Balsa Wood Bridge Competition

Overview

Teams will compete to design and construct a bridge made from balsa wood. This competition evaluates both technical skill and efficiency under strict time and dimensional constraints. All bridges will be tested to failure to determine their ultimate load capacity. Design quality will also contribute to the overall score, which will be calculated using the rubric provided in the Judging section. The team with the highest total score will be declared the winner.

Host schools will supply the balsa wood and loading block to each participating team during the Captain's Meeting on *Thursday, March 12, 2026*, prior to the symposium. All other materials are the responsibility of each team. The bridge's self-weight will be one of the judging criteria (see *Judging* and *Awards* sections). Details about the construction cutoff and testing are to come. All construction for this project must proceed on The University of Alabama campus.

No written report is required for this event. Judging will be based solely on the bridge's design, weight, and load-carrying capacity.

Teams

Each school may enter one official team, and only one bridge will be evaluated for scoring. Teams are permitted to construct multiple bridges for practice or design testing; however, only one final bridge may be submitted for official testing and scoring. There is no limit on the number of team members involved in the design and construction process, but only two team representatives are allowed to be present during the load testing. All participants must adhere to their school's safety policies and comply with any capacity or laboratory restrictions when designing, building, and testing their bridge.

Competition Schedule

The Balsa Wood Bridge Competition will be conducted asynchronously as part of the 2026 ASCE Gulf Coast Student Symposium. Each participating school will construct its bridges on

UA campus, and only one final bridge will be selected and submitted for official testing at the competition. All construction for this project must proceed on The University of Alabama campus, after receiving the materials at the Captain's Meeting on *Thursday, March 12, 2026*. While the construction phase will not be performed live, the testing phase will take place live under referee supervision, following official instructions. Competition results will be announced during the Awards Ceremony, and a full summary of results will be shared with all the schools participating at the symposium conclusion.

Materials

The following materials will be provided to each participating school during the Captain's Meeting:

- 20 pieces of balsa wood, each measuring *1/8" × 1/8" × 36"*
- 1 loading block

Teams are required to use only the wood provided by the host institutions, The University of Alabama and The University of Alabama at Birmingham, for constructing their final competition bridge. Failure to use the provided wood will result in disqualification.

In addition to the supplied materials, teams may use any type of knife or glue for construction. No other materials or reinforcements are permitted in building the bridge.

Construction rules

Teams may begin construction as soon as they receive the official materials from the host schools. Only the materials provided by The University of Alabama and The University of Alabama at Birmingham (as listed above) may be used for bridge construction.

Bridges must not be coated, painted, or laminated with any substance (including paint, glue coatings, or sealants) other than what may already be applied by the host schools, if applicable.

Teams may bring rulers, paper, and writing utensils (such as pencils or pens) strictly for measuring and design purposes.

All bridges must comply with the dimensional requirements specified in the *Bridge Dimensions*

section. Any bridge that does not meet these dimensional criteria will be disqualified from the competition.

Bridge Dimensions

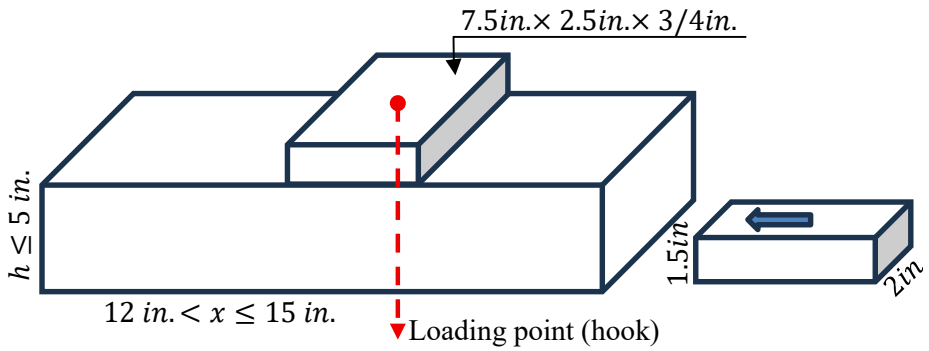
The completed bridge must span a clear gap of 12 inches and may have a maximum overall length of 15 inches. The maximum height of the bridge is 5 inches.

There are no restrictions on width, but the bridge must:

- Support the loading block securely at the top center during testing.
- Allow a wooden block measuring 1.5 inches in height and 2 inches in width to pass through the bridge deck, immediately above the lowest horizontal plane.

The total mass of the bridge must not exceed 100 grams.

During testing, the bridge will be loaded at the top center using a loading block connected to a hanging bucket. *See diagram below for reference.*



**not drawn to scale

Loading

The bridge must accommodate a loading block measuring $7.5\ inches\ (length) \times 2.5\ inches\ (width) \times 3/4\ inch\ (thickness)$. The loading block thickness is subject to change, and any modifications will be communicated by the host schools in advance. A half-inch diameter hole must be provided through the center of the bridge (along the red line shown in the diagram) to allow a cable and hook to connect the loading block to the testing apparatus. The loading block will be placed at the top center of the bridge during testing. The bridge will be

loaded gradually through the hook until its ultimate strength is reached. Testing will continue until failure, defined as the bridge's inability to support additional load for at least **eight seconds** before collapse or when the bucket contacts the ground.

Scoring and Awards:

Judges for the Balsa Wood Bridge Competition will be appointed by the host schools. They are responsible for determining compliance with all rules outlined in this document and for assigning any penalties related to rule violations. In cases where questions or ambiguities arise, judges will provide official interpretations of the rules. All decisions made by the judging panel are final and not subject to appeal. Before the load testing, judges will evaluate each bridge based on innovation and aesthetic quality. The design aspect will be included as part of the overall competition score.

Score rubric:

Team	Strength Score	Design score (innovation, aesthetics)	Total Score
Team 1	Load score 1	Design score 1	Total score 1
Team 2	Load score 2	Design score 2	Total score 2
….	…	…	…
Team n	Load score n	Design score n	Total score n

Awards:

Teams will be ranked in order of best Overall Score. Overall Score is based by summing the Design Score and Strength Score. Design Score is based on the judges' view of best engineering practices on the final bridge product. Strength Score is based on a ratio of breaking load to bridge weight.

Safety Guidelines

- Always follow your home school's safety policies and laboratory guidelines.
- Keep knives covered when not in use and never run or engage in horseplay while handling sharp tools.
- Do not ingest or inhale glue or adhesives under any circumstances.

- Exercise caution and good judgment when working with chemicals, cutting tools, or other potentially hazardous materials.
- Wear safety glasses whenever working with materials or tools that could cause injury.