INDEX OF SHEETS

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TITLE SHEET</td>
</tr>
<tr>
<td>2</td>
<td>INDEX OF SHEETS AND STANDARD DRAWINGS</td>
</tr>
<tr>
<td>3</td>
<td>GOVERNING SPECIFICATIONS AND GENERAL NOTES</td>
</tr>
<tr>
<td>4</td>
<td>TYPICAL SECTIONS OF IMPROVEMENT</td>
</tr>
<tr>
<td>5</td>
<td>SPECIAL DETAILS</td>
</tr>
<tr>
<td>7</td>
<td>TEMPORARY EROSION CONTROL DETAILS</td>
</tr>
<tr>
<td>14</td>
<td>MAINTENANCE OF TRAFFIC DETAILS</td>
</tr>
<tr>
<td>15</td>
<td>SUMMARY OF QUANTITIES AND REVISIONS</td>
</tr>
<tr>
<td>28</td>
<td>QUANTITIES</td>
</tr>
<tr>
<td>29</td>
<td>SURVEY CONTROL DETAILS</td>
</tr>
<tr>
<td>31</td>
<td>PLAN AND PROFILE SHEETS</td>
</tr>
<tr>
<td>42</td>
<td>CROSS SECTIONS</td>
</tr>
</tbody>
</table>

NOTE: CROSS SECTIONS NOT USUALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.

ROADWAY STANDARD DRAWINGS

<table>
<thead>
<tr>
<th>DRAW NO.</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDPL-1</td>
<td>CONCRETE DITCH PAVING</td>
</tr>
<tr>
<td>FES-1</td>
<td>FLARED END SECTION</td>
</tr>
<tr>
<td>FES-2</td>
<td>FLARED END SECTION</td>
</tr>
<tr>
<td>MB-1</td>
<td>MAILBOX DETAILS</td>
</tr>
<tr>
<td>PSC-1</td>
<td>PRECAST CONCRETE BOX CULVERTS</td>
</tr>
<tr>
<td>PCC-1</td>
<td>CONCRETE PIPE CULVERT FILL HEIGHTS &amp; BEDDING</td>
</tr>
<tr>
<td>PCP-1</td>
<td>METAL PIPE CULVERT FILL, HORIZONTAL &amp; VERTICAL</td>
</tr>
<tr>
<td>PCP-2</td>
<td>METAL PIPE CULVERT (HIGH DENSITY POLYETHYLENE)</td>
</tr>
<tr>
<td>PCP-3</td>
<td>METAL PIPE CULVERT (POLYPROPYLENE)</td>
</tr>
<tr>
<td>PUC-1</td>
<td>DETAILS OF PIPE UNDERGROUND</td>
</tr>
<tr>
<td>RCB-1</td>
<td>REINFORCED CONCRETE BOX CULVERT DETAILS</td>
</tr>
<tr>
<td>RCB-2</td>
<td>EXCAVATION PAY LIMITS, BACKFILL &amp; SOIL SODDING FOR BOX CULVERTS</td>
</tr>
<tr>
<td>RCB-3</td>
<td>METHOD OF EXTENDING EXISTING R.O. BOX CULVERTS</td>
</tr>
<tr>
<td>ST-1</td>
<td>STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION</td>
</tr>
<tr>
<td>ST-2</td>
<td>STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION</td>
</tr>
<tr>
<td>ST-3</td>
<td>STANDARD TRAFFIC CONTROLS FOR CONSTRUCTION</td>
</tr>
<tr>
<td>ST-4</td>
<td>STANDARD TRAFFIC CONTROLS FOR CONSTRUCTION</td>
</tr>
<tr>
<td>TEC-1</td>
<td>TEMPORARY EROSION CONTROL DEVICES</td>
</tr>
<tr>
<td>TEC-2</td>
<td>TEMPORARY EROSION CONTROL DEVICES</td>
</tr>
<tr>
<td>TEC-3</td>
<td>TEMPORARY EROSION CONTROL DEVICES</td>
</tr>
<tr>
<td>WP-1</td>
<td>WIRE FENCE WATER OUTS</td>
</tr>
<tr>
<td>WP-2</td>
<td>WIRE FENCE TYPE A &amp; D</td>
</tr>
<tr>
<td>WP-3</td>
<td>DETAILS OF STANDARD WALLS FOR REINFORCED CONCRETE BOX CULVERTS</td>
</tr>
<tr>
<td>R22CX-1</td>
<td>DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS</td>
</tr>
<tr>
<td>NUMBER</td>
<td>TITLE</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>FHWA-1273</td>
<td>REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS</td>
</tr>
<tr>
<td>FHWA-1273.1</td>
<td>SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS</td>
</tr>
<tr>
<td>FHWA-1273.2</td>
<td>SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)</td>
</tr>
<tr>
<td>FHWA-1273.3</td>
<td>SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND GUIDELINES</td>
</tr>
<tr>
<td>FHWA-1273.4</td>
<td>SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS</td>
</tr>
<tr>
<td>FHWA-1273.5</td>
<td>SUPPLEMENT - FOSTERS HOMESTEADS REQUIRED FOR FEDERAL-AID PROJECTS</td>
</tr>
<tr>
<td>FHWA-1273.6</td>
<td>SUPPLEMENT - WAGE RATE DETERMINATION</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.

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

3. ANY EQUIPMENT OR APPURTENANCES THAT INTERFERE WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF URBAN SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MALBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUOUS MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.

5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.

6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARNESS AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.

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

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

9. ALL PIPE OR PIPE AND ASPHALT PIPE PALM LAYERS (INCLUDING CONCRETE) SHALL BE PALM LAYERS (INCLUDING CONCRETE) SHALL BE PAID FOR BASED ON ITEM NO. 210.1 - UNCLASSIFIED EXCAVATION.

10. THE EXISTING ASPHALT PAVERMENT TO BE REMOVED FROM THE REMAINING PAVERMENT SHALL BE SEPARATED BY SAVING ALONG A NEAR LINE. AFTER SAVING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE TO THE ASPHALT PAVERMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSES.

11. THIS PROJECT IS COVERED UNDER SECTION 404 NARROWME 23 PERMIT REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS EDITION OF 2014, FOR PERMIT REQUIREMENTS.
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 SHOWING THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

SHOULDER WIDENING SECTION

100 MILL OUT TO 100 MILL OUT
LEG MILL OUT TO LEG MILL OUT

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

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

CONSTRUCTION LIMITS

DESIGN

EDGE OF LANE

EDGE OFshoulder

NO. 4 BARS AT 12"
HORIZONTAL SPACING

NO. 4 BARS AT 12"
VERTICAL SPACING

VARIES

TOP VIEW

SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

SPECIAL DETAILS

ASSALY CONCRETE MIX MIX SURFACE

ASPHALT CONCRETE MIX MIX BASE

AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH

NO. 6 BARS 8 12" HORIZONTAL SPACING

NO. 6 BARS 8 12" VERTICAL SPACING

VARIES

TOP VIEW

SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

SPECIAL DETAILS
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 GLEES, INTERSECTIONS STREETS OR ROADS, 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 LONGITUDINALLY 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 GAP, DRIVeways, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPES HAVE NOT BEEN CONSTRUCTED.

4. THE 1/2" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 6" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

DETAILED FOR GAP PATTERN RUMBLE STRIPE

NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER WITH FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.
TRAFFIC DRUMS AND SIGNS ON EXISTING SHOULDER
FOR EXTENDING/CONSTRUCTING PIPE CULVERTS LT. AND RT.

ADVANCE WARNING - SIDE ROADS
(ALL SIDE ROADS)

DRIVEWAY/TRAFFIC DRUM DETAIL

ADVANCE WARNING (ALL STAGES)

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

DETAIL OF OBJECT MARKERS
AT PRECAST CONCRETE BARRIER TURNBACKS

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1 CONSTRUCTION SEQUENCE:
INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE BEGINNING AND END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

FURNISH AND INSTALL R.C.C.B. AS SHOWN IN STAGE 1 FOR EXTENDING R.C. BOX CULVERT AT STA. 300+02 ON LT.

INSTALL CROSS DRAIN EXTENSIONS ON LEFT USING TRAFFIC DRUMS SPACED 20' O.C. AT EACH PIPE CULVERT.

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

NOTCH AND WIDEN FROM L.M. 0.07 - L.M. 2.17 AND FROM L.M. 2.67 - L.M. 2.87 ON THE LEFT LANE EDGE USING TRAFFIC DRUMS SPACED 50' O.C. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS AS PER DETAIL.

STAGE 2 CONSTRUCTION SEQUENCE:

MAINTAIN ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE BEGINNING AND END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

APPLY CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

INSTALL CROSS DRAIN EXTENSIONS ON RIGHT USING TRAFFIC DRUMS SPACED 20' O.C. AT EACH PIPE CULVERT.

NOTCH AND WIDEN FROM L.M. 0.07 - L.M. 2.17 AND FROM L.M. 2.67 - L.M. 2.87 ON THE RIGHT SHOULDER USING TRAFFIC DRUMS SPACED 50' O.C. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS AS PER DETAIL.

