</td>
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<td>STAGE 3 - MAIN LANE</td>
<td>2400</td>
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<td>107+60</td>
<td>112+50</td>
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<td>211+60</td>
<td>218+89.27</td>
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</table>

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

# Concrete Ditch Paving

<table>
<thead>
<tr>
<th>CONCRETE DITCH PAVING</th>
<th>CONC. DITCH PAVING (TYPE B)</th>
<th>NATIVE STONE FOR DITCH LINER</th>
<th>SOLID SODDING</th>
<th>WATER</th>
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</thead>
<tbody>
<tr>
<td>STATION</td>
<td>LOCATION</td>
<td>LENGTH</td>
<td><strong>W</strong></td>
<td>LN. FT.</td>
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<tr>
<td>201+00</td>
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<td>SITE 2 - LT</td>
<td>31.60</td>
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<tr>
<td>209+70</td>
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<td>6.00</td>
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<tr>
<td>209+70</td>
<td>00</td>
<td>SITE 2 - RT</td>
<td>65.00</td>
<td>6.00</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td>100.00</td>
<td>6.00</td>
<td>66.67</td>
</tr>
</tbody>
</table>

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

** SOLID SODDING SHALL NOT BE USED INSIDE THE PARK BOUNDARY.

# Removal and Disposal of Fence

<table>
<thead>
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<th>FENCE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>STATION</td>
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</tr>
<tr>
<td>98+51</td>
<td>SITE 1 - LT</td>
</tr>
<tr>
<td>169+54</td>
<td>SITE 2 - LT</td>
</tr>
<tr>
<td>205+40</td>
<td>SITE 2 - RT</td>
</tr>
<tr>
<td>228+5</td>
<td>SITE 3 - LT</td>
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TOTAL: 1542

# Trenching and Shoulder Preparation

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<tr>
<th>TRENCHING</th>
<th>SHOULDER PREPARATION</th>
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</thead>
<tbody>
<tr>
<td>STATION</td>
<td>LOCATION</td>
</tr>
<tr>
<td>30+00</td>
<td>SITE 1 - MAIN LANE</td>
</tr>
<tr>
<td>50+00</td>
<td>SITE 2 - MAIN LANE</td>
</tr>
<tr>
<td>50+00</td>
<td>SITE 3 - MAIN LANE</td>
</tr>
</tbody>
</table>

TOTAL: 16

# Removal and Disposal of Culverts

<table>
<thead>
<tr>
<th>PIPE CULVERTS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION</td>
<td>LOCATION</td>
</tr>
<tr>
<td>100+00</td>
<td>18&quot;X20' CMP LT SIDE DRAIN</td>
</tr>
<tr>
<td>102+20</td>
<td>18&quot;X20' CMP RT SIDE DRAIN</td>
</tr>
<tr>
<td>205+40</td>
<td>18&quot;X34' RCP RT SIDE DRAIN</td>
</tr>
<tr>
<td>206+12</td>
<td>18&quot;X39' CMP RFPS RT SIDE DRAIN</td>
</tr>
<tr>
<td>206+44</td>
<td>18&quot;X39' RCP RT SIDE DRAIN</td>
</tr>
<tr>
<td>207+04</td>
<td>KXVX989 RCR REMOVAL</td>
</tr>
<tr>
<td>224+39</td>
<td>18&quot;X28' CMP RT SIDE DRAIN</td>
</tr>
<tr>
<td>224+57</td>
<td>18&quot;X28' CMP RT SIDE DRAIN</td>
</tr>
<tr>
<td>229+80</td>
<td>18&quot;X38' CMP RT SIDE DRAIN</td>
</tr>
</tbody>
</table>

TOTAL: 9

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

# Clearing and Grubbing

<table>
<thead>
<tr>
<th>CLEARING</th>
<th>GRUBBING</th>
<th>STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION</td>
<td>LOCATION</td>
<td>CLEARING</td>
</tr>
<tr>
<td>103+51</td>
<td>SITE 1 - MAIN LANE</td>
<td>11</td>
</tr>
<tr>
<td>109+15</td>
<td>SITE 1 - MAIN LANE</td>
<td>13</td>
</tr>
<tr>
<td>109+15</td>
<td>SITE 2 - MAIN LANE</td>
<td>13</td>
</tr>
<tr>
<td>213+50</td>
<td>SITE 2 - MAIN LANE</td>
<td>15</td>
</tr>
</tbody>
</table>

TOTAL: 52

* QUANTITIES ESTIMATED. SEE SECTION 104.03 OF THE STD. SPECS.
### Erosion Control

#### Permanent Erosion Control

<table>
<thead>
<tr>
<th>Station Location</th>
<th>Special Seeding</th>
<th>Lime</th>
<th>Special Mulch Cover</th>
<th>Water</th>
<th>Special Second Seeding Application</th>
<th>Temporary Seeding</th>
<th>Special Mulch Cover</th>
<th>Water</th>
<th>Erosion Control Matt</th>
<th>Fencing</th>
<th>Sediment</th>
<th>Obiteration of Sediment Basin</th>
<th>Sediment Removal &amp; Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project Clearing and Grubbing</td>
<td>9.53</td>
<td>9.53</td>
<td>194.4</td>
<td>528</td>
<td>3120</td>
<td>760</td>
<td>876</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entire Project Stage 1</td>
<td>0.16</td>
<td>0.16</td>
<td>3.3</td>
<td>66</td>
<td>330</td>
<td>760</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entire Project Stage 2</td>
<td>4.46</td>
<td>9.2</td>
<td>4.46</td>
<td>454.9</td>
<td>4.46</td>
<td>330</td>
<td>760</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entire Project Stage 3</td>
<td>3.91</td>
<td>7.82</td>
<td>3.91</td>
<td>398.8</td>
<td>3.91</td>
<td>760</td>
<td>906</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entire Project to be Used If and Where Directed by the Engineer</td>
<td>90</td>
<td>242</td>
<td>10</td>
<td>800</td>
<td>30</td>
<td>906</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Base of Estimate:**
- Lime: 2 Tons / Acre of Seeding
- Water: 102.0 Gals / Acre of Seeding
- Water: 20.4 M.G. / Acre of Temporary Seeding
- Water: 12.6 Gals / Sq. Yd. of Solid Sodding
- Wattle Ditch Checks: 9 Lin. Ft. / Location
- Sand Bag Ditch Checks: 22 Bags / Location
- Rock Ditch Checks: 3 Cu Yd. / Location

Note: The temporary erosion control devices shown above and on the plans shall be installed in such a sequence as to deter erosion and sedimentation on U.S. waterways as explained by the National Pollutant Discharge Elimination System Permit.

*Quantities Estimated.*
See Section 104.03 of the STD. Specs.

### Erosion Control Matting

<table>
<thead>
<tr>
<th>Station Location</th>
<th>Length</th>
<th>Class 2</th>
<th>Class 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>201-199.00</td>
<td>31.00</td>
<td>13.76</td>
<td></td>
</tr>
<tr>
<td>200-200.00</td>
<td>300.00</td>
<td>296.67</td>
<td></td>
</tr>
<tr>
<td>219-195.00</td>
<td>65.00</td>
<td>28.89</td>
<td></td>
</tr>
<tr>
<td>220-50.00</td>
<td>600.00</td>
<td>533.33</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 28.89 830.00

**Note:** Average Width = 9.0".

*Quantities Estimated.*
See Section 104.03 of the STD. Specs.

### Fencing

<table>
<thead>
<tr>
<th>Station Location</th>
<th>Length</th>
<th>Type of Fence</th>
<th>Lin. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>99-51</td>
<td>SITE 1-LT</td>
<td>104-00</td>
<td>550</td>
</tr>
<tr>
<td>199-55</td>
<td>SITE 1-LT</td>
<td>203-75</td>
<td>452</td>
</tr>
<tr>
<td>220-00</td>
<td>SITE 2 - RT</td>
<td>210-00</td>
<td>132</td>
</tr>
<tr>
<td>228-15</td>
<td>SITE 2 - RT</td>
<td>228-40</td>
<td>308</td>
</tr>
</tbody>
</table>

**Total:** 1442

### Mailboxes

<table>
<thead>
<tr>
<th>Location</th>
<th>Mailboxes</th>
<th>Mailbox Supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**Total:** 2 2

*Quantities Estimated.*
See Section 104.03 of the STD. Specs.
### Cold Milling Asphalt Pavement

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Avg. Width</th>
<th>Cold Milling Asphalt Pavement</th>
</tr>
</thead>
<tbody>
<tr>
<td>199+00.00</td>
<td>100+00.00</td>
<td>20.00</td>
<td>222.22</td>
</tr>
<tr>
<td>12+00.00</td>
<td>12+00.00</td>
<td>20.00</td>
<td>222.22</td>
</tr>
<tr>
<td>200+00.00</td>
<td>201+00.00</td>
<td>20.00</td>
<td>222.22</td>
</tr>
<tr>
<td>220+00.00</td>
<td>230+00.00</td>
<td>20.00</td>
<td>222.22</td>
</tr>
<tr>
<td>229+50.30</td>
<td>230+50.30</td>
<td>20.00</td>
<td>222.22</td>
</tr>
</tbody>
</table>

**TOTAL:** 188.88

Note: Average milling depth 1".

