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# **Chapter 7**

## **Earthen Dam Structures**

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# **Earthen Dam Structures**

## **Drop Structure (DS)**

## **Sediment Basin (SBN)**

## **Stormwater Detention Basin (SDB)**

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### **Description**

An earthen barrier across a drainage way usually constructed with a pipe system through the embankment and/or an auxiliary spillway bypass. Earthen dam structures may be used in conjunction with the following practices:

- Drop Structures
- Sediment Basins
- Stormwater Detention Basins

Basins created by the earthen dam can be used to convey runoff water without causing erosion, to trap sediment, and/or to reduce stormwater peak flows.

### **Installation**

- Divert runoff from undisturbed areas away from the earthen dam practice if allowable.
- Clear and prepare the foundation for the dam by removing all objectionable material.
- Stockpile surface soil for use in topsoiling and vegetation establishment.
- When specified, excavate a keyway trench with 8 ft. bottom and 1.5:1 side slopes across the dam foundation according to the plans, at least 2 feet deep, and to an adequate foundation.

- Compact earth fill in the keyway trench with good clay material in thin lifts (6" – 9" uncompacted) back up to ground elevation.
- Install pipe system according to plans and elevations with either a sand drainage diaphragm or anti-seep collars, anti-flotation block, trash rack, and outlet protection.
- When a sand drainage diaphragm is specified, ensure the sand is properly graded, placed, and compacted. Ensure the drainage outlet is composed of the layers of graded material specified.
- Manually compact moist clayey earth fill around pipe (4"- 6" uncompacted lifts) and anti-seep collars (or drainage diaphragm) within 2 ft. of pipe and to an elevation 2 ft. over the pipe.
- Construct earthen dam in 6" – 9" uncompacted lifts (compacted to 4" - 6") to form the embankment to the planned elevation with a top width specified (generally at least 8 ft.) and side slopes of 2.5:1 or flatter (3:1 or flatter for continuous maintenance with mowing equipment). Use most clayey material in the core of the dam with more permeable materials in the shell of the dam. Overbuild the dam at least 10% for settlement. Maintain moisture and compaction requirements according to the plans and specifications.
- Construct auxiliary spillway according to plans and elevation installing geotextile and riprap or other stabilization practices as specified.
- For Sediment Basins, make sure stormwater enters the far end of the pool to maximize trap efficiency (see Figure EDS-1).

- Spread stockpiled topsoil and establish vegetation.

## **Maintenance**

- Inspect the earthen dam and basin after each storm event.
- Remove and properly dispose of sediment that has accumulated to  $\frac{1}{2}$  the design volume.
- Remove trash from pipe system or auxiliary spillway.
- Check for any erosion, settlement, seepage, or slumping and make repairs as needed.
- If the basin is temporary, properly remove the structure and stabilize the area.



**Figure EDS-1 Sediment Basin**

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