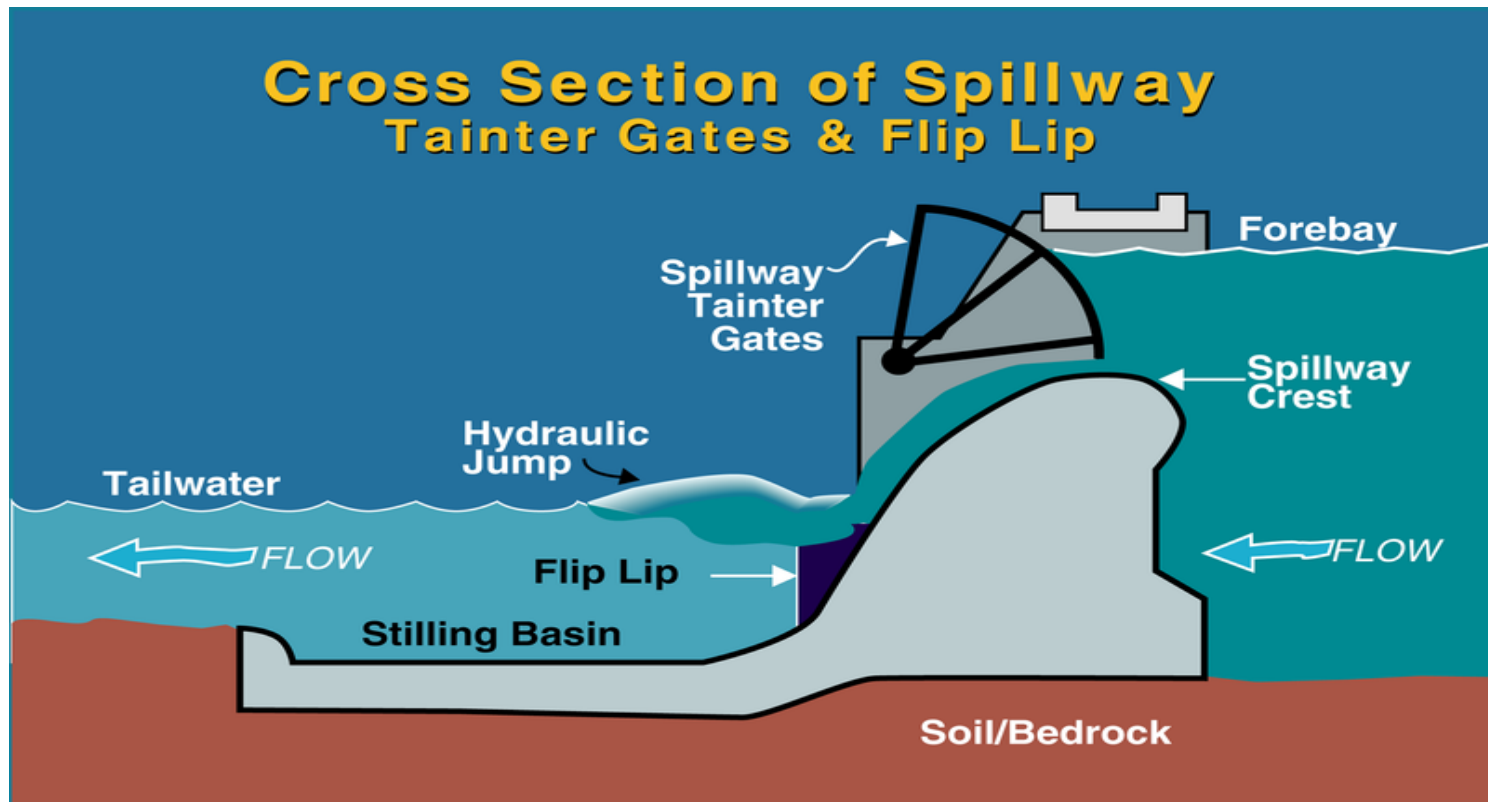


SPILLWAY



What is a Spillway?

- Spillway – Overflow portion of dam – over which surplus water is discharged (Reservoir D/S)
- Release floods - the water - does not overtop – damage the dam.