APPLY ULTRA THIN BONDED WEARING COURSE FROM L.M. 0.00 - L.M. 0.50, L.M. 1.00 - L.M. 2.50, AND L.M. 2.58 - L.M. 2.90 ON MAINLANES.

INSTALL RUMBLE STRIPES FROM L.M. 0.00 - L.M. 2.50 AND FROM L.M. 2.56 - L.M. 2.90 ON THE LEFT AND RIGHT SHOULDERS.

APPLY PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.
SITE 3 - STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

STA 300+00.00
BEGIN SITE 3 - CULVERT CONST.
LOG MILE 1.70

TRAFFIC DRUMS
SPACED 50' O.C.

STA 315
WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

STA 315
TRAFFIC DRUM
& EACH LOCATION

STA 318+05.17
END SITE 3 - CULVERT CONST.
LOG MILE 2.04

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.

WHITE SOLID
CONSTRUCTION PAVEMENT
MARK MND

TRAFFIC DRUM
& EACH LOCATION

TRAFFIC DRUMS
SPACED 50' O.C.
TYPICAL 2-LANE PERMANENT PAVEMENT MARKING LAYOUT
## Construction Pavement Markings and Permanent Pavement Markings

<table>
<thead>
<tr>
<th>Description</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>End of Job</th>
<th>Construction Pavement Markings</th>
<th>Raised Pavement Markers</th>
<th>Thermoplastic Pavement Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LIN. FT</td>
<td>LIN. FT</td>
<td></td>
<td></td>
<td></td>
<td>Type II</td>
</tr>
<tr>
<td>Construction pavement markings</td>
<td>61268</td>
<td>61248</td>
<td>32596</td>
<td></td>
<td></td>
<td>(Yellow/Yellow)</td>
</tr>
<tr>
<td>Raised pavement markers (yellow/yellow)</td>
<td>192</td>
<td>192</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermoplastic pavement marking (white/white)</td>
<td>29084</td>
<td>29084</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermoplastic pavement marking (white/yellow)</td>
<td>22520</td>
<td>22520</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermoplastic pavement marking (yellow/white)</td>
<td>24</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermoplastic pavement marking (arrows)</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>123168</td>
<td>1192</td>
<td>29084</td>
<td>22520</td>
<td>24</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note:** This is a high traffic volume road as defined in Section 060.03, Standard Specifications for Highway Construction. The project must be marked for passing zones prior to the placement of any final striping. Contact the maintenance division after the final lift of surface course has been placed to schedule the zoning of the project.

## Advance Warning Signs and Devices

<table>
<thead>
<tr>
<th>Sign Number</th>
<th>Description</th>
<th>Sign Size</th>
<th>Stage 1</th>
<th>Maximum Number Required</th>
<th>Total Signs Required</th>
<th>Vertical Panels</th>
<th>Furnishing &amp; Installing Precast Concrete Barrier</th>
<th>Temporary Impact Attenuation Barrier</th>
<th>Temp. Impact Attenuation (Repair)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-5D-1</td>
<td>Road Work 1000 FT</td>
<td>48&quot;x48&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W-5D-1</td>
<td>Road Work 1000 FT</td>
<td>48&quot;x48&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W-5D-1</td>
<td>Road Work 500 FT</td>
<td>48&quot;x48&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W-5D-1</td>
<td>Road Work 1000 FT</td>
<td>48&quot;x48&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W-5D-1</td>
<td>Road Work 1000 FT</td>
<td>48&quot;x48&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W-5D-1</td>
<td>Road Work 2000 FT</td>
<td>48&quot;x48&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W-5D-1</td>
<td>End Road Work</td>
<td>48&quot;x48&quot;</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>W-5D-1</td>
<td>End Road Work</td>
<td>48&quot;x48&quot;</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>O-2</td>
<td>Object Marker</td>
<td>12&quot;x12&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>O-3</td>
<td>Object Marker</td>
<td>12&quot;x12&quot;</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>O-3</td>
<td>Object Marker</td>
<td>12&quot;x12&quot;</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>R-1</td>
<td>Do Not Pass</td>
<td>24&quot;x24&quot;</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>R-1</td>
<td>Right Shoulder Closed</td>
<td>36&quot;x36&quot;</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

**Note:** This is a high traffic volume road as defined in Section 060.03, Standard Specifications for Highway Construction. The quantity of vertical panels provided in the contract is for one side of the roadway for 3 miles. This is the maximum quantity required to allow the contractor to notch one mile, backfill, and then notch another one mile section. Refer to Section 060.02 of the Standard Specifications for construction requirements.
<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>SEEDING</th>
<th>LIME</th>
<th>MULCH COVER</th>
<th>WATER</th>
<th>SECOND SEEDING APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT</td>
<td>CLEARING AND GRUBBING</td>
<td></td>
<td>2.15</td>
<td>4.25</td>
<td>2.18</td>
<td>192.6</td>
<td>2.14</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 1 - SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.13</td>
<td>4.20</td>
<td>2.18</td>
<td>194.2</td>
<td>2.13</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 2 - SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.10</td>
<td>4.20</td>
<td>2.18</td>
<td>194.2</td>
<td>2.10</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 3 - LOCATIONS OUTSIDE OF SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.39</td>
<td>4.60</td>
<td>2.20</td>
<td>224.2</td>
<td>2.39</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 4 - LOCATIONS OUTSIDE OF SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.40</td>
<td>4.40</td>
<td>2.20</td>
<td>224.2</td>
<td>2.40</td>
</tr>
<tr>
<td>ENTIRE PROJECT TO BE USED IF AND WHEN DIRECTED BY THE ENGINEER</td>
<td></td>
<td></td>
<td>2.15</td>
<td>4.26</td>
<td>2.18</td>
<td>192.4</td>
<td>2.14</td>
</tr>
</tbody>
</table>

**EROSION CONTROL**

**PERMANENT EROSION CONTROL**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>SEEDING</th>
<th>LIME</th>
<th>MULCH COVER</th>
<th>WATER</th>
<th>SECOND SEEDING APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT</td>
<td>CLEARING AND GRUBBING</td>
<td></td>
<td>2.15</td>
<td>4.25</td>
<td>2.18</td>
<td>192.6</td>
<td>2.14</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 1 - SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.13</td>
<td>4.20</td>
<td>2.18</td>
<td>194.2</td>
<td>2.13</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 2 - SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.10</td>
<td>4.20</td>
<td>2.18</td>
<td>194.2</td>
<td>2.10</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 3 - LOCATIONS OUTSIDE OF SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.39</td>
<td>4.60</td>
<td>2.20</td>
<td>224.2</td>
<td>2.39</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>STAGE 4 - LOCATIONS OUTSIDE OF SITES 1, 2, 3 &amp; 4</td>
<td></td>
<td>2.40</td>
<td>4.40</td>
<td>2.20</td>
<td>224.2</td>
<td>2.40</td>
</tr>
<tr>
<td>ENTIRE PROJECT TO BE USED IF AND WHEN DIRECTED BY THE ENGINEER</td>
<td></td>
<td></td>
<td>2.15</td>
<td>4.26</td>
<td>2.18</td>
<td>192.4</td>
<td>2.14</td>
</tr>
</tbody>
</table>

**REMOVAL AND DISPOSAL OF FENCE**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>FENCE LENGTH</th>
<th>FENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>200+00</td>
<td>30+90</td>
<td>SITE 2 - RT MAIN LANES</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>236+50</td>
<td>117+18</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>TOTAL</td>
<td>155</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONCRETE DITCH PAVING**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>&quot;W&quot;</th>
<th>CONCRETE PAVING TYPE</th>
<th>SOLID SODDING</th>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>304+12</td>
<td>00</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>1180</td>
<td>6.32</td>
<td>30</td>
<td>0.44</td>
<td>6.88</td>
</tr>
<tr>
<td>410+08</td>
<td>00</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>120</td>
<td>6.32</td>
<td>6.4</td>
<td>0.43</td>
<td>6.7</td>
</tr>
<tr>
<td>410+94</td>
<td>00</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>120</td>
<td>6.32</td>
<td>6.4</td>
<td>0.43</td>
<td>6.7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>155</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EROSION CONTROL MATTING**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>204+40</td>
<td>00</td>
<td>SITE 2 - RT MAIN LANES</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>204+42</td>
<td>00</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MAIL BOXES**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>MAILBOXES SUPPORTS</th>
<th>MAILBOXES</th>
</tr>
</thead>
<tbody>
<tr>
<td>200+00</td>
<td>204+82</td>
<td>SITE 2 - RT MAIN LANES</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>204+82</td>
<td>204+82</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FENCING**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>WIRE FENCE LENGTH</th>
<th>CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>200+00</td>
<td>204+82</td>
<td>SITE 2 - RT MAIN LANES</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>200+00</td>
<td>204+82</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CULVERT CLEAN OUT**

