



**2012 KENNETH T. RYBARCZYK MEMORIAL  
MODEL BRIDGE CONTEST**  
WWW.ABCDWN.Y.ORG

Each year, the Association for Bridge Construction and Design (ABCD) sponsors multiple balsa wood model bridge contests throughout the Western New York Area, each is open to all full time 7<sup>th</sup> to 12<sup>th</sup> Grade students who would like to participate.

Trophies will be awarded for first place, second place, and third place, with the winners to be selected by the ABCD.

An entry certificate (enclosed) with the name of the individual(s) responsible for the design and construction of the model shall accompany each entry. If there is more than one participant responsible for the design and/or construction of the model, all such names shall appear on the entry certificate, and it is understood that the trophy will be shared equally among them. A student (or group of students) may enter only one bridge. No student can be a member of more than one group, nor can a student enter as an individual for one bridge and part of a group for another bridge. The entry certificate shall clearly state the name of the school attended by the participant(s).

This year's Buffalo Area Contest will be held on:  
**Wednesday, February 29, 2012 @ 2:00 PM**  
@ Classics V Banquet Facility  
2425 Niagara Falls Boulevard (Rte 62), Amherst, NY  
(About 1 mile north of the I-290 interchange)

**IF YOUR STUDENTS PLAN ON ATTENDING, PLEASE BE SURE TO FILL OUT THE  
ATTACHED ENTRY FORM AND SEND THE TOP HALF ONLY TO:**

ABATE ASSOCIATES  
ATTN: Ralph Abate  
P.O. BOX 218  
BUFFALO, NY 14225-0218

**Keep the Bottom half (filled out the same as the top half) and attach it to the bridge on the  
day of the event.**

## MODEL BRIDGE CONTEST INSTRUCTIONS

The model bridge must be built in accordance with the following instructions:

### REGULATIONS

- A. Have fun and enjoy the design process!
- B. The material to be used for each structure shall consist of balsa wood and glue. The weight of each structure shall be less than 300 grams (10.6 oz.).
- C. See attached Figures for required bridge dimensions.
- D. **The bridge and deck shall be provided with a 1/2" diameter hole at the geometric center of the structure (center of bridge length, center of bridge width) so there is clearance for a 1/2" diameter rod to extend downward from this hole to facilitate set up of the testing device.**
- E. Specific definitions:
  - a. **Failure:** failure is determined:
    - (1) by the bridge collapsing from the load placed on the test block by the testing device;
    - (2) by the superstructure below the deck touching the face of the testing device; or
    - (3) the structure is unable to carry any increased load from the testing device after 5 consecutive pumps to apply load.
  - b. **Deck:** the part of the bridge that is meant to be traveled on by a vehicle.
    - (1) The deck must extend the full length of the bridge and maintain a vehicular roadway area **without any obstruction**.
    - (2) The deck shall be constructed using a single, solid, balsa wood sheet. The balsa wood sheet used for the deck may not be more than 1/4" thick.
    - (3) The deck shall be level (or flat) and shall not be curved (or arched).

## EVALUATION

- A. The structure is weighed before testing and the weight is recorded on the evaluation form.
- B. An increasing load is applied to the structure via the testing device until the structure fails. The load will consist of a uniform load, applied over a **2” wide and 4” long area** on the deck at the center of the structure.
- C. The Failure Load is recorded.
- D. The efficiency is determined by the following equation:  
$$\frac{(\text{Failure Load} - \text{Device Calibration Load})}{(\text{Structure Weight}) + \text{Device Calibration Load}} = \text{Spring Constant for Testing Device}$$
- E. The efficiency is recorded.
- F. The winner is determined by a point system as follows:
- **Aesthetics- 10 pts**
    - An independent judge will walk around during the competition and assign a score to each bridge based on the following criteria:
      - Complexity- The number of purposeful members involved in the design, for example a truss bridge will score better than a girder bridge. (3 pts.)
      - Engineering- How much thought is placed into the design, where the connection points are, how connections are made, and what member shapes are used in the design. (3 pts.)
      - Workmanship- A bridge that is “clean”, such as nice glued edges, members matching at connections and nice sanded edges. (4 pts.)
    - For example, truss and arch style bridge will be given a higher score than a flat slab style bridge.
  - **Efficiency- 30 pts**
    - Calculation from step D
- G. The best possible score will be 40 points. In case of a tie, the first prize will be awarded to the structure, which in the opinion of the judges, displays the best application of Civil Engineering principles, innovative ideas, and general overall appearance.
- H. **The judges decisions will be final.**

## SUBMISSION

Model bridges shall be submitted at the ABCD contest table on the date of the competition.

Trophies will be presented at the conclusion of the contest. Certificates will be given to all that participate.

