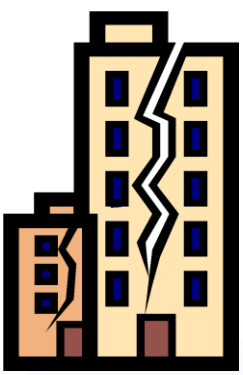
CEVILIZATION
SEASON 2
where everything begins

RULEBOOK



QUAKE QUEST

ORGANIZED BY:
ASCE STUDENT CHAPTER, DUET

IN COLLABORATION WITH:
DEPARTMENT OF CIVIL ENGINEERING, DUET

Earthquakes can cause significant destruction and loss of life. That's why civil engineers are tasked with building earthquake-resistant structures. It's one of the biggest challenges facing civil engineers today. To increase undergraduate students' awareness of constructing earthquake-resistant structures, **CEvilization Season 2** has planned to host a competition called "**Quake Quest**" in which participants will build earthquake-resistant structures.

Event Details:

On the event day, the participants have a time limit to build the structural models using the materials supplied. Every story in the building will have a superimposed dead load using steel blocks. The amount of steel blocks will depend on the floor area specified in section **4.**

To pass the shaking table test, a structure must be able to support the imposed dead load (steel blocks). If a structure fails to do so, the model will be considered disqualified. A uniaxial shaking table will then be used to test the constructed structures. Uniaxial shaking load of variable intensity will be applied to the models during final test.

The winner is the team whose constructed structure endures the longest time as well as all other judging criteria. The competition will be judged by a panel of experts in the field of earthquake engineering who will evaluate the designs and structures based on various criteria.

Guidelines for Quake Quest

1. Rules and Regulations:

- Each team consists of a maximum of **three** participants.
- All undergraduate students from any department enrolled at any university/institution in Bangladesh are eligible to participate.
- Each member needs to come from the same Institution.
- Cross Institutional team is not allowed.
- The participants have **2 hours** (no extra time will be given) at DUET to construct the model using the materials and equipment provided by the organizer (personal materials are not permitted).
- No drawings and clips can be used during the model build time.

2. Materials:

- Popsicle Sticks (101mm×10mm×1mm) – 500 nos.
- Super glue (3 gm) – 3 nos.
- Cable tie (200 mm) – 35 nos.
- Cable tie (300 mm) – 10 nos.(A maximum of 8 ties can be used)
- Anti-cutter (medium size) – 1 nos.
- Ruler – 1 nos.
- Stitching Awl – 1 nos.
- PVC foam board for floor (3mm thick)
- Baseboard (12mm plywood)-1 nos.

Popsicle Sticks

Cable Tie

3. Structural Specifications:

- **Baseboard**- The dimensions of the baseboard will be 30 cm by 30 cm. Four bolts will be placed on the baseboard in such a way that the distance between the two bolts is 25 cm, as shown in Figure 3.1. Besides, the baseboard will have drilled holes to let cable ties attach to the structure.

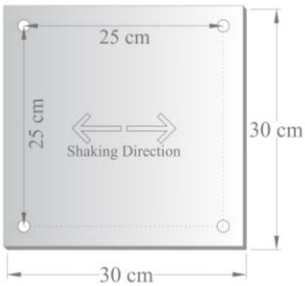


Fig: 3.1

- **Number of floors-** The building must be at least three stories with four horizontal floors represented by flat pieces of foam boards/baseboard as shown in Figure 3.2. The total height of the structure from baseboard to the roof top shall be between 50 cm to 75 cm.`

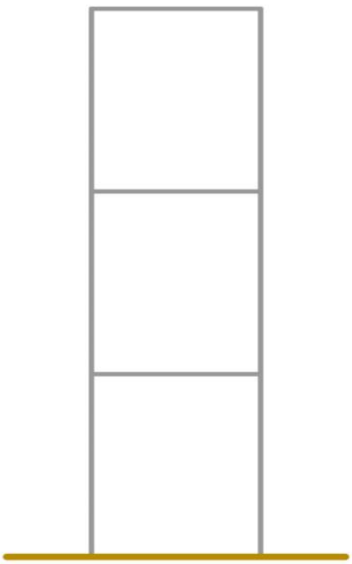


Fig: 3.2

- **Story height-** Each story height must be the same and shall be within 15 cm to 25 cm.
- **Area of floors-** The floor area shall be within 125 cm^2 to 500 cm^2. The floor area will be calculated considering out-to-out dimension of the structure at the floor levels.

