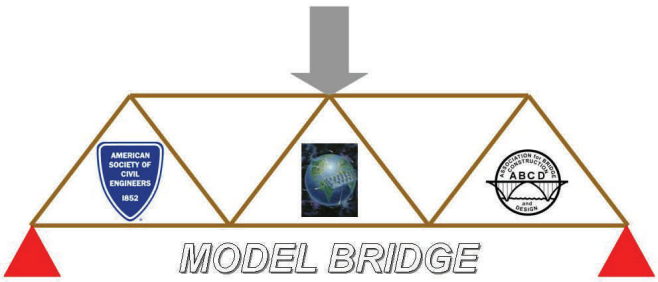
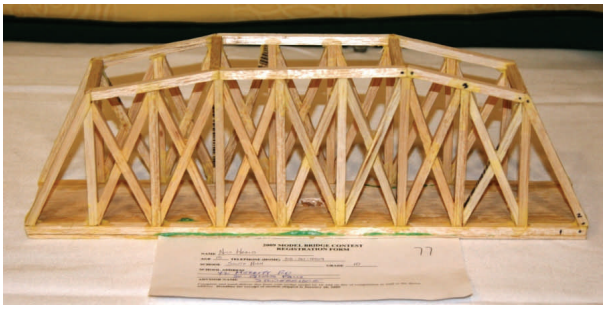


The 2011 Model Bridge Competition
Capital District's 31st Anniversary Celebration of National Engineer's Week
Albany Marriott Hotel - February 17, 2011

The Model Bridge Competition, which is open to full-time high school students, involves building a model truss-type or arch-type bridge out of balsa wood with the parts joined by carpenter's glue. Each model will be judged on its aesthetics (appearance and quality of construction), then weighed and loaded to failure by a testing machine. Model efficiency scores will be computed based upon maximum load at failure divided by the weight of the model. Cash prizes will be awarded for 1st, 2nd, and 3rd places in categories of efficiency, load capacity, and aesthetics.



The contest is sponsored by:

- Foundation for Engineering Education.
- Structural Engineering Institute of the Mohawk-Hudson Section of the American Society of Civil Engineers.
- Eastern New York Chapter of the Association for Bridge Construction and Design.

Details of Construction:

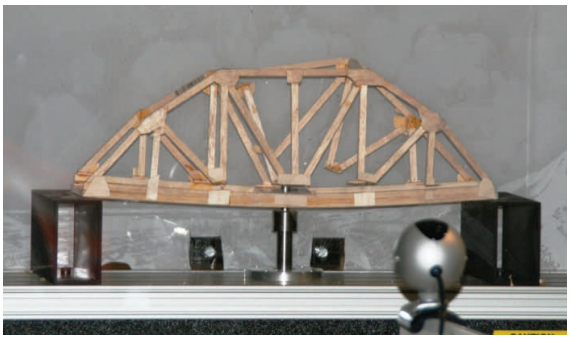
1. Models **shall** be constructed entirely of **balsa wood** bonded by any commonly available **yellow carpenter's glue**. Decorative painting is acceptable, but no painting or other coating shall be applied to the joints between pieces. "Dipping", soaking, or painting to add strength is **not** allowed.
2. Models shall be constructed as a truss bridge with each side containing at least two (2) panels. See the attached sketch for examples.
3. The model shall be **400 millimeters (mm)** long, less than **200 mm** high, and less than **100 mm** wide. The interior distance between the truss sides shall be at least **55 mm**. See the attached sketch.
4. The "roadway deck" shall be continuous without holes or gaps.
5. No part of the bridge shall be more than **15mm** below the top surface of the roadway deck. No exceptions.
6. The model **must have an opening** centered in the top of the structure through which the loading plate can pass to bear on the "roadway deck". A **10mm** hole through the "roadway deck" shall be provided for the load piston.
7. A load plate **50 mm x 50 mm** shall be used to load the structure at mid-span. The "roadway deck" should be strengthened (reinforced) at the load point.
8. No solid (one piece) models are allowed.
9. Models must be made solely by the student entrant.
10. The supports will be **12 mm** wide at each end and will not support thrust developed by the model.

Basis for Competition:
Each model will be examined by a judging panel for aesthetically pleasing design before being weighed, loaded to failure and ranked by a model efficiency number. The model efficiency number is the maximum load in grams divided by the weight of the model.

Prizes:
Cash prizes will be awarded immediately after the competition.

