

PC-5 *DIKES AND BERMS*

Refer to: ITD Standard Specifications, Sections 205, 209, and 212.
ITD Standard Drawings P-1-E and P-1-F.

**BMP Objectives**

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|-------------------------------------|------------------------------|
| <input checked="" type="checkbox"/> | Perimeter Control |
| <input checked="" type="checkbox"/> | Slope Protection |
| <input type="checkbox"/> | Borrow and Stockpiles |
| <input checked="" type="checkbox"/> | Drainage Areas |
| <input checked="" type="checkbox"/> | Sediment Trapping |
| <input type="checkbox"/> | Stream Protection |
| <input checked="" type="checkbox"/> | Temporary Stabilizing |
| <input checked="" type="checkbox"/> | Permanent Stabilizing |

Definition and Purpose

A permanent dike or berm is a ridge constructed of compacted soil, loose gravel, stone, or crushed rock that intercepts and prevents stormwater runoff from entering a sensitive area, and diverts or directs the water to a controlled or stabilized drainage outlet. Dikes or berms can be located or placed immediately along the top or bottom of cut or fill slopes, along the perimeter of an area, or adjacent to streams to prevent high stream flows from entering a site, or runoff from a site entering a stream or waterway.

Appropriate Applications

- Directs water to slope drains, ditches, channels, sediment trap basins, retention ponds, or swales.
- Serves both as a temporary and later as a permanent erosion control that is left in place for the life of the project.
- Prevents runoff water from entering or overflowing slopes or intercepts and diverts overflow water after coming off a slope.
- Intercepts runoff from upland undisturbed areas and diverts to a sediment trap basin or slope drain.
- Intercepts runoff from a road or slope and directs the water to a slope drain or a sediment trap basin.
- Prevents off-site stormwater from entering the area when installed around the perimeter.
- Prevents high water from entering a project when installed next to live streams, ponds, or lakes.

- Prevents runoff from a site entering a live body of water.
- Slows the velocity of water when used in ditches as a water bar.

Limitations

- Shall not be used in streambeds and should not be used to filter water.
- Should be used for anticipated minor runoff or for small drainage areas.
- Must be properly keyed and compacted to avoid washout.
- Must be designed and constructed to avoid erosion or washout due to diversion of the water and/or creation of a concentrated flow of high velocity runoff.

Design Parameters

- Dikes or berms are constructed of soil, gravel, stone or crushed rock, or a combination of these materials. If soil is used for dikes or berms, the soil should be of a silt or clay type, intermixed with gravel or rock.
- The height of dikes or berms comprised of soil or rock should be sufficient to prevent water from overtopping the structure. The width at the top of the dike or berm should be approximately twice the height, with 2H:1V or flatter slopes. Maximum height should not exceed 5 feet.
- A permanent ditch or channel liner may be placed on the uphill or upstream side and properly anchored to prevent erosion or washout of the dikes or berms.
- If used as an interceptor/diversion structure, the dike or berm should be built on contour with a consistent but gradual gradient to a stabilized outlet.
- A channel or ditch may be constructed directly uphill from a dike or berm to aid in diverting and carrying water to a stabilized outlet.

Construction Guidelines

- Use permanent dikes and berms to intercept and divert water to sediment traps or stabilized outlets. Used in conjunction with channels or ditches and liners, they can be very effective in handling runoff water. Space, degree of slope, and access can be limiting or prohibitive factors in installing dikes or berms.
- Grade all dikes and berms as flat as possible to prevent erosion and drain to a stabilized outlet or other area.
- Compact the dike or berm material in accordance with the Standard Specifications, and if for any reason this cannot be done, ditch or channel liners are required to avoid erosion and washout.
- Make field adjustments as necessary to ensure proper performance.

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications during construction.

- Periodic inspection and maintenance will be required based on post-construction site conditions.
- Repair immediately if erosion or damage is observed.