

# **BOB THE BUILDER**

**Problem Statement 2:** (In addition to problem statement 1, the following criterion are be considered.)

Build a tensegrity tower to carry maximum possible load with minimum deformation, following the criterion mentioned in this document.

**Tensegrity definition:** A structural form where no compression members are in direct contact. Tension strings connect compression members at edges and none of the member exhibits bending or twisting.

## **Rules:**

### **A) Broad Rules:**

- 1) A team can comprise of maximum of 4 students.
- 2) All participants must carry their valid college id cards.
- 3) All participants should reach at least 15 minutes prior to the start of the testing procedure at the said venue.
- 4) Participants should take a note that extra time will not be provided. Every team has to complete the structure in the given time.

### **B) Problem specific rules:**

- 1) The structural form of the tower should not violate contemporary definition of tensegrity.
- 2) Once the structural dimensions are noted and verified, a team is not allowed to modify the structure.
- 3) Material provided by us can only be put in use. External material shall not be allowed (*except markers, pens, scissor and scale which teams can bring for themselves*).
- 4) Failure to meet the constraints mentioned in the problem statement will lead to disqualification.
- 5) The decisions by the judges will be final and binding.

## **Testing:**

### **Load Application:**

- 1) The tower will be placed inside the loading assembly and will be tested for monotonically increasing load.

- 2) The tower should be constructed in such a way that **both base and top nodes will be levelled**, and **tower will stand straight** during loading procedure.
- 3) Loading frame will be as shown in fig. no.1.

### **Definition of Failure:**

A structure is said to be failed under any one of the following conditions whichever occurs earlier:

1. Tower exceeding the 30mm deflection **or**
2. Detachment or sliding of any individual member of the tower **or**
3. Overall structural failure.

### **Judging Criterion:**

- |                                 |          |
|---------------------------------|----------|
| 1) Stiffness at 10mm deflection | 50 marks |
| 2) Stiffness at 20mm deflection | 20 marks |
| 3) Failure load                 | 30 marks |

### **Certification Policy:**

Certification of Participation will be awarded to the participants who have submitted their models.

### **Note:**

- 1) Participants will be notified of change in rules (if any) appropriately via e-mails and corresponding change in rules will also be highlighted on website.
- 2) *Participants should also take a note that last minute changes (if any) are possible, which will be intimated prior to the commencement of the event and should be prepared for it.*



**Fig. no.1: Loading Frame**