

November 7, 2007

TO: Science/Math Teachers
From: Chris Bass, PE
Model Contest Vice -Chairman
Subject: MES Model Contest

Enclosed you will find a copy of the announcements and specifications for the 2007 - 2008 Mississippi Engineering Society Model Contest for Mississippi High School Students.

If you desire to enter this years contest please return a completed Registration Form to the address listed below by no later than January 7, 2008.

MES Model Contest
c/o Chris Bass
P.O. Box 180183
Richland, MS 39218

If you have any questions about the contest, please contact me at the email address listed on the Registration Form.

Respectfully

Chris Bass, PE
Model Contest Vice Chairman

Enclosures

General Entry Requirements
MES Model Contest

1. Students may enter only one model. Students may enter the contest as individuals, as a group, or as a class. If they choose to enter as a team or class and win a regional contest the team or class shall choose no more than two students to represent them at the State Final.

(If students wish to enter as a team or as a class they will need to indicate so on the entry form. Each team or class member who plans to attend a regional event should send in an entry form.)

2. We will hold four regional competitions at the following locations and dates
Jackson Area January 19, 2008
Oxford Area January 26, 2008
Gulf Coast Area February 2, 2008

Details concerning the time and exact locations of these events will be mailed to the students and teachers after their entry forms are received.

3. The first, second, third and fourth place winner of the regional contest will participate in the state final to be held during the Mississippi Engineering Society Winter Meeting in Jackson, Mississippi on March 3, 2008.
4. The judges of each contest will choose a bridge to receive a Judges' Award. This award will be given to the bridge that has the most innovative design. If a bridge finishes in the top three it will not be eligible for the Judges' Award. The Judges' Award winner from each regional will compete in the State Finals.
5. We will weigh the models on the day of the competition and assign each model an entry number.
6. The school that sponsors the state wide winning bridge will be awarded a cash prize to be used to improve their mathematic and science programs.