- **Height to width ratio-** The total height of the structure to the width ratio shall be greater than **4**. Where the width is the square root of the maximum size of the floor areas.
- **Location of columns-** To eliminate the obstruction of fixing the steel blocks onto each floor, columns are allowed to be placed only at the perimeter of a model as shown in Figure 3.3. Columns can be placed only at the end of a popsicle stick. Bracing can be placed at any location of the columns.

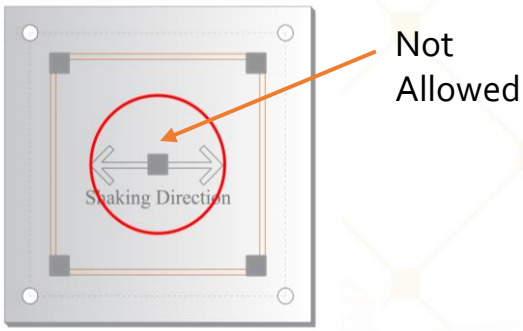


Fig: 3.3

- **Foam-board for slab and roof-** Supplied foamboard (30 cm × 80 cm) can be used for the slab and roof. These boards will be assembled with cable ties at the middle of the beam as shown in Figure 3.4.

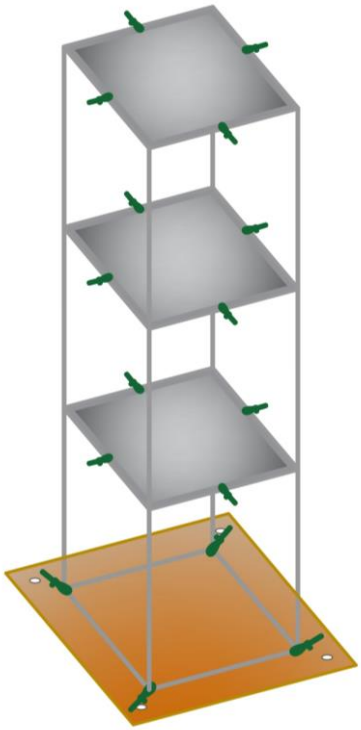


Fig: 3.4

4. Loading Criteria:

- The direction of uniaxial shaking (cyclic loading) will be marked on the base plate as shown in Figure 3.1 so that the participants can assemble their model considering the structural behavior while shaking on the shake table.
- For the shake table test, the steel blocks (weights) will be placed on the foam-board floor and roof as shown in Figure 4.1.
- The sizes of the steel blocks (weight) are 8 cm x 8 cm x 7.5 cm, 8 cm x 8 cm x 10.0 cm, and 8 cm x 8 cm x 12.5 cm for 3.75kg, 5.00 kg, and 6.25 kg respectively.
- The weight of steel blocks on each floor will be based on the floor area (A_f) as shown below.
    - For $125\ cm^2 \leq A_f \leq 250\ cm^2$ - 3.75 kg wt. on each floor
    - For $250\ cm^2 < A_f \leq 375\ cm^2$ - 5.00 kg wt. on each floor
    - For $375\ cm^2 < A_f \leq 500\ cm^2$ - 6.25 kg wt. on each floor

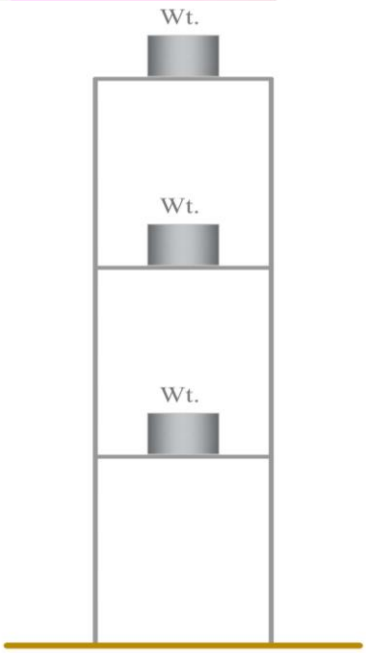


Fig: 4.1

5. Construction Guidelines

- Maximum limit for Popsicle stick is 400.
- Full-length overlapping of two popsicles is restricted. Overlapping at the joint should not exceed 12 mm as shown in Figure 5.1.

