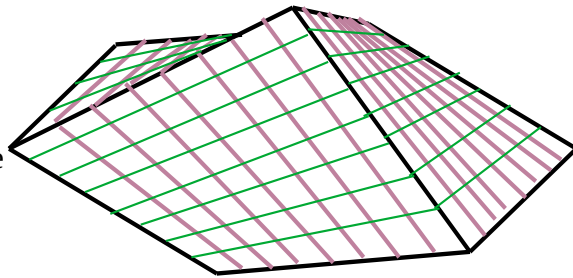


Trihyperbolicparaboloid

One of the most economical roof systems I can think of is a hexagonal structure needing only nine rigid members.

This structure combines three hyperbolic paraboloids to form a hexagonal roof structure that can be mounted on three posts under the feet of the three central pieces. The other three points are supported by tension.



A 10' Diameter Prototype was made with a frame of $\frac{1}{2}$ " steel conduit. The perimeter was made from six 5' long pieces, with three pieces cut to 6'5" to meet at the center. All the ends were flattened, and drilled with $\frac{1}{4}$ " holes, centered $\frac{1}{2}$ " in from the ends. The frame was assembled in such a way that it could be folded up for storage.

The covering material was landscape fabric (weed block) painted with an elastomeric solar roof coating.

A thin galvanized wire (#17 or #18 would do) should be embedded in the fabric and coating and connected between the centers of the opposing tubes to prevent any stretching of the surfaces.

Some of the coating was poured into a plastic squeeze bottle so it could be used as a glue to initially hold the fabric in place when it was clamped around the edges.



After the surface was covered, I verified that the whole thing could be folded into a convenient bundle for moving or storage.

Three metal fence posts were drilled with $\frac{3}{8}$ " holes about 2" from the top, and fitted with $\frac{1}{4}$ " openable chain links. They were then driven into the ground at a spacing adequate to stretch the three points of the tripod (please drive them straighter than I did).



The entire structure (except for the 3 posts) weighed just under 20 pounds and can be either spread out and mounted, or folded up for storage in less than five minutes. The total materials cost was about \$100 in June of 2022.

