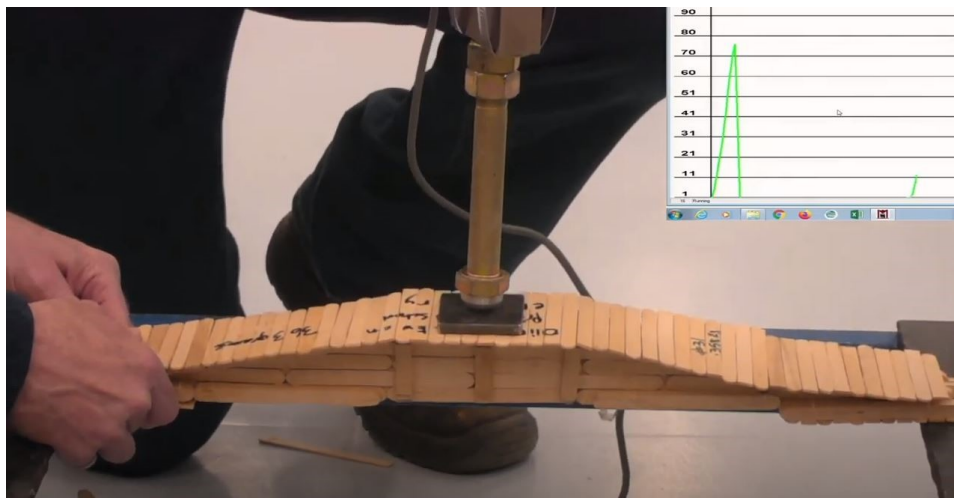




# *31st* Annual Bridge Building Contest

Open to Students from  
Grade 4 - 12



# Bridge Building Contest Scholarships for Grade 12 Students

Engineers PEI will grant two (2) \$500 Scholarship annually to one male and one female Grade 12 student pursuing engineering education endeavors.

## Scholarship:

- \$500 scholarship to a male Grade 12 student
- \$500 scholarship to a female Grade 12 student
- The awards are not renewable.

## Scholarship Rules:

- The Grade 12 Student must successfully compete in the Bridge Building Contest. Bridge must be in compliance with the rules as outlined and must survive the pre-test weight screening.
- The Grade 12 Student **must be enrolled** in Engineering studies at any CEAB recognized University. A letter of confirmation of registration from University Registrar is required.

## Application:

- To ensure that the student has completed the necessary education requirements for admission to university, applications will not be accepted prior to June 1.  
**Applications must be received by Engineers PEI by August 30.**
- Awarding of the scholarship will be based on completed application and standing in the Senior High School Category of the Bridge Building Competition.
- The decision of the Engineers PEI Student Chapter Committee will be final. Winners will be required to submit proof of Registration in an accepted Engineering program in order to receive the Award.
- Each student may submit one application.

For more information and application form, visit:  
**[www.EngineersPEI.com](http://www.EngineersPEI.com)**

# Attention Teachers & Students

## Bridge Building Contest open to Grade 4 - 12 students

Engineers PEI is pleased to present the **31st Annual Bridge Building Contest**.

This contest is open to all students from Grade 4 - 12.

There is no registration fee. Entries can be prepared by one student or a group of students.

This activity offers students the opportunity to apply physics concepts to construction of a variety of different bridge designs.

Students learn about the forces and stresses their creation must endure and develop a greater understanding of structural integrity and the physics of bridge construction.

Students are encouraged to engage in research and to design the most structurally sound bridges.

Testing of bridges will be held at Royalty Crossing Mall on Friday, March 13th, beginning at 4:30pm.



# THE RULES:

## 1. Materials

The only materials to be used in construction of the bridges are wooden popsicle sticks and all-purpose white glue. **NO OTHER MATERIALS ARE PERMITTED**; entries using other types of glues or materials would be disqualified. The popsicle sticks may be cut and the amount of popsicle sticks or glue used is restricted only by the maximum weight limit.

**Engineers PEI has supplies available. Call or email to make arrangements.**

## 2. Design

Many bridge designs are possible; however there are certain limitations to allow the structures to be tested. In particular, the **structures must comply with the weight and dimensions as listed on section 3 and on the highlighted box.**

If the design has part of the bridge structure extending above the main deck of the bridge, near the area where the load will be applied, consideration should be given to effects of buckling under load. If part of this structure touches the ram as the result of buckling, **it will**

**be deemed to have reached its maximum load.** The bridge is to be designed to stand on its own, spanning the 55 cm gap on the testing apparatus.

The more successful entries will be those which have correctly applied good engineering design principles.

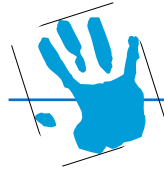
**All bridges will be pretested with a 10 kg weight. Bridges that do not pass this screening test will not be tested further.**

Students are encouraged to pre-test on their own to determine if their bridges are eligible for the competition. Some guidelines can be found on the Engineers PEI website under “National Engineering Month.” Other helpful information can be found at the library and on the Internet. Students might also wish to study some local bridges to get a few ideas.

## 3. Dimensions & Weight

- The width of the bridge must be between 8 cm and 15 cm.
- The length of the bridge must be no less than 55 cm but can not exceed 65 cm. (Hint: Shorter bridges should weigh less and carry a larger load than a larger bridge with the same design).

