

ENERGY DISSIPATORS

Structures used to dissipate excess kinetic energy possessed by flowing water through irrigation structures .

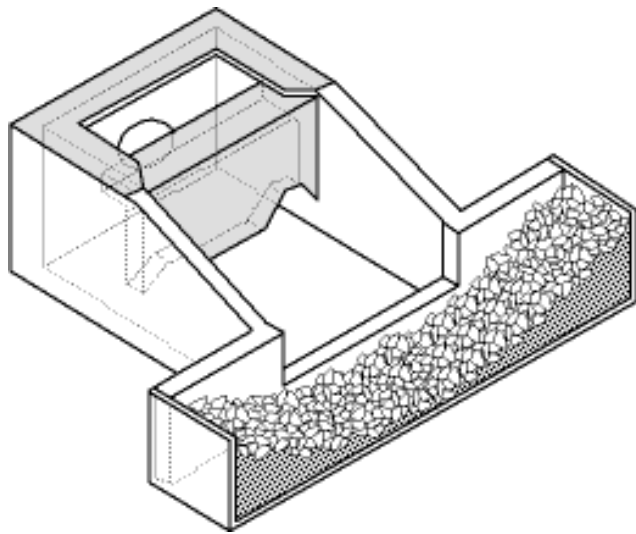
Types of energy dissipators

1. Baffeled outlet
2. Stilling basin
3. Hydraulic jump

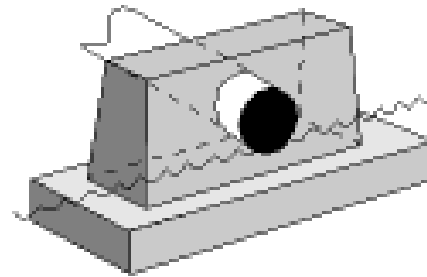
Baffeled out let

The outlet has many obstructions higher than the bed of canal dissipate the excess energy of flow water.

