15TH ANNUAL ASCE

POPSICLE BRIDGE CONTEST

Richmond Joint Engineers Council – Careers in Engineering Day

The Challenge:

Can you design the most efficient bridge using only popsicle sticks and Elmers Glue?

The Prizes:

1st Place: $100 /team (each division)
2nd Place: $50 /team (each division)
Most Aesthetic Bridge: $50/team
Most Innovative Bridge: $50/team
Beat-the-Engineer Contest

The Competitors:

Middle School Division (Grades 6-8)
High School Division (Grades 9-12)

Date: February 28, 2010
Time: 12:45pm-5:00pm

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

Send Registration Form to:

Mike Howell, Austin Brockenbrough & Associates
804.592.3905, mhowell@brockenbrough.com
or **register online** at www.ascebc.eventbrite.com

Registration Due Date: February 12, 2010
See complete rules for details.

Richmond Joint Engineers Council

SCIENCE MUSEUM OF VIRGINIA

ASCE American Society of Civil Engineers

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Overview of the Competition

The Richmond Branch of the American Society of Civil Engineers (ASCE) is pleased to sponsor the 2010 Popsicle Stick Bridge Contest on **Sunday, February 28, 2010**. The competition will be held at the Science Museum of Virginia located at 2500 West Broad Street in Richmond, Virginia from 12:45 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 for middle school entries and two (2) students for high school entries.

Registration

All students (or teams) interested in competing should complete the registration form online at www.ascebc.eventbrite.com or should fill out the Registration Form provided in this packet (see Page 4) and send it to Mike Howell by email, fax or U.S. mail. All registrations should be completed on or before **February 12, 2010**.

Mike Howell
Austin Brockenbrough & Associates, LLP
1011 Boulder Springs Drive, Suite 200
Richmond, VA 23225
Email: mhowell@brockenbrough.com
Phone: 804/592-3905
Fax: 804/592-3901

Competition

Registration will take place from 12:45 pm - 1:30 pm and testing will begin around 1:45 the day of the event. The awards ceremony will follow the testing once all results 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. Registration will take place in the main lobby of the Science Museum and the actual testing and awards ceremony will take place at the demonstration stage on the main floor of the museum (in rear of lobby).

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 scores 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 loaded to determine which structure can carry the highest load most efficiently. 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 Glue: Elmer's ® Glue-All Multi-Purpose Glue. With many designs, the connection between the sticks is the weakest link so be sure to allow at least 24 hours before the competition for the glue to dry *(Please do not substitute any other glues or adhesives)*

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

- Required Sticks: Standard, 4½" x 3/8" x 1/12" craft-type popsicle sticks *(readily available at all craft and department stores).*

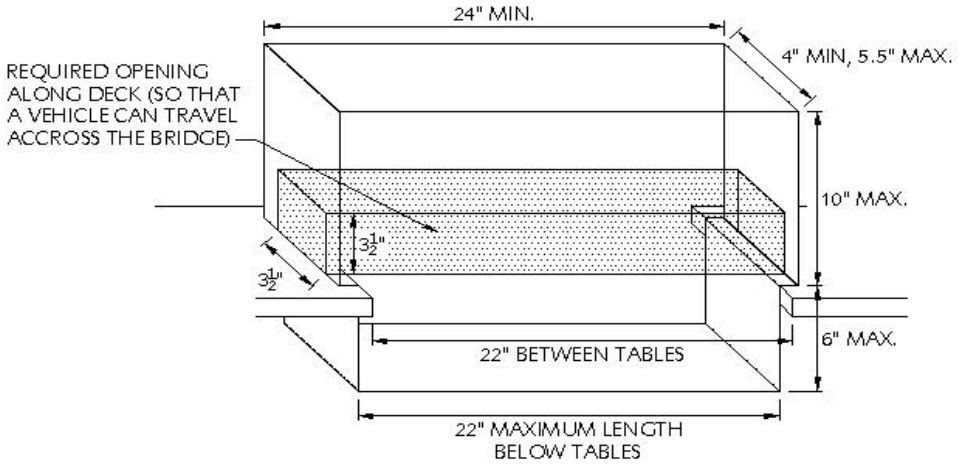
- Sticks can be cut, sanded, or trimmed but all sticks must be visible to inspection.

