

May 22, 2011

Professional Engineers in California Government
Los Angeles Section
BOX 712352
Los Angeles, CA 90071-7352

P.O.

Dear Mr. John Vassiliades,

At first I would like to thank the Los Angeles Section of Professional Engineers in California Government (PECG) for selecting me to be the 2011 Los Angeles County Science Fair winner of the James E Roberts award. This is the greatest honor that I ever had and I would always cherish the prestige and recognition that I felt through this award.

About my project, I have always been fascinated with the types of bridges in America and elsewhere and wanted to understand and learn how they are built. So the purpose of my experiment was to calculate and determine the efficiencies of different bridge designs. The bridges that I tested were drawn using the computer program Model Smart 3D. A comprehensive analysis was done between the results from the structure tester and the Model Smart 3D.

First, I drew the bridges on the graph paper and then I used wood and glue to build the models for testing. Then I placed the model bridge on the structure tester to measure the maximum load that the particular bridge would absorb. I also measured the weight of each bridge model that I tested. I used the following equations to calculate the efficiency of the bridges:

- Engineering Efficiency = (Critical Load / Structure Weight)
- Bartlett Efficiency = 9.8m/s^2 * Engineering Efficiency

Next step, I built the bridges in the computer program Model Smart 3D in order to run the analysis in the computer. In the end I compared the data of the computer program with the actual data to find out the efficiency of each of the bridges.

This award has definitely shaped my direction and plans for my future. Before this award I wanted to be an architectural designer, but with this award I now have a lot more confidence and hope to pursue my career in the field of structural engineering like Mr. James E. Roberts from Caltrans.

Again, thank you very much for honoring me with this prestigious award from PECG.

Sincerely,

Hao Sun, Gr. 11 student
Ribet Academy, Los Angeles