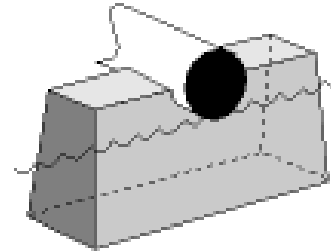




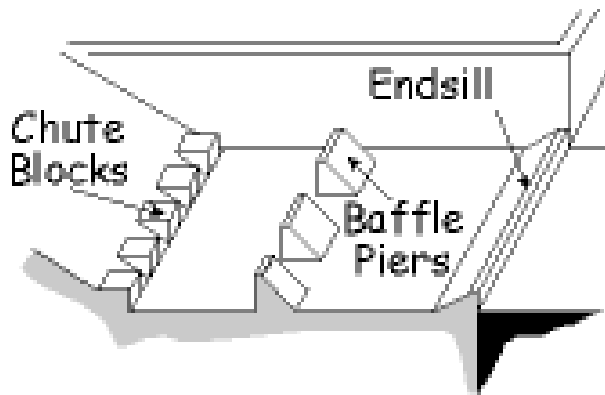
Impact Basin



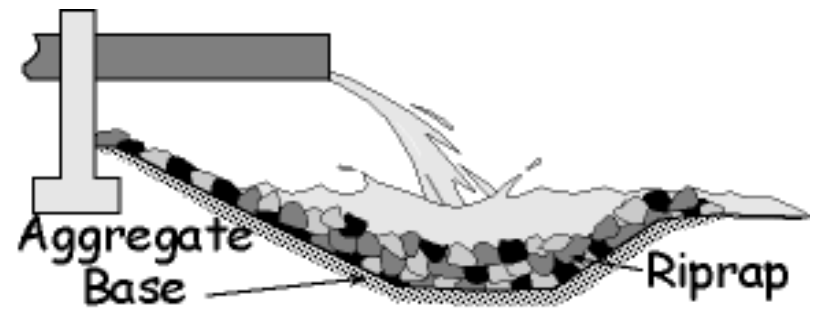
Headwall



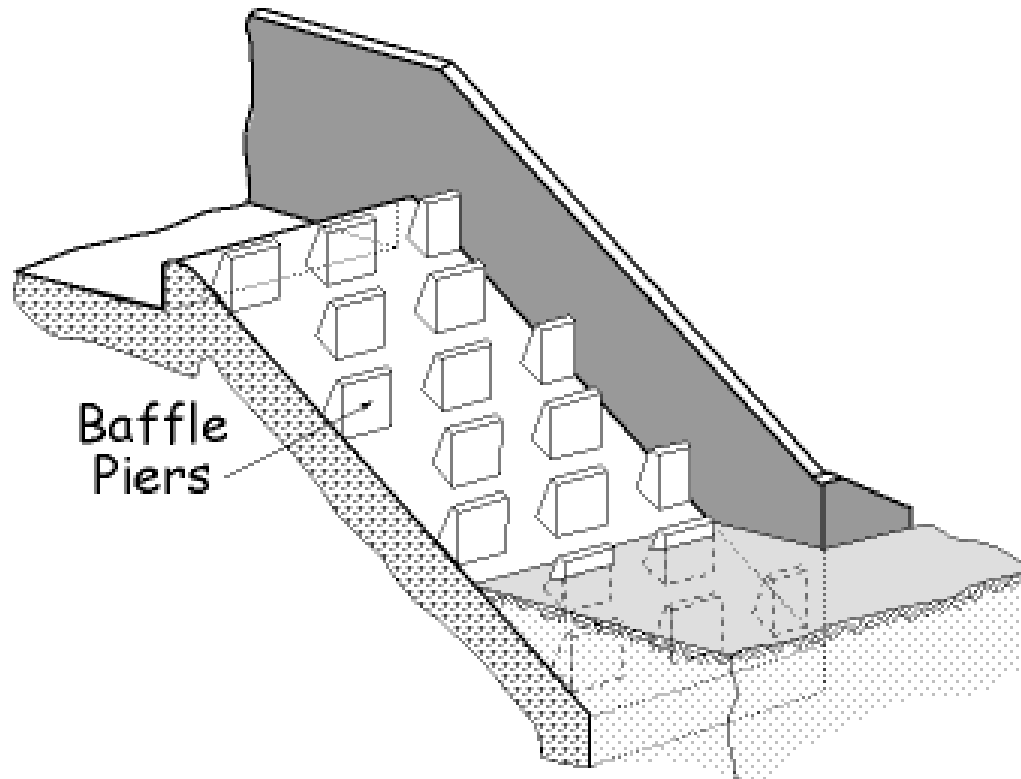