---

### Asphalt Concrete Patching for Maintenance of Traffic

<table>
<thead>
<tr>
<th>Location</th>
<th>Tonnage</th>
<th>Tack Coat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project - To be used if and where directed by the Engineer</td>
<td>25.00</td>
<td>50.00</td>
</tr>
</tbody>
</table>

**TOTAL:** 25.00 TON

**Note:** Basis of estimate: Asphalt concrete patching for maintenance of traffic...50 gal./mile

---

### Bench Marks

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Bench Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>106+00</td>
<td>Site 1 - 20 RT</td>
<td>1</td>
</tr>
<tr>
<td>217+00</td>
<td>Site 2 - 20 RT</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL:** 2

**Note:** Shown for information only. Bench marks shall be furnished and placed by state forces.

---

### Rumble Stripes in Asphalt Shoulders

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th><em>Rumble Stripes in Asphalt Shoulders</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project - Right</td>
<td>5330.3</td>
<td></td>
</tr>
<tr>
<td>Entire Project - Left</td>
<td>5330.3</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** 10660.6

**Note:** See section 104.03 of the STD. SPECS.

---

### Selected Pipe Bedding

<table>
<thead>
<tr>
<th>Location</th>
<th>Selected Pipe Bedding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project - To be used if and where directed by the Engineer</td>
<td>50</td>
</tr>
</tbody>
</table>

**TOTAL:** 50

**Note:** See section 104.03 of the STD. SPECS.

---

### ACHM Patching of Existing Roadway

<table>
<thead>
<tr>
<th>Description</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Project - To be used if and where directed by the Engineer</td>
<td>50</td>
</tr>
</tbody>
</table>

**TOTAL:** 50

**Note:** See section 104.03 of the STD. SPECS.

---

### Soil Log

<table>
<thead>
<tr>
<th>Station</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Depth</th>
<th>Plasticity Index</th>
<th>AASHTO Classification</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+00</td>
<td>34 50 53.70</td>
<td>93 6 5.90</td>
<td>5 RT</td>
<td>0.5</td>
<td>9</td>
<td>A-4 (3)</td>
</tr>
<tr>
<td>101+00</td>
<td>34 50 53.60</td>
<td>93 6 5.80</td>
<td>25 RT</td>
<td>0.5</td>
<td>31</td>
<td>A-6 (6)</td>
</tr>
<tr>
<td>110+00</td>
<td>34 51 5.10</td>
<td>93 6 2.00</td>
<td>20 RT</td>
<td>0.42</td>
<td>29</td>
<td>A-6 (3)</td>
</tr>
<tr>
<td>116+00</td>
<td>34 51 8.80</td>
<td>93 5 5.90</td>
<td>6 LT</td>
<td>0.5</td>
<td>32</td>
<td>A-6 (3)</td>
</tr>
<tr>
<td>120+00</td>
<td>34 51 9.60</td>
<td>93 5 5.90</td>
<td>25 RT</td>
<td>0.42</td>
<td>32</td>
<td>A-6 (6)</td>
</tr>
<tr>
<td>200+00</td>
<td>34 52 8.40</td>
<td>93 6 3.30</td>
<td>6 RT</td>
<td>0.5</td>
<td>46</td>
<td>A-7 (6)</td>
</tr>
<tr>
<td>202+00</td>
<td>34 52 8.60</td>
<td>93 6 3.30</td>
<td>25 RT</td>
<td>0.42</td>
<td>44</td>
<td>A-7 (16)</td>
</tr>
<tr>
<td>203+00</td>
<td>34 52 13.10</td>
<td>93 6 18.00</td>
<td>5 LT</td>
<td>0.5</td>
<td>34</td>
<td>A-5 (5)</td>
</tr>
<tr>
<td>208+00</td>
<td>34 52 13.10</td>
<td>93 6 18.00</td>
<td>24 LT</td>
<td>0.6</td>
<td>35</td>
<td>A-6 (10)</td>
</tr>
<tr>
<td>210+00</td>
<td>34 52 22.20</td>
<td>93 6 38.45</td>
<td>5 RT</td>
<td>0.5</td>
<td>30</td>
<td>A-6 (7)</td>
</tr>
<tr>
<td>211+00</td>
<td>34 52 22.20</td>
<td>93 6 38.20</td>
<td>10 RT</td>
<td>0.5</td>
<td>28</td>
<td>A-6 (5)</td>
</tr>
<tr>
<td>300+00</td>
<td>34 52 11.90</td>
<td>93 6 26.80</td>
<td>CL</td>
<td>0.22</td>
<td>34</td>
<td>A-6 (4)</td>
</tr>
<tr>
<td>315+00</td>
<td>34 52 22.30</td>
<td>93 6 37.80</td>
<td>CL</td>
<td>0.12</td>
<td>34</td>
<td>A-6 (2)</td>
</tr>
<tr>
<td>317+00</td>
<td>34 52 11.90</td>
<td>93 6 26.80</td>
<td>CL</td>
<td>0.22</td>
<td>34</td>
<td>A-6 (4)</td>
</tr>
<tr>
<td>331+00</td>
<td>34 52 11.90</td>
<td>93 6 26.80</td>
<td>CL</td>
<td>0.22</td>
<td>34</td>
<td>A-6 (4)</td>
</tr>
<tr>
<td>360+00</td>
<td>34 52 11.90</td>
<td>93 6 26.80</td>
<td>CL</td>
<td>0.22</td>
<td>34</td>
<td>A-6 (4)</td>
</tr>
<tr>
<td>370+00</td>
<td>34 52 11.90</td>
<td>93 6 26.80</td>
<td>CL</td>
<td>0.22</td>
<td>34</td>
<td>A-6 (4)</td>
</tr>
<tr>
<td>372+00</td>
<td>34 52 11.90</td>
<td>93 6 26.80</td>
<td>CL</td>
<td>0.22</td>
<td>34</td>
<td>A-6 (4)</td>
</tr>
<tr>
<td>380+00</td>
<td>34 52 11.90</td>
<td>93 6 26.80</td>
<td>CL</td>
<td>0.22</td>
<td>34</td>
<td>A-6 (4)</td>
</tr>
</tbody>
</table>

**Note:** Soil characteristics tabulated above are representative at the location of the sample. From surface indications are typical for the limits shown. These data are shown for information only. The state will not be responsible for variations in the soil characteristics and/or extent of same differing from the above tabulations.

2: Auger refusal.

---

### Quantities

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** See section 104.03 of the STD. SPECS.

**To be used if and where directed by the Engineer.**
STRUCTURES

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>CONCRETE PIPE CULVERT</th>
<th>FLARED END SECTIONS FOR R.C. PIPE CULVERTS</th>
<th>TEMPORARY CULVERTS</th>
<th>SOLID SODDING</th>
<th>WATER</th>
<th>STD. DWG. NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>117+74</td>
<td>EXTEND 24&quot; x 69' PIPE CULVERT LT. &amp; RT.</td>
<td>26</td>
<td>2</td>
<td>-</td>
<td>PCC-1, PES-1, PES-2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>201+69</td>
<td>EXTEND 24&quot;x236' PIPE CULVERT LT. &amp; RT.</td>
<td>36</td>
<td>2</td>
<td>164</td>
<td>PCC-1, PES-1, PES-2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>209+00</td>
<td>INSTALL 18&quot; x 104' TEMP. PIPE CULVERT LT.</td>
<td>68</td>
<td>2</td>
<td>-</td>
<td>PCC-1, PES-1, PES-2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>226+45</td>
<td>CONSTR. 24&quot; x 69' PIPE CULVERT LT. &amp; RT.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

TOTALS: 130 184 6 2 104 16 0.20

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

NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
NOTE: FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.
* SOLID SODDING SHALL NOT BE USED INSIDE THE PARK BOUNDARY.

GUARDRAIL

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>GUARDRAIL (TYPE A)</th>
<th>GUARDRAIL TERMINAL (TYPE 2)</th>
<th>TERMINAL ANCHOR POSTS (TYPE 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>105+67.38</td>
<td>107+68.13</td>
<td>RT SIDE</td>
<td>GUARDRAIL</td>
<td>150</td>
<td>1</td>
</tr>
<tr>
<td>112+13.86</td>
<td>114+32.61</td>
<td>LT SIDE</td>
<td>150</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>112+23.48</td>
<td>113+27.23</td>
<td>RT SIDE</td>
<td>150</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>204+81.76</td>
<td>211+38.51</td>
<td>RT SIDE</td>
<td>150</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>216+41.86</td>
<td>219+00.23</td>
<td>LT SIDE</td>
<td>150</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

TOTALS: 950 6 4 4

DUMPED RIPRAP AND FILTER BLANKET

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>DUMPED RIPRAP</th>
<th>FILTER BLANKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>109+00</td>
<td>107+89</td>
<td>SITE 1 - RT</td>
<td>373 746</td>
<td>-</td>
</tr>
<tr>
<td>113+00</td>
<td>116+00</td>
<td>SITE 1 - RT</td>
<td>705 1410</td>
<td>-</td>
</tr>
<tr>
<td>112+11</td>
<td>114+00</td>
<td>SITE 1 - LT</td>
<td>462 923</td>
<td>-</td>
</tr>
<tr>
<td>207+00</td>
<td>211+76</td>
<td>SITE 2 - RT</td>
<td>113 226</td>
<td>-</td>
</tr>
<tr>
<td>216+74</td>
<td>222+00</td>
<td>SITE 2 - RT</td>
<td>27 53</td>
<td>-</td>
</tr>
<tr>
<td>211+00</td>
<td>211+76</td>
<td>SITE 2 - LT</td>
<td>29 58</td>
<td>-</td>
</tr>
</tbody>
</table>

TOTALS: 1680 3816

NOTE: QUANTITY ESTIMATED.
SEE SECTION 10403 OF THE STANDARD SPECIFICATIONS

FLOWABLE SELECT MATERIAL

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>CU. YD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>207+64</td>
<td>PLUG &amp; ABANDON BOX CULVERT CROSS HWY. 7</td>
<td>54</td>
</tr>
<tr>
<td>209+50</td>
<td>PLUG &amp; ABANDON PIPE CULVERT CROSS HWY. 7</td>
<td>7</td>
</tr>
</tbody>
</table>

TOTAL: 61
### Driveways & Turnouts

<table>
<thead>
<tr>
<th>Station</th>
<th>Side</th>
<th>Location</th>
<th>Width (ft)</th>
<th>ACHIM Surface Course (PSI)</th>
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### Quantities

