

Frequently Asked Questions
Bridge Building Challenge 2015

Question #1:

Can the bridge I build for the challenge use any glue and popsicle sticks?

Answer:

No. For the final bridge that you build and bring to the challenge, you have to use the popsicle sticks and glue provided in the kit in order for your entry to qualify. If you want to build a prototype and test it out in advance, you can use any glue and popsicle sticks you like. If you want to build a prototype based on the supplies in the bridge kit, the bridge kit consists of popsicle sticks and Elmer's white school glue bought from Staples.

Question #2:

Can we sand the popsicle sticks in order to improve adhesion?

Answer:

No. The rules say that the popsicle sticks may not be altered or modified in any way so please don't sand them.

Question #3:

How far below the test platforms can the bridge extend?

Answer:

If your bridge structure extends more than 15 cm below the test platforms, it may start to interfere with the load cell and guiding springs. If it goes far beyond that, it may be difficult to test your bridge.

Question #4:

The rules indicate that a toy car must be able to "drive" over the bridge. Does the bridge have to have a roadway across the bridge, or does it mean that there should be an open space for the car to fit through the bridge (as was required the previous year)? If so, does the roadway have to be made exclusively from popsicle sticks or can it be made from a piece of construction paper?

Answer:

The rules are different this year. The intent of the challenge this year is that your bridge has a practical design and it is not purely an arch design with no pathway across it. Therefore there must be a path or roadway across the entire span of the bridge that allows a car to "drive" across.

Creating a practical design is very subjective and it is very difficult to quantify what this means or regulate the design criteria in order to compel a practical design. The goal is that the core structure of the bridge made from popsicle sticks serves as the bridge structure and roadway.

The main guideline is that a toy car must not be able to fit/fall through the bridge at any point over the span of the bridge. Using construction paper is optional and it should be purely cosmetic and not actually be required to hold the toy car on the roadway.

So we will certainly permit large gaps between the popsicle sticks, just try not to make them so large that it would allow the toy car to fall through/fit through. Also, try not to allow the pathway across the bridge exceed an angle of inclination of 35 degrees. Beyond this criteria, the judges will ultimately decide what a practical design means and it will reflect in your score.

Note that the toy car is roughly 34 mm wide and a maximum of 22 mm high.

Question #5:

What score will be given if the strength to mass ratio of the bridge exceeds 100? How do bonus points work?

Answer:

In theory, if you score perfectly in every category and your bridge has a strength to mass ratio that is greater than 100, then the teams overall score can exceed 100%.

For example, if the bridge supports 200 lbs and your bridge has a mass of 0.75 lbs, then...

$$\text{Strength to mass ratio} = 200 \text{ lbs} / 0.75 \text{ lbs} = 266.67$$

The team will be awarded +2% for every 25 units of strength to mass ratio over 100 that you achieve, which means...

266.67 - 100 (the ratio required to earn the full 40%)
= 166.67 / 25
= 6 (rounded down as per the rules)

6 x 2% = +12% in bonus points

So in this example, the teams total score would be 112%.

Note that in order to preserve the integrity of our bridge tester, we will not test bridges beyond 500 lbs.

Question #6:

Do I need print the ticket or email confirmation from event brite and bring it to the event?

Answer:

No, you don't need to bring any paper work on event day. As long as you register using eventbrite, everything will be taken care of and there is nothing more you need to do.

Question #7:

Does the 8 mm diameter rod have to go through the top of the bridge? Is it acceptable to have the rod reaching halfway up the height of the bridge? Our bridge is approximately 15 cm high.

Answer:

No, the rod itself doesn't need to go all the way up through the bridge and therefore, you don't need an 8 mm diameter hole going all the way through to the top of your bridge. However, what we need is a way to install the fastener on the end of the rod and the fastener has to go all the way down onto the load plate. So at some point through your bridge structure, there has to be an opening for the fastener which is 15 mm x 40 mm so that the fastener can be secured all the way down onto the load plate. See the picture below.