**ENTRY FORM**

**MODEL BRIDGE CONTEST**

**(this portion of the form must be returned two weeks prior to the date of the competition)**

Student Name(s): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name of School: \_\_\_\_\_

Teacher: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: \_\_\_\_\_

**ENTRY FORM**

**MODEL BRIDGE CONTEST**

**(this portion of the form to accompany your model bridge)**

Student Name(s): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name of School: \_\_\_\_\_

Teacher: \_\_\_\_\_

School Address: \_\_\_\_\_

\_\_\_\_\_

School Phone: \_\_\_\_\_

FIGURE 1

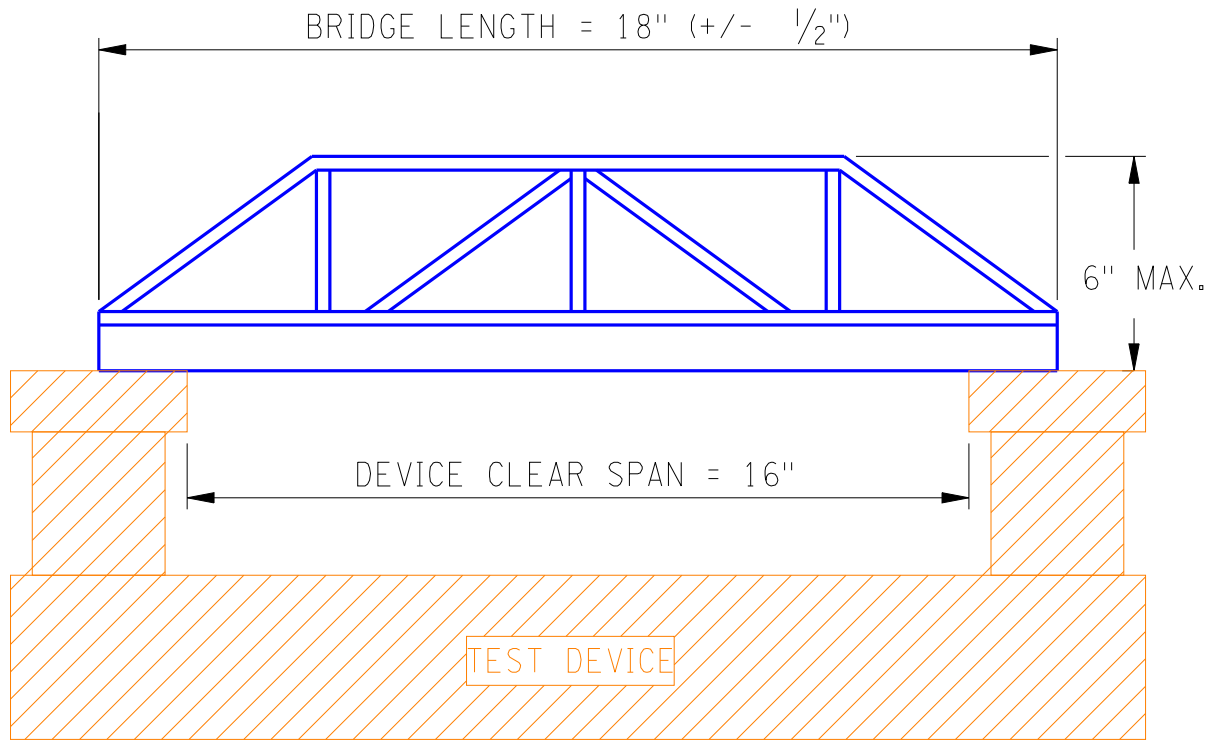


FIGURE 2

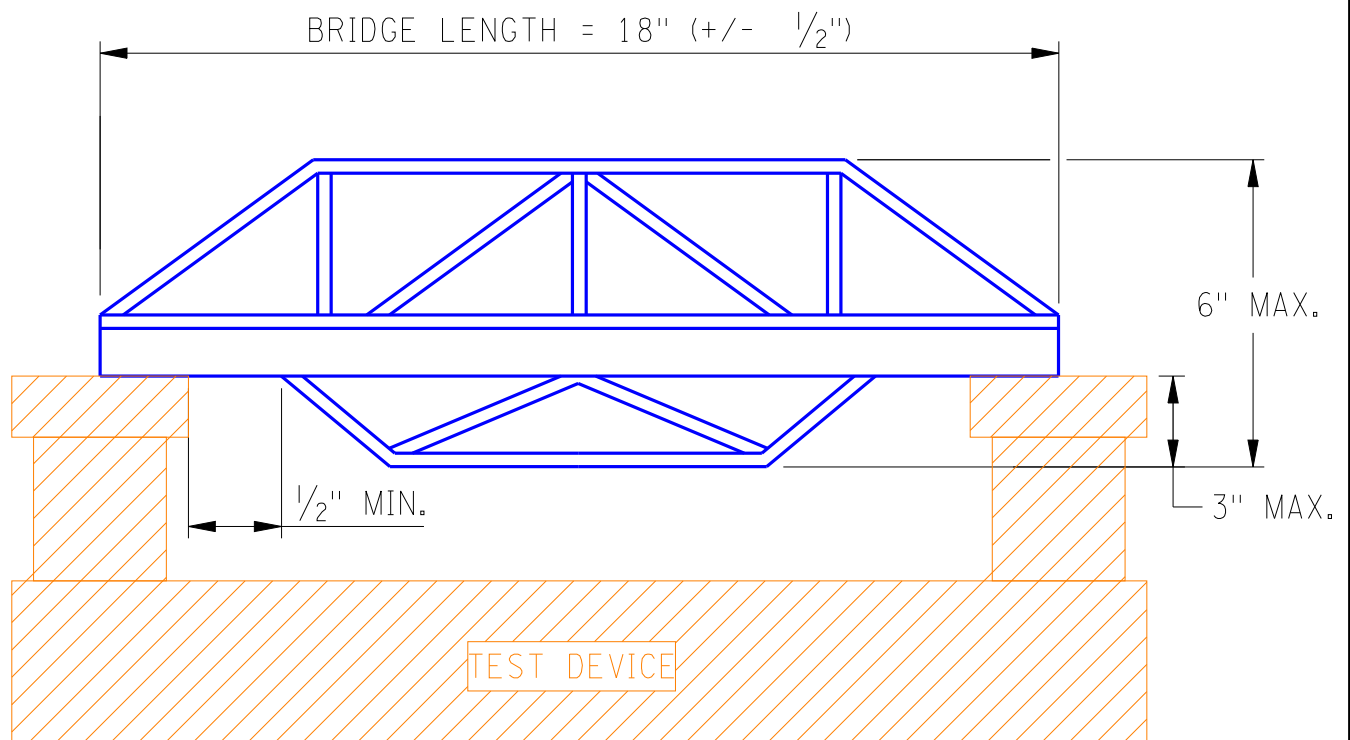


FIGURE 3 (TRUSS EXAMPLE)