- **Note:** Use 1'-10" for 6' Shoulder.
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**BASE AND SURFACING**

**AGGREGATE BASE COURSE (Class 7)**

- **LENGTH**: 100.00
- **TACK COAT**: 26.00
- **ACME BASE COURSE (1")**: 294.67
- **ACME Binder Course (1")**: 294.67
- **ACME Surface Course (2")**: 294.67

**ACME BASE COURSE (1")**

- **AVG. WID.**: 100.00
- **SQ.YD.**: 294.67
- **GALLON**: 100.00
- **POUND**: 100.00
- **TOTAL**: 294.67

**ACME Binder Course (1")**

- **AVG. WID.**: 100.00
- **SQ.YD.**: 294.67
- **GALLON**: 100.00
- **POUND**: 100.00
- **TOTAL**: 294.67

**ACME Surface Course (2")**

- **AVG. WID.**: 100.00
- **SQ.YD.**: 294.67
- **GALLON**: 100.00
- **POUND**: 100.00
- **TOTAL**: 294.67
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**Includes specific location yard of rock excavation.**

**Steel piling is required to be Grade 50 and have special tips which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling HP47/5."**

**Based upon next lines of Decorative Concrete Pile Caps and the dimension of deck edge being 1½".**

**Payment will be based upon plan quantities shown.**

**From 5/67 to 10/50**

---

SCHEDULE OF BRIDGE QUANTITIES - JOB NO.80439

Jeff Covay
DESIGN SECTION SUPERVISOR

ARKANSAS STATE HIGHWAY COMMISSION
BEAR CREEK & SP. FOURCHE LA FAVE RIVER
STRS. & APPRS. (S)
PERRY COUNTY
ROUTE 7 SEC. 1

**STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER**

**SCHEDULE OF BRIDGE QUANTITIES - JOB NO.80439**

**DRAWN BY: JAC R 4/21/2001**
**CHECKED BY: JAC R 4/21/2001**
**DRAFTS UNIT, SCALE: NO SCALE**

**BRIDGE NO. 07415 & 0746**
**DRAWING NO. 53959**
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SUMMARY OF QUANTITIES & REVISIONS
**Survey Control Coordinates**

**Project Name:** US-1044

**Date:** 6/6/2013

**Coordinate System:** Arkansas State Plane Coordinates

**Based on:** AITD GPS PS... 300011 330051 330010 3300261

**Projected to Ground Coordinates:**

**Units:** U.S. Survey Foot

---

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

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</table>

**Surface Control Points:**

- ** Reference Control Points:**
  - All additional project control points shall be established as "Arkansas Hwy & Trans Dept" with "YN, 3mm", & "Job Name". Monuments that are used as control points shall be stamped "Arkansas Hwy & Trans Dept" with "YN, 3mm", & "Job Name". The consultant Professional Surveyor in charge shall stamp his/her PS license number on the cap.

**Standard GPS Control Point Monument:** 5/8" x 40" Rebar with 2.5" Aluminum Cap stamped: "(include all common information here)". All other markings indicated in the point description of the individual point. The monuments shall be stamped "Ark. State Hwy Trans. Dept." GPS Survey", & "Point No. XXXXXX". SK, SV, SP - Represents the standard error estimate of the coordinate values of each point at the 68% confidence level (one sigma) based on the least squares analysis of the control network. See the AASHTO SDMS Technical Data Guide data tag definition for SK, SV, and SP: for additional information. These values shall be used when control points are occupied, and the entire network is reprocessed using least square analysis. A value of 0.000 is defined as fixed (no adjustment) in the least square analysis procedure. A value of 2.000 is defined as location by handheld GPS device or scaled from UGS Quadrant.

- **Reference Control Points:**
  - All additional project control points shall be established at the project datum with 3-mm level techniques. All additional project control shall be occupied, measured, and adjusted with direct survey techniques at least two of the two control points listed in the table above. A survey control point shall not be independent of the survey control listed above. This includes horizontal coordinates and elevations.

**Positional Accuracy:**

- **Horizontal:**
  - GPS: 300-100
  - Total Station: 300-100
- **Vertical:**
  - Total Station: 300-100

**Horizontal Datum:**

- State Plane Zone: 0901 - North Zone
- The adjustment year is based on metadata in the SDMS Control File.A project CAF has to be used to compute the above coordinates.
- The project CAF shall have a minimum precision of 3-ft at the right of the record.
- This CAF is intended for use within the project limits only.

**Vertical Datum:**

- NAD 1983 based NGS BM
- All project Elevation Factor: 0.9999731522 has been computed and incorporated in the above CAF.

---

**Survey Control Details**

- **Coordinate System:** Arkansas State Plane Coordinates
- **Based on:** AITD GPS PS... 300011 330051 330010 3300261
- **Projected to Ground Coordinates:**
  - U.S. Survey Foot

---

**Notes:** Information in italics is for clarification only. It is not to be part of the actual Control Table or Control Detail Sheets.
Plan of Railing (Wing A)

Includes allowance for Fieldstone Finish on each side.

Plan of Railing (Wing B)

Includes allowance for Fieldstone Finish on exterior face.

Table of Variables

<table>
<thead>
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<th>Item</th>
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For "VIEW S", "SECTION E", "SECTION G", see Spec No. 53867.

See DETAIL X for reinforcing details of railing.

For "VIEW S", "SECTION E", "SECTION G", see Spec No. 53867.

Plan and elevation views for Fieldstone Finish.

Roughsawn Fieldstone Finish (with grooves) for Fieldstone Finish.

Connector Plate, see Spec No. 53867.

See DETAIL X for reinforcing details of railing.

Plan and elevation views for Fieldstone Finish.

Roughsawn Fieldstone Finish (with grooves) for Fieldstone Finish.

Connector Plate, see Spec No. 53867.

See DETAIL X for reinforcing details of railing.

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Plan and elevation views for Fieldstone Finish.

Roughsawn Fieldstone Finish (with grooves) for Fieldstone Finish.

Connector Plate, see Spec No. 53867.

See DETAIL X for reinforcing details of railing.
PLAN OF DECORATIVE CONCRETE PARAPET RAILING

TABLE OF VARIABLES

<table>
<thead>
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<th>Variable</th>
<th>420'-0&quot; unit</th>
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<td>II</td>
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<tr>
<td>III</td>
<td>24'-0&quot;</td>
<td>16'-0&quot;</td>
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ELEVATION OF DECORATIVE CONCRETE PARAPET RAILING (FROM TRAFFIC SIDE)

ELEVATION OF DECORATIVE CONCRETE PARAPET RAILING (FROM BACK SIDE)

The interior panels beyond 6'-0" of the C.L. of the bents shall be open panels. Each open panel shall have a 5'-2" x 3'-2" drain opening.

Note: All panels shall be utilized for the end panels and interior panels within 6'-0" left and right of the C.L. of the bents. The interior panels beyond 6'-0" of the C.L. of the bents shall be open panels. Each open panel shall have a 5'-2" x 3'-2" drain opening.

See Sheet No. 53873 for rolling joint details.

Measure of gutterline not including 3" allowance for Roughsown Wood Finish, see TIER-A-1, SECTION 0-8 & SECTION C-C, Sheet No. 53874.

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ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

REGISTERED PROFESSIONAL ENGINEER

BROOK ENGINEER

SHEET 1 OF 3

DETAILS OF DECORATIVE CONCRETE PARAPET RAILING

ROUTE SEC.

BRIDGE NO. 0745 & 0746 - RAILING - 53872
### TABLE OF VARIABLES

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<td>D</td>
<td>6'-2&quot;</td>
<td>6'-2&quot;</td>
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<tr>
<td>B</td>
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<td>100</td>
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<tr>
<td>H</td>
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</tr>
<tr>
<td>S</td>
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**Note:** All rolling joints shall extend from the top of the concrete rail to the top of deck.

**Details of Decorative Concrete Parapet Railing**

**Route Sec.:**

ARKANSAS STATE HIGHWAY COMMISSION

**Details of Decorative Concrete Parapet Railing**

**.Route Sec.:**

ARKANSAS STATE HIGHWAY COMMISSION

**Details of Decorative Concrete Parapet Railing**

**ROUTE SEC.:**

ARKANSAS STATE HIGHWAY COMMISSION

**Details of Decorative Concrete Parapet Railing**

**ROUTE SEC.:**

ARKANSAS STATE HIGHWAY COMMISSION

**Details of Decorative Concrete Parapet Railing**

**ROUTE SEC.:**

ARKANSAS STATE HIGHWAY COMMISSION

**Details of Decorative Concrete Parapet Railing**

**ROUTE SEC.:**

ARKANSAS STATE HIGHWAY COMMISSION

**Details of Decorative Concrete Parapet Railing**
Concrete Roll with Roughstone Finish, see SP job No. 080439 “Architectural Finish” and SP Job No. 008438 “Shading Concrete Surfoces”
Concrete Post with Fieldstone Finish, see SP Job No. 080439 “Architectural Finish” and SP Job No. 008438 “Shading Concrete Surfoces”
3/8" Allowance for Fieldstone Finish

For details of Guarded connections, for list of End Bents & additional details of Approach Railing, see the following detail drawings:

dwg Nos. 53872-53874 for Bent 1 of Bridge No. 0745,
dwg Nos. 53872-53876 for Bent 2 of Bridge No. 0745,
dwg Nos. 53872-53880 for Bent 3 of Bridge No. 0745,
dwg Nos. 53873-53880 for Bent 4 of Bridge No. 0746,
dwg Nos. 53877-53880 for Bent 5 of Bridge No. 0746,
dwg Nos. 53878-53880 for Bent 6 of Bridge No. 0746,
dwg Nos. 53882-53884 for Bent 7 of Bridge No. 0746,
dwg Nos. 53882-53886 for Bent 8 of Bridge No. 0746,
DETAILS OF BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS

The Contractor may elect to install the expansion device using one of the following two alternatives:

1. The concrete upon pour adjacent to joint shall be placed before the and bent backwards to a point, after which the bent backward forms are to be poured. When the concrete is placed in the forms, the beam expansion device shall be tucked and adjusted for grade. All connection bolts shall be fully tightened prior to placing the device. The concrete adjacent to the beam, difficulty of pouring the bending concrete, the beam shall be removed, and the beam adjusted for temperature and grade.