TYPES OF SPILLWAY

1. Free fall or Straight drop spillway
2. Ogee or overflow spillway
3. Side channel spillway
4. Chute spillway
5. Conduit spillway
6. Drop inlet or Morning glory spillway
7. Siphon Spillway
8. Stepped Spillway







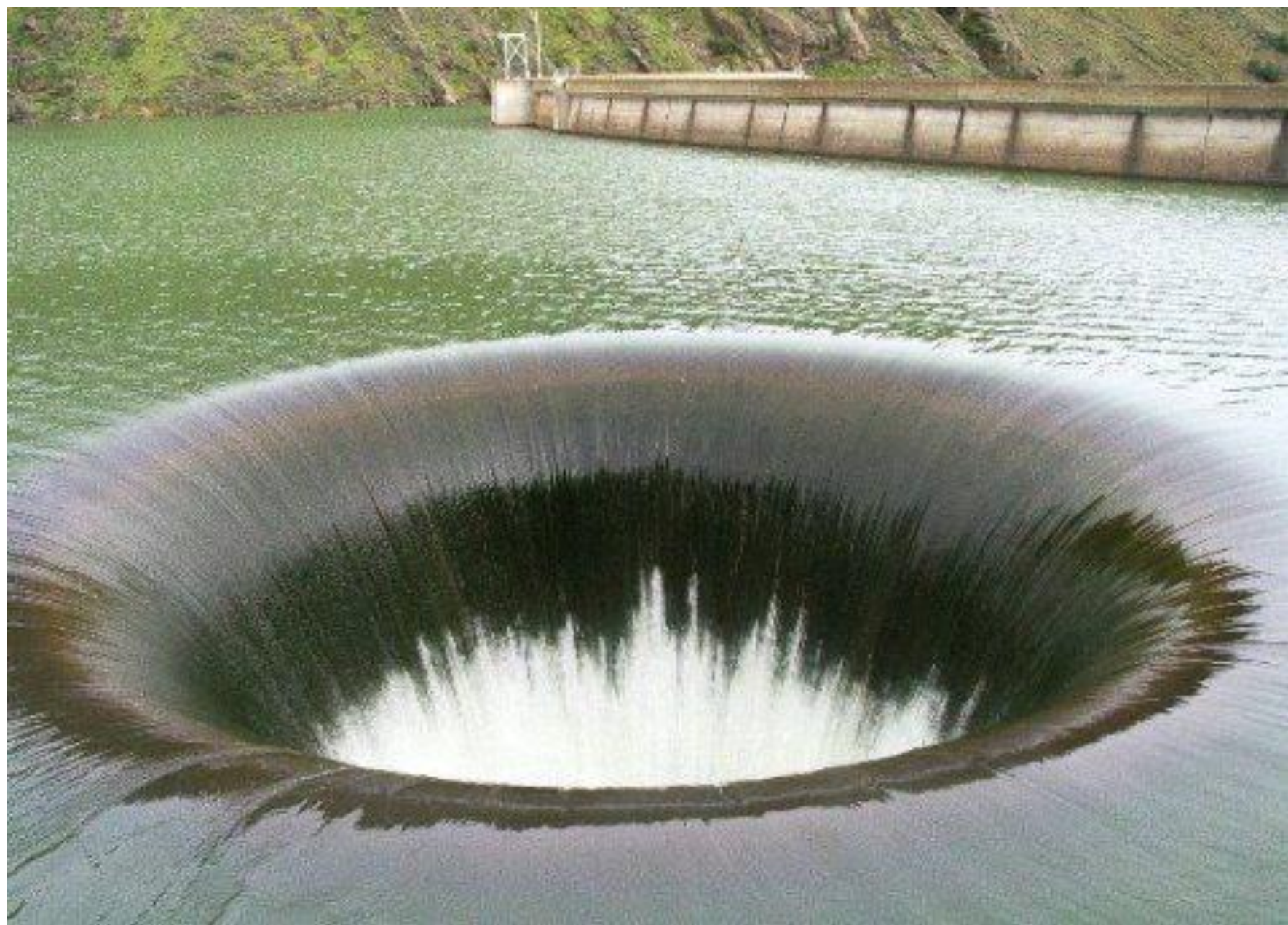
1
The dam's spillway is a concrete structure that allows water to flow over it safely.







