ROUND PIPE

CONCRETE EDGE PROTECTION ON INLET AND/OR OUTLET END (WHEN SPECIFIED IN PLANS)

1'-0" (300)
VARIIES - SEE DTL. DWG. NO. 603-32
2'-0" (600)
6" (150)
VARIIES - SEE DTL. DWG. NO. 603-32
4'-0" (1200)
6" (150)

CONCRETE CUTOFF WALL
(SEE DTL. DWG. NO. 552-00)

RIPRAP AS SPECIFIED

3/8" DIA. (M20) ANCHOR BOLTS AT APPROX. 18" (450) O.C. AROUND ENTIRE PERIMETER OF PIPE EMBEDDED IN CONCRETE (TYP., ALL STRUCTURES THIS SHEET), SEE DTL. DWG. NO. 552-00

6" x 6" x W2.9
(152.4 x 152.4 x W18.71)
WIRE MESH THROUGHOUT ENTIRE STRUCTURE (TYPICAL, ALL STRUCTURES THIS SHEET)

CONCRETE CUTOFF WALL INLET AND OUTLET END SEE DTL. DWG. NO. 552-00

SIDE ELEVATION

FRONT ELEVATION

SECTION A-A

FRONT ELEVATION MULTIPLEPIPES

ARCH PIPE

CONCRETE EDGE PROTECTION ON INLET AND/OR OUTLET END (WHEN SPECIFIED IN PLANS)

1'-0" (300)
VARIIES - SEE DTL. DWG. NO. 603-34
2'-0" (600)
6" (150)
VARIIES - SEE DTL. DWG. NO. 603-34
4'-0" (1200)

CONCRETE CUTOFF WALL
(SEE DTL. DWG. NO. 552-00)

RIPRAP AS SPECIFIED

FOR ANCHOR BOLT SPACING AND WIRE MESH SEE NOTES ABOVE

6" (150)

FRONT ELEVATION MULTIPLEPIPES

SECTION B-B

NOTE:
ALL CONCRETE IS CLASS GENERAL OR EQUAL.

UNITS SHOWN IN BRACKETS ( ) ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.
**Notes:**

1. All concrete is Class General Concrete or Equal.
2. See DTL, DWG. NO. 603-08 and 603-10 for RCP and RCPC Culverts with Fets. For RCP and RCPC Culverts with square ends, the "x" dimension is D/4 or R/3.

**Units Shown in Brackets ( ) are Metric and Are in millimeters (mm) unless other units are shown.**
INLET AND OUTLET HEADWALLS FOR CMP

<table>
<thead>
<tr>
<th>DIAM.</th>
<th>AREA</th>
<th>C.I.</th>
<th>GENERAL CONC.</th>
<th>O.F.</th>
<th>11'</th>
<th>5'</th>
<th>2'</th>
<th>1'</th>
<th>6'-6&quot;</th>
<th>6'-10&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'</td>
<td>3.14</td>
<td>0.86</td>
<td>0.86</td>
<td>71</td>
<td>61</td>
<td>1'3</td>
<td>1'3</td>
<td>2'</td>
<td>3'</td>
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</tr>
<tr>
<td>2'</td>
<td>3.14</td>
<td>0.86</td>
<td>0.86</td>
<td>95</td>
<td>75</td>
<td>1'3</td>
<td>1'3</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>1'</td>
<td>3.14</td>
<td>0.86</td>
<td>0.86</td>
<td>115</td>
<td>95</td>
<td>1'3</td>
<td>1'3</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>6'-6&quot;</td>
<td>3.14</td>
<td>0.86</td>
<td>0.86</td>
<td>129</td>
<td>111</td>
<td>1'3</td>
<td>1'3</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>6'-10&quot;</td>
<td>3.14</td>
<td>0.86</td>
<td>0.86</td>
<td>132</td>
<td>123</td>
<td>1'3</td>
<td>1'3</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
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**INLET AND OUTLET HEADWALLS FOR RCP**

