

APEGBC Sea to Sky Branch



Ninth Annual **Popsicle Stick Bridge Building Contest at Capilano Mall**



Sunday, March 1ST, 2009 starting at 11 am

Thank you for signing up for the 9th annual popsicle stick bridge building contest organized by the Sea to Sky branch of APEGBC.

Contained in this kit you will find: 120 popsicle sticks, glue, cardboard bridge deck and the rules.

All contestants are expected to arrive at the scheduled registration time. Prizes for each category will be awarded at the end of the day. Door prizes and goodies will also be handed out throughout the day, including a \$100 Future Shop gift certificate.

Category	Prize(s) for the strongest bridges
Elementary School* (attending elementary school)	Seven (7) video MP3 players for the seven top entries
Secondary School (attending secondary school)	Seven (7) video MP3 players for the seven top entries
Post-Secondary (attending a post-secondary institution full time)	One (1) prize of \$500
Professional (you know who you are)	Bragging Rights

Gold-Level Event Sponsors: [David Aplin Recruiting](#), [Associated Engineering](#) and [Knight-Piésold Consulting](#), [Stantec](#), [MMM Group](#) and [McElhanney](#).

* Children under 13 must be accompanied by an adult.

Kits are available at [KidsBooks](#) in Edgemont Village (3040 Edgemont Blvd., North Vancouver)

Entry Deposit: \$5 (refunded with completed bridge at registration)

For teachers of third-grade classes, please note that building structures is part of the **Provincial third grade curriculum**. For a teacher's guide, special pricing on bulk materials for bridge making, and a chance for your class to win one of three "pizza days" (pizza for an entire class of twenty-four third graders), please contact us at popsicleengineer@gmail.com

For further distribution points, information, hints and updates:

www.apeg.bc.ca/services/branches/seatosky/popsicle.html

e-mail: popsicleengineer@gmail.com

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Event Schedule

To improve the flow of the event, bridges will be tested in order of their ticket number (the order that entrants picked up their kits at KidsBooks). So, if you were the first person to pick up your kit, your bridge will be the first one tested. We have two test rigs working in tandem, so we anticipate the schedule working as follows:

Ticket #	Testing Time
1 - 100	11:00 am – 12:00 pm
101 - 200	12:00 pm – 1:00 pm
201 - 300	1:00 pm – 2:00 pm

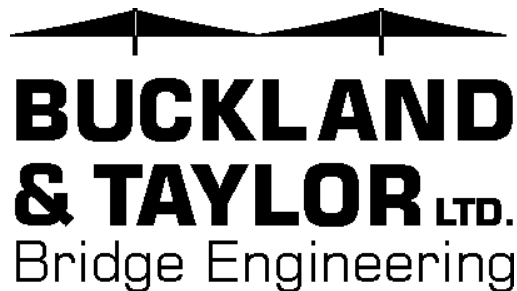
Prizes will be awarded after the last bridge is tested after 2:00pm. Treats (hot chocolate), surprise spot prizes (hats, gift certificates...), and bridges failing *dramatically* should make for a fun spectator event. We'll also have some fun activity booths around the event. For those who win a prize but are unable to return for the award ceremony, prizes can be picked up at the end of the day. If it's looking "close", you may leave a cell phone number can be left with the judges and we can contact you to let you know if you've won a top prize.

Special Workshop!

Buckland and Taylor (yes, the internationally famous *bridge engineering firm* based on the North Shore) has volunteered to put on a bridge building workshop on:

Wednesday, February 18TH at 7:00 pm.

Space is limited, so we ask that you RSVP by e-mail to CScollard@b-t.com with "Popsicle Stick Bridge Workshop" in the subject line.



