STUDENT MODEL BRIDGE BUILDING RULES AND SPECIFICATIONS
2027 SOUTHERN NEVADA REGIONAL CONTEST
ELEMENTARY SCHOOL SPECIFICATIONS

The following rules and specifications will be followed for the **Elementary School Division** of the Southern Nevada Regional Model Bridge Building Contest, to be held on **Saturday, March 6, 2027** at the campus of the University of Nevada Las Vegas, Thomas T. Beam Engineering Complex. Contact Casey Collins at casey.collins@snwa.com or Rich Eastland at reastland@usbr.gov if you have questions. For more information on the contest, visit our website at: http://www.modelbridgecomp.com/

Please read the specifications carefully!

The objective of this contest is to see who can design and construct the **most efficient bridge** within the following specifications. The Elementary School Division is open to all students in 3rd^{h} through 5th grades.

1. **Materials:**
   a. The bridge must be constructed only from the 3/32 inch square cross-section basswood included in the kit, which may be notched, cut, or laminated in any manner.
   b. Any commonly available adhesive may be used.
   c. No other materials may be used. Do not paint or stain the bridge.



2. **Construction:**
   a. The bridge must weigh no more than **30 grams**.
   b. The bridge must span a gap (S) of 300-mm (**hint: bridge must be longer than 300-mm**), be no longer (L) than 400-mm, be no shorter (H) than 50-mm and no taller than 80-mm above the support surface, and be no wider (W) than 60-mm and not less than 30-mm. No part of the bridge may extend below the support surface (Figure 1).

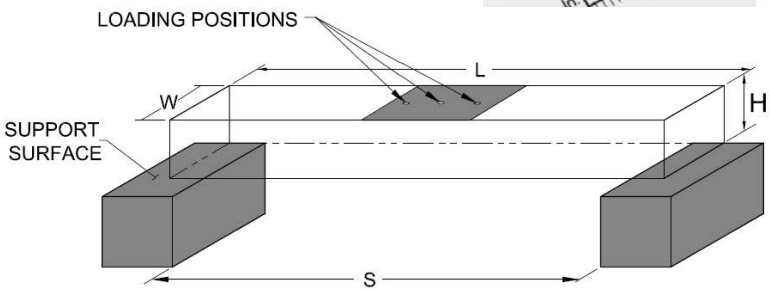
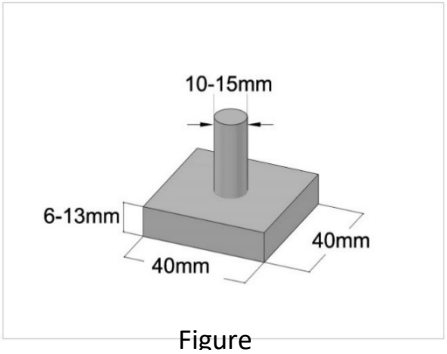


Figure 1: Detail of Bridge Configuration (not to scale). S=300 mm; L=400 mm (max); 50 mm ≤ H ≤ 80 mm; 30 mm ≤ W ≤ 60 mm.

   c. The bridge must be constructed to include a horizontal loading plane that provides support for three possible loading positions along the longitudinal axis of the bridge. The three loading positions are located at the center of the bridge and 50-mm to either side of the center of the bridge. (Figure 1). **NOTE: Load will be applied at the center of one loading position as described in section 4b.**
   d. The loading plane shall be horizontal and shall lie on the physical top of the bridge between 50-mm and 80-mm above the support surfaces (hint: top of the bridge must be taller than 50-mm but not exceed 80-mm in total height) (see Figure 1).
3. **Loading:**
   a. The load will be applied from above with the loading plate (**Figure 2**) centered over one of the three loading locations.
   b. The load will be applied from above by means of a 40-mm square by 6-13-mm thick plate. A 10-15-mm diameter loading rod will be attached to the center of the plate (**Figure 2**). The plate will be horizontal, have a flat bottom and will not pivot on the loading rod.
   c. During competition, loading will continue until the bridge experiences failure (see section 4d).

4. **Testing:**
    a. The bridge will be centered on the support surfaces.
    b. The loading plate will be lowered from above the bridge and placed at the centerline of one of the specified loading locations.
    c. The load will be steadily applied from above, as described in section 3a.
    d. Bridge failure is defined as the inability of the bridge to carry additional load, or a deflection of 38.1-mm (1.5 inch) under the loading point, whichever occurs first.
    e. The bridge with the **highest structural efficiency, *E*,** will be the winner.



Figure

E = Load supported in grams / weight of bridge in grams

5. **Qualification:**
    a. All specifications will be checked prior to testing. Bridges that do not meet the specifications at the conclusion of the allowable time for check-in (5 minutes prior to your school's scheduled testing time) will be disqualified. Time permitting, disqualified bridges may be tested unofficially and scored for the builder at the testing official's discretion.
    b. If, during testing of a bridge, a condition becomes apparent which prevents testing as described in section 4 above, that bridge will be disqualified. If the disqualified bridge can accommodate loading, it may still be tested unofficially as stated above.
    c. All the participating bridges from a single school must appear to be of different design. Any bridge that appears to be a duplicate design will be disqualified.
    d. Decisions of the judges are final.

A **Teacher's Workshop** is scheduled at UNLV in the B building of the Thomas Beam Engineering Complex, on **January 13, 2027 from 4:30 – 6:00 pm.** At the workshop, we will discuss the specifications, bridge design, and ideas for presenting this program in the classroom. Bridge Kits will be available at the workshop.

A **School Competition** banner in the Elementary School Division will be awarded to the school with the highest average efficiency for its best **five** bridges. A plaque will be awarded to the student with the highest performing bridge from each school on the day of the competition. The competition budget limits our ability to distribute more than one plaque per school; however, additional plaques will be available for purchase ($10) for teams with more than one student.

Have fun!