

Frequently Asked Questions – January 2019

- 1. If your team proposal/report portfolio is determined to be complete by the judges, you will be invited to the 2018 Bridge Challenge. Are there any costs from the local district associated with the school's participation in this competition?***

Each three-member team with one advisor/chaperone will receive mileage reimbursement for one vehicle based upon the State of Michigan Mileage Reimbursement Rate. This rate is currently at \$0.34 per mile. If you decide to travel with two teams plus chaperones in a larger vehicle, the reimbursement rate is currently at \$0.58 per mile. If you have several teams coming to the Challenge in a bus, please contact Julie VanPortfliet at 906-420-4280 to discuss reimbursement rates.

Breakfast and lunch on the day of competition will be provided at the hotel. No other meals will be provided or reimbursed.

Each three-member team with one advisor/chaperone will be allowed two overnight rooms at the Amway Grand Plaza in Grand Rapids. If your team consists of males and females, please contact Julie VanPortfliet. With special approval, you will be allowed to have three overnight rooms. You must reserve the rooms with your own credit card. Upon check-in, the overnight charges for these rooms will be transferred to MDOT's bill for payment.

- 2. Can you use computer printouts for my graphs and charts?***

All graphs, charts, calculations, etc., must be created by students. Students may use computer programs to create the chart, graph, etc., computer-generated data charts.

If a computer program like West Point Bridge Designer or ModelSmart creates the charts/graphs for the student, the team will be disqualified from the competition.

- 3. Can students use a lap joint?***

Yes, the lap joint is permitted, but the joint is limited to 1/2 inch for the length.

- 4. Can pieces be glued on the edge of one piece to the side of the next?***

Yes. At the joints, more than one layer may be required. A multi-layered joint may not exceed 1/2 of an inch in length.

- 5. Does the bridge deck need to be greater or equal to 2 inches or can it be less than 2 inches?***

The bridge deck must measure between 2.5 inches minimum and 4.5 inches maximum. These measurements apply to the 7/8 grade and 9/10 grade bridge categories. The bridge deck must measure between 2 inches minimum and 4.5 inches maximum for the 11/12 grade category.

6. Can we have CAD design in 2-D, three views, or does the drawing need to be in 3-D?

CAD drawings can be in 2-D.

7. Can we print the CAD drawing on 11-inch by 8.5-inch paper with 2:1 scale or do we need to submit the .dgn file?

Students must use the Bentley MicroStation PowerDraft program and must follow the print instructions included in the step-by-step video located on the TRAC website (www.michigan.gov/mdot-trac). The drawing will print on an 8.5-inch by 11-inch paper. If the print instructions are not followed, the bridge will be disqualified from the bridge challenge. A .dgn file is not required.

8. The guidelines say we are limited to the supplies in the challenge kits. Are we limited to the amount in the challenge kit?

Students are limited to the amount in the challenge kit. You cannot add more items to the kits. You can purchase more supplies to build a test bridge. Students may not use the mailing tube as part of the bridge.

9. If someone has designed their bridge but not built it yet, would they be able to put much into these tables other than the bridge member information? If they have not tested it yet and therefore have no calculations, is it acceptable to insert into the proposal that "data will be forthcoming following future testing"?

If ModelSmart is used, they could make a table of design versus breaking load. The table would consist of a main design, then simple modifications and how the modifications affect the breaking load. The different types of designs versus the different breaking loads could be used to create a table. A table could be as simple as time spent versus progress, i.e., planning stage six hours – 5 percent progress of entire project; design stage 30 hours – 35 percent progress. There are several variations that would work. The students need to be creative. Calculations should be done prior to building the bridge. These calculations must be included in the proposal. Please do not submit tables directly from the ModelSmart Program.

10. Are we allowed to use double members like what is shown in the ModelSmart booklet on pages 7-9?

According to our rules, you may use double members. Joints are limited to a 1/2-inch overlap.

11. I remember reading somewhere during the registration process that I can change group members up to a certain date. Is this true? I have a few people wanting to switch teams.

You can switch team members but you must contact Julie VanPortfliet (vanportflietj@michigan.gov or 906-420-4280) before the change can be completed.

