Vortex Sand Fencing (Patent Pending)

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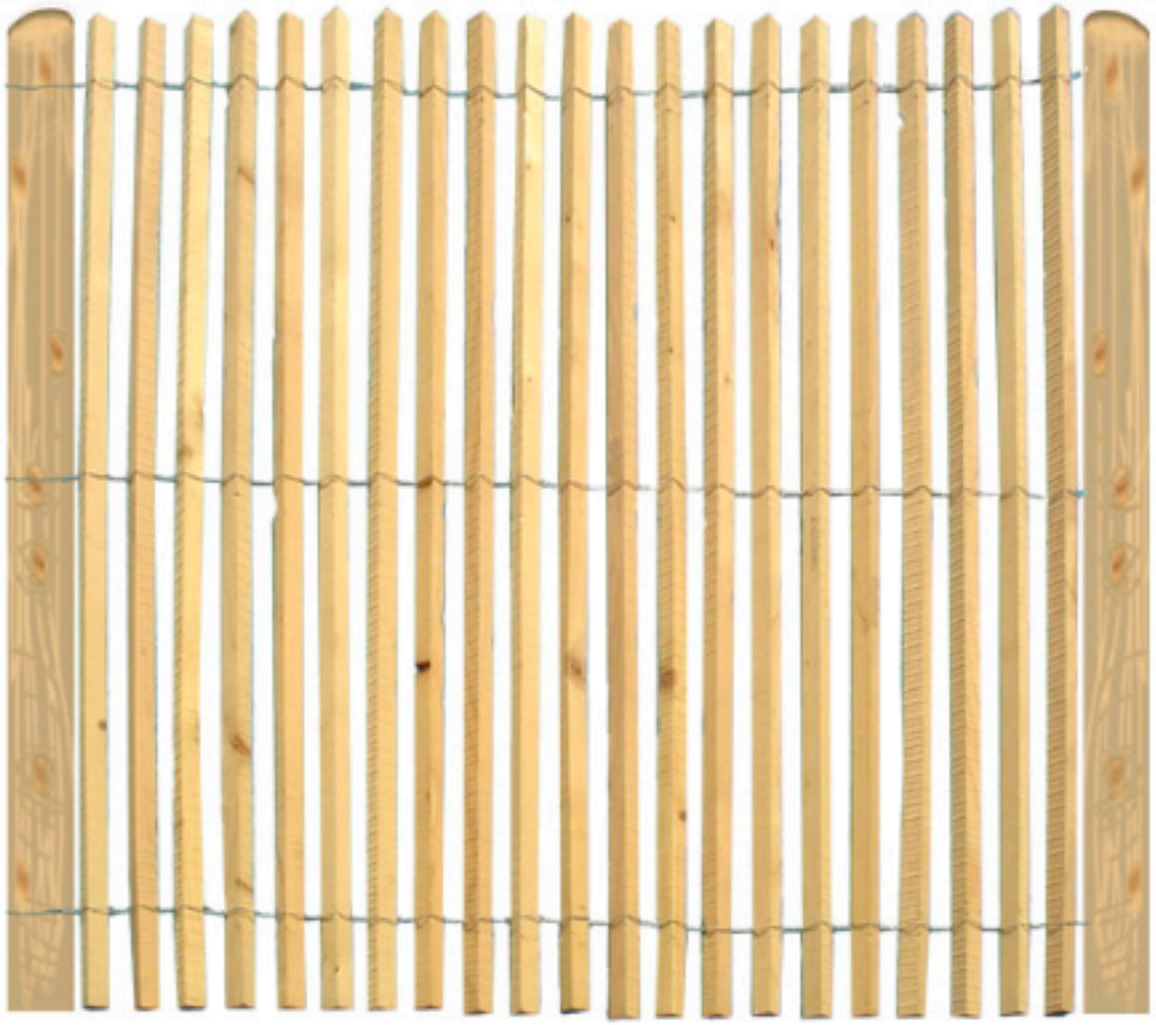
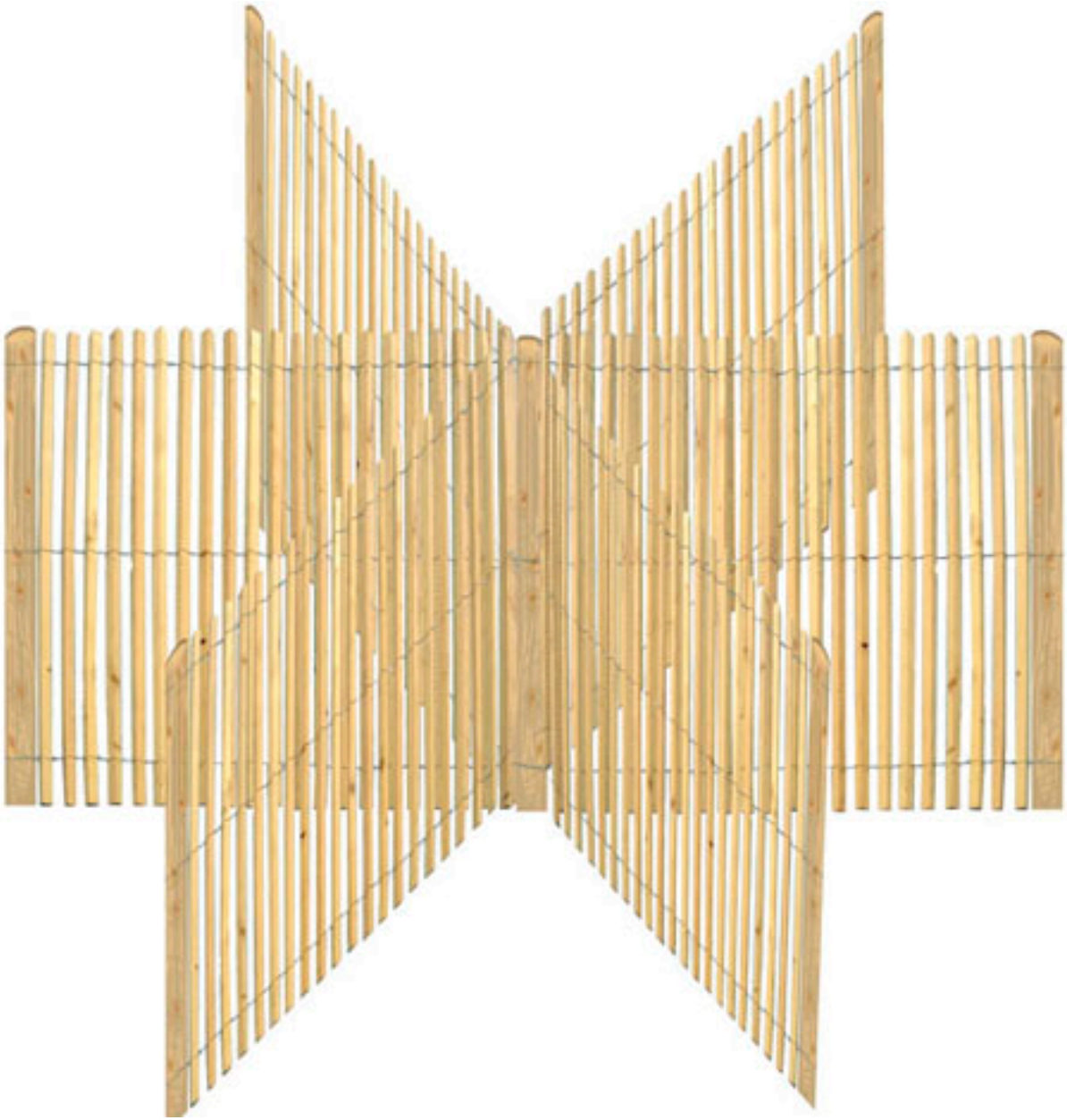