<table>
<thead>
<tr>
<th>3</th>
<th>L</th>
<th>MILLION</th>
<th>L</th>
<th>MILLION</th>
</tr>
</thead>
<tbody>
<tr>
<td>204+50</td>
<td>204+50</td>
<td>SITE 2 - RT MAIN LANES</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>410+94</td>
<td>410+94</td>
<td>SITE 2 - LT MAIN LANES</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**QUANTITIES**

<table>
<thead>
<tr>
<th>QUANTITIES</th>
<th>QUANTITIES</th>
<th>QUANTITIES</th>
<th>QUANTITIES</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>JANUARY 2020</td>
<td>17</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
## DREWAYS & TURNSOUTS - SITES 1, 2, 3 & 4

<table>
<thead>
<tr>
<th>STATION</th>
<th>SIDE</th>
<th>LOCATION</th>
<th>WIDTH</th>
<th>ACVM SURFACE COURSE (1/2&quot;) x 220 LBS. PER YD. (0.22 KPa)</th>
<th>AGGREGATE BASE COURSE (1.5&quot;) x 220 LBS. PER YD. (0.22 KPa)</th>
<th>SIDE DRAINS</th>
<th>STANDARD DRAWINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+76</td>
<td>LT</td>
<td>SITE 1: HVW. 227</td>
<td>16</td>
<td>83.86 6.04 25.76 20</td>
<td>PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100+90</td>
<td>RT</td>
<td>SITE 1: HVW. 227</td>
<td>16</td>
<td>98.60 7.67 25.99 20</td>
<td>PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>105+42</td>
<td>LT</td>
<td>SITE 1: HVW. 227</td>
<td>16</td>
<td>83.77 6.96 25.84 28</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>105+18</td>
<td>RT</td>
<td>SITE 1: HVW. 227</td>
<td>16</td>
<td>68.28 5.94 24.80 26</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>105+26</td>
<td>LT</td>
<td>SITE 1: HVW. 227</td>
<td>16</td>
<td>66.18 7.27 25.96 30</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110+90</td>
<td>LT</td>
<td>SITE 1: HVW. 227</td>
<td>16</td>
<td>90.20 6.94 25.40 28</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110+20</td>
<td>RT</td>
<td>SITE 1: HVW. 227</td>
<td>16</td>
<td>91.10 6.81 25.28 32</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>205+48</td>
<td>RT</td>
<td>SITE 2: HVW. 227</td>
<td>16</td>
<td>81.79 6.95 33.93 34</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>209+45</td>
<td>RT</td>
<td>SITE 2: HVW. 227</td>
<td>16</td>
<td>87.60 7.48 29.99 28</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>212+40</td>
<td>LT</td>
<td>SITE 2: HVW. 227</td>
<td>16</td>
<td>81.80 6.78 25.15 30</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>214+47</td>
<td>RT</td>
<td>SITE 2: HVW. 227</td>
<td>16</td>
<td>86.40 7.94 28.12 30</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>216+28</td>
<td>LT</td>
<td>SITE 2: HVW. 227</td>
<td>16</td>
<td>89.47 6.87 25.51 30</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>218+32</td>
<td>RT</td>
<td>SITE 2: HVW. 227</td>
<td>16</td>
<td>81.79 6.80 25.23 30</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>234+42</td>
<td>LT</td>
<td>SITE 3: HVW. 227</td>
<td>16</td>
<td>204.67 24.88 31.96 38</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>237+15</td>
<td>LT</td>
<td>SITE 3: HVW. 227</td>
<td>16</td>
<td>192.24 21.15 78.50 42</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>317+79</td>
<td>LT</td>
<td>SITE 3: HVW. 227</td>
<td>16</td>
<td>80.34 6.97 25.86 28</td>
<td>PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1, PCC-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTIRE PROJECT TEMPORARY DRAINS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100.00</td>
</tr>
</tbody>
</table>

**TOTALS:**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BASES OF ESTIMATE:</strong></td>
<td>ACVM SURFACE COURSE (1/2&quot;)</td>
<td>94.8% M&amp;R, AGG.</td>
<td>5.2% ASPHALT BINDER</td>
<td>MAXIMUM NUMBER OF CYLINDRATIONS = 115 FOR PG 64/22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBS</td>
<td>BASIS OF ESTIMATE:</td>
<td>ACVM SURFACE COURSE (1/2&quot;)</td>
<td>94.8% M&amp;R, AGG.</td>
<td>5.2% ASPHALT BINDER</td>
<td>MAXIMUM NUMBER OF CYLINDRATIONS = 115 FOR PG 64/22</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td>137879</td>
<td>173.35</td>
<td>743.47</td>
<td>224</td>
<td>156</td>
<td>50</td>
</tr>
</tbody>
</table>

**QUANTITIES**

---

## ULTRATHIN BONDED WEAR ING COURSE

<table>
<thead>
<tr>
<th>NO. OF LANE M</th>
<th>NO. OF LANE P</th>
<th>TOTAL LENGTH</th>
<th>AVG. WIDTH</th>
<th>ULTRATHIN BONDED WEARING COURSE (1/32&quot;)</th>
<th>TOTAL SQ. YD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0.55</td>
<td>294.00</td>
<td>20.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>1.08</td>
<td>2.17</td>
<td>387.60</td>
<td>20.00</td>
<td>1314.33</td>
<td></td>
</tr>
<tr>
<td>2.58</td>
<td>2.87</td>
<td>570.20</td>
<td>20.00</td>
<td>1551.80</td>
<td></td>
</tr>
<tr>
<td>2.87</td>
<td>2.87</td>
<td>492.20</td>
<td>20.00</td>
<td>1561.80</td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS:**

| 10269.60 | 2717.13 |

**EASE AND SURFACING**

<table>
<thead>
<tr>
<th>LOG MILE</th>
<th>LOG MILE</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>AGGREGATE BASE COURSE (CLASS 7)</th>
<th>ACVM SURFACE COURSE (1/2&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TON</td>
<td>FEET</td>
<td>AVG. WDL</td>
<td>ADT YD</td>
<td>POUND / SU ITL.</td>
<td>PG 64-22</td>
</tr>
<tr>
<td>MAIN LANE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00</td>
<td>2.17</td>
<td>MAIN LANE</td>
<td>11068.00</td>
<td>38.60</td>
<td>4268.68</td>
</tr>
<tr>
<td>2.37</td>
<td>2.99</td>
<td>MAIN LANE</td>
<td>1241.40</td>
<td>38.60</td>
<td>467.84</td>
</tr>
</tbody>
</table>