Endwall



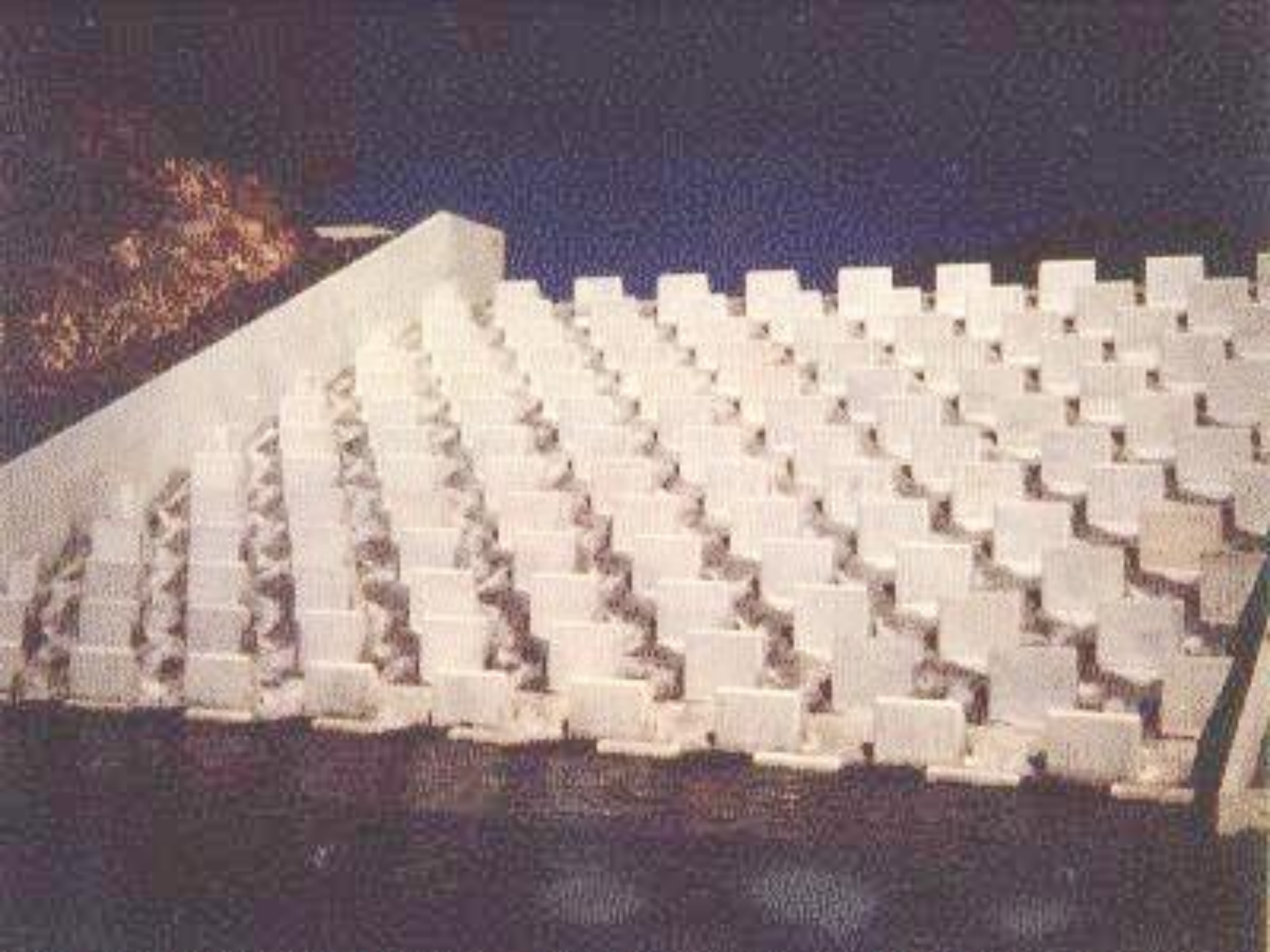
Type III Basin



Plung Pool



Baffled Chute Basin



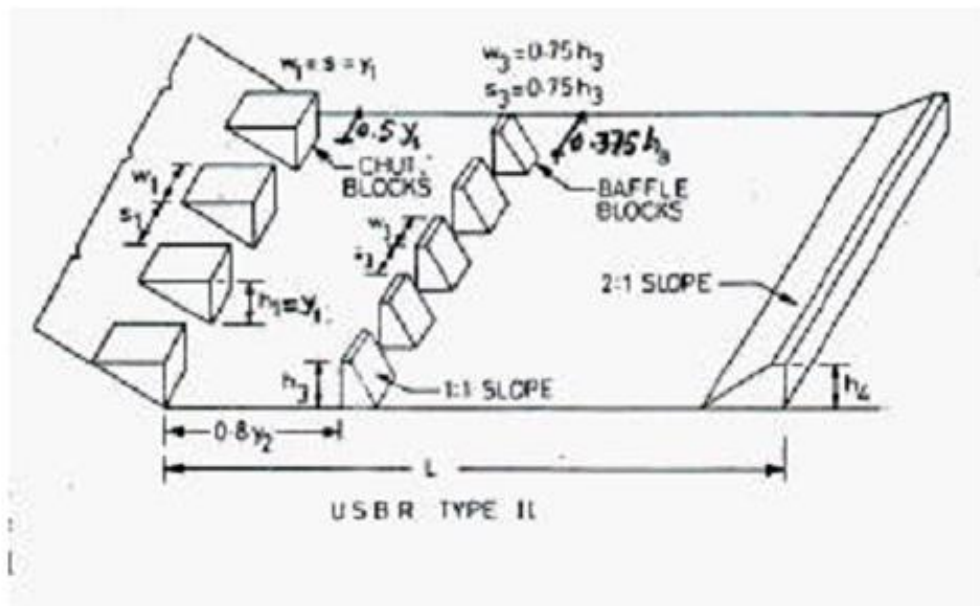
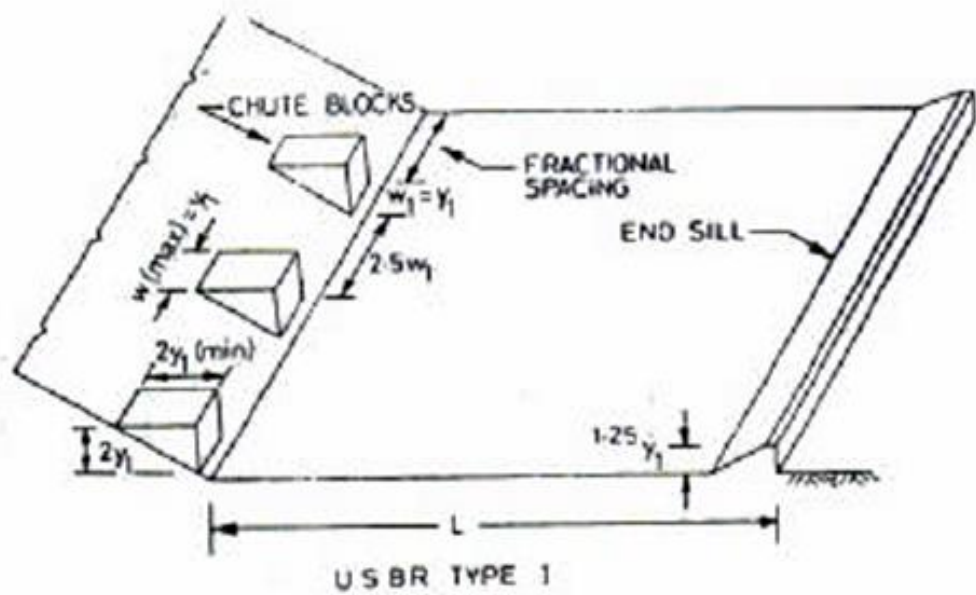
Stilling basin