12. Can the wood from the kits be shaped to any specification, or must it still resemble the stick as it came to us?

The wood can be reshaped, cut, split, etc., as long as it is the balsa wood we originally sent to you. Water may be used to help shape the wood. Chemicals that alter the property of the wood are not permitted.

13. Can you paint the bridge?

Painting the entire bridge is not acceptable, but you can paint decorations on the bridge. Be careful not to paint the joints. Painting the joints is considered lamination. In the first specification, it states, "additional materials may be used for decorations or visual aids."

14. Are we allowed to use hot glue?

No, you can only use the glue included in your bridge challenge kit.

15. The test support apparatus is intended to have two and only two supports as shown in the packet's diagram. Please confirm.

The Pitsco tester will be set up as shown in each team's rule packet.

16. Is there a minimum or maximum weight for the bridge competition?

No maximum or minimum. However, the bridge is judged for strength-to-weight ratio.

17. When the bridge is tested, does the entire bridge have to sit on the testing machine?

Yes, the entire bridge must fit on the testing machine.

18. Is there a limit to how many times you can laminate two pieces together?

There is no limit on how many two pieces are laminated; however, when students create a joint, the length of the joint may not exceed 1/2 of an inch. The thickness or width of the joint will not be measured.

19. Does the 1/2-inch rule mean the cross-section of the wood member size or the length of the glue line?

The length of the glue line cannot exceed 1/2 of an inch. The thickness of the joint will not be measured.

20. Can students use an angle joint?

Yes, if two laminated pieces of balsa cross to create an angle joint, that joint will not be measured for the 1/2-inch rule.

21. If two laminated pieces are used to create a joint perpendicular to each other, will the 1/2-inch rule be enforced?

Yes, if it is possible to create a joint that is 1/4 of an inch long without having to alter a laminated piece, the 1/2-inch rule will be followed.

22. Are students allowed to laminate an entire 8-inch-long piece? Or, is lamination only permitted at joints?

Students can laminate as many pieces as they want without a length limitation, as long as they keep it to two pieces of balsa at a time. Students cannot glue three pieces together, expect to make a joint (then the 1/2-inch rule will apply).

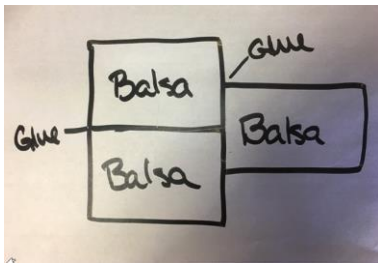
23. Can glue be used on the knots?

Yes, the students may put glue on the knots of the string but they cannot coat the string with glue.

24. When using CAD, how do we show the string?

The string can be shown by using a smaller line weight or thinner member on the drawing.

25. Is this OK?



Yes.

26. Can there be string going from one side of the deck to the arch on the other side (cross strings)?

The string configuration is up to the designer, as long as the 1-inch by 2-inch block can be placed on the deck and there is clearance for the threaded rod to pass through the entire height of the bridge.

27. Can the truss be located inside of the truss that sits on the testing pads?

The truss cannot be located within the truss. However, the ends of the truss may pass through the truss portion of the bridge.

28. Can the deck be located below the arch for the 11/12 grade category?

The deck must be above the arch for the deck arch truss bridge.

29. The arch tips are secured (glued) to the deck so that the wood making the deck is technically the tie that holds the arch in shape and keeps it from kicking out. So does that mean the bridge would only be as strong as the glue holding it? Can the students have wood that sticks out from the deck or have deck pieces intersect with the arch ends so that they have structure that acts as abutments?

This is allowed. We are not specific in how the arch is tied to the deck.

30. Can the arches be tilted or slanted inward, or do they have to be vertical?

The arch angle is up to the designer.

31. For the 9/10 grade challenge, the deck does not need to be free in space, does it?

Correct, the deck is not suspended.

32. Can the deck and the arch be glued together?

The deck and arch may be glued together.

33. In the 9/10 category, is there a restriction on the length of the bridge?

There is not a restriction on the length of the bridge.

34. In the 9/10 category, do the arches have to be on the outermost beams of your deck or can they be located further inside (closer together)?

The arches may be further inward.

35. Is it OK to use Bentley CONNECT for the CAD Drawing?

Yes.