2. The blockout plate to the optional construction joint after beams are removed. The beam expansion device shall be tucked and adjusted for grade. All connection bolts shall be fully tightened prior to placing the device. The concrete adjacent to the beam, immediately prior to pouring the remainder of the basement concrete, the beam shall be removed and the beam adjusted for temperature and grade.

EXPANSION DEVICE INSTALLATION AT EXTENDED BENT 4 OF BRIDGE

At any time after the expansion joint is open, the beam expansion device shall be removed and adjusted for grade. The beam expansion device shall be tucked and adjusted for grade. All connection bolts shall be fully tightened prior to placing the device. The concrete adjacent to the beam, immediately prior to pouring the remainder of the basement concrete, the beam shall be removed and the beam adjusted for temperature and grade.

SECTION A-B

Concrete Curb on Span

Concrete Curb on Wing or Span

DETAILS OF CURB SLIDER PLATES

Broad in concrete (10) installation and removal of curb

SLIDER PLATE ASSEMBLY

NOTES:

1. Dimension "X" equals the width of opening in curb to allow for removal or repair of joint.

2. Curved slider plates are intended to allow for the installation of a temperature joint and to provide for the necessary movement of the neoprene seal, anchors, and other components from the expansion device.

3. The method of attachment of the slider plate assembly shall be determined by the Manufacturer.

4. The expansion joint shall conform to ASTM 0781 "Standard Method of Test for Flexural Strength of Concrete."
NOTES:

Class I Protective Surface Treatment shall be applied to the top of beam ends. Class I Protective Surface Treatment shall not be applied to any portion of the Building including Roof, Floor, Curbs and Walls.

Structural steel in bent shall be A572 Grade 50.

Notes:

See Dwg No. 53890 & 53898 for Bar List and details of wing and fillings.

See Std. Dwg. No. 55006 for additional notes.
### TABLE OF VARIABLES

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### TYPICAL ANCHOR BOLT LAYOUT

For details of elastomeric bearings, see figure No. 53876.

**NOTE:** Typical anchor bolts are shown on layout.

**GENERAL NOTES:**

1. For Standard General Notes, see Std. DWG. No. 55B06.

2. Drilled shank and permanent casing should conform to Special Provision No. 48000 "Drilled Shanks (2")" and casing pipe for the use by size of "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see Layout.)

3. Minimum penetration into competent rock below permanent casing.

4. Length of permanent casing shown for key values given in the notes above.

5. Permanent casing and drill pipe are shown in the details. (For additional information, see "Perforated Casing."

6. Reinforcing steel details and dimensions shown on typical for columns and permanent casing.

7. Perforated steel, details and dimensions shown on typical for columns and permanent casing.

8. Column reinforcing steel will be as shown on detail. Dimension shown in the detail is the concrete cover in the top of column. Rebars will be spaced not more than 8" apart.

9. Non-penetrating anchors will be provided at the top of column. The contractor will be responsible for ensuring satisfactory results.

10. For non-penetrating anchors, see Drawings No. 53876 and 53877.

11. Drilled shank and permanent casing should conform to Special Provision No. 48000 "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see Layout.)

12. Minimum penetration into competent rock below permanent casing.

13. Length of permanent casing shown for key values given in the notes above.

14. Permanent casing and drill pipe are shown in the details. (For additional information, see "Perforated Casing."

15. Reinforcing steel details and dimensions shown on typical for columns and permanent casing.

16. Perforated steel, details and dimensions shown on typical for columns and permanent casing.

17. Column reinforcing steel will be as shown on detail. Dimension shown in the detail is the concrete cover in the top of column. Rebars will be spaced not more than 8" apart.

18. Non-penetrating anchors will be provided at the top of column. The contractor will be responsible for ensuring satisfactory results.

19. For non-penetrating anchors, see Drawings No. 53876 and 53877.

20. Drilled shank and permanent casing should conform to Special Provision No. 48000 "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see Layout.)

21. Minimum penetration into competent rock below permanent casing.

22. Length of permanent casing shown for key values given in the notes above.

23. Permanent casing and drill pipe are shown in the details. (For additional information, see "Perforated Casing."

24. Reinforcing steel details and dimensions shown on typical for columns and permanent casing.

25. Perforated steel, details and dimensions shown on typical for columns and permanent casing.

26. Column reinforcing steel will be as shown on detail. Dimension shown in the detail is the concrete cover in the top of column. Rebars will be spaced not more than 8" apart.

27. Non-penetrating anchors will be provided at the top of column. The contractor will be responsible for ensuring satisfactory results.

28. For non-penetrating anchors, see Drawings No. 53876 and 53877.

29. Drilled shank and permanent casing should conform to Special Provision No. 48000 "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see Layout.)

30. Minimum penetration into competent rock below permanent casing.

31. Length of permanent casing shown for key values given in the notes above.

32. Permanent casing and drill pipe are shown in the details. (For additional information, see "Perforated Casing."

33. Reinforcing steel details and dimensions shown on typical for columns and permanent casing.

34. Perforated steel, details and dimensions shown on typical for columns and permanent casing.

35. Column reinforcing steel will be as shown on detail. Dimension shown in the detail is the concrete cover in the top of column. Rebars will be spaced not more than 8" apart.

36. Non-penetrating anchors will be provided at the top of column. The contractor will be responsible for ensuring satisfactory results.

37. For non-penetrating anchors, see Drawings No. 53876 and 53877.

38. Drilled shank and permanent casing should conform to Special Provision No. 48000 "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see Layout.)

39. Minimum penetration into competent rock below permanent casing.

40. Length of permanent casing shown for key values given in the notes above.

41. Permanent casing and drill pipe are shown in the details. (For additional information, see "Perforated Casing."

42. Reinforcing steel details and dimensions shown on typical for columns and permanent casing.

43. Perforated steel, details and dimensions shown on typical for columns and permanent casing.

44. Column reinforcing steel will be as shown on detail. Dimension shown in the detail is the concrete cover in the top of column. Rebars will be spaced not more than 8" apart.

45. Non-penetrating anchors will be provided at the top of column. The contractor will be responsible for ensuring satisfactory results.

46. For non-penetrating anchors, see Drawings No. 53876 and 53877.

47. Drilled shank and permanent casing should conform to Special Provision No. 48000 "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see "Drilled Shanks (2")" and Permanent Steel Casing, 3/4" size. (For additional information, see Layout.)

48. Minimum penetration into competent rock below permanent casing.

49. Length of permanent casing shown for key values given in the notes above.

50. Permanent casing and drill pipe are shown in the details. (For additional information, see "Perforated Casing."

51. Reinforcing steel details and dimensions shown on typical for columns and permanent casing.

52. Perforated steel, details and dimensions shown on typical for columns and permanent casing.

53. Column reinforcing steel will be as shown on detail. Dimension shown in the detail is the concrete cover in the top of column. Rebars will be spaced not more than 8" apart.

54. Non-penetrating anchors will be provided at the top of column. The contractor will be responsible for ensuring satisfactory results.

55. For non-penetrating anchors, see Drawings No. 53876 and 53877.
NOTES: For details of anchor bearings, see Fig. 5307E.

**TYPICAL ANCHOR BOLT LAYOUT**

No Scale

**GENERAL NOTES**

For Standard General Notes, See Fig. 5305E.

Drilled shafts and permanent casings shall conform to Special Provision Job No. 530680 Drilled Shaft Specifications, and shall be paid for at the unit bid price for "Drilled Shaft 12" DIA" and "Permanent Steel Casing 12" DIA."

For additional information, see Layout.

1. Minimum penetration into competent rock below permanent casing.
2. Lengths of permanent casing shown are for estimating purposes only. For exact lengths, see Drilled Shaft Foundations drawing.
3. Permanent casing shall not extend below top of competent rock. Column reinforcing cage may be placed before or after concrete placement in the shaft is complete. Abortion of the concrete by the top of the shaft shall be necessary to facilitate the construction of the column above the cage. The contractor shall be responsible for obtaining necessary permits.
4. Nonpay item - Subsidiary to the item "Drilled Shaft 12" DIA."

**DIMENSIONS:**
All dimensions are to the nearest 1/16 in. and orientation is per layout.
For details of 20" Bent Plate Diaphragm, see Spec. No. 5267.

For detailed of 20" Bent Plate Diaphragm, see Spec. No. 5267.

See "DETAIL 1", Spec. No. 5267

6" thickness noted otherwise

CL. Bearing of Bent L 4 b, 4 c, and 7

ELEVATION

17'-0" - Span for 3

41'-0" - Y, Span 2

See "DETAIL 3", Spec. No. 5267

CL. Bearing of Bent Z, 5/8" or 6

CL. Bolted Field Splice

4'-0" - Span 1

24'-0" (0.011)

SHEAR CONNECTOR DETAIL

No Scale

DETAILS OF FIELD SPICES

No Scale

CL. Joint

CL. Bearing of Bent L 4 b, 4 c, and 7

CL. Bearing of Bent Z, 5/8" or 6

CL. Bolted Field Splice

17'-0" - Span for 3

41'-0" - Y, Span 2

NOTE: Bolted field splices may be substituted if shop welds substituted with the approval of the Engineer. Payment will be made on cost of the options shown.

NOTE: All structural steel shall be ASTM A 36, 50, 50-70, unless otherwise noted and shall be pooled for on "Standard General Notes for Steel Bridge Structures", see Spec. No. 5006. See "Shear connector detail", Spec. No. 5267.