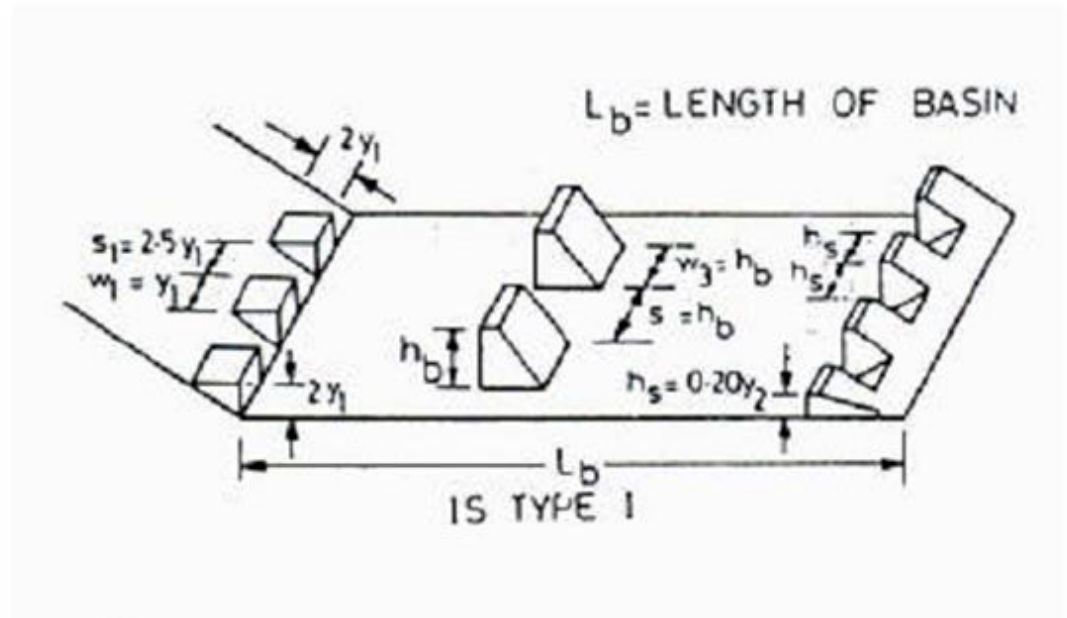
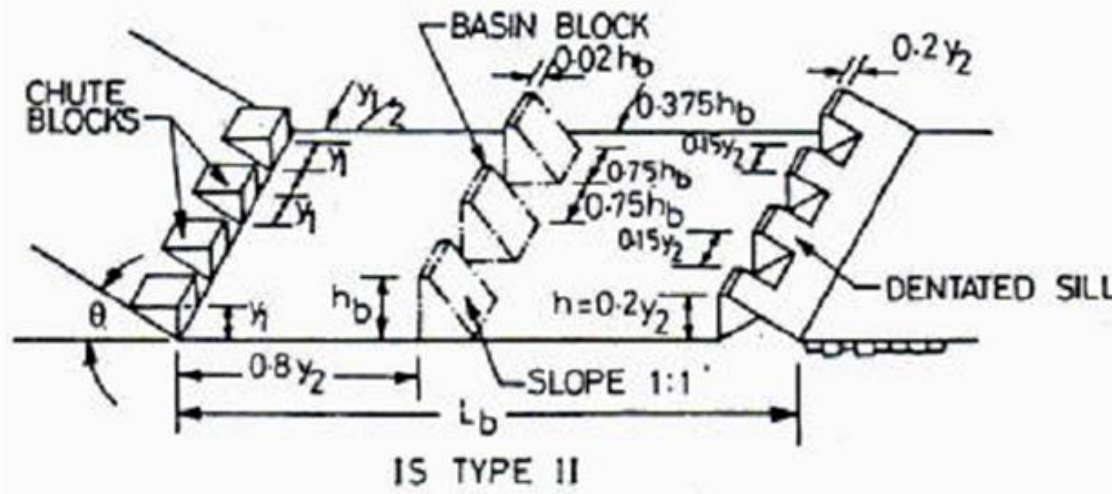
Basin contains the turbulent water until it can be discharge into the down stream channel with out damage to the channel.

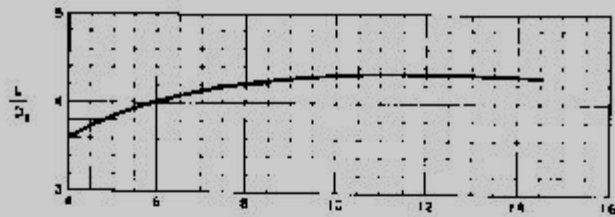
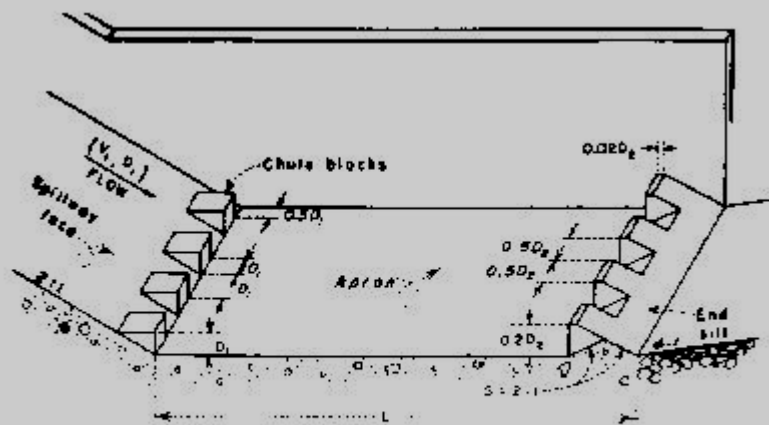
Hydraulic jump

It is a jump of water that takes place when super-critical flow changed into a sub- critical flow.