State Historical Society of North Dakota

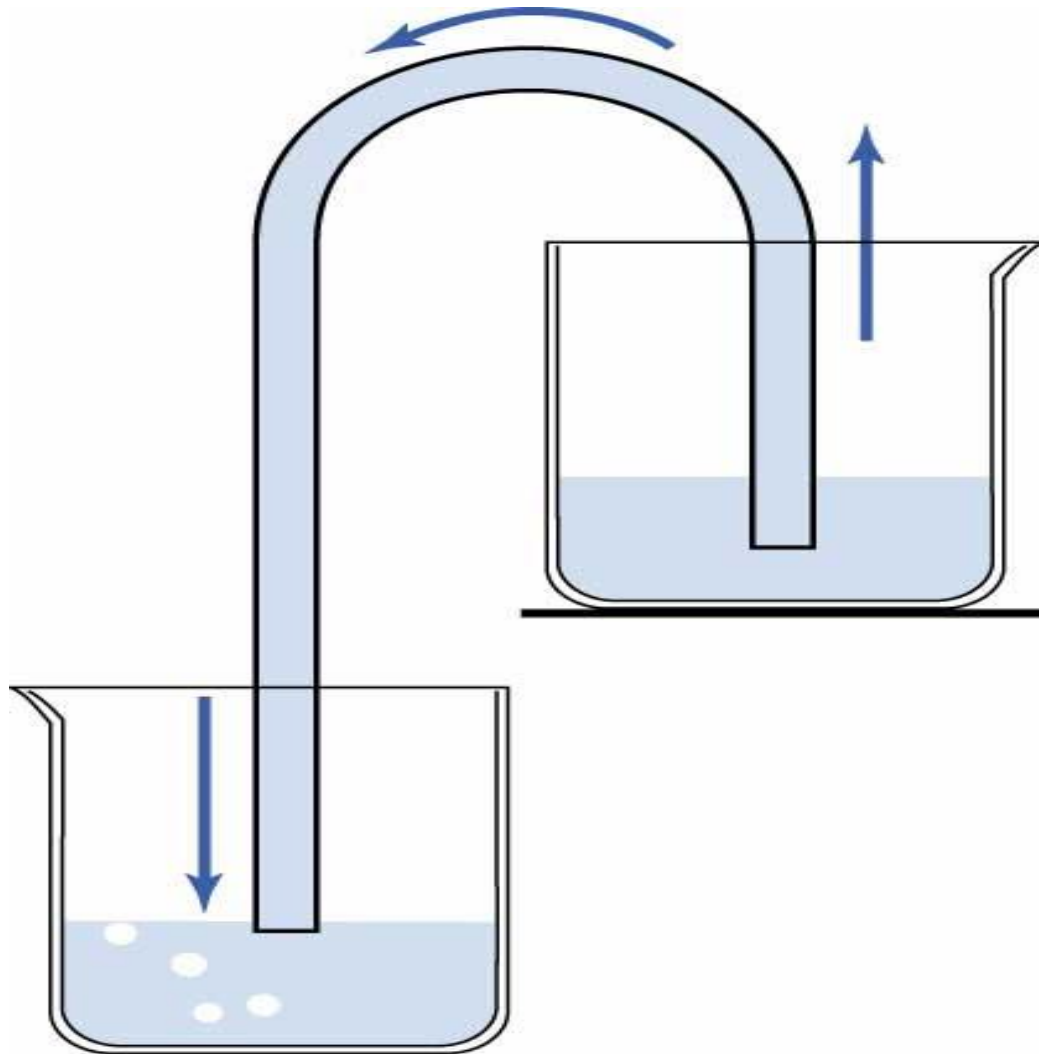








Siphonic Action



Siphon Spillway – Principle – Siphonic action

Types

Saddle Siphon spillway