**TOTALS:**

| 4738.42 | 5687.73 | 651.49 |
## SUMMARY OF QUANTITIES

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>202</td>
<td>REMOVAL AND DISPOSAL OF FENCE</td>
<td>156</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>203</td>
<td>REMOVAL AND DISPOSAL OF PIPE CULVERTS</td>
<td>207</td>
<td>EACH</td>
</tr>
<tr>
<td>SS &amp; 210</td>
<td>UNCLASSIFIED EXCAVATION</td>
<td>11457</td>
<td>CU. YD.</td>
</tr>
<tr>
<td>SP &amp; 210</td>
<td>SOIL STABILIZATION</td>
<td>100</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 200</td>
<td>AGGREGATE BASE COURSE (CLASS 1)</td>
<td>5480</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 407</td>
<td>PACK COAT</td>
<td>381</td>
<td>GAL.</td>
</tr>
<tr>
<td>SS &amp; 407</td>
<td>MINERAL AGGREGATE IN ACDAH (SURFACE COURSE 1/2&quot;)</td>
<td>877</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 407</td>
<td>ASPHALT Binder (PG 64-22) in ACDAH (SURFACE COURSE 1/2&quot;)</td>
<td>47</td>
<td>TON</td>
</tr>
<tr>
<td>SP</td>
<td>ULTRA-TIN BONDED WEARING COURSE (65&quot;, TYPE 5)</td>
<td>27714</td>
<td>SQ. YD.</td>
</tr>
<tr>
<td>412</td>
<td>COLD MILLING ASPHALT PAVEMENT</td>
<td>358</td>
<td>SQ. YD.</td>
</tr>
<tr>
<td>SS &amp; 416</td>
<td>ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC</td>
<td>75</td>
<td>TON</td>
</tr>
<tr>
<td>SP, SS &amp; 416</td>
<td>ACMA PATCHING OF EXISTING ROADWAY</td>
<td>75</td>
<td>TON</td>
</tr>
<tr>
<td>801</td>
<td>MOBILIZATION</td>
<td>1.09</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>SS &amp; 501</td>
<td>MAINTENANCE OF TURF</td>
<td>1.75</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>SS &amp; 504</td>
<td>SIGNS</td>
<td>823</td>
<td>SQ. FT.</td>
</tr>
<tr>
<td>SS &amp; 504</td>
<td>TRAFFIC SIGNS</td>
<td>211</td>
<td>EACH</td>
</tr>
<tr>
<td>SS &amp; 504</td>
<td>FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER</td>
<td>69</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>604</td>
<td>CONSTRUCTION PAVEMENT MARKINGS</td>
<td>121268</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>SS &amp; 504</td>
<td>VERTICAL PANELS</td>
<td>211</td>
<td>EACH</td>
</tr>
<tr>
<td>SS &amp; 605</td>
<td>CONCRETE DITCH FACING (TYPE 6)</td>
<td>100</td>
<td>SQ. YD.</td>
</tr>
<tr>
<td>89</td>
<td>CULVERT CLEAN OUT</td>
<td>2</td>
<td>EACH</td>
</tr>
<tr>
<td>606</td>
<td>18&quot; REINFORCED CONCRETE PIPE CULVERTS (CLASS 3)</td>
<td>14</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>606</td>
<td>16&quot; REINFORCED CONCRETE PIPE CULVERTS (CLASS 3)</td>
<td>44</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>606</td>
<td>12&quot; REINFORCED CONCRETE PIPE CULVERTS (CLASS 3)</td>
<td>12</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>SS, SS &amp; 506</td>
<td>3&quot; SIDE DRAIN</td>
<td>224</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>SS, SS &amp; 506</td>
<td>4&quot; SIDE DRAIN</td>
<td>116</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>SS, SS &amp; 506</td>
<td>6&quot; SIDE DRAIN</td>
<td>62</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>SS &amp; 506</td>
<td>24&quot; X 20&quot; SIDE DRAIN</td>
<td>190</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>606</td>
<td>18&quot; FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>606</td>
<td>16&quot; FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>606</td>
<td>12&quot; FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>606</td>
<td>SELECTED PIPE BEDDING</td>
<td>66</td>
<td>CU. YD.</td>
</tr>
<tr>
<td>SS &amp; 611</td>
<td>4&quot; PIPE UNDERDRAIN</td>
<td>3750</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>SS &amp; 611</td>
<td>UNDERDRAIN OUTLET PROTECTORS</td>
<td>15</td>
<td>EACH</td>
</tr>
<tr>
<td>619</td>
<td>WIRE FENCE (TYPE C)</td>
<td>127</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>620</td>
<td>LAPI</td>
<td>22</td>
<td>TON</td>
</tr>
<tr>
<td>620</td>
<td>SEEDING</td>
<td>10.88</td>
<td>ACRE</td>
</tr>
<tr>
<td>SS &amp; 620</td>
<td>MAHOGANY COVER</td>
<td>53.63</td>
<td>ACRE</td>
</tr>
<tr>
<td>620</td>
<td>WATER</td>
<td>1984.1</td>
<td>GAL.</td>
</tr>
<tr>
<td>621</td>
<td>TEMPORARY SEEDING</td>
<td>42.75</td>
<td>ACRE</td>
</tr>
<tr>
<td>621</td>
<td>BATTLE</td>
<td>1280</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>621</td>
<td>BATTLE</td>
<td>3920</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>621</td>
<td>BATTLE</td>
<td>4090</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>621</td>
<td>SEEDING REMOVAL AND DISPOSAL</td>
<td>622</td>
<td>CU. YD.</td>
</tr>
<tr>
<td>621</td>
<td>ROAD DITCH CHECKS</td>
<td>1580</td>
<td>CU. YD.</td>
</tr>
<tr>
<td>621</td>
<td>SEEDING APPLICATION</td>
<td>10.88</td>
<td>ACRE</td>
</tr>
<tr>
<td>624</td>
<td>SOIL STABILIZATION</td>
<td>183</td>
<td>SQ. YD.</td>
</tr>
<tr>
<td>626</td>
<td>EROSION CONTROL MATING (CLASS 3)</td>
<td>73</td>
<td>SQ. YD.</td>
</tr>
<tr>
<td>635</td>
<td>ROADWAY CONSTRUCTION CONTROL</td>
<td>1.09</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>637</td>
<td>MAILBOXES</td>
<td>26</td>
<td>EACH</td>
</tr>
<tr>
<td>637</td>
<td>MAILBOX SUPPORTS (SINGLE)</td>
<td>51</td>
<td>EACH</td>
</tr>
<tr>
<td>637</td>
<td>MAILBOX SUPPORTS (DOUBLE)</td>
<td>3</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 542</td>
<td>RUBBLE STREPS IN ASPHALT SHOULDER</td>
<td>26256</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>719</td>
<td>THERMOPLASTIC PAVEMENT MARKING (WHITE 4&quot;)</td>
<td>29084</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>719</td>
<td>THERMOPLASTIC PAVEMENT MARKING (WHITE 1&quot;)</td>
<td>29084</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>719</td>
<td>THERMOPLASTIC PAVEMENT MARKING (YELLOW 4&quot;)</td>
<td>23529</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>719</td>
<td>THERMOPLASTIC PAVEMENT MARKING (ARROWS)</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>719</td>
<td>THERMOPLASTIC PAVEMENT MARKING (ARROWS)</td>
<td>4</td>
<td>EACH</td>
</tr>
<tr>
<td>721</td>
<td>RAISED MARKING MARKERS (TYPE 5)</td>
<td>192</td>
<td>EACH</td>
</tr>
<tr>
<td>SS &amp; 731</td>
<td>TEMPORARY IMPACT ATTENTION BARRIER</td>
<td>2</td>
<td>EACH</td>
</tr>
<tr>
<td>SS &amp; 731</td>
<td>TEMPORARY IMPACT ATTENTION BARRIER (REPAIR)</td>
<td>2</td>
<td>EACH</td>
</tr>
<tr>
<td>801</td>
<td>UNCLASSIFIED EXCAVATION FOR 5' STRUCTURES ROADWAY</td>
<td>18</td>
<td>CU. YD.</td>
</tr>
<tr>
<td>SS &amp; 802</td>
<td>CLASS 5 CONCRETE ROADWAY</td>
<td>17.62</td>
<td>CU. YD.</td>
</tr>
<tr>
<td>SS &amp; 802</td>
<td>REINFORCED STEEL ROADWAY (GRADE 82)</td>
<td>1395</td>
<td>FOUND</td>
</tr>
</tbody>
</table>

### REVISIONS

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISION</th>
<th>SHEET NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/05/2020</td>
<td>REPLACED &quot;ULTRA-TIN BONDED WEARING COURSE&quot; SPECIAL PROVISION.</td>
<td>20</td>
</tr>
</tbody>
</table>
**SURVEY CONTROL COORDINATES**

Project Name: 465260

**Coordinate System:** ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL.

**Units:** SURVEY FEET

<table>
<thead>
<tr>
<th>Point</th>
<th>Name</th>
<th>Northing</th>
<th>Easting</th>
<th>Elev.</th>
<th>Feature Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>465250</td>
<td>938679,796</td>
<td>469,305</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 3</td>
</tr>
<tr>
<td>2</td>
<td>465260</td>
<td>938706,796</td>
<td>470,601</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 4</td>
</tr>
<tr>
<td>3</td>
<td>465270</td>
<td>938732,796</td>
<td>471,901</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 5</td>
</tr>
<tr>
<td>4</td>
<td>465280</td>
<td>938759,796</td>
<td>473,207</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 6</td>
</tr>
<tr>
<td>5</td>
<td>465290</td>
<td>938786,796</td>
<td>474,507</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 7</td>
</tr>
<tr>
<td>6</td>
<td>465300</td>
<td>938812,796</td>
<td>475,803</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 8</td>
</tr>
<tr>
<td>7</td>
<td>465310</td>
<td>938839,796</td>
<td>477,103</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 9</td>
</tr>
<tr>
<td>8</td>
<td>465320</td>
<td>938866,796</td>
<td>478,401</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 10</td>
</tr>
<tr>
<td>9</td>
<td>465330</td>
<td>938893,796</td>
<td>479,701</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 11</td>
</tr>
<tr>
<td>10</td>
<td>465340</td>
<td>938911,796</td>
<td>480,999</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 12</td>
</tr>
<tr>
<td>11</td>
<td>465350</td>
<td>938936,796</td>
<td>482,299</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 13</td>
</tr>
<tr>
<td>12</td>
<td>465360</td>
<td>938963,796</td>
<td>483,593</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 14</td>
</tr>
<tr>
<td>13</td>
<td>465370</td>
<td>938989,796</td>
<td>484,887</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 15</td>
</tr>
<tr>
<td>14</td>
<td>465380</td>
<td>940013,796</td>
<td>486,183</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 16</td>
</tr>
<tr>
<td>15</td>
<td>465390</td>
<td>940039,796</td>
<td>487,483</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 17</td>
</tr>
<tr>
<td>16</td>
<td>465400</td>
<td>940065,796</td>
<td>488,781</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 18</td>
</tr>
<tr>
<td>17</td>
<td>465410</td>
<td>940090,796</td>
<td>490,081</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 19</td>
</tr>
<tr>
<td>18</td>
<td>465420</td>
<td>940115,796</td>
<td>491,381</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 20</td>
</tr>
<tr>
<td>19</td>
<td>465430</td>
<td>940140,796</td>
<td>492,681</td>
<td>0</td>
<td>STE AROBOT CAP STAKED PM 21</td>
</tr>
</tbody>
</table>

**SURVEY CONTROL DETAILS**
STA. 100+00 TO STA. 100+93

CONSTRUCT APPROACH = 15 CU. YDS.