A hydraulic jump can be stabilised in stilling basin by using appurtenances (or accessories such as chute blocks, basin blocks and end sill.







FROUDE NUMBER (F1)

NOTES

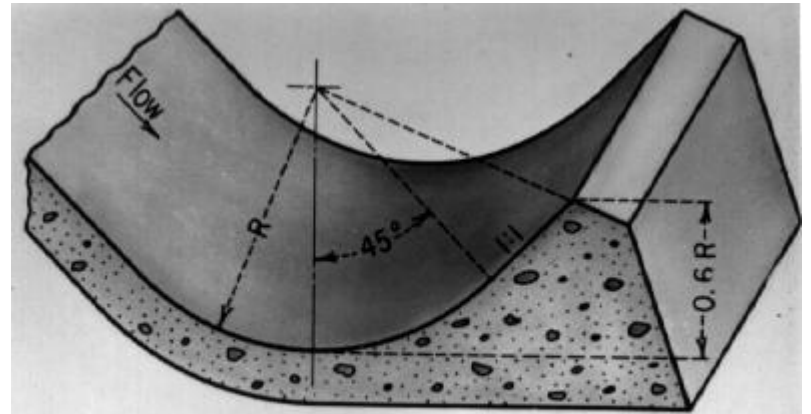
$$F_1 = \frac{V_1}{\sqrt{g D_1}}$$

g = Acceleration of gravity

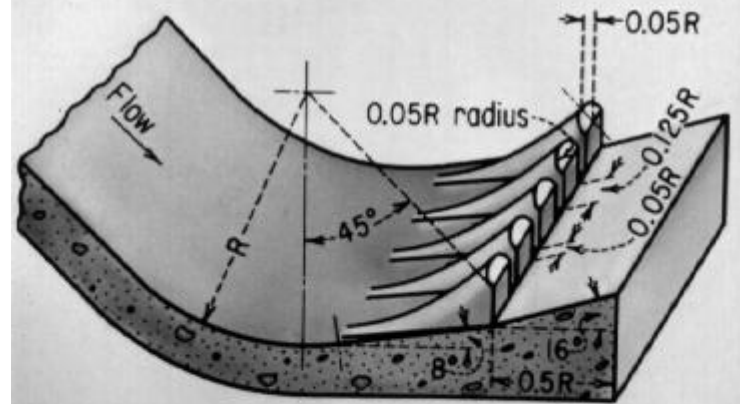
V_1, D_1 = velocity and depth of flow entering hydraulic jump

