



RULES: HEAVYWEIGHT

This competition is open to any full-time secondary or post-secondary student. At least one builder of each bridge entered must accompany the bridge to the contest. Okanagan College will provide a space for storing bridges prior to the competition but it is the responsibility of the competitor to safely store and protect their bridge(s) prior to testing. Okanagan College will bear no responsibility for bridges that are damaged or broken prior to testing.

Materials

The bridge construction materials are outlined as follows:

- The bridge shall be built using any commercial pasta product. The pasta may be shaped, molded or boiled in water, but no additives are allowed
- Commercial glue or epoxy shall be the only joining material and may not be used as a structural member. It is intended that glue be used for joints only
- **Continuous glue along the length of any member is not allowed**

Dimensions

The dimensions are outlined as follows and shown in Figure 1.

- The maximum vertical depth of the bridge from the highest point to the lowest point shall not exceed 600 mm
- The lowest point of the unloaded bridge shall not be more than 100 mm below a horizontal line running between the two end support surfaces
- The bridge must span a distance greater than 1.00 m (the end supports are 1.00 m apart and on the same level so a bridge 1.00 m in length would fall through between the supports). Ensure your bridge is not too long as well
- The maximum allowable mass of the bridge, including the heavyweight loading platform and U-bolt, will be 1000 grams

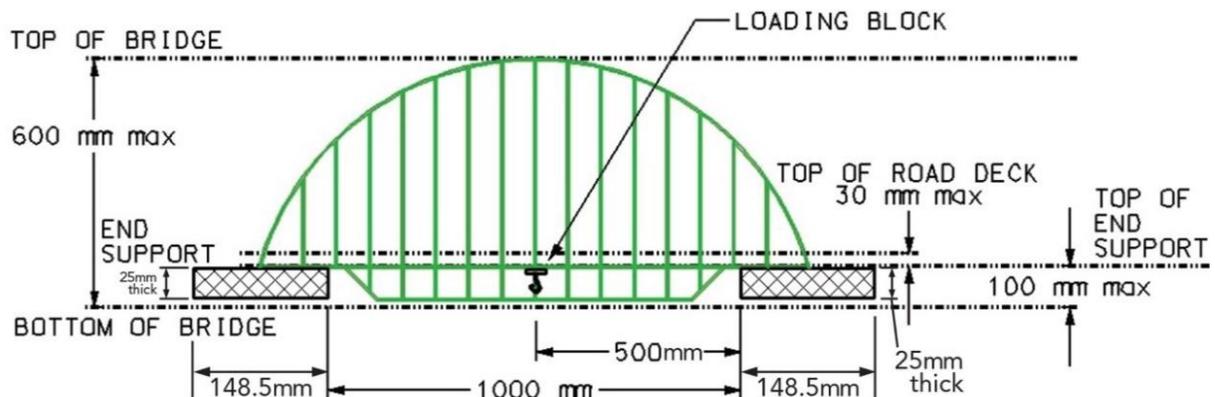


Figure 1: Overall Bridge Dimensions



Road Deck

The road deck requirements are outlined as follows and shown in Figures 2-4.

- To provide a suitable road surface, the bridge must have a solid, continuous pasta road deck that is at least 50 mm wide and covers the full length of the bridge. Note: we recommend using lasagna.
- The solid road deck shall have no gaps or joints running along the length of the bridge (see Figure 2).
- The solid road deck may have up to six joints running across the road deck. Gaps between joints may not exceed 1 mm (see Figure 3).
- A block of wood (50 mm x 50 mm x 100 mm long), representing a car, must be able to pass unobstructed through the bridge along the top surface of the road deck.
- All parts of the unloaded solid road deck must be within 30 mm of a horizontal line drawn between the top surfaces of the end supports (see Figure 4).
- If the heavyweight loading platform is to form part of the road deck, a small section of the road deck may be replaced by the heavyweight loading platform

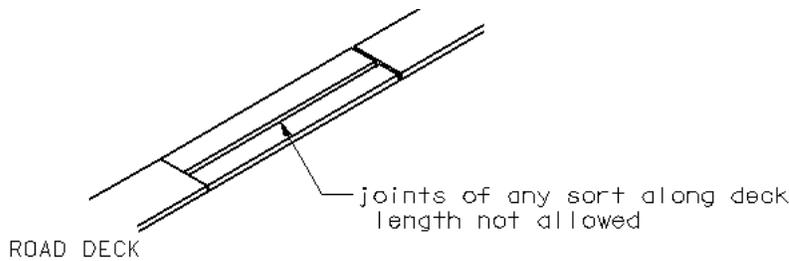


Figure 2: Joints Along Road Deck

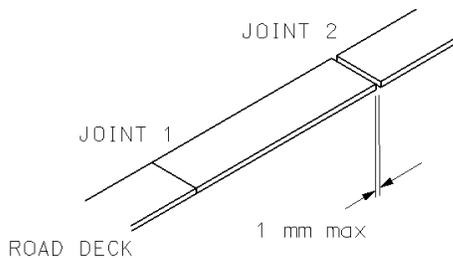


Figure 3: Joints Across Road Deck

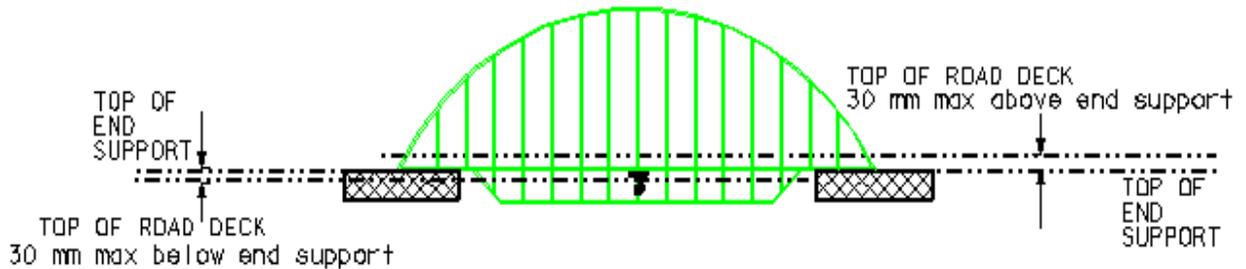


Figure 4: Bridge Deck Vertical Position



Supports

Bridge support requirements are outlined as follows and shown in Figure 5.