Volute siphon spillway

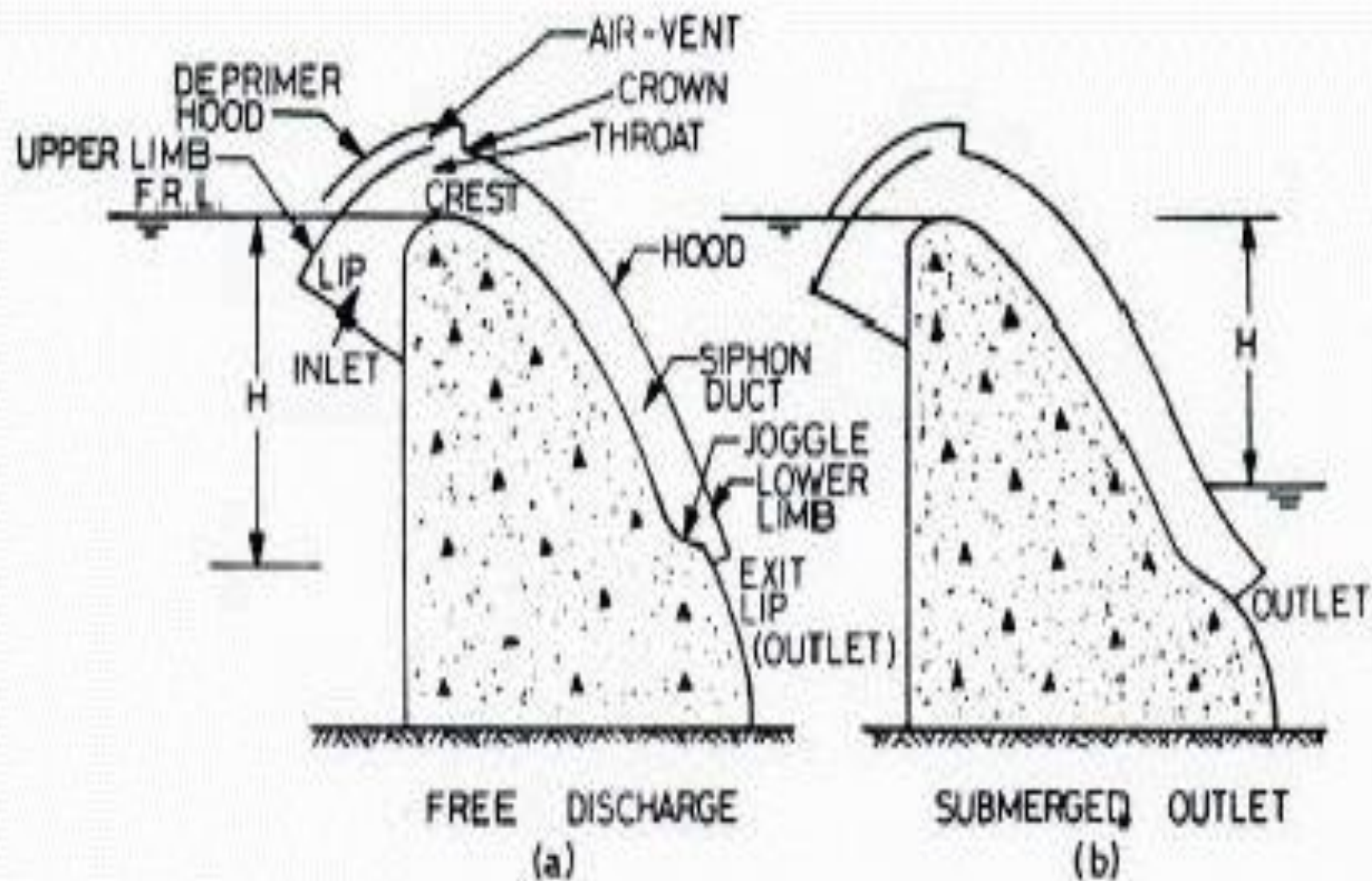
Saddle Siphon spillway

Closed conduit of inverted U shape

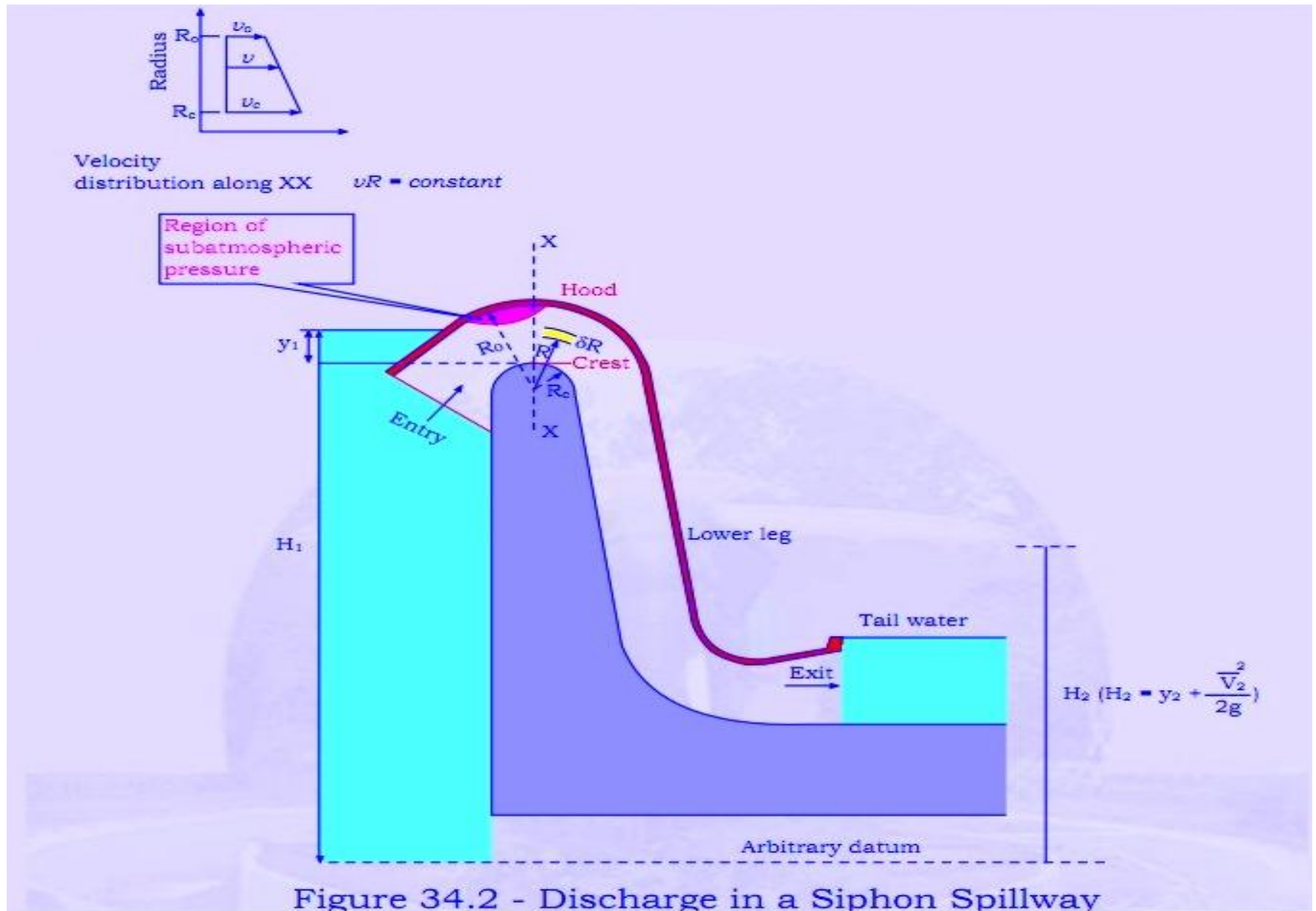