- 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, nor will the bridges be allowed to bear against the edges of the tables.

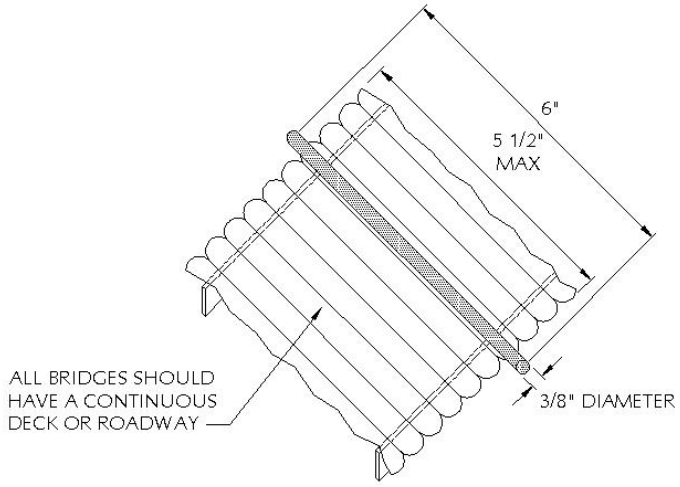
- Any questions about the requirements or the contest should be directed to Mike Howell at the email and phone number provided on page 1 of this package. The decision of the judges at the time of the event is final.

Additional Requirements:



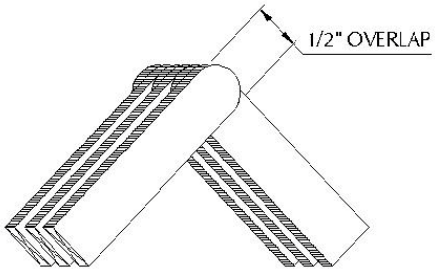
GEOMETRIC CONSTRAINTS

- 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



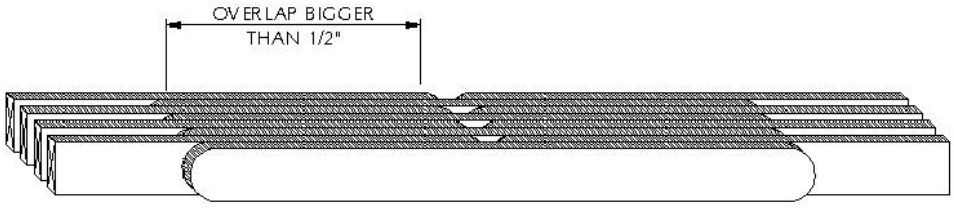
STEEL LOADING ROD (PROVIDED BY ASCE)

- 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

- 6 STICKS MAX AT A CONNECTION
- OPEN GAPS BETWEEN ADJACENT PIECES
- 1/2" MAX. OVERLAP



UNACCEPTABLE CONNECTION

- TOO MANY STICKS (> 6 STICKS)
- TOO MUCH OVERLAP (> 1/2")

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Registration Form

Team Name: _____
(Optional) *(pick a unique team name that will be used to during the competition)*

Team Members: 1. Name: _____

Grade: _____

2. Name: _____

Grade: _____

Middle School Only *3.* *Name:* _____

Grade: _____

School/Organization: _____
(If team members are from different schools, provide name of each school)

Teacher/Administrator's Name and Daytime Contact Information:

_____

_____

_____

Send or fax by February 12th to:

Mike Howell
Austin Brockenbrough & Associates, LLP
1011 Boulder Springs Drive, Suite 200
Richmond, VA 23225
Email: mhowell@brockenbrough.com
Phone: (804) 592-3905
Fax: (804) 592-3901