D_2 = Hydraulic jump conjugate depth
 $= \frac{D_1}{2} (\sqrt{1+8F_1^2} - 1)$

CHUTE BLOCK STUDIES
 STILLING BASIN — TYPE II
 RECOMMENDED PROPORTIONS



A. GRAND COULEE TYPE SOLID BUCKET



B. ANGSTURA TYPE SLOTTED BUCKET

SUBMERGED BUCKETS







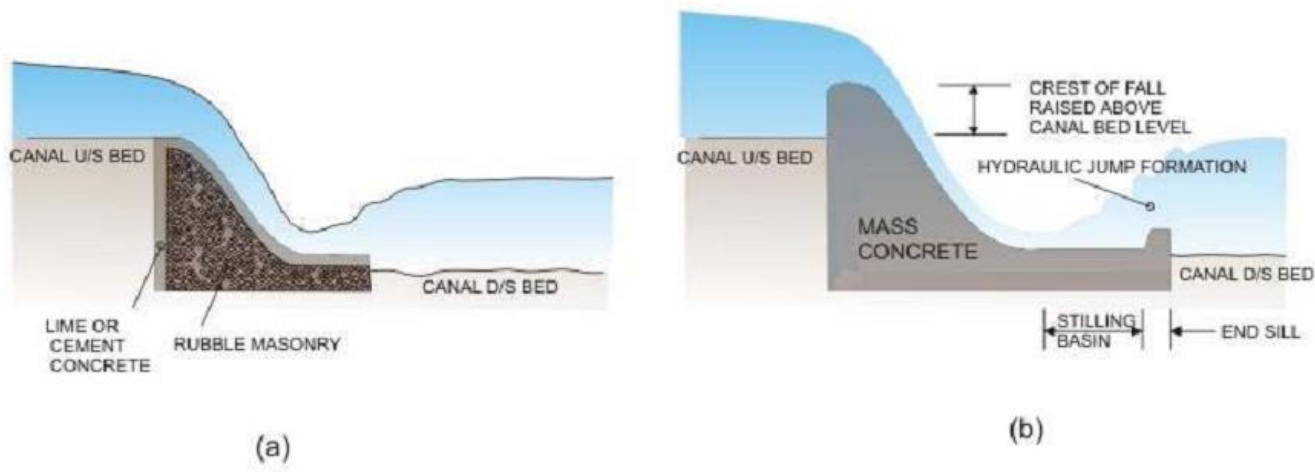
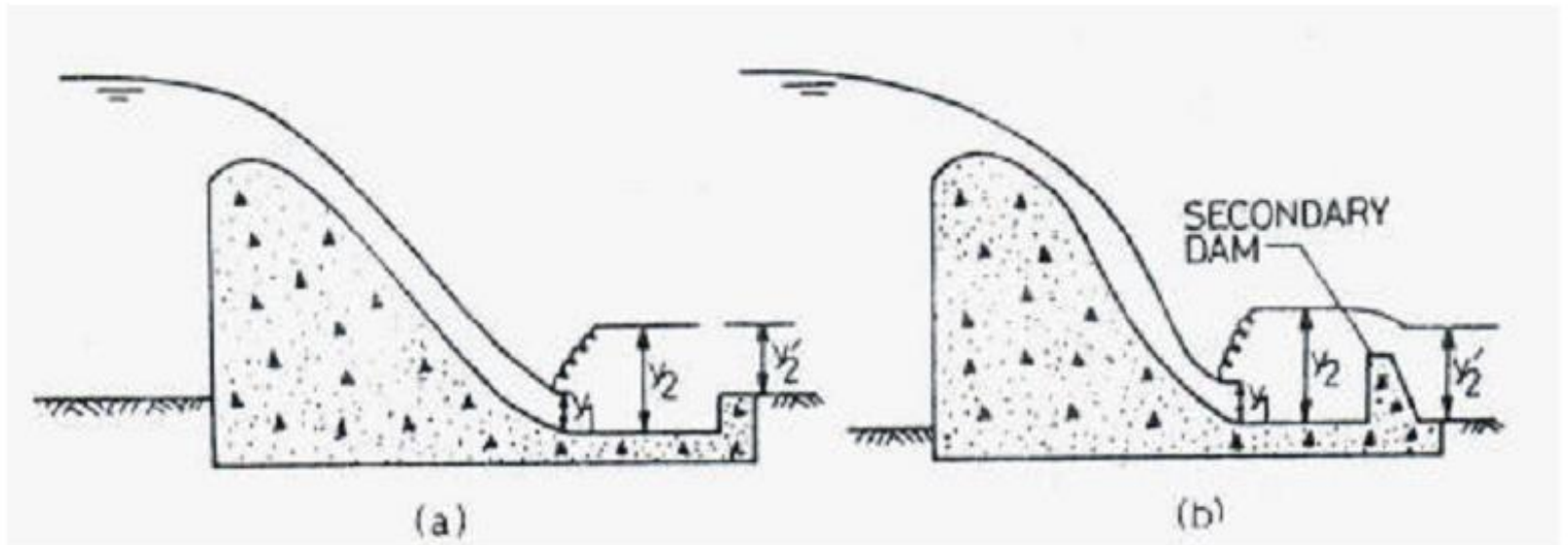
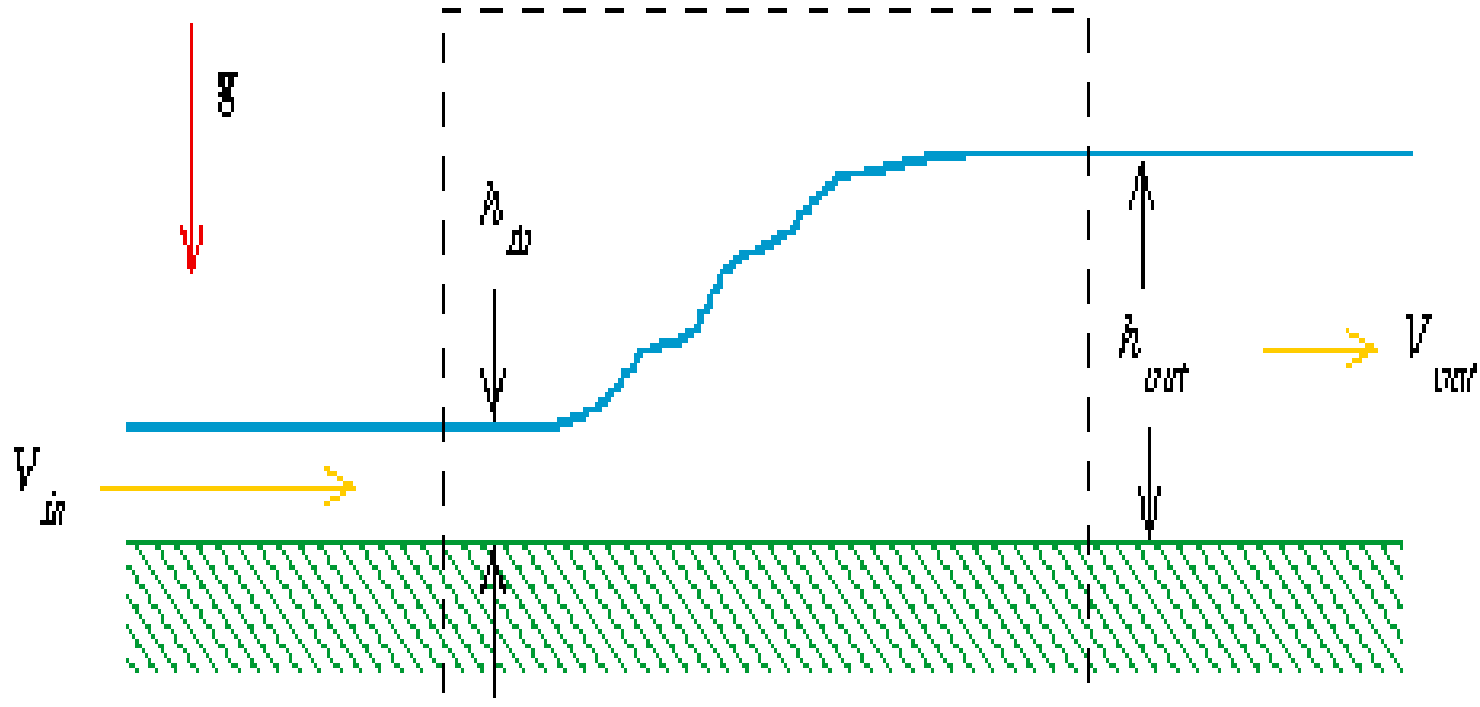


