SWSC Tower Competition - 2008

The goal for this event is to design and build a tower with the greatest structural efficiency to support a load of up to 20 kg. Students are encouraged to use sound engineering and construction practices in their design. Structural Efficiency is defined as the Load Supported in grams divided by the Mass of the Tower in grams. Each school may bring one tower built by a team of one or two students.

Materials:

a. The tower is to be constructed of wood and bonded by glue.
b. Particleboard, plywood, beaverboard, any other composite wood products, bamboo or paper may NOT be used.
c. The pieces of wood can be no larger than ¼ inch x ¼ inch in cross-section. If dowels are used they may not have a diameter of greater than ¼ inch. There is no limit on the lengths of pieces of wood.
d. Any type of glue may be used.

Construction:

a. All construction must be completed prior to the competition.
b. Unlimited lamination by the students is allowed, however commercially laminated wood is NOT allowed.
c. The tower must support a square-loading block, 5.0 cm x 5.0 cm x 2.0 cm thick, on its top. The loading block must be a minimum of 50.0 cm above the testing platform before the load is applied. There is no maximum height.
d. The portion of the tower 20.0 cm above the testing platform must be able to pass through a 10.0 cm diameter round hole.
e. The tower must be able to sit centered on the testing platform that has a 20.0 cm x 20.0 cm square opening cut out of its center.
f. Space must be provided for a ¼ inch diameter rod to pass up from the bottom, through the tower, to the center of the loading block. This rod must not make contact with any part of the tower.
g. No portion of the tower may extend below the top surface of the testing platform.

Testing:

a. All towers must be checked-in before the first round of the competition.
b. No alterations to the tower are allowed once it has been checked-in.

c. Student will place the tower on the testing platform; insert the rod through the tower and loading plate on the top of the tower. A nut will connect the rod to the loading plate. The nut is adjusted such that the bottom of the rod is off the floor.
d. Students will add 2 kg, 1 kg, and ½ kg slotted massed to the bottom of the rod until a total of 20 kg has been added, or the tower breaks. If the tower breaks, the last mass added is not included in the load supported total for calculating its Structural Efficiency.

<u>Scoring:</u>

a. Each tower's score will be determined by its Structural Efficiency: Structural Efficiency = Load Supported (grams) / Mass of Tower (grams)
b. All scores will be ranked from highest to lowest. If a tower did not meet all the specifications under Materials and Construction, it will be ranked after the tower with the lowest Structural Efficiency that did meet all the specifications.

<u>Questions:</u> E-mail Debby Lojkutz at dlojkutz@jths.org