

17th Annual American Society of Civil Engineers

Popsicle Bridge Contest

The Challenge:

Build the most efficient bridge from only Popsicle sticks and Elmer's Glue

The Prizes:

1st Place: \$100 (each division)

2nd Place: \$50 (each division)

Most Aesthetic Bridge Award : \$50/team

Most Innovative Bridge Award : \$50/team

Beat-the-Engineer Contest

The Competitors:

Middle School Division (Grades 6-8)

High School Division (Grades 9-12)

Date: February 19, 2012

Middle School Registration

12:00 pm – 1:00 pm

High School Registration

1:00 pm – 2:00 pm

Bridge Testing

12:15 pm – 4:15 pm

Awards Ceremony

Following Testing

Place: Science Museum of Virginia
2500 West Broad St., Richmond VA

Register by February 3, 2012 at
www.ascerichmond.org/2012bridgecontest/registration

View a video from last year's contest at:
<http://www.youtube.com/watch?v=s4NqJu52aPU>

See complete rules for additional information about the contest

17TH ANNUAL ASCE

POPSICLE BRIDGE CONTEST

Overview

The Richmond Branch of the American Society of Civil Engineers (ASCE) is pleased to sponsor the 2012 Popsicle Bridge Contest on **Sunday, February 19, 2012**. The competition will be held at the Science Museum of Virginia located at 2500 West Broad Street in Richmond, Virginia from 12:00 pm until 5:00 pm.

Eligibility

The competition is open to all greater Richmond area Middle School (grades 6th-8th) and High School students (grades 9th-12th). Students may submit entries as individuals or as a team. Team sizes will be limited to three (3) students per team.

Students do not need to be from the same school or in the same age group to be on a team together, however, any team consisting of both middle and high school students will have to compete in the high school division.

Registration

All students (or teams) interested in competing should complete the registration form online at www.ascerichmond.org/2012bridgecontest/registration. The deadline for all team registrations is **February 3, 2012**. Please direct any questions to:

Brooke Young
Kimley Horn Associates
1700 Willow Lawn Drive, Suite 200
Richmond, VA 23230
Email: Brooke.Young@kimley-horn.com
Phone: (804) 672-4726

Competition

Team check-in on the day of the event will be from 12:00 pm - 1:00 pm for Middle School teams and 1:00 pm – 2:00 pm for High School teams. Testing will begin around 12:15 pm. The awards ceremony will follow once testing has been completed (approximately 4:00 pm – 4:30 pm).

The competition takes place during the Richmond Joint Engineers Council “*Careers in Engineering Field Day*” which will include a variety of activities by different Richmond area engineering societies. Admission to the competition and the other Field Day events is free. Signs and volunteers in the main rotunda of the museum will direct each team where to check-in on the day of the event.

Awards

The following awards will be given separately to both Middle and High School Divisions:

Highest Efficiency Rating	= \$100/team and Certificate
Second Highest Efficiency Rating	= \$50/team and Certificate
Third Highest Efficiency Rating	= Certificate Only

Both divisions will compete together for the following awards:

2012 Most Aesthetically-Pleasing Bridge*	= \$50/team and Certificate
2012 Most Innovative Design**	= \$50/team and Certificate

** A team of judges will evaluate each bridge after each team has checked in.*

***Optional: Each team will have an opportunity to briefly discuss their design with the judges to demonstrate any innovative approaches they used in their design.*

Beat-the-Engineer Award – A team of ASCE members will submit one entry into the contest. The award will be given to the members of each team that score higher than the engineers' entry.

All participants will receive a Certificate of Participation.

General Competition Requirements & Helpful Hints

- Objective: To span a clear distance of 22 inches using a bridge constructed only of standard, craft-variety popsicle sticks and glue. Each bridge will be scored in accordance to an Efficiency Rating (ER), which will be calculated by the following equation:

$$ER = \frac{\text{Load carried by the Bridge at Failure (lbs)}}{\text{Weight of the Bridge (lbs)}^2}$$

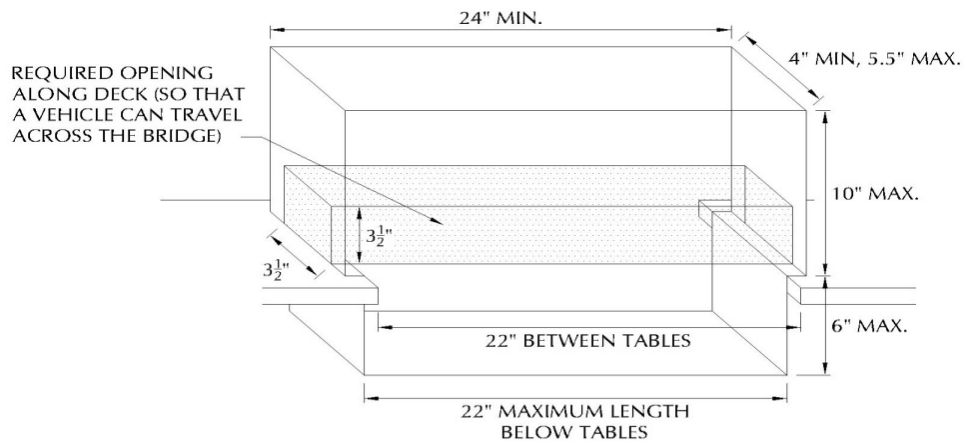
~Note that the score will be very heavily influenced by the weight of the bridge. Maximize the strength of the bridge while keeping the weight as low as possible!

