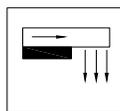


Level Spreader

Plan Symbol



Description

A level spreader is a permanent outlet for dikes and diversions consisting of an excavated channel constructed at zero grade across a slope that converts concentrated runoff to sheet flow and releases it onto areas stabilized by existing vegetation. Sediment-laden waters **should not** be directed towards level spreaders.

When and Where to Use It

Construct level spreaders on undisturbed areas that are stabilized by existing vegetation and where concentrated flows are anticipated to occur. Diversion channels call for a stable outlet for concentrated storm water flows. The level spreader is used for this purpose if the runoff is relatively free of sediment. If properly constructed, level spreaders significantly reduce the velocity of concentrated storm water and spread it uniformly over a stable undisturbed area.

Design Criteria

Design the grade of the channel transition for the last 20-feet before entering the level spreader less than or equal to 1 percent. The crest of the overflow is level (0 percent grade) to ensure uniform spreading of runoff.

Design the lip of the level spreader with a Turf Reinforcement Mat (TRM) able to withstand 5-lbs./ft shear stress.

Determine the spreader dimensions by estimating the flow expected from the 10-year, 24-hour design storm (Q_{10}). The maximum flow into the spreader should not exceed 30 cfs.

- The minimum width of the spreader is 6-feet.
- Design a minimum uniform depth of 0.5-feet across the entire length the of the spreader as measured from the crest of the lip.
- The maximum design the slope of the undisturbed outlet is 10 percent.

Installation

Care must be taken during construction to ensure the lower lip of the structure is level.

If there are any depressions in the lip, flow will tend to concentrate at these points and erosion will occur, resulting in failure of the outlet. Avoid the problem by using a grade board, a gravel lip or a TRM along the exit lip of the level spreader.

Extend the TRM 10-feet below the lip and bury it at least 6- inches within the spreader, and extend at least 12-inches beyond the lip on the outside of the spreader.

Install the grade of the channel transition for the last 20-feet before entering the level spreader less than or equal to 1 percent.

Install the crest of the overflow level (0 percent grade) to ensure uniform spreading of runoff.

Inspection and Maintenance

- The spreader should be inspected every 7 days and within 24-hours after each rainfall event that produces ½-inches or more of precipitation to ensure that it is functioning correctly.
- The contractor should avoid the placement of any material on the structure or prevent construction traffic across the structure.
- If the spreader is damaged by construction traffic, it should be immediately repaired.



Level Spreader



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Preventive Measures and Troubleshooting Guide

Field Condition	Common Solutions
Spreader is damaged by construction traffic.	Repair immediately.
Water is channelizing and causing erosion.	Make sure level spreader lip was installed correctly, with a 0% grade to ensure a uniform distribution of flow, Repair immediately, as needed.
Too much sediment has accumulated.	Remove accumulated sediment to recover capacity. A sediment forebay may need to be constructed at the inlet of the level spreader.