



FunFest 2026 The Reynold Davenport Balsa Wood Bridge Competition Rules High School



Objective: The objective is to design and build a bridge to span a given distance and carry the maximum amount of load with the minimum mass of material given material the following design constraints.

Entries and Judging

Participants: MCS may enter a total of 75 bridges, with 15 bridges being scheduled every 30 minutes starting at 9:30 am and ending with the 11:30 am testing cycle. Participants may include individuals or teams of 2 or more students.

Submission: All submissions must be delivered to Sandhills Community College (by school personnel) on **Wednesday, April 1, 2026 in Little Hall 153.** Each bridge must have an identification tag that correlates to a Moore County Schools spreadsheet.

SCC Judges: **Michael Sassano**, Coordinator, Building Construction Technology and Instructor/Tutoring Coordinator, Engineering and Construction

Judging Location: Sandhills Community College campus at the Outdoor Picnic Shelter

Notes: SCC provides the testing apparatus. SCC judges will find the Mass of each bridge and will supervise MCS student testing until failure.

Determining the winner: The bridges will be tested to determine the maximum load at failure using the sand and bucket method. The bridge with the largest load carrying capacity is the winning bridge. ***Bridge Efficiency will be utilized to determine the FunFest winner.***

Bridge Efficiency = Load Carried @ Failure / Mass of Bridge

*Rules Revised/Checked:
Participants & Dates Updated: 09/02/25*

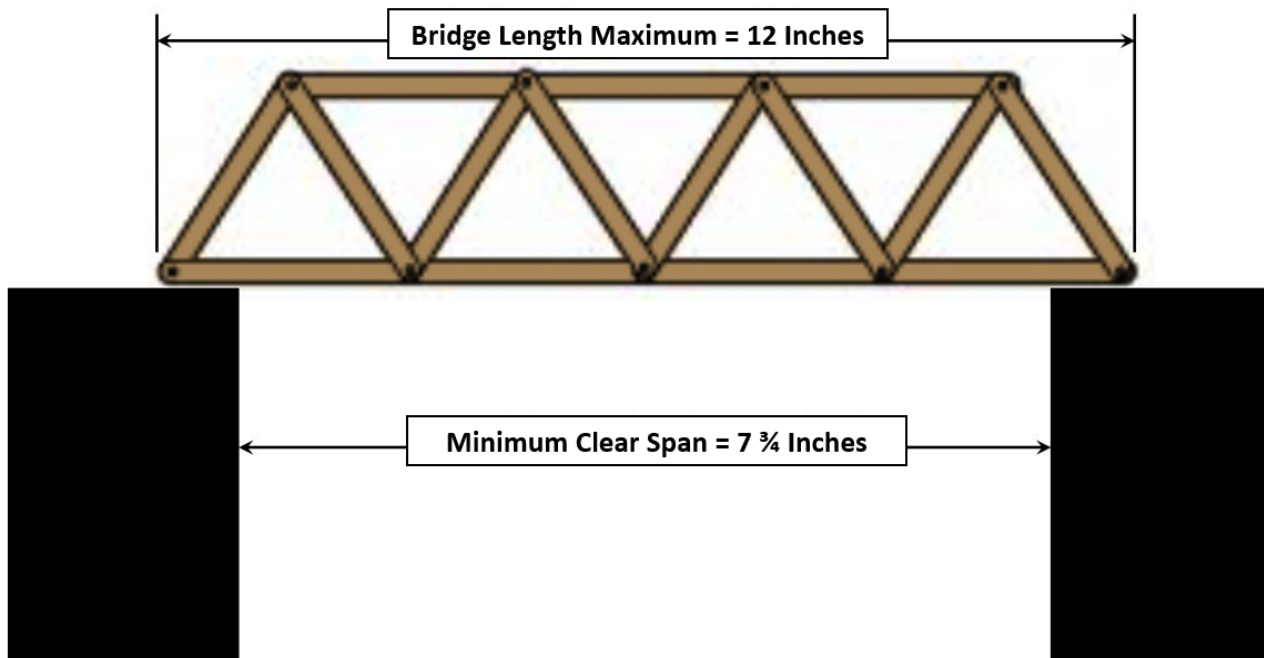
Competition Rules

Design Constraints

Violations of rules will result in disqualification. **

Geometric Design

- ***The bridge must not weigh more than 30g.****
- ***The Maximum bridge length is 12 inches.***
- The bridge deck (AKA: “vehicular roadway”) shall not be curved or arched.
- Gussets, dowels and mitered joint connections are allowed, but only at the joint areas.
- The bridge must be freestanding.



