16th Annual ASCE

Popsicle Bridge Contest

Richmond Joint Engineers Council – Careers in Engineering Day

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 20, 2011

Schedule:

Registration	12:30 pm – 1:30 pm
Bridge Testing	1:00 pm – 4:15 pm
Awards Ceremony	4:30 pm – 5:00 pm

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

Register by January 31, 2011:

1. Online at www.2011ascebc.eventbrite.com
2. Send Registration Form found in rules packet to Mike Howell, Austin Brockenbrough & Associates, 1011 Boulder Springs Drive Suite 200, Richmond, VA 23225

See complete rules for additional information about the contest

ASCE American Society of Civil Engineers

Richmond Joint Engineers Council

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Overview of the Competition

The Richmond Branch of the American Society of Civil Engineers (ASCE) is pleased to sponsor the 2011 Popsicle Stick Bridge Contest on **Sunday, February 20, 2011**. The competition will be held at the Science Museum of Virginia located at 2500 West Broad Street in Richmond, Virginia from 12:30 pm until 5:00 pm.

Eligibility

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

Registration

All students (or teams) interested in competing should complete the registration form online at www.2011ascebc.eventbrite.com or should fill out the Registration Form provided in this packet (see Page 4) and send it to Mike Howell by U.S. mail to the address below. All registrations should be completed on or before **January 31, 2011**. Please direct any questions about the contest to:

Mike Howell
Austin Brockenbrough & Associates, LLP
1011 Boulder Springs Drive, Suite 200
Richmond, VA 23225
Email: mhowell@brockenbrough.com
Phone: 804.592.3905

Competition

Team check-in will be from 12:30 pm - 1:30 pm for all teams. Testing will begin around 1:15 pm following a brief presentation by the ASCE bridge design team. The awards ceremony will follow around 4:30 pm once all of the results from the bridge testing have been compiled. The competition takes place during the Careers in Engineering Field Day at the museum which will feature a variety of demonstrations by different Richmond area engineering societies. Admission to the competition and the other Field Day events is free. Signs will be displayed in the main lobby of the museum directing teams where to check-in on the day of the event.

Awards

The following awards will be given:

- Highest Efficiency Rating (Middle School) = $100/team
- Second Highest Efficiency Rating (Middle School) = $50/team
- Highest Efficiency Rating (High School) = $100/team
- Second Highest Efficiency Rating (High School) = $50/team
- Most Aesthetically-Pleasing Bridge* = $50/team
- Most Innovative Design** = $50/team

** A team of judges will evaluate each bridge upon the student's arrival at the event.*

***If they would like to, 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 - ASCE Engineers 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 participates will receive a Certificate of Participation.

General Requirements

- 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:

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

  ~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!

- Required Sticks: Standard, 4½" x $^3/_8$" x $^1/_{12}$" 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).* The glued connection between the sticks is the 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

- No painting or staining of the bridges will be allowed. If color is desired, use only colored pencils or markers.

- Sticks can be cut, sanded, or trimmed but all sticks must be visible to inspection.

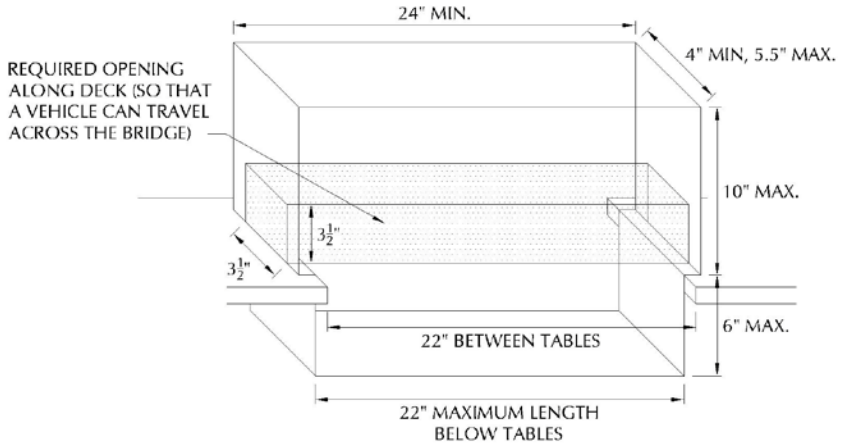
- After the bridges are registered, inspected, and weighed on the day of the contest, no modifications will be allowed.

- 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.

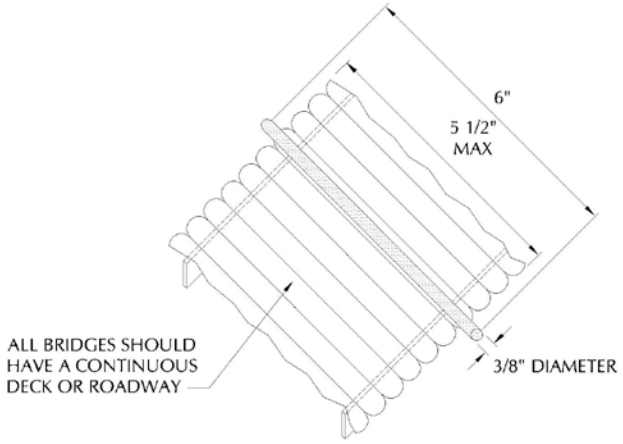
- Any questions about the requirements or the contest should be directed to Mike Howell at the email and phone number provided on page 1 of this package. Any bridge not meeting these requirements will be disqualified. The decision of the judges at the time of the event is final.

Additional Requirements:



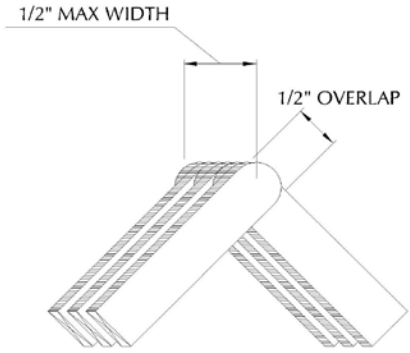
GEOMETRIC CONSTRAINTS

- 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



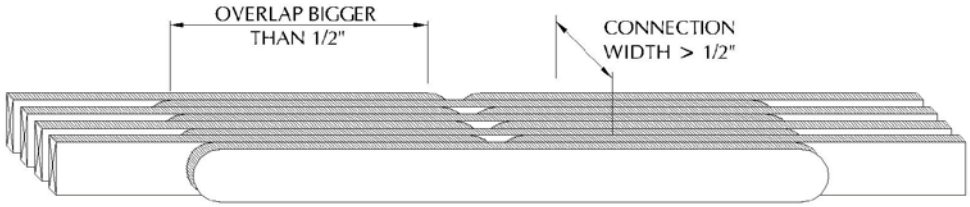
STEEL LOADING ROD (PROVIDED BY ASCE)

- 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")

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Registration Form

Team Name: _____
(Optional)

Team Members:

1. Name: _____
   Grade: _____
   School: _____

2. Name: _____
   Grade: _____
   School: _____
   (if same as team member 1, leave blank)

3. Name: _____
   Grade: _____
   School: _____
   (if same as team member 1, leave blank)

Parent/Teacher/Administrator's Name, Phone Number, and Email address:

_____

_____

_____

Send by January 31, 2011 to:

Mike Howell
Austin Brockenbrough & Associates, LLP
1011 Boulder Springs Drive, Suite 200
Richmond, VA 23225
Email: mhowell@brockenbrough.com
Phone: (804) 592-3905