FIGURE 3. (a) Ogee-type fall made of rubble masonry
 (b) Same type of fall, but made of concrete and equipped with a stilling basin for energy dissipation





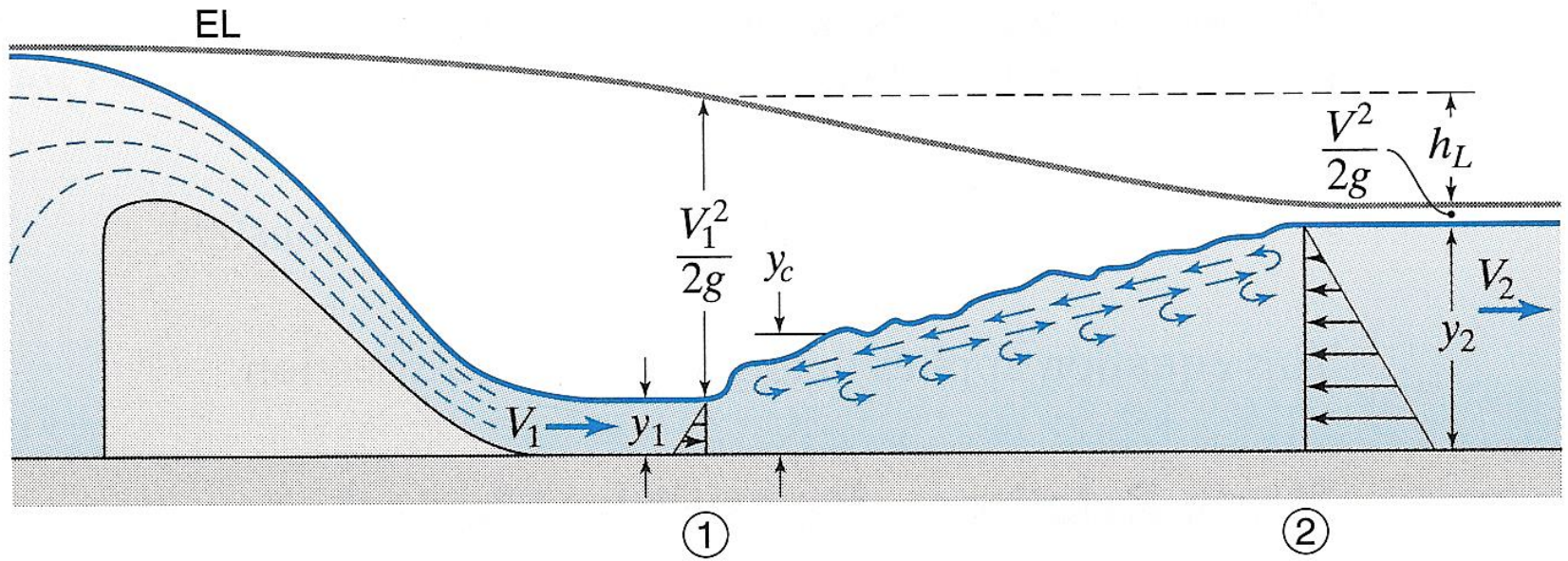
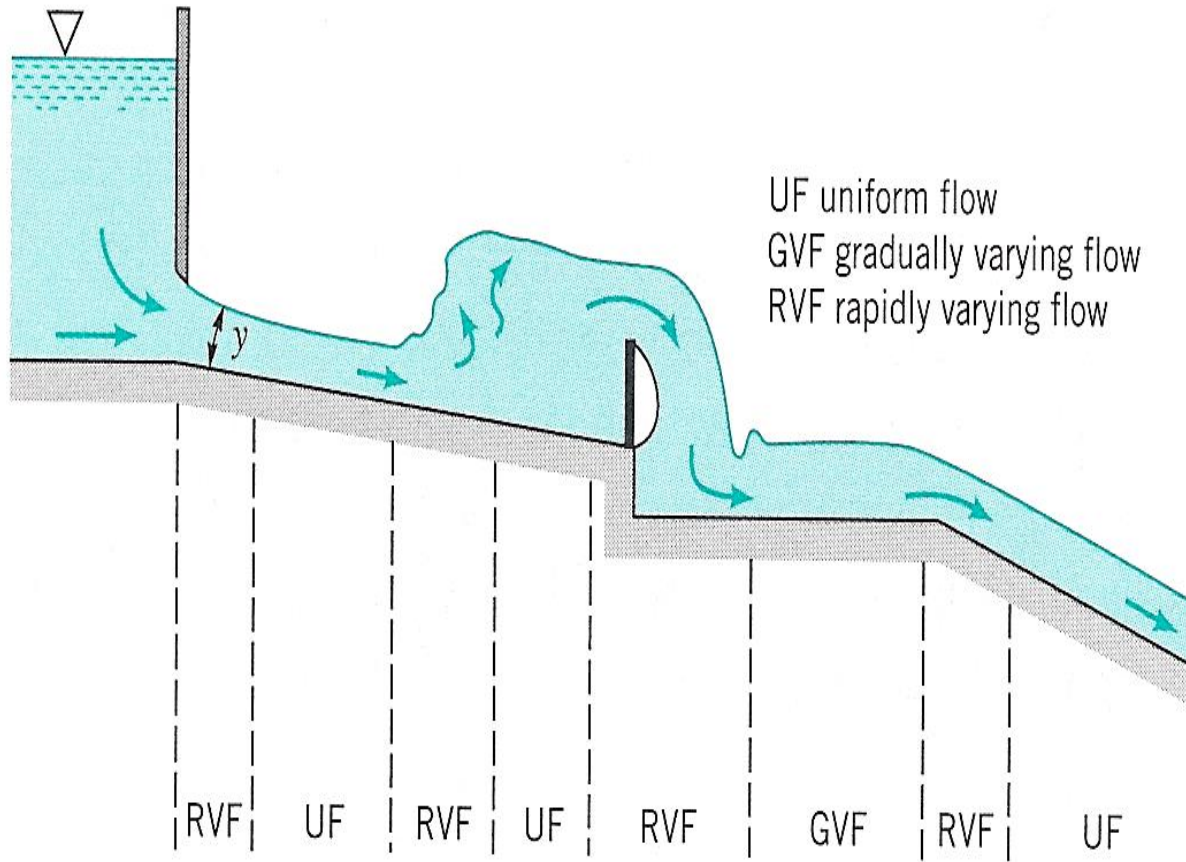


