



Colorado Science and Engineering Fair

2024 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Can You Truss-t The Truss

Finalist's Name: Vaughn Bankston

School and City: Mancos Middle School, Mancos

Sponsor's Name: Dallas Bankston

Category: Engineering (ENGR)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

Which bridge design (Warren Truss, Pratt Truss, Howe Truss, K-Truss) can bear the most weight and be the most efficient. The K-truss is going to bear the most weight and be the most efficient because it has a radius top chord that deflects the weight and lots of triangular members that will distribute the weight better. The bridges were made at 8th scale. The bridges were tested using the hanging bucket method. Before testing the bridges were weighed in kilograms. When testing a two inch layer of sand was added to the bottom of the bucket. Galvanized steel nuts and bolts were then added to the bucket. This was repeated until the bridge broke. Once the bridge broke the bucket was weighed in kilograms. The efficiency score was then calculated by dividing weight held by weight of the bridge. It was found that the Pratt Truss bridge was both able to hold the most weight and be the most efficient. The Pratt Truss held 48.8 kg and had an efficiency score of 503.10. The Warren Truss held 33.6 kg and had an efficiency score of 414.81 which was the second highest. The Howe Truss held 29.6 kg and had an efficiency score of 318.28. The bridge that did the worst was the K-Truss which only held 28.8 kg and the lowest efficiency score of 242.02. In the conclusion of this experiment I reject my hypothesis. The hypothesis stated that the K-Truss would hold the most weight and be the most efficient, this was proven to be false after testing.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

February 22, 2024

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with your Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.