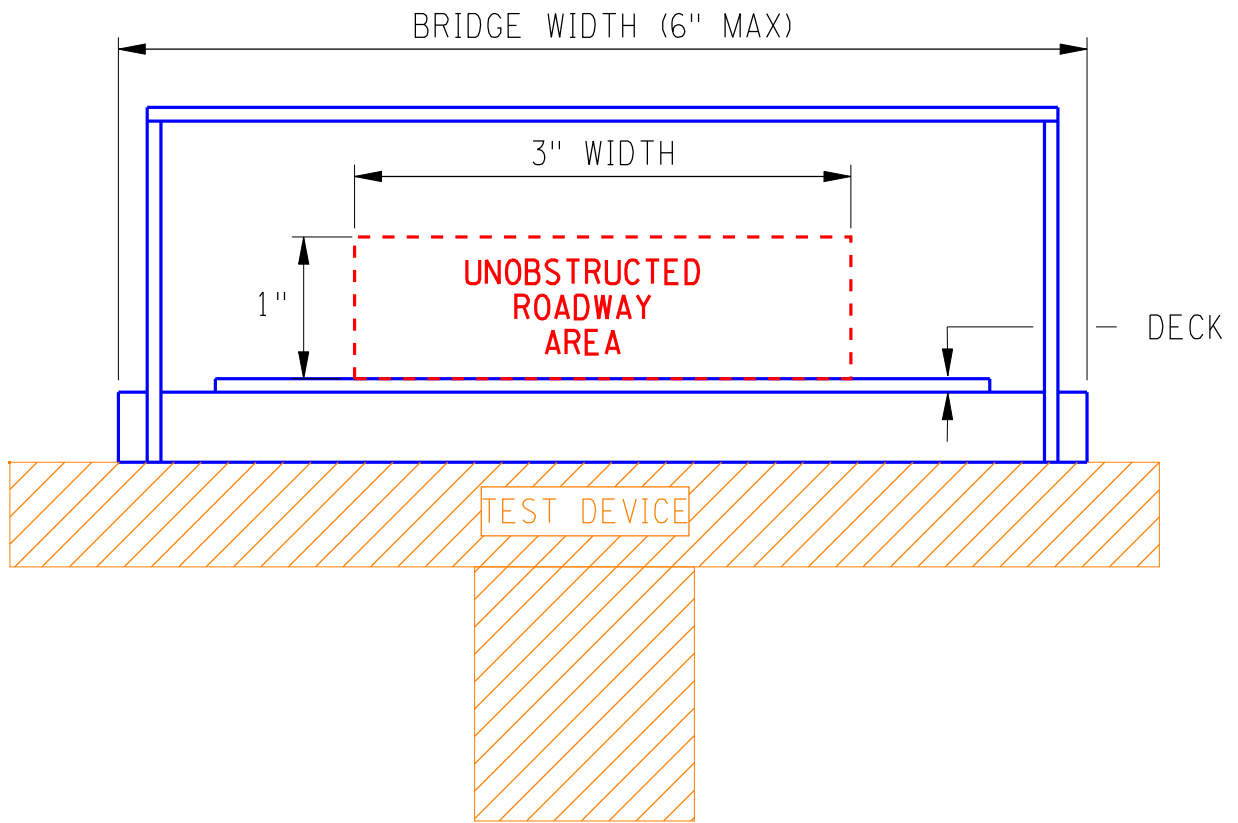
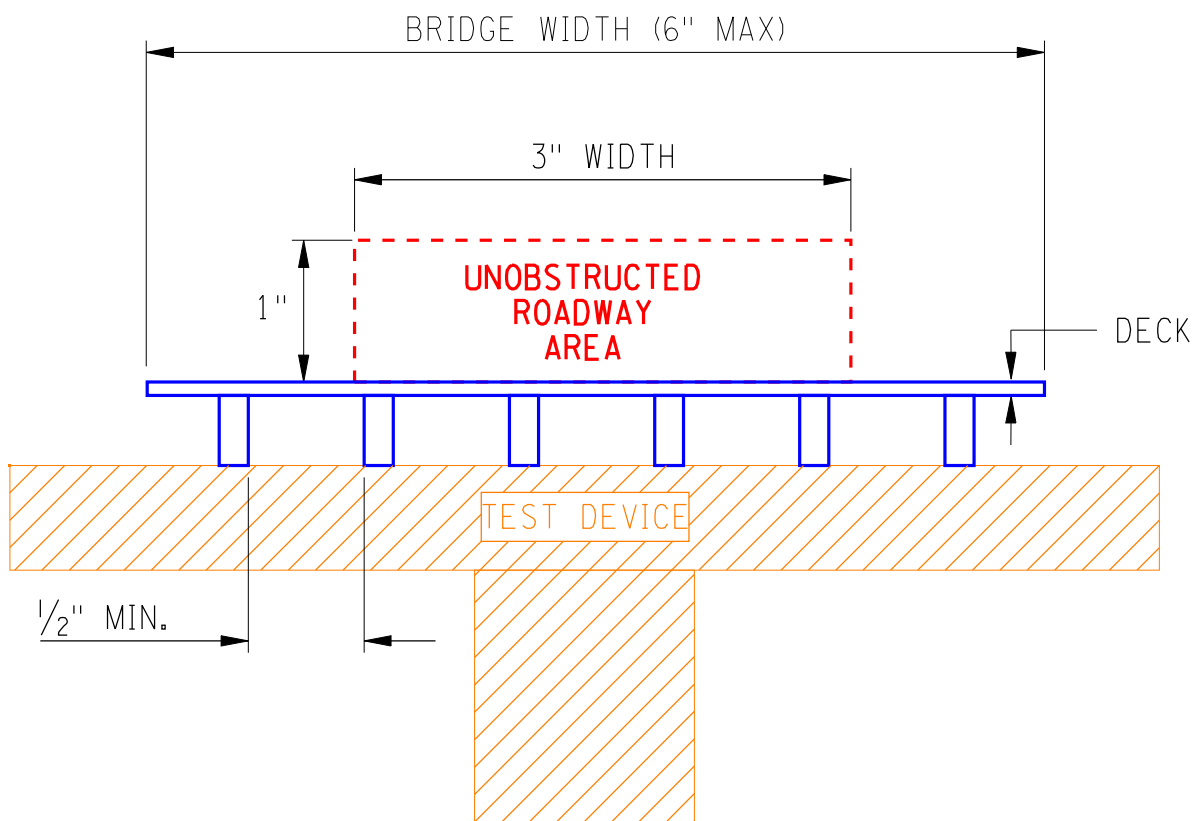


FIGURE 3 (GIRDER EXAMPLE)



## **ENTRY FORM**

Enclosed is an official entry form. Please fill it out and send to:

ABATE ASSOCIATES  
ATTN: Ralph Abate  
P.O. BOX 218  
BUFFALO, NY 14225-0218

If you wish further information or assistance, please contact Ralph Abate or visit the ABCD website at **[www.abcdwny.org](http://www.abcdwny.org)**.