**Production/construction**

**ToothPick Bridges**

**Toothpick Bridge Challenge Specifications, Guidelines, and Evaluation**

**The Challenge:**

Your challenge is to construct a bridge that will serve as an overland route over a waterway. The goal is to design and create the most efficient, economical and aesthetic bridge possible using only toothpicks and glue.

**The Specifications:**

* **Span**: The bridge must have a ***minimum*** clear span of 12 inches in length, and rest on abutments on either side of the river. The abutments are to be part of the bridge. (See Bridge Support Platform Photo)
* **Vehicle Deck**: The bridge deck must be at least 1.5 inches wide. This will be tested with a matchbox car. The deck must be solid so that the car can travel the length of the bridge. The loading block will also be placed on the deck.
* **Bridge Width:** The maximum width of the bridge is 2.5 inches.
* **Boat Clearance:** The bridge must be more than 2 inches above the water.

A 2 inch high boat must pass unobstructed underneath the bridge.

* **Bridge Height**: The maximum height of the bridge is 8 inches from the

river surface.

* **Loading Connection**: The bridge must be able to accommodate the

loading block (1.5 inches by 2 inches) at the midpoint of the deck. The loading block will be placed on the vehicle deck of the bridge (the same place the matchbox car travels). ***A hole in the center of the bridge MUST allow for a 1/4 inch rod to pass through the vehicle deck.***

**Material Specifications:**

* Round uncoated toothpicks (maximum 1000 toothpicks)
* Elmer’s white glue. ***Epoxy, wood glue, hot glue, paint and super glues***

***are not permitted.***

* Do not coat the bridge with any material (paint, stain or glue).
* Any bridge not meeting the material specifications will be penalized.

**The Competition:**

On the day of the competition your bridge will be examined for appearance, adherence to bridge specifications, and strength.

Your bridge will be evaluated on each of the following categories:

1. Aesthetics (5points)  
2. Presentation (15points)

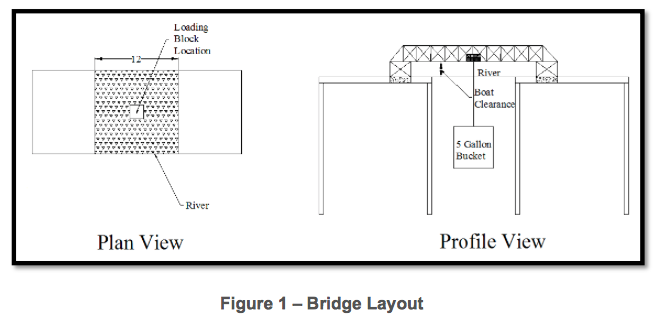
1. Presentation must include the total cost for your project, cost effectiveness predictions and graph, strength ratio data and strength ratio graph.
2. Share the process used to determine the bridge design you created.
3. Refer to the career titles explored in your research when you present your bridge.

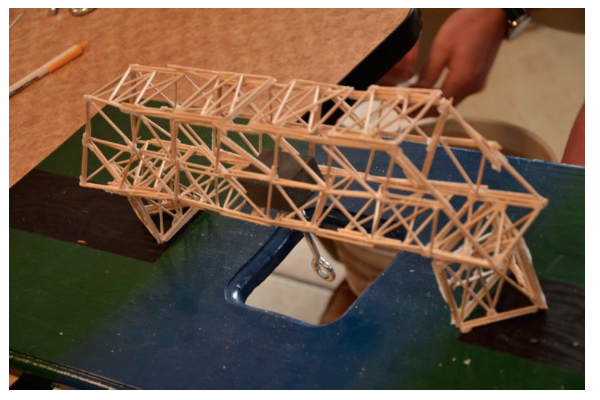
3. Bridge Specifications(10points)

1. Clear Span (needs to be at least 12inches)
2. Vehicle Deck (needs to be at least 1.5inches wide for matchbox car)
3. Bridge Width (maximum width is 2.5 inches wide)
4. Boat Clearance (at least 2inches clear distance from tabletop)
5. Bridge Height (maximum of 8inches tall)
6. Loading Connection (accommodates the loading block on top of vehicle deck)

4. Strength Points (10points)

5. Cost Effectiveness Points (10points)  
6. In the event of a tie the lightest bridge will be the winner.



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