



Mech Tech Meet

Season-8

March 3rd-4th, 2017



BRIDGING

(Bear The load)

Introduction:

We bring you the annual bridge making competition of Mech Tech Meet that will test your ability to design and construct the most efficient bridge within the given specifications. Your model bridges are intended to be simplified versions of their real world counterparts.

Problem statement:

Build a bridge entirely made up of Popsicle sticks with optimum efficiency.

Rules:

1. A team may consist of 4 members at max. Students from different educational institutions are allowed to form a team.
2. Eligibility: Any student with valid Identity card of their respective institution can participate. All the participants must have a valid ID at the time of competition.

BRIDGE SPECIFICATION:

1. Construct a bridge of length (span) at least 500mm and up to 800 mm using standard Popsicle sticks and adhesives.
2. The bridge cannot have more than two footings.
3. Overlap criteria -The structure must be a truss (not a beam), not more than three Popsicle sticks should be overlapped to make a truss member except at the joint.
4. Footing cannot be created by an overlapping network of sticks.
5. The width of the bridge at any point shall not be more than 150mm.
6. Total height of the bridge from footing must not be less than 150mm and must not exceed 300mm.
7. Loading will be done at the centre of the bridge.
8. At starting a load of 20 k.g. will be put on your bridge for 30 sec. to check the stability of bridge.
9. After that, loading will be done with a rate of 5 k.g. /10 sec.

MATERIALS:

1. The bridge must be constructed only from Popsicle sticks (120mm x 12mm x 2mm) and adhesives (Synthetic white adhesive or single component cyanoacrylate adhesive eg. FEVICOL).
2. No other materials may be used. The bridge may not be stained, painted or coated in any fashion with any foreign substance.
3. The Popsicle sticks may be cut or trimmed to any shape or size.



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4. The adhesive can only be used to join Popsicle sticks together; however adhesives cannot be applied on the free surface of the member sticks to increase its strength.

GAMEPLAY:

1. Loading will be done at the centre of the bridge.
2. All construction and material requirements will be checked prior to testing. Bridges failing to meet these requirements will be disqualified.
3. Central deflection up to 15 mm is tolerable. Sinking of supports at the end will lead to disqualification.
4. Loading will be done until the limit of deflection is reached or breaking of truss/ span members occurs.
5. The bridge with highest structural efficiency (E) will be declared as winner.

$E = \text{load supported in kg} / \text{weight of the bridge in kg}.$

6. The top two teams will be awarded.
7. All the dimensions mentioned are acceptable within an error range of +/- 5%. Any failure in adhering to the specifications will lead to immediate disqualification.
8. All decisions of the judges shall be final.