



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

<p>Your Name (List all student names if multiple authors.) Paul F. Wiegand</p>	<p>Science Fair Use Only</p>
<p>Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) Which Bridge Design Is the Most Efficient?</p>	<p style="font-size: 2em; font-weight: bold;">J0139</p>
<p>Preferred Category (See page 5 for descriptions.) 1 - Applied Mechanics/ Structures & Mechanisms/ Manufacturing</p>	<p>Division <u>X</u> Junior (6-8) _ Senior (9-12)</p>
<p>Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.</p> <p>The experiment is to find out which type of bridge design is the most efficient. Five bridge designs were selected. The beam bridge, arch bridge, truss bridge, stayed bridge and the suspension bridge were loaded and then compared to their weight.</p> <p>The experimental hypothesis is that the suspension bridge would hold the most weight but most likely weigh the most.</p> <p>In order to test the bridges, designs had to be selected, materials were gathered and plans were made. First, standard roadways were built to make the bridges as similar as possible. Then each bridge design was built to support the roadway. The bridges were then brought to Vons to weigh them. The testing started after the weighing of the bridges.</p> <p>After the testing and reviewing the results the hypothesis was found to be true. The suspension bridge held the most weight at 8lb and 12oz, and weighed .16 lb. The truss bridge came in second place by holding 8lb and 8oz. The surprise was that it weighed .8 lb., half of the suspension bridge. A strength factor was calculated to compare the bridge designs. This factor equaled the division of the load carried by the mass of the bridge. The truss bridge had the highest strength factor.</p>	
<p>Summary Statement (In one sentence, state what your project is about.) To find the most efficient bridge design by comparing the load carried by the bridge to the mass of the bridge.</p>	
<p>Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. Vons weighed the bridge designs to the nearest hundredth of a pound. Father help research the bridge designs.</p>	