Shear connector detail

No Scale

Shear connector detail

No Scale

Shear connector detail

No Scale
Construct gutter curb with height transition as shown if drop inlet is not placed on end of gutter.

Construct gutter curb full height (no height transition) if drop inlet is placed on end of gutter. Curb height transition placed on drop inlet (see drop inlet details).

Refer to "SECTION 9-9", Deg. No. 53874A.

Details of Type Special Approach Gutters

**General Notes**

All concrete shall be Class C or Class S600 or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry, reinforced concrete slabs on grade. Reinforcing bars shall be Grade 60 Class C 0.060" 6.000 ksi min. reinforcing bars furnished to 120% of bar size in 3.000 ksi steel with test report. Approach gutters will be measured and paid for in accordance with Section 501.02(h-2).

Details of Type Special Approach Gutters

**Route Sec.**

Arkansas State Highway Commission

Little Rock, Ark.

Dr. H. A. Clark, C.E.

Registered Professional Engineer

June 1973

*Contractor's information on file.*

**Drawing No.** 0740-5 A. 0740-6

**Drawing date** June 1973

**Scale** 1" = 1'-0"
CROSS SECTION STA. 107+39.75 TO STA. 107+88.75

STAGE 1 BRIDGE EARTHWORK BETWEEN STA. 107+50 AND STA. 122+50

FILL VOLUME: 4900
ROCK FILL VOLUME: 400

AREA CUT: 682
AREA FILL: 0
AREA ROCK FILL: 643

ROADWAY EARTHWORK END STATION STA. 108+39.75 TO STA. 115+00
CUT VOLUME: 0
FILL VOLUME: 1785
ROCK FILL VOLUME: 1021

CROSS SECTION STA. 107+88.72 TO STA. 107+88.75

STAGE 2 BRIDGE EARTHWORK BETWEEN STA. 107+50 AND STA. 122+50

FILL VOLUME: 0
ROCK FILL VOLUME: 0

AREA CUT: 0
AREA FILL: 0
AREA ROCK FILL: 0

CROSS SECTION STA. 107+88.75 TO STA. 115+00

STAGE 3 BRIDGE EARTHWORK BETWEEN STA. 107+50 AND STA. 122+50

FILL VOLUME: 1785
ROCK FILL VOLUME: 1021

AREA CUT: 0
AREA FILL: 0
AREA ROCK FILL: 0

CROSS SECTION STA. 107+88.72 TO STA. 107+88.75
CROSS SECTIONS - SITE I

STAGE 1
STAGE 2
STAGE 3

AREA CUT D
AREA CUT 3
AREA CUT O
AREA FILL 39
AREA FILL 90
AREA FILL 90

CUT VOLUME 9
CUT VOLUME 21
CUT VOLUME 02
FILL VOLUME 26
FILL VOLUME 26
FILL VOLUME 26

CROSS SECTION STA. II7+74 TO STA. II7+74
CROSS SECTIONS - SITE 2

BRIDGE EARTHWORK BETWEEN STA. 2H+00 AND STA. 2H+00
ROCK FILL VOLUME 2700

STA. 2H+72.63 TOE OF SLOPE

CROSS SECTION STA. 2H+72 TO STA. 2H+72
GENERAL NOTES
These GENERAL NOTES are applicable unless otherwise shown in the Plan Details, Special Provisions, or Supplemental Specifications.


DESIGN SPECIFICATIONS: See Bridge Layout.

SUPERSTRUCTURE NOTES:

MATERIALS AND CONSTRUCTION:

Oasis SHD Concrete

Riveting Steel: Grade 80, Type A, with welds and welds of equal or greater strength. All welds shall be made by a approved process and meet the requirements of the applicable American Welding Society Specification.

Structural Steel:

Steel Grades:

- Grade 50
- Grade 70
- Grade 80
- Grade 100

Structural Steel Dimensions:

- W 270
- W 310
- W 360

See Plan Details for Grade of Structural Steel required.

CONCRETE:

All concrete shall be Class 5000 with a minimum 28 day compressive strength of 4,000 psi. Concrete shall be poured in the dry and all exposed concrete shall be cured 7 days unless otherwise noted.

The superstructure details shown are for use when removable deck forming is used and are the basis of the requirements of Oasis Concrete. See Standard Drawing No. O505 for allowable modifications and for information on the purchase of Steel Bridge Deck forms are used.

Use of a longitudinal imprint is not permitted on any span of a bridge deck with horizontal curvatures.

The concrete deck roadway shall be given the finish to be completed in accordance with Subsection 202.2 for Class G Bridge Roadway Surface Finish. Sidewalks shall receive a broken finish as specified for thin finishing in Subsection 202.8 for Class G Open-Faced Finish. Movement of the new concrete shall be on top of the surface and shall be completed in accordance with the plans and specifications. The strike-off shall be made horizontally and the slope of the concrete shall be slope of the grade, or the project engineer may approve a different slope for the future deck load distribution and for any loading, wind, or surface.

REINFORCING STEEL:

All reinforcing steel shall be Grade 50 conforming to A500 Grade A, with welds and welds of equal or greater strength. All welds shall be made by the approved process and meet the requirements of the applicable American Welding Society Specification.

Structural Steel Connection to Reinforcing and Plate Girders:

Steel Grades:

- Grade 50
- Grade 70
- Grade 80

Structural Steel Dimensions:

- W 270
- W 310
- W 360

Steel Grade 80 shall be permitted unless otherwise stated and all exposed surfaces shall be cleaned in accordance with Subsection 201.8. Structural steel commonly erected in concrete may be W 270, W 310, W 360, or Grade 80 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, approved and approved before fabrication begins.

Requests for substitution of structural steel shapes shown with shapes of greater grade shall be submitted by the Contractor to the Engineer for approval. Shears of equal or greater strength will be permitted only when shown on the approved shop drawings.

Allowable strength to be determined by the Contractor for approved process and meet the requirements of the applicable American Welding Society Specification.

Welding to be done in accordance with the instructions of the shop drawings and submittals for approval. All welds shall meet the requirements of the applicable American Welding Society Specification.

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SUBSTRUCTURE NOTES:

CONCRETE:

All concrete shall be Grade 80 with a minimum 28 day compressive strength of 4,000 psi. Concrete shall be poured dry and all exposed concrete shall be cured 7 days unless otherwise noted.

REINFORCING STEEL:

All reinforcing steel shall be Grade 40 with a minimum 28 day compressive strength of 3,600 psi. Concrete shall be poured dry and all exposed concrete shall be cured 7 days unless otherwise noted.

STRUCTURAL STEEL:

Structural steel in end bents shall be ASTM A 36 with grade and location as specified in the plan.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUTS AND PLAN DETAILS.

STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, AR

PHONE: 501-949-5785

FAX: 501-949-5732

DRIVING NO. 55004

TESTING:

All reinforcing steel shall be Grade 80 field yield strength = 60,000 psi conforming to A500 Grade A Grade 36, Type A, with welds and welds of equal or greater strength.

Top reinforcing bars in caps to be properly placed to avoid interferences with anchor bolts and other ship form details.
**GENERAL NOTES FOR STEEL H-PILES:**

Steel H-Piles shall conform to AASHTO M 30, Grade 36 or greater.

See Bridge Layout and Bents Details for pile size, anticipated length, spacing, and candle of reinforcement for driving directions. Steel H-Piles that extend above the ground and are not protected by pile enclosure shall be painted in accordance with Subsection B260.

Bentonite, if used, shall consist of piles 3 ft. drill points and cutting, adding, and cleaning shall be per the details, but shall be considered subsidiary to the pile "Steel H-Pile." 

**TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT**

(Shown with Partial Height Encasement)

**REINFORCING DETAIL FOR STEEL H-PILE**

Steel reinforcing shall be Grade 60 or greater and shall be furnished in accordance with standard specifications for Highway Construction-QSM Edition.

*Note:* See AASHTO M 30, Grade 36 or greater, for details of pile enclosure. Steel H-Piles that extend above the ground and are not protected by pile enclosure shall be painted in accordance with Subsection B260.

**TYPICAL SPICE DETAILS**

*Note:* See AASHTO M 30, Grade 36 or greater, for details of pile enclosure. Steel H-Piles that extend above the ground and are not protected by pile enclosure shall be painted in accordance with Subsection B260.
GENERAL NOTES:
The full width of each section shall be poured monolithically.
Toe walls to be constructed full width at each end of ditch paving and poured monolithically.
Solid 900 along ditch paving to be placed within 14 days of ditch paving construction.
3" wide transverse expansion joints shall be placed in concrete ditch paving at 40' intervals. The space shall be filled with approved joint filler complying with AASHTO M213.
“GENERAL NOTES:

ALL DIAMETERS SHALL BE SUPPORT LENGTHS TO EXTENT
THROUGH THICKNESS OF THE NUT AND NO MORE THAN
1/4” BEYOND DIAMETER OF THE NUT AND NO MORE THAN
1/4” BEYOND DIAMETER OF THE NUT.

STEEL WOOD GUARD RAIL CONSTRUCTS THE INSTRUMENTAL LINES
SHELL HAVE A POST SPACING OF 4'-0". STEEL GUARD RAILS
SHALL BE MACHINED ALONG THE PAINSTIRACLE FACE FROM CENTERS OF
POST TO ENTRANCE OF HOLES.

STEEL WOOD GUARD RAIL COMPONENTS OF SAME MATERIAL FOR EXISTING JOBS
FOR EXTENSIONS BY MODIFICATION OF EXISTING GUARD RAIL STEEL GUARD RAIL
CONSTRUCTION SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-Beam GUARD RAIL.

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CONNECTIONS SHALL BE MACHINED ALONG THE PAINSTIRACLE FACE FROM CENTER OF
Note: Bolts, DIA. galvanized or zinc coated, may be used. For design speeds of 50 MPH or more, hot-dip galvanized or other Type 1 CURB FACE shall be used.

DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

For design speeds of 50 MPH or less, all CURB details as shown on this drawing may be used. For design speeds of 50 MPH or more, Type 1 CURB FACE shall be used.

Plan View: Steel Posts
Other base configuration acceptable.

Renew for existing configurations ranging from 8" to 10", including NLA. Required width in A

Zone B

For design speeds ranging from 0 to 50, the depth of required backfill is as shown in A.

Precautions

Detail of Post Placement in Solid Rock (W-BEAM)

Plan View: Wood Posts
Other base configuration acceptable.

Notes:

1. Posts and bolt sizes shall be determined in accordance with Section 502 of the Standard Specifications.

2. Soil depth shall be determined in accordance with Section 502 of the Standard Specifications.

3. Rock & Wood Post spacings shall be as shown.

4. The depth of required backfill is as shown in A or B, whichever is less.

5. Zone A & B as shown in Section 502 of the Standard Specifications.

ARKANSAS STATE HIGHWAY COMMISSION
GUARD RAIL DETAILS
STANDARD DRAWING GR-8A
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 2) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.

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 2) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.

LEGEND

- THREE BEAM GUARD RAIL TERMINAL
- GUARD RAIL TERMINAL, TYPE 2

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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING OR-9

DATE: 6/27/06

DRAWN BY: W. WOODS

REVISION: D-05
**ARKANSAS STATE HIGHWAY COMMISSION**

**GUARD RAIL DETAILS**

**GUARD RAIL (TYPE A)**

**NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.**

**NOTE: NORMAL SECTION TO**

**METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE**

**SECTION A-A**

**DETAILS OF WIDENING FOR GUARD RAIL**

**SECTION B-B**

**DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY**

**PIER PROTECTION**

**MEDIAN PROTECTION**

**FACE OF PIER**

**SIDE OF PIER**

**SIDE OF MEDIAN**

**FACE OF MEDIAN**

**PIER PROTECTION**

**SIDE OF PIER**

**SIDE OF MEDIAN**

**FACE OF MEDIAN**

**ARKANSAS STATE HIGHWAY COMMISSION**

**GUARD RAIL DETAILS**

**STANDARD DRAWING GR-9A**
THREE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POSTS 1-7

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

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

THREE BEAM RAIL WITH WOOD OR PLASTIC BLOCKOUT & WOOD POST 7

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

NOTES:

1. RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE, GRADE AND HORIZONTALLY IN CROSS SECTION.
2. RAIL POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 3 STRUCTURAL OR BETTER ELITE BAND (OR NO. 15) SOUTHERN PINE.

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A
PLAN - GUARD RAIL TERMINAL (TYPE II)

ELEVATION - GUARD RAIL TERMINAL (TYPE II)

NOTES:
- Sheets 1 and 2 of guard rail terminal
- Instructions for proper alignment provided in linear foot of the type of guard rail specified.

SECTION 1

DETAIL OF TERMINAL ANCHOR POST (TYPE II)

NOTES:
- Sheet members may be cut to 10/32nds at terminal anchor and the two assemblies positioned to proper alignment prior to placing concrete around #3 x 17 post and counterflange for stability.
GENERAL NOTES

1. MAILBOX SUPPORT SYSTEMS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE 
   MOUNTED IN CONCRETE IN ACCORDANCE WITH 
   STANDARDS DATED OF THE STANDARD SPECIFICATIONS.

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

3. MAILBOX, BRACKET & PLATFORM SHALL BE CALIBRATED 
   WITH A MAXIMUM OF 1/16" PLUS TOLERANCE(){

   WITH WOODEN POST, THE WOODEN SHIELD BRACKET & PLATFORM 
   SHALL BE A MINIMUM OF 1/16" PLUS TOLERANCE. 

   PLATFORM LENGTHS SHOWN ARE FOR WOODEN 
   PLATFORMS. USE TOLERANCES TO ORDER THE PLATFORMS 
   THAT ARE WOODEN.

4. THE PLATFORM AND PLATFORMS THAT ARE WOODEN 
   SHALL BE FITTED TO THE PLATFORMS 
   THAT ARE WOODEN. THE PLATFORMS 
   THAT ARE WOODEN SHOULD BE WOODEN OR METAL.

5. THE PLATFORMS AND PLATFORMS THAT ARE WOODEN 
   SHALL BE WOODEN OR METAL.

6. THE PLATFORMS AND PLATFORMS THAT ARE WOODEN 
   SHALL BE WOODEN OR METAL.

7. THE PLATFORMS AND PLATFORMS THAT ARE WOODEN 
   SHALL BE WOODEN OR METAL.

8. THE PLATFORMS AND PLATFORMS THAT ARE WOODEN 
   SHALL BE WOODEN OR METAL.

9. THE PLATFORMS AND PLATFORMS THAT ARE WOODEN 
   SHALL BE WOODEN OR METAL.

10. THE PLATFORMS AND PLATFORMS THAT ARE WOODEN 
    SHALL BE WOODEN OR METAL.

11. THE PLATFORMS AND PLATFORMS THAT ARE WOODEN 
    SHALL BE WOODEN OR METAL.
### Minimum Height of Fill "H" Over Circular R.C. Pipe Culverts

<table>
<thead>
<tr>
<th>Class of Pipe</th>
<th>Installation Type</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
<th>Class V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 or 2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Type 3</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

**NOTE:** One side of the fill "H" shall include a minimum of 1/2 of pipe diameter and/or base.

### Maximum Height of Fill "H" Over R.C. Arch & Horizontal Elliptical Pipe Culverts

<table>
<thead>
<tr>
<th>Class of Pipe</th>
<th>Installation Type</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
<th>Class V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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<tr>
<td>Type 2</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
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<td>Type 3</td>
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<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
</tbody>
</table>

**NOTE:** One side of the fill "H" shall include a minimum of 1/2 of pipe diameter and/or base.

---

### Construction Sequence

1. Place structural bedding material to grade. Do not compact.
2. Install pipe to shape, using bedding outside the wider third of the pipe.
3. Place and compact the haunch area up to the middle of the pipe.
4. Complete backfill according to subsection 506.03(f).

**NOTE:** Haunch 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 concrete pipe.

---

### Legend

- **Normal Inside Diameter of Pipe**
- **Minimum Height Over Pipe Feet**
- **Undesired Soil**

---

### Embankment and Trench Installations

1. **Material in the Haunch and Outer Structural Bedding:** Shall be compacted to 95% of the maximum density according to the type or class of material used.
2. **For Trenches:** Withwalls of natural soil, the density of the soil in the lower side of the trench shall not vary more than 2% of the maximum density according to the type or class of material used.
3. **For Embankments:** The material in the lower side zone shall be compacted to 95% of the maximum density according to the type or class of material used.

---

### General Notes

1. **Concrete Pipe Culvert Construction:** Shall conform to Arkansas State Highway and Transportation Department Standard Specifications. For highway construction, conformance to applicable U.S. Department of Transportation Specifications noted in the plans, section and subsection refer to the standard construction specifications.
2. **Concrete Pipe Design:** Shall conform to AASHTO LRFD Bridge Design Specifications, Fifth Edition.
3. **All Pipe:** Shall conform to section size, circular R.C., pipe. Culverts shall conform to AASHTO R.C., pipe. Culvert design shall conform to AASHTO M206 and to structural design.
4. **All pipe:** Shall be protected during construction by a cover sufficient to prevent damage from passage of equipment.
5. **The maximum trench width:** Shall be the inside diameter of the pipe plus 24 inches. The maximum allowable trench width shall be the minimum practicable for normal conditions.
6. **Multiple Pipe Culverts:** Shall be installed with a minimum clearance of 12 inches between centers of pipe above to 100% of pipe. For minimum clearance: Where flange and gasket are used, the minimum clearance between centers shall be at least 12 inches; where flange and gasket are not used, the minimum clearance shall be at least 18 inches.
7. **Mastic:** Material should be placed as directed by the engineer. At the ends of the culvert to prevent loss of structural bedding material. It is not used for structural bedding and/or backfill.
8. **Not more than one outlet pipe:** May be provided in concrete pipe. It may be provided and/or backfill, the number of outlets shall be at least 12 inches in diameter in two inches of diameter. Cutting or displacement of mastic will not be permitted except as directed by the engineer.
9. **When directed by the engineer:** Mastic or mastic-like material that is encountered at the bottom of the trench, the engineer shall determine the material to be excavated. The excavated trench shall be packed with selected pipe bedding. The quantity of material required shall be measured and paid for as selected pipe bedding.
10. **When the existing material:** Excavated for the pipe trench is determined by the engineer to be unsuitable for backfilling the pipe, the area excavated above the material. Unless otherwise directed by the engineer, the existing material may be used for selected pipe bedding.
**CORRUGATED STEEL PIPE (ROUND)**

<table>
<thead>
<tr>
<th>PIPE DIAMETER (INCHES)</th>
<th>MINIMUM COVER (IN FEET)</th>
<th>MAX. FILL HEIGHT &quot;H&quot; ABOVE TOP OF PIPE (FEET)</th>
<th>METAL THICKNESS (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>0.064</td>
<td>0.084</td>
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<tr>
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<tr>
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<tr>
<td>12</td>
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<td>0.209</td>
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<td>14</td>
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<td>0.185</td>
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<td>16</td>
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<td>0.222</td>
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</table>

**CORRUGATED ALUMINUM PIPE (ROUND)**

<table>
<thead>
<tr>
<th>PIPE DIAMETER (INCHES)</th>
<th>MINIMUM COVER (IN FEET)</th>
<th>MAX. FILL HEIGHT &quot;H&quot; ABOVE TOP OF PIPE (FEET)</th>
<th>METAL THICKNESS (INCHES)</th>
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<tr>
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</table>

**CORRUGATED METAL PIPE ARCHES**

<table>
<thead>
<tr>
<th>Equivalent Diameter (Inches)</th>
<th>Minimum Cover (Inches)</th>
<th>Total Height of Fill (&quot;H&quot;)</th>
<th>Minimum Height of Fill (&quot;H&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.084</td>
<td>0.080</td>
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**CONSTRUCTION SEQUENCE**

1. Place structural bedding material to grade, do not compact.
2. Compact pipe to grade, place structural bedding outside the middle third of the pipe.
3. Complete structural bedding installation by working from the bottom up, the quantity of material required shall not exceed 24 inches of the pipe of the same diameter.
4. The top of the pipe shall be placed at a height equal to the minimum fill required for the specified grade and composition.

