



## Bridge Building Challenge 2017 - RULES

### Participants:

1. Grade 6, 7 and 8 students from Mississauga schools, 100 Teams maximum.
2. Participants may enter individually or as a Team (up to 2 students max). In case of a team, it should register once providing the names and other details of both members of the team.
3. All members of a team must be registered in order to receive a bridge kit.
4. A team may only submit one bridge for the challenge.
5. A participant is not allowed to be a member of more than one team.

### Construction:

1. Each contestant/team will receive a "challenge kit" containing the supplies needed to build the bridge. The challenge kit must be picked up at the main office of *Tomken Road Middle School* located at *3200 Tomken Rd, Mississauga, ON L4Y 2Y6, Canada*. The school is generally open between 8:30am – 2:20pm but it is advisable to call ahead at 905-277-0321 before picking up the kit.
2. Bridges must be built well enough in advance of the challenge date to allow the glue to dry. It is recommended to allow 48 hours for glue to dry.
3. The bridge may be built using up to a maximum of 200 popsicle sticks. The kit comes with extra sticks in the event that some sticks are bent or have a flaw of some type. A penalty of 2% will be applied to the teams overall score for each popsicle stick over 200 that is used in their bridge. For example, if your overall score is 80% but you used 5 extra popsicle sticks, your score will be reduced to 70%.
4. Only the glue provided must be used (White School Glue). **Other glues, including carpenter's glue are NOT acceptable.**
5. The bridge must span at least a 500 mm gap. See schematic diagram below. **THIS IS IMPORTANT** otherwise we will not be able to test your bridge.
6. Popsicle sticks must be left whole (they may not be altered or modified in any way).
7. At the support ends of the bridge, the bottom surface must be substantially flat with no intentional protrusions which will interfere with placement on the test platforms as shown in the diagram below.



8. The bridge deck must allow a small toy car to drive over/through the bridge. There must be a clear path to allow the car to "drive" over the entire bridge and it must be a minimum of 34 mm wide and 22 mm high. A penalty of 25% will be applied to the teams overall score if this criteria is not met.
9. The bridge must allow a 8 mm diameter rod to be installed up through the bridge for testing.
10. The bridge deck must accept a 95 mm x 34 mm x 22 mm (L x W x Thickness) load plate.
11. In the middle of the bridge, there must be an open area on the top of the bridge in order to be able to access the bridge deck. The open area must be at least 15 mm x 40 mm (see photo below for orientation) in order to fit the fastener that will be placed on top of the load plate. **THIS IS IMPORTANT** otherwise we will not be able to test your bridge. See photo and illustration below.
12. Bridges will be inspected by the judges. Rules that are totally violated may result in disqualification.

### **Testing the Bridge:**

1. Bridges must be judged before being tested. Bridges will be tested based on a first-come first-serve basis. Registration starts at 8:00 am. See the "Agenda" for more details.
2. The mass of each bridge will be measured before being tested.
3. During testing, each bridge will have a load plate placed on the deck. The load will be increased until the bridge fails. A bridge that deflects more than 100 mm will be deemed to have failed.
4. The maximum load will be divided by the mass of the bridge to determine the strength to mass ratio. The goal is to have the highest strength to mass possible.
5. The strength to mass ratio of the bridge will account for 40% of the teams final, overall score. In order to achieve full marks in this category, the bridge needs to have a strength to mass ratio of 100. Points will still be awarded for bridges that have a strength to mass ratio less than 100 (points to be awarded proportionately to the strength to mass ratio). See the score sheet posted on website.



Teams can earn **BONUS POINTS** for exceeding 100: +2% for every 25 units over 100 achieved (rounded down)

- 6. All contestants and officials within the loading/testing area must wear protective eyewear (provided).
- 7. Remember that all bridges will be destroyed during testing.

Email Hasan Akhter at [hasan.akhter@peo-mc.ca](mailto:hasan.akhter@peo-mc.ca) with any questions. See [www.peo-mc.ca](http://www.peo-mc.ca) for bridge tips and photos.

Also check the website for the "Judging Criteria" to see how bridges will be graded.

