

THE PALISADE SYSTEM



ER-CON TECHNOLOGIES

Premier Erosion Control Installations

Palisades in Short:

- Palisades displace high velocity and turbulent flow away from the threatened riverbank and associated asset
- The system moves maximum velocities through structures end, thus halting river bank migration
- Variable permeability tunes the system to site specific river velocities, cross section and sediment characteristics



Palisades are a proven technology, addressing site-specific solutions for major erosion problems.

How the Palisade System Works

Er-Con's patented Palisade™ System is designed to stabilize a specific portion of an eroding river bank. This river training system gently influences the flow and migration of rivers in order to protect encroachment on pipelines, railroads or other assets. Er-Con's Palisade™ system has the ability to protect any length of riverbank from further migration.

The system consists of high strength steel, reinforced synthetic Erconets™ which are attached to fabricated steel attachment assemblies. The assemblies are installed over steel pipe pilings that are driven deep into the riverbed.



The individual Palisade™ units are spaced variably along the riverbank and are angled slightly downstream perpendicular to flow. Each of these panels has variable permeability ranging between 55 and 70 percent flow and are designed to slightly reduce flow within the control zone. As seen in most rivers, the presence of sand and silt loads can allow for significant accretion as a result of the realignment of velocities towards midstream.

The structures are mounted to allow for vertical settlement as the river section near the bank is modified during the initial period of operation. Within a short time, sediment deposition within the control zone can support the re-establishment of riparian vegetation propagating further natural stability. Installation time is dependent on the size of the requested system, but has minimal impact/disturbance to the ambient environment.

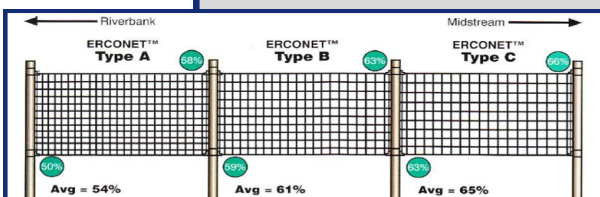


Illustration of Palisade permeability



The Palisade™ Accretion Process

Er-Con's Palisade™ systems continue to be the best available technology for meandering river bank erosion control. The permeability decreases nearer to the shore as the system reduces the high velocity next to the threatened river bank and re-aligns the thalweg (area of high flow and deepest part of the system) towards the center of the channel. This arrests the bank erosion and often creating accretion along the once eroding bank.

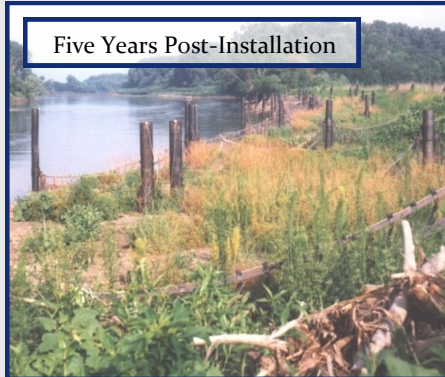
Palisades™ are designed to work as a system with different levels of permeability and lengths for bank stabilization. The system is not dependent upon a single structure, therefore it is capable of protecting the bank with certain natural accretion and debris. In certain cases of high debris flow, breakers may be installed to protect the system; however, not all debris is bad. In fact, debris is usually considered beneficial and contributes to the riparian habitat and bank accretion.



Following Installation



Five Years Post-Installation



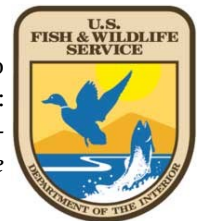
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The Environmental Advantage

The primary goal of the Palisade™ System is to protect the client's asset. However, installation of the system has clear environmental advantages as well by inducing natural fluvial processes, re-creating riparian habitats, and enhancing aquatic habitats.

Following a California-based project along the Sacramento River, the USFWS issued a *Concluding Report* which stated: "The lowest occurrence of juvenile salmon was at the riprapped site. The relative abundance of juvenile salmon at the palisade site increased compared to pre-project conditions."



Furthermore, the report finalized: "Based on the information developed in the course of this study, it appears that palisades are an environmentally superior form of bank stabilization compared to standard rock revetment."

Palisades are a time-tested technology that serve the primary purpose of protecting the asset with minimal impact to the ambient environment. The presence of these structures stabilizes the riverbank, creating both riparian and aquatic habitats.