**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 1:** Structural bedding, and structural corrugation in rounds.
- **MATERIAL REQUIREMENTS FOR TYPE 2:** Selected materials/grades SM-3, SM-2, or SM-1.

**EQUIVALENT METAL THICKNESS AND GAUGES**

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<td>0.260</td>
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**GENERAL NOTES**

1. Metal pipe culvert construction shall conform to Arkansas state highway and transportation department's standards and specifications for metal pipe culvert construction, with applicable exception to the special provisions, unless otherwise noted.
2. Structural backfill and bedding material shall be compacted to the maximum density according to the type of material used.
3. The installation type may not be used for corrugated steel or aluminum pipe round. Any pipe more than 12 inches in diameter shall be used for corrugated steel or aluminum pipe arches.

**DATE:** 

**REVISION:** 

**DATE FILED:**

---

**EMBANKMENT AND TRENCH INSTALLATIONS**

1. Structural backfill and bedding, and outer structural bedding material shall be compacted to the maximum density according to the type 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 arches with 20 x 1/2" corrugation.
4. Installation type 2 or 3 may be used for corrugated steel or aluminum pipe arches with 3 x 1 1/2" corrugation.

---
MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>CLEAR DISTANCE BETWEEN PIPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>1'-6&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>1'-0&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>12&quot;</td>
</tr>
</tbody>
</table>

MINIMUM COVER FOR CONSTRUCTION LOADS

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>MINIMUM COVER REQUIREMENTS FOR CONSTRUCTION LOADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>2'-6&quot;</td>
</tr>
</tbody>
</table>

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

<table>
<thead>
<tr>
<th>TRENCHNotFoundException</th>
<th>PIPE DIAMETER (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;H&quot; &gt; 2'-0&quot;</td>
<td>&quot;H&quot; x &quot;H&quot; + 2'-0&quot;</td>
</tr>
<tr>
<td>2'-0&quot; &lt; &quot;H&quot; &lt; 6'-0&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>&quot;H&quot; &gt; 6'-0&quot;</td>
<td>&quot;H&quot; x &quot;H&quot; + 5'-0&quot;</td>
</tr>
</tbody>
</table>

MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASHTO LIMITED TYPE 2 INSTALLATION SHALL CONFORM TO THE PC-1 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2010 EDITION.
2. PLASTIC PIPE Culvert shall conform to ASHTO LTD PIPE DESIGN SPECIFICATIONS, FIFTH EDITION.
3. THE MINIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PERFORM AND SAFELY PLACE AND COMPACT HARDWOODS AND OTHER BEDDING MATERIALS.
4. MUDDY MATERIAL SHOULD 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, NON-PLASTIC MATERIAL THAT IS DISCONTINUED AT THE BOTTOM OF THE EXCAVATED TRENCH SHALL NOT BE DISCONTINUED AT THE BOTTOM OF THE TRENCH. INSTEAD, STRUCTURAL BEDDING AND/OR BACKFILL MATERIALS SHALL BE PLACED WITHIN THE HYDRAULICALLY NORMAL LIMIT DESIGNATED ABOVE AND PAY FOR "SELECTED PIPE BEDDING".
6. WHEN THE EXISTING MATERIAL EXCEEDS THE PERVIOUS MATERIAL ALLOWANCE FOR PIPE INSTALLATION, THE EXISTING MATERIAL SHALL BE DISCONTINUED AND THE "SELECTED PIPE BEDDING" MATERIAL PAYMENT WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING".
7. FOR PIPES THAT ARE NOT SMOOTH ON THE OUTSIDE OR CORRODED OR PROFILE, MAL-SIZED, BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORROSION OR PROFILE VULNERABILITY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HIGH PIPE SHALT MEET THE REQUIREMENTS FOR 50% TIGHTNESS AS SPECIFIED IN ASHTO Section 26.4.4 AND "MINIMUM COVER REQUIREMENTS" SHALT BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRACE, DO NOT COMPACT.
2. INSTALL PIPE TO GRACE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED. THE LAYERS SHALL BE Brought TO THE ELEVATION AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, RECOMMENDATIONS OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.
INSTALLATION

**MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING**

**TYPE 2**

- **SELECTED MATERIALS**
  - **CLASS SM-3, SM-4, or SM-5**
  - Aggregate base course class 4, 5, B, or C may be used in place of selected material.
  - **SAND WILL NOT BE ALLOWED.**

- **STRUCTURAL BEDDING MATERIAL** shall have a maximum particle size of 12 inches.
  - Structural backfill, structural bedding, and structural bedding material shall be free of organic material, stones larger than 10 inches in greatest dimension, or frozen clumps.
  - Structural bedding and structural bedding material shall not be used for structural bedding or structural bedding material.

- **MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT “H”**

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>TRENCH WIDTH (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36&quot;</td>
<td>6'</td>
</tr>
<tr>
<td>30&quot;</td>
<td>5' 6&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>5'</td>
</tr>
<tr>
<td>20&quot;</td>
<td>4' 6&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>4' 3&quot;</td>
</tr>
<tr>
<td>15&quot;</td>
<td>3' 6&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>3' 0&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td>2' 6&quot;</td>
</tr>
</tbody>
</table>

- **MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>CLEAR DISTANCE (Feet)</th>
<th>COVER (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36&quot;</td>
<td>6' 0&quot;</td>
<td>4' 0&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>5' 6&quot;</td>
<td>3' 6&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>5' 0&quot;</td>
<td>3' 0&quot;</td>
</tr>
<tr>
<td>20&quot;</td>
<td>4' 6&quot;</td>
<td>2' 4&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>4' 0&quot;</td>
<td>2' 0&quot;</td>
</tr>
<tr>
<td>15&quot;</td>
<td>3' 6&quot;</td>
<td>1' 8&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>3' 0&quot;</td>
<td>1' 2&quot;</td>
</tr>
</tbody>
</table>

- **MULTIPLE INSTALLATION OF PVC PIPES**

- **GENERAL NOTES**
  - PVC pipe culvert design shall conform to AASHTO LRFD bridge design specifications, Fifth Edition.
  - The maximum allowable trench width shall be the minimum width plus a sufficient width to ensure working room to property and stability of the trench and compact bedding and other backfill material.
  - Incompatible material should be placed as directed by the engineer at the ends of the trench to prevent loss of structural bedding when permissible material is used for structural bedding and/or backfill.
  - When directed by the engineer, the area encased by the structural bedding shall be placed as structural bedding and compacted with selected pipe bedding. If the area encased by the structural bedding is not compacted with selected pipe bedding, the quantity of material required to backfill the encased area will be measured and paid for as "selected pipe bedding." In such cases, the engineer may authorize the use of "selected pipe bedding." If pipe installation may require the use of restraints or other approved methods in order to help maintain grade and alignment.

**CONSTRUCTION SEQUENCE**

1. Place structural bedding material to grade, do not compact.
2. Install pipe to grade.
3. Compact structural bedding outside the pipe in layers not exceeding 8". The layers shall be brought up evenly and simultaneously to the elevation of the minimum cover.
4. Pipe installation may require the use of restraints.

**TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS**

1. Structural backfill, embankment, and other structural bedding material shall be compacted to 90% of the maximum density according to the type or class of material used.

**MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL**

**NOTE:**
- 24" 6' 0" - 36" 6' 0"

**MINIMUM COVER VALUE:**
- "H" - MINIMUM COVER VALUE
- "H" - MAXIMUM COVER VALUE

**CONSTRUCTION NOTES (VVRTH)**

**SELECTED PIPE BEDDING** 
- BACKFILL AND STRUCTURAL BEDDING WHEN PREVIOUS MATERIAL IS NOT CONSIDERED ORGANIC, STONES OR OTHER APPROVED METHODS.

**MINIMUM DIAMETER**

- **B = 36" 6' 0"**
- **A = 30" 5' 6"**
- **O = 24" 5' 0"**
- **P = 20" 4' 6"**
- **R = 18" 4' 0"**
- **S = 15" 3' 6"**
- **T = 12" 3' 0"**

**MINIMUM BACKFILL DENSITY VALUES**

- **MINIMUM BACKFILL DENSITY**
  - 90% \(H + 0.6\) 
  - 90% \(H + 0.4\) 
  - 90% \(H + 0.2\) 

- **MINIMUM BACKFILL DENSITY**
  - 90% \(H + 0.6\) 
  - 90% \(H + 0.4\) 
  - 90% \(H + 0.2\) 

**LEGEND**

- \(H\) - FILL HEIGHT (FT.)
- \(O\) - OUTSIDE DIAMETER OF PIPE
- \(A\) - MAXIMUM MIN.
- \(M\) - MINIMUM
- \(S\) - STRUCTURAL BEDDING MATERIAL
- \(U\) - UNDISTURBED SOIL

**ARKANSAS STATE HIGHWAY COMMISSION**

**PLASTIC PIPE CULVERT**

**PVC F949**

**STANDARD DRAWING**

**PCP-2**
NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THE 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.