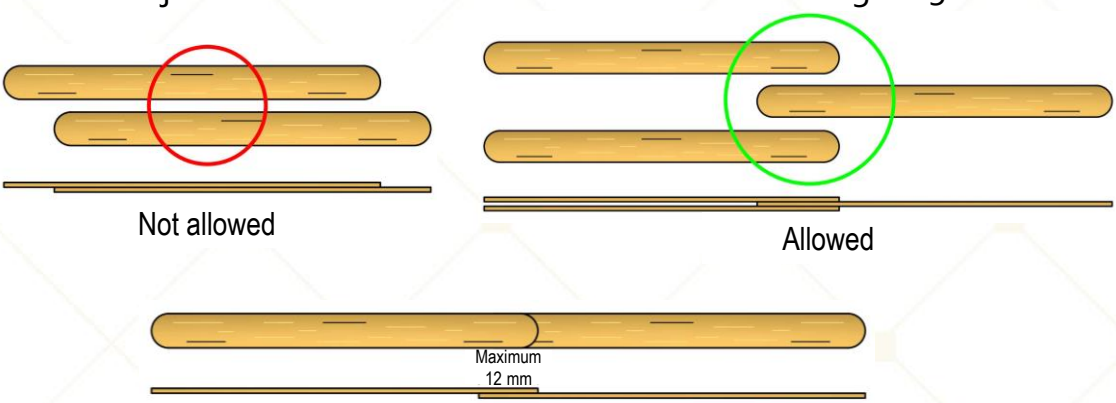


Fig: 5.1

- Overlapping at diagonal connection at the joint should not exceed 18 mm as shown in Figure 5.2.

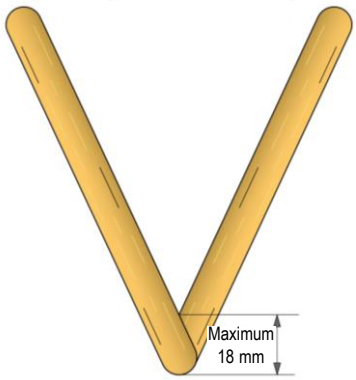


Fig: 5.2

- The dimension of any member at any joint and in any direction must not exceed 30mm. The members tied together at any location will be considered as a joint.
- Glue can be used only at joints. If glue is found in other than the joint the model will be disqualified.
- Horizontal bracings are not allowed as shown in Figure 5.3.
- Diagonal bracings are allowed in connecting two columns as shown in Figure 5.4. But no glue can be used where two braces cross each other.
- Two columns can be joined by a single cable tie only. The use of more ties per joint/connection is prohibited.
- To attach the baseboard to the ground floor, cable ties can be used only at the corner joints of the ground floor. Use cable tie(s) at each corner of the ground floor (Please see Fig: 3.4).
- At least one face of each floor should be clear of bracing to provide space so that the steel blocks (weights) can be placed.

