BRIDGE-IT

!BRIDGE MAKING COMPETITION!

This activity will provide you with valuable preparation for learning how to design a structure. The objective of this event is to design, construct and test the most efficient bridge built in accordance with the specifications. Model bridges are intended to be simplified versions of real-world bridges, which are designed to accept a load in any position and permit the load to travel across the entire bridge, varying at each position of deck. In order to simplify model bridge design, uniform loading will be applied on deck to check its stability.

And the only way to truly appreciate the challenges and rewards of engineering is to actively engage in the creative process of design.

General Instructions: -

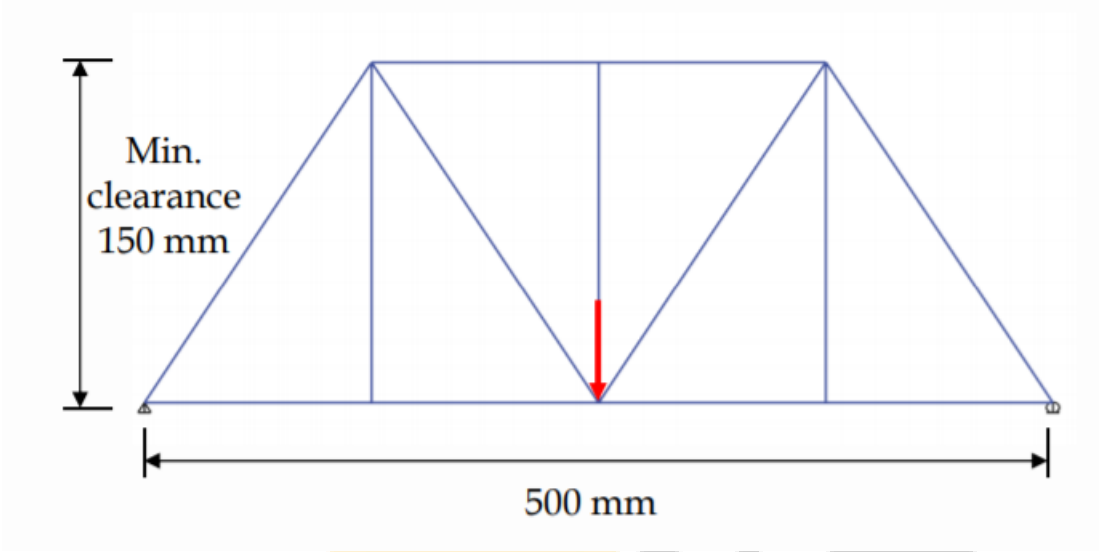
- Team should comprise of at most 4 member.
- All the instruments and Materials will be provided at the event location only.
- Sticks can be altered physically by cutting or notching at any angle.
- Only provided material can be used as adhesive, use of other adhesives may lead to disqualification.
- Use of threads is not allowed

Model Design Specification: -

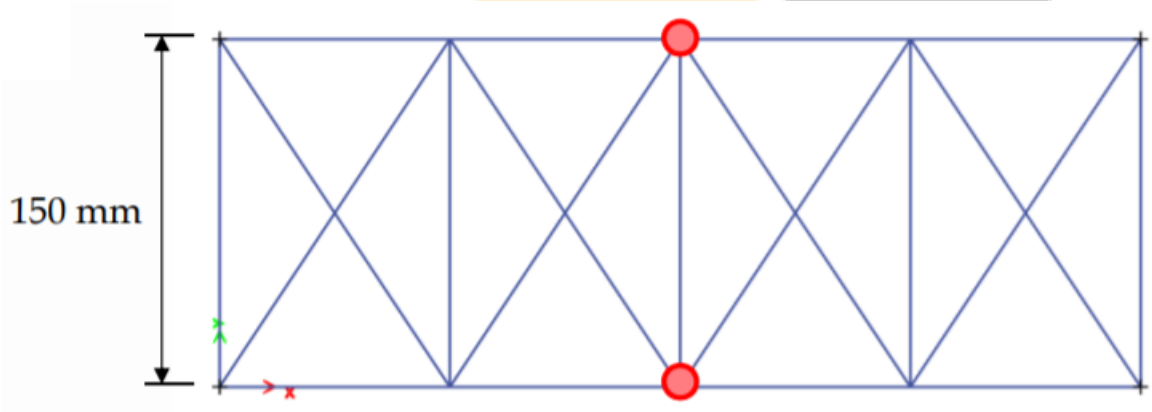
- Wooden strips will be provided with following dimensions
  Width B = 11.4 mm
  Thickness T = 4.6 mm