Commonly used type

a. Hood type

b. Tilted Outlet type



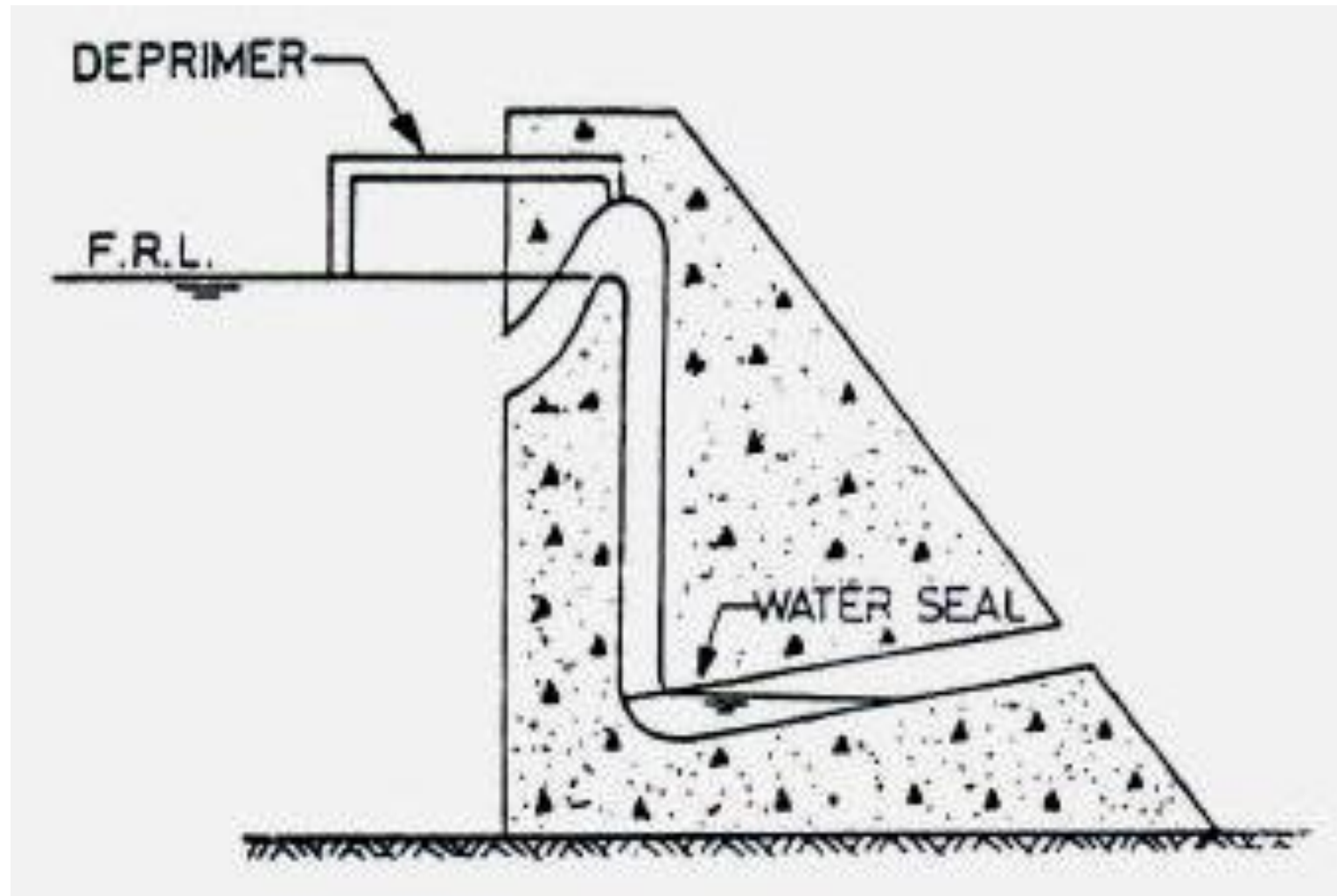
HOOD TYPE spillway



HOOD SIPHON SPILLWAY

- The siphon duct – Air tight concrete cover (hood) – over ogee type body wall
- Top of the body wall – crest level – kept at F.R.L of the reservoir
- Top of hood – crown
- Space between crown and crest – throat