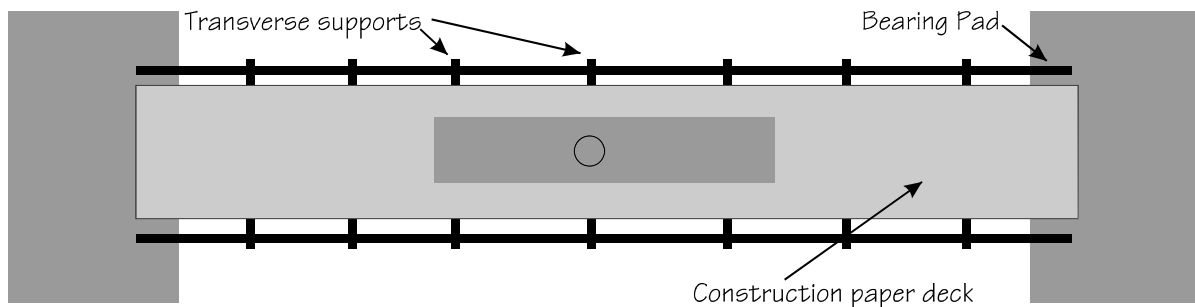
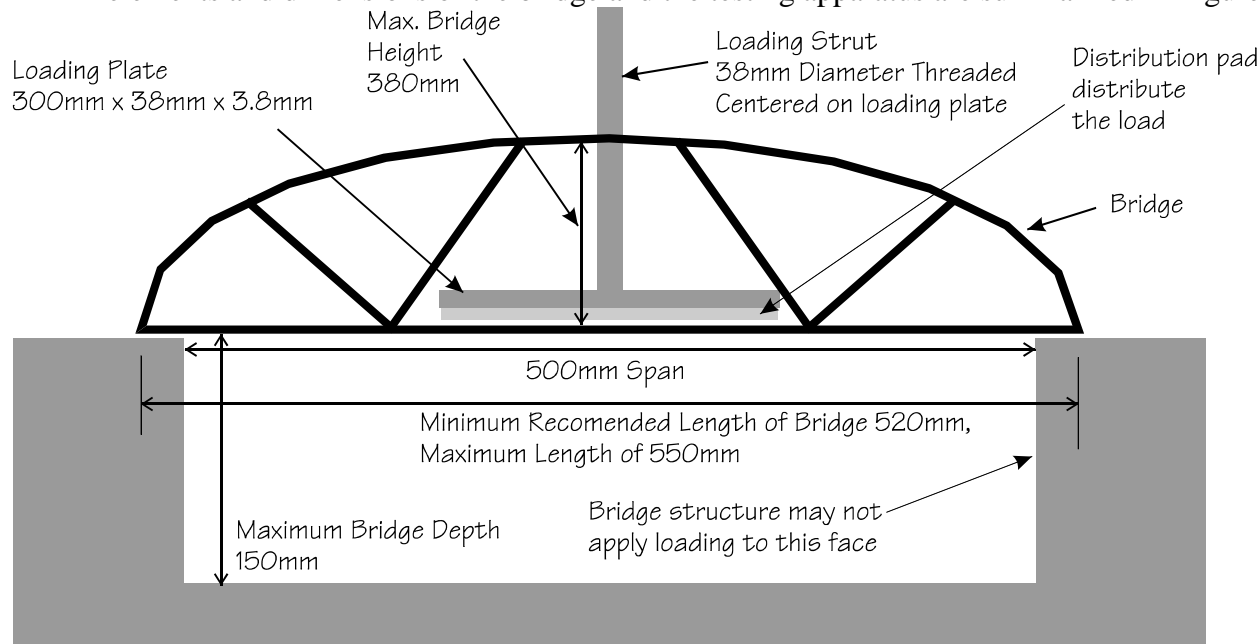
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Contest Rules

Admission is open to all. Spectators are advised to arrive early to secure a suitable viewing spot. Contestants should report to the organizer at Capilano mall a minimum of 15 minutes ahead of the testing start time for your entry ticket (see above).

1. Object

- 1.1 Build the strongest bridge possible with popsicle sticks and white glue. The bridge must be capable of transporting a matchbox car from end to end. The support system is to be built only with popsicle sticks, and the construction paper is to serve as the car deck. Design of the bridge, within the constraints of these rules, is left up to the contestant. The required elements and dimensions of the bridge and the testing apparatus are summarized in Figure 1.



