Transporting surfboards can be very difficult. People who have to travel long distances to a beach are interested in a product that allows them to easily and efficiently carry their surfboards. Current collapsible surfboards are custom built boards that only break into two pieces, which does not significantly increase transportability, and severely hinders the performance of the board. Our product provides a simple method for making any surfboard collapsible without reducing the performance of the board. The surfboard is cut into four sections, and secured with an internal steel cable that can be tightened with an embedded crank.

Customer surveys and market research identified five main problems with current collapsible surfboards:

- With two sections, the board can still be too big.
- In many cases, it does not meet TSA regulations on baggage size.
- Single, horizontal cut hinders flexibility.
- Support adds too much weight.
- Hinges difficult to assemble.

The goal of this design project is to design a simple method to make any surfboard collapsible, without reducing the performance of the board, and allow it to meet TSA size regulations.

The modeling and analysis of different cuts and shapes were done using Solidworks. Each design was tested using two 100 lb loads on the board and buoyant forces on the bottom to simulate a surfer on a wave. The analysis showed that the ideal design consisted of four sections connecting at 60 degrees.

The collapse surfboard design meets each performance requirement defined by a regular surfboard. The process can also be applied to any surfboard shape and size. Further improvements could be made by reducing the weight using lighter materials such as carbon fiber.

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