

Mahoning Valley Miniature Bridge Building Competition

Civil & Environmental Engineering at Youngstown State University
Mahoning County Engineer
Trumbull County Engineer



**** IMPORTANT MESSAGES OF RULE CHANGES **** BEGINNING WITH THE 2023 COMPETITION

Message to school advisors and students: As part of last year's competition, an attempt was made to entice student teams to predict their structure's failure weight prior to loading. We also had a Target Design Award for the team that had a target failure load closest to the 60 pound prescribed failure load. This was done for several reasons:

#1 – In real world engineering, bridges are designed to meet certain dead load (materials) and live load (truck) requirements using prescribed safety factors. Since steel, concrete and wood are expensive materials and funding is always limited for infrastructure projects, it is incumbent upon engineers to design their structures as efficiently as possible, while maintaining public safety. Therefore, the MVMBBC Committee has decided to extend this philosophy to our competition and have the focus placed on designing the lightest, most efficient structure to carry a prescribed weight in future competitions.

#2 – Our load testing materials are in limited supply and our loading buckets can only hold so much volume of testing material. In order to expeditiously test each bridge, we cannot have one team using an excessive amount of load material because it limits the weight material available to the adjacent testing team. Last year, we tried to encourage all bridge teams to have their bridge fail prior to reaching a 100-pound maximum limit. However, this was difficult to enforce because establishing a 100-pound bucket of weight material at the start of the testing session was not practical for the officials to regulate. Furthermore, MVMBBC officials did not want to stop a loading in progress because each team naturally wants to see how strong their bridge is and to see it ultimately fail.

#3 – We have come to realize that many teams' focus is only to try to build the strongest bridge so they can see how much it can carry before ultimately breaking. While this creates real excitement during testing, the MVMBBC Committee would like to see that focus shift to a more "engineered" bridge design that breaks at an "engineered" failure load that is more manageable to deal with.

Therefore, for the reasons stated above, the MVMBBC Rules Committee has decided to implement the following changes beginning for the 2023 MVMBBC event:

#1 - The number of allowable laminations is reduced from 6 members to 4 members. See acceptable lamination examples in the specifications. This will inherently reduce the amount of load a bridge can carry.

#2 – The Target Design Load is now 40 pounds. Contestants will no longer be asked to predict their failure load.

- The Top Prize Award (\$150) will be awarded to the bridge team that breaks closest to 40 pounds.
- The Most Efficient Award (\$100) will also still be awarded to the lightest bridge that carries the most weight. It is possible that the top prize can also win the most efficient bridge, and collect \$250.
- Additional cash awards will be made to the team coming in second to the closest to 40#, second to most efficient, plus the Wade Harvey Award and the Marsico Aesthetic Awards.