



## RICHMOND/DELTA BRANCH POPSICLE STICK BRIDGE CONTEST



**LANSDOWNE PARK SHOPPING CENTRE  
MARCH 31st, 2012**

Category/Event	Event Start	1 <sup>st</sup> Prize	2 <sup>nd</sup> Prize
Check in (for all)	12:00 pm		
Elementary* (under 13 years old)	12:30 pm	\$ 100	\$ 50
Secondary (14 to 18 years old)	1:30 pm	\$ 100	\$ 50
Open (19 years and older)	2:30 pm	\$ 100	\$ 50

\* Children under 13 must be accompanied by an adult.

### Prizes:

- ❖ **Winners must be present to claim prizes.**
- ❖ All contestants will receive participation certificates.
- ❖ Category prizes to be awarded following completion of each class.

### **Design Brief**

The goal of the contest is to construct the strongest bridge possible with 100 Popsicle sticks and white glue. The bridge must span a 500 mm gap with a maximum height of 250mm, and a matchbox car must be able to traverse the bridge on a construction paper deck; otherwise, the design of the bridge is left up to the competitor. Specifications are included on the following page.

**Anyone is welcome to participate.**

Participants are encouraged to pick up their registration package early. Contestants may participate as individuals or as teams. For more information, please email us at [trevorrow.m@gmail.com](mailto:trevorrow.m@gmail.com) or visit our website at [www.apeg.bc.ca/rd/](http://www.apeg.bc.ca/rd/)

## OFFICIAL CONTEST RULES

### Registration:

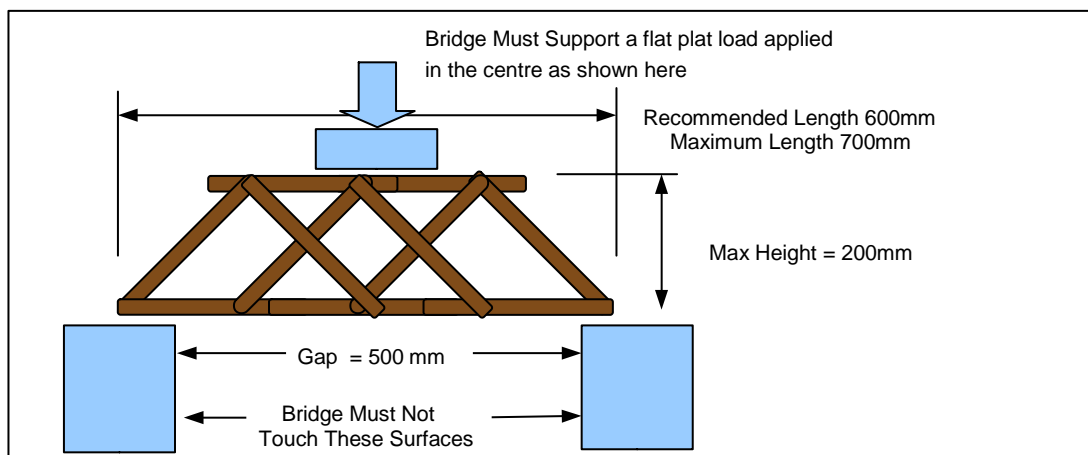
1. Each bridge built by a team is considered as 1 entry. All entries must be registered in advance. A completed registration form should be emailed back to [trevorrow.m@gmail.com](mailto:trevorrow.m@gmail.com) by March 15<sup>th</sup>, 2012. Include your name(s) using the spelling that you want to appear on certificate for entries.
2. A limited number of construction kits will be available in for pick-up and info will be provided by return email when your registration is confirmed.
3. The kit materials consist of 125 Popsicle sticks, regular white, all-purpose glue and a sheet of construction paper. Participants can also buy their own material from craft stores or dollar stores. Standard wooden popsicle sticks 11.3 cm long and 1 cm wide must be used.

### Construction:

1. The bridge must be built with a maximum of 100 Popsicle sticks and all-purpose white glue. No other glues are acceptable. Popsicle sticks with non standard dimensions are not allowed. Popsicle sticks must be used whole and without alteration. No cutting, grinding or sanding is permitted.
2. A deck made from construction paper must be included, wide enough to permit a matchbox car, 35 mm wide by 15mm high to roll across the bridge.
3. It is critical that the bridge must span a minimum 500mm gap. We recommend that the bridge be at least 600mm long (50mm excess on either end) to ensure that bridge does not fall through the 500mm opening when the load is applied (please see the diagram below). Note that the bridge may not load the sides of the 500mm gap at any time during the testing. If it does, this will be considered the failure load.
4. The test load will be applied at the center of the top side of the bridge as shown. The highest centre portion of the bridge should be designed to support a level loading plate. The bridge must not exceed 200mm in height and 700mm in length.

### Test Procedure

1. Bridges will be inspected at registration. Any violations of the rules outlined above will result in disqualification from the official results. The judging panel decisions are final.
2. Bridges will be weighed pretest at registration. In event of a tie, lightest bridge wins.
3. Testing will be performed by the contestants with the bridge tester provided. The winning bridge is the bridge that holds the largest load at failure. All bridges will be destroyed during testing unless the contestants decide not to continue with incremental loads before the failure occurs (to save their bridge)!



## BRIDGE BUILDING ADVICE

- Give yourself plenty of time; don't wait until the last minute to build your bridge. The glue will need at least 24 hours to dry and will get stronger if allowed to dry for 2 days or more. Also, wood joints are always stronger if you clamp them tight while the glue dries - try using big paper clips to clamp the sticks together (clamps must be removed before testing).
- For bridge ideas look around at real bridges. A Popsicle stick bridge is of course much smaller, but the same principles apply (the important part is not the deck, but the steel or concrete structure that supports it). Look particularly at railway truss bridges, but also at bridges like the Port Mann Bridge, the Second Narrows Bridge, and the Queensborough Bridge. The Lions Gate Bridge and Alex Fraser Bridge are not good examples to follow because they rely on cables.
- Research the Internet and your local library for excellent bridge reference information to help your design.
- Your bridge needs to have a solid, stiff shape. Notice how a popsicle stick is much stiffer and stronger when on its edge. A bunch of sticks glued together flat, like a raft, has very little strength and will sag during testing. The strongest structural shape is the triangle.
- A bridge that is symmetrical is less likely to twist when loaded and hence will probably carry more load.
- If you aren't sure if your bridge will be stable, test it yourself - span it across two tables set about 500 mm apart, and press down on the top of the bridge in the middle of the span. Just be careful not to break your bridge before the contest!
- In past years winning bridges have held over 300 kg (660 pounds). the record for a bridge with only 100 sticks is 321.9 kg (710 pounds)!
- Good Luck and have some fun.