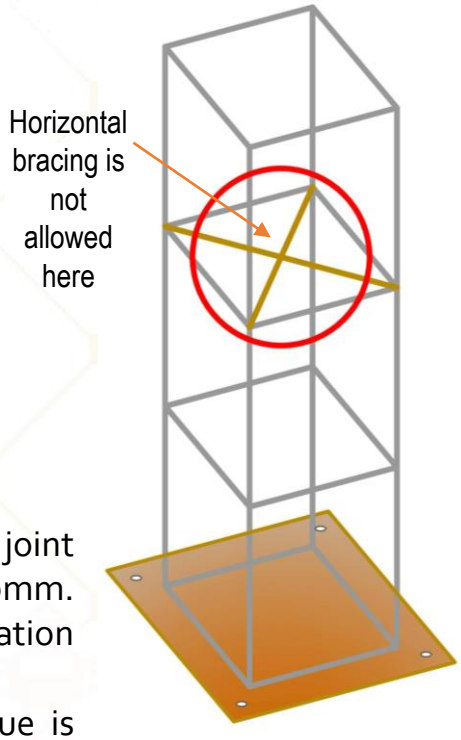


Fig: 5.3

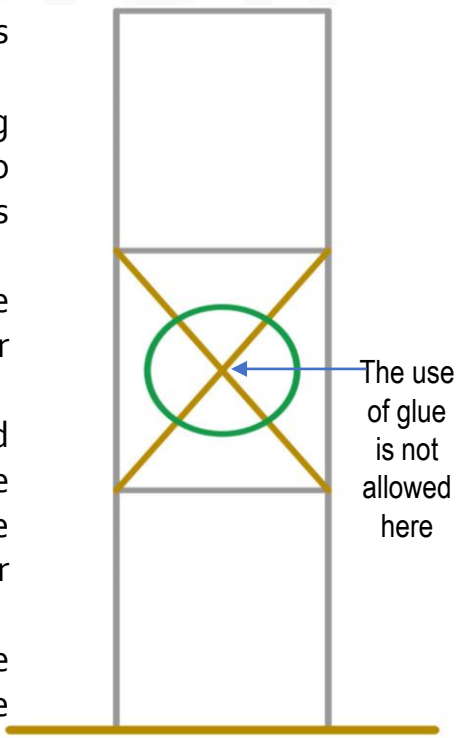


Fig: 5.4

6. Test Procedure

- Before the model is attached to the shake table, the structure must be stable to withstand gravity loading (steel blocks).
- Uniaxial shaking load of variable intensity (as shown in the following Figure 6.1) will be applied to the models during final test.
- The direction of shaking will be indicated on the supplied baseboard. When attaching the models to the baseboard, competitors are urged to consider this.

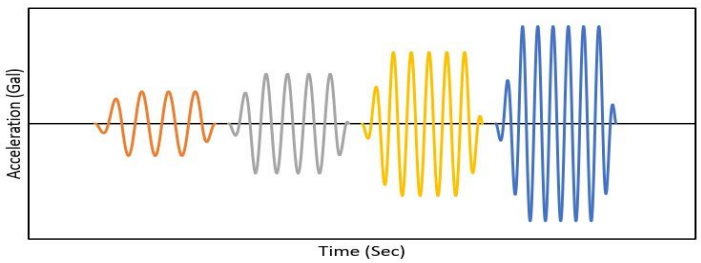


Fig: 6.1

7. Judging Criteria

Our top concern during the judging process is the ability to withstand cyclic loading. The total score is **100**. **80%** of the total score (i.e., 80) will be counted based on the long-term stability during the shake table test. The structure's overall height is given second importance. There are some negative scores for the model's weight (excluding base plate) of more than 300 grams and its floor size of more than 120 cm^2.

- The more the height the more points a team can achieve. The score will be **Negative** for a total height of less than 75 cm. The formula for this negative score is (75-H)/2. Where H is the total height of the structure from the baseboard to the roof in cm.
- The more the weight of the model the more points a team will lose. **Negative** points for weight will be (W-200)/20, where W is the weight of the model in grams.
- Also, the more the floor area of the model the more points a team will lose. **Negative** points for floor area will be (A-125)/40, where A is the floor area of the model in cm^2.

The rest of the **20%** scores will be counted based on the viva performed by the **Top 10** selected teams. The members of the selected 10 teams will face a challenging viva session conducted by our esteemed judges panel who have expertise in the field of earthquake engineering.

🖋️ Compliance Guidelines for the Contest:

- All teams must follow the materials and structural guidelines as outlined in the rules and regulations.
- Any use of prohibited materials or deviation from the guidelines will result in disqualification.
- Teams must ensure that their structures are stable and secure before the shaking table test begins. Respect judges' decisions; maintain professionalism at all times.
- Teams must not tamper with or make adjustments to their structures during the shaking table test.
- Adhere to the host university's conduct standards without exception.
- The organizing committee reserves the right to change or modify the rulebook as required for specific purposes.
- Any violations may lead to disqualification from the competition.
- Maintain respectful conduct towards fellow participants, organizers and judges.
- Ensure compliance with all safety protocols outlined by the host university.

🏆 Prize pool:

- Prizes will be awarded to Champion, 1st Runner-up & 2nd Runner-up based on their attained scores.
- An alluring prize pool of **45k+** has been announced that will be distributed among the winners.
- Besides a **Gorgeous Crest** and winning **Certificate** will be offered to the winners of this Quake Quest segment.

🎁 **Registered Participants will receive →**

- Event Kits [T-Shirt + Merchandise + ID Card]
- Breakfast and Lunch
- Participation Certificate
- Round-Trip Transport Facilities

Note: The rules and guidelines outlined above are subject to change at the discretion of the organizing committee. Participants are advised to check for updates and announcements regarding the competition regularly.

Registration Fee: BDT 1500/-

Registration link: https://ascechapter.duet.ac.bd/cevilization/13

🗓️ **Event Date:** 10 January, 2026 (Saturday)

📋 **Event Schedule:** 10:00 AM (Competition Start) & 12:00 PM (Test Start)

🔗 Event Link : https://www.facebook.com/share/1XxSGdGfuk/

For any queries :

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📞 **Contact Number :** 01627223048, 01798765786, 01876119117