Wooden strip

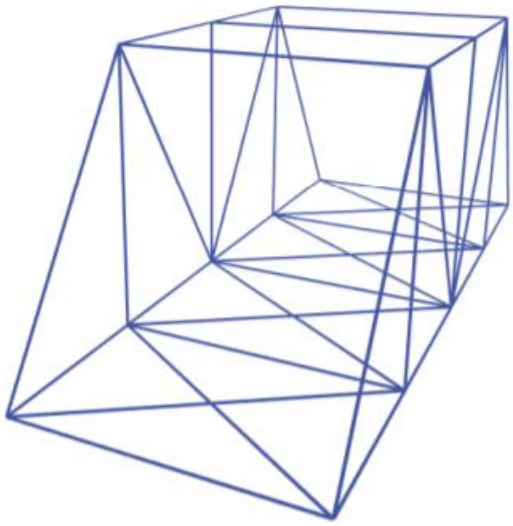
- The bridge must span a gap of 500mm with 150mm height as shown below.



[Side view]



[Top view]



[Isometric view]

Judging Criteria: -

All bridges are subjected to evaluation by judges comprised of the engineering community. Judging of bridges will be based on a blended criteria consisting of Judges Evaluation of the bridge (dimensional compliance, neatness of construction, aesthetics, etc.), application of engineering principals, and of course the performance of the bridge. The total score will be out of.

- Finally, the majority of the score will be weighted on the bridges overall performance. Bridges will be evaluated based on how much weight they can support while factoring in how much the bridge weighs.

  Efficiency = $\frac{\text{Load resisted}}{\text{Weight of bridge}}$ (75%)

- Aesthetic, Innovation and application of engineering principle,
  Like –does the design show use of structural engineering principals.(25%)

  1. 10% error in height of the structure is allowable, beyond that your marks will be deducted accordingly.

2. 5% error in span of the deck in longitudinal direction and 10% error in the transverse direction is allowable, beyond that your marks will be deducted accordingly.