LT. SIDE DRAIN
28" X 20" X 30' PIPE CULVERT
REMOVE AND INSTALL
24" X 21' PLASTIC PIPE CULVERT
STA. 100+76 IN PLACE

RT. SIDE DRAIN
28" X 20" X 28' PIPE CULVERT
REMOVE AND INSTALL
28" X 20" X 24' CM PIPE CULVERT
STA. 100+93 IN PLACE
STA. 106+00 TO STA. 107+58

SITE 1

STAGE 1

5.14% 6.76

20' EXIST. PAVEMENT

STAGE 2

3.18% 3.85 5.98

20' EXIST. PAVEMENT

CONSTRUCT APPROACH = 55 CU. YDS.

RT. SIDE DRAIN

24" X 36' PIPE CULVERT

REMOVE AND INSTALL

24" X 22' CM PIPE CULVERT

STA. 106+06 IN PLACE

1.70% 5:1 2:1

CONSTRUCT APPROACH = 55 CU. YDS.

LT. SIDE DRAIN

30" X 32' PIPE CULVERT

REMOVE AND INSTALL

30" X 22' CM PIPE CULVERT

STA. 107+58 IN PLACE
STA. 112+00 TO STA. 113+00

SITE 1

CONSTRUCT APPROACH = 15 CU. YDS.
RT. SIDE DRAIN 18" X 32' PIPE CULVERT
REMOVE AND INSTALL 18" X 25' R.C. PIPE CULVERT STA. 112+10 IN PLACE
STA. 113+59 TO STA. 113+81

4:1

APPROACH = 10 CU. YDS. ON RT.

STA. 113+59 CONSTRUCT

20' EXIST. PAVEMENT

20' EXIST. PAVEMENT

SITE 1

CROSS SECTIONS
STA. 203+00 TO STA. 204+50

F.L. INLET = 523.22
F.L. OUTLET = 522.56

24" FES = 2 EA.
24" R.C. PIPE = 8 LIN. FT.
WITH FES LT. & RT. (CLASS III) (TYPE 3 BEDDING)
TO A COMPLETED LENGTH OF 42'
EXTEND R.C. PIPE 4' LT. AND 4' RT.
RETAIN AND REMOVE 4' LT. AND RT.
24" X 44' R.C. PIPE CULVERT
STA. 204+50 IN PLACE

F.L. INLET LT. (EXIST.) = 523.21
F.L. OUTLET RT. (EXIST.) = 522.56
STA. 205+00 TO STA. 208+00

0.020'/4:1
0.040'/0.032'/0.037'/0.040'/4:1
0.020'/4:1
0.040'/0.023'/0.019'/0.040'/4:1
0.012'/4:1
0.040'/0.010'/0.005'/0.040'/4:1
0.062'/4:1
0.040'/0.036'/0.011'/9:1

CONSTRUCT APPROACH = 10 CU. YDS.
RT. SIDE DRAIN
21" X 15" X 34' ARCH PIPE CULVERT
REMOVE AND INSTALL
18" X 31' PLASTIC PIPE CULVERT
STA. 205+98 IN PLACE

20' EXIST. PAVEMENT
STA. 209+00 TO STA. 210+00

- Construct Approach = 15 CU. YDS.
- RT. Side Drain
- 28" X 20" X 28' PIPE CULVERT
- Remove and Install 24" X 21' CM PIPE CULVERT
- STA. 209+45 In Place

- 0.77%
STA. 216+28 TO STA. 217+00

**SITE 2**

**CONSTRUCT APPROACH = 40 CU. YDS.**
**RT. SIDE DRAIN**
**24" X 30' PIPE CULVERT**
**REMOVE AND INSTALL**
**24" X 21' R.C. PIPE CULVERT**
**STA. 216+28 IN PLACE**

**F.L. OUTLET=532.09**
**F.L. INLET=535.43**

**24" FES = 2 EA.**
**24" R.C. PIPE = 10 LINEFT.**
**WITH FES LT. & RT.**
**(CLASS III) (TYPE 3 BEDDING)**
**TO A COMPLETED LENGTH OF 54'**
**EXTEND R.C. PIPE 6' LT. AND 4' RT.**
**RETAIN AND REMOVE 4' LT. AND RT.**
**24" X 52' R.C. PIPE CULVERT**
**STA. 216+20 IN PLACE**

**F.L. INLET RT. (EXIST.)=535.23**
**F.L. OUTLET LT. (EXIST.)=532.46**

**20' EXIST. PAVEMENT**

**CROSS SECTIONS**

**STAGE 1**
**STAGE 2**

<table>
<thead>
<tr>
<th>STA.</th>
<th>Cut Area</th>
<th>Fill Area</th>
<th>Cut Volume</th>
<th>Fill Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>216+28</td>
<td>7 SQ. FT</td>
<td>0 SQ. FT</td>
<td>3 CU. YD</td>
<td>1 CU. YD</td>
</tr>
<tr>
<td>216+90</td>
<td>11 SQ. FT</td>
<td>7 SQ. FT</td>
<td>22 CU. YD</td>
<td>8 CU. YD</td>
</tr>
<tr>
<td>217+00</td>
<td>8 SQ. FT</td>
<td>0 SQ. FT</td>
<td>9 CU. YD</td>
<td>0 CU. YD</td>
</tr>
</tbody>
</table>

**JOB NO.**
**FED.AID PROJ.NO.**
**FED.RD.**
**DIST.NO.**

<table>
<thead>
<tr>
<th>061620</th>
<th>R 061620.DGN</th>
<th>6/23/2020</th>
<th>061620.CROSS SECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>---------</td>
<td>---------------</td>
<td>----------</td>
<td>-----------------------</td>
</tr>
</tbody>
</table>
CROSS SECTION STA. 304+00 TO STA. 304+90

F.L. INLET LT. (EXIST.) = 486.74

STA. 304+82 IN PLACE

20' EXIST. PAVEMENT

CONSTRUCT APPROACH = 70 CU. YDS.
RT. SIDE DRAIN
18" X 38' PIPE CULVERT
REMOVE AND INSTALL
18" X 41' R.C. PIPE CULVERT

ELEV. = 487.95

ELEV. = 488.48

ELEV. = 490.90

-2.95% RT. DITCH GRADE

-6.64% RT. DITCH GRADE

-2.95% RT. DITCH GRADE
STA. 316+00 TO STA. 317+81

3 :1
4 :1
0.040'/'
0.005'/'
0.034'/'

3 :1
4 :1
0.040'/'
0.020'/'
0.007'/'
0.023'/'

20' EXIST. PAVEMENT

CONSTRUCT APPROACH = 45 CU. YDS.
LT. SIDE DRAIN
24" X 28' PIPE CULVERT
REMOVE AND INSTALL
24" X 21' R.C. PIPE CULVERT
STA. 317+79 IN PLACE

7.43%
STA. 318+00 TO STA. 318+05

<table>
<thead>
<tr>
<th>CUT AREA 11 SQ. FT</th>
<th>CUT AREA 12 SQ. FT</th>
<th>FILL AREA 0 SQ. FT</th>
<th>FILL AREA 0 SQ. FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>END SITE 3 - CULVERT CONSTRUCTION</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE 1</th>
<th>STAGE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUT VOLUME 2 CU.YD</td>
<td>CUT VOLUME 3 CU.YD</td>
</tr>
<tr>
<td>FILL VOLUME 0 CU.YD</td>
<td>FILL VOLUME 0 CU.YD</td>
</tr>
</tbody>
</table>
SITE 4

STA. 404+00 TO STA. 405+28

- F.L. OUTLET=453.60
- F.L. INLET=454.22

18" FES = 2 EA.
18" R.C. PIPE = 10 LIN. FT.
WITH FES LT. & RT. (CLASS III) (TYPE 3 BEDDING)
TO A COMPLETED LENGTH OF 44'
EXTEND R.C. PIPE 6' LT. AND 4' RT.
RETAIN AND REMOVE 4' LT. AND RT.
18" X 42' R.C. PIPE CULVERT
STA. 405+28 IN PLACE

- F.L. INLET RT. (EXIST.)=454.22
- F.L. OUTLET LT. (EXIST.)=453.51
STA. 409+00 TO STA. 410+88

SITE 4

ELEV. = 461.43
F.L. INLET = 462.30
F.L. OUTLET = 461.03

20' EXIST. PAVEMENT

18" X 47' R.C. PIPE CULVERT STA. 410+88 IN PLACE

ELEV. = 462.42
F.L. INLET RT. (EXIST.) = 461.20

18" FES = 2 EA.
18" R.C. PIPE = 4 LIN. FT.
WITH FES LT. AND RT. (CLASS III) (TYPE 3 BEDDING)
TO A COMPLETED LENGTH OF 30'
EXTEND R.C. PIPE 2' LT. AND RT.
RETAIN AND REMOVE 6' LT. AND 16' RT.

