

Straw Bale Check Dam

Straw bale check dams are temporary sediment barriers constructed of several square straw bales located across small drainage features. Each bale is bound using either wire or nylon string. (Figure 1).

These check dams are often constructed in series, and are meant to slow sediment laden water, which allows sediment to settle and clean water to flow downstream. They are not intended to provide protection from large storm events or to be used in water bodies such as creeks, streams and rivers. Straw bale check dams should be installed prior to beginning work.

Figure 1
Installed straw bale
check dam



Straw Bale Check Dam

Installation

To install:

- Dig a shallow trench approximately 75mm (3 inches) deep by the width of the bale, across the channel/ditch ensuring bales are level with the ground. The bales should be placed in a row with bale ends tightly abutting each other. The trench should extend up the bank enough to ensure that the bottom of the end bales will be higher than the top of the middle bales.
- Place the bales so the bale ties are not in contact with the ground, and then stake them. Drive two wooden stakes through each bale of straw, ensuring each stake goes at least 600mm (24 inches) deep in the ground for anchorage. The first stake in each bale should be driven toward a previously laid bale to force the bales together.
- Dig a second trench on the upstream side of the existing row of bales approximately 75mm (3 inches) deep and wider than the first row of bales (about half a bale length wider on each side). Again, make the trench as flat as possible so that the bales can make good ground contact.
- Place the second row of bales in a staggered, brick pattern tightly abutting the first row of bales. Again, ensure the bale ties are not in contact with the ground. Stake in the bales the same as previous.
- Use the excavated soil to backfill around the base of the bales on the upslope row and pack well to ensure the bales are stable. Use extra straw from unused bales to pack all voids and crevices between the bales.

Maintenance & Removal

Straw bale check dams should be inspected weekly and after any significant rainfall event. Sediment deposits should be removed once it reaches half of the height of the barrier. Inspect each bale and replace any that are damaged, decaying or dislodged immediately. Ensure bales are still tightly bound and secure.

Common issues include:

- Inadequate staking (*Figure 2*).
 - Placement of bales such that the baling twine is in contact with the ground (*Figure 2*).
 - Inadequate packing of voids between bales with additional straw (*Figure 3*).
 - Installation of only one row of bales, or not enough bales to cover the channel width (*Figure 2*).
- Remove the bales and stakes once permanent stabilization of soils on site has been re-established. Used straw can be used as mulch in other areas.



Pros & Cons

Pros

- Inexpensive
- Straw bales are biodegradable and often readily available

Cons

- Can require extensive maintenance following high velocity flows associated with storm events
- Susceptible to undermining and erosion damage if not properly trenched into soil or if joints are not completely infilled with straw
- Short service life

This project was undertaken with the financial support of the Government of Canada.

Ce projet a été réalisé avec l'appui financier du gouvernement du Canada.

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