



Colorado Science and Engineering Fair

2025 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: Under Pressure

Finalist's Name: Cooper Bolyard

School and City: Wiggins Middle school, Wiggins, Co

Sponsor's Name: Ralph Bolyard

Category: Engineering

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

The purpose of this project was to test various bridges in the real world and see which one would hold the most weight. The bridges I am going to test are a truss bridge, arch bridge, and a tied arch bridge. I am going to test these bridges because they are not supported by piers. I hypothesize that the truss bridge would hold the most because of the tension and compression system that it holds.

The experiment involved me building some bridges with some balsa wood setting it up on some stands. I then attached this rope to it with a fish scale to see how much weight it held and started adding weight until the bridge broke. I was writing down information as I went along.

The data collected did not support the original hypothesis. My hypothesis was the truss bridge would have held the most weight but in the end it only held 110.5 pounds and the winner was the tied arch bridge which held 170 pounds.

These findings lead me to believe that out of the three bridges I chose, the tied arch bridge would be the best possible option to choose if you need a strong bridge. This is so because of the weight distribution and how it is made and it is super effective and surprised me really.

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:

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 you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**