

Frequently Asked Questions

- 1. If your team proposal/report portfolio is determined to be complete by the judges, you will be invited to the 2012 Bridge Challenge. Are there any costs from the local district associated with the schools 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 0.39 per mile. If you decide to travel with two teams plus chaperones in a larger vehicle, the reimbursement rate is currently at 0.55 per mile. If you have several teams coming to the Challenge in a bus, please contact Jan Pohl at 517-373-9571 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 Radisson in Lansing. If your team consists of males and females, please contact Jan Pohl. With special approval, you will be allowed to have 3 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 coat the string in glue?***

No, this is considered laminating.

- 3. Can pieces be glued on the edge of one piece to the side of the other (typically popsicle sticks to balsa wood)?***

Yes. At the joints, more than one layer may be required. These joints may not exceed ½ inch in thickness. A multi-layered joint may not exceed one-half inch in length.

- 4. What should the width of the road for the cable stayed bridge be? We are unsure whether to make the dimensions compatible for a car that is one inch by one inch, or for a car that is 2 inches wide by one inch tall.***

The width of the road must be wide enough to accommodate a car that is 2 inches wide x 1 inch tall.

5. *Can the base of the towers be wider than an inch and three quarters? We understand that the base of the towers must rest on the platform between the square columns. And from what we concur, based on the pitsco bridge tester dimensions, the width of that platform is only one and three quarters. Is that correct or is the platform wider than that?*

The width of your columns can be any dimension that you feel will give you strength during the testing process. The base of the towers must be designed in a way that they will sit on the surface of the testing pads. The top of the testing pads are the only place where the bridge may come into contact with the Pitsco tester.

6. *Does 12 inch span mean the opening of the bridge must raise or swing open 12 inches?*

No, the length of the moving span must be a minimum of 12 inches. However, when the bridge is in the open position, a 2 inches wide x 4 inches tall block of wood (car) must be able to pass under the bridge.

7. *Are there any limitations on how we use and attach the gears?*

There are no limits on how many gears you can use from the kit. To attach the gears, you must use the items that are in the kit. If the hole in the gear is too small, you may enlarge it.

8. *Is there a minimum or maximum width of the bridge?*

No, there is not a maximum width, but please keep in mind, the "column" that the bridge sits on while being tested is 4.5 inches wide. The only width requirement is: A car that is 2 inches wide by 1 inch tall must be able to drive across the bridge while the bridge is closed.

9. *The guidelines say we are limited to the supplies in the Challenge bridge kits. Are we limited to the amount in the Challenge bridge kits? Can we purchase more of the identical popsicle sticks, or can we only use the amount given?*

You are limited to the amount in the bridge kit. You cannot add more items to the bridge kits. You can purchase more supplies to build a test bridge.

- 10. *I have not been able to get Model Smart to incorporate a cable or arched wood (only straight lengths). Is this possible? Or do you know of another testing program that can be used for the groups building the suspension bridges?***

By using Joint-Move, you can "arch" the bridge. They merely show how results of first using Member-Add and then using Joint-Move. The joint move option creates more joints than a typical arch would create and may not test out as strong using model smart.

- 11. *Can the students drill bigger holes in the gears, so there is less sanding of the dowel?***

Yes, it is your choice if you want to drill or sand - either way is fine

- 12. *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 model smart is used, they could make a table of design vs. 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 vs. the different breaking loads could be used to create a table. A table could be as simple as time spent vs. progress, ie.; planning stage 6 hours - 5% progress of entire project, Design stage 30 hours - 35% progress. I can think of 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.

- 13. *Does the 12 inch maximum height of the Drawbridge include the moveable leaf in its open position?***

The 12 inch max. height would be in the closed position.

- 14. *I need to know what size hole we should allow in our drawbridge?***

The hole should be 5/8 inches or larger.

- 15. *“Maximum clearance underneath the bridge may be no more than 2 inches when the bridge is in the closed position.” That would mean the bridge structure must hang below the tops of the 3.25 inches tall support columns. Are you sure 2 inches is not the minimum clearance under the closed drawbridge?***

Two inches is correct. The bridge is tested with a 2 inch x 4 inch block while the drawbridge is in an open position.

- 16. *Are we allowed to use double members – like what is shown in the ModelSmart booklet on page 7-9?***

According to our rules, you cannot use double members.

