

# 2008 Physics Olympics

## Bridges

### Rules

1. The bridge must only be built using 1/8" X 1/8" square stock of balsa wood. No Bass wood
2. The bridge must be free standing – it cannot be fastened to the tables.
3. The testing structure must be able to slide underneath your bridge without it touching any part.  
See Mr. Andrews about dimensions of test structure (35 cm wide, 6 cm high in middle)
4. **The bridge must have a minimum distance of 35.1 cm between the supports.**
5. The bridge may not weigh more than **40.0** grams, including the weight of the wood and glue.
6. There must be a "road surface" with a **minimum width of 3 cm and a length of 20 cm.**
7. The testing block that holds the bucket must be able to be placed on the "road surface" **in the same direction as the "road", not at right angle to the "road"** (see picture)
8. No fastening mechanism except for the mechanical interlock of the balsa pieces.
9. Any bridge not meeting these specifications will be disqualified and receive a grade of an F.
10. The bridge cannot be painted or colored in any way.

### Competition

1. The bridges must be checked in **Tuesday April 8<sup>th</sup>** , no bridges will be checked after the due date – **NO EXCEPTIONS.**
2. The bridge will be placed between two tables. The testing block will be placed on the bridge and the contestant has the choice of one or two rods to hang the bucket from.

3. Once suspended, sand will be added to the bucket until the bridge breaks or the bucket hits the ground.
4. If the bridge is still intact after all of the sand has been added, additional weight (2 kg masses) will be added one at a time until the bridge collapses.
4. The definition of a collapse will be left to the discretion of the judge, all decisions are final.
5. The weight of the sand will be measured after the collapse.

## **Scoring**

1. The bridge with the greatest ratio of Mass held by bridge/ Mass of bridge will be the winner.
2. In case of a tie, the lightest bridge will be the winner
3. All other places will be determined in the same way.
4. Awards will be given to the top three bridges.
5. There will be a special award given to the best designed bridge, the winner will be excused from the final exam. This will be determined by an impartial panel of judges.

## **Grades**

1. To receive an A, your bridge must meet all rules and have a sand to bridge ratio of 0.95 or higher.
2. To receive a B, your bridge must meet all rules and have a sand to bridge ratio of 0.75 or higher
3. To receive a C, your bridge must meet all rules and have a sand to bridge ratio of 0.50 or higher
4. To receive a D, your bridge must meet all rules and be able to hold the empty bucket.
5. To receive an F, your bridge was not turned in on time or the rules were not followed.

All Grades are final and determined by Mr. Andrews