**GENERAL NOTES**

1. **Fill Height Greater Than Maximum Allotted in the Heights of Fill Table**
   - The fill height greater than the maximum allotted in the heights of fill table on this sheet requires special design of structure.

2. **Pipe Design**
   - The pipe design is based on safety factor of 1.33 on ultimate strength.

3. **The Heights of Fill Over Top of Pipe**
   - The heights of fill over top of pipe are based on unit weight of soil at embankment to here and excavation to depth required.

4. **Bedding**
   - Bedding is class B (modified) (from concrete pipe design manual - American Concrete Pipe Association).

5. **Changes in Design Factors**
   - Changes in design factors require compensating changes in pipe design.

6. **Minimum Wall Thickness Dimensions**
   - The minimum wall thickness dimensions are based on AASHTO M 170 (wall B) for circular pipe, and AASHTO M 207 for elliptical pipe.

7. **Spacing for Multiple Pipe Installations**
   - Spacing for multiple pipe installations shall conform to the details shown on standard plan M-206-1.

8. **Non-reinforced Concrete Pipe**
   - At the option of the contractor, non-reinforced concrete pipe conforming to AASHTO M 86 may be used in lieu of reinforced concrete pipe for all sizes and types of pipe, and shall meet the same design as specified for reinforced concrete pipe in conformance with AASHTO M 207. The contractor shall provide written certification of conformance and the minimum thickness of the non-reinforced pipe may be increased as required to meet D-load requirement.

**DIMENSIONS FOR REINFORCED CONCRETE PIPE**

<table>
<thead>
<tr>
<th>Type of Pipe</th>
<th>Minimum Cover for Rigid Pipe</th>
<th>Minimum Cover for Flexible Pipe</th>
<th>Minimum Cover for Structural Backfill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class CIR II</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
<tr>
<td>Class CIR III</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
<tr>
<td>Class CIR IV</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
<tr>
<td>Class CIR V</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
</tbody>
</table>

**ALLOWABLE RANGE OF HEIGHTS FOR FILL OVER REINFORCED CONCRETE PIPE**

<table>
<thead>
<tr>
<th>Type of Pipe</th>
<th>Minimum Cover for Rigid Pipe</th>
<th>Minimum Cover for Flexible Pipe</th>
<th>Minimum Cover for Structural Backfill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class CIR II</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
<tr>
<td>Class CIR III</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
<tr>
<td>Class CIR IV</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
<tr>
<td>Class CIR V</td>
<td>1 ft</td>
<td>1 ft</td>
<td>1 ft</td>
</tr>
</tbody>
</table>

**COMMENTS**

- **Note:** Use the lowest H that is greater for maximum allowable fill height.

- **Note:** Use the H that is greater for maximum allowable fill height.

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**REINFORCED CONCRETE PIPE**

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