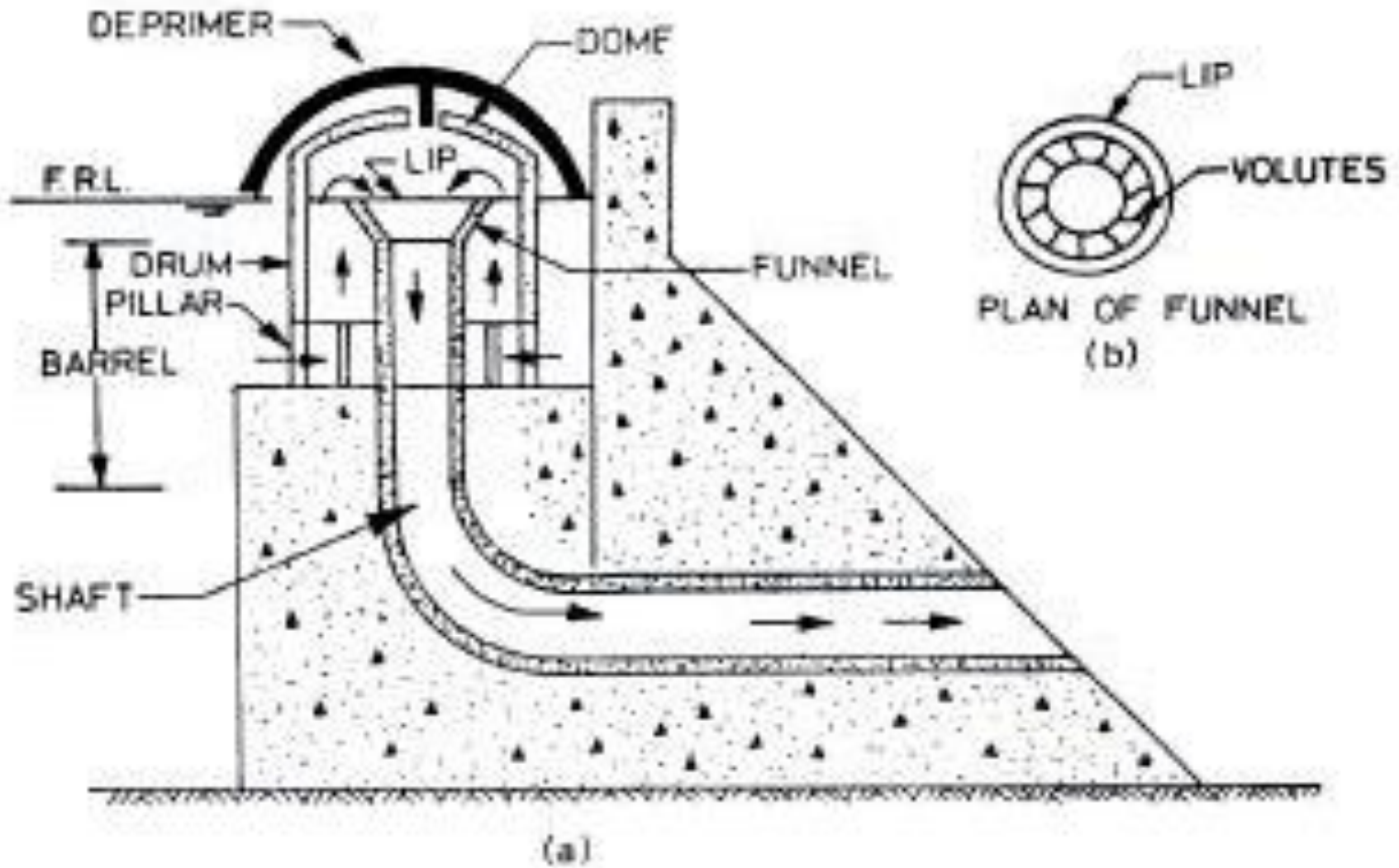
TILTED OUTLET TYPE SPILLWAY



Tilted Outlet Spillway

- The siphon duct is formed within the body of the dam.
- The lower limb of the siphon is vertical with a tilted outlet.
- The outlet is tilted upwards so as to develop water seal at the bend.
- It is required for sealing the air entry from the exit end without which priming is not possible.
- For depriming of the spillway, a deprimer is provided

VOLUTE Siphon spillway



Volute Siphon Spillway

- The volute siphon spillway - makes use of volutes (curved vanes) for priming.
- Consists of a vertical shaft (or barrel), which has a funnel shape at its top.
- At the bottom end, it is connected to a horizontal or nearly horizontal outlet conduit through a right-angled bend, which leads the water to the downstream channel
- The top or lip of the funnel is kept at the full reservoir level (F.R.L).

- The inner sloping surface of the funnel is provided with a number of volutes.
- The volutes are the curved vanes like the blades of a centrifugal pump or a turbine
- A cylindrical drum is constructed around the upper portion of the vertical shaft.
- The drum is supported on a number of pillars.
- The drum is open at the sides near the bottom so that water can enter into it.
- A dome is constructed over the drum.

- On the top of the dome, a small air-vent pipe (deprimer) of reinforced concrete is formed.
- One end of the airvent pipe is connected to the interior of the dome at its crown and the other end is kept slightly higher than the full reservoir level.
- These air-vent pipes serve as deprimers.