-0.45% LT. DITCH GRADE
12.50% LT. DITCH GRADE
-0.45% LT. DITCH GRADE
6.33% RT. DITCH GRADE

-0.45% LT. DITCH GRADE
12.50% LT. DITCH GRADE
-0.45% LT. DITCH GRADE
6.33% RT. DITCH GRADE

STA. 409+00 BEGIN
STA. 410+88 BEGIN

STA. 409+00 END
STA. 410+88 END

ELEV. = 461.43
ELEV. = 462.30
GENERAL NOTES:

1. The full width of each section shall be poured monolithically.
2. Toe walls to be constructed full width at each end of ditch paving and poured monolithically.
3. Solid sod along ditch paving to be placed within 14 days of ditch paving construction.
4. 1'-0" transverse expansion joints shall be placed in concrete ditch paving at 10'-0" intervals. The space shall be filled with approved joint filler complying with AASHTO M213.

ENERGY DISSIPATORS

- Number of elements per row varies with width of paving specified.
- Energy dissipators to be used for the entire length of ditch when slope of ditch paving exceeds 7%. The dissipators will not be paid for directly, but shall be considered to be included in the price bid for concrete ditch paving.

ARMS 2050-12-17

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1
### General Notes
1. Metal pipe culvert construction shall conform to the Missouri Department of Transportation specifications for functional and visual appearance, with all metal exposed to the weather being painted a uniform color.
2. All metal pipe culverts shall conform to the Missouri Department of Transportation specifications for functional and visual appearance.
3. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
4. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
5. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
6. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
7. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
8. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
9. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
10. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
11. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
12. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
13. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
14. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
15. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
16. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
17. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
18. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
19. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
20. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
21. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
22. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
23. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
24. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
25. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
26. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
27. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
28. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
29. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
30. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
31. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
32. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
33. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
34. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
35. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
36. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
37. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
38. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
39. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
40. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
41. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
42. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
43. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
44. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
45. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
46. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
47. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
48. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
49. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
50. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
51. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
52. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
53. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
54. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
55. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
56. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
57. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
58. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
59. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.
60. All metal pipe culverts shall be fabricated with a minimum clearance of 24 inches from any existing water main or other underground utility lines.

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

### Installation Requirements
- **Material Requirements:**
  - **Type 1:** Uncoated steel or aluminum pipe with a minimum thickness of 0.105 inches.
  - **Type 2:** Coated steel or aluminum pipe with a minimum thickness of 0.135 inches.

### Equivalence of Metal Thicknesses and Gauges

### Structural Bedding Requirements

---

### Embankment and Trench Installations

- **Construction:**
  - **Type 1:** Corrugated steel pipe
  - **Type 2:** Corrugated aluminum pipe

- **Dimensions:**
  - **Diameter:** 16 to 30 inches
  - **Height:** 0.5 to 3 feet

- **Materials:**
  - Corrugated steel pipe
  - Corrugated aluminum pipe

- **Installation:**
  - **Type 1:** Riveted or helical lock-seam construction
  - **Type 2:** Structural bedding

### Fill Heights & Bedding

- **Minimum Height of Fill:**
  - 15 feet above ground level

- **Maximum Height of Fill:**
  - 20 feet above ground level

- **Thickness:**
  - 0.060 inches

- **Gauge:**
  - 0.064 inches

---

### Standard Drawings

- **PCM-1**
- **S-1**

---

### Acknowledgments

- **Arkansas State Highway Commission**
- **Standard Drawings PCM-1**
**GENERAL NOTES**

1. PIPE SHALL CONFORM TO ASHTECH HIGH DENSITY POLYETHYLENE PIPES AND OTHER APPROVED MATERIALS SHALL CONFORM TO THE ASHTECH STANDARD SPECIFICATIONS FOR HIGH DENSITY POLYETHYLENE PIPES AND PLASTIC PIPE CULVERTS.

2. INSTALL PIPE TO GRADE.

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

4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

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

- **Type 1 EMBANKMENT AND TRENCH INSTALLATIONS**

- **Type 2 EMBANKMENT AND TRENCH INSTALLATIONS**

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

**MINIMUM COVER FOR CONSTRUCTION LOADS**

**PAVEMENT AREA**

**3'-0"**

**STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION SHALL BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.**

**FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 INCH.**

**SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)**

**AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)**

**SELECTED PIPE BEDDING**

**PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.**

**JOINTS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.**

**JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.**

**WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH BORROW MATERIAL OR SELECTED PIPE BACKFILL.**

**WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE, THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."**

**PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND STRUCTURAL BACKFILL.**

**MATERIAL REQUIREMENTS FOR SELECTED PIPE BEDDING AND SELECTED PIPE BACKFILL.**

**MINIMUM COVER VALUES, "H"**

**MAXIMUM FILL HEIGHT = 15'-0"**

**MINIMUM COVER (FEET) FOR INDICATED CONSTRUCTION LOADS**

**MINIMUM COVER FOR INDICATED CONSTRUCTION LOADS**

**MINIMUM TRENCH WIDTH**

**MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS**

**TRENCH WIDTH**

**NOTE:**

- **2"**

- **2'-6"**

- **3'-0"**

- **3'-6"**

- **4'-6"**

- **42" OR GREATER**

- **36" OR LESS**

- **24"**

- **30"**

- **2'-0"**

- **48"**

- **5'-0"**

- **5'-6"**

- **6'-0"**

- **6'-0"**

- **7'-0"**

- **7'-6"**

- **8'-0"**

- **9'-0"**

- **10'-0"**

- **10'-6"**

- **12'-0"**

- **H = FILL HEIGHT (FT.)**

- **D = OUTSIDE DIAMETER OF PIPE**

- **TRENCH WIDTH**

- **MINIMUM TRENCH WIDTH**

- **EMBANKMENT**

- **STRUCTURAL BACKFILL**

- **OUTER STRUCTURAL BEDDING**

- **MIDDLE STRUCTURAL BEDDING**

- **HAUNCH**

- **UNCOMPACTED LOOSELY PLACED**

- **SELECTED PIPE BEDDING**

- **UNDERDUGED SOIL**

- **PLASTIC PIPE CULVERT**

- **HIGH DENSITY POLYETHYLENE**

- **ARKANSAS STATE HIGHWAY COMMISSION**

- **STANDARD DRAWING PCP-1**
**General Notes**

1. PVC pipes shall conform to ASTM F949, Cell Class 12454. Installation shall conform to job specific provisions.
2. Plastic pipe culvert design shall conform to standard specifications for highway construction for selection of material, design, and installation.

**Installation**

- **Type 2:** Material requirements for structural bedding and structural grading shall be determined based on fill height (H).

**Multiple Installation of PVC Pipes**

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Cover (Ft.)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot;</td>
<td>4'-6&quot;</td>
<td></td>
</tr>
<tr>
<td>24&quot;</td>
<td>5'-0&quot;</td>
<td></td>
</tr>
<tr>
<td>30&quot;</td>
<td>5'-6&quot;</td>
<td></td>
</tr>
<tr>
<td>36&quot;</td>
<td>6'-0&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Minimum Trench Width Based on Fill Height (H)**

<table>
<thead>
<tr>
<th>Trench Width</th>
<th>Fill Height (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'-0&quot;</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>3'-6&quot;</td>
</tr>
</tbody>
</table>

**Minimum Cover for Construction Loads**

<table>
<thead>
<tr>
<th>Type</th>
<th>Min. Cover (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>2</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>3</td>
<td>3'-6&quot;</td>
</tr>
</tbody>
</table>

**Maximum Fill Height Based on Structural Backfill**

<table>
<thead>
<tr>
<th>Maximum Cover (Ft.)</th>
<th>Fill Height (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>2</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>3</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>4</td>
<td>3'-6&quot;</td>
</tr>
</tbody>
</table>

**Construction Sequence**

1. Place structural bedding material to grade, do not compact.
2. Install pipe to grade.
3. Compact structural bedding outside the middle third of the pipe.
4. Install selected pipe bedding, if specified by engineer.
5. Install pipe bedding in order to help maintain grade and alignment.

**Legend**

- D = Uncompacted
- F = Structural bedding
- R = Unwashed
- L = Outer structural bedding
- M = Structural backfill
- * = Selected pipe bedding

**Type 2 Embankment and Trench Installations**

- Structural bedding, embankment, and other structural bedding materials shall be compacted to fill of the maximum height according to the type of material and area.
- Minimum cover shall include a minimum 12" of reinforced concrete, reinforcement, soil, and/or other approved materials in order to help maintain grade and alignment.

**Notes**

- [Note](#) - General Notes & Minimum Cover Notes Deleted

**Date**

- [Date] - December 2010
### General Notes

1. Polypropylene pipe installation shall conform to the requirements of the manufacturer's recommendations and the AASHTO LRFD Bridge Construction Specifications.

