

Common Dam Elements

ABUTMENT - That part of the valley side against which the dam is constructed. The wall between a spillway or gate structure and the embankment can also be referred to as an abutment.

APPURTENANT STRUCTURES - The primary spillway; other conduits through the dam, the auxiliary spillway; the service spillway; the stilling basin; any constructed outlet channel; all dikes and berms designed and constructed to protect the dam; drains; and all other features constructed to protect or operate a dam.

AUXILIARY SPILLWAY (EMERGENCY SPILLWAY) - Is an open channel that is constructed over or around a dam embankment for the purpose of conveying safely past the dam, the flows that are greater than the primary spillway design discharge and detention storage.

AXIS OF DAM - The imaginary line down the center of the dam from end to end.

BOIL - An upward disturbance in the surface layer of soil caused by water escaping under pressure from behind or under a water-retaining structure such as a dam or a levee. The boil may be accompanied by deposition of soil particles (usually silt) in the form of a ring (miniature volcano) around the area where the water escapes.

BREACH - An opening or a breakthrough of a dam sometimes caused by rapid erosion of a section of earth embankment by water. Dams can also be breached intentionally to make them incapable of holding water.

CONDUIT - A closed channel or pipe to convey the discharge of water through, around or under a dam.

CORE (IMPERVIOUS CORE/IMPERVIOUS ZONE) - A zone of material of low permeability in an embankment dam.

CREST LENGTH - The measured length of the top of the dam from abutment to abutment.

CREST OF DAM - see "Top of Dam"

CUTOFF COLLAR - A projecting flange built or installed completely around the outside of a pipe to lengthen the path of seepage along the outer surface of the pipe.

CUTOFF TRENCH - An excavation under a dam to be later filled with impervious material to prevent or reduce seepage of water from passing through the foundation of a dam.

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DRAINAGE AREA - The area that drains naturally to a particular point on a river or stream.

DRAWDOWN - The resultant lowering of water surface level due to the release of water from the reservoir.

EMBANKMENT DAM (EARTH DAM / EARTHFILL DAM) - Any dam constructed of excavated natural materials and which has sloping sides.

EMERGENCY ACTION PLAN (EAP) - A formal document that identifies potential emergency conditions at a dam and specifies preplanned actions to be followed to minimize property damage and loss of life if the dam would fail.

ENERGY DISSIPATOR - Any device constructed in a waterway to reduce or dissipate the energy of fast-flowing water.

FOUNDATION OF DAM - The material on which the dam structure is placed.

FREEBOARD - The vertical distance between the maximum water surface elevation during the design storm and the top of a dam.

GROIN - That area along the contact (or intersection) of the face of a dam with the abutments.

HEIGHT OF DAM - The height of a dam or barrier that extends across the natural bed of a stream or water course shall be the vertical distance measured from the bed of the stream or water course at the downstream toe of the dam or barrier to the lowest elevation on the top of the dam or barrier, excluding any open channel spillway and any anomalous low points.

(b) The height of a dam or barrier that does not extend across the natural bed of a stream or water course shall be the vertical distance measured from the lowest elevation of the outside limit of the dam or barrier to the lowest elevation on the top of the dam or barrier, excluding any open channel spillway and any anomalous low points.

(c) When determining the height of a proposed dam, the height shall be measured from the lowest elevation on the downstream toe of the dam to the planned top of the dam excluding any allowance for settlement.

INTAKE - Any structure in a dam through which water can be drawn into the primary or auxiliary spillway.

INUNDATION AREA - means the area below a dam that will be inundated with water as determined by conducting a breach analysis meeting the requirements set forth in K.A.R. 5-40-24.

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LONGITUDINAL CRACK- Longitudinal cracks extend parallel to the crest of the embankment and may indicate the early stages of a slide that may occur on either the upstream or downstream slope of the embankment.

ONE-PERCENT CHANCE STORM – A rainfall event that has a one percent chance of being equaled or exceeded one or more times in a year.

OUTLET - An opening in which water can be freely discharged for a particular purpose from a reservoir.

PIPING - The action of water passing through or under an embankment dam and carrying with it to the surface at the downstream face some of the finer material. The progressive removal of soil particles from a mass by percolating water leads to the development of channels.

PLUNGE BASIN (PLUNGE POOL) - A natural or artificially created pool that dissipates the energy of free-falling water.

PRIMARY SPILLWAY - The outlet device through a dam that provides the initial outlet for storm flows, usually consisting of either: (1) a riser structure in combination with an outlet conduit, or (2) a canopy or hooded inlet structures in combination with an outlet conduit.

RIP RAP - A layer of large uncoursed stones, broken rock, or pre-cast blocks placed in random fashion on the upstream slope of an embankment dam, on a reservoir shore, or on the sides of a channel as protection against wave and ice action.

SCARP - The nearly vertical, exposed earth surface created at the upper edge of a slide or slump

SEEPAGE - The movement of water that may take place through the dam, its foundations, or its abutments.

SLIDE - The movement of a mass of earth fill down a slope. In embankments and abutments, this involves the separation of a portion of the slope from the surrounding material.

SPILLWAY - A structure which flows are discharged over, through or around the dam. If the flow is controlled by gates, it is considered a controlled spillway; if the elevation of the spillway crest is the only control, it is considered an uncontrolled spillway.

SERVICE SPILLWAY - An open channel spillway constructed over or around a dam embankment to convey past the dam all flows entering the reservoir which cannot be stored in a reservoir behind a dam that does not have a primary spillway. A service spillway is generally designed to serve the functions of both a primary and auxiliary spillway.

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STILLING BASIN - An open structure or excavation at the outlet of a primary, service or auxiliary spillway that dissipates the energy of fast moving water being discharged from the spillway outlet to protect the streambed below a dam from erosion.

STORAGE - The retention of water or delay in runoff by storage in a reservoir, or by temporarily filling the overflow areas, as in the progression of a flood crest through a natural stream channel.

TAILWATER LEVEL - The level of water in the discharge channel immediately downstream of the dam.

TOE OF DAM - The point of intersection between the bottom of a slope or the upstream or downstream face of a dam and the natural ground.

TOP OF DAM - The elevation of the uppermost surface of a dam, excluding parapet wall, railings, etc.

TOP WIDTH - The width of a dam at the level of the top of the dam.

TRANSVERSE CRACK - Transverse cracks extend perpendicular to the crest and can indicate differential settlement within the embankment.

TRASH RACK - a protective device installed on a primary spillway inlet to prevent trash and other debris from obstructing the primary spillway but not obstructing the flow of water.

VALVE - A device used to control the flow in a conduit, pipe or tunnel that permanently obstructs a portion of the waterway. As distinguished from gates, valves are constructed so that the closing member remains in the water passageway for all operating positions.