- The deck must allow a test vehicle 6 cm in width (e.g., a dinky car) to pass freely along the length of the bridge. A small piece of steel is placed between the testing apparatus and the bridge during testing (dimension: 51mm x 51mm x 6.4mm thick.)
- The height of the bridge must not exceed 30 cm.
- The weight of the bridge must not exceed 0.5 kg.
- The design must allow for application of the testing apparatus without alteration to the bridge.



### IMPORTANT

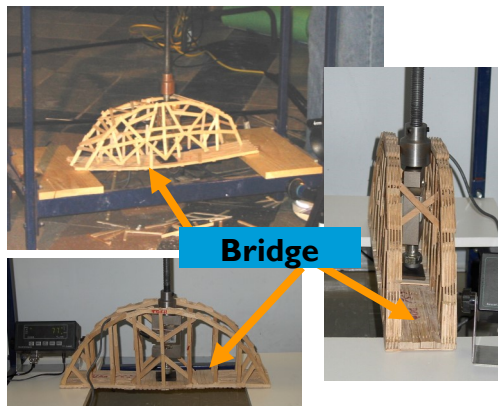
**The bridge must be designed to allow the hydraulic ram to apply a vertical load on the centre of the deck section of each structure.**

**THE TESTING WILL BE DONE ON THE CENTRE OF THE DECK. Therefore, the top centre area of the structure must be free of obstruction, allowing a minimum space of approximately 4 cm x 10 cm for the ram to be vertically applied.**

## 4. Identification

A registration form must be securely attached to each entry. In addition, the student's name, grade level (elementary, junior or senior) and the school must be noted on the bridge itself using permanent marker.

**NOTE: Structures that do not meet the bridge criteria will automatically be disqualified.**



# Judging:

## 1. Evaluation

Each bridge will be evaluated according to the following grading system:

- |  |            |
|--|------------|
| A. Strength Factor   | <b>80%</b> |
| B. Quality of Construction<br>& Application of Engineering<br>Principles | <b>20%</b> |

The strength factor is given by the following formula:

$$\text{S.F.} = \frac{\text{Maximum Load (kg)}}{\text{Weight of Bridge (kg)}}$$

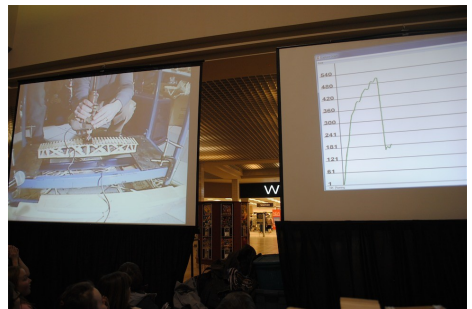
The bridge is considered to have failed when it collapses or the load cell readings decrease.

## 2. Testing

All bridges must be available for testing.

All bridges must be picked up or dropped off at the Engineers PEI office up by **March 11th.**

To have your bridge(s) picked up, email Kim at [info@EngineersPEI.com](mailto:info@EngineersPEI.com)



# Prizes:

## **School Prize (Urban):**

**\$250** will be awarded to the urban school with the highest average bridge strength (Based on the top 10 finishers from each school; minimum of 10 entries from the school is required).

## **School Prize (Rural):**

**\$250** will be awarded to the rural school with the highest average bridge strength (Based on the top 10 finishers from each school; minimum of 10 entries from the school is required).

## **Student/Team Prize:**

The bridge contest is divided into Elementary, Junior and Senior Divisions. Cash prizes will be forwarded to the winning students care of the school.

Elementary Division (Grade 4 - 6 )

Junior Division (Grade 7 - 9)

Senior Division (Grade 10 - 12)

**1st Place - \$50**

**2nd Place - \$30**

**3rd Place - \$20**

***Please note:*** Any structure that does not comply with the rules will not be eligible for a prize. Judges' decisions will be final, however all efforts will made to give entries the benefit of the doubt.



## **Engineers PEI Strongest Popsicle Bridge Builder Prize!**

***Can you beat the Engineers PEI strongest popsicle bridge all-time record of 1683 lbs of maximum load set in 2014?***

**The Grand Prize of \$250** will go to the student/team whose bridge withstands the highest load that exceeds the previous all-time record.

**Bridges must comply with all specifications as outlined in this brochure.**

# 31st Annual Bridge Building Contest

## REGISTRATION FORM

### Choose Your Division:

( ) Elementary Division - Grade 4 - 6

( ) Junior Division - Grade 7 - 9

( ) Senior Division - Grade 10 - 12

### Attention Grade 12 Students: \$500 Scholarship for Engineering Studies

Two \$500 Scholarships are available for Grade 12 Students who participate in the Bridge Building Contest and would be enrolling in an Engineering Program.

For more scholarship application forms, rules and details, visit : [EngineersPEI.com](http://EngineersPEI.com)

Student(s) Name:

**Please Print Clearly**

1)

2)

3)

4)

5)

6)

School:

Grade:

Class:

Teacher:

Please ensure that this form is securely attached to your bridge and also that your name, school and school grade division (elementary, junior or senior) are written clearly on your bridge in permanent marker. Bridges without Registration Forms may be disqualified.

**Bridges must be ready for pickup or dropped off at the Engineers PEI office by March 11th.** Email Kim at [info@EngineersPEI.com](mailto:info@EngineersPEI.com) to arrange for pickup.



135 Water Street  
Charlottetown, PE  
Canada C1A 1A9

Phone: 902-566-1268  
Email: [info@engineerspei.com](mailto:info@engineerspei.com)