Material Selection

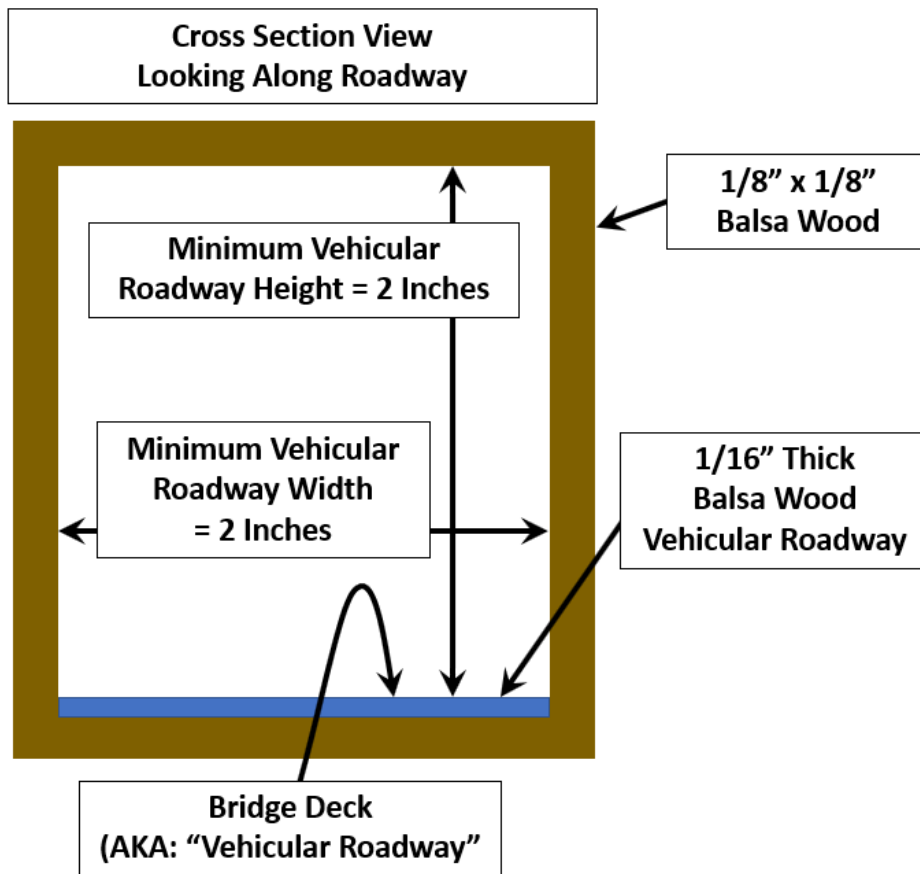
- The materials used in the construction of the bridge shall consist only of commercially available balsa wood and glue. Wood Density choice is up to the teacher and students.
- A bridge may not be coated with any material (i.e. paint, stain, or glue).
- There will be no use of steel bars to elevate the plate above the deck.

*Rules Revised/Checked:
Participants & Dates Updated: 09/02/25*

- Laminated members are not allowed. The bridge shall contain no member wider than 1/8" nor deeper than 1/8". This member size requirement does not apply at the intersection of members.
- Any type of bonding material (glue) may be used.
- Individual members shall be constructed of a single piece of balsa wood.

The Vehicular Roadway

- The bridge deck must extend the entire length of the bridge and maintain a "vehicular roadway" without any obstruction (2" wide × 2" high). The bridge deck "vehicular roadway" must allow a 2" × 2" cube to be passed along the length of the bridge with no obstructions.

