Classification according to Hydraulic Design

- Overflow Dam

  Permitted to carry surplus discharge over its crest.

  Some length of dam is kept at lower height than the remaining one. Generally called a spill way .They are made up of materials which will not be eroded by discharge.

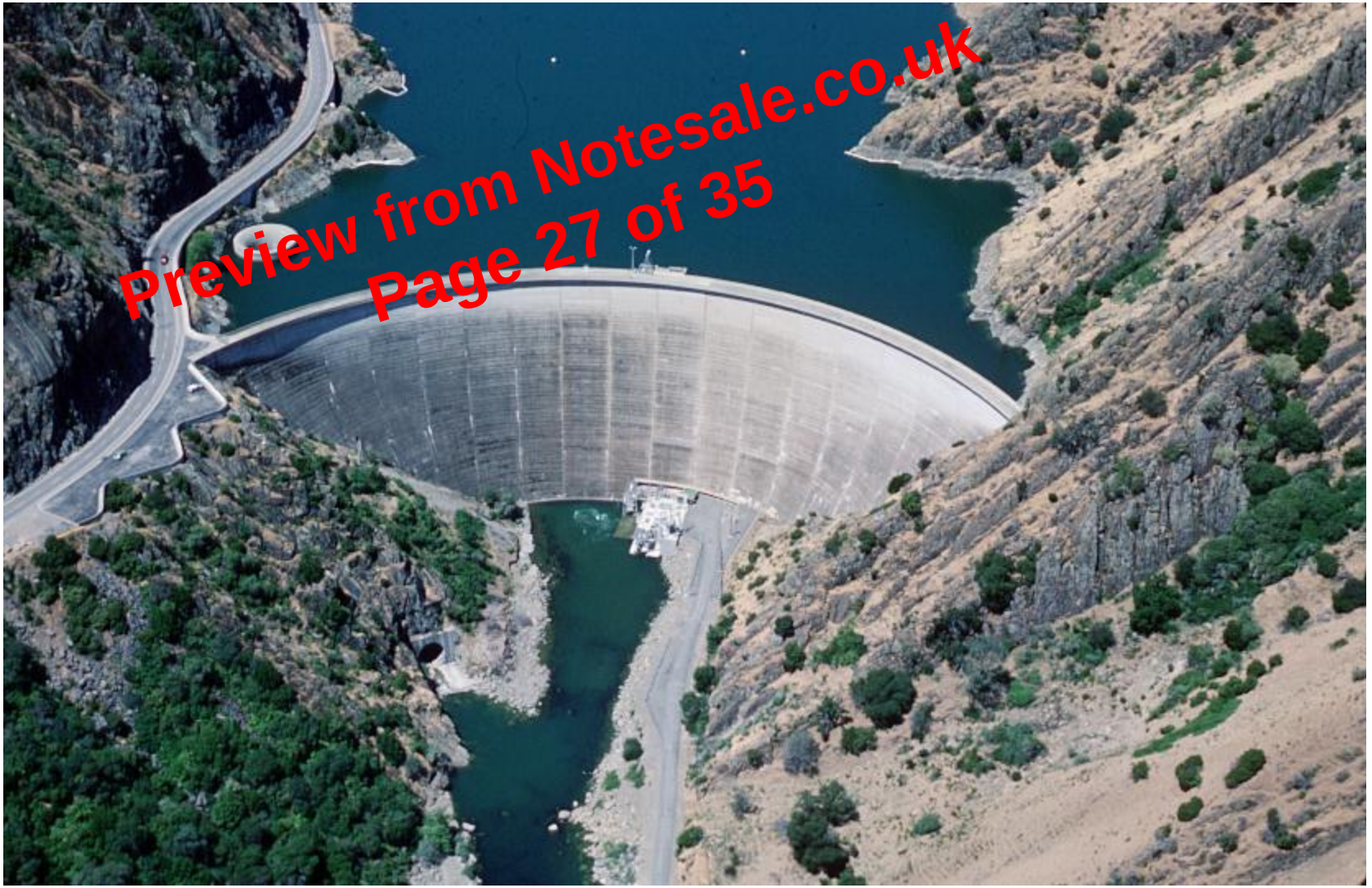
  Many times overflow & non-overflow dams are combined to form a composite single structure.

Classification according to Structural Behavior

- Gravity Dams

  It is masonry or concrete dam which resists the external forces acting on it by its own weight. They may be straight or curve in plan. Expensive to build, but more durable. Well adapted for use as an spillway, can be constructed of any height, requires least maintenance.

  e.g. Bhakra, Aswan, Roosevelt, Moover.



Dams and earthquakes

- Design, construction and operation of large dams are particularly sensitive to earthquake due the following factors :
  - (i) Reservoir can trigger earthquakes
  - (ii) Dams are often constructed in the active earthquake areas
  - (iii) Some water supply structure may be susceptible to the earthquake motion.
  - (iv) Embankments and outlets towers may respond to earthquake vibration.
  - (v) The consequence of a dam or water supply failure is high.
- Note that dams often built in active earthquake areas. Dams are usually constructed in valleys which active erosion is taking place. Active erosion implies that there has been recent uplift Under compressional tectonic force, reverse or thrust faults produce uplift. Hence many dam have an active fault dipping under them.
- Large new reservoirs can trigger earthquakes caused by change in stress due to weight of wate or increased ground water pore pressure decreasing the effective strength of the rock under the reservoir.
- Reservoir triggered earthquake are often referred to as reservoir induced seismicity
- Ground water plays a large part in earthquake activity pore pressure can be increased by due to decrease in pore volume caused by compaction under the weight of the reservoir and this can be

Dams and climate change

- The climate change poses risks, as well as opportunities. Climate change may alter the hydrological cycles. The dams which were designed for climate of their time are ill – prepared for rapid shifts in river flows and precipitation.
- Reduced rainfall under climate change translate itself into reduced run – off in the catchments. Hence due to this water based activities are likely to be attached.
- Country overall hydro – electricity generation and irrigation potential are likely to be affected due to expected lower surface and sub – surface flows and other factor like tourism are also likely to be affected.
- Following are the various strategies to be adopted in case of climate change
  - (i) operational changes to mitigate climate change impacts.
  - (ii) Increase awareness on the importance of dam and climate change
  - (iii) provisions for future off – stream storage