<table>
<thead>
<tr>
<th>DIAM.</th>
<th>AREA</th>
<th>C.I.</th>
<th>GENERAL CONC.</th>
<th>O.F.</th>
<th>11'</th>
<th>5'</th>
<th>2'</th>
<th>1'</th>
<th>6'-6&quot;</th>
<th>6'-10&quot;</th>
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<tbody>
<tr>
<td>450</td>
<td>0.168</td>
<td>0.7</td>
<td>0.5</td>
<td>32</td>
<td>28</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>600</td>
<td>0.232</td>
<td>0.9</td>
<td>0.6</td>
<td>58</td>
<td>54</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>750</td>
<td>0.406</td>
<td>1.1</td>
<td>0.8</td>
<td>113</td>
<td>105</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>1050</td>
<td>0.894</td>
<td>1.7</td>
<td>1.2</td>
<td>58</td>
<td>54</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>1500</td>
<td>1.417</td>
<td>2.0</td>
<td>1.4</td>
<td>85</td>
<td>69</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
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</tbody>
</table>

**METRIC INLET AND OUTLET HEADWALLS FOR CMP**

<table>
<thead>
<tr>
<th>DIAM.</th>
<th>AREA</th>
<th>C.I.</th>
<th>GENERAL CONC.</th>
<th>O.F.</th>
<th>11'</th>
<th>5'</th>
<th>2'</th>
<th>1'</th>
<th>6'-6&quot;</th>
<th>6'-10&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>0.114</td>
<td>0.6</td>
<td>0.6</td>
<td>22</td>
<td>17</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>10&quot;</td>
<td>0.232</td>
<td>0.9</td>
<td>0.6</td>
<td>45</td>
<td>40</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>12&quot;</td>
<td>0.442</td>
<td>1.1</td>
<td>0.8</td>
<td>84</td>
<td>75</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>15&quot;</td>
<td>0.886</td>
<td>1.6</td>
<td>1.1</td>
<td>170</td>
<td>150</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
</tbody>
</table>

**METRIC INLET AND OUTLET HEADWALLS FOR RCP**

<table>
<thead>
<tr>
<th>DIAM.</th>
<th>AREA</th>
<th>C.I.</th>
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<th>O.F.</th>
<th>11'</th>
<th>5'</th>
<th>2'</th>
<th>1'</th>
<th>6'-6&quot;</th>
<th>6'-10&quot;</th>
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</thead>
<tbody>
<tr>
<td>9&quot;</td>
<td>0.114</td>
<td>0.6</td>
<td>0.6</td>
<td>22</td>
<td>17</td>
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<td>0.6</td>
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<td>40</td>
<td>1'</td>
<td>1'</td>
<td>2'</td>
<td>3'</td>
<td>5'</td>
</tr>
</tbody>
</table>

**NOTICE:** All exposed corners 1" C.S. Rebar only. No reinforcing steel to be less than 1 1/2" D.C. to nearest face of concrete.
NOTES:

1. CULVERT RIPRAP IS ONLY USED IN SPECIAL CIRCUMSTANCES.

2. KEY ENDS OF RIPRAP WALLS INTO THE EMBANKMENT SLOPES A MINIMUM OF 2 FEET (600 mm) FROM OUTER FACE OF THE RIPRAP FOR THE FULL HEIGHT OF THE RIPRAP WALL.
EMBANKMENT PROTECTION

MINIMUM T FOR:
CLASS I RIPRAP = 1.5' [450]
CLASS II RIPRAP = 2.5' [750]
CLASS III RIPRAP = 3.0' [900]

ENSURE INTIMATE CONTACT OF PERMANENT EROSION CONTROL GEOTEXTILE TO SUBGRADE SOIL.

GEOTEXTILE PLACEMENT DETAIL
METHOD FOR PLACING PERMANENT EROSION CONTROL GEOTEXTILE FOR PROTECTION OF STREAM BANKS

1. INSTALL PERMANENT EROSION CONTROL GEOTEXTILE PER SECTION 622.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.