- 17. *Is the entire bridge including the cable stayed component being tested, or is it only the roadbed being tested?***

The load block does sit on the deck of the bridge, but the bridge itself is considered to be one complete component - the entire bridge is placed on the testing device.

- 18. *On the single leaf bascule type bridge, is the clearance under the bridge measured at the center of the lifting portion of the bridge or at the tip of the lifting portion?***

The rules say "The maximum clearance under the bridge may be no more than 2 inches when the bridge is in the closed position." There should not be any point under the bridge that exceeds 2 inches. If the 2 inches x 4 inches block that is required to go under the bridge, when the bridge is in the open position, is able to go under without touching the bridge, the bridge will be accepted.

- 19. *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 up until February 20, 2012, but you must contact Jan Pohl at 517-373-9571 before the change can be completed.

- 20. *Can the balsa wood be bent to make an arch, either by steam or soaking...or is this against the rules?***

You can bend the balsa wood.

- 21. *What is the minimum or maximum spacing between the towers? Do the towers have to sit completely on the tester pad or can some of the tower exceed the tower pad?***

The distance on-center between the towers must be 12 inches.

The base of the towers must be designed in a way that they will sit on the surface of the testing pads. The top of the testing pads are the only place where the bridge may come into contact with the Pitsco tester. The vertical supports for the tester will be positioned 12" apart (on center).

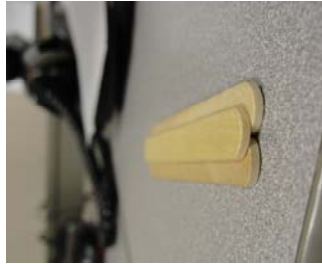
There is no requirement that says the tower base is limited to the dimensions of the tester base (tower can exceed the tester pad).

22. Are these joints acceptable or is this laminating?

Picture A
not acceptable



Picture B
2nd view of Picture A
not acceptable



Picture C
edge to edge is not laminating. This is acceptable.



Picture D
not acceptable – greater than 1/2" of lamination



23. The rules state: "The distance on-center between the towers must be 12 inches." My students were wondering if they can have one tower for the cable-stay or because of how the rule is stated they would have to have 2 towers.

Since the rules state that only the bottom of the cable-stayed towers can touch the tester pad, you will need to have at least 2 towers so the bridge can fit on the tester.

24. The rules state: "Only the bottom of the cable-stayed bridge towers can make contact with the tester." Does this mean the road bed can't touch the test just the bottom of the tower?

Yes, you are correct!

25. Can we create I-beams with popsicle sticks?

Yes

26. The rules state: "Maximum clearance underneath the bridge must be no more than 2 inches; however the bottom of the deck must not touch the Pitsco support."

The bottom of the towers/columns of the bridge can only touch the top surface of the tester pads. The towers/columns must extend beyond the bottom of the deck of the bridge. When measuring the maximum 2" clearance, I recommend setting the bridge on a table and measuring from the top of the table to the bottom of the deck. The measurement must be in the range of greater than 0" and less than 2".

27. Is it okay to double the string, triple the string, or even braid it?

Yes, it is okay to braid or wrap multiple strings, as long as you do not coat the strings with glue. Remember to only use the supplies provided in your kit.

28. With the drawbridge, can a student raise the drawbridge using their hands or does the drawbridge need to stay raised without holding it.

Students must use bridge kit materials to mechanically raise their bridge (cannot just use their hands to lift it). They may use their hands for support, once the structure has been raised.

29. Are the I-beam pictures below acceptable?

This I-beam is acceptable, but less glue needs to be used.



30. Does the structure that is used to raise the bridge need to be in place during the load testing or can it be removed and set to the side?

The drawbridge is one structure and the whole structure will be tested as one. You cannot remove a portion of the drawbridge for the testing.

31. When testing the Drawbridge to see if the 2x4" block can go underneath, is the test done on a flat table?

Yes

32. Is there any specification on how the "power" is applied to raise the Draw Bridge?

Students must use their bridge kit materials only to mechanically raise their bridge. They can use their hands to crank or activate a mechanism to raise their drawbridge. Students may use their hands for support, once the structure has been raised.

33. 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.

34. Can you paint the bridge?

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

35. Is this considered lamination?



This is not lamination.

36. Are we allowed to use hot glue?

No, you can only use the glue included in your Bridge Challenge kit.

37.

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