This is one wing of a sand fence section. A section consists of 6 wings wired to a center post and anchored on each end by a post. The wings are 4 feet by 4 feet. The posts are 3 inches in diameter and are 8 feet long. The posts are placed in the ground 4 feet.

Each slat of the wired fence is a triangular shaped four foot long wooden slat created by cutting a 4 foot long 1" by 1" in half on the diagonal. The wood is the same type used in "regular" sand fence manufactured with thin rectangular slats. The wire used to weave this fence is also the same type used in "regular" sand fence manufacturing. Likewise for the posts, although these posts are a foot longer at 8 feet in length to provide more resistance to erosive action.

A Single Sand Fence Section

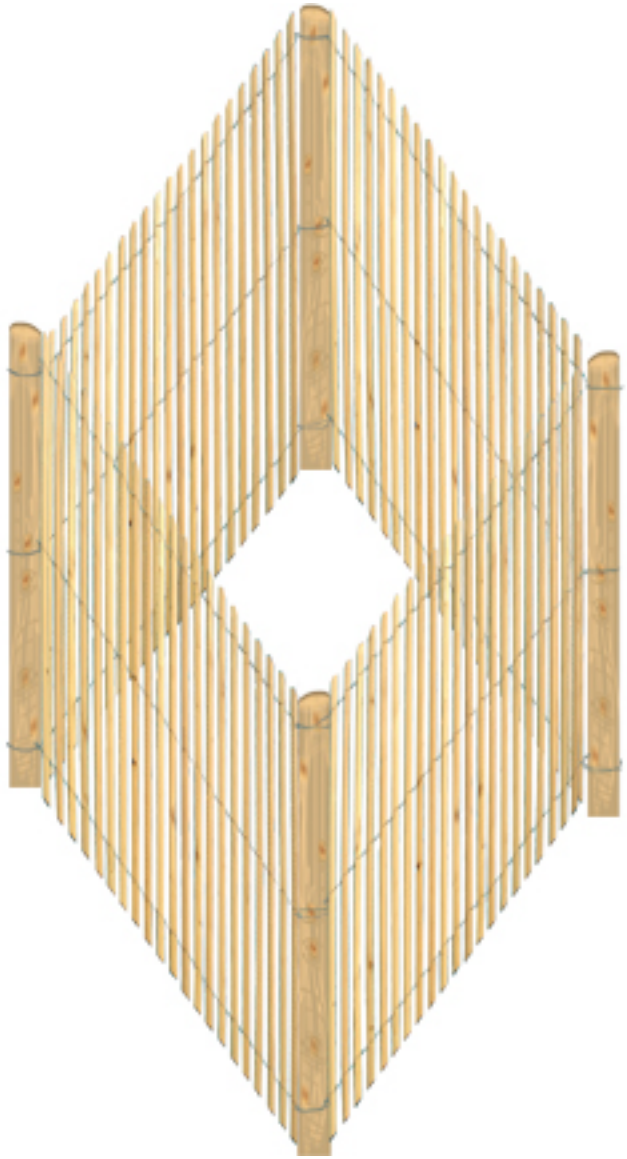


This structure consists of six 4 foot by 4 foot wings wired to a common center post and anchored on each end by a single post. Thus, one section consists of 6 wings and 7 posts.

Currently this newly designed fence is made with a fair amount of manual labor on a weaving machine designed for rectangular shaped slats. The cost is $300 per section plus shipping and installation labor. However, after a sufficient amount is manufactured by this manual labor method, the manufacturer (Kalinich Fence Company) will be able to design a modification to their current fence weaving machines that will automate the weaving process and reduce the cost.

The new design is robust and expected to survive a winter storm season and thereby eliminate the annual cost of replacing "regular" fencing normally lost each winter storm season. While this research expense is significantly higher than "regular" sand fence, given the expected dune creation efficiencies gained with this design and the longevity increase of its operational life span, the cost effectiveness is still better than "regular" fencing.

Turtle Friendly Design - Single Fence Section



This design allows installation within a zone where marine sea life, such as turtles and shorebirds may be active. Because the configuration is diamond shaped with the long axis aligned with the landward-seaward line (perpendicular to the shore), animals moving along that path would be diverted in a diagonal direction along the perimeter of the section. Because the section is closed, no dead-end entrapment is possible.

In addition, vegetation planted in the center of the section would have an irrigation advantage over vegetation planted along the toe of a dune (as one example) on a flat contour. The section will create a natural low spot quickly and allow rain water to pool in the center area more efficiently than rain water moving off and through the slope of a dune face.

As shown on page 4, installation of these diamond shaped, turtle-friendly, closed fence sections would be done so that a minimum width of 2.5 meters would be maintained between parallel fence lines. The offset installation pattern is shown on page 5 for the 6-winged fence section.

Mockup Installation of a Turtle Friendly Design Fence Section

Mockup Image of Installed Sections

The installation pattern is based on the eight foot diameter (2.5m) of each section. These are spaced along a line at eight foot intervals leaving an eight foot gap between each section. A second row is then added to place a section in front of the gap created by the previous row. This pattern is continued until the area needing sand dune formation is covered with sections. Two rows are required as a minimum.

There are three advantages to this deployment pattern. First, after enough time to accrete some sediment and start small dunes, any flooding water that reaches the installed sections will be diverted into a tortuous path which helps expend energy. Second, once sand or sediment has begun to accrete and a topographic change is started, the low spots between sections become a natural drainage for rainwater and therefore provides water to any vegetation planted or growing in these low spots (irrigation of planted vegetation can be minimized in this manner). Finally, once the sections are buried by the accreting sand, another layer can be placed on top of the previous layer by offsetting the pattern to avoid hitting the buried sections. In this way, an eight foot high dune could be created (three rows of sections are required as a minimum base for this option.)

Research Sites and Funding for Sand Dune Building Projects Needed

If your community has a coastal erosion problem and is looking for some validation of the problem from an impartial research focused agency, please contact the University of South Florida Coastal Research Laboratory (http://crl.usf.edu). The Director of the Coastal Research Lab is Dr. Ping Wang. His email address is pwang@cas.usf.edu. The lab contact information is:

University of South Florida
Coastal Research Lab
4202 E Fowler Ave, SCA 520
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URL: http://crl.usf.edu

If your community has a beach erosion problem and is looking for a better way to create sand dunes, please contact the University of South Florida Coastal Research Laboratory (http://crl.usf.edu). The graduate student working that aspect of coastal erosion within the Coastal Research Lab is Rip Kirby. His email address is jkirby@cas.usf.edu. Phone is 850-216-1717.

The USF Coastal Research Lab is supported by various organizations and foundations whose generous grants provide funding for coastal geology research conducted by the CRL. Your tax-deductible donation can help with this important research and provide significant assistance to the hardworking students and graduate students who conduct pre- and post-storm coastal research. The data they gather is used by all levels of government agencies to validate their own data as well as by private property owners and other citizens researching coastal issues.