NOTES:
1. THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.
2. FOR ASPHALT OR CONCRETE PAVEMENT
3. FOR BITUMINOUS SURFACE TREATMENT

NOTES: WHEN INSTALLING PAVEMENT MARKERS ARE TYPICAL, THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE SAME REFLECTIVITY AS APPROVED FOR THE SIMILAR MARKERS MAY BE MADE BY REFERENCING TO THE QUALIFIED PRODUCTS LIST.

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

ARKANSAS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1
NOTES FOR PIPE UNDERDRAINS

1. Geotextile Fabric Shall Meet the Requirements of Section 525 for Type S. 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 525 of the Standard Specifications.

2. Non-Perforated Schedule 40 PVC Pipe Laterals with Outlet Protectors Shall Be Installed As Shown. Holes in Laterals Shall Be Measured and Paid For at "4" Pipe Underdrains." Underdrain Outlet Protectors Will Be Measured and Paid For By the Unit in Accordance with Section 6109 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 "A" White At the Outside Edge of the Curb, 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.


7. At Locations Where a Single Lateral Is Used, the Contractor Shall Have the Following Options: Install Outlet Protector as Shown on Standard Drawing P-1 and Grout the Unused Hole OR Install an Outlet Protector With a Single Hole.
### Tables and Method of Super-elevation for Two-Way Traffic

#### 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 added to or subtracted from the point of control.
3. Lengths for a round shall be multiples of 25 ft. or 50 ft. to permit simpler calculations.
4. Pavements wider than 2 lanes shall have additional transition lengths as follows:

<table>
<thead>
<tr>
<th>Lane Type</th>
<th>Inner Subgrade</th>
<th>Outside Subgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 lane</td>
<td>0.25 ft</td>
<td>0.5 ft</td>
</tr>
<tr>
<td>2 lanes</td>
<td>0.50 ft</td>
<td>1.0 ft</td>
</tr>
<tr>
<td>3 lanes</td>
<td>0.75 ft</td>
<td>1.5 ft</td>
</tr>
<tr>
<td>4 lanes</td>
<td>1.00 ft</td>
<td>2.0 ft</td>
</tr>
</tbody>
</table>

#### Super-elevation Table for Two-Way Traffic

<table>
<thead>
<tr>
<th>Degree of Curve</th>
<th>Application</th>
<th>Inside Subgrade</th>
<th>Outside Subgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>N.C.</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1°</td>
<td>R.C.</td>
<td>0.10</td>
<td>0.20</td>
</tr>
<tr>
<td>2°</td>
<td>N.C.</td>
<td>0.20</td>
<td>0.40</td>
</tr>
<tr>
<td>3°</td>
<td>R.C.</td>
<td>0.30</td>
<td>0.60</td>
</tr>
<tr>
<td>4°</td>
<td>N.C.</td>
<td>0.40</td>
<td>0.80</td>
</tr>
<tr>
<td>5°</td>
<td>R.C.</td>
<td>0.50</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Notes:**
- Normal Crown (N.C.) - Normal crown super-elevation at normal crown slope.
- Rate of Super-elevation (R.C.) - Rate of super-elevation at 20 ft. per ft.
- Length of Super-elevation Transition (L.T.) - Length of super-elevation transition at 10 ft.
- Elevation from Beginning of Super-elevation Transition (D.P.) - Elevation from beginning of super-elevation transition at 0 ft.
- Control Point (C.P.) - Control point at 0 ft.
- Rate of Super-elevation (R.C.) - Rate of super-elevation at 20 ft. per ft.
- Length of Super-elevation Transition (L.T.) - Length of super-elevation transition at 10 ft.

#### Diagrams
- **Standard Method When Super-elevation Revolves Around Inner Subgrade or Inner pavement Edge**
- **Standard Method When Super-elevation Revolves Around Center Line**

**Legend:**
- **A**: Normal Crown (N.C.)
- **B**: Reverse Crown (R.C.)
- **C**: Normal Crown (N.C.)
- **D**: Rate of Super-elevation (R.C.)
- **E**: Length of Super-elevation Transition (L.T.)

---

**Arkansas State Highway Commission**

**Tables and Method of Super-elevation for Two-Way Traffic**

**Standard Drawing SE-2**

**File Status:**

**Revision Date:**

**Scale:**

---

**Note:** Maintain normal crown on inside until super-elevation exceeds 2 ft.

---

**File Reference:**

**Drawing Number:**

---

**Revision:**

**Scale:**

---

**Note:** Maintain normal crown on inside until super-elevation exceeds 2 ft.
### Reinforcing Bar Table per Barrier Unit

<table>
<thead>
<tr>
<th>Location</th>
<th>Bar</th>
<th>Dia</th>
<th>Shank</th>
<th>Slotted Leads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>1</td>
<td>0.3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bottom</td>
<td>1</td>
<td>0.3</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### Notes

1. The contractor shall furnish the Precast Concrete Barrier units and must be responsible for the manufacture, placement, and removal of all the required units as directed by the Engineer. On the delivery trucks, the units shall be placed on flatbeds, and the units shall be delivered to the site in accordance with the specifications for traffic control.

2. The Contractor shall furnish a certification of the fabricated barriers to be used for the project. The certification shall be endorsed by the Engineer. The certification shall include the design details of the fabricated barriers and the requirements for their installation.

3. The Contractor shall furnish a copy of the Standard Traffic Control Plan for the project.

4. The Contractor shall furnish a copy of the Specifications for the project.

5. The Contractor shall furnish a copy of the Drawings for the project.

6. The Contractor shall furnish a copy of the Materials Specifications for the project.

7. The Contractor shall furnish a copy of the Work Orders for the project.

8. The Contractor shall furnish a copy of the Contract Documents for the project.

9. The Contractor shall furnish a copy of the Contract Drawings for the project.

### Diagrams

- **Connection Pin**: Diagram showing the connection between the barrier units.
- **End Panel**: Diagram showing the end panel of the barrier unit.
- **Tapered Slotted Hole**: Diagram showing the tapered slotted hole used for the barrier units.
- **Barreled Pin**: Diagram showing the barreled pin used for the barrier units.

### Details

- **Barrier Stabilization Detail**: Diagram showing the stabilization detail for the barrier units.
- **Roadway Section**: Diagram showing the roadway section for the barrier units.
- **Barrier Removal Slot Details**: Diagram showing the details for the barrier removal slots.

### Notes on Diagrams

1. The diagrams show the connection between the barrier units, the end panel, the tapered slotted hole, and the barreled pin used for the barrier units.

2. The barrier units are held together by the connection pin and the end panel.

3. The tapered slotted hole allows for the adjustment of the barrier units.

4. The barreled pin provides additional stability to the barrier units.

5. The diagrams also show the details for the barrier removal slots, which are used to remove the barrier units.

### Additional Information

- The project is for the Arkansas State Highway Commission and involves the construction of a temporary precast barrier for a highway.
- The drawings include details for the standard traffic controls, temporary precast barrier, and standard drawing.
- The project is referenced to theArkansas State Highway Commission's specifications and standards.
- The project involves the installation of precast concrete barriers for traffic control along the highway.

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*ARIZONA STATE HIGHWAY COMMISSION*  
*STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (TEMPORARY PRECAST BARRIER)*  
*STANDARD DRAWING TC-4*
**Offset Distance for Two Way Traffic Only**

<table>
<thead>
<tr>
<th>Offset Distance (see table)</th>
<th><strong>Offset Distance</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4 feet</td>
<td>12</td>
</tr>
<tr>
<td>5 feet</td>
<td>18</td>
</tr>
</tbody>
</table>

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

**General Notes**

When shown on the Plan, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-250 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."

**Special End Unit**

If offset distance is not attainable, then see "Barrier Placement With Attenuator" detail shown below.
3''MIN. WIDTH TO BE OR FLATTER
PLAN

NOTE: SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER, A MINIMUM LENGTH-TO-WIDTH RATIO OF 2:1 SHAL BE USED.

ROCK FILTER (6''MIN. THICKNESS)

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)

SLOPE DRAIN (E-12)

SEDIMENT BASIN WITH PIPE OUTLET (E-13)

DIVERSION DITCH (E-8)

NOTE: A T-SECTION SHALL BE USED AT THE INLET FOR TWO-DIRECTIONAL FLOW, AN ELBOW SHALL BE USED FOR ONE-DIRECTIONAL FLOW.

ANCHOR STAKES

COMPACTED SOIL DITCH BLOCK

E - 8

FLOU LINE

SECTION ON FLOW LINE

TOP OF BANK

EXIST FLOW LINE

PROFILE VIEW

SLOPE DRAIN (E-12)

TOP OF BANK

EXIST FLOW LINE

SECTION ON FLOW LINE

PROFILE VIEW

SEDIMENT BASIN (E-14)
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
I. PLACE PERIMETER CONTROLS (SILT FENCES, DIVERSION DITCHES, EROSION DITCHES, EMBANKMENT STABILIZATION)
II. PERFORM CLEARING AND GRUBBING OPERATION

EXCAVATION

EXCAVATION

EXISTING GROUND

EXISTING GROUND

PHASE 1 EXCAVATION

PHASE 2 EXCAVATION

PHASE 3 EXCAVATION

GENERAL NOTE

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

CONSTRUCTION SEQUENCE
I. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES
II. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
III. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
IV. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DREDGE DITCHES, SEDIMENT BASINS OR OTHER EROSION CONTROL DEVICES AS REQUIRED.
GENERAL NOTES

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

Where 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 so that the fence may be strung to the post in the depression without touching the ground. Such fences of such extreme irregularity that NBC grading of this extreme irregularity may strung to the depression and the gulles 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.

BARBED WIRE 5-3/4 O.D.
1-7/8" DIA TREATED POST OR TIMBER TO BE FREE SWINGING

EXTRA LENGTH POST TO BE USED AS DIRECTED BY THE ENGINEER

ALUMINUM POSTS

EXTRA LENGTH POST TO BE USED AS DIRECTED BY THE ENGINEER

ALUMINUM POSTS