1. Straight concrete endwalls are intended for use outside the clear zone.

2. Endwalls may be cast-in-place or precast construction. Cast-in-place endwalls shall conform to the details on this index, design specifications AASHTO 1989. Precast construction which adheres to this Index, including any additional reinforcement required for handling which shall be determined by the Contractor or supplier, does not require additional approvals. Deviations from this Index, for precast units, shall require the approval of the State Drainage Engineer prior to construction. For precast construction, see Index No. 201 for opening and grouting details.

3. Reinforcing steel shall be either Grade 40 or 60.

4. Concrete shall be Class II except concrete meeting the requirements of ASTM C 476 (4000 PSI) may be used in lieu of Class II concrete in precast units manufactured in plants which are under the Standard Operating Procedures for the Inspection of precast drainage products.

5. Chamfer all-exposed edges and corners to be chamfered 30° unless otherwise shown.

6. That portion of corrugated metalpipe in direct contact with the concrete slab and extending 12" beyond shall have a continuous bituminous coating of .004" minimum thickness applied prior to placing the concrete.

7. Sliding shall be in accordance with Index No. 281 and paid for under the contract unit price for Performance Test, S.T.

8. Basis of payment for either cast-in-place or precast construction shall be the estimated quantities tabulated on the Index. Concrete and reinforcing steel shall be paid for under the contract unit prices for Class II Concrete (Endwall), C.Y. and Reinforcing Steel (Roadway), LB.

**BENDING DIAGRAM**

**REVISION LOG**

- Revised Note 5, Note 6, DSM-01-01-07-revised note 7

**DEVELOPMENT CHECKLIST**

- STANDARD INDEX NO. 251, SHEET 1 OF 2

**GENERAL NOTES**

- Cut and field bend Bars B1 as shown.

**TYPICAL SECTION THRU ENDWALL**

---

**BILL OF REINFORCING STEEL**

<table>
<thead>
<tr>
<th>Mark</th>
<th>Size</th>
<th>No. Rows</th>
<th>Length</th>
<th>Location</th>
<th>Gaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1/2</td>
<td>3</td>
<td>120&quot;</td>
<td>Roadway</td>
<td>Straight</td>
</tr>
<tr>
<td>B</td>
<td>1/2</td>
<td>3</td>
<td>360&quot;</td>
<td>Fishing &amp; Walk</td>
<td>Straight</td>
</tr>
<tr>
<td>C</td>
<td>1/2</td>
<td>4</td>
<td>120&quot;</td>
<td>Wall</td>
<td>Straight</td>
</tr>
<tr>
<td>D</td>
<td>1/2</td>
<td>4</td>
<td>120&quot;</td>
<td>Wall</td>
<td>Round</td>
</tr>
<tr>
<td>E</td>
<td>1/2</td>
<td>4</td>
<td>240&quot;</td>
<td>Wall</td>
<td>Straight</td>
</tr>
</tbody>
</table>

**ESTIMATED QUANTITIES**

- Class II Concrete
  - Cu. Yd: 1.3
  - Lb: 695
  - 695