NOTES:

1. PLANS SHALL SPECIFY FOR THIS STANDARD:
   (A) RIPRAP CLASS AND THICKNESS (T)
   (B) FILTER BLANKET MATERIAL AND THICKNESS (t).

2. ADDITIONAL RIPRAP MAY BE NECESSARY FOR
   STEEP APPLICATIONS (> 5%).

3. ADD 12" THICK CONCRETE SILL WHEN W>36", OR
   WHEN REQUIRED BY THE ENGINEER - SEE STD 314-4.

4. CUTOFF WALL AND SILL DEPTH TO BE 4' OR RIPRAP
   THICKNESS (T) PLUS FILTER THICKNESS (t)
   WHICHEVER IS GREATER.

5. DETAIL MAY BE UTILIZED FOR CIRCULAR CONCRETE
   DITCH ALSO.

6. FOR 3' WIDE DITCH AT SLOPE OF <5% AND A FLOW
   RATE < 3.0 CFS, ENERGY DISSIPATOR MAY BE 6' BY 6'
   No. 2 BACKING PER STD 314-4.
NOTES:
1. PLANS SHALL SPECIFY FOR THIS STANDARD:
   (A) RIPRAP CLASS AND THICKNESS (T)
   (B) FILTER BLANKET MATERIAL AND THICKNESS (t).
2. ADDITIONAL RIPRAP MAY BE NECESSARY FOR
   STEEP APPLICATIONS (>5%).
3. ADD 12" THICK CONCRETE SILL WHEN D>36", OR
   WHEN REQUIRED BY THE ENGINEER - SEE STD 314-4.
4. CUTOFF WALL AND SILL DEPTH TO BE 4" OR RIPRAP
   THICKNESS (T) PLUS FILTER THICKNESS (t)
   WHICHEVER IS GREATER.
5. CUTOFF WALL TO BE ON BOTH SIDES AND END OF
   PCC APRON ADJACENT TO RIPRAP.
6. 10' LONG BY 6" THICK CONCRETE APRON WITH
   #4 BARS AT 18" OC. APRON WIDTH TO MATCH
   HEADWALL WIDTH (W1).
7. RIPRAP WIDTH TO EQUAL HEADWALL WIDTH (W1).

TABLE A

<table>
<thead>
<tr>
<th>PIPE DIA (D)</th>
<th>18&quot;</th>
<th>21&quot;</th>
<th>24&quot;</th>
<th>27&quot;</th>
<th>30&quot;</th>
<th>36&quot;</th>
<th>42&quot;</th>
<th>48&quot;</th>
<th>54&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>WALL WIDTH (W1)</td>
<td>12.7</td>
<td>13.7</td>
<td>14.7</td>
<td>15.7</td>
<td>16.7</td>
<td>18.7</td>
<td>20.7</td>
<td>22.7</td>
<td>25.2</td>
</tr>
<tr>
<td>APRON WIDTH (W2)</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.5</td>
</tr>
</tbody>
</table>

PREPARED UNDER THE SUPERVISION OF:

COUNTY OF RIVERSIDE

RIPRAP ENERGY DISSIPATOR
AND APRON AT STRAIGHT
HEADWALL OUTFALL

STANDARD No. 314 (3 OF 4)
# Riprap Energy Dissipater Sizing Table

<table>
<thead>
<tr>
<th>Design Velocity (ft/sec)</th>
<th>Riprap Class</th>
<th>Riprap Thickness (T) Placement Method A *</th>
<th>Riprap Thickness (T) Placement Method B *</th>
<th>Filter Material **</th>
<th>Filter Thickness (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8</td>
<td>NO. 2 BACKING</td>
<td>N/A</td>
<td>1.25'</td>
<td>1&quot; CRUSHED ROCK</td>
<td>0.5'</td>
</tr>
<tr>
<td>8-13</td>
<td>1/4 TON</td>
<td>N/A</td>
<td>3.3'</td>
<td>1&quot; CRUSHED ROCK</td>
<td>0.75'</td>
</tr>
<tr>
<td>13-15</td>
<td>1/2 TON</td>
<td>3.4'</td>
<td>4.3'</td>
<td>1&quot; CRUSHED ROCK</td>
<td>1.0'</td>
</tr>
<tr>
<td>15-17</td>
<td>1 TON</td>
<td>4.3'</td>
<td>5.4'</td>
<td>1&quot; CRUSHED ROCK</td>
<td>1.0'</td>
</tr>
<tr>
<td>17-20</td>
<td>2 TON</td>
<td>5.4'</td>
<td>N/A</td>
<td>1&quot; CRUSHED ROCK</td>
<td>1.0'</td>
</tr>
</tbody>
</table>

* For riprap gradation and placement method descriptions see Caltrans Std specifications Section 72-2

** See 1" Crushed Rock gradation this sheet

## 1" Crushed Rock Gradation

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent (%) Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot; (37.5 mm)</td>
<td>100</td>
</tr>
<tr>
<td>1&quot; (25.0 mm)</td>
<td>90-100</td>
</tr>
<tr>
<td>3/4&quot; (19.0 mm)</td>
<td>30-60</td>
</tr>
<tr>
<td>1/2&quot; (12.5 mm)</td>
<td>0-20</td>
</tr>
<tr>
<td>3/8&quot; (9.5 mm)</td>
<td>-</td>
</tr>
<tr>
<td>No. 4 (4.75 mm)</td>
<td>0-5</td>
</tr>
<tr>
<td>No. 8 (2.36 mm)</td>
<td>-</td>
</tr>
<tr>
<td>ASTM C131 Testing Grading</td>
<td>A</td>
</tr>
</tbody>
</table>

CONCRETE SILL WHERE REQUIRED

4" OR THICKNESS OF RIPRAP (T), WHICHEVER IS GREATER

#4 BARS @ 18" OC

FLOW

RIPRAP THICKNESS

FILTER THICKNESS

NOT TO SCALE

PREPARED UNDER THE SUPERVISION OF:

[Signature]

11/30/22

DIRECTOR OF TRANSPORTATION
MARK LANCASTER, P.E.

COUNTY OF RIVERSIDE

RIPRAP ENERGY DISSIPATOR SIZING AND CONCRETE SILL

STANDARD No. 314 (4 OF 4)