2. The installation of Polypropylene pipe shall be conducted in accordance with the manufacturer's specifications and the AASHTO LRFD Bridge Construction Specifications.

3. Structural backfill shall be compacted to a minimum 12'' of pavement and/or base.

4. Min. cover shall be measured from the top of the pipe to the top of the pavement.

5. For installations requiring backfill, the minimum cover shall be based on fill height (H).

6. Polypropylene pipes of diameters other than shown will not be allowed.

7. Polypropylene pipes shall be installed in accordance with the manufacturer's recommendations.

8. Polypropylene pipes shall be installed in accordance with the manufacturer's specifications.

9. Soil types other than those shown will not be allowed.

### Table: Minimum Trench Width Based on Fill Height (H)

<table>
<thead>
<tr>
<th>H</th>
<th>Trench Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'</td>
<td>2'-2&quot;</td>
</tr>
<tr>
<td>3'</td>
<td>3'-4&quot;</td>
</tr>
<tr>
<td>4'</td>
<td>4'-10&quot;</td>
</tr>
<tr>
<td>5'</td>
<td>5'-0&quot;</td>
</tr>
<tr>
<td>6'</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>7'</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>8'</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>9'</td>
<td>9'-0&quot;</td>
</tr>
<tr>
<td>10'</td>
<td>10'-0&quot;</td>
</tr>
<tr>
<td>11'</td>
<td>11'-0&quot;</td>
</tr>
<tr>
<td>12'</td>
<td>12'-0&quot;</td>
</tr>
<tr>
<td>13'</td>
<td>13'-0&quot;</td>
</tr>
<tr>
<td>14'</td>
<td>14'-0&quot;</td>
</tr>
<tr>
<td>15'</td>
<td>15'-0&quot;</td>
</tr>
<tr>
<td>16'</td>
<td>16'-0&quot;</td>
</tr>
<tr>
<td>17'</td>
<td>17'-0&quot;</td>
</tr>
<tr>
<td>18'</td>
<td>18'-0&quot;</td>
</tr>
<tr>
<td>19'</td>
<td>19'-0&quot;</td>
</tr>
<tr>
<td>20'</td>
<td>20'-0&quot;</td>
</tr>
<tr>
<td>21'</td>
<td>21'-0&quot;</td>
</tr>
<tr>
<td>22'</td>
<td>22'-0&quot;</td>
</tr>
<tr>
<td>23'</td>
<td>23'-0&quot;</td>
</tr>
<tr>
<td>24'</td>
<td>24'-0&quot;</td>
</tr>
<tr>
<td>25'</td>
<td>25'-0&quot;</td>
</tr>
<tr>
<td>26'</td>
<td>26'-0&quot;</td>
</tr>
<tr>
<td>27'</td>
<td>27'-0&quot;</td>
</tr>
<tr>
<td>28'</td>
<td>28'-0&quot;</td>
</tr>
<tr>
<td>29'</td>
<td>29'-0&quot;</td>
</tr>
<tr>
<td>30'</td>
<td>30'-0&quot;</td>
</tr>
<tr>
<td>31'</td>
<td>31'-0&quot;</td>
</tr>
<tr>
<td>32'</td>
<td>32'-0&quot;</td>
</tr>
<tr>
<td>33'</td>
<td>33'-0&quot;</td>
</tr>
<tr>
<td>34'</td>
<td>34'-0&quot;</td>
</tr>
<tr>
<td>35'</td>
<td>35'-0&quot;</td>
</tr>
<tr>
<td>36'</td>
<td>36'-0&quot;</td>
</tr>
<tr>
<td>37'</td>
<td>37'-0&quot;</td>
</tr>
<tr>
<td>38'</td>
<td>38'-0&quot;</td>
</tr>
<tr>
<td>39'</td>
<td>39'-0&quot;</td>
</tr>
<tr>
<td>40'</td>
<td>40'-0&quot;</td>
</tr>
<tr>
<td>41'</td>
<td>41'-0&quot;</td>
</tr>
<tr>
<td>42'</td>
<td>42'-0&quot;</td>
</tr>
<tr>
<td>43'</td>
<td>43'-0&quot;</td>
</tr>
<tr>
<td>44'</td>
<td>44'-0&quot;</td>
</tr>
<tr>
<td>45'</td>
<td>45'-0&quot;</td>
</tr>
<tr>
<td>46'</td>
<td>46'-0&quot;</td>
</tr>
<tr>
<td>47'</td>
<td>47'-0&quot;</td>
</tr>
<tr>
<td>48'</td>
<td>48'-0&quot;</td>
</tr>
<tr>
<td>49'</td>
<td>49'-0&quot;</td>
</tr>
<tr>
<td>50'</td>
<td>50'-0&quot;</td>
</tr>
</tbody>
</table>

### Table: Minimum Cover for Construction Loads

<table>
<thead>
<tr>
<th>Clear Distance</th>
<th>Minimum Cover (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>3'</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>4'</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>5'</td>
<td>5'-0&quot;</td>
</tr>
<tr>
<td>6'</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>7'</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>8'</td>
<td>8'-0&quot;</td>
</tr>
</tbody>
</table>

### Diagram: Elevation and Trench Installations

- **Legend:**
  - N = Fill Material
  - L = Structural Backfill Material
  - R = Structural Bedding Material
  - U = Unloadable Soil

- **Notes:**
  - E = Embankment
  - T = Trench

- **Construction Sequence:**
  - 1. Place Structural Bedding Material to Grade. Do not compact.
  - 2. Install pipe to Grade.
  - 3. Compact structural bedding outside the middle third of the pipe.
  - 4. The structural backfill shall be placed and compacted in accordance with the manufacturer's recommendations.
  - 5. Pipe installation may require the use of restraints, weight or other approved methods in order to maintain grade and alignment.

### Arkansas State Highway Commission

**PLASTIC PIPE CULVERT (POLYPROPYLENE)**

**Standard Drawing PCP-3**
**Notes for Pipe Underdrains**

1. Geotextile Fabric shall meet the requirements of Section 625, Type 1.
2. Payment for geotextile fabric and granular filter material shall be included in the price bid per lin. ft. for 4" pipe underdrains.
3. Existing 4" pipe underdrains may be connected to proposed drop inlets or extended where required.
4. The location of all underdrains shall be marked with 4" x 12" permanent pavement marking tape (Type III white) at the outside edge of any subgrade; added later as required.
5. Payment for the removal of underdrain outlet protectors shall be included in the price bid per each for "4" pipe underdrains. Underdrain outlet protectors will be measured and paid for by the lin. ft. in accordance with Section 611 of the Standard Specifications.

**Details of Pipe Underdrain**

- Granular cover shall meet the requirements of Section 625 for Type 1.
- Payment for granular filter material shall be included in the price bid per lin. ft. for 4" pipe underdrains.
- Existing 4" pipe underdrains may be connected to proposed drop inlets or extended where required.

**Underdrain Outlet Protectors**

- 4" pipe underdrain outlet protectors shall be installed as shown on plans.
- 4" pipe underdrain outlet protectors shall be measured and paid for by the lin. ft. in accordance with Section 611 of the Standard Specifications.

**粒状物の埋め込み**

- ゲオテクシールバットは、625号、タイプ1の要件に従って作成されます。
- ゲオテクシールバットと粒状フィルターの料金は、4インチパイプの下水路の価格に含まれます。
- 存在する4インチパイプの下水路は、提案されたドロップインレットに接続されたり、延长されたりする場合があります。
- 下水路の位置は、4インチ x 12インチの永久的な道路マーキングテープ（タイプIIIホワイト）で示されます。

**パイプ下水路の詳細**

- 粒状物カバーは、625号、タイプ1の要件に従って作成されます。
- 粒状フィルターマテリアルの料金は、4インチパイプの下水路の価格に含まれます。
- 存在する4インチパイプの下水路は、提案されたドロップインレットに接続されたり、延长されたりする場合があります。

**パイプ下水路の詳細**

- ケーブル下水路の詳細は、625号、タイプ1の要件に従って作成されます。
- ケーブル下水路の詳細の料金は、4インチパイプの下水路の価格に含まれます。
- 存在する4インチパイプの下水路は、提案されたドロップインレットに接続されたり、延长されたりする場合があります。

**粒状物の埋め込み**

- ゲオテクシールバットは、625号、タイプ1の要件に従って作成されます。
- ゲオテクシールバットと粒状フィルターの料金は、4インチパイプの下水路の価格に含まれます。
- 存在する4インチパイプの下水路は、提案されたドロップインレットに接続されたり、延长されたりする場合があります。
- 下水路の位置は、4インチ x 12インチの永久的な道路マーキングテープ（タイプIIIホワイト）で示されます。
**REINFORCED CONCRETE BOX CULVERT GENERAL NOTES**

Concrete shall be class S with a minimum 28-day compressive strength of 3500 psi. Reinforced steel shall be AASHTO M 31 or M 53, grade 60.