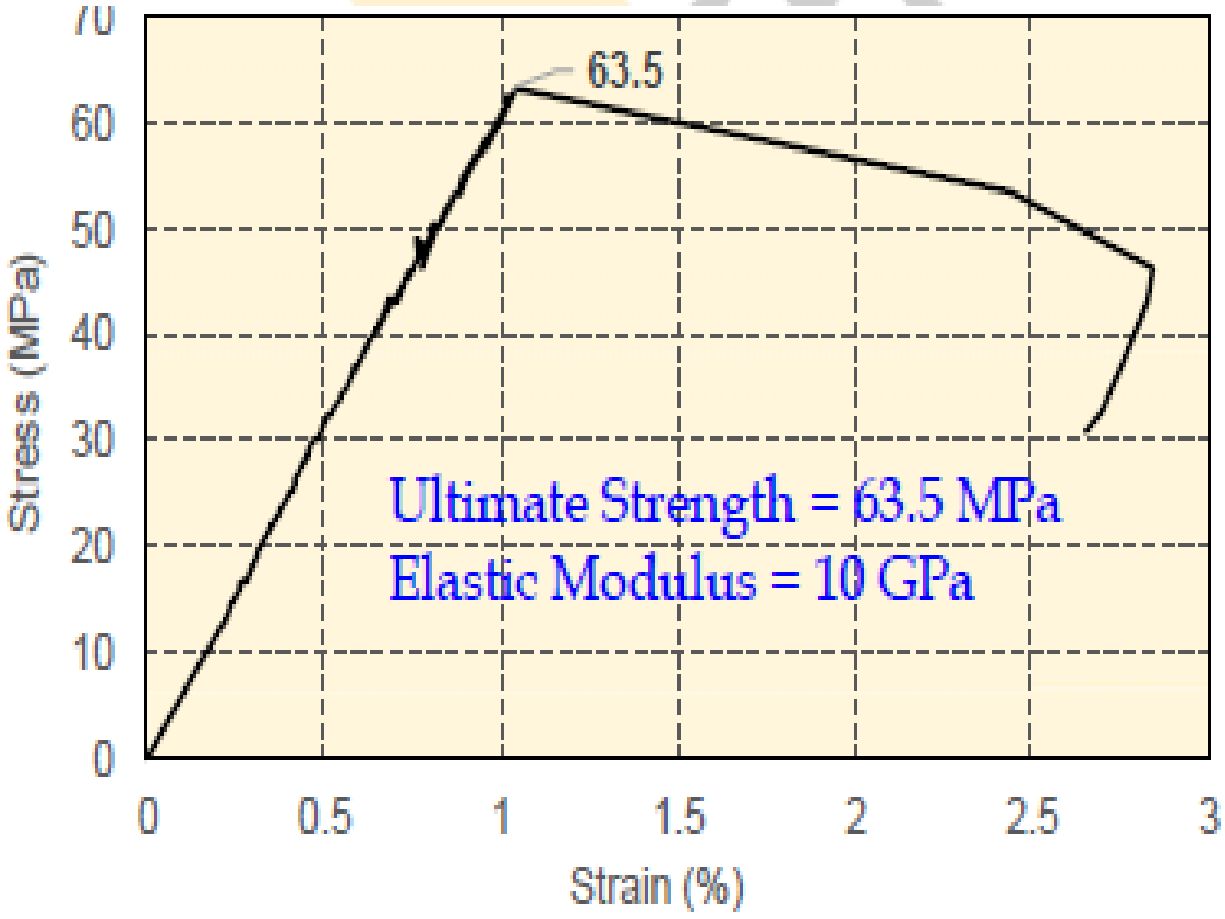
    - Does the bridge appear uniform and symmetrical?
    - Are joints clean, tapered, and show good transition of members.

- Some of the basics questions, related to bridge model, will also be asked by our judges.

Additional Information (optional*): -

For SAP analysis, required information are

- **Tensile Strength**



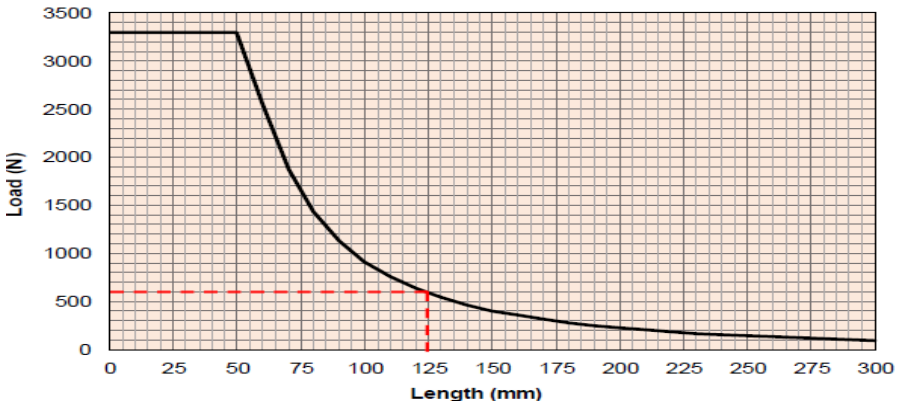
➢ **Compressive Strength**

– Buckling strength for hinged end condition,

$$P_{cr} = \frac{\pi^2 EI}{L^2}$$

Buckling curve

Factor of safety = 2.0



Important Declarations:

In case of any dispute, the decisions made by the organizing committee and the judges will be final and abiding.

Event organizer Contact details:

Ravi Kiran-8409024534

Rahul gupta-8617039813