

# MoDOT's 20<sup>th</sup> Annual Bridge Building Competition

## IMPORTANT INFORMATION

1. Use the 2023 RULES provided with the bridge kits. Only the 2023 rules, provided with the bridge kits, are the official competition rules. A copy of the 2023 rules are also available on MoDOT's Southeast District website.
2. **We will pick up your bridge on Oct 30<sup>th</sup> – Oct 31<sup>st</sup>. Please place the yellow ID tag on the bridge end as shown in the photo. Please DO NOT “loop” the ID tag around the bridge like a bracelet.** This allows us to more easily record weights on the ID tags.
3. The bridges will be inspected at our office and any disqualified bridges will then be notified. If for some reason you do not complete a bridge entry, please return bridge materials.
4. If you have any questions, please contact **BOTH** Anita Clark and Gretchen Hanks.



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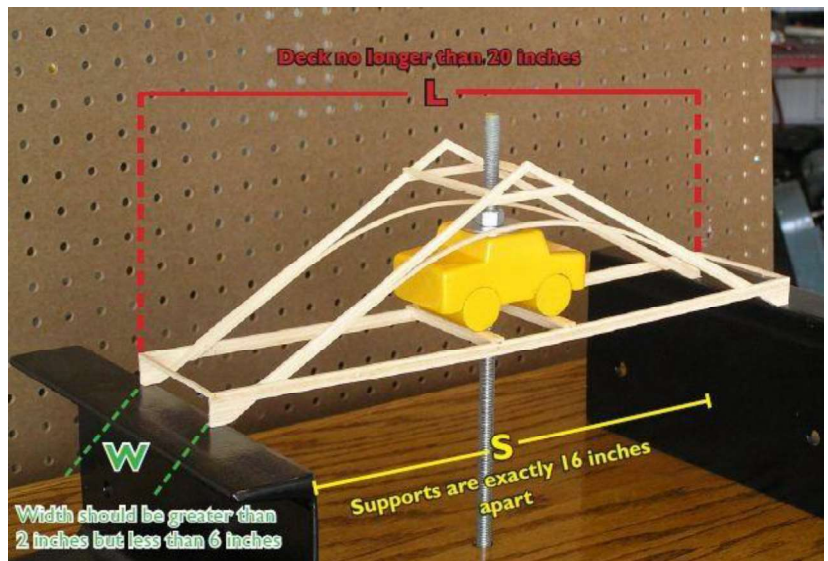
## 2023 OFFICIAL RULES

The object of this competition is to design and construct the most efficient bridge within these rules.

All bridges will be thoroughly inspected. Bridges which do not meet the requirements listed in the following rules will be disqualified and participants notified approximately one week prior to the competition. During the competition, if a condition becomes apparent (use of ineligible materials, etc.) which violates any of the competition rules, that bridge will be disqualified.

### **Decisions of the judges are final.**

1. Students may use only materials provided by MoDOT. Each student will receive an individual bridge kit containing 15 pieces of 1/8" square balsa wood, a bottle of glue, and string. **No other materials may be used, and no more may be used than what's provided to each student.** If you use any materials not provided by MoDOT, or more materials than what's provided in your kit, your bridge will be DISQUALIFIED. Please be careful not to use other left-over competition/practice balsa wood. Absolutely no other balsa wood will be allowed or the bridge will be DISQUALIFIED!
2. Length (L) of the bridge should be no shorter than 17 inches and no longer than 20 inches. The support surfaces are exactly 16 inches apart and cannot be adjusted during the competition. The bridge must span both support surfaces (S), but should not extend below the top of the support surfaces. Remember, if you construct your bridge with substructure, your bridge will be disqualified.
3. Bridge width (W) must be 2 inches or greater, but less than 4 inches (for the entire length of the bridge) so that no part of the car touches the

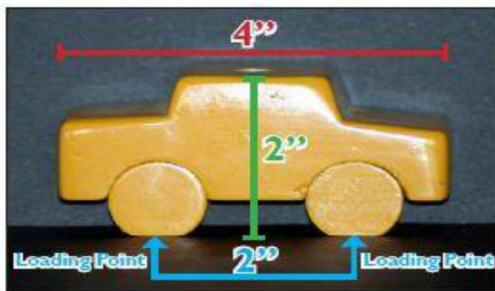


bridge other than the wheels. At no point shall the bridge width be less than 2 inches or greater than 4 inches. Remember the car is 2 inches wide (**i.e. you may want to construct your bridge wider than 2 inches so that the car can fit through your bridge's inside supports**).

4. Bridge height cannot be more than 9" tall.
5. A solid deck surface is not required, but the loading car must be able to pass the bridge from end to end along the deck (**i.e. there should be no string or wood member restricting the car's passage, see picture**).



6. Loading points on the bridge should be located 1 inch on each side of the **center** of the bridge and **no greater than 1 inch above the support surfaces**. Loading points must be constructed of wood. If any portion of the loading car, except the wheels, makes contact with the bridge, it will be disqualified.



7. The load will be applied to the threaded rod from below, as depicted in the photo. The bridge must support a minimum load of 7 pounds (3.2 kg).
8. The bridge must be constructed with a minimum 1 inch square opening centered on the bridge at **mid-span**, to allow the loading rod to pass vertically through the bridge and all the way through the top. See photos on Do's and Don'ts sheet.
9. Loading will continue until bridge failure. Bridge failure is defined as the inability of the bridge to carry additional load or a load deflection of 1 inch under the loading location, whichever occurs first.
10. A maximum load of 80 lbs (36.3 kg) will be used to evaluate efficiency. For bridges supporting a load greater than 80 lbs, the additional load above 80 lbs will not be included in the efficiency calculation.



11. The bridge with the highest structural efficiency, E, will be declared the winner.  $E = \text{load} / \text{weight}$

## Do's and Don'ts



These are great looking bridges, but some don't meet all the rules. You are going to spend a great deal of time working on your bridge and want to see it tested.

Follow the rules explicitly, and if you have *any* questions about the competition rules, design or construction, please contact us. It's always better to ask than be disqualified.

**We highly recommend if you have any questions, email BOTH of us or send us a photo/drawing of your bridge before we pick them up.**

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