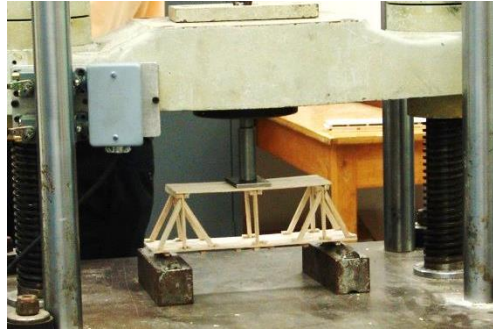
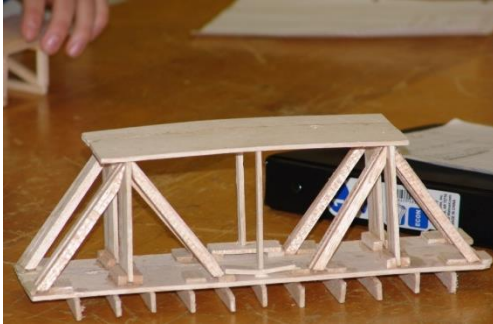


MODEL SPAN BRIDGE COMPETITION RULES



The object of this contest is to construct a 12 inch long model bridge from a given amount of balsa wood. This model will be **tested to destruction** to determine its load-carrying capacity as related to its weight when subjected to a single loading. There will be separate competitions for high schools and middle schools.

COMPETITION RULES:

All contestants must use the official material kits available from Old Dominion University. The cost of the kits is \$4.00. Kits can be picked up from the Engineering Technology Department at Old Dominion University, Room 214, Kaufman Hall, 757-683-3765.

1. Only one materials kit may be used to construct each model.
2. The wood cannot be treated or painted in any way. Such treatment would alter the strength characteristics of the wood.
3. The model must be completely assembled when submitted for testing.
4. The panel of judges will determine the final decision on all questions.
5. Any number of people may work on a single entry.
6. All entries will indicate the name, school, and grade of each participant responsible for entry construction.
7. Entries will be disqualified if materials other than those furnished in the kit are used. Wood glue and "super" (ACC) glue are not allowed.
8. The design of the bridge must accommodate the test load apparatus. Loading will be applied to a 2" x 3" plate placed on the roadbed in the center of the span. A 1" x 1" x 3" (tall) block will transmit the load to the roadbed plate. Any construction above the roadbed should allow the block to pass through an opening in the center of the bridge. Any construction below the bridge must be less than 1".
9. The bridge **MUST** be configured as a truss. If the materials are glued together as a "log" in any form, the entry will be disqualified.

LOADING SPECIFICATIONS:

- The model will be loaded until failure.
- Failure is defined as a permanent decrease in the load carrying capacity.
- The load will be applied to the roadbed and a minimum of 50 lbs must be carried.

BRIDGE DIMENSIONS:

Length: 12 inches
Min. width: 3 inches
Max. height: 4 inches

JUDGING CRITERIA:

The model that demonstrates the highest efficiency ratio will be declared the best entry. The efficiency ratio refers to the amount of weight that the bridge holds at the point it fails (i.e. breaks) divided by the weight of the bridge. For example if two bridges both fail when loaded with 150 pounds of weight and bridge #1 weighs 50 grams and bridge #2 weighs 75 grams the efficiency ratios would be:

Bridge #1 Efficiency Ratio = 150 lbs/50 grams = 3 lbs/gram
Bridge #2 Efficiency Ratio = 150 lbs/75 grams = 2 lbs/gram

You can see from these calculations that bridge #1 has the higher efficiency ratio and consequently would be a higher rated bridge than bridge #2. At the end of the competition the bridge with the highest ratio in each division (high school and middle school) will be declared the winner

Balsa Bridge Kit:

2 pieces of $\frac{1}{4}$ by $\frac{1}{4}$ by 3 ft balsa wood

1 piece of $\frac{1}{8}$ by 1 inch by 3 ft balsa wood

1 piece of $\frac{1}{8}$ by 2 inches by 3 ft balsa wood

1 bottle of Elmer's Glue