Figure 10.23

Hydraulic jump on horizontal bed following a spillway; horizontal scale foreshortened between sections 1 and 2 approximately $2\frac{1}{2}:1$.



■ **FIGURE 10.1**
 Classification of open-channel flow.

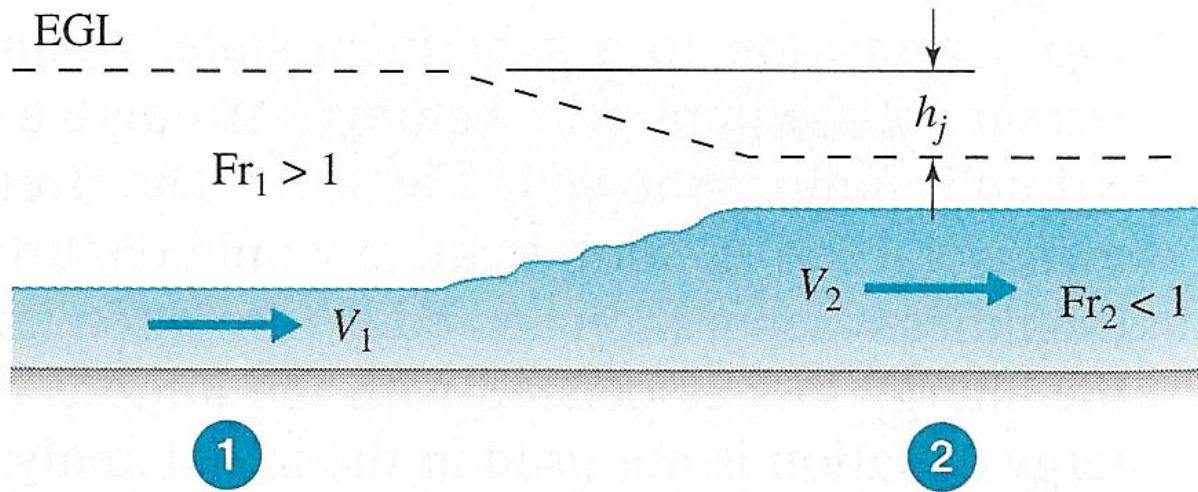


FIGURE 10.15 Idealized hydraulic jump.

