

# Maine Transportation Conference Popsicle Stick Bridge Competition Official Rules

Thank you for choosing to participate in this year's Popsicle Stick Bridge Competition. This competition benefits the ASCE Maine Student Chapter. This competition is a great way of teaching and demonstrating structural engineering fundamentals and your support is greatly appreciated. **Those not competing in the contest are encouraged to contact [cindy@mbtaonline.org](mailto:cindy@mbtaonline.org) to donate to the ASCE Maine Student Chapter.**

## Changes for 2020

- This year's bridge breaking will be virtual. Bridges can be mailed or delivered to the location below:
  - MaineDOT Augusta Headquarters  
ATTN: Garrett Gustafson  
24 Child Street  
Augusta, ME 04330
  - Please schedule deliveries by emailing [garrett.a.gustafson@maine.gov](mailto:garrett.a.gustafson@maine.gov) since the building is not currently open to the public.
  - Alternative delivery locations can be arranged upon request.
- Since the contest is virtual this year and contestants will not be present to make modifications in the event of rules violations, the judges reserve the right to assess bridge self-weight penalties (increases) for minor rules violations.
- **The prize for the top student bridge is back again this year. High school and college students are eligible. Please encourage any students you know to enter this competition.**

## Prizes (Provided by Maine Better Transportation Association)

- First place will be awarded a **\$200 L.L. Bean gift card**
- Second place will be awarded a **\$100 L.L. Bean gift card**
- The top student bridge (high school or college) will be awarded a **\$50 L.L. Bean gift card**. Students are eligible for the top two prizes as well.

## Materials

- **Popsicles Sticks:** Provided by the ASCE Maine Student Chapter. Using other Popsicle sticks will result in disqualification. The sticks are approximately 4-1/2 inches long, 3/8 inches wide and 3/32 inches thick.
- **Water soluble Elmer's White Glue:** Glue is not provided in the bridge kit. Please purchase your own Elmer's White Glue, no other glue will be allowed. Yellow wood glue or glues containing resin adhesives or other cement binders are NOT allowed.
- **Plain copier paper:** Up to 10 sheets of standard, white copier paper may be used
- Rehabilitation of a previous year's bridge is allowed. A bridge kit must be purchased for making repairs and entry.

## Overall Dimensions

- 19" L (min) x 6" H (max) x 6" W (max). Please refer to the attached drawing for additional information.

## Weight

- Each bridge shall weigh **200 grams or less**.

## Roadway

- The design roadway width is **4 inches**. The roadway deck does not have to be constructed but it should be evident where the roadway would be.
- The design vertical clearance is **4 inches** and the apparent roadway must be flat the entire length of the bridge.

#### Loading

- The load testing machine will apply a vertical load down through a 4 inch square plate with a tension rod passing through the roadway and the bottom of the bridge. The roadway area must be able to accommodate and support the 4 inch plate.
- The load will be applied directly to the roadway.
- A minimum ¾" diameter hole must be available from the loading plate down through the entire structure.
- The bridges will be loaded to ultimate capacity during the competition. Bridges will be broken in the determination of their ultimate load capacity.
- If the bridge deflects more than 1.5" without failure it will be disqualified.

#### Bridge Abutments

- Bridge abutments (supports) will be provided for the bridge to sit on. Supports are made of timber. Bridges will not be allowed to be end bearing on the bridge abutments.

#### Construction

- The Popsicle sticks may be physically altered including as follows: Cut/notched at any angle, sanded to any width or thickness, bent or curved (sticks may be soaked in water ONLY).
- The Popsicle sticks may NOT be altered in the following ways: Soaked in any material other than water, painted or coated except for decorative purposes.
- At least one entire side of the longest dimension of each Popsicle stick used shall be visible.
- Members used as dowels only need to be visible at each end
- Voids or enclosed areas where foreign materials could be hidden are not allowed.

#### Bridge Rehabilitation (Entering a bridge from a previous year)

- Building a popsicle stick bridge can be time consuming so bridge rehabilitations are allowed again this year. The geometric rules for 2020 are the same as last year and will remain the same next year to allow rehabilitations.

#### Rules Enforcement

- A panel of technical judges will review the bridges for rules violations. Any bridge with significant rules violations will be disqualified. In the event of minor rules violations, the judges reserve the right to assess bridge self-weight penalties (increases). Qualification decisions and self-weight penalties assessed by the judges are final.

