



**POORNIMA**  
INSTITUTE OF ENGINEERING & TECHNOLOGY

## **Report On Bridge Mania Activity**

**Date:-19/3/19**

Submitted to:-

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# STRAW TOWER CHALLENGE

OBJECTIVE:- To Enhance the skills of students like teamwork, taking different challenges, designing different structure & problem solving techniques.

One can create new world with his ideas and innovations. A civil engineer can built or create many structures with unique ideas which can serve as betterment of society. So an engineer require certain skills to developed which help in all these work such as team work, thought process, quick decision ,taking challenges for betterment of society, designing a structure, management, creativity etc.

So for developing such skills some college level events are organized such as TOWER CONSTRUCTION. In this event teams have to make tower using straws and cello tape and then its bearing capacity is measured by applying load on it and its failure load is noted.

A **tower** is a tall structure, taller than it is wide, often by a significant margin. Towers are distinguished from masts by their lack of guy-wires and are therefore, along with tall buildings, self-supporting structures.

Towers are specifically distinguished from "buildings" in that they are not built to be habitable but to serve other functions. The principal function is the use of their height to enable various functions to be achieved including: visibility of other features attached to the tower such clock tower as part of a larger structure or device to increase the visibility of the surroundings as in a fortified building such as a castle or as a structural feature as an integral part of a bridge.

Towers can be stand alone structures or be supported by adjacent buildings or can be a feature on top of a large structure or building.

## **EVENT SYNOPSIS :-**

The straw tower lesson explores how engineering has impacted the development of towers over time, including innovative designs and the challenges of creating towers that become landmark for a city. Students will work in team to design and build their own tower out of 100 straws and cello tape. The main objective to build the strongest tower, that is able to withstand great load.

### **Role of group members**

Chanchal meena :- Conduct the event at canteen stairs.

Shubham, devendra bhatt :- for testing the bridge on next day.

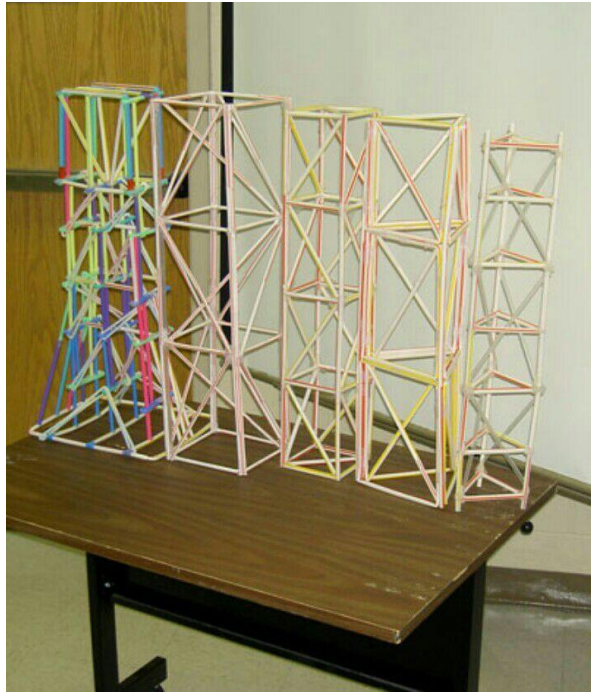
komal :- For evaluation

krishna :- To manage raw material before event.

## **APPARATUS**

- **Materials:** (All materials provided)
  1. 100 Straws.
  2. Cello Tape
  3. Cutting blade(cutting of straw is allowed)
  
- **Dimensions:**
  1. Diameter =5mm
  2. Length=19.8cm
  3. Minimum height of tower should not be less than 75 cm

4. **Rule update #2** Diagram presented for clarification:



4. Tower must be able to stand on its own.
5. Tower must be able to support the load at the centre.

**C. TERMS & CONDITIONS**

1. No other material will be provided for construction of tower.
2. Tower should have at least 3 base points.
3. Tower should stand on its base on its base on the level platform.

**D. The Competition**

1. Tower must be made with given specification.
2. Shape: Structure should be satisfying the above constraints.
3. Once the structure is weighed, you are not allowed to modify your structure in any way.

4. If the structure fails to satisfy any of the above constraints then it will be summarily rejected.

5. Any team that is not ready at the time specified will be disqualified immediately

### **E. Judging and Scoring**

1. Firstly towers are tested against wind energy using table fan.
2. Then the towers are judged according to their height.
3. Then the towers are tested according to the load it bears.
4. Teams with high overall marks will be the winner.

### **F. Marks will distributed as follows**

- Strength [30 marks] : awarded to the team, prior to failure whose tower will be able to support the greatest load to height ratio.
- Workmanship [10 marks] : awarded to the team whose Tower appears to be the most well craft.
- Team work [5 marks]
- Presentation [5 marks] : awarded to the team which presents their TOWER in the most creative and professional manner.

### **E. Duration of event**

- 1.5 hour on the day of tower construction.

### **G. Requirements of raw material for one section (60 students)**

- straw –  $100 \times 15 = 1500 + 200 = 1700$  straws
- Cello tape –  $2 / \text{team} = 2 \times 15 = 30 + 5 = 35$
- Cutting blade  $1 \times 15 = 15 + 5 = 20$
- Table fan.
- Weighing machine
- Measuring tape.
- Weight bars(gm)