**MN6-7 Hood Inlet Spillway**

**6-7.1 Design**

*Figure 6-7.1 Dimensions of Hood Inlet*

- **Full pipe flow:** When a hood inlet is used, full pipe flow should be assumed to occur at a minimum entrance head which is based on the diameter of the conduit. The relationships between conduit diameter and minimum entrance head are listed in Table 6-7.1.

- **Slope:** The criteria provided in Technical Release 3, Hood Inlets for Culvert Spillways, is based on testing results that are only valid for conduits up to a 36% slope.

<table>
<thead>
<tr>
<th>Slope of Conduit (%)</th>
<th>H = Minimum Entrance Head</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>1.5D</td>
</tr>
<tr>
<td>6-15</td>
<td>1.6D</td>
</tr>
<tr>
<td>16-25</td>
<td>1.7D</td>
</tr>
<tr>
<td>26-32</td>
<td>1.8D</td>
</tr>
</tbody>
</table>

*Place the auxiliary spillway at least this distance above the invert of the inlet.*

**Stage discharge curve:** When it is necessary to develop a stage discharge curve for graphical flood routing, follow official Minnesota hydrology policy provided in the Minnesota supplement to NEM 530.11. The Minnesota Hydrology Flowchart is also provided in Figure 6-7.3.

A shortcut procedure for the design of structures with temporary storage is provided in the Minnesota supplement to EFH Chapter 3, section 3-112.

**Fabrication:** Fabrication and construction details of the metal hood inlet and baffle plate should be in accordance with approved standard drawings. Copies of approved standard drawings are kept on file in the Minnesota State Office.

Special designs using other materials should be submitted to the State Conservation Engineer for prior approval. Baffle side angle braces for conduits 21” diameter or less may be omitted at the discretion of the engineer.

**6-7.2 Hood Drop Inlets**

For those installations where the depth of water that can be impounded over a hood inlet is less than the required minimum entrance head, it may be advisable to lower the inlet by means of an entrance box so that the conduit will flow full. See Figure 6-7.2 for the minimum dimensions for hood drop inlets.
Dimensions for the anti-vortex wall on a hood drop inlet should be the same as for standard inlets used on drop inlets. The anti-vortex wall may extend down into the inlet for structural reasons, if desired, to a point which is 1-1/4D + 3” above the inlet floor.

Standard weir and pipe flow formulas shall be used in computing the stage-discharge curve.

The entrance box should be made of concrete if the conduit is concrete. Either metal or concrete may be used for the box if the conduit is metal or another material.

Figure 6-7.3  Minnesota Hydrology Flowchart