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2. Construction

- 2.1 No materials other than the popsicle sticks, glue and construction paper deck may be used. The only acceptable construction paper and popsicle sticks are those that are supplied in the kits – no substitutes.
- 2.2 A maximum of 100 popsicle sticks may be used to construct the bridge. Extra popsicle sticks are provided with each kit should a contestant need to discard some of the popsicle sticks during construction of their bridge. Popsicle sticks must be left whole.
- 2.3 Only regular white all-purpose glue such as Bondex or Lepages Bondfast glue may be used. No epoxies, contact cement or carpenter's glue is permitted. A bridge with evidence of glue, other than white glue, being used will not be eligible for prizes.
- 2.4 The construction paper must be used as the deck of the bridge. The construction paper car deck must be glued to the bridge and may be cut to fit the design of the bridge.
- 2.5 A matchbox car (approximately 30 mm wide by 70 mm long by 25mm high) must be capable of being rolled across the bridge. The structure supporting the paper deck must be continuous from one end to the other.
- 2.6 The bridge must span a 500 mm gap, with maximum 25mm long bearing pads. Total length of assembled bridge is not to exceed 550 mm. A minimum length overall of 520 mm is advised, bridges which do not span the 500 mm gap will not be eligible for prizes.
- 2.7 **The bridges must be able to fit in the testing apparatus.** The maximum height of the bridge is 380 mm. The minimum width of the bridge is 50 mm to fit the loading equipment and the maximum width is 150 mm. **Please make note of this rule – many good bridges have been disqualified due to the fact that they couldn't fit the loading plate, or they were too long, or popsicle sticks interfered with the loading strut, etc..**
- 2.8 The bridge should be designed to support the highest load possible when applied via a longitudinal loading plate and distribution pad placed on the deck of the bridge. This loading plate should span over multiple transverse supports (see Figure 1b). The plate and the pad are part of the APEGBC testing apparatus.
- 2.9 The roadway portion of the bridge must be designed to support the load distribution plate.
- 2.10 The uppermost portion of the bridge must be able to accommodate a 38 mm diameter loading strut aligned vertically at the centre of the bridge to extend from the deck loading plate to above the bridge superstructure. Loading strut must pass through any cross bracing and be able to fasten onto loading plate.
- 2.11 The bridge structure is not permitted to apply loading to the vertical faces of the support structure at any time during testing. **Please make note of this rule** – for those “techies” out there, any bridge that is designed to benefit from applying any horizontal force vectors to the vertical faces or corners of the testing apparatus will be disqualified. (Again, any rulings from our judges will be final.)

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3. Testing the Bridges:

- 3.1 Bridges will be weighed before being loaded. In the event of a tie, the lightest bridge wins.
- 3.2 The bridge will be loaded using a hydraulic jack and a load cell. The test force will be delivered to a loading plate and distribution pads placed on the deck via a vertical strut projecting above the bridge. Contestants should ensure that the bridge design will accommodate this arrangement as described above and depicted in Figure 1. Bridges that do not fit the apparatus will not be eligible for prizes and may not be tested.
- 3.3 The jack will be manually actuated to produce as smooth an application of force as can reasonably be achieved by the test equipment.
- 3.4 The maximum capacity of the bridge will be based on the highest of either:
 - 1 The maximum load accepted by the bridge as measured on the load cell during the loading cycle or,
 - 2 The load supported by the bridge at a deformation of 50 mm at the centre of the bridge.
- 3.5 The winner is the bridge that achieves the highest capacity as described above.
- 3.6 All bridges will be destroyed during testing !!!!!!!!!!!!!
- 3.7 *All onsite decisions of the Sea to Sky branch chief popsicle bridge testing judge are final.*
- 3.8 The testing of all bridges may be photographed and/or video taped for reference.

HAVE FUN!!!