Construction and materials for wingwall & culvert drainage, including wingwall and granular material, shall be subsidiary to the bid item, "CLASS S CONCRETE".

Membrane waterproofing shall conform to the requirements of Section 815 of the standard specifications.

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

REINFORCED STEEL TOLERANCES: The tolerances for reinforcing steel shall meet those listed in Manual of Standard Practice published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 0.1 inch.

Reinforced steel tolerances and requirements on all reinforced concrete box culvert standard drawings.

Reinforced concrete box culvert details.

Membrane waterproofing shall conform to the requirements of Section 815 of the standard specifications.

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

Reinforced concrete box culvert general notes.

Concrete shall be class S with a minimum 28-day compressive strength of 3500 psi. Reinforced steel shall be AASHTO M 31 or M 53, grade 60.

Construction and materials for wingwall & culvert drainage, including wingwall and granular material, shall be subsidiary to the bid item, "CLASS S CONCRETE".

Membrane waterproofing shall conform to the requirements of Section 815 of the standard specifications.

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

Reinforced steel tolerances: The tolerances for reinforcing steel shall meet those listed in Manual of Standard Practice published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 0.1 inch.

Weep holes in box culvert walls shall have a maximum horizontal spacing of 12'-0" and shall be placed 12" above the top of the bottom slab. Weep holes in box culvert walls shall have a maximum horizontal spacing of 12'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

Wingwall & culvert drainage detail.

2 bars "c" cut as required.

* 12" or T+3" (whichever is greater)

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

R.C. box culvert headwall modifications.

Arkansas state highway commission.

Reinforced concrete box culvert details.

Standard drawing RCB-1.
GENERAL NOTES:

ROADWAY EXCAVATION CHANNEL CHANGES WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS, IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION CHANNEL CHANGES SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES. EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.
PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 & METHOD 2.

REINFORCING DETAILS AND CULVERT DIMENSIONS
SAME AS STANDARD CULVERT DRAWINGS

THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.

IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.

REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.

ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL COMPLY WITH THE MANUFACTURER’S INSTRUCTIONS AND THE STANDARD SIGNS, LAMINATED INSERTS OF THE MUTCD APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.


3. TRAFFIC SIGNS AND ROAD WORK SIGNS SHALL BE MOUNTED ON SUPPORTS."
Typical Application of Traffic Controls Devices on a 2-Lane Highway Where the Entire Highway is Closed and a Bypass Section is Provided.

Notes:
1. This layout is intended to apply to any location where the entire highway is closed and a bypass section is provided.
2. The bypass section should be designed to accommodate the traffic flow.
3. Traffic control devices should be placed as shown in the drawing.
4. Additional devices may be used as necessary for traffic control purposes.

Typical Application - 4-Lane Divided Highway Where the Roadway Is Closed.

Notes:
1. This layout is intended to apply to any location where the entire highway is closed and a bypass section is provided.
2. The bypass section should be designed to accommodate the traffic flow.
3. Traffic control devices should be placed as shown in the drawing.
4. Additional devices may be used as necessary for traffic control purposes.

Typical Application - 4-Lane Undivided Highway Where Half of the Roadway Is Closed.

Notes:
1. This layout is intended to apply to any location where half of the highway is closed and the other half remains open.
2. Traffic control devices should be placed as shown in the drawing.
3. Additional devices may be used as necessary for traffic control purposes.

Typical Application - Roadway Closed Before Detour Point.

Notes:
1. This layout is intended to apply to any location where the roadway is closed before a detour point.
2. Traffic control devices should be placed as shown in the drawing.
3. Additional devices may be used as necessary for traffic control purposes.

Typical Application of Traffic Control Devices on a 2-Lane Highway Where the Entire Highway is Closed and a Bypass Section is Provided.

Notes:
1. This layout is intended to apply to any location where the entire highway is closed and a bypass section is provided.
2. The bypass section should be designed to accommodate the traffic flow.
3. Traffic control devices should be placed as shown in the drawing.
4. Additional devices may be used as necessary for traffic control purposes.
**General Notes**

- 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (See BARRIER STABILIZATION DETAIL- BRIDGE DECKS STD. DRWG. TC-4).
- Special End Unit
- Taper Rate 10:1
- Work Area
- Offset Distance Table
- Barriers shall be dowelled to pavement when the B dimension is less than 41'-0" and the C dimension is greater than 24 inches.

**SECTION J-J**

**BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET**

<table>
<thead>
<tr>
<th>Offset Distance</th>
<th>Special End Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0''</td>
<td>No Scale</td>
</tr>
<tr>
<td>12'-0''</td>
<td>No Scale</td>
</tr>
<tr>
<td>2'-8&quot;</td>
<td>No Scale</td>
</tr>
</tbody>
</table>

**BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET**

**OFFSET DISTANCE**

<table>
<thead>
<tr>
<th>Speed</th>
<th>Offset Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>1'</td>
</tr>
<tr>
<td>&gt;15</td>
<td>2'</td>
</tr>
</tbody>
</table>

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

**BARRIER PLACEMENT WITH ATTENUATOR**

**OFFSET DISTANCE**

<table>
<thead>
<tr>
<th>Offset Distance</th>
<th>Special End Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0''</td>
<td>No Scale</td>
</tr>
<tr>
<td>12'-0''</td>
<td>No Scale</td>
</tr>
<tr>
<td>2'-8&quot;</td>
<td>No Scale</td>
</tr>
</tbody>
</table>

**General Notes**

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with a Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."
**CLEARING AND GRUBBING**

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

**EXCAVATION**

**EXISTING GROUND**
- 

**DIVERSION DITCH**
- 

**INTERCEPTOR OR DIVERSION DITCHES**
- 

**PHASE 1 EXCAVATION**
- 

**PHASE 2 EXCAVATION**
- 

**FINAL PHASE EXCAVATION**
- 

**GENERAL NOTE**

**CONSTRUCTION SEQUENCE**
1. Excavate and stabilize interceptor and/or diversion ditches.
2. Perform phase 1 excavation, place permanent or temporary seeding.
3. Perform phase 2 excavation, place permanent or temporary seeding.
4. Perform final phase of excavation, place permanent or temporary seeding.

**EMBANKMENT**

**EXISTING GROUND**
- 

**PHASE 1 EMBANKMENT**
- 

**PHASE 2 EMBANKMENT**
- 

**FINAL PHASE EMBANKMENT**
- 

**SIDE DITCH**
- 

**CONTROL DEVICES**
- 

**GENERAL NOTE**

**CONSTRUCTION SEQUENCE**
1. Construct diversion ditches, check ditches, sediment basins, silt fences, or other erosion control devices as specified.
2. Place phase 1 embankment with permanent or temporary seeding.
3. Place phase 2 embankment with permanent or temporary seeding, and stabilize as required.
4. Place final phase of embankment with permanent or temporary seeding, and stabilize as required.

**NOTE:**
Until the slope is completely stabilized.

**NOTE:**
The work progresses slowly. Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured horizontally.

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

**NOTE:**
The work progresses slowly. Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured vertically.

**NOTE:**
Conduct erosion control devices (i.e., silt fences, diversion ditches, sediment basins, etc.)

**NOTE:**
All cut slopes shall be protected, prepared, seeded, and mulched as the work progresses. Slopes shall be constructed and stabilized in equal increments not to exceed 25 feet measured horizontally.

**GENERAL NOTE**

**CONSTRUCTION SEQUENCE**
1. Construct diversion ditches, check ditches, sediment basins, silt fences, or other erosion control devices as specified.
2. Place phase 1 embankment with permanent or temporary seeding.
3. Place phase 2 embankment with permanent or temporary seeding, and stabilize as required.
4. Place final phase of embankment with permanent or temporary seeding, and stabilize as required.

**NOTE:**
The work progresses slowly. Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured horizontally.

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

**NOTE:**
All cut slopes shall be protected, prepared, seeded, and mulched as the work progresses. Slopes shall be constructed and stabilized in equal increments not to exceed 25 feet measured horizontally.

**NOTE:**
Conduct erosion control devices (i.e., silt fences, diversion ditches, sediment basins, etc.)

**NOTE:**
The work progresses slowly. Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured horizontally.

**NOTE:**
All cut slopes shall be protected, prepared, seeded, and mulched as the work progresses. Slopes shall be constructed and stabilized in equal increments not to exceed 25 feet measured horizontally.

**NOTE:**
Conduct erosion control devices (i.e., silt fences, diversion ditches, sediment basins, etc.)

**NOTE:**
The work progresses slowly. Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured horizontally.
GENERAL NOTES:

These installations to be used where normal fencing installations would cause the collection or drift on the channel or the depression will not permit normal installation requirements will be made only where directed by the Engineer.

When a fence line approaches a ditch, gully or depression, the last post on level ground shall be placed close enough to the edge of the drop off that the fence may be strung to the post in the depression without touching the ground.

In terrain of such extreme irregularity that minor grading will not be feasible the normal fence shall continue on grade and the gullies or depressions treated by auxiliary fences as shown.

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