- The bridge will be progressively loaded until failure, with the weight applied to the loading platform
- The support for the bridge shall be from the top of the level surfaces of the end supports only. The vertical edge of the supports shall not be used as a support in any way (refer to Figure 5)

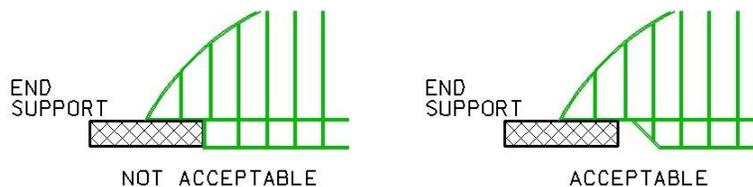


Figure 5: Use of End Support

Loading

Loading requirements are outlined as follows:

- An official “heavyweight loading platform,” 50 mm X 100 mm with a metal U-bolt weighing approximately 50 g, may be obtained from Okanagan College
- Platforms are freely available from Okanagan College Campuses as listed below:
 - Kelowna: Administration, 2nd floor, Lab Building C245
 - Penticton / Vernon / Salmon Arm: Administration Office
- Alternatively, contestants may supply their own heavyweight loading platform if it meets the following specifications:
 - Must be constructed of solid wood, plywood or hardboard
 - Must be no larger than 50 mm X 100 mm X 13 mm
 - Must have a metal U-bolt mounted at the center of the platform. The U-bolt must be large enough to allow a 1/4” threaded Quick Link, supplied by Okanagan College, to be easily attached (See Figure 6). DO NOT attach your own link.
 - Metal washers may be used in the mounting of the U-bolt
- The loading platform must be attached at the mid-span of the bridge (see Figure 7)

Note: to facilitate connection of the heavyweight loading platform’s U-bolt to the loading device, the area immediately below the heavyweight loading platform must be unobstructed to allow for a 1/4” threaded Quick Link to be easily attached (on site, prior to loading the bridge) to the U-bolt (See Figure 6). The loading platform including its hardware (excluding the 1/4” threaded Quick Link) will be included in the overall weight of the bridge.

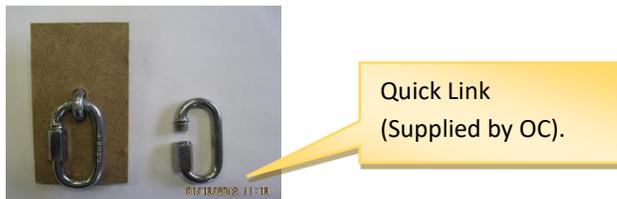


Figure 6: Heavyweight Loading Platform and Threaded Quick Link (1/4")

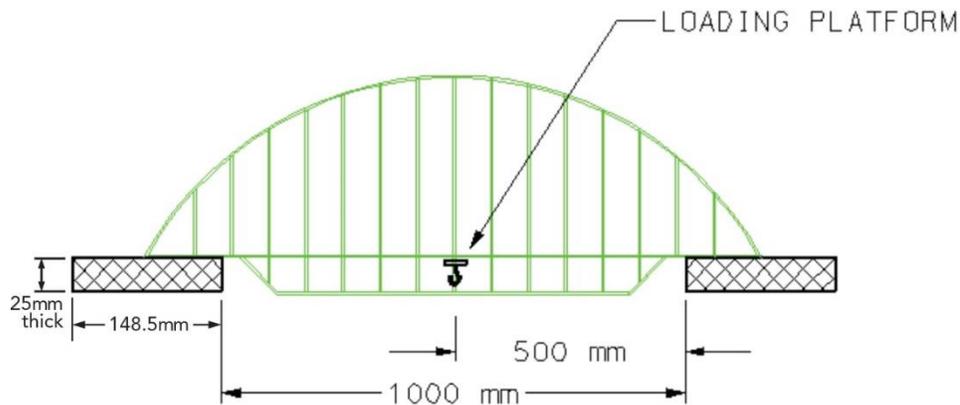


Figure 7: Location of Loading Platform

Judging

The judging will be carried out as follows:

- Bridges will be inspected and weighed by the judges prior to testing to ensure all bridges comply with the rules. Bridges failing inspection will be disqualified
- Only one contestant per bridge will be allowed in the judging area. Each bridge will be placed by the contestant on platform
- All contestants must accept the loading conditions as provided
- The load will be progressively applied to the U-bolt until failure
- Bridges may not be touched during loading
- If two bridges fail at the same load, the lighter bridge will be ranked higher
- **The minimum qualifying mass to be carried by any winning bridge is 10.0 kg**
- **ON ALL MATTERS, THE JUDGES' DECISION SHALL BE FINAL.** The judges have the right to disqualify any bridge that in their opinion is in violation of the intent or letter of the rules. The judges have the right to accept any bridge that in their opinion is consistent with the rules