- **Maximum Weight of Bridge = 450 g** (about 1 pound)
- Required Sticks: Standard, $4\frac{1}{2}'' \times \frac{3}{8}'' \times \frac{1}{12}''$ craft-type Popsicle sticks (*readily available at all craft and department stores*).
- Required Glue: **Elmer's® Glue-All Multi-Purpose Glue** (*This is the white, craft variety of glue. Please don't substitute for any other glue such as wood glue, super glue, epoxy, or any other type of adhesive or the bridge will be disqualified*).
- Sticks can be cut, sanded, trimmed or colored with color pencils but all sticks must be visible to inspection and may not be painted or stained in anyway.
- No modifications will be allowed once teams have been checked in on the day of the event.
- The bridges must be able to stand freely on the table tops. No hooking, gluing or otherwise fastening the bridges to the tables will be allowed.
- Bridge must contain a continuous roadway capable of allowing a "matchbox" type car to roll completely across the bridge without stopping or falling through.
- Bridges must meet the additional requirements shown on the next page for connection and geometric limitations.
- **Disqualification:** Bridges not meeting the requirements listed in these rules will be subject to disqualification. Disqualified bridges will still be eligible for the innovation or aesthetic awards but will not be considered for the efficiency score awards. Disqualified bridges will be tested until failure as long as it remains safe to do so. The decision of the judges at the time of the event is final.

Miscellaneous Information

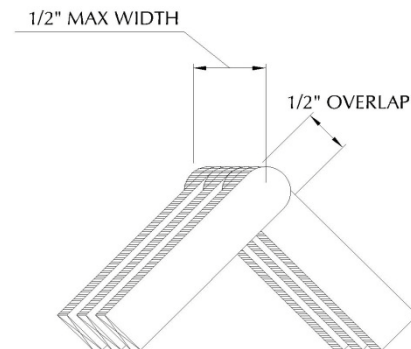
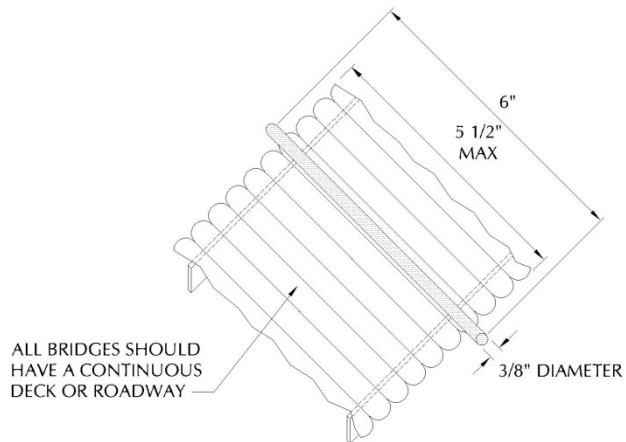
- Each bridge must be able to hold the weight of the testing equipment which is about 5 lbs.
- The glued connection between the sticks is most likely the weakest link in the bridge so be sure to allow at least 24 hours before the competition for the glue to dry.
- All participants are encouraged to view a video from the 2011 event in order to preview how the bridges are tested. The video is available at <http://www.youtube.com/watch?v=s4NqJu52aPU>.

Additional Requirements:



GEOMETRIC CONSTRAINTS

- THE BRIDGE MUST BEAR ON THE TOP SURFACE OF EACH TABLE, NOT ON THE FRONT EDGES OR BOTTOM.
- ONLY THE OUTLINE OF THE BRIDGE IS SHOWN, EVERY BRIDGE WILL BE DIFFERENT

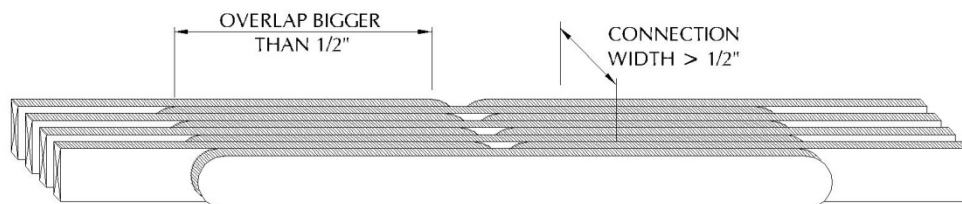


STEEL LOADING ROD (PROVIDED BY ASCE)

- A STEEL BAR WILL BE PLACED AT THE CENTER OF EACH BRIDGE ON TOP OF THE DECK. THIS WILL BE PULLED DOWNWARDS UNTIL THE BRIDGE BREAKS

ACCEPTABLE CONNECTION

- 1/2" MAXIMUM WIDE FOR ANY CONNECTION
- OPEN GAPS BETWEEN ADJACENT PIECES
- 1/2" MAX. OVERLAP



UNACCEPTABLE CONNECTION

- CONNECTION IS GREATER THAN 1/2" WIDE
- TOO MUCH OVERLAP (> 1/2")