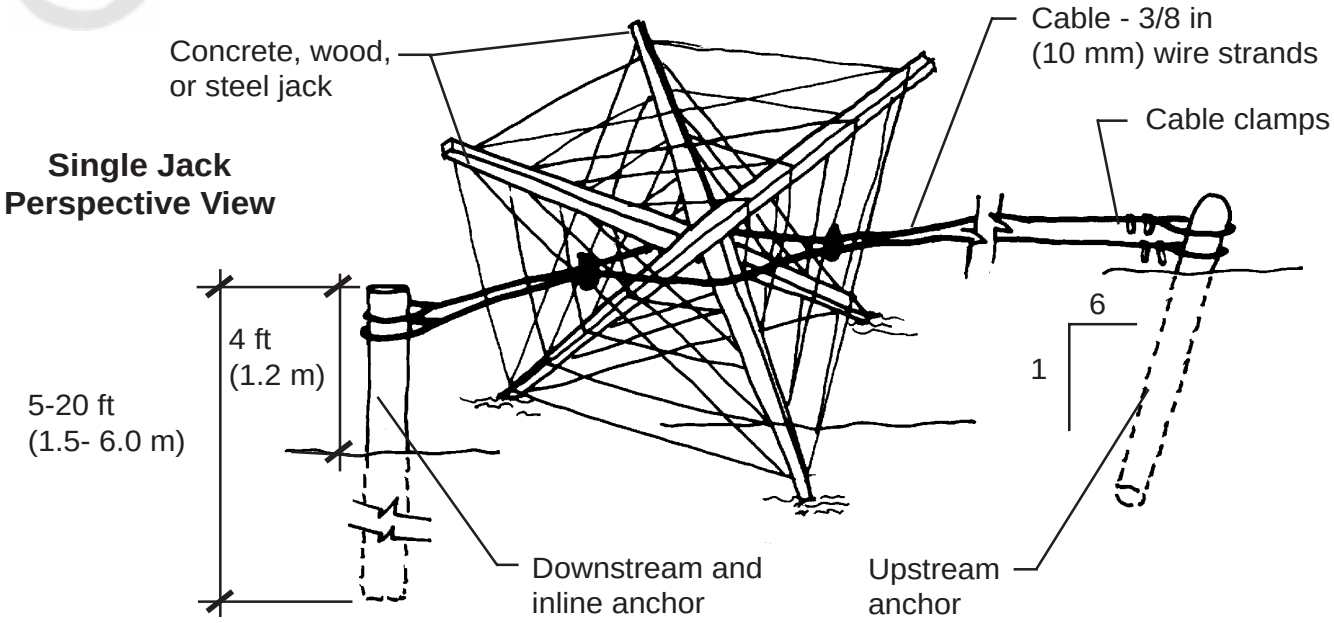
PRIMARY USE: Minimize bank erosion.
ADDITIONAL USES: Improve habitat for aquatic plants and animals.

JACKS/JACK FIELDS

What is it? Jacks are individual structures made of wood, concrete or steel poles crossed and wired together at the ends and midpoints. They are anchored in rows, parallel to an eroding streambank.

Purpose

Jacks trap debris and sediment during flood flows, resulting in a natural revegetation of the streambank as the jacks become embedded. This technique is especially effective on long radius curves.



Limitations

They are not effective in redirecting flow away from the streambank. The debris which collects will diminish the aesthetic quality of the reach. Habitat may be destroyed during installation, and recreational opportunities may be eliminated because of the dangers posed. Engineers will need to provide some of the design/installation details and dimensions. Wooden jack systems are limited to shallow flow depths of 12 ft (3.7 m) or less if using the dimensions suggested.

Materials

Wooden jacks are constructed from three poles, each 10-16 ft (3-4.9 m) long. They are crossed and wired together at the ends and midpoints with No. 9 galvanized wire. Cables used to anchor the wood jack systems should be 3/8 in (10 mm) in diameter or larger with a minimum breaking strength of 15,400 pounds (7000 kg). Steel jacks are used in a manner similar to that of wood jacks; however, leg assemblies, cable size, anchor blocks, and anchor placement details vary. Concrete beams may be substituted for steel, but engineering design is required to determine different attachment methods, anchoring systems, and assembly configuration.