#### Scoring

- Bridges will be scored by efficiency. Efficiency is the ratio of the ultimate load capacity to bridge weight. Bridges will first be weighed and then loaded to ultimate capacity. The loading will damage the bridge, potentially beyond repair.

For popsicle Stick Bridge Competition questions, please contact [garrett.a.gustafson@maine.gov](mailto:garrett.a.gustafson@maine.gov)

***Have fun!***

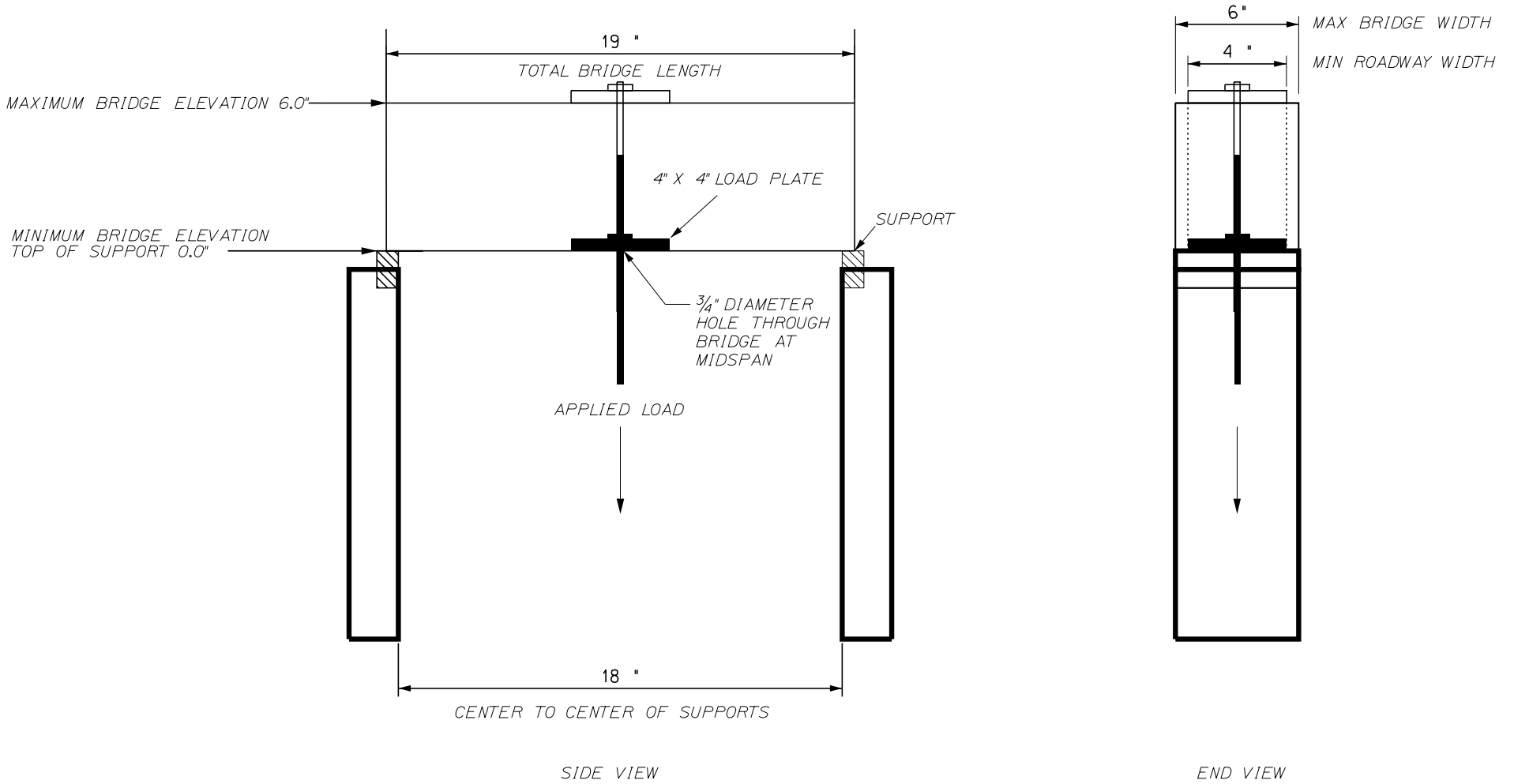


FIGURE 1