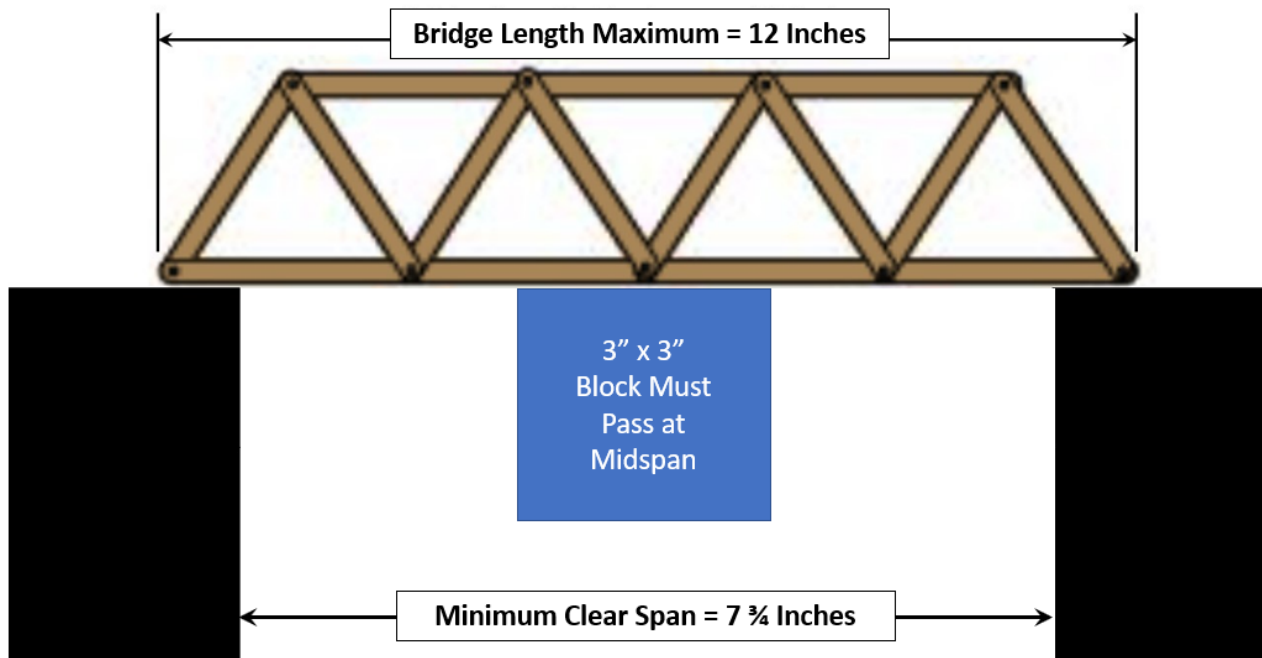


- The bridge deck shall be the full width of the "vehicular roadway" and extend the entire length of the bridge's **longest** dimension.
- The bridge deck (vehicular roadway) shall be level (or flat).
- The bridge deck (vehicular roadway) shall be constructed using a single solid balsa wood sheet. The balsa wood sheet used for the deck must be 1/16" thick.

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Participants & Dates Updated: 09/02/25*

Testing Requirements

- The bridge must allow a 3"x3" cube to be passed beneath it at mid-span, measured while the end supports are resting on a flat surface.



- There must be a 1/2" hole at mid-span in the bridge deck to allow for testing. There must be no obstructions below the hole that would prevent the passage of the testing rod.
- A 1 1/2" wide x 3" long x 1/2" thick loading plate will be positioned over the hole in the deck at midspan and placed directly on the balsa wood deck.
- A testing rod will fit through the 1/2" hole in the balsa wood deck and attach to the loading plate.
- Bridges will be loaded initially with only the bucket and testing apparatus. Dry sand will be added after the initial loading until the bridge collapses.

****The Sandhills Community College scales will be the official scales for the competition.***

*****Decisions made by competition judges are final. There is no dispute resolution; however, input for future process improvement is always encouraged.***

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Participants & Dates Updated: 09/02/25*