

Introduction to Engineering Contest
The University of Texas - Pan American
Spring 2007

Spaghetti-Bridge

Your team is requested to design and build a well-tested bridge made from spaghetti and glue/epoxy. The object is to construct a bridge that will carry the heaviest load while still meeting specifications. Bridges will be loaded until they fail. A design report must be turned in the day of the contest. These reports represent 50% of your project grade. The remaining 50% of your grade will depend on your final ranking in the contest.

Design Contest Parameters

- I. The bridge is to be built from spaghetti (cylindrical forms of pasta) and glue, epoxy or resin.
- II. The bridge shall be free-standing and must span two level surfaces which are one meter apart.
- III. The support for the bridge shall be from the top of the level surfaces. The edges of the level surfaces cannot be used in any way for support.
- IV. The bridge must include a decking of spaghetti to provide a suitable road surface at least 5cm wide across the full span of the bridge. Three conditions must be met:
 - a) gaps in the bridge deck are not to exceed 2 mm,
 - b) a block of wood (5 cm x 5cm x 10 cm) representing a car must be able to move along the length of the decking unobstructed from end to end,
 - c) the deck of the bridge must not be more than 5 cm above or below the ends of the bridge at any point along its length.
- V. You must incorporate a "loading platform" consisting of a U-bolt secured to a piece of plywood (0.7 cm x 5 cm x 10 cm). This platform is to be attached at the center of the bridge such that the bottom of the U-bolt is no more than 5 cm from the top of the bridge decking. All loads will be suspended from this U-bolt, and there must be a clear space directly below it to allow loads to be attached. Loads will be attached using an S-hook, and, if necessary, a 10 mm diameter metal rod extension. If during loading, the bridge twists in such a way as to cause the bridge to touch the rod at any point other than the U-bolt, thus lending additional support, the bridge will be disqualified.
- VI. The maximum vertical depth of the bridge, from the highest point in its structure to the lowest cannot exceed 50 cm.
- VII. The maximum weight of the bridge including the loading platform must not exceed 0.75 kilograms.

Note: These rules are essentially the same as those developed for contests at Okanagan University College. For a bridge meeting these restrictions, Okanagan claims a world record of 176 kg.