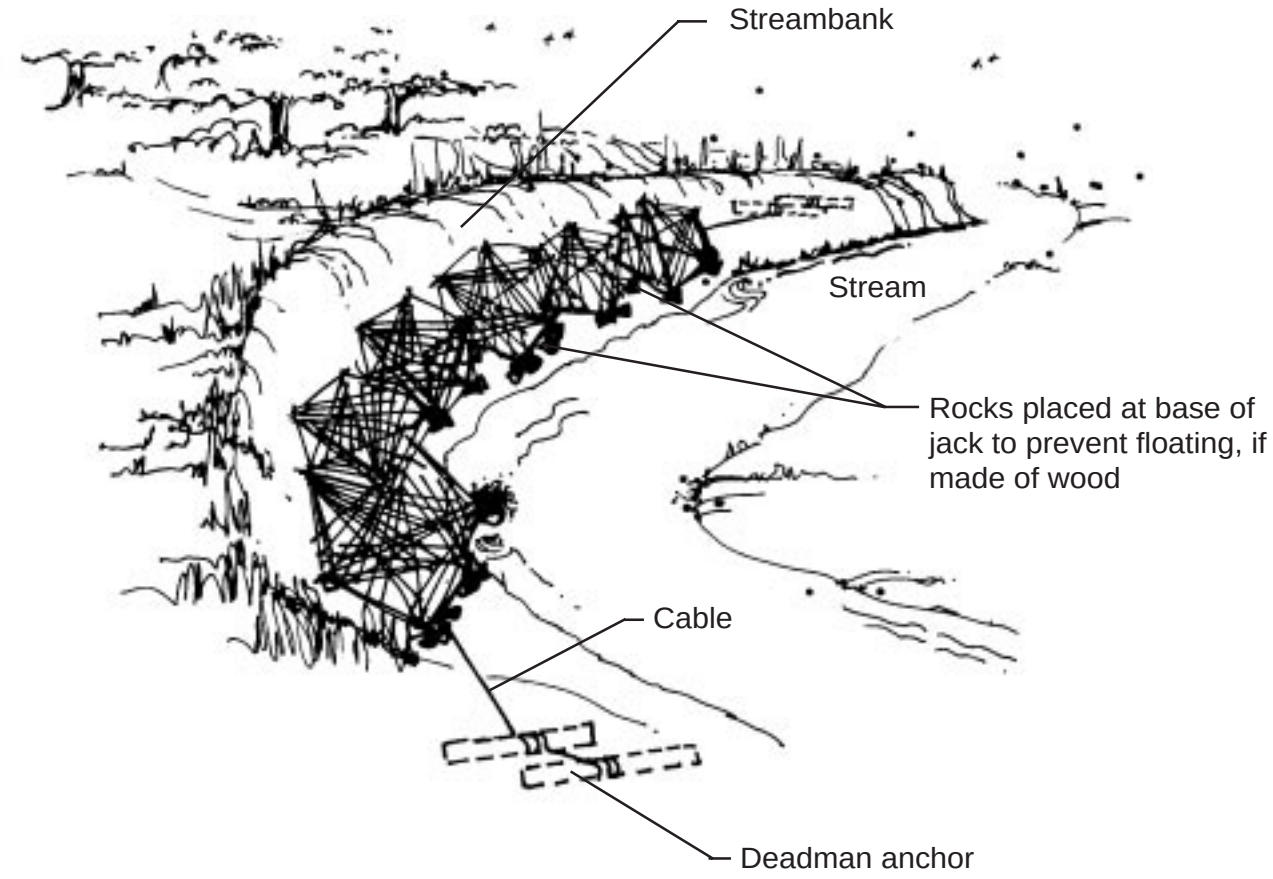
Installation

Jack rows can be placed on a shelf 14 ft (4.3 m) wide, and on two shelves, each 14 ft (4.3 m) wide, for a double jack row. Grade the shelf to slope from 1ft (0.3 m) above the streambed at the side nearest the stream to 3 ft (0.9 m) above the streambed at the side nearest the slope. Space the jacks one jack dimension apart to provide an almost continuous line of revetment. Anchor the jacks in place by a cable strung through and tied to the center of the jacks with cable clamps. The cable should be tied to a buried anchor or piling. Bury anchors or drive anchor piling to the design depth determined by an engineer. Attach an anchored 3/8 in (10 mm) dia. wire cable to one leg of each jack to prevent rotation and improve stability.

Source: Engineering Field Handbook, NRCS.

JACKS/JACK FIELDS

Additional Drawings:



Jack Field
Perspective View

Source: Engineering Field Handbook, NRCS.