TROPICAL J's
INCORPORATED

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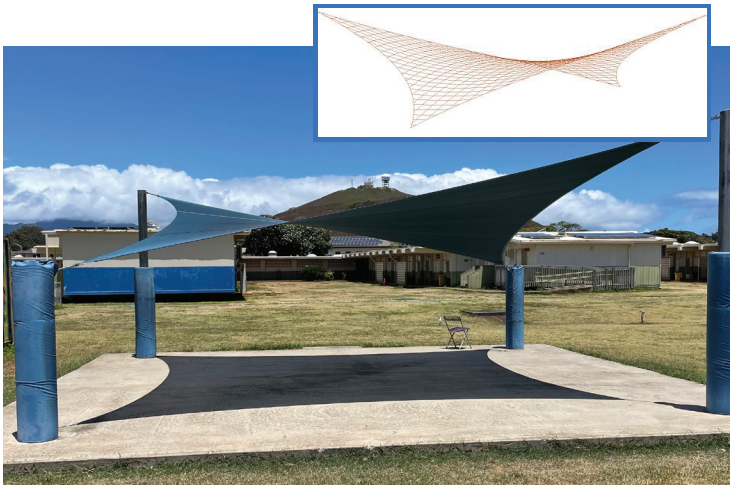
TENSILE

Made in Hawai'i. Made for Hawai'i.

Tension structures also known as tensile structures are characterized by the tensioning of a fabric membrane.

A membrane is a heavy duty industrial vinyl fabric that is stretched between points or inside a frame.
A canopy is a fabric that is stretched on top of a frame.

You'll recognize tensile projects as they are normally fabrics that have a twist or a cone shape. Stretching the fabric in this manner creartes an anticlastic shape, in which the fabric is being pulled in opposite directions and the cover becomes stable. This is called an anticlastic state and the easiest way to picture this of a saddle or



a 4 point shade sail. Tropical J's does not install any 3 point shade sail projects.
Shade sails or tensile products are a great way to get shade overhead without a lot of steel or Aluminum framing. However in a commercial application these products require permits as the DPP mandates that anything overhead and over 300 square feet that covers more than 50% of the sky needs a permit. A permit will require that the property is allowed to have additional covered floor space and that the product will meet or exceed a set wind speed. As of 5/12/22 that wind speed is 130 mph. In order to show this, a design/engineering is required to determine the size of the cables in the fabric perimeter, the working loads of the turnbuckles in the corner, the size of the posts or frame that support the fabric, the quantity, diameter and embed depth of the hardware anchoring the structure and the size of the footings that the anchors are into.

These sizes are determined by designing the fabric in 3D software, and then running a plugin that simulates the fabric in a 130 mph wind scenario. The forces that are generated at the points of attachment are then given to a structural engineer who interprets these loads as sizing for the supporting structure. These calculations and sizing are required for the permitting process and to be able to quote the project. Talk to your salesman about how we price these projects.