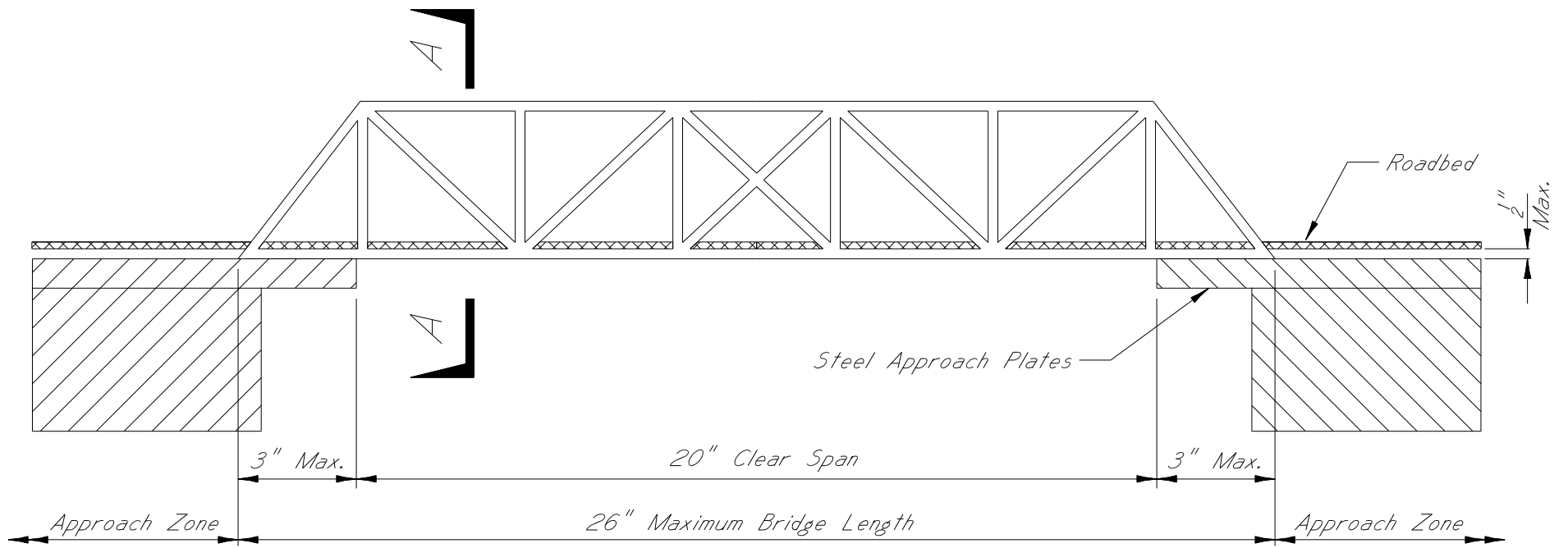
Technical Specifications

1. **General:** Design for the 2007 – 2008 MES Balsa Model Contest is a highway bridge. The design shown on the next page is not necessarily a sound one and information contained therein is not intended to specify size, location, or spacing of bridge members. The drawings are intended solely to indicate limiting dimensions and manner of applying the load. The bridge may be of any type (truss, plate girder, beam, etc.) provided it complies with all these specifications.
2. **Dimensions:** The dimensional requirements for the bridge are as shown on the next page. The bridge shall have a maximum overall length of 26 inches and be designed to span a clear distance of 20 inches (allowing a nominal dimension of 3 inches maximum for each end to rest on the steel approach plates). There is no limit to the height or depth of the bridge.
3. **Roadbed:** The student will be responsible for the construction of the entire bridge, including a deck or roadway surface on which the loaded truck will roll across the entire length of the bridge. The roadway surface (deck) must be made of the same materials as the rest of the bridge and should be securely attached to the structure. The roadway surface must extend the entire length of the structure itself, must be completely horizontal, and should provide a relatively smooth ride for the loaded truck. MES will be responsible for providing a flat roadway in the approach zones leading up to both sides of the bridge. The top of the deck may not be built greater than $\frac{1}{2}$ inch above the top of the approach plates as shown.
4. **Clearances:** A minimum width of 2 inches and a minimum vertical clearance of 3 inches above the roadbed shall be provided for the entire length of the structure allowing clear passage of a vehicle.
5. **Materials:** The only materials allowed for the construction of the bridge are balsa wood and glue. Any glue may be used. All other materials (Load Vehicle, Weights, Approach Plate) will be provided by MES on the day of the competition.
6. **Loads:** The bridge must be designed to support its own weight. Additionally, the bridge must be designed to support a live load consisting of a two axle vehicle which will travel at a uniform speed across the entire length of the bridge from one approach to the next. The dimensions of the vehicle are shown on the next page. The total weight of the vehicle including weights is 5 pounds.
7. **Construction:** Construction shall follow all of the above specifications (dimensions, clearance, materials, etc.). Glued joints should be neat and clean in appearance. Cement shall not be used to coat structural members. Laminated members will be permitted. Although straight lines are shown in the example, the use of curved members will be allowed as long as all other specifications relating to dimensions, clearances, etc. are satisfied. (Note: Balsa wood, when slightly moistened, becomes pliable and bends quite readily.)
8. **Testing Procedure:** Each model will be weighed prior to load testing. Each model will be placed on a load frame and the roadbed will be placed on the bridge. The load vehicle will be placed on the approach zone and pulled completely across the bridge along the roadbed to the other approach zone. The bridge will be loaded with a total of 5.0 lbs. being pulled across the bridge. The bridge does not fail after loading, the bridge will be eligible to win a first, second or third place award.
9. **Failure Modes:** The bridge will be considered to have failed under any one or combination of the following circumstances:

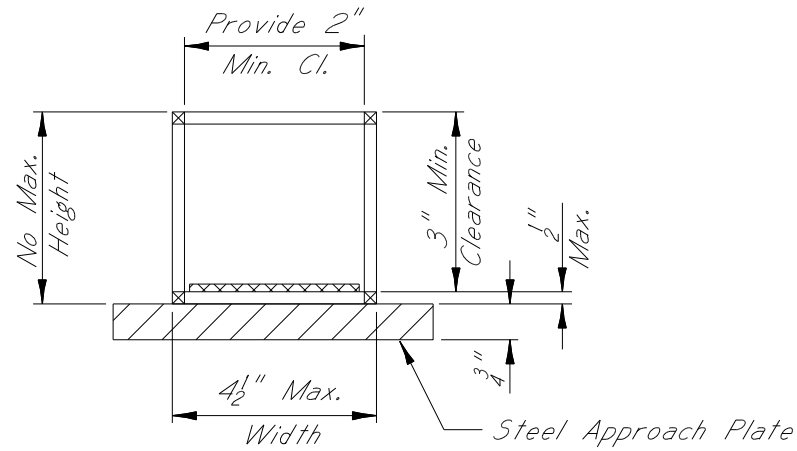
- a. A total or partial collapse of the bridge which causes the load vehicle to fall off the roadbed and bridge.
- b. The bridge is so unstable that the load vehicle falls off the roadbed without damage to the bridge itself.
- c. The bridge deflects vertically more than $\frac{3}{4}$ inch at any point.
- d. The bridge deflects in such a way that the load vehicle cannot be pulled completely across the bridge.

A bridge which has failed due to one of the modes listed above will be ineligible to win a first, second, or third place award. **However, a bridge which has failed will be eligible to win the judge's award.**

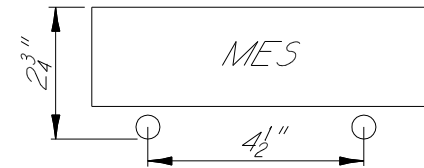
10. **Winners:** The lightest bridge which has not failed will win first place, the second lightest bridge which has not failed will win second place, etc.



PLAN VIEW



SECTION A-A



LOAD DETAILS

