

RULES FOR THE BRIDGE BUILDING COMPETITION

1. Balsa wood and any glue are to be the only materials used. No other fastening mechanisms are allowed.
2. The bridge shall contain no element wider than 1.0 cm and no thicker than 1/8 inch commercial balsa stock. Two or more pieces may be glued to make a composite beam, but no single piece may exceed the specifications given.
3. The total mass of the bridge shall not exceed 55.0 g.
4. The bridge must be free standing with a flat bed.
5. The bridge shall allow a 40 cm wide by 2 cm high board to slide underneath without touching.
6. The bridge shall allow a cube 10 cm on a side to slide underneath without touching.
7. The bridge will provide a horizontal bed surface above the 10 cm level across which a small metal car of the Hot Wheels or Matchbox variety may roll given a single light push of the hand. The road surface shall have a minimum width of 4.6 cm and maximum width of 5.0 cm. The roadbed surface shall be no less than 30 cm long.
8. The bridge design shall allow the standard test frame to be placed on the road surface at the center of the bridge with the load support rods extending beyond the bridge sides (see the figure).

Bridge Testing:

1. An elimination procedure consisting of an initial weigh-in and measurement of all specifications will take place prior to the actual testing. Any bridge not meeting these specifications will be disqualified. In addition, a 2 kg mass will be placed on a test block (see figure) and the bridge will be required to support this mass without breaking or sagging more than 1 cm from its original level.
2. The bridge will then be placed upon a level testing stand which will consist of two flat level surfaces separated by approximately 35 cm. The test block will then be placed at the center of the bridge and the load support rods inserted (see the figure). A mass will then be hung from the rods and continuously increased until the bridge fails. The bridge will be judged to have failed when it either collapses or the bridge bed sags more than 1 cm from its original level.
3. The total mass supported by the bridge at the moment of failure will be recorded and a score calculated as follows:

$$\text{Score} = \text{Mass Supported} / \text{Mass of Bridge}$$