Category	1st Place	2nd Place	3rd Place
Efficiency:	$500	$250	$100
Load Capacity:	$150	$100	$50
Aesthetics:	$150	$100	$50

An E-Week Tradition for Over 25 Years!



Pre-registration:
Students planning to enter the competition are requested to pre-register by e-mail to the attention of clesher@ryanbiggs.com. Please provide the following information:

Name, Telephone Number, School, and Name of Advisor

Pre-registration deadline is December 6, 2010
There is no cost to register or compete. Schools/students are responsible for providing their bridge materials and transportation to and from the Albany Marriott Hotel, 189 Wolf Road, Albany

Submitting Entries:
Bridge models should be entered by completing the tear-off coupon below. Model entries should be hand-carried to the contest for arrival by 9:45 a.m. or mailed in advance in packaging to withstand the trauma of shipping to:

- Chris Lesher, P.E., c/o Ryan-Biggs Associates, 257 Ushers Road, Clifton Park, NY 12065.
- Please write "2011 MBC" on outside of package.

Models should be marked on the bottom with student's name, telephone number, and school.

2011 MODEL BRIDGE CONTEST
REGISTRATION FORM

NAME _____

AGE _____ **TELEPHONE (HOME)** _____

SCHOOL _____ **GRADE** _____

SCHOOL ADDRESS

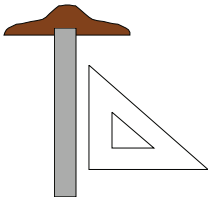
_____

_____

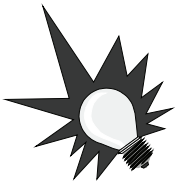
ADVISOR NAME _____ **EMAIL** _____

Complete and hand-deliver this form with bridge model by 9:45 AM on day of competition or mail to the above address. **Deadline for receipt of models shipped is February 10, 2011.**

Helpful Hints: (Courtesy of Boston Society of Civil Engineers, Infrastructure Group)



1. Draw a sketch of your bridge first. Try a number of different designs and select the design that you are able to construct (See last page for examples of bridge types).
2. Make sure your bridge meets the rules (See first page).
3. Practice assembling the pieces of your model before gluing them together.
4. Top chord (horizontal) members of trusses will go into compression and tend to bend or buckle. These members should be large enough so they will not buckle too soon. They should also be straight and symmetrically aligned.
5. Bottom chord (horizontal) members of trusses will go into tension.
6. Tension diagonals slope downward from the top chord towards the middle of the span.
7. Compression diagonals slope downward from the top chord towards the supports.
8. Connections tend to be the weak points. Compression members will push on connections while tension members will try to pull away.
9. Try testing the strength of individual members by pushing down on them (compression) or by pulling on both ends at the same time (tension).
10. Use care and work safely while constructing your bridge.



An Excellent Link on the Web:

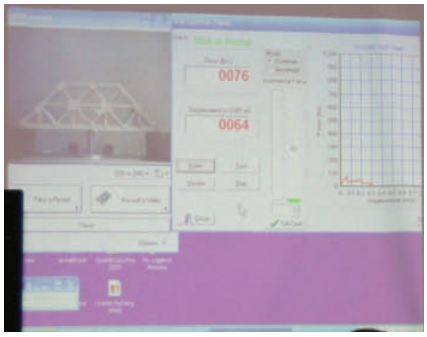
http://www.sciencebuddies.org
Go to the Project Ideas tab and select Civil Engineering (under "Engineering")
Go to Page 2 and select "The Design Process: Creating a Stronger Truss"

Also check out the following link under the bibliography:
http://www.abcdpittsburgh.org/kids/kids.htm

Reference Materials:

⇒ Trusses, A Study by the Historic American Engineering Record, National Park Service (excerpt attached)
⇒ Wood Engineering and Construction Handbook, 2nd Ed., by Keith F. Faherty & Thomas G. Williamson, McGraw Hill
⇒ Timber Construction Manual, 4th Ed. by The American Institute of Timber Construction
⇒ Understanding Wood by R. Bruce Hoadley, The Tauton Press

Questions?
Contact Chris Lesher at 406-5506 ext. 322
(clesher@ryanbiggs.com).



For the most current information, schedule, and E-Week program, please visit the Capital District E-Week web-site: http://www.capitaldistricteweek.org/

Please join us on February 17, 2011.
The excitement begins at 9:45 am.
Awards Ceremony at the Conclusion.
Have Fun and Good Luck!