

## BRIDGE BUILDING CHALLENGE RULES

### MEA Conference

#### WHAT IS THE CHALLENGE?

The event involves fabricating a bridge from balsa wood. The completed project is tested to failure

#### WHO MAY ENTER?

Meeting participants who think they can build a bridge and invited students older than 19 years of age.

#### REGISTRATION:

Email: [melanie.knowles@uclg.on.ca](mailto:melanie.knowles@uclg.on.ca)

CC: [Amin.Mneina@municipalengineers.on.ca](mailto:Amin.Mneina@municipalengineers.on.ca)

Registration Deadline: If you are intending on submitting a bridge, please advise at least one week before the event. All entries accepted up to the start of the event.

#### BUILDING MATERIAL:

- Max. - 6 pieces of balsa
- 1/4" square x 36" long
- LePage Multi Purpose White Glue.

No other glue is permitted. No other wood or additional materials or fasteners are allowed. These materials can be purchased at any craft shop or hardware store.

#### CONSTRUCTION SPECIFICATIONS:

Bridge length: The Bridge must be long enough to span over the 400mm gap between supports.

- The bridge must be wide enough to accept the 50mm loading plate without the plate hanging over the outer extremities of the bridge.
- The bridge needs to allow a sufficient space to locate the 100mm x 50mm "load plate" lengthwise on the bridge.
- Maximum bridge height is 200mm. Height is measured from the lowest extremity of the bridge to the highest extremity when resting on the loading plane.
- The structure design of the bridge will mimic a roadway / railway structure for the purpose of passing vehicles.
- Glue can only be applied to joint contact surfaces. Excess glue is to be removed.
- No surface glue is permitted. Joints are not to be wrapped in glue.
- Reducing the % square cross-sectional profile of the balsa wood is permitted.
- Laminating is permitted, but no more than six layers.

## JUDGING AND TESTING:

The bridge shall be simply supported (i.e. no thrust blocks)

- The bridges will be judged on load capacity to weight ratio.
- Once the bridge is set up on the test rig, the contestant will load his/her own bridge using supplied free weights.
- The bridges will be loaded at mid span from the bottom with the loading device as shown in the attached drawing to mimic a vehicular load on the bridge deck.
- The load will be transferred from the loading device through the centre of a 50 x 100 mm plate where it shall be supported/carried no more than 12.5mm above or below the loading plane at midspan. The contestant is responsible to ensure the load plate and hanger can be readily accommodated.
- All contestants and officials within the loading area must wear protective eyewear (provided).
- The load is increased incrementally, by a minimum of one pound increments, to ultimate failure of the bridge.
- Bridges will be destroyed during testing!

## THE COMPETITION

- **Weigh-In:** bridges entered into the competition are weighed. The weight is displayed with the builder's name.
- **Disqualification:** bridges will be examined by opposing contestants. Any challenges to conformity with the rules must be voiced before testing begins. If the judge deems a complaint to be valid, the contestant will be given 10 minutes to correct the nonconformity. Failure to comply with the rules will result in disqualification. "Creative" interpretation of these rules will result in disqualification solely at the judges' discretion.
- **Winning Bridges:** the winning criterion is highest load to weight ratio. There will be prizes for first, second and third place.
- **Testing:** the builder of the bridge (or delegate) will position the bridge in the test stand and will load the bridge.
- **End of Test:** In the event that all available weights are used and the bridge did not fail, the test will end. The load to weight ratio at the maximum available load will be used as the bridge's score.
- **Judge's decision is final:** That's that!

## GENERAL

Please note that due to the time limits/constraints in performing the bridge testing, a maximum of twelve bridges will be tested during the event night. Therefore, pre-testing/pre-qualification may be required if more than eight bridges are registered. More details will be provided to the Bridge registrants after registration deadline.

## BRIDGE BUILDING CHALLENGE LOADING ARRANGEMENT



