

BRIDGE THE GAP

TASK

Participants need to design and make a prototype of a suspension bridge using popsicle sticks. The bridge would be tested for deflection or failure and finally efficiency would be checked for each bridge. A team must be of 4 members.

ARENA SPECIFICATIONS

1. There is a metallic base on which 4 grooves for column of dimensions 40mm*40mm*65mm (breadth*width*depth)
2. The Distance between column of adjacent side is 150mm from center to center.
3. There will be an anchor at a distance of 200mm from center of groove to hold the suspension cables behind the cables.
4. There will be 2 grooves on each side of arena.

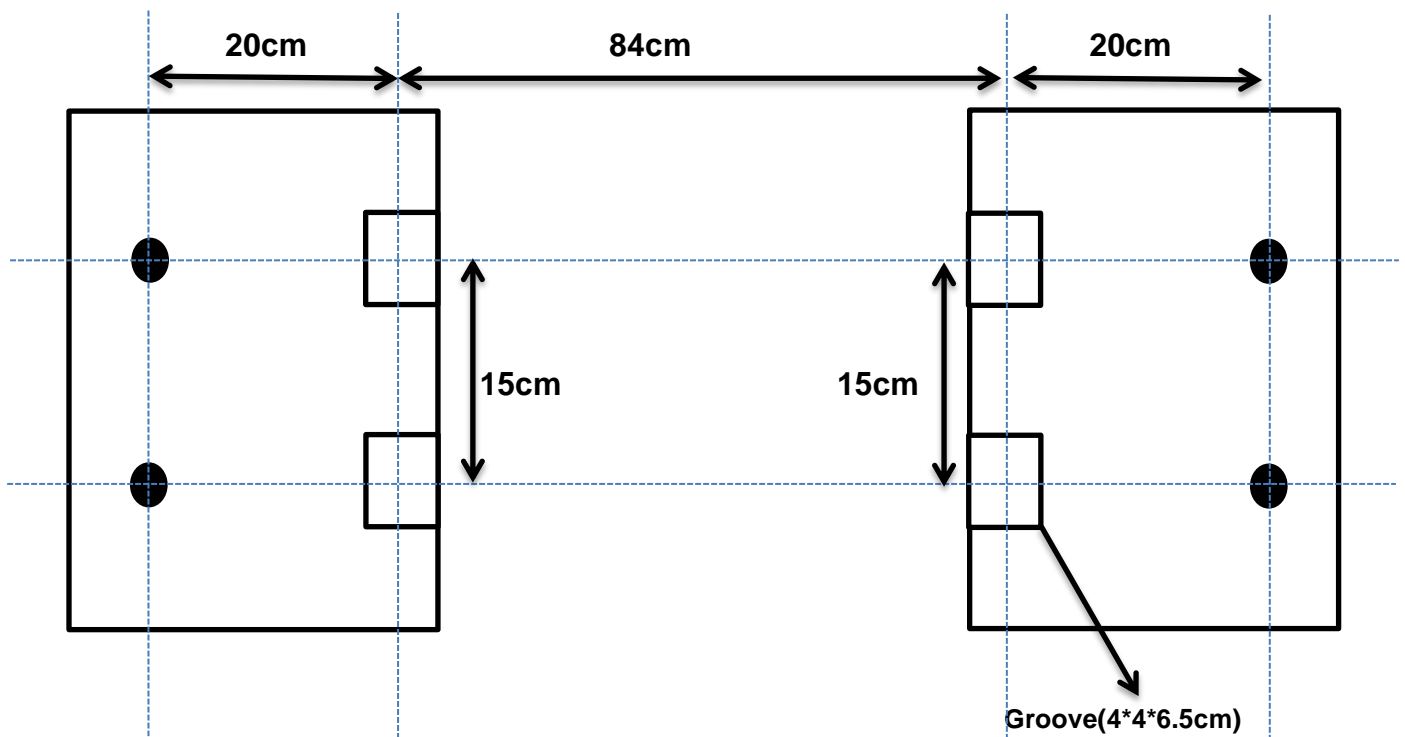


FIG 1: TOP VIEW OF ARENA

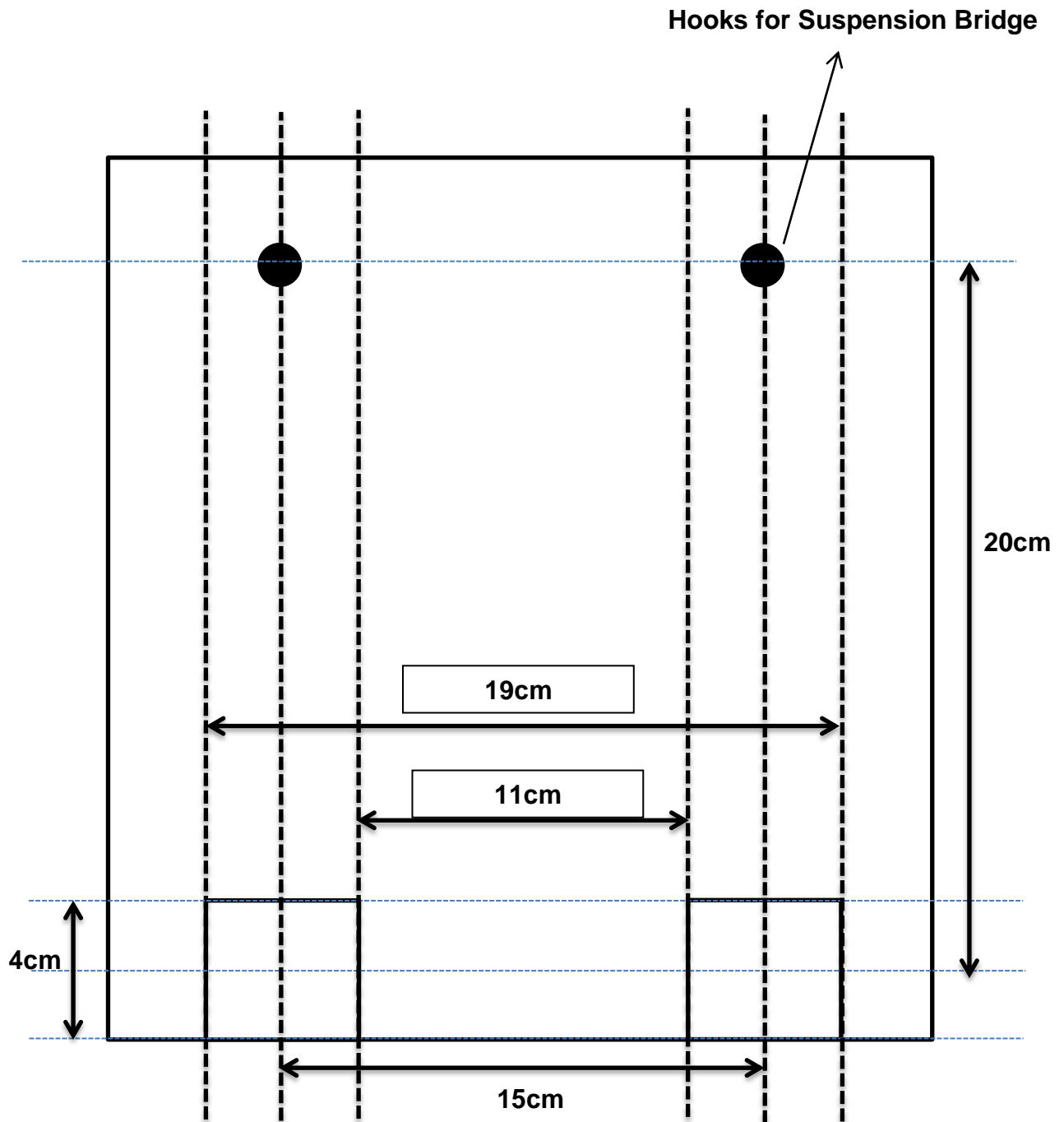


FIG 2: TOP VIEW OF ONE PLATE OF ARENA

TESTING

1. The structure will be weighed and after weighing is done no changes can be made in the structure.
2. Loading will be applied to the structure by two point loads acting at an equal distance of 150mm from the girder.
3. Load will be gradually increased till the structure shows the deflection of 25mm at center or if the members fails, whichever occur first.

JUDGING CRITERIA

A: Dead Weight of the final structure

B: Total weight carried by the structure

1. 100points will be awarded to the team with the lowest value of A, zero point to the team with the highest value of A. Others will be awarded points based on linear interpolation of these two points.
2. Equal points will be awarded as the value of B.
3. Total score of the team will be equal to summation of above two points.
4. The team with the highest score will be declared winner.

STRUCTURE SPECIFICATIONS

1. The minimum height of the column measured along the length should be 200mm above the base.
2. The maximum height of the column measured along the length should be 250mm above the base.
3. The span of the girders should be 800mm from inner edge of column taking center of the girder with center of the structure as reference point.
4. The dimension of the member of structure should not be more than 12mm*12mm (breadth*width).
5. There should be enough length of suspension cable at the end of columns to join it with anchor on the arena.

MATERIAL CONSTRAINTS

1. Popsicle sticks(maximum length 115mm, width 13mm and thickness 3mm) and adhesives(Fevicol SH only) should be used to build the structure. The popsicle sticks can be cut or trimmed to any shape or size.
2. Adhesives can only be used to join Popsicle sticks together, however adhesives cannot be applied on the free surface of a member made of Popsicle sticks to increase its strength (Only FEVICOL SH can be used as adhesive).
3. The Team will be disqualified if found using any other material other than those mentioned in any part of structure.
4. Use only white kite flying thread (saddi). It should not be coated with any type of material.
5. Diameter of cable should not exceed 2mm.

FOR MORE DETAILS